

GIFT TAX IMPLICATIONS ON MONETARY ASSET TRANSFERS FROM NONRESIDENTS

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ABSTRACT

In this paper, we analyze some of the gift tax implications on monetary asset transfers from nonresidents to residents. Specifically, we analyze whether such monetary transfers would be considered tangible with U.S. situs and therefore trigger gift taxation. Given the fact that the gift tax is progressive and there are limited existing gift tax exemptions for nonresidents in comparison to residents, it is important for nonresidents to properly understand and plan these activities. As such in this paper, we plan to analyze some of the obstacles nonresidents face when they give away funds as gifts (in the form of money transfers) for which it is unclear as to whether they should be treated as tangible or intangible and whether such transfers stipulate underwritten U.S. property.

INTRODUCTION

The gift tax on transfers of monetary assets located in the U.S. from nonresidents to residents has been the topic of many discussions regarding its applicability [(Colon, 1997, (Gale, Slemrod, 2001), (Joulfaian, 2005)]. The unambiguity comes with certain “money transfers” using bank accounts for which it is unclear as to whether they should be treated as tangible or intangible, and whether such transfers stipulate underwritten U.S. property. Per IRS Section 25.2511, gifts of tangible assets located in the U.S. are subject to gift taxation for nonresidents. Further, Section 2501(a)(1) (1983) of the Code provides that a “tax is imposed for each calendar year on the transfer of certain property by gift during such calendar year by any individual, resident or nonresident”. Such “certain property” excludes tangible assets located outside of the U.S. and intangible assets, irrespective of their location (IRS Section 25.2511, 1997). That is, the nonresident could be making gifts to nonresidents and residents in the form of intangibles or gift away property located outside of the U.S. and such activities would not trigger the gift taxation. As such exclusion exists for gift taxation for nonresidents, it is critical to analyze whether “monetary transfers” using bank accounts for gift making purposes would be considered tangible with U.S. situs and therefore trigger taxation. Given the fact that the gift tax is progressive and there are limited gift tax exemptions for nonresidents in comparison to

the resident taxation, it is important for nonresidents to properly understand and plan these activities. As key component to our analysis, we note that monetary transfer originates and ends with a bank account. That is, in this paper, we only analyze transfers between bank accounts. Therefore, in order to provide a proper analysis, we need to determine the nature of bank accounts, whether they are considered tangible or intangible for IRS gift tax purposes. In addition, we need to discuss the actual transfer from one bank account to another, and whether it is considered tangible or intangible event. By analyzing the nature of the event and its forms, we could determine whether it should be taxable. That is, we need to determine whether the gift activity or the monetary transfer based on its different forms, is considered tangible with U.S. citizen and therefore subject to gift taxation. Such discussion is warranted as it will assist nonresidents as well as tax professionals in their gift making activities. As a starting point, we would analyze the definitions of resident and nonresident (section 2 of this paper). Then, we would look into IRS Section 25, which provides the current rules and regulations in regards to gift taxation for nonresidents (section 3 of this paper). This would be followed by an analysis section (4) which would further explore the obstacles of gift taxation for monetary transfers for nonresidents.

DEFINING NONRESIDENT FOR GIFT TAX PURPOSES

The gift tax is a tax on the transfer of property by one individual to another while “receiving nothing, or less than full value, in return” (IRS Gift Tax Definition, 2014). IRS definition further states that “the tax applies whether the donor intends the transfer to be a gift or not” (2014). IRS treats individuals as “nonresident aliens if they are neither U.S. citizens nor residents of the United States” (IRS Section 25.2501). Further, per Publication 519 from the IRS, a person is U.S. Citizen or “considered to be nonresident alien unless he/she meets one of the two tests: green card test or the substantial presence test” (2013). As the definition of nonresident is an exclusion from the definition of resident alien, it is important to understand the definition of resident alien. Per IRS Publication 519 (2013), a person is considered resident if he or she is a U.S. Citizen or “meets either the green card test or the substantial presence test for calendar year”. There is no unambiguity with the definition of “U.S. Citizen” and therefore, it would not

be discussed in this paper. We are more concerned with Non-U.S. Citizens for which such determination is not as clear. In the following paragraphs, we would briefly list these two tests (green card and substantive presence tests) as per IRS Publication 519 (2013):

Green card test

Person is a resident for tax purposes if he/she is a lawful permanent resident of the United States at any time during calendar year...A person is a lawful permanent resident of the United States at any time if he/she has been given the privilege, according to the immigration laws, of residing permanently in the United States as an immigrant. He/she generally has this status if the U.S. Citizenship and Immigration Services (USCIS) (or its predecessor organization) has issued an alien registration card, also known as a “green card.” The person continues to have resident status under this test unless the status is taken away or is administratively or judicially determined to have been abandoned.

...

Substantive presence test

Person will be considered a U.S. resident for tax purposes if he/she meets the substantial presence test for calendar year. To meet this test, a person must be physically present in the United States on at least:

1. 31 days during calendar year, and
2. 183 days during the 3-year period that includes current calendar year and the previous 2, based on IRS provided formula

Further, IRS Section 25.2501-1(b) (1983) provides that “a resident of the United States is an individual who has his domicile in the United States”. The code (Section 25.2501-1(b)) further states (1983):

A person acquires a domicile in a place by living there, for even a brief period of time, with no definite present intention of moving therefrom. Residence without the requisite intention to remain indefinitely will not constitute domicile, nor will intention to change domicile effect such a change unless accompanied by actual removal.

The above section (25.25.01-1b) of the code is a little bit misleading and it should not be taken as a stand-alone rule of residence. It is the means of initiating the “substantive presence test” to determine if a person should be treated as resident or nonresident. That is, if a person has established residence in the U.S., we need to than figure out whether such person meets the established secondary tests (green card and substantive presence). As we have defined residents, nonresidents are considered to be an exclusion from the definition of resident alien.

BACKGROUNDS TO NONRESIDENT RULES REGARDING GIFT ACTIVITIES

In the next couple of paragraphs, we would discuss some of the rules regarding the gift taxation on nonresidents defined above. In general, Sections 2501 (1983) and 2511 (1997) of IRS Code contain rules relating to the taxation of transfers of property by gift by a donor who is a nonresident not a citizen of the United States. Per these rules:

(1) The gift tax applies only to the transfer of real property and tangible personal property situated in the United States at the time of the transfer if either—

(i) The gift was made on or after January 1, 1967, by a nonresident not a citizen of the United States who was not an expatriate to whom section 2501(a)(2) was inapplicable on the date of the gift by reason of section 2501(a)(3) and paragraph (a)(3) of § 25.2501-1, or

(ii) The gift was made before January 1, 1967, by a nonresident not a citizen of the United States who was not engaged in business in the United States during the calendar year in which the gift was made.

(2) The gift tax applies to the transfer of all property (whether real or personal, tangible or intangible) situated in the United States at the time of the transfer if either—

(i) The gift was made on or after January 1, 1967, by a nonresident not a citizen of the United States who was an expatriate to whom section 2501(a)(2) was inapplicable on the date of the gift by reason of section 2501(a)(3) and paragraph (a)(3) of §25.2501-1, or

(ii) The gift was made before January 1, 1967, by a nonresident not a citizen of the United States who was engaged in business in the United States during the calendar year in which the gift was made.

It is important to look at the IRS definitions of “situs of property”, “tangible” and “intangible” as these would guide us in our further discussion. Per Sections 2511 of IRS code (1997):

(b) Situs of property. For purposes of applying the gift tax to the transfer of property owned and held by a nonresident not a citizen of the United States at the time of the transfer—

(1) Real property and tangible personal property. Real property and tangible personal property constitute property within the United States only if they are physically situated therein.

(2) Intangible personal property. Except as provided otherwise in subparagraphs (3) and (4) of this paragraph, intangible personal property constitutes property within the United States if it consists of a property right issued by or enforceable against a resident of the United States or a domestic corporation (public or private), irrespective of where the written evidence of the property is physically located at the time of the transfer.

(3) Shares of stock. Irrespective of where the stock certificates are physically located at the time of the transfer

(4) Debt obligations. (i) In the case of gifts made on or after January 1, 1967, a debt obligation, including a bank deposit, the primary obligor of which is a United States person (as defined in section 7701(a)(30)), the United States, a State, or any political subdivision thereof, the District of Columbia, or any agency or instrumentality of any such government constitutes property situated within the United States. This subdivision applies—

Note: For the purposes of this paper, the case of gifts made before January 1, 1967 are intentionally *omitted from this discussion*.

Based on the above, the IRS Code clearly defines that tangible assets located outside of the U.S. and intangible assets (irrespective of their location) are not subject to such tax for nonresidents. That is, the nonresident could be making gifts to nonresidents and residents in the form of intangibles or gift away property located outside of the U.S. and such activities would not trigger the gift taxation. In addition, in the above section, it clearly notes that “debt obligations”, or the promise to pay from one party to the other is considered an intangible asset. This is important component of the code which would be later used to further the *Analysis* section.

“Monetary transfers” can possess both the qualities of tangible and intangible assets, and therefore be subject to gift taxation. Clear example would be to withdraw funds from one’s bank account located in the U.S. and to physically gift these funds to another person in the U.S. This would clearly be an example of “monetary transfer” subject to gift tax. As such, it is important to discuss the different forms of monetary transfers and their gift tax implications on nonresidents. This would be discussed in the following *Analysis* section.

ANALYSIS

As previously mentioned, certain transactions such as monetary transfers from nonresidents to residents could trigger gift taxation. This is especially the case when such transfers involve tangible assets with U.S. situs. As key component to our analysis, we note that monetary

transfer originates and ends with a bank account. That is, in this paper, we only analyze transfers between bank accounts. Therefore, in order to provide a proper analysis, we need to determine the nature of bank accounts, whether they are considered tangible or intangible for IRS gift tax purposes. In addition, we need to discuss the actual transfer from one bank account to another, and whether it is considered tangible or intangible event. By analyzing the nature of the event and its forms, we could determine whether it should be taxable. That is, we need to determine whether the gift activity or the monetary transfer based on its different forms, is considered tangible with U.S. citrus and therefore subject to gift taxation. Such discussion is warranted as it will assist nonresidents as well as tax professionals in their gift making activities.

In this paper, we argue that bank accounts are considered to be debt obligations and therefore intangible assets. In order to support this argument, we need to link debt obligations (which were previously shown to be intangible per Section 2511) to bank accounts. That is, we need to show that bank accounts are considered to be debt obligations. This is not difficult to prove as bank accounts are the result of one party (could be an individual or business) depositing funds into a financial institution that is permitted to accept such deposits. When the deposit is made, the individual depositing the funds (from an accounting reporting stand point of view) debits "Cash at the bank" or "Cash receivable from the bank" and credits "Cash on hand". That is, when the individual deposits funds into the bank, there is a reallocation or transfer from "Cash on hand" to "Cash at the bank". The "cash on hand" is a tangible asset as it represents physical currency such as bills and coins. The "cash at the bank" is considered intangible as it represents promise by the bank to repay these funds in the future. That is, the "cash at the bank" actually represents a receivable from the bank. Per IRS Section 2511, such promises to pay, which represent obligations by one party to another are considered debt obligations and therefore intangible in nature. To further support this analysis, we could analyze journal entries from the point of view of the financial institution accepting the deposit. When a customer makes a deposit, the bank needs to debit "Cash received from customer" or "Cash on hand" and credit "Customers deposits". The credit side or the customer's deposits is considered to be a liability

account or debt obligation. This is the case as it represents an obligation by the bank towards its customers to repay the deposit at any point of time with the accumulated interests (if such terms exists for the timeliness of the interest). That is, the customer's deposits are in fact debt obligations that the bank creates when the customer deposits the funds. As previously discussed, debt obligations are considered to be intangible. That is, the arrangement created by the customer and bank is considered to intangible in nature. If we pursue this logic, we can argue that cash at the bank is also an intangible in nature as it represent a receivable (the counterpart of the debt obligation). That is, it represents a receivable the customer expects to receive from the bank at any point of time. As such, this is also considered to be intangible in nature.

Next, we need to analyze whether the actual gift monetary transfer made by the nonresident to another using bank accounts would be considered taxable event per IRS rules. In order to furnish proper analysis, we need to evaluate the different means of funds transfer between two bank accounts. Essentially, these transfers could occur via 1) Physical transfer, 2) Check and 3) Bank or wire transfer. These would be discussed next.

Physical Transfer

As we previously noted, the monetary transfer originates from a bank account (debt obligation and therefore an intangible asset). Therefore, for a physical transfer to occur, the nonresident needs to physically withdraw cash from the bank and then gifting it in its physical tangible form. If such action is undertaken by nonresident, the cash (currency bills and coins) would be transformed from an intangible asset (bank account) to tangible asset (bills and coins). If the nonresident is to give these bills and coins, this gift would be considered tangible. To determine whether it would be taxable per IRS Rules, we need to determine the location of the physical transfer. If the nonresident transfers the funds outside of the US, it would be clearly gift of tangible assets outside of the U.S. and therefore not subject to tax. If the nonresident withdraws the funds from a bank account (debt obligation and intangible assets) and gifts to the recipient in the U.S., it would be considered a tangible assets with U.S. situs and therefore

subject to tax. Finally, if the nonresident withdraws the funds outside of the U.S. but travels and enters the U.S. and then gifts the funds, it would be again considered tangible with U.S. situs as the funds are gifted in the U.S. Therefore, proper care needs to be exercised when gifting physical bills and coins to avoid gift taxation.

Transfer by Check

The second option would be to transfer funds via check. In this case, the nonresident would draw a check on his bank. In this situation, the check would be considered tangible asset as it has all the attributes of an item that has physical substance. The check is given physically as tangible asset and it is under the control of the recipient. At this point, it is important to determine whether such tangible asset would have US situs. It strictly depends on where the check was given. However, if there is no proper evidence to prove that the check was given outside of the US, it would be important to determine where the check was cashed or deposited. If it is again outside of the US, there should not be any gift taxes owed. However, if there is no evidence that the check was given outside of the US and it was subsequently deposited or cashed in the US, it could be subject to gift tax on the recipient.

Wire Transfer

The third option to provide monetary transfer is via wire transfer. There are no current IRS reporting decisions as to whether wire transfers from U.S. or non-U.S. bank account to U.S. bank account would be considered a transfer of tangible or intangible. As such, it is critical that we furnish proper discussion on this topic. First, we would take the position that such transfer is in fact tangible. We could argue that wire transfer are very similar to a check. It essentially transfers funds from one account to another. In the case of a check, there is physical document that is exchanged between the donor and recipient. This makes the transfer tangible in nature, even though it is between two intangible assets (as it was argued that bank account are considered debt obligations). We can argue that such physical form exists with a wire transfer as the donor needs to fill out a document requesting the transfer. Some could argue that this documents is similar to check as it also has physical attributes. However, in this paper, we

believe that such wire transfers better meet the definitions of intangible assets. This is mainly because the wire transfer form is not given to the beneficiary when the transfer is made. That is, it is not an external document in comparison to a check. The nonresident need to simply call his/her bank to transfer funds. It is a fairly instantaneous transaction which avoids the “promise to pay” represented by the check. As such, this type of transfer would be considered to be intangible in nature and not subject to gift taxation.

An issue could arise when nonresident wants to gift a tangible U.S. real property to resident of the U.S., but circumvents paying gift tax by gifting funds by the means of wire transfer. That is, a nonresident could avoid paying gift tax on tangible gifts by simply wiring intangible assets that subsequently are used to purchase tangible assets in the U.S. Alternatively, nonresident could avoid paying gift tax by selling a tangible asset with U.S. citrus for cash (deposits in bank account) and therefore converting it to intangible asset. Later the funds from the intangible asset could be wired to the resident/nonresident located in the U.S. and the gift tax could be eliminated altogether. In this case, IRS needs to analyze the scenario more closely and most likely if presented with such case, they could argue that the gift should be taxed as gift of tangible with U.S. citrus. Similarly, if the donor when gifting away specifies that the funds are to be used to purchase tangible asset in the U.S., it could be argued that even though the wire transfer is intangible, the whole economic event is considered tangible and therefore be subject to gift taxation. In order to avoid such situations, nonresidents should clearly define their transfers as unrestricted and to be used for any purposes. This would ensure that the gift continues to remain intangible. Without such notes, the gift and the subsequent payments could be viewed as pass through gifts of tangible assets with U.S. citrus and therefore be subject to gift taxes.

CONCLUSION

Given the obstacles of money transfer and the impact of nonresidents, clients and their CPAs need to have proper understanding of this matter in order to avoid gift taxation. Special attention needs to be paid for monetary gifts which in process of the transfer could change

from intangible to tangible (with U.S. citrus) and therefore be subject to gift taxation on the nonresident. To avoid such situations, it important for the donor to ensure that the gift has not restrictions on how the funds are to be spend, in order to avoid IRS litigations that could view the transfer as a way of the donor to transfer tangible property and not pay the gift tax.

REFERENCES

- CFR (1997) Title 26, Chapter I, Subchapter B, Part 25, 25.2511-1, Transfers in general, <http://www.law.cornell.edu/cfr/text/26/25.2511-1>
- CFR (1983) Title 26, Chapter I, Subchapter B, Part 25, 25.2501-1, Imposition of tax, <http://www.law.cornell.edu/cfr/text/26/25.2501-1>
- Colon, J. M. (1997). Changing US Tax Jurisdiction: Expatriates, Immigrants, and the Need for a Coherent Tax Policy. *San Diego L. Rev.*, 34, 1.
- Gale, W. G., & Slemrod, J. B. (2001). *Rethinking the estate and gift tax: overview* (No. w8205). National Bureau of Economic Research.
- IRS Gift Tax Definition (2014), <http://www.irs.gov/Businesses/Small-Businesses-&Self-Employed/Gift-Tax>
- IRS Publication 519 (2013), U.S. Tax Guide for Aliens, <http://www.irs.gov/pub/irs-pdf/p519.pdf>
- Joulfaian, D. (2005). Choosing between gifts and bequests: how taxes affect the timing of wealth transfers. *Journal of Public Economics*, 89(11), 2069-2091.
- US Code, Title 26, Subtitle B, Chapter 12, Subchapter A › § 2501 <http://www.law.cornell.edu/uscode/text/26/2501>

THE IDIOSYNCRATIC CASE OF FIRMS THAT EXHIBIT NONSEASONAL QUARTERLY EARNINGS CHARACTERISTICS

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ABSTRACT

This paper reviews and synthesizes empirical work in accounting assessing the time-series properties of firms exhibiting nonseasonal quarterly earnings characteristics. The focus on nonseasonal firms is warranted given the recent trend documented by Lorek, Willinger, and Bathke (2008) showing that 35.6% of their sample firms exhibit nonseasonal quarterly earnings characteristics. Moreover, 43.6% of their nonseasonal firms were not covered by security analysts. Therefore, analysts, investors, and researchers interested in obtaining quarterly earnings forecasts for such firms must employ statistically-based forecasting models thereby increasing the importance of this topic. Yet, use of the seasonal ARIMA models on nonseasonal firms described by O’Hanlon (1995) results in seasonal over-differencing, parameter redundancy, and a violation of the principle of parsimony – not to mention a significant decline in predictive ability. Finally, the paper also discusses specific statistically-based forecasting models (i.e., the AR (1) model and, more recently, the random-walk model) which have improved predictive ability of quarterly earnings for such nonseasonal firms.

INTRODUCTION

Previous studies assessing the time-series properties of quarterly earnings have concentrated virtually exclusively upon identifying a singular optimal *seasonal* ARIMA model that fits across all firms and time.¹ Such efforts culminated in the specification of competing *seasonal* ARIMA model structures such as those championed by Foster (1977), Brown and Rozeff (1979) and Griffin (1977) and Watts (1975). More recent efforts (i. e., Bathke et al., 2006 and Lorek and Willinger, 2007) underscore the futility of this approach and provide empirical evidence that firms with varying attributes (i.e., nonseasonals, regulated firms, and high-technology firms, among others) exhibit idiosyncratic quarterly earnings time-series properties. This suggests that the “one size fits all” approach to modeling quarterly earnings may, in fact, be counterproductive. This paper concentrates exclusively upon firms that exhibit quarterly earnings time-series properties that are purely nonseasonal for two compelling reasons. First, Lorek, Willinger and Bathke (2008) provide evidence that the percentage of nonseasonal firms has been increasing through time. Therefore, knowledge of the time-series properties of

quarterly earnings for such firms has taken on added importance. Second, Lorek et al. (2008) also provide evidence that 43.6% of their sample of nonseasonal firms had no analyst coverage whatsoever. Therefore, investors, researchers, and users of expectational quarterly earnings data must rely exclusively upon statistically-based quarterly earnings prediction models for such firms.

Knowledge of the idiosyncratic quarterly earnings time-series properties of nonseasonal firms is necessary for empirical financial-based researchers to: (1) employ better proxies for the market's expectation of quarterly earnings in capital market association testing that abandons the myopic notion that all firms exhibit seasonal quarterly earnings time-series properties consistent with the viewpoint expressed by Brown (1999), (2) employ nonseasonal statistically-based prediction models that avoid parameter redundancy, overfitting of the data, and violation of the principle of parsimony when seasonal models are inadvertently employed on nonseasonal firms, and (3) develop proxies for earnings persistence for nonseasonal firms that are descriptively valid.

In some ways, the current paper may be viewed as an update to the time-series review paper of O'Hanlon (1995). Its considerably narrower focus, however, emphasizes how forecast models have subtly changed since the mid-1990s. Specifically, the paper reviews and synthesizes recent empirical findings underscoring the contextual nature of statistically-based quarterly earnings forecasting models by concentrating upon empirical work detecting nonseasonal firms. Forecasting models for such firms are considerably more parsimonious in their ARIMA model structure than the premier seasonal ARIMA models. Adoption of descriptively-valid time-series models for nonseasonal firms by empirical financial-based researchers will enhance predictive performance while reducing measurement error in research designs. Subsequent sections of the paper include documenting the existence of nonseasonal firms in samples analyzed by researchers, providing a summary of empirical financial-based settings that would benefit from controlling for the presence of nonseasonal firms, and detailing precisely why knowledge of when to employ nonseasonal quarterly earnings expectation models is useful in

accounting research settings. Finally, we provide some concluding remarks and suggestions for future research.

NONSEASONAL FIRM DETECTION

The “golden-age” of time-series research in accounting took place in the late 1970s when numerous articles were published seeking to identify a singular optimal *seasonal* ARIMA (pdq) X (PDQ) model structure for quarterly earnings data (see Foster (1977), Brown and Rozeff (1979), Griffin (1977) and Watts (1975), and Lorek (1979), among others). All such works employed seasonal ARIMA model structures that invoked either seasonal differencing or seasonal parameters for all sample firms. For example, the Foster (100) X (010) with drift ARIMA model employed seasonal differencing, the Brown-Rozeff (100) X (011) ARIMA model employed both seasonal differencing and a seasonal moving-average parameter, and the Griffin-Watts (011) X (011) ARIMA model did likewise.² An implicit assumption invoked by the above works is that a common-structure *seasonal* ARIMA model is representative of *all* sample firms. Subsequent work across several decades suggests that this assumption has been called into question and that the time-series properties of quarterly earnings appear to be more contextual.

Lorek and Bathke (1984) were the first to detect nonseasonal firms (29 out of a total sample of 240 firms or 12.1%) that exhibit idiosyncratic quarterly earnings time-series properties at variance with those exhibited by seasonal firms. They were concerned that the methodology employed in the identification of “common-structure” ARIMA models – since it relied exclusively upon examining *average* sample autocorrelation function (SACF) values – may have masked the presence of heretofore undiscovered nonseasonal firms. They developed an operational filtering mechanism that identified nonseasonal firms so that more parsimonious nonseasonal ARIMA model structures could be identified separately for them. Specifically, the filter stipulates that if all three lag multiples of the seasonal span (i.e., 4, 8, and 12 with quarterly data) of the SACF of the consecutively-differenced quarterly earnings series exhibit values less than their respective standard deviations, the firm is labeled nonseasonal. Had these 29 nonseasonal firms been inadvertently treated as seasonal – as previous quarterly

earnings ARIMA studies had done – parameter redundancy and seasonal overdifferencing would occur. In fact, if seasonal differencing were employed on a time-series database of nonseasonal quarterly earnings, artifactual seasonal autocorrelation would be inadvertently induced at all seasonal lags resulting in the identification of an overly complex ARIMA model structure. This violates Occam’s razor as well as the principle of parsimony resulting in a decline in predictive ability for such nonseasonal firms. Lorek and Bathke demonstrated the fact that a simple nonseasonal AR (1) ARIMA model outperformed seasonal ARIMA models attributed to Foster (1977), Brown and Rozeff (1979), and Griffin (1977) and Watts (1975) in one-step-ahead quarterly earnings predictions for the 29 nonseasonal firms detected in their sample.

Brown and Han (2000) relied upon two quarterly earnings databases spanning 1961-1983 and 1961-1988, respectively, to detect the presence of nonseasonal firms.³ Consistent with Lorek and Bathke (1984), 16% and 18% of all sample firms were identified as nonseasonals using the same nonseasonal screening filter created by Lorek and Bathke. Their purpose in isolating nonseasonal firms was to test whether the complexity of the quarterly earnings expectation model (i.e., the nonseasonal AR(1) model represents a simpler quarterly earnings expectation model whereas the Brown-Rozeff (100) X (011) ARIMA model represents a more complex quarterly earnings expectation model) affects the earnings-return relationship. Their detection of nonseasonal firms was crucial to the simpler/more complex dichotomy of quarterly earnings expectation models central to their research methodology. Their study represented the first attempt by researchers to stratify sample firms by examining their quarterly earnings time-series properties in an earnings-return context.

Lorek and Bathke’s aforementioned identification of 12.1% of their sample firms as nonseasonal was based upon a quarterly earnings database spanning 1962 to 1976. Using a relatively more current database (1967 to 1982) and the same nonseasonal filtering mechanism, Bathke, Lorek and Willinger (1989) detected 126 nonseasonal firms from a subpopulation of 374 firms (33.7%). While the primary focus of Bathke et al. was to assess

whether the time-series properties of quarterly EPS were affected by firm size, the substantial increase in nonseasonal firm representation (12.1% to 33.7%) underscores the growing importance of nonseasonal firms and motivated subsequent researchers to examine further the quarterly earnings time-series properties of nonseasonal firms.

Bathke et al. (2006) identified a subsample of 167 nonseasonal firms from a sample of 593 firms (i.e., 28.2%) using the aforementioned nonseasonal filtering mechanism. Their time-series identification database included quarterly earnings during the 1978 to 1991 time period. They suggest that nonseasonality may be attributed to merger and acquisition activity which resulted in the diversification of businesses into alternative product lines and services. A risk diversification strategy might be to invest in new highly seasonal products and services to provide counterbalancing seasonal effects that serve to smooth the firm's quarterly earnings SACF values giving it a nonseasonal appearance. For example, a toy manufacturer may choose to invest in products exhibiting seasonal effects in the spring counterbalancing the seasonal effects of Christmas season sales. Bathke et al. provide empirical evidence that an AR (1) ARIMA model provided more accurate earnings predictions across the 1990-1996 holdout period than more complex seasonal ARIMA models.

Lorek et al. (2008) identified 296 nonseasonal firms out of a total sample of 831 firms (35.6%) using a quarterly earnings identification database across 1984-1993. These findings serve to reinforce the sizable and growing percentage of firms that exhibit quarterly earnings patterns that are clearly nonseasonal in nature. Perhaps more importantly, they report that 43.6% of the 296 nonseasonal firms did not have analyst coverage. Therefore, researchers interested in undertaking earnings-return analyses *must* rely on a statistically-based quarterly earnings expectation model to provide quarterly earnings predictions for such firms. Lorek et al. report that the random-walk (RW) model provides significantly more accurate one-step ahead quarterly earnings predictions than the AR (1) ARIMA model across the 1994-2003 holdout period. They attribute the dominance of the RW model to its robustness (i.e., there are no

parameters to estimate) avoiding potential structural change issues, reduced levels of autocorrelation exhibited in the SACFs relative to the SACFs examined by Lorek and Bathke (1984) making the estimation of autoregressive parameters problematic, and the greater frequency of loss quarters experienced by their sample firms. These factors contribute to the propriety of a short-memory expectation model (i.e., the RW model) rather than a long-memory expectation model (i.e., an ARIMA model).

WHY ARE THESE FINDINGS IMPORTANT?

The first reason that this stream of research is salient pertains to predictive ability. Beaver, Kennelly, and Voss (1968) championed the use of the predictive-ability criterion in accounting as a method (among others) to discern the usefulness/relevance of accounting data. The multitude of time-series studies in accounting during the 1970s – 1980s [see O’ Hanlon (1995)] served to operationalize the predictive-ability criterion and reinforce its use in accounting research settings. We emphasize that controlling for the presence of nonseasonal firms by detecting them via analysis of the SACF of quarterly earnings and modeling them separately from seasonal firms – rather than assuming that a singular *seasonal* ARIMA model fits all firms - enhances predictive ability.

A more subtle benefit, however, may pertain to analysts who cover such firms. Bradshaw et al. (2001) and Easton and Sommers (2007), among others, document that analysts are unable to process the time-series properties of quarterly earnings efficiently. That is, they seemingly confuse permanent earnings effects with transitory ones inadvertently introducing serial correlation in their quarterly earnings forecast errors across time. Treating all firms as having seasonal quarterly earnings is consistent with this notion. To the extent that nonseasonal firms may be easily identified using Lorek and Bathke’s filtering mechanism, analysts may avoid this source of measurement error thereby enhancing predictive ability.

Researchers typically employ a singular quarterly earnings expectation model (i.e., an analyst forecast or a statistically-based ARIMA model) for all sample firms as a matter of expediency in an earnings-return setting (see Foster (1977), Bathke and Lorek (1984), and Brown et al. (1987), among others). The findings detailed in this paper suggest that this approach introduces measurement error in proxying the market's expectation of quarterly earnings via the treatment of nonseasonal firms as if they were seasonal. Therefore, researchers should consider matching the quarterly earnings expectation model with the underlying quarterly earnings time-series properties of each sample firm.

Finally, recall that Lorek et al. (2008) reported that 43.6% of their nonseasonal firms did not have any analyst coverage. For such firms, investors, researchers and users of earnings expectational data have no choice but to employ a statistically-based quarterly earnings expectation model. Knowledge of precisely when to use a nonseasonal model (i.e., the RW model) versus a seasonal ARIMA model is necessary to enhance predictive performance and control for measurement error.

CONCLUDING REMARKS AND SUGGESTIONS FOR FUTURE RESEARCH

Quarterly earnings data exhibit time-series properties that are considerably more contextual than originally thought. Early time-series work in accounting was on a myopic quest to identify a singular seasonal ARIMA model structure across all firms and time. More recent empirical evidence documented herein suggests that an increasing number of firms exhibit quarterly earnings time-series properties that are nonseasonal. Use of seasonal ARIMA models on nonseasonal firms results in parameter redundancy, seasonal over-differencing, a violation of the principle of parsimony, and a resultant decline in predictive ability. Use of Lorek and Bathke's (1984) operational nonseasonality filtering mechanism provides analysts, investors, researchers, and users of earnings expectational data with a cost-effective method to tailor statistically-based quarterly earnings expectation models to the time-series properties of each

firm's quarterly earnings series. By doing so, analysts, investors, and researchers will enhance predictive ability and reduce measurement error in their quarterly earnings expectations.

Researchers interested in contributing to this research stream should consider: (1) documenting the increasing trend of nonseasonal firms using more current databases (i.e., post 2000 data), (2) assessing the robustness of the RW model as a descriptively-valid forecasting model for the quarterly earnings of nonseasonal firms (i.e., as opposed to the AR(1) model), and (3) consider stratifying samples in earnings-return studies (i.e., seasonals, nonseasonals, covered, and not covered firms by security analysts) to employ more accurate proxies for the market's expectation of quarterly earnings rather than using the same expectation model across all firms.

REFERENCES

- Bathke, A. W. Jr. and K. S. Lorek. 1984. The relationship between time-series models and the security market's expectation of quarterly earnings. *The Accounting Review* 59: 163-176.
- Bathke, A. W. Jr., K. S. Lorek, and G. Lee Willinger. 1989. Firm-Size and the predictive ability of quarterly earnings data. *The Accounting Review* 64: (1): 49-68.
- Bathke, A. W. Jr., K. S. Lorek, and G. Lee Willinger. 2006. Long-Term earnings Forecast models for nonseasonal firms. *Journal of Business Inquiry* Vol. 5: Issue 1: 20-27.
- Beaver, W. H., J. W. Kennelly, and W. M. Voss. 1968. Predictive ability as a criterion for the evaluation of accounting data. *The Accounting Review* 43: 675-683.
- Bradshaw, M. T., S. Richardson, and R. Sloan. 2001. Do analysts and auditors use information In accruals? *Journal of Accounting Research* 39 (1): 45-74.
- Brown, L. and M. Rozeff. 1979. Univariate time-series models of quarterly earnings per share: a proposed model. *Journal of Accounting Research* 17: 179-189.
- Brown, L., P. Griffin, R. Hagerman, and M. Zmijewski. 1987. Security analyst superiority relative to univariate time-series models in forecasting quarterly earnings. *Journal of Accounting and Economics* 9: 61-87.
- Brown, L. 1999. Discussion of post-earnings announcement drift and the dissemination of predictive information. *Contemporary Accounting Research* 16: 341-345.
- Brown, L. and J. Han. 2000. Do stock prices fully reflect the implications of current earnings for future earnings for AR1 firms? *Journal of Accounting Research* 17: 179-189.
- Easton, P. G. and G. A. Sommers. 2007. Effects of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts. *Journal of Accounting Research* 45 (5): 983-1015.
- Foster, G. 1977. Quarterly accounting data: time-series properties and predictive-ability results. *The Accounting Review* 52: 1-21.
- Griffin, P. A. 1977. The time-series behavior of quarterly earnings: preliminary evidence. *Journal of Accounting Research* 15: 71-83.
- Lorek, K. S. 1979. Predicting annual net earnings with quarterly earnings time-series models. *Journal of Accounting Research* 17: 190-204.

- Lorek, K. S. and A. W. Bathke, Jr. 1984. A time-series analysis of nonseasonal quarterly earnings data. *Journal of Accounting Research* 22 (1): 369-379.
- Lorek, K. S. and G. Lee Willinger. 2007. The contextual nature of the predictive power of statistically-based quarterly earnings models. *Review of Quantitative Finance and Accounting*. 28: 1-22.
- Lorek, K. S., G. Lee Willinger, and A. W. Bathke, Jr. 2008. Statistically based quarterly earnings expectation models for nonseasonal firms. *Review of Quantitative Finance and Accounting* 31: 105-119.
- O'Hanlon, J. 1995. The univariate time series modelling of earnings: A review. *British Accounting Review* 27: 187-210.
- Watts, R. 1975. The time-series behavior of quarterly earnings. Manuscript, University of New Castle, NSW.

FOOTNOTES

¹ See O'Hanlon (1995) for a particularly lucid review of time-series works in accounting.

² We employ conventional Box-Jenkins notation: [(pdq) X (PDQ)] where (p,P) = regular, seasonal autoregressive parameters, (d,D) = consecutive, seasonal differencing, and (q,Q) = regular, seasonal moving average parameters.

³ We discuss Brown and Han (2000) prior to Bathke et al. (1989) since Brown and Han's quarterly earnings databases started earlier than the databases examined by Bathke et al. despite being published more than a decade later.

RISING AND CHANGING PROFESSIONAL KNOWLEDGE AS BARRIERS TO ENTRY

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RISING AND CHANGING PROFESSIONAL KNOWLEDGE AS BARRIERS TO ENTRY

ABSTRACT

Applying a partial equilibrium model, this paper examines the role of the rate of increase in the level of professional knowledge and the role of the rate of replacement of "old" for "new" knowledge on the equilibrium concentration level in a market for professional services. The two main results provide the conditions for 'no-entry' and 'no-exit' equilibrium. These conditions provide a plausible rationalization for concentration in the high-level market for professional services. In this paper we use data pertaining in particular to the high-level market for auditing services. The generality of our results suggests that a similar model can be utilized to illuminate concentration phenomena in additional markets for professional and related services.

INTRODUCTION

The literature on entry limitations has dealt with adverse selection, moral hazard, advertising and the durability and replacement of capital as barriers to entry, see Dell' Ariccia et al. (1999), Farrell (1986), Nagle (1981) and Eaton and Lipsey (1980). But it has not examined the roles of the volume and pace of changes in the professional knowledge as an entry barrier. The objective of this study is to contribute to this literature by showing how the rate of increase in the level of professional knowledge and the rate of replacement of "old" for "new" knowledge determine the structure (level of concentration) of a market for high-level professional services and, in particular, how they can rationalize an observed tendency of increased concentration. We use the market for two-type (low and high) auditing services.

In the field of Auditing of publicly traded companies, professional knowledge is comprised of (i) knowledge of the GAAP (Generally Accepted Accounting Principles) and (ii) knowledge of regulation pertaining to both the industry and the activities of the client company. Awareness of the potential benefits from changes in GAAP and in regulation (which are usually thought of as salutary regulatory responses to the changing business environment) should be complemented with awareness of the negative effects on market concentration of the volume and pace of changes in the GAAP and in the resulting regulatory requirements.

In our setting, any company is required by law to be audited annually by an independent CPA (Certified Public Accountant), whether its stock or bonds are publicly traded or not. But, when the stock or bonds are traded publicly in a regulated exchange, the accounting rules for that company are different. For example, most private companies in the USA whose shares or bonds are *not* traded in a regulated exchange are using simple and stable 'historical cost' accounting rules for preparing their reports. They do not apply the US GAAP. Some private companies are required by lenders, bonding companies, regulators and others to prepare financial statements conforming to the US GAAP but in many of these cases this requirement is dispensed with if a Certified Public Accountant (CPA) appends her audit with an appropriate reservation.¹

The International Financial Reporting Standards (IFRS) and, similarly, the US GAAP provide preparers of financial statements with instruction on how to measure assets and liabilities and how to report the changes in their measured amounts. In addition, companies whose shares or debt instruments are publically traded are subject to governmental regulation (e.g., the SEC) that is voluminous and changing over time. Another aspect of professional knowledge is regulation of the client industry (e.g., insurance, banking, tobacco). In this context, professional knowledge refers to familiarity with the IFRS or the US GAAP; with the SEC regulation; and with government regulation of the client industry.

Our partial equilibrium model examines the market for professional services where CPA-firms offer their customers a professional service. There are two groups of customers: low-level and high-level customers. The professional knowledge needed to serve the low-level customers is stable. We assume that all the professionals already have the knowledge to provide the service to the low-level customers and, therefore, the costs of maintaining that knowledge are negligible. In contrast, the professional knowledge needed to serve the high-level customers is increasing over time and, in addition, part of the existing knowledge is updated and replaced each period.

¹ Blue Ribbon Panel on Standard Setting of Private Companies: Report to the Board of Trustees of the Financial Accounting Foundation, January 2011.

It is shown that the rate of increase in the professional knowledge and the rate of knowledge replacement serve as a barrier to entry to the high-level services. A CPA firm that wishes to provide auditing services to publicly traded companies has to bear the costs of (i) entering the market and (ii) maintaining its knowledge. Since these costs are growing over time, the entry cost at some point exceeds the benefit from serving a high-level customer and therefore no new CPA firms enter the high-level market. Also, over time, small CPA firms exit the high-level market. This leads to higher concentration levels where the big CPA firms control the high-level market.

While our study clarifies the roles of the volume and pace of changes in the professional knowledge in determining market structure, it does not offer a political-economic theory that explicitly deals with the endogenous determination of these changes. Nevertheless, it clearly alludes to the possibility that some political players may have an axe to grind in this respect. A fuller integration of this issue awaits further research.

Undoubtedly, in the high-level market of auditing services professional knowledge is highly increasing. Our approach and results can therefore contribute to the understanding of the observed high concentration in this market. Let us briefly describe the situation in this market in UK and the US.

Beattie, Goodacre and Fearnley (2003) documented the concentration in the UK audit market for listed companies from 1968 to 2003. During this period, the number of audit firms active in the market *decreased* steadily from 1,109 audit firms to 84 audit firms. In addition, the percentage of audits performed by the "Big 4" (PriceWaterhouseCoopers, KPMG, Ernst & Young and Deloitte & Touche) CPA firms increased from about 20% to above 70%.

The concentration level in the US market for auditing public companies reached similar levels (see Willekens and Achmadi (2003)). Caban-Garcia and Cammack (2009) report that the "Big 4" CPA firms audited 91% of the US public companies in 2003.

Eichenseher and Danos (1981) studied the causes for different concentration levels of auditors in different industries. They showed that auditor concentration in each industry is positively correlated with the levels of client-industry regulation and capital market activity. In terms of our model, higher levels of client-industry regulation and of capital market activity and specifically the pace of regulation changes imply higher professional knowledge that is needed to serve a client.

Finally, it is interesting to note that in 2012, the total revenues of the "Big 4" CPA firms were reported to exceed 110 billion dollars.²

THE MODEL

Stigler (1968 p. 67) defined a barrier to entry as "a cost of producing (at some or every rate of output) that must be borne by firms seeking to enter an industry but is not borne by firms already in the industry." The level of professional knowledge creates a barrier to entry in two ways: (i) it prevents new CPA firms from entering the high-level market; and (2) it drives out of the high-level market small CPA firms that cannot afford to maintain their level of professional knowledge. In other words, the changes in the professional knowledge can be viewed as both "*barrier to entry*" and "*pressure to exit*".³

The knowledge needed to provide the service to a high-level customer at time t , $K(t)$, is measured in terms of the cost of acquiring and assimilating this knowledge. We assume that $K(t) = K_0 + D(1 - e^{-\beta t})$. At time 0, $K(0) = K_0$ and as t increases, the level of knowledge

² *The 2012 Big Four Firms Performance Analysis* <http://www.big4.com/wp-content/uploads/2013/01/The-2012-Big-Four-Firms-Performance-Analysis.pdf>.

³ Note that a barrier to entry does not necessarily reduce public welfare. For example, professional knowledge of oncologists is increasing over time and it possibly creates a barrier to enter the market for cancer treatments, but we presume that the increasing knowledge enhances the cure of people. However, in the context of the auditing market it is not clear that higher pace of changes in GAAP and in industry specific regulation is enhance public welfare.

approaches $K_0 + D$. The rate of change of knowledge is $\frac{dK(t)}{dt} = \beta D e^{-\beta t}$, and

$$\frac{d^2 K(t)}{dt^2} = -\beta^2 D e^{-\beta t}. \text{ Thus, the concavity measure of } K(t) \text{ is } \frac{d[\text{Ln}(K'(t))]}{dt} = \frac{K''(t)}{K'(t)} = -\beta.$$

The higher is β , the sooner the level of knowledge approaches its maximum level. The time it takes to reach a level of knowledge which is $K_0 + \delta D$, for $0 < \delta < 1$, is $t = \frac{1}{\beta} \text{Ln} \left[\frac{1}{1 - \delta} \right]$.

In addition to the growth in the level of knowledge, part of the existing knowledge, α , has to be replaced continuously.

Suppose that a professional who provides service to the low-level market considers entering the high-level market at time t . To be able to provide the service, he first has to learn and assimilate the current state of knowledge. In addition, the entering professional has to take into account the present value of the costs to maintain his ability to serve the high-level market. Let the interest rate be denoted by i . At time t , the present value of the cost of entering the high-level market and stay there is

$$PV(\text{enter} - \text{and} - \text{stay}) = K(t) + \int_t^{\infty} [\beta D e^{-\beta x - i(x-t)} + \alpha K(x) e^{-i(x-t)}] dx.$$

Substituting $K(x) = K_0 + D(1 - e^{-\beta x})$ into the above equation yields,

$$PV(\text{enter} - \text{and} - \text{stay}) = \left(1 + \frac{\alpha}{i}\right) \left(K(t) + \left(\frac{1}{1 + \frac{i}{\beta}} \right) D e^{-\beta t} \right).^4$$

The effect of time on the entry cost

Notice that $\frac{d}{dt} PV(\text{enter} - \text{and} - \text{stay}) > 0$. That is, the entry cost is increasing over time:⁵

4 Proof

$$PV(\text{enter} - \text{and} - \text{stay}) = K(t) + \int_t^{\infty} \left[\beta D e^{-\beta x - i(x-t)} + \alpha K_0 e^{-i(x-t)} + \alpha D (1 - e^{-\beta x}) e^{-i(x-t)} \right] dx =$$

$$K(t) + \int_t^{\infty} \left[\beta D e^{-\beta x - ix + it} + \alpha K_0 e^{-i(x-t)} + \alpha D e^{-i(x-t)} - \alpha D e^{-\beta x - ix + it} \right] dx =$$

$$K(t) + \int_t^{\infty} \left[\beta D \left(1 - \frac{\alpha}{\beta} \right) e^{-\beta x - ix + it} + (\alpha K_0 + \alpha D) e^{-i(x-t)} \right] dx =$$

$$K(t) + \left[-\frac{\beta D}{\beta + i} \left(1 - \frac{\alpha}{\beta} \right) e^{-\beta x - ix + it} - \frac{\alpha}{i} (K_0 + D) e^{-i(x-t)} \right]_{x=t}^{\infty} =$$

$$K(t) + \frac{\beta D}{\beta + i} \left(1 - \frac{\alpha}{\beta} \right) e^{-\beta t} + \frac{\alpha}{i} (K_0 + D)$$

Substituting $K_0 = K(t) - D(1 - e^{-\beta t})$ into the above last expression yields,

$$PV(\text{enter} - \text{and} - \text{stay}) = \left(1 + \frac{\alpha}{i} \right) \left(K(t) + \left(\frac{1}{1 + \frac{i}{\beta}} \right) D e^{-\beta t} \right).$$

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$$\frac{d}{dt} \left[\left(1 + \frac{\alpha}{i} \right) \left(K(t) + \left(\frac{1}{1 + \frac{i}{\beta}} \right) D e^{-\beta t} \right) \right] = \left(1 + \frac{\alpha}{i} \right) \left(\beta D e^{-\beta t} - \beta D \left(\frac{1}{1 + \frac{i}{\beta}} \right) e^{-\beta t} \right) =$$

$$= \beta D \left(1 + \frac{\alpha}{i} \right) e^{-\beta t} \left(1 - \left(\frac{1}{1 + \frac{i}{\beta}} \right) \right) = \beta D e^{-\beta t} \left(1 + \frac{\alpha}{i} \right) \left(\frac{1}{1 + \frac{i}{\beta}} \right) = \left(\frac{i + \alpha}{i + \beta} \right) \beta D e^{-\beta t} > 0$$

Therefore, if the benefit from entering the high-level market is stable over time, and at time t_0 the entry cost is a viable barrier to entry, it will continue to be a barrier to entry in the future, for any $t > t_0$.

It is interesting to note that

$$\frac{d}{dt} PV(\text{enter} - \text{and} - \text{stay}) = \left(\frac{i + \alpha}{i + \beta} \right) \beta D e^{-\beta t} = \left(\frac{i + \alpha}{i + \beta} \right) \frac{dK(t)}{dt}.$$

Therefore, the ratio $\frac{\frac{d}{dt} PV(\text{enter} - \text{and} - \text{stay})}{\frac{d}{dt} K(t)} = \frac{1 + \frac{\alpha}{i}}{1 + \frac{\beta}{i}}$ is constant;

If $\alpha > \beta$, then $\frac{\frac{d}{dt} PV(\text{enter} - \text{and} - \text{stay})}{\frac{d}{dt} K(t)} > 1$; that is, the rate of increase in the cost to enter the

market is higher than the rate of increase of knowledge.

At $t = 0$, the cost of entering the high-level market is:

$$PV(\text{enter} - \text{and} - \text{stay})_{t=0} = \left(1 + \frac{\alpha}{i} \right) \left(K_0 + \left(\frac{1}{1 + \frac{1}{\beta/i}} \right) D \right)$$

The higher the standardized $\frac{\alpha}{i}$ and $\frac{\beta}{i}$, the higher the cost of entering the market.

But the effect of $\frac{\alpha}{i}$ is different from that of $\frac{\beta}{i}$: If $\frac{\alpha}{i} \rightarrow \infty$, then $PV(\text{enter} - \text{and} - \text{stay})_{t=0} \rightarrow \infty$,

but if $\frac{\beta}{i} \rightarrow \infty$, then $PV(\text{enter} - \text{and} - \text{stay})_{t=0} \rightarrow \left(1 + \frac{\alpha}{i} \right) (K_0 + D)$. In other words, the effect of

the rate of knowledge replacement on the entry cost is much stronger than the effect of the rate of increase in the knowledge. This is because, in our setting, the knowledge is bounded from above by $K_0 + D$.

As $t \rightarrow \infty$, the cost of entering the high-level market is:

$PV(\text{enter} - \text{and} - \text{stay})_{t \rightarrow \infty} = \left(1 + \frac{\alpha}{i}\right)(K_0 + D)$. In the long run the entry cost depends on the standardized rate of knowledge replacement $\frac{\alpha}{i}$ and on the maximum level of knowledge, $K_0 + D$.

The total increment in the entry cost is

$$PV(\text{enter} - \text{and} - \text{stay})_{t \rightarrow \infty} - PV(\text{enter} - \text{and} - \text{stay})_{t=0} = \left(1 + \frac{\alpha}{i}\right)(K_0 + D) - \left(1 + \frac{\alpha}{i}\right)\left(K_0 + \frac{\beta}{i + \beta}D\right) = \left(\frac{i + \alpha}{i + \beta}\right)D = \left(\frac{1 + \frac{\alpha}{i}}{1 + \frac{\beta}{i}}\right)D$$

Notice that D is the total increase in the level of knowledge (from K_0 to $K_{t \rightarrow \infty} = K_0 + D$). Hence, the total increase in the entry cost is directly related to the total increase in the level of knowledge, and it also depends on the standardized rates of knowledge, growth and replacement. Also note that the total increase in the entry cost increases with $\frac{\alpha}{i}$ and decreases with $\frac{\beta}{i}$. The reason for that is that when $\frac{\beta}{i}$ is increased, the cost to enter the high-level market at $t=0$ is increased whereas the entry cost when $t \rightarrow \infty$ is independent of $\frac{\beta}{i}$.

The benefit from entering the high-level market

Let us denote by N the number of professionals that operate in the high-level market and by p the professional's added income from serving a customer in the high-level market rather than serving other customers in the low-level market. Let g denote the professional's perceived growth rate of the number of his customers from the high-level market. Given the plausible assumption that the perceived growth rate is lower than the interest rate, $g < i$, the

professional's perceived present value of the benefits from entering the high-level market is

$$\int_{x=t}^{\infty} p e^{(g-i)x} dx = p \left[\frac{e^{(g-i)x}}{g-i} \right]_{x=t}^{\infty} = p \left[0 - \frac{1}{g-i} \right] = \frac{p}{i-g}. \quad ^6$$

Therefore, the professional's knowledge is a viable barrier to entry, at time t , if the benefit from entering the high-level market is lower than the entry cost:

$$\frac{p}{i-g} < \left(1 + \frac{\alpha}{i} \right) \left(K(t) + \left(\frac{\beta}{\beta+i} \right) D e^{-\beta t} \right).$$

The equilibrium conditions

Denote by n_j the number of customers from the high-level market of professional j and denote by N_t the number of professionals in the high-level market at time t .

At t , no professional has an incentive to exit the high-level market if, for any $n_j \in \{n_1, n_2, \dots, n_{N_t}\}$

,

$$\text{(no-exit condition)} \quad \frac{p}{i-g} > \frac{\left(1 + \frac{\alpha}{i} \right) \left(\frac{\beta}{\beta+i} \right) D e^{-\beta t} + \frac{\alpha}{i} K(t)}{n_j}$$

The LHS is the average benefit from a current customer in the high-level market and the RHS is the average cost per customer of maintaining the level of knowledge and make it feasible to serve the customers. Notice that as the number of customers n_j increases, the average cost of knowledge maintenance decreases which, in turn, provides an incentive to stay in the high-level market. And, at time t , no professional has an incentive to enter the high-level market if

$$\text{(no-entry condition)} \quad \frac{p}{i-g} < \left(1 + \frac{\alpha}{i} \right) \left(K(t) + \left(\frac{\beta}{\beta+i} \right) D e^{-\beta t} \right).$$

Hence, in equilibrium, for any $n_j \in \{n_1, n_2, \dots, n_{N_t}\}$,

⁶ A violation of this assumption, viz., $g > i$, implies infinite benefit from entering the high-level market that, in turn, increases the number of firms that enter the high-level market. Therefore, the actual growth rate decreases, which, in turn, reduces the perceived rate g . This process continues until the assumption is satisfied.

$$\frac{\left(1 + \frac{\alpha}{i}\right)\left(\frac{\beta}{\beta+i}\right)De^{-\beta t} + \frac{\alpha}{i}K(t)}{n_j} < \frac{p}{i-g} < \left(1 + \frac{\alpha}{i}\right)\left(K(t) + \left(\frac{\beta}{\beta+i}\right)De^{-\beta t}\right)$$

Denote by n_0 the minimum number of clients for a professional in the high-level market, $n_0 = \text{Min}\{n_1, n_2, \dots, n_{N_i}\}$. In equilibrium, where no firm enters or exits the market for high-level services, both conditions must hold at time t :

$$\text{(no-entry condition)} \quad \frac{p}{i-g} < \left(1 + \frac{\alpha}{i}\right)\left(K(t) + \left(\frac{\beta}{\beta+i}\right)De^{-\beta t}\right),$$

and,

$$\text{(no-exit condition)} \quad \frac{p}{i-g} > \frac{\left(1 + \frac{\alpha}{i}\right)\left(\frac{\beta}{\beta+i}\right)De^{-\beta t} + \frac{\alpha}{i}K(t)}{n_0}$$

The possibility of equilibrium – the 'no-entry condition'

$$\text{The "no-entry" condition holds if } NE = \left(1 + \frac{\alpha}{i}\right)\left(K(t) + \left(\frac{\beta}{\beta+i}\right)De^{-\beta t}\right) - \frac{p}{i-g} > 0$$

NE denotes the excess of entry cost over the benefit from entering the high-level market.

Since the benefit from entering the high-level market is the same over time, for any fixed interest rate, $\frac{\partial(NE)}{\partial t} = \frac{d}{dt}[PV(\text{enter} - \text{and} - \text{stay})] > 0$.

Result 1

If the long run cost of entering the high-level market is larger than the benefit, that is,

$\left(1 + \frac{\alpha}{i}\right)(K_0 + D) > \frac{P}{i - g}$, then there exists t_0 such that for any $t > t_0$, the "no-entry" condition

holds.

Proof: See Appendix.

Note that if the perceived growth rate is zero, $g = 0$, then the condition for the existence of

"no-entry" may be expressed as $\alpha + i > \frac{P}{K_0 + D}$. Thus, for any level of interest, it is sufficient

that $\alpha > \frac{P}{K_0 + D}$. In other words, if the rate of change of professional knowledge is higher than

the ratio of the benefit (from serving a client in the high-level market) to cost (of acquiring the knowledge) then at some point of time no professional enter the market for high level services.

The possibility of equilibrium - the "no-exit" condition

If the rate of knowledge replacement is higher (smaller) than the rate of growth of knowledge, that is, $\alpha > \beta$ ($\beta > \alpha$), then the maintenance cost is increasing (decreasing) over time.⁷ In both cases we obtain

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$$\begin{aligned} \frac{\partial}{\partial t} \left[\left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta + i}\right) D e^{-\beta t} + \frac{\alpha}{i} K(t) \right] &= -\beta \left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta + i}\right) D e^{-\beta t} + \frac{\alpha}{i} \frac{\partial K(t)}{\partial t} = \\ -\beta \left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta + i}\right) D e^{-\beta t} + \frac{\alpha}{i} \frac{\partial}{\partial t} (K_0 + D(1 - e^{-\beta t})) &= \\ -\beta \left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta + i}\right) D e^{-\beta t} + \frac{\alpha}{i} \beta D e^{-\beta t} &= D \beta e^{-\beta t} \frac{\beta}{i} \left[\frac{\alpha}{\beta} - \frac{i + \alpha}{i + \beta} \right] > 0 \end{aligned}$$

Result 2

The no-exit condition is satisfied if $\frac{n_0 P}{i-g} > \frac{\alpha}{i}(K_0 + D)$.

Proof: See Appendix.

Combining Result 1 and Result 2 , we get that at equilibrium:

$$\frac{\frac{n_0 i p}{i-g}}{K_0 + D} > \alpha > \frac{\frac{i p}{i-g}}{K_0 + D} - i$$

If the expectation for growth is nil, $g = 0$, we get that equilibrium is ensured if :

$$\frac{\frac{n_0 P}{i-g}}{K_0 + D} > \alpha > \frac{P}{K_0 + D} - i .$$

Notice that a if $\alpha > \frac{P}{K_0 + D}$ then for any level of interest rate, $\alpha > \frac{P}{K_0 + D} - i$.

Therefore, sufficient conditions for equilibrium are that $\frac{n_0 P}{K_0 + D} > \alpha > \frac{P}{K_0 + D}$.

This last result sheds light on the important role of the rate of changing regulations. The rate, α , must be higher than the ratio of benefit to cost, $\frac{P}{K_0 + D}$, so that an outsider is deterred from

entering the market, and the rate of regulation change divided by the minimum number of clients for an incumbent firm, $\frac{\alpha}{n_0}$, must be lower than the ratio of benefit to cost, $\frac{P}{K_0 + D}$, so that an incumbent firm will not exit the market.

Notice that if the regulator (e.g., the Securities and Exchange Commission) imposes new rules that reduce the extra benefit of providing an auditing service to a public company, then this will cause a higher concentration in the professional market. For example, if by a new regulation, an auditor is prohibited from consulting his auditing client on business or tax issues, the benefit from auditing a public company is decreased and thus more CPA firms will exit the high-level

market. This process continues until the minimum number of clients is large enough such that

$p > \frac{\alpha(K_0 + D)}{n_0}$. In other words, regulation may cause higher concentration.

The effect of increasing cost to maintain professional knowledge is twofold: (i) it decreases the number of CPA firms that provide service to public companies; and (ii) to cope with the maintenance cost of professional knowledge, the incumbent professionals specialize in providing auditing services to companies in specific areas of knowledge, such as automobiles, high-tech, oil and gas, mining or aerospace and defense. For example, in 2002, 84% of the Oil and Gas industry were audited by E&Y; 100% of the Tobacco industry were audited by PWC; 55% of the Banking industry were audited by KPMG (Beattie, Goodacre and Fearnley, 2003).

CONCLUSION

The sheer volume and velocity of change of both the applicable accounting rules and of the regulatory environment are shown to be a primary cause of market concentration in the high-level auditing market. More specifically, New CPA firms will be hesitant to access this market and numerous existing firms that have too few clients in this market will be forced out for lack of means to master both the volume of the required professional knowledge and its rapid rate of transformation. In addition, regulations that are intended to increase the level of independence of the auditor from the audited company may cause small CPA firms to exit the market. The generality of our results suggests that a similar model can be utilized to illuminate concentration phenomena in additional markets for professional and related services.

REFERENCES

- Beattie V., Goodacre A. and Fearnley S. (2003), "And then there were four: A study of UK audit market concentration — causes, consequences and the scope for market adjustment", *Journal of Financial Regulation and Compliance* (11) pp. 250-265.
- Caban-Garcia Maria T., and Cammack Susan E. (2009), "Audit Firm Concentration and Competition: Effects of Consolidation Since 1997", *The Journal of Theoretical Accounting Research* 5 (1), pp. 1-24.
- Dell'Ariccia G., Friedman E., and Marquez R. (1999), "Adverse Selection as a Barrier to Entry in the Banking Industry", *The RAND Journal of Economics* 30 (3), pp. 515-534.
- Eaton B. C., and Lipsey R. G. (1980), "Exit Barriers are Entry Barriers: The Durability of Capital as a Barrier to Entry", *The Bell Journal of Economics* 11 (2), pp. 721-729.
- Eichenseher J.W. and P. Danos (1981), "The Analysis of Industry-Specific Auditor Concentration: Towards an Explanatory Model", *The Accounting Review* 56(3) pp. 479-492.
- Farrell J., (1986), "Moral Hazard as an Entry Barrier", *The RAND Journal of Economics*, 17 (3) , pp. 440-449.
- Nagle T. N.(1981), "Do Advertising-Profitability Studies Really Show That Advertising Creates a Barrier to Entry?", *Journal of Law and Economics* 24 (2), pp. 333-349.
- Stigler, George J. (1968), *The organization of industry*. Chicago, IL: University of Chicago Press.
- Willekens M. and Achmadi C. (2003), "Pricing and supplier concentration in the private client segment of the audit market: Market power or competition?", *The International Journal of Accounting* 38 pp. 431-455

APPENDIX

Proof of Result 1

If $PV(\text{enter} - \text{and} - \text{stay})_{t=0} = \left(1 + \frac{\alpha}{i}\right) \left(K_0 + \frac{\beta}{i + \beta} D\right) > \frac{p}{i - g}$ then, because $\frac{\partial(NE)}{\partial t} > 0$, for any t , the "no-entry" condition holds.

If $NE_{t=0} = \left(1 + \frac{\alpha}{i}\right) \left(K_0 + \frac{\beta}{i + \beta} D\right) - \frac{p}{i - g} < 0$ but $NE_{t \rightarrow \infty} = \left(1 + \frac{\alpha}{i}\right) (K_0 + D) - \frac{p}{i - g} > 0$, then there exist t_0 for which $\left(1 + \frac{\alpha}{i}\right) \left(K(t_0) + \left(\frac{\beta}{\beta + i}\right) D e^{-\beta t_0}\right) = \frac{p}{i - g}$.

Since $\frac{\partial(NE)}{\partial t} > 0$, for any $t > t_0$,

$$NE = \left(1 + \frac{\alpha}{i}\right) \left(K(t) + \left(\frac{B}{\beta + i}\right) e^{-\beta t}\right) - \frac{p}{i - g} > 0.$$

Therefore, there exists t_0 such that for any $t > t_0$ the "no-entry condition" holds if and only if

$$\left(1 + \frac{\alpha}{i}\right) (K_0 + D) - \frac{p}{i - g} > 0.$$

Proof of Result 2

Notice that, for any α and β , when $t \rightarrow \infty$, the maintenance cost is

$$\left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta + i}\right) D e^{-\beta t} + \frac{\alpha}{i} K(t) \rightarrow \frac{\alpha}{i} (K_0 + D).$$

Case 1: $\alpha > \beta$

Since the maintenance cost is increasing over time,

$$\left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta + i}\right) D e^{-\beta t} + \frac{\alpha}{i} K(t) < \frac{\alpha}{i} (K_0 + D).$$

If $\frac{n_0 p}{i - g} > \frac{\alpha}{i} (K_0 + D)$, then a service provider in the high-level market has no incentive to exit

the market, since for any t , $\frac{n_0 p}{i - g} > \frac{\alpha}{i} (K_0 + D) > \left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta + i}\right) D e^{-\beta t} + \frac{\alpha}{i} K(t)$.

If, on the other hand, $\frac{n_0 P}{i-g} < \frac{\alpha}{i}(K_0 + D)$, then there exists some t_0 such that for any $t > t_0$

$\frac{n_0 P}{i-g} < \left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta+i}\right) D e^{-\beta t} + \frac{\alpha}{i} K(t)$ and therefore for $t > t_0$ the firm exits the high-level market.

Case 2: $\alpha < \beta$

Since the maintenance cost is decreasing over time,

$$\left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta+i}\right) D e^{-\beta t} + \frac{\alpha}{i} K(t) > \frac{\alpha}{i}(K_0 + D).$$

If $\frac{n_0 P}{i-g} > \frac{\alpha}{i}(K_0 + D)$, then there exists t_0 such that for any $t > t_0$,

$\frac{n_0 P}{i-g} > \left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta+i}\right) D e^{-\beta t} + \frac{\alpha}{i} K(t)$. In other words, for $t > t_0$ a service provider in the high-level market has no incentive to exit the market.

If, on the other hand, $\frac{n_0 P}{i-g} < \frac{\alpha}{i}(K_0 + D)$, then $\left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta+i}\right) D e^{-\beta t} + \frac{\alpha}{i} K(t) > \frac{n_0 P}{i-g}$ and the firm exits the high-level market.

Case 3: $\alpha = \beta$

Since the maintenance cost is constant over time, $\left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta+i}\right) D e^{-\beta t} + \frac{\alpha}{i} K(t) = \frac{\alpha}{i}(K_0 + D)$.

If $\frac{n_0 P}{i-g} > \frac{\alpha}{i}(K_0 + D)$, then $\frac{n_0 P}{i-g} > \left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta+i}\right) D e^{-\beta t} + \frac{\alpha}{i} K(t)$. In other words, a service provider in the high-level market has no incentive to exit the market.

If, on the other hand, $\frac{n_0 P}{i-g} < \frac{\alpha}{i}(K_0 + D)$, then $\left(1 + \frac{\alpha}{i}\right) \left(\frac{\beta}{\beta+i}\right) D e^{-\beta t} + \frac{\alpha}{i} K(t) > \frac{n_0 P}{i-g}$ and the

firm exits the high-level market.

THE STRUCTURE OF THE PUBLIC ACCOUNTING INDUSTRY – WHY EXISTING MARKET MODELS FAIL

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THE STRUCTURE OF THE PUBLIC ACCOUNTING INDUSTRY – WHY EXISTING MARKET MODELS FAIL

ABSTRACT

The structure of the public accounting industry has been the subject of study and debate for decades. Both empirical and theoretical research has reached contradictory results and conflicting conclusions regarding which model of industrial organization describes the structure of the public accounting industry. Some research has concluded the industry is competitive and other research found it is oligopolistic. This paper compares the structure of the public accounting industry with the economic models of industrial organization and discusses the reasons why current models fail to describe the structure of the industry. It calls into question, if not outright invalidates, every previous study that has found the structure of the public accounting industry to be either competitive, oligopolistic, or monopolistic. Because both supply and demand are regulated, there is no current model that can describe the public accounting industry. Previous research has failed to consider that the market for audit services was created by government which resulted in the simultaneous regulation of both the supply and demand for audit services. The simultaneous regulation of both supply and demand distorts the market thereby rendering current models incapable describing the structure of the public accounting industry.

“We will control the horizontal. We will control the vertical.” *The Outer Limits*.

1.0. Introduction

The structure of the public accounting industry¹ has been the subject of study debate for decades. Both empirical and theoretical research has reached contradictory results and conflicting conclusions as to how the public accounting industry is structured. The industry has been described as competitive and oligopolistic. Obviously the industry cannot be both. The basic reason for the contradictions observed in the literature is that the structure of the public accounting industry has not been subjected to the same degree of analytical rigor as other industries have been. Research has neglected to consider the conditions of the models in which they are positioning the public accounting industry, and whether the public accounting industry fulfills those conditions.

¹ The terms “public accounting industry” and “public accounting market” are used interchangeably.

This paper discusses the reasons why current economic models of industry structure are inadequate to describe the structure of the public accounting industry. Previous research has failed to consider the simultaneous regulation of both the supply and demand for audit services. The simultaneous regulation of both supply and demand distorts market forces thereby rendering current models unable to describe the structure of the public accounting industry.

The rest of the paper is organized as follows. First, it discusses why the issue of the structure of the public accounting industry is important, the contribution of this paper to the literature, and the importance of the paper to the profession. Second is a review of the economics of industry structure. This is followed by a review of the research of the market structure of the public accounting industry. Fourth is an examination of the distortion of the market for public accounting services caused by government intervention in the market. Finally, it concludes by calling for a new model to be developed to describe the industry that fully accounts for the distortion caused by government regulation of both supply and demand.

2.0. Importance of the structure of the public accounting industry, contribution of the paper to the literature, and the importance of the paper to the profession.

2.1. Importance of the structure of the public accounting industry

The structure of the public accounting industry is important for several reasons. First, the structure of the industry determines, in significant part, the auditing fees that public accounting firms are able to charge their clients.² If the public accounting industry is non-competitive, then the assumption arises that, *ceteris paribus*, the auditing firms within the industry charge higher fees than would be seen in a competitive industry structure. If the industry is competitive audit fees would be lower. (GAO, 2003).

² Following the 2003 GAO report, the terms “public accounting firms,” “registered accounting firms,” and “public accounting services” are used here to refer only to those firms registered with PCAOB to audit publicly traded companies, and the audit services provided by those firms. Only the market for audit services is considered here, not all services that public accounting firms provide, since only auditors and auditing services are regulated.

Second, there is an inherent suspicion for any industry that is anything other than competitive. This has been droned into the American psyche especially for over a century with the passage of the Sherman Antitrust Act of 1890. There is good reason to be suspicious of industries that are non-competitive since consumer surplus is minimized in non-competitive industries, while producer surplus is maximized. If the public accounting industry is non-competitive, consumer surplus is reduced.³

Third, although the public accounting profession is already highly regulated, as explained below, the specter of additional regulation of public accounting firms is always looming on the horizon. (GAO, 2003). Threats of imposing some type of regulation, whether by statute or by some other mechanism, may be more theatrical than real since the question of how to regulate public accounting firms to make the industry more competitive has never reached the stage of concrete proposals. The impracticality of regulating firms makes regulation unlikely, but not impossible. It should not, therefore, be ignored. The question of the structure of the public accounting industry is important, then, because the structure of the industry would confirm or negate the need for additional, or different, regulation.

2.2. Contribution of the paper to the literature

This paper contributes to the literature by showing that previous research has neglected to consider the distortion of the public accounting market due to the simultaneous regulation of both supply and demand. Previous research has reached contradictory results and conflicting conclusions, with some studies describing the industry as competitive and others as oligopolistic.

³ While consumers of audit services provided by public accounting firms are the publicly traded corporations required by Federal Securities laws to have their financial statements audited, the consumers of the audit reports issued by the public accounting firms are investors and creditors. Consumers of audit reports are not able to purchase the reports directly in the market.

What has been neglected in prior research is the incorporation of the simultaneous regulation of both the supply and the demand for audit services. This paper demonstrates that attempts to prove theoretically or empirically that the public accounting industry fits into any existing model is an exercise in futility. This paper not only identifies the inadequacy of existing models, but also the sources of the distortion that have resulted in the inconsistent descriptions of the public accounting industry.

2.3. Contribution and importance of the paper to the profession

Threats of regulating the public accounting profession is a popular topic among politicians and regulators. The threat is not completely unjustified, as proven by Enron and Arthur Andersen, and the resulting enactment in 2002 of Sarbanes-Oxley (SOX). But the regulation of the accounting profession under SOX pertains to auditing standards. Other threats are aimed at the structure of the industry and the firms within the industry (GAO, 2003). It is therefore important to the public accounting profession to understand the structure of the industry. If it is competitive, regulation would not be necessary. If it is non-competitive then further regulation may be justified.

The following section discusses the economics of industry structure.

3.0 Economic models of industry structure

Market structure, also called industry structure, refers to the degree of competition present in a market. There are four models of market structure: perfect competition, monopoly, monopolistic competition, and oligopoly. The basic assumptions and conditions of the four models are sufficiently well known that a comprehensive in-depth analysis is unnecessary. However, a review of the relevant conditions of the models is presented to provide the context of the models in order to understand the reasons why they fail to describe the structure of the public accounting industry.

3.1. Perfect competition

The conditions for a perfectly competitive market (also referred to as pure competition) are that suppliers⁴ are price takers and face a horizontal, perfectly elastic firm and industry demand curve. There are very many small producers and consumers thus making both producers and consumers anonymous. No single producer or consumer has the ability to influence the market, either by entering or exiting. There are no barriers to entry. All suppliers produce homogeneous products that are perfect substitutes. Prices are set where supply equals demand, which is also at the point where marginal cost equals marginal revenue. Factor input prices are competitive and mobile, and may be substituted as a function of cost and technology. Marginal cost includes a normal profit and normal return to capital. Surplus is evenly divided between consumers and producers. All consumers have perfect knowledge of the market.

3.2. Monopoly

In a monopoly there is only one producer, or at least only one major producer. As explained by Chamberlain (1965), “the essence of monopoly is control over supply.” A natural monopoly is one in which there can be only one supplier as a result of the nature of the product. For example, public utilities (such as gas or electricity) are often considered as natural monopolies. Legally created monopolies are created by, or at least protected by, state or Federal statutes. For example, patents provide legally created and protected monopolies for the holder of the patent rights.

Suppliers face a downward sloping, relatively steep, inelastic demand curve. Prices are set at the demand price, rather than where marginal revenue equals marginal cost as in a perfectly competitive market thus allowing a monopolist to earn excess profits resulting in above normal profits and return to capital. This in turn results in increased producer surplus and decreased consumer surplus. There are no close substitutes for the product that is produced, and no arbitrage. The market may be national or local, as long as the producer is the sole producer in the market. Factor input prices are competitive and mobile, and may be substituted as a

⁴ The terms supplier, producer, provider, and seller are used here interchangeably. Likewise the terms buyer, customer and consumer are also used interchangeably.

function of cost and technology. There are barriers to entry, either legal or economic. Legal barriers consist of government prohibition of new entrants to the market such as patent protection. Economic barriers would include prohibitively high costs for investment. Monopolies are almost always regulated. The most common form of regulation is rate regulation where the monopolist must obtain permission from the government to raise its prices which is generally based on its cost of capital.

3.3. Monopolistic competition

In industries characterized by monopolistic competition there are many buyers and sellers. Firms produce differentiated products that are close, but not perfect, substitutes. Firms face both individual and industry downward sloping, elastic demand curves. Firms are price setters and have some control their prices. Firms compete on the basis of non-price differences in products such as brand name or advertising. Prices are set where marginal revenue (the demand curve) equals marginal cost (the supply curve). A normal return to capital is part of product cost. Firms can earn excess profit in the short-run, but not the long run since new firms will enter the market driving the excess profits down to a normal level.

Production is not set at lowest cost and firms generally operate below full capacity. Thus there is a net loss of surplus for both producer and consumer, but producers often capture a greater percentage than consumers. There are low or no barriers to entry or exiting. Firms have the power to influence the market. (Robinson, 1933; Chamberlain, 1965; Waldman and Jensen, 2006; Baye, 2010).

Industries characterized by monopolistic competition are common.

3.4. Oligopoly

An oligopoly is characterized in part by the existence of a few large firms that control the market. The presence of an oligopoly is measured by the Herfindahl–Hirschman Index (HHI)

(GAO, 2013). Quintessential examples of oligopolies are the petroleum industry, cereal, mobile phone carriers, and the soft drink and beer industries.

An oligopolistic market is more complicated than the others. Firms in an oligopoly are not price takers; they have some control over prices but not total control as in a monopoly. They face a downward sloping demand curve, but the slope of the demand curve is complicated, as discussed below. Barriers to entry exist which are often economic such as high entrance costs. Firms operate below full capacity. Additionally, consumers are knowledgeable about the market but more importantly, consumers have no power in the market. The most important condition of an oligopoly, however, is the interdependence of the firms in the market. In oligopolistic markets each producer is fully aware of all other producers in the market as well as potential entrants, and individual producers are strategically linked. They necessarily have an interdependent, symbiotic relationship with other producers (Ried, 1981; Friedman, 1983).

There are several models of an oligopolistic industry. Each model is based on different assumptions and conditions, and involves the application of high-level mathematics. A mathematical analysis is not necessary for purposes of this paper. It is necessary only to discuss the basic conditions in order to demonstrate that the public accounting industry does not fulfill the conditions of an oligopolistic structure as is frequently assumed. (See Cournot, 1838; Sweezy, 1939; Friedman, 1983; Waldman and Jensen, 2006; Baye, 2010; Stackelberg, 2011; for a more in-depth discussion of the assumptions and conditions as well as a mathematical analysis of the various models.)

In one model of oligopoly there are a few firms that produce differentiated products and serve many consumers. There is an industry leader that sets prices and the other firms follow the leader in setting their prices.

In another model there are a few firms that produce either differentiated or homogenous products and serve many customers. Each firm believes other producers will hold their output constant if it changes its own output.

A third model assumes there are a few firms that produce differentiated products that serve many consumers. There is an industry leader that sets its output and others set their output based on the leader's output.

According to a fourth model there are a few firms that produce identical products that serve many consumers. Firms engage in price competition and react to prices set by other firms. Overall, rivals will follow price decreases but will not follow price increases. Thus, producers face a "kinked demand curve" which is not present in perfect competition, monopoly, or monopolistic competition. (Stigler, 1947; 1978). As explained by Reid (1981) the kinked demand curve is a discontinuity in the quantity demanded at a point where the elasticity of demand changes and where price is not defined within a relevant range. Furthermore, the kink is more pronounced when the products are more homogeneous in both normal and recession economies, but is more pronounced when the products are more differentiated in boom economies.

The kinked demand curve interferes with firms' ability to maximize profits (Hall & Hitch, 1939; Sweezy, 1939; Waldman & Jensen, 2006; Baye, 2010) and results in firms necessarily using strategic game theories in making pricing and production decisions. Game theory is concerned with decision making where each firm chooses its actions based on how it anticipates other firms will act. The firms in an oligopolistic market can maximize profits by engaging in collusive behavior or forming cartels, both of which are illegal in the United States and most other countries.⁵

⁵ Oligopolists can maximize profits through collusion, which is here assumed without argument not to occur within the public accounting industry. Sikka (2008) takes a contrary view.

The following section reviews the literature on research on the structure of the public accounting industry.

4.0. Review of the public accounting industry structure research

4.1. The evolution of the public accounting market structure

Market structure determines the behavior and performance of firms within the industry (Yearley, Kauffman, Cairney, and Albrecht, 1992; Pong and Turley, 1997; GAO, 2003). It is important, therefore, to understand the market structure of the industry in order to understand how public accounting firms behave with respect to their clients, each other, and the public, concerning audit fees.

Currently, the public accounting industry is dominated by what is known as the “Big 4,” but the industry was for decades dominated by the “Big 8” – Arthur Andersen, Arthur Young & Co., Coopers & Lybrand, Ernst & Whinney, Deloitte Haskins & Sells, Peat Marwick Mitchell, Price Waterhouse, and Touche Ross. While they are commonly referred to as “firms,” a more accurate description is “professional services networks.”⁶ The term does not change the analysis or the conclusion.

The Big 8 became the Big 8 as a result of a series of mergers of smaller firms over a series of decades and culminating in 1988. (GAO, 2003). Then in June, 1989, a series of what is referred to by Ivancevich and Zardkoohi, (2000) as “megamergers” began with the merger of Ernst & Whinney with Arthur Young to form Ernst & Young (now known as EY). This was soon followed by the merger of Deloitte, Haskins & Sells with Touche Ross to form Deloitte & Touche in August of the same year. Less than a decade later, Price Waterhouse merged with Coopers &

⁶ For example, KPMG’s website states, “2013 KPMG LLP, a Delaware limited liability partnership and the U.S. member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (“KPMG International”), a Swiss entity...Member firms of the KPMG network of independent firms are affiliated with KPMG International. KPMG International provides no client services. No member firm has any authority to obligate or bind KPMG International or any other member firm vis-à-vis third parties, nor does KPMG International have any such authority to obligate or bind any member firm.” (KPMG, 2013)

Lybrand in 1998 and PricewaterhouseCoopers was born leaving the “Big 5” as they became known. (GAO, 2003).

In 2002 Arthur Andersen was forced to exit the public accounting industry due to its association with Enron’s fraudulent activities and reporting. The story of the fall of Arthur Andersen need not be repeated here. What is important is that after the disappearance of Arthur Andersen from the public accounting industry the Big 4 acquired 87% the market share of audit clients which are referred to as the “top-tier” (GAO, 2003).⁷

4.2. Research of the structure of the public accounting industry

Prior to examining the research on the structure of the public accounting industry a problem common to all research on the structure of the public accounting industry must be considered, and that is the insurmountable task of separating cost, revenue, and production functions of auditing services, from all other services provided by accounting firms such as management advisory services and tax.

While revenue generated from audit services are reported separately from revenue generated from management advisory services and tax, revenues from each source cannot be matched with the costs of producing that revenue. Marginal costs and marginal revenues cannot be calculated based on available information. Any attempt to align the structure of the public accounting industry with any model of industrial organization without considering marginal costs and marginal revenues of auditing services, is little more than speculation.

For example, Banker, Chajng and Cunningham (2003) estimated the public accounting industry production function and determined that merger activities among accounting firms were justified by the scale economies obtained from the mergers, and that the public accounting industry improved its productivity in delivering all services—Accounting and Auditing, Tax, and

⁷ The next tier includes Laventhol & Horwath, Grant Thornton, BDO Seidman, and McGladrey & Pullen. The third tier is “all others” which are several hundred.

Management Advisory Services—over the period 1995–1999⁸. Ignored in their study, as well as all others however, were costs associated with each service. Other studies have obtained similar results. Thus, those results offer little in the way of providing empirical support for defining the structure of the public accounting industry as any one particular model.

4.2.1. The public accounting industry as perfectly competitive

All market models are of course simplifications of actual markets, and are more or less useful to understand markets as they more or less accurately describe the behavior of actual markets. In this section I argue that no existing model describes the behavior of the public accounting industry.

No theory of the public accounting industry conceives of the industry as perfectly competitive. However, it is useful to consider some of the more salient reasons why the public accounting industry is not perfectly competitive since many of those reasons reappear in recognizing that the public accounting industry is also not a monopoly, not monopolistic competitive, and not oligopolistic.

First, public accounting firms are not price takers. They do not face an industry or firm horizontal, perfectly elastic demand curve. Public accounting firms, particularly the Big 4, have the ability to influence the market and audit fees, as seen by the exit of Arthur Andersen from the market in 2002.⁹

Second, there are high barriers to entry into the public accounting industry, including limiting entrance into the profession by state laws, and restrictions by Federal law and regulations of who can perform audits of publicly traded companies. (GAO, 2003). Third, there are not many small consumers—a condition of a perfectly competitive market. The number of consumers of

⁸ Sarbanes-Oxley severely curtailed the services registered accounting firms could provide to clients for whom they also offered auditing services.

⁹ There was an increase in audit fees following the enactment of Sarbanes-Oxley in 2002. However, the evidence that the increase in fees was attributed to the market becoming more concentrated is inconclusive (GAO, 2003).

auditing services is determined by the number of publicly traded corporations which must meet minimum capital requirements in order to receive SEC authorization to issue securities to the public, and many are global in size. Fourth, the market does not consist solely of many small providers, another condition of a perfectly competitive market. The market is dominated by the Big 4.

Since the conditions of perfect competition are not met, it can be concluded with certainty that the structure of the auditing industry is not one of perfect competition.

4.2.2. The public accounting industry as a monopoly

The public accounting profession has a monopoly on auditing services (Fogarty and Parker, 2010).¹⁰ However, statutes creating and protecting the public accounting profession as a monopoly for conducting financial statement audits of publicly traded corporations do not necessarily translate into a monopoly economic structure for the industry. Within the public accounting industry there is not one firm, or even one dominant firm—a condition of a monopoly market structure. There are a few very large firms and hundreds of smaller firms. Therefore, since the conditions are not met, monopoly is also eliminated as a market structure for the public accounting industry.

4.2.3. The public accounting industry as monopolistic competition

While not perfect competition, attempts have been made nevertheless to impose a competitive model on the public accounting industry, which must be interpreted as a monopolistic competition model (Banker, Chang, and Cunningham, 2003; Simunic, 1980).

For example, Bierstaker, Houston, and Wright (2006) found that “over the past 25 years the audit environment has experienced intense competition” and that there is competition

¹⁰ For example, see New York State Education Law Article 149, Public Accountancy, §7400: “public accountancy services which all require the independence of licensees: a. any audit to be performed in accordance with generally accepted auditing standards or other similar standards, developed by a federal governmental agency, commission or board or a recognized international or national professional accountancy organization, that are acceptable to the department in accordance with the commissioner's regulations.”

between the Big 4. In 2003 the GAO conducted a simulation “To assess whether the current high degree of concentration in the market for audit services is necessarily inconsistent with a price-competitive setting” (GAO, 2003, p. 4). The GAO found that the observed high degree of concentration in the public accounting industry “is not necessarily inconsistent with a price-competitive environment.”

The problem with these and similar studies that have found the public accounting industry to be competitive, however, is that they failed to incorporate the basic conditions of the monopolistic competition model. It has not been established theoretically or empirically that either the firms or the industry face a downward sloping demand curve for audit services—a necessary condition of the monopolistic competition model—and as demonstrated below, they in fact do not meet that condition.

Second, there is only one product every firm in the industry produces—the audit report (opinion). Yet research that finds the public accounting industry to be competitive omits any consideration as to whether the product of one firm—the audit report—is a close substitute for the product of another firm. If the product is not a close substitute, there can be no monopolistic competition, another necessary condition of the model.

It must, therefore, be concluded that the industry does not fulfill the conditions of monopolistic competition. Monopolistic competition fails to describe the structure of the public accounting industry.

4.2.4. The public accounting industry as an oligopoly

There is a popular saying that if something looks like a duck, walks like a duck, and quacks like a duck, it must be a duck. In describing the public accounting industry, while it may look like an oligopoly, it does not walk like an oligopoly or quack like an oligopoly.

Describing the public accounting industry as an oligopoly is tempting. Oligopoly is the “go to” model to describe the industry simply because the industry exhibits one oligopolistic characteristic. But while the industry has the appearance of an oligopoly, it does not behave as an oligopoly. It has the form, but not the substance, of an oligopoly. The frequent assertion that the industry is an oligopoly is made without a rigorous examination whether the industry fulfills the necessary conditions of an oligopoly.

According to the HHI, Tier 1 accounting firms have a concentration ratio of over 1,800, which is the threshold definition for a tight oligopoly.¹¹ The GAO report states, “By any measure, the large public company audit market is a tight oligopoly” (GAO. 2003, p. 16). Yet, the only measure the GAO Report used to support its assertion that the public accounting industry is an oligopoly is market concentration (i.e., the number for firms). It provides no evidence that the industry actually behaves as an oligopoly, whether loose or tight.

Whether the industry fulfills the conditions of an oligopoly is highly questionable at best. In fact, Cahan, Jeter and Naiker (2011) failed to find evidence that the Big 4 operate “as a tight oligopoly either in the overall audit market or within industry markets, whether defined at the national or local level.” Simply defining the industry as an oligopoly according to some arbitrary measure such as the HHI provides little understanding of the nature of the market or the behavior of the market participants. To look at market concentration while ignoring all other necessary conditions of an oligopolistic market renders invalid any conclusions that the public accounting industry is an oligopoly.

Absent from the GAO Report is an analysis of the nature of demand for audit services (e.g., whether demand is elastic or inelastic, whether the product is homogeneous). As noted earlier, it has not been established that either firms or the industry face a downward sloping demand curve for audit services—a condition that applies to all oligopolistic models—and as further explained below, they do not. Consumers of audit services may not purchase less of an audit

¹¹ A tight oligopoly is “an oligopolistic market structure where the four firms hold over 60 percent of the market. A loose oligopoly is a market structure with 8–15 firms and a four-firm concentration ratio below 40 percent.”

report. Federal law requires that each customer purchase one unit of the good produced—the audit report—on an annual basis.

A factor ignored by the GAO Report as well as other studies claiming the public accounting industry is an oligopoly is the presence (or absence) of a kinked demand curve. While Hermanson, Dykes and Turner (1987) assert that a kinked demand curve does exist in the auditing industry they offer no evidence in support. In the public accounting industry consumers have substantially equivalent information about the market and global corporations are able to exercise some power in the market by bargaining (Hay and Knechel, 2010).

As noted above, interdependence and strategic planning around other firms in the market is a key condition of an oligopoly. Yet, another major factor ignored in the GAO Report is any reference to whether auditing firms engage in strategic game theories regarding price or output decisions. There is no evidence either in the GAO Report or other studies that auditing firms base their fees or output decisions on the actions of other firms in the industry. Furthermore, as Reid (1981) observes, one weakness in available evidence is that no link has been established between price and cost variations.

Missing from the GAO Report, as well as other studies finding the presence of an oligopoly in the public accounting industry, is a consideration of the nature of the product. There is only one product for each firm in the industry—the audit report (opinion). Yet whether the product is homogeneous or differentiated is important in determining if the industry is an oligopoly since it would narrow the choices of which model of oligopoly would apply, and in turn whether the industry meets the necessary conditions for the model. On the one hand, the product (audit reports/opinions) can be considered homogenous in that they all follow the same basic format and contain the same basic type of information since they are prescribed by the Reporting Standards of Generally Accepted Auditing Standards and the PCAOB (Hermanson, Dykes, and Turner, 1987; Pong and Turley, 1997). Not only are audit reports homogeneous when seen from

that perspective, there is no substantial differentiation within the auditing profession itself (Hermanson, Dykes, and Turner, 1987; Cohen Commission, 1978; DiGabriele, 2013).

On the other hand, the product can also be seen as differentiated, even unique. That is, each audit report is unique to the company audited (Yeardley, et al, 1992), and audit reports cannot be traded or re-sold on the market. Since audit reports are the result of professional opinions, they are not close, let alone perfect, substitutes. The opinion of one auditor may differ from the opinion of another auditor. Differences in opinion have in fact led to the charge that companies often engage in “opinion shopping” (Lennox, 2000; DiGabriele, 2013).

The GAO report recognizes high barriers to entry are present in the public accounting industry. States prohibit the practice of public accounting unless the individual is licensed.¹² Obtaining a license to practice requires a bachelors degree with 150 credit hours of study and passing an examination. Many states also require individuals to have one or more years of supervised auditing experience prior to receiving a license to practice. Obtaining a license to practice from a state, however, does not entitle the licensed individual to audit publicly traded companies. The Federal government imposes a further restriction that only auditors and auditing firms registered with the PCAOB can audit publicly traded companies.

The effectiveness of these barriers is debated. Dopuch and Simunic (1980) believe that neither individual nor firm barriers are effective in limiting the supply of auditors. Individual licensing barriers, they claim, are less restrictive than in medicine or law. However, it is not the licensing alone that creates the barrier, but the cost of education, both out-of-pocket costs for education (e.g., tuition and textbooks) and opportunity costs (e.g., foregone income) which can be a major obstacle to individuals, particularly after the adoption of the 150-hour requirement to be eligible for obtaining a license to practice. (GAO, 2003)

¹² See, e.g., New York State Education Law Article 149, Public Accountancy, §7400, fn. 7.

Furthermore, while the fee for registration with PCAOB is negligible, the fee itself is not the barrier. To be able to audit a publicly traded company that complies with SOX and PCAOB auditing standards, the auditing firm requires an investment in both human capital and physical capital that is prohibitive for smaller firms. The required investment is an effective barrier for potential entrants into the public accounting industry (GAO, 2003).

Auditing publicly traded companies introduces litigation risks under Federal Securities laws. Firms must have the resources to manage that risk by purchasing malpractice insurance or self-insuring, both of which impose high costs on a firm and contribute to the high barriers to entry. (Simunic and Stein 1996; GAO, 2003).

In addition to litigation risk, SOX and the PCAOB introduced a new risk to registered accounting firms—sanction risk. (Huber, 2013). Registered accounting firms now risk incurring either monetary or non-monetary sanctions for the manner in which they conduct an audit. Smaller firms are less able to absorb such sanctions further adding to the barriers to entry.¹³

The claim that the public accounting industry is an oligopoly suffers from additional flaws. First, there is no guessing by one firm of the output of other firms in order for one firm to adjust its output. Each firm already knows the output of all other firms and output cannot be adjusted. Each firm knows who the clients are of all other firms. This, too, is public knowledge. Each firm also knows what the prices (audit fees) are of all other firms. This, too, is publicly available information. This knowledge negates the employment of strategic game theory. There is no symbiotic relationship as required in an oligopolistic industry. Furthermore, each firm knows its own limitations; i.e., each firm is aware that it is precluded from auditing certain companies due to, e.g., the presence of conflicts of interest (GAO, 2003).

As discussed above, in some models of oligopoly firms compete on the basis of quantity of output. But auditing firms have no choice regarding the quantity of output regardless of cost or

¹³ Sanctions may also be imposed by the SEC. See Beasley, Carcello, Hermanson, and Neal, 2013.

price other than to decline an audit engagement, resign from an engagement (e.g., KPMG recently resigned from the audit of Herbalife, Pfeifer, 2013), or to exit the industry entirely. Output cannot be adjusted. It is discrete. The quantity of output is fixed across the industry by Federal Securities laws that require the financial statements of publicly traded companies be audited on an annual basis, and the total number of publicly traded companies. Output decisions are thus constrained by very narrow parameters so that the only output decision is whether to perform or not perform an audit.

In other models of oligopoly one firm, the largest, sets prices and others follow. That phenomenon has not been witnessed in the public accounting industry and it is highly unlikely that it is even possible.

An oligopolistic market structure is much more complicated than the existence of a few large, dominant firms. An industry cannot truly be considered an oligopoly on the basis of the number of firms and the degree of concentration alone (Yeardley, et al, 1992). It must also behave as an oligopoly and there is no evidence that the public accounting industry actually behaves like an oligopoly.

Thus, research concluding that the public accounting industry is an oligopoly not only fails to account for the basic conditions of the model, it ignores the question whether fulfilling those conditions is even possible. Beyond a small number of large firms dominating the public accounting industry with the concomitant barriers to entry, there are no conditions that the public accounting industry fulfills in order to be considered an oligopoly. There is insufficient evidence that the public accounting industry behaves as an oligopoly with respect to prices, output, or strategy. Thus, it must be concluded that oligopoly fails to describe the structure of public accounting industry.

The following section discusses the reasons why existing models of industrial organizations are incapable of describing the public accounting industry.

5.0. The distortion of the market in the public accounting industry

Regulation of supply may take the form of price controls (public utilities), output quantity limitations (carbon emission), or limitations on the percentage of market share (e.g. mergers of mobile phone carriers must be approved by various government agencies). Demand may also be regulated. For example, every state requires drivers to purchase automobile insurance thus creating a demand for insurance.

The public accounting industry is unique, however. The market for auditing services is distorted because the demand for auditing services is created by the government, while supply is simultaneously limited by the government.

5.1. The distortion in the supply of the public accounting industry

The regulation of supply is multifaceted. Distortion in the supply of the public accounting industry is the result of two separate but related factors. The supply of auditing services is limited first at the state level by education and licensing requirements. It is further limited at the federal level by the requirement that publicly traded companies register with the PCAOB which creates barriers to entry due to the high level of investment required in order to fulfill the auditing standards required by the PCAOB. The supply of auditing firms available to a given publicly traded company is further restricted by prohibitions against conflicts of interest. This combination of factors creates a steep, highly inelastic supply curve. Shifts in supply are non-existent in the short term, and very narrow in the long term. Similarly, shifts in quantity supplied are non-existent in the short term, and very narrow in the long term.

5.1.2. The distortion in the demand of the public accounting industry

The demand for auditing services is created by the government, not by the consumers of auditing services. This distortion in the market for the demand for audit services results from the statutory requirements that publicly traded companies issue financial statements that have been audited by independent auditors. Sarbanes-Oxley created additional government mandated demand for audit services (Bierstaker, Houston, and Arnold, 2006). This essentially

creates a steep, highly inelastic demand curve (Yeardley, et al, 1992). Shifts in demand are non-existent in the short term, and very narrow in the long term since demand is solely a function of the number of publicly corporations. Likewise shifts in quantity demanded are non-existent in the short term, and very narrow in the long term.

5.2. The implications of simultaneous regulation of supply and demand.

That government regulation and intervention in the market distorts market forces is well known. (Stigler, 1971). When the government creates the market and then simultaneously regulates both supply and demand of the market it created, it distorts the market even more.

In the case of the public accounting industry, the simultaneous regulation of both supply and demand in essence produces an almost perfectly vertical supply curve while at the same time creates an almost perfectly vertical demand curve. Neither the supply nor the demand can be changed in the short run either by the government or by the market, and they can only be changed in the long run not by market forces, but by changes in the number of companies required to have their financial statements audited pursuant to the Federal securities laws, new laws or regulations, or the slow process of new entrants into the industry limited by licensing and the ability to raise sufficient capital.¹⁴

6.0. Conclusions

This is not to argue that there should be no regulation of either supply or demand. Both are necessary. But one must question why legislators and regulators create a market, then prevent normal market forces from operating by regulating the supply and demand in the market they created, and then criticize the market participants for the conditions of the market they create and control.

¹⁴ The actual number of new firms entering into the industry is somewhat stable. Smaller firms outside the industry may be absorbed by larger firms already in the industry, which does not change the number of firms in the industry; merely the number of individual auditors. Furthermore, smaller firms already in the industry merge thereby decreasing the number of firms, while holding constant the number of individual auditors.

It is clear that the market structure of the public accounting industry is determined by laws and regulations which artificially create, control, and manipulate the market and cause almost perfectly inelastic demand and supply curves. The almost perfectly inelastic demand and almost perfectly inelastic supply are ignored by existing research on the structure of the public accounting industry and render invalid any conclusions that the market fits any current industry structure. Research has failed to explain how the industry meets the conditions of or behaves like an oligopoly. It has failed to explain how the industry fulfills the conditions of monopolistic competition.

The market structure of the public accounting industry does not fit into any current model of industrial organization, suggesting an entirely new model must be developed to describe the public accounting industry. If the industry structure does not fit into any existing model, then what is the structure? Unless a new model is developed, continued research using current models is futile. It will be met with frustration. It will continue to find contradictory evidence and arrive at conflicting conclusions.

REFERENCES

- Banker, R.D., Chang, H. Cunningham, R. 2003. The public accounting industry production function. *Journal of Accounting and Economics* 35, 255–281.
- Baye, M. 2010. *Managerial Economics & business strategy*. New York: McGraw–Hill.
- Beasley, M.S., Carcello, J.V., Hermanson, D.R., and Neal, T.L. 2013. *An analysis of alleged auditor deficiencies in SEC fraud investigations: 1998–2010*. Center for Audit Quality, Retrieved from www.theqaq.org/resources/pdfs/CAQ_deficienciesMay2013.pdf.
- Bierstaker, J., Houston, R. and Wright, A. 2006. The impact of competition on audit planning, Review, and Performance. *Journal of Accounting Literature* 25, 1–58.
- Cahan, S.F., Jeter, D.C., and Naiker, V. 2011. Are all industry specialist auditors the same?. *Auditing: A Journal of Practice & Theory* 30, 191–222.
- Chamberlain, E. 1965. *The theory of monopolistic competition, A Re-orientation of the Theory of Value*. 8th Ed. Boston: Harvard University Press.
- Cohen Commission, 1978. *The Commission on auditors' responsibilities: An Independent Commission Established by the American Institute of Certified Public Accountants--Report: Conclusions, and Recommendations*. Retrieved from http://c0403731.cdn.cloudfiles.rackspacecloud.com/collection/papers/1970/1978_0101_CohenAuditors.pdf.
- Cournot, A. 1838. *Researches into the mathematical principles of the theory of wealth*. N. Bacon. New York: Macmillan.
- DiGabriele, J. 2013. The insignificance of auditor selection in the valuation of private companies within the public acquisition market. *International Journal of Critical Accounting*, 5(3), 275-283.
- Dopuch, N., and Simunic, D., 1980. Competition in auditing: an assessment. In: *Symposium on Auditing Research IV*, University of Illinois, Urbana-Champaign, 401–450.
- Fogarty, T. J., and Parker, L.M. 2010. Reconsidering specialization in the accounting profession: A model for constructive recognition. *Journal of Theoretical Accounting Research* 5, 1-36.
- Friedman, J. 1983. *Oligopoly theory*. London, Cambridge University Press
- GAO. 2003. *Public Accounting Firms: Required Study on the Potential Effects of Mandatory Audit Firm Rotation*. Retrieved from <http://www.gao.gov/new.items/d04216.pdf>.

- Hall, R., and Hitch, C.J. 1939. *Price theory and business behavior*. Oxford Economic Papers 2, 12–45.
- Hay, D.C., and Knechel, W.R. 2010. The effects of advertising and solicitation on audit fees. *Journal of Accounting and Public Policy*, 29(1), 60–81.
- Hermanson, R. H., Dykes, L.M., and Turner, D. H. 1987. Enforced competition in the accounting profession –Does it make sense?, *Accounting Horizons* 3, 3–19.
- Huber, W.D. 2013. PCAOB sanctions, sanction risk, sanction risk premiums, and public policy: Theoretical framework and a call for research. *Journal of Accounting, Ethics and Public Policy*, 14(3), 647-663.
- Ivancevich, S.H., and Zardkoohi, A. 2000. An exploratory analysis of the 1989 accounting firm megamergers. *Accounting Horizons* 14, 389–401.
- KPMG, 2013. KPMG About. Retrieved from <http://www.kpmg.com/us/en/about/Pages/default.aspx>.
- Lennox, C. 2000. Do companies successfully engage in opinion–shopping? Evidence from the UK. *Journal of Accounting and Economics* 29, 321–337.
- OECD. 2009. *Competition and regulation in auditing and related professions*. New York: Organisation for Economic Cooperation and Development. Retrieved from <http://www.oecd.org/regreform/sectors/44762253.pdf>
- Pfeifer, S. 2013. *Herbalife effort to replace KPMG “nearing completion,” CFO says*. LA Times, April 30. Retrieved from <http://articles.latimes.com/2013/apr/30/business/la-fi-mo-herbalife-ceo-first-quarter-results-ackman-icahn-kpmg-20130429>.
- Pong, C., and Turley, S. 1997. Audit Firms and the Audit Market. In Shere, M., Turley, S. (Ed.). *Current Issues in Auditing*, Paul Chapman Publishing, London.
- Reid, G.C. 1981. *The kinked demand curve analysis of oligopoly: Theory and evidence*. Edinburgh University Press, Edinburgh.
- Robinson, J. 1933. *The economics of imperfect competition*. New York: MacMillan.
- Sikka, P. 2008. Enterprise culture and accountancy firms: New masters of the universe. *Accounting, Auditing and Accountability Journal* 21, 268–295.
- Simunic, D.A., 1980. The pricing of audit services: theory and evidence. *Journal of Accounting Research*. 18, 161–190.

Simunic, D. and M. Stein. 1996. The impact of litigation risk on audit pricing: A review of the economics and the evidence. *Auditing: A Journal of Practice & Theory* 15 (Supplement), 119-134.

von Stackelberg, H.F. 2011 (1934). Market structure and equilibrium. Tr. Rowland Hill. Damien Bazin, and Lynn Urch. Bonn: Springer.

Stigler, G. 1947. The kinky oligopoly demand and rigid prices. *The Journal of Political Economy* 55, 432-449.

Stigler, G. (1971). The Theory of Economic Regulation. *The Bell Journal of Economics and Management Science*, 2(10), 3-21

Stigler, G. 1978. The literature of economics: The case of the kinked oligopoly demand curve. *Economic Inquiry* 16, 185-204. The other one?

Sweezy, P. 1939. Demand under conditions of oligopoly. *The Journal of Political Economy* 47, 568-573.

Waldman, D.E., and Jensen, E.J. 2006. *Industrial Organization*, Boston: Addison Wesley

Yeardley, J., Kauffman, N., Cairney, T., and W. Albrecht, W.D. 1992. Supplier behavior in the U.S. audit market. *Journal of Accounting Literature* 11, 151-184.

IS IT ETHICAL FOR THE U.S. GOVERNMENT TO OFFER FINANCIAL AWARDS TO POTENTIAL WHISTLEBLOWERS OF FINANCIAL STATEMENT FRAUD AND INTERNAL CONTROL VIOLATIONS?

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IS IT ETHICAL FOR THE U.S. GOVERNMENT TO OFFER FINANCIAL AWARDS TO POTENTIAL WHISTLEBLOWERS OF FINANCIAL STATEMENT FRAUD AND INTERNAL CONTROL VIOLATIONS?

ABSTRACT

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 permits the Securities and Exchange Commission to award a whistleblower 10-30% of the monetary sanctions exceeding one million dollars imposed on a violator for original information of a violation of a securities law, commodities law, or the Foreign Corrupt Practices Act. This article uses a utilitarian model to analyze whether it is ethical for the U.S. government to make such awards to whistleblowers of financial statement fraud despite that the whistleblower may have bypassed internal controls. The authors came to the conclusion that the current system is indeed ethical after examining the risk of material misstatements, the SEC's intent to uphold the rights of the investors over the rights of the company and internal control mechanism, and the benefits of the information provided by the whistleblower. However, the current system could be made more ethically sound by requiring the whistleblower to provide some evidence that the whistleblower attempted to follow internal control procedures when appropriate.

INTRODUCTION TO ETHICAL DILEMMA

BACKGROUND

The accounting literature frequently examines the implications of the ethical dilemmas connected with whistleblowing. The Dodd-Frank Wall Street Reform and Consumer Protection Act (DFA) § 922, enacted in 2010, allows for a whistleblower to be awarded 10-30% of the monetary sanctions exceeding \$1 million imposed on the violator by the Securities and Exchange Commission (SEC) for original information of a violation of a securities law, commodities law, or the Foreign Corrupt Practices Act (FCPA). The determination of the award is based on the significance of the information, the level of whistleblower assistance, and the extent to which the government wants to deter the violation (Kerschberg, 2011, p. 1). Ultimately the purpose of the DFA is "to promote financial stability by improving accountability and transparency in the financial system" (Whittington et al, 2014, p. 10).

STATEMENT OF PROBLEM

The discussion relating to section 922 of the DFA has caused much debate. Specifically people are questioning, “Is it ethical for the U.S. Government to offer financial awards to potential whistleblowers of financial statement fraud and internal control violations?” Some research shows companies are concerned that internal compliance programs are devalued due to the large financial award whistleblowers could receive by bypassing the internal mechanisms and reporting directly to the government (Vega, 2012, p. 516). Other positions are supporting the need for an incentive to increase the amount of information employees have regarding potentially fraudulent activities to protect investors (Black, 2010, p. 1).

At the root of this discussion is whistleblowing. According to Duska, Duska, and Ragatz, whistleblowing is the practice in which employees who know that their coworkers are involved in activities that cause “unnecessary harm, violate human rights, are illegal, run counter to the defined purpose of the institution or the profession, or are otherwise immoral” (p. 146). Once the activity is identified, the “whistleblower” informs the appropriate superior, a professional organization, the public, or a governmental agency, such as the SEC, of the alleged wrongdoing (Duska, et al, 2011).

The Institute of Management Accountants (IMA) has established a set of professional practices that members should follow. They include competence, confidentiality, integrity, and credibility (IMA, 2013, p. 1). Based on these practices, management accountants with information regarding fraudulent financial statements or internal control failures have a duty to report such instances based on the best practices of integrity and credibility.

This ethical question related to whistleblowing is important to the field of accounting because accurate financial statement reporting and effective internal control processes are the cornerstones for investors and creditors to make sound decisions. The Financial Accounting Standards Board’s (FASB) conceptual framework for financial reporting states that the objective

of financial reporting is “to provide information that is useful to present to potential investors and creditors and others in making investment, credit, and similar resource allocation decisions” (FASB, 2010, p. 1). Investors rely on the information contained in the annual reports (i.e. Form 10-K) provided by the companies to the SEC. Accountants have the duties of preparing financial statements according to Generally Accepted Accounting Principles and designing efficient internal controls.

Although this ethical issue is rooted in the ethical dilemma of whistleblowing, this article is not bringing into light the ethics of the potential whistleblower and whether or not to blow the whistle. The ethical question currently under review is contemplating the moral obligations of the SEC in regards to the awards offered to increase the number of whistleblowers to obtain information regarding companies’ financial statement fraud and internal control violations. Therefore, this article will examine whether it is ethical for the U.S. Government to offer financial awards to potential whistleblowers of financial statement fraud and internal control violations.

REVIEW OF RELATED LITERATURE

INTRODUCTION

After the major fraud scandals in the early 2000s, the need for regulations became more apparent. One would be remiss not to discuss the ethical duty of Cynthia Cooper, former Vice President of WorldCom. In 2002, Cooper and her staff uncovered the largest corporate fraud to date. In her book, *Extraordinary Circumstances*, Cooper tells the story of WorldCom from start to finish. In the Epilogue of the book, she discusses many of her personal beliefs regarding “whistleblowing” and ethical dilemmas. For instance, she never thought of herself as a “whistleblower.” She saw herself as doing her job as an internal auditor and following a professional code of conduct. She states, “Keep in mind that what is legal and what is ethical are sometimes different” (2008, p. 365). Cooper brought the WorldCom scandal to the appropriate authorities without the incentive of a financial award. She also mentions that it is important to be loyal to superiors and to ethical principles (Cooper, 2008, p. 366).

OTHER LEGISLATION AND AGENCY AWARDS

The Sarbanes-Oxley Act of 2002 (SOX) included a set of reforms to increase the penalties for fraud. Section 301 requires audit committees of publically traded companies to implement a means for individuals to report securities violations internally. This requirement includes a mechanism for recording, tracking, and acting upon the confidential tips received. The most common form of reporting is a whistleblower “hotline” in which people can call and leave anonymous tips. Under SOX, these tips are not eligible for a financial award (Awner & Dickins, 2011).

According to an article by Shannon Quigley in the *Santa Clara Law Review*, section 922 of the DFA competes with internal compliance programs as promoted in section 404 of SOX. It is not the intention of the SEC to compete with internal compliance programs, but Quigley believes that the DFA adversely encourages employees to report to the government instead of following internal protocol. Under the DFA, employees have monetary motivation coupled with increased protection against employee retaliation. In contrast, internal compliance programs are less effective because employees are not willing to utilize the internal mechanisms (Quigley, 2012, p. 268).

The idea of whistleblower awards did not start with the DFA. According to Doug Clark, an attorney for Wilson, Sonsini, Goodrich & Rosati, section 3730 of the False Claims Act permits a “relator” of information regarding a fraudulent activity to receive a payout of 15-25% of the settlement proceeds. Clark also reports that the “relator” can proceed with the case even if the government decides not to pursue the false claim. If the “relator” is successful at a recovery, then an even higher percentage of the settlement may be awarded. The Internal Revenue Service also has a reward system for reporting tax fraud (Clark, 2010).

MONETARY AWARDS AS INCENTIVES

According to Feldman and Lobel, traditional economists maintain the belief that individuals will respond to awards that merit certain types of behavior. Therefore, the idea that monetary incentives will increase the number of claims of fraudulent financial statements or internal control malfunctions is in line with the traditional economists' view of thinking. If the benefits from the awards or the costs of the liability outweigh the costs of reporting, it is reasonable to assume a monetary incentive to be productive in increasing tips (Feldman & Lobel, 2009, p.23).

The SEC prepares evaluations of the whistleblower program and makes the report available on the sec.gov website. According to the January 18, 2013 report, whistleblower awards are needed to increase the number of tips reported to detect fraud. The appropriate level of award needs to be studied to determine how the award level would influence potential whistleblower behavior (Rymer, 2013).

The moral principles related to whistleblower awards were not apparent in the reviewed literature. This topic is important and needs to be developed to determine the ethical implications of financial awards offered to potential whistleblowers by the U.S. government.

DEVELOPMENT OF THE ETHICAL MODEL

To answer the question, "Is it ethical for the U.S. government to offer financial awards to potential whistleblowers of financial statement fraud and internal control violations?" one must first sift through the ethical and accounting literature to derive an ethical model against which to analyze the current whistleblowing award system. As Cynthia Cooper stated in her book, "Keep in mind that what is legal and what is ethical are sometimes different" (2008, p. 365).

ACCOUNTANT'S RESPONSIBILITIES IN REPORTING AND INTERNAL CONTROLS

In order to build an ethical model to answer the question, one must first review the accountant's duties to protect investors. Because accounting information gives investors a financial picture, its fundamental purpose is to provide useful information about the economic

and financial dealings of an organization. Many stakeholders may be interested in the information an accountant prepares for possible decision-making. The government, inside management, shareholders and possible investors all have an interest in a company's financial dealings (Duska, 2011, p. 10-11).

The Financial Accounting Standards Board (FASB) developed a conceptual framework for financial information that “prescribes the nature, function, and limits of financial accounting and reporting. It is expected *to serve the public interest* [italics added] by providing structure and direction to financial accounting and reporting to facilitate the provision of evenhanded financial and related information that helps promote the efficient allocation of scarce resources in the economy and society, including assisting capital and other markets to function efficiently” (FASB, 1997).

According to Harrison and Horngren, accounting information can be costly to produce. Although financial statements need to be comparable, verifiable, timely, and understandable, there is a cost constraint. Therefore, management needs to identify whether the information is necessary for the complete understanding of the financial picture of the company (2013, p. 7).

Accountants have the responsibility of maintaining proper internal controls. Among other objectives, proper internal controls are to “ensure accurate, reliable accounting records” for decision-making and to “comply with legal requirements” of regulatory agencies such as the SEC (2013, p. 235).

ANALYSIS OF ETHICAL PHILOSOPHIES

In choosing a model to evaluate the ethical soundness of government awards for whistleblowers, one must review the ethical literature surrounding business.

Deontology. A logical consideration for the ethical model is deontology. According to Ferrell, Fraedrich, and Ferrell, this philosophy “focuses on the rights of individuals and the intentions

associated with a particular behavior rather than its consequences” (2015, p. 161). With the whistleblower award, the SEC is concerned with increasing the amount of information to uncover financial statement fraud and internal control violations; thus, the SEC is concerned with the consequences of the action. Additionally, deontology does not consider costs in the decision making process (Ferrell et al, 2015). As discussed previously, the accounting industry is concerned with the cost constraint of financial reporting. Due to these conflicting concerns, deontology will not be used to build the ethical model.

Utilitarianism. Utilitarianism should also be considered as a foundation for the ethical model. Duska et al indicated that utilitarianism can be expressed as “do that action which will bring about the greatest good for the greatest number of people” (2011, p. 57). According to DeGeorge, utilitarian arguments are frequently used in examining legislation. “A policy is morally justified if it produced more good than bad, and is optimally justified if it produces more good than any other alternative would” (DeGeorge, p. 49, 2010).

According to DeGeorge, one must carefully specify all parties affected by the action under consideration (2010, p. 54). Identified parties related to this action include investors, taxpayers, other public companies, internal control departments, the perpetrators of the violation, and the potential whistleblower. After identifying those affected, one must determine the consequences for all parties. See the attached tables for comprehensive studies of alternatives and consequences for parties identified.

CONSTRUCTION OF THE ETHICAL MODEL

Because this question is asked from the perspective of the SEC and the mission of the SEC is to “protect investors,” the proceeding ethical model is built around investors. Additionally, recall FASB’s framework for accurate and reliable financial reporting and the cost constraint commonly addressed in financial reporting (FASB, 2010, p. 1). Using these concerns as background, utilitarianism is utilized to prepare the model to answer the ethical question. The model will address whether the current system of awarding whistleblowers under the DFA is

promoting the greatest amount of good for the greatest number of persons involved. Specifically the model will consist of four questions to answer, “Is it ethical for the U.S. government to offer financial awards to potential whistleblowers of financial statement fraud and internal control violations?” If any of the subsequent questions can be answered “no,” then it is assumed that the action is not ethically justified. See decision flowchart in Figure 1.

1. Is there a risk that audited financial statements and tested internal controls could contain material misstatements and mislead investors? This question incorporates FASB’s framework for financial reporting and evaluates the need for additional investor protection aside from corporate accountants and auditors who act in good faith.
2. Is it the SEC’s intent to uphold the rights of the investors over the rights of the company and internal control mechanisms, but to not conflict with SOX? This question is asked from a qualitative standpoint to determine whether the rights of the investors are upheld above the rights of the company.
3. Do the benefits of the information provided by the whistleblower outweigh the costs of the award and litigation? This question is asked to determine the financial cost constraints from a quantitative standpoint.
4. Based on the answers to the previous questions, is it ethical for the U.S. government to offer financial awards to a potential whistleblower of financial statement fraud and internal control violations?

APPLYING THE ETHICAL MODEL

Utilizing the utilitarian ethical model, one can apply it to the question at hand to determine if the awards offered by the SEC are ethical based on the utilitarian premise.

1. IS THERE A RISK THAT AUDITED FINANCIAL STATEMENTS AND TESTED INTERNAL CONTROLS COULD CONTAIN MATERIAL MISSTATEMENTS AND MISLEAD INVESTORS?

This question is to understand the risks that may continue to exist after the SEC mandated financial statement and SOX compliance audits are completed. According to the Whittington and Pany, “the audit reports are regarded as expressions of opinion, rather than absolute certifications of the fairness of financial statements” (2014, p. 331). Auditors rely on audit sampling to evaluate a sample of items from a population. As with any sample, there is sampling risk and sampling error. Auditors calculate an allowance for sampling risk and determine a tolerable misstatement amount. Typically, auditors attempt to achieve a 90-95% confidence level depending on the risks associated with the process under review (Whittington, 2014).

In the early 2000’s, investor uncertainty regarding financial statement reliability shook an already weak financial market. Starting with the events of Enron, the credibility of the accounting profession entered into a crisis. To combat investor uncertainty, SOX was implemented in 2002. After the Financial Crisis of 2008, Congress enacted the DFA in 2010, recognizing a need for investor protection by providing incentives to increase the amount of reported information relating to fraud and internal control violations. In answering the first question, a risk does exist that audited financial statements and tested internal controls could contain material misstatements and mislead investors, making it ethical to offer a financial award to whistleblowers. Because there is still risk after the audits, the SEC’s goal with the whistleblower incentive program is to ultimately reduce investor uncertainty (Whittington et al, 2014).

2. IS IT THE SEC’S INTENT TO UPHOLD THE RIGHTS OF THE INVESTORS OVER THE RIGHTS OF THE COMPANY AND INTERNAL CONTROL MECHANISM, BUT TO NOT CONFLICT WITH SOX?

According to the SEC website, the protection of the investor is “more compelling than ever” (2013c, p.1). Title IX of the DFA is entirely devoted to protecting investors and improving the

regulation of securities. Because there are no guarantees with stocks, bonds, and other securities, investors can lose everything invested overnight. The website also discusses that protecting against fraud, maintaining fair dealings, and promoting disclosures of important market-related decisions are the primary concerns of the agency. This position connects to the conceptual framework of accurate and reliable financial reporting set forth by the FASB. Without trustworthy financial statements, decision makers, including investors, are not able to make sound decisions (FASB, 2010, p. 1).

After the whistleblower program was implemented, some concerns arose concerning possible contradictions to SOX (Vega, 2012). The Sarbanes Oxley Act of 2002 (SOX) revamped corporate governance to help insure the reliability of financial information. Specifically SOX requires that public companies issue detailed internal control reports evaluated by external auditors. The Act also instituted a statement of management's responsibility over internal controls and reporting as well as management's assessments of the effectiveness of the internal controls. Through the issuance of the DFA, the government does not discount the importance of the internal control mechanism as outlined in SOX. It is believed that these actions help to enforce the message of the importance of internal controls and deter fraud through threats of increased liability (Harrison et al, 2013).

According to the SEC's 2013 Annual Report to Congress on the Dodd-Frank Whistleblower Program, the program in question was designed to complement current corporate compliance programs. The report also mentions that employees are encouraged to act within the company's own mechanism (SEC, 2013a, p. 3). As previously stated, the SEC's stated mission is to protect investors. The purpose of SOX is to decrease fraud, which in turn is to ultimately protect investors and decision makers. The evidence shows that the SEC's intent in enacting the whistleblowing provision is to uphold the rights of investors over the rights of the company and the internal control mechanism, but does not conflict with the essence of SOX. Therefore, the answer to the second question indicates that the whistleblowing awards under DFA are ethical.

3. DO THE BENEFITS OF THE INFORMATION PROVIDED BY THE WHISTLEBLOWER OUTWEIGH THE COSTS OF THE AWARD AND LITIGATION?

This question was designed to address the cost benefit constraint outlined in Harrison's text. Based on the utilitarian model, once it is determined that the intent of the SEC is to uphold the interests of the investor over the interests of the company and the internal control mechanism, one must review the financial costs and benefits.

Although the SEC has not paid out many awards since the inception of the program, in the SEC authorized more than \$30 million to be awarded to a whistleblowers in September 2014 who provided "key original information that led to a successful enforcement action . . . of an ongoing fraud that otherwise would have been very difficult to detect" (SEC, 2014). This is the largest award to date. According to Andrew Ceresney, SEC's Division of Enforcement Director, the whistleblower led the SEC to a successful investigation of a "fraud that would have been very difficult to detect" (Tysiac, 2014). The SEC made the statement on its website, "We hope an award like this encourages more individuals with information to come forward" (SEC, 2013d). Using the utilitarian model on this single instance, one can see the value of the program. According to the DFA, awards are 10-30% of the monies collected from the wrong doer (§ 922). Therefore, the costs of this transaction alone were approximately \$30 million, primarily the cost of the whistleblowing award. Additional costs would include the costs for legal and overhead of the SEC's Office of the Whistleblower (OWB), which would be difficult to measure. The benefits are dollars collected from the defendant. Assuming a conservative award of 10% for the whistleblower, the sanction against the company must have been approximately \$300 million. Disregarding legal fees and OWB overhead and using a conservative award percentage of 10%, the net benefit to investors is at most \$270 million, which is the difference between the \$300 million and \$30 million.

According to the utilitarian model for evaluating costs and benefits of a decision and considering the cost constraint principle in accounting, the above information answers the

authors' third question in the proposed ethical model. Therefore, according to the quantitative measures, it is ethical to offer financial awards to whistleblowers.

4. IS IT ETHICAL FOR THE U.S. GOVERNMENT TO OFFER FINANCIAL AWARDS TO POTENTIAL WHISTLEBLOWERS OF FINANCIAL STATEMENT FRAUD AND INTERNAL CONTROL VIOLATIONS?

The final question can be answered by evaluating the previous three questions based on the utilitarian ethical premise. Recall that the utilitarian model requires one to “do that action which will bring about the greatest good for the greatest number of people” (Duska, 2011, p. 57). Based on the utilitarian model, it is ethical to offer financial awards to potential whistleblowers of financial statement fraud and internal control violations. Because risk still exists after audits, the intent of the SEC is to uphold investor rights over company rights and internal controls (but to not conflict with SOX), and the quantitative benefits are greater than the costs, it is determined that the current law is ethical. Also refer to Table 1 to review the positive and negative consequences of all identified parties. It is evident that the positive consequences outweigh the negative consequences.

Ultimately, the incentives are meant to increase the number of properly motivated whistleblowers to uncover financial statement fraud and internal control violations. This information will decrease the number of investors that are affected by corporate misconduct or at least decrease the losses from financial statement fraud or internal control violations.

THE DFA FINANCIAL AWARDS COULD BE MORE ETHICALLY SOUND

The SEC could make the awards to whistleblowers under the DFA more ethically sound by requiring the whistleblower to provide some evidence that the whistleblower attempted to follow internal control procedures prior to “blowing the whistle” when reasonably appropriate. Evidence might include an email or other documentation detailing conversations by the employee attempting to raise or resolve the issue prior to getting the SEC involved and potentially collecting a large financial award.

The framework of requiring a whistleblower to follow internal company policies prior to being successful in a claim is well established in the sexual harassment case law. Two U.S. Supreme Court cases in 1998 set the precedent that employers could successfully defend a sexual harassment claim by proving that (1) the employer “exercised reasonable care to prevent and correct promptly any sexually harassing behavior;” and (2) that “the plaintiff employee unreasonably failed to take advantage of any preventive or corrective opportunities provided by the employer or to avoid harm otherwise” (*Burlington Industries, Inc. v. Ellerth*, 1998, p. 765; *Faragher v. City of Boca Raton*, 1998, p. 807).

In these cases the Court encouraged businesses to draft effective sexual harassment policies for employees to follow. Success for the plaintiff required the employee to follow those established procedures prior to “blowing the whistle” in court. This case law also encouraged employees to make complaints about sexual harassment before the situation became a court case.

This framework could work well for DFA whistleblowers. Requiring a potential DFA whistleblower to follow internal controls would perhaps (1) solve the financial issue early in its stages, (2) protect the company from the embarrassment of an SEC investigation, and (3) protect investors from the losses in their investment due to an SEC investigation or the public announcement of a financial award to a whistleblower.

IMPLICATIONS AND FURTHER RESEARCH

This decision will have implications on the accounting profession. As discussed previously, the DFA has the potential to supersede the intent of the internal control mechanism imposed by SOX. Because the DFA implies that there is need for additional investor protection beyond SOX, the accounting profession should be concerned.

What if the SEC decided to remove the incentive of a whistleblowing award? Table 2 discusses the positive and negative consequences of not offering whistleblower awards. While this seems to be a viable alternative, it appears that whistleblower awards will continue to be a consideration to increase the number of tips and to deter management from committing these financial crimes.

An avenue for further research is the possibility of adding a question on the application for award (SEC form WB-APP) to address the whistleblower's knowledge of the company's internal control mechanism. The question could address the actions of the whistleblower and any interactions with the company through the internal control process as outlined in the company policy (see Table 3 for utilitarian comprehensive study of alternative). This research would help determine if whistleblowers are aware of the company's internal programs and if they felt safe to report to the proper channels (SEC, 2013b).

Continuing research should include a similar analysis for the actions of the potential whistleblower. Future research should include examination of the amount of the award and its sufficiency to increase the number of whistleblowers.

Feldman and Lobel's 2009 research on the *Comparative Effectiveness of Rewards, Liabilities, Duties and Protections for Reporting Legality* could be extended to include the same research parameters for years following the DFA in 2010. The article compares the effects of different regulatory mechanisms such as monetary awards on individual motivation and behavior. The data for years after the institution of the DFA could help give insight into the actual effects of the law to see if there are any changes from a pre-DFA to post-DFA environment.

As an accountant, the struggle exists as to whether one should receive additional compensation for doing one's job as described by the IMA's professional practices. Ultimately, if all employees protected the stakeholders by following the company's policies regarding appropriate behaviors, fraud would not occur. Every company is at risk of fraud; most violators do not plan

to commit these financial crimes. Because total elimination of fraud is unlikely, legislation is necessary to help deter these financial crimes. Changing the process to include the internal control mechanism will only strengthen the process and reinforce the message that fraud will not be accepted.

REFERENCES

- Awner, J., & Dickins, D. (2011). Will there be whistleblowers? *Regulation*, 34, 36.
- Black, B. (2010). *Why cash incentives for whistleblowers are actually useful*. Retrieved October 22, 2013, from <http://www.businessinsider.com/why-cash-incentives-for-whistleblowers-are-actually-useful-against-control-frauds-2010-12>
- Blount, J., & Markel, S. (2012). The end of the internal compliance world as we know it, or an enhancement of the effectiveness of securities law enforcement? Bounty hunting under the Dodd-Frank Act's whistleblower provisions. *Fordham J. Corp. & Fin. L.*, 17, 1023-1061.
- Burlington Industries, Inc. v. Ellerth. 524 U.S. 742. (1998). Retrieved from LexisNexis Academic database.
- Clark, D. (2010). *Opening the floodgates: The Dodd-Frank whistleblower provisions' impact on corporate America*. Retrieved October 22, 2013, from <http://www.wsgr.com/publications/PDFSearch/dclark1010.pdf>
- Cooper, C. (2008). Extraordinary circumstances. *John Wiley & Sons*.
- DeGeorge, R. (2010). Business ethics. *Prentice Hall*.
- Duska, R., Duska, B. S., & Ragatz, J. A. (2011). Accounting ethics. *Wiley-Blackwell*.
- Faragher v. City of Boca Raton. 524 U.S. 775 (1998). Retrieved from LexisNexis Academic database.
- Feldman, Y., & Lobel, O. (2009). *The incentives matrix: The comparative effectiveness of rewards, liabilities, duties and protections for reporting illegality*. Retrieved November 20, 2013 from http://works.bepress.com/cgi/viewcontent.cgi?article=1000&context=yuval_feldman
- Ferrell, O. C., Fraedrich, J., & Ferrell, L. (2015). Business ethics. *Cengage Learning*.
- Financial Accounting Standards Board (FASB). (2010). *Statement of financial accounting concepts 8: Conceptual framework for financial reporting*. Norwalk, CT: Financial Accounting Foundation. Retrieved November 27, 2013, from <http://www.fasb.org/cs/BlobServer?blobkey=id&blobwhere=1175822892635&blobheader=application%2Fpdf&blobcol=urldata&blobtable=MungoBlobs>

- Financial Accounting Standards Board (FASB). (1997). *Statement of financial accounting concepts 8: Conceptual framework for financial reporting*. Norwalk, CT: Financial Accounting Foundation. Retrieved November 27, 2013, from <http://www.fasb.org/cs/BlobServer?blobkey=id&blobwhere=1175822892635&blobheader=application%2Fpdf&blobcol=urldata&blobtable=MungoBlobs>
- Harrison Jr., W. T., & Horngren C. W. (2013). *Financial accounting*, ninth edition. *Pearson Education, Inc.*
- Institute of Management Accountants (IMA). (nd). *Statement of ethical professional practice*. Montvale, NJ: Institute of Management Accounts, Inc. Retrieved November 27, 2013, from http://www.imanet.org/PDFs/Public/Press_Releases/STATEMENT%20OF%20ETHICAL%20PROFESSIONAL%20PRACTICE_2.2.12.pdf
- Kerschberg, B. (2011). *The Dodd-Frank Act's robust whistleblowing incentives*. Retrieved October 22, 2013, from <http://www.forbes.com/sites/benkerschberg/2011/04/14/the-dodd-frank-acts-robust-whistleblowing-incentives/>
- Quigley, S. K. (2012). Whistleblower tug-of-war: Corporate attempts to secure internal reporting procedures in the face of external monetary incentives provided by the Dodd-Frank Act. *Santa Clara Law Review*, 52, 255.
- Rymer, J.T. (2013). *Evaluation of the SEC's whistleblower program*. Retrieved November 6, 2013, from <http://www.sec-oig.gov/Reports/AuditsInspections/2013/511.pdf>
- Securities Exchange Commission. *2013 Annual report to congress on the Dodd-Frank Whistleblower Program*. (2013a). Retrieved February 28, 2014, from <http://www.sec.gov/about/offices/owb/annual-report-2013.pdf>
- Securities Exchange Commission. *Application for award for original information submitted pursuant to section 21F of the securities exchange act of 1934*. (2013b). Retrieved February 28, 2014, from <https://www.sec.gov/about/forms/formwb-app.pdf>
- Securities Exchange Commission. *The investor's advocate: how the SEC protects investors, maintains market integrity, and facilitates capital formation*. (2013c). Retrieved February 28, 2014, from <http://www.sec.gov/about/whatwedo.shtml>
- Securities Exchange Commission. *Dodd-frank act section 922*. (2010). Retrieved October 23, 2013, from <http://www.sec.gov/about/offices/owb/dodd-frank-sec-922.pdf>
- Securities Exchange Commission. *SEC awards more than \$14 million to Whistleblower* (2013d). Retrieved June 9, 2014, from <http://www.sec.gov/News/PressRelease/Detail/PressRelease/1370539854258#.U5Y4ePlDU3U>

Securities Exchange Commission. *2014 annual report to congress on the dodd-frank whistleblower program*. (2014). Retrieved December 11, 2014, from <http://www.sec.gov/about/offices/owb/annual-report-2014.pdf>

Tysiac, K. *SEC expects to pay whistleblower a record \$30 million* (2014). Retrieved September 30, 2014, from <http://www.journalofaccountancy.com/news/201410983.htm>

Vega, M. A. (2012). Beyond incentives: making corporate whistleblowing moral in the new era of Dodd-Frank Act "bounty hunting." *Connecticut Law Review*, 45(2), 481-545.

Whittington, O.R., & Pany, K. (2014). *Principles of auditing & other assurance services*. McGraw-Hill Irwin.

APPENDIX

Table 1

Utilitarian Comprehensive Study of Affected Parties and the Associated Consequences of Offering Awards to Potential Whistleblowers

Affected Party	Positive Consequences	Negative Consequences
Investors	- Reported tips can uncover fraud and violations to minimize investment losses.	-An SEC investigation known to the public could harm the reputation of the company and cause stock prices to drop.
Taxpayers	- Reported tips may decrease tax dollars used to investigate fraud and violations. - The potential for SEC investigation and awards may lead to less fraud and more stable markets.	- The costs of the legislation and of the OWB.
Other Public Companies	- Companies are able to compete fairly once the fraud or violation is exposed.	
Internal Control Departments	- Reported tips could lead to fraud and violations that could expose holes for future issues.	- To be eligible for an award, reported tips are often received first by the SEC, bypassing the company's internal controls.
Perpetrators	- The threat of SEC investigation and award could deter illegal activity.	- Coworkers could be motivated to look for fraud and violations.
Potential Whistleblowers	- The award of 10-30% of the monetary sanctions received exceeding \$1 Million.	- Ostracized by the company and potential future employers.

Table 2

Utilitarian Comprehensive Study of Affected Parties and the Associated Consequences of Not Offering Awards to Potential Whistleblowers

Affected Party	Positive Consequences	Negative Consequences
Investors		- Potential fraud or violations may go unreported for a long period of time.
Taxpayers		- The costs of the legislation once cases are brought forth are large.
Other Public Companies		- Companies are not able to compete with each other when competitors are not following GAAP and anti-fraud laws.
Internal Control Departments	- If the whistleblower decides to report, tips are most likely to be reported internally.	- The idea that awards incentivize potential whistleblowers would be non-existent.
Perpetrators	- Violations are less likely to be reported by coworkers.	
Potential Whistleblowers		- It may be difficult to report internally due to the possible whistleblower retaliation. - No possibility of receiving a large award.

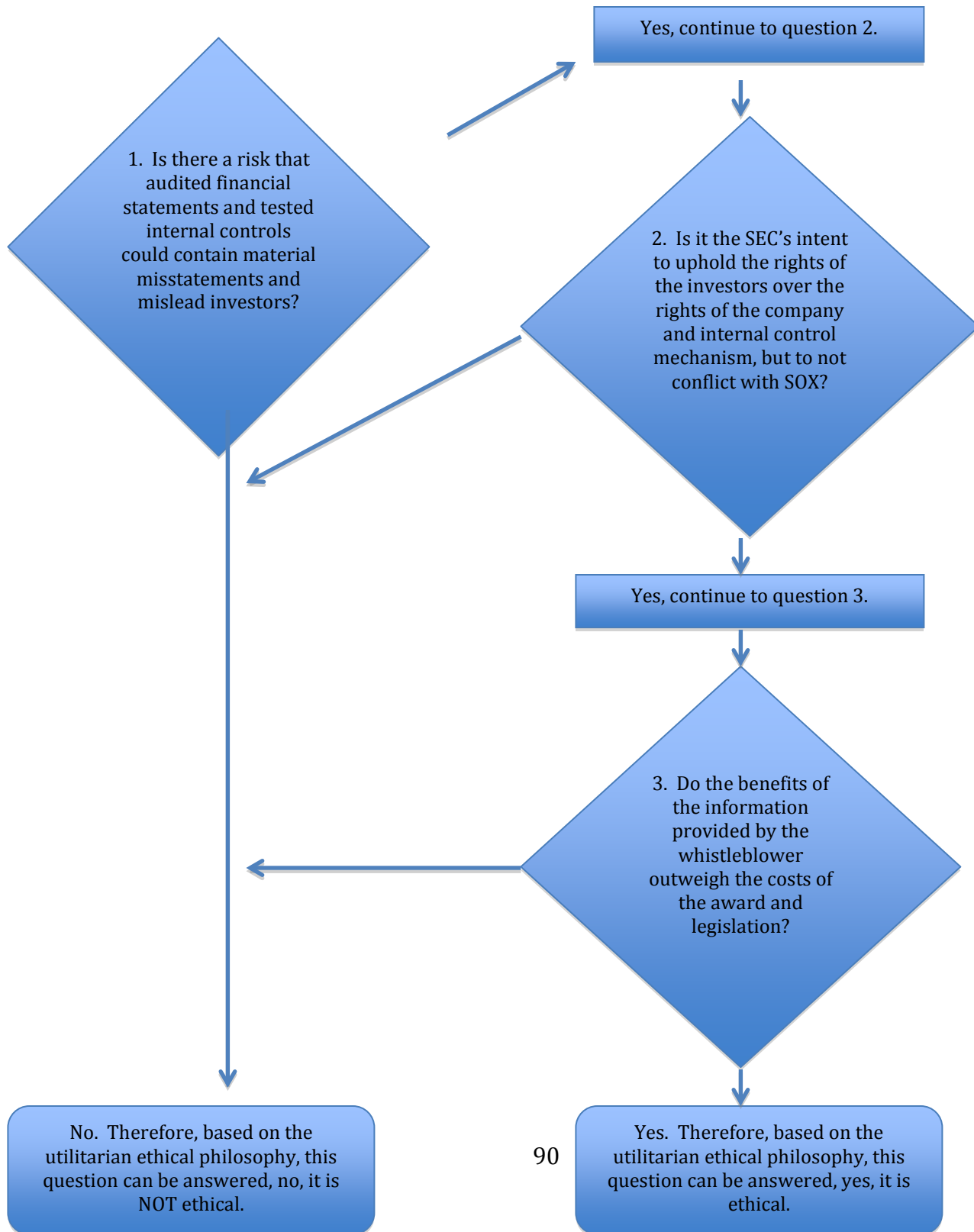
Table 3

Utilitarian Comprehensive Study of Affected Parties and the Associated Consequences of Offering Awards to Potential Whistleblowers with an Updated OWB Application

Affected Party	Positive Consequences	Negative Consequences
Investors	- Reported tips can lead to fraud and violations to minimize losses.	
Taxpayers	- Reported tips may decrease tax dollars used to investigate fraud and violations.	- The legislative costs to change the current SEC regulations.
Other Public Companies	- Companies will now be on a level playing field once the fraud or violation is exposed.	
Internal Control Departments	- Reported tips could lead to fraud and violations that could expose holes for future issues. <i>- Department will be involved in the investigative process, eliminating need for an SEC investigation.</i>	
Perpetrators		- More people are potentially incentivized to blow the whistle. - Coworkers could be motivated to look for fraud and violations. <i>- Internal control departments will be informed and attempting to uncover the fraud or violation earlier.</i>
Potential Whistleblowers	- The award of 10-30% of the monetary sanctions received exceeding \$1 Million <i>- By using the internal controls in place, employee loyalty is emphasized.</i>	Situations may exist when it may not be feasible to use internal controls prior to reporting to SEC, such as the case of fraud.

Figure 1

Ethical Model built on the philosophy of Utilitarianism to answer the question, "Is it ethical for the U.S. Government to offer financial awards to potential whistleblowers of financial statement fraud and internal control violations?"



**FOR WANT OF A NAIL:
A CONCISE EXPLANATION FOR THE ONGOING FINANCIAL
CRISIS**

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FOR WANT OF A NAIL: A CONCISE EXPLANATION FOR THE ONGOING FINANCIAL CRISIS

ABSTRACT

The 2008 collapse of the US housing market is causing severe financial repercussions throughout the world economy. In the developed world, the Great Recession has evolved from a liquidity crisis into a solvency crisis. During the recession rising unemployment and falling output exacerbated deficits and debts in many EU countries, raising the specter of sovereign debt failure. The US government deficit also grew significant. Many emerging economies, particularly those in Asia, have suffered fewer losses and recovered faster from the crisis. However, the “hot money” coming to Asia from economically advanced countries is creating both asset bubbles and inflation in emerging markets.

It is critical that particularly business students understand the causes of this complex financial disaster. Many authors have attempt to provide an explanation, but unfortunately most comprehensive analyses are too complex for many readers while shorter examinations tend to focus on only one party and are thus incomplete. What is required is a comprehensive yet concise explanation of the crisis that takes account of the many causes of this systemic failure.

The purpose of this paper is to provide a concise explanation for the financial crisis that could be used in a one-hour presentation or a lecture to undergraduate business students. Section one introduces the topic and provides the motivation for the manuscript. Section two discusses the major housing market participants and their respective roles in regulating the housing market. Section three outlines how each of these participants sequentially failed, while section four summarizes and concludes the paper.

INTRODUCTION

The collapse of the US housing market in 2007 has led to the greatest economic catastrophe since the Great Depression. Between 2007 and 2009 (the official end of the recession) the financial crisis destroyed approximately \$16 trillion in wealth in the US alone (Isidore 2011) as the disaster transformed from a housing issue to a liquidity crisis and eventually to a sovereign debt crisis that has impacted countries throughout the developed world, particularly Portugal, Ireland, Italy, Greece and Spain. Developing nations were initially little impacted, but over time the cheap money flowing in from developed nations has created asset bubbles and inflation. The collapse of the housing market has led to over 4 million foreclosures (Christie 2012) and

triggered a recession that drove the official unemployment rate to 9.5%. Since the summer of 2009 (the official end of the recession) the federal government has added trillions of dollars to the deficit and the Federal Reserve Board has spent trillions more in various forms of quantitative easing. Nevertheless, median income is down over 5% from pre-recession levels and has fallen more since the end of the recession than it did during the recession, In addition, the labor participation rate is at its lowest level since 1978 (Sherk 2014).

College students have been deeply affected by the ongoing crisis, so it is imperative that they develop some understanding of what happened. Many explanations for the crisis have been published, and more will undoubtedly be written in the future. So far, however, most of these analyses have either overly simplistic (e.g., “it’s all Wall Street’s fault,” “not enough regulation”) or too complex for the average reader to understand.

The manuscript attempts to provide a concise yet reasonably thorough explanation that is suitable for a one hour class lecture. It will also provide interested readers with a starting point for further research and provide some context with which to evaluate current and future proposals to ameliorate the crisis.

HOUSING MARKET PARTICIPANTS AND THEIR INTERNAL CONTROL ROLES

The housing industry is a significant and highly complex part of the US economy. Currently there are almost 79 million owner-occupied housing units worth a total of over \$10 trillion (Durbin, 2013). In any given month approximately 5 million new and existing homes are on the market (National Association of Home Builders 2012), with 62% of the population living in owner occupied housing (Gallup, 2012). The housing industry employs millions of US workers and contributes approximately 5% of total US GDP (National Association of Home Builders 2014).

The federal government has long encouraged home ownership. In the 19th century federal property was often given away to encourage settlement, and the savings and loan industry was

established to primarily to provide home mortgage loans. In 1938 the Roosevelt administration created the Federal National Mortgage Association (Fannie Mae) with the goal of expanding the home mortgage market, and the Federal Home Loan Mortgage Corporation (Freddie Mac) was established in 1970 to further expand the secondary mortgage market. Over the next 20 years Congress passed a number of laws, including the Community Reinvestment Act and the Garn-St. Germain Law to expand home ownership and/or protect the home mortgage industry (Mitschow, 1994). Since then both the Clinton and George W. Bush administrations actively used those laws to increase the home ownership rate.

The US housing market consists of a number of private, public, and quasi-public entities, each of which had a specific role to play in ensuring the industry's safety and soundness. However, despite all these gatekeepers the industry collapsed in 2007, precipitating the greatest financial crisis since the 1930s. In the following section we will describe the major players and outline how their actions contributed to the crisis.

The Federal Government

“Governments and their central banks contributed to the boom by: 1) keeping interest rates too low for too long, allowing asset-price bubbles to build; 2) giving implicit guarantees to the banks and other borrowers; 3) failing in their functions of prudential [sic] supervision and financial market regulation; and 4) encouraging borrowing by those least able to afford it” (Simpson 2013).

The federal government contributed to the crisis in several ways. First, in an attempt to increase home ownership rates the federal government placed significant pressure on lenders to increase loans to riskier borrowers (Lederman and Reid 2008). Too many unqualified individuals were able to access initially low cost credit and take out mortgages on houses they could not afford. The federal government also implied that many large banks and quasi-governmental financial institutions (i.e., Fannie Mae and Freddie Mac) were “too big to fail.” These actions were essential precursors to the creation of the housing bubble.

The Federal Reserve Board

The Federal Reserve Board has a dual mandate to maintain price stability and promote full employment. Toward this end the Fed generally reduces interest rates during periods of weak economic growth to spur investment and increases rates during economic recoveries to control inflationary pressures. It is important for the Fed to carefully time these changes, however, for if rates are kept too low it can have deleterious consequences for many parts of the market, including the housing sector.

In 2000 the Fed lowered interest rates in order to help reduce unemployment resulting from the late 1990s dot-com bust and subsequent recession. Nevertheless, it appears that the Fed maintained low rates for too long after the economy recovered. Critics including the Wall Street Journal warned that maintaining artificially low rates was unwise, but policymakers appeared unwilling to “take away the punch bowl.”

The resulting “subsidy for debt” had numerous adverse consequences for the housing market. Lower interest rates directly reduce required interest payments. This makes debt cheaper and incentivizes lenders to find borrowers to use the money. When combined with government policy that explicitly favors more home lending such a rate environment will inevitably lead to suboptimal lending decisions.

FANNIE MAE and FREDDIE MAC

Fannie Mae was established in 1938 to encourage home building by providing federal money to home mortgage lenders and securitizing home mortgages. Freddie Mac was created in 1970 to expand this secondary loan market by further facilitating mortgage securitization. Both Freddie and Fannie were publicly traded government sponsored entities (“quasi-public entities”) whose principals directly benefited from a more robust home mortgage market and consequent increased securitization.

Typically lenders made home loans in their specific operating regions and held the loans to maturity. This tended to concentrate risk (particularly when the region's economy was weak) and inhibited the bank's ability to make new loans until the old was repaid. By packaging home mortgages into various securities and selling them to other parties the banks could diversify their risk and get their investment back quicker, thereby allowing them to make more loans.

Freddie and Fannie profited both from the securitization process itself and from an implicit government guarantee. Stakeholders correctly assumed that the federal government would not allow these quasi-public entities to collapse, so Fannie and Freddie could expand their profits by borrowing at the risk free rate and lending at the market rate. Since they did not hold the underlying mortgages they were insufficiently concerned with default risk, which gave them a powerful incentive to process as many home mortgages as possible, resulting in high reported net income for Freddie and Fannie (and lucrative bonuses for their top executives). Under such circumstances, these institutions not unsurprisingly lobbied Members of Congress to protect the status quo.

Commercial Bankers

Commercial banks throughout the country responded by lending to those who did not have adequate financial stability. Both lenders and borrowers appeared to believe that even if home owners were unable to pay off the mortgage they could sell the house at a profit because housing prices were consistently rising. This provided sufficient reason for many borrowers to secure a larger mortgage on a nicer house than they originally anticipated. The result was an explosion in home mortgage lending (Beachy 2013):

Average Yearly Mortgage Borrowing		
Years	Amount	% Increase
1993-1997	200 Billion	-
1998-2002	500 Billion	150%
2003-2006	1 Trillion	100%

Lenders apparently realized that increased lending exposed them to increased credit risk. To diversify this risk the banks created giant pools of mortgages called mortgage backed securities (MBS) and sold them to other specialized financial intermediaries (e.g., Fannie Mae, Freddie Mac, Merrill Lynch). By diversifying credit risk among many investors, each purchaser could theoretically take on more risk than could any individual lender. However, since commercial banks were now selling the loans they used to retain, they had less reason for concern about the quality of those mortgages. This encouraged lenders to use the proceeds from MBS sales to make more home mortgage loans, often to less credit worthy individuals.

By 2007 the once low risk home mortgage market had changed dramatically. In less than five years subprime and alt-A loans (also known as “liar loans” because income and assets did not need to be verified) made up over 37% of total home mortgage loans. This deterioration in loan quality can be seen in Table 1 below (Peach 2009):

Mortgage Originations by Loan Type (billions of dollars)

	2001-2003 Average	2004	2005	2006	2007	2008Q1	2008Q2	2008Q3
Conventional								
Conforming	1817	1210	1090	990	1149	326	295	167
percent	63.9	47.2	39.6	38.8	55.2	73.6	72.1	59.4
FHA/VA	190	130	90	80	120	47	71	90
percent	6.7	5.1	3.3	3.1	5.8	10.6	17.4	32.0
Jumbo	559	510	570	480	347	39	29	19
percent	19.7	19.9	20.7	18.8	16.7	8.8	7.1	6.8
Alt A	71	185	380	400	275	21	10	3
percent	2.5	7.2	13.8	15.7	13.2	4.7	2.4	1.1
Subprime	205	530	625	600	191	10	4	2
percent	7.2	20.7	22.7	23.5	9.2	2.3	1.0	0.7
Total	2842	2565	2755	2550	2082	443	409	281

Source: Inside Mortgage Finance

Credit Rating Agencies and Wall Street

In order for banks to sell off MBS required one of the three major rating agencies (S&P, Moody's, and Fitch) to give a credit rating to each product. Unfortunately there were two fundamental issues with the rating of these securities. First, there was very little transparency in terms of how the MBS was made and exactly what it consisted of. As a result, the ratings agencies did not completely understand the complexity of the instruments. Second, the financial incentives were not aligned with Wall Street's incentives. The banks that created the security out of the pool of mortgages were also the ones who paid the ratings agencies. If a particular rating agency did not give the required rating to the MBSs the bank could take its business to one of the other two agencies, resulting in a clear conflict of interest for the rating agencies.

Wall Street found that there was much money to be made from the creation of mortgage-backed securities, which increased demand for the underlying mortgages. This spike in demand trickled down through the entire MBS creation process: Banks issued as many mortgages as possible in order to make more mortgage pools, ratings agencies continued to issue ill-advised, optimistic credit assessments, and investment banks continued to buy and demand more MBSs. What was lost throughout this entire process was the actual contents of the MBS. The security was used primarily to facilitate the creation of profitable securities without regard for the quality of the underlying loans.

Mortgage Brokers

Mortgage brokers generally neither make nor hold home mortgages. Instead, they match borrowers with lenders. The broker's income derives from the fees generated by matching the counterparties, mortgage brokers have little incentive to ensure the loan can actually be repaid.

As credit standards deteriorated, the mortgage brokers actively marketed their services to an ever wider potential audience. The mortgages they originated provided the raw material for

the mortgage-backed securities being created by the investment banks. While the mortgage brokers facilitated many loans to poor credit risks, they were not concerned about repayment as the loans were purchased by the investment banks then pooled and sold to investors around the world. Thus, as long as the mortgage brokers were being encouraged to originate loans of suspect quality, they were pleased to do so and earn their fees.

Mortgage brokers were responsible for originating a substantial portion of all home mortgages, and an even greater percentage of subprime mortgage loans. By 2007, mortgage brokers were involved in about 58% of home loans, up from 40% a decade earlier. Their presence was even greater in the subprime market where they originated nearly 75% of the mortgages.

Much of the subprime market operated outside the traditional federal regulatory environment. Mortgage brokers were subject to fewer federal regulations and less federal oversight than other lenders (e.g., commercial banks). This contributed to a significant increase in mortgage loans to people who could not afford them, and sometimes involved predatory lending practices such as steering unsophisticated borrowers to more expensive subprime loans, hidden prepayment fees, or undisclosed future rate adjustments.

As the mortgage brokers' business model had fewer incentives (than commercial banks) to ensure loan quality, they became a major contributor to increased subprime lending. As credit standards deteriorated, the mortgage brokers actively marketed their services to less credit worth borrowers. The mortgages they originated provided the raw material for the array of mortgage-backed securities being created by the investment banks. In a classic example of moral hazard, mortgage brokers were being rewarded for facilitating bad loans by commercial banks.

Home Builders

Home builders contributed to the subprime crisis by helping to inflate the housing bubble until it eventually burst in 2007. Spurred in large part by the unprecedented access to cheap

mortgages, home prices grew rapidly from 1998 through 2006. From the third quarter of 2003 through the third quarter of 2005 housing prices increased by 3% every three months, finally peaking in 2006 at an average price (for new homes) of \$305,900 more than 180% of the price one decade earlier. (Beachy 2013)

Coinciding with this growth in home prices was a boom in housing construction. Builders and developers, speculating on continued growth in housing demand, built new subdivisions and condominiums before they had a buyer. Over two million new homes were constructed in 2005, far more than the historical average (Baker 2008). By 2006, the demand for new homes began to decline and the number of unoccupied new homes eventually hit record levels. This glut of new homes contributed to a steady drop in home prices and the deflation of the housing bubble. The drop in home prices led to a significant increase in mortgage defaults and foreclosures which ultimately triggered the subprime crisis.

Home Buyers

Many borrowers also had a role in creating the crisis. As lenders aggressively marketed mortgages with lower underwriting standards to borrowers with lower credit ratings, many home buyers responded by purchasing more expensive homes than they could afford. In many cases, homes were purchased with the expectation that rising real estate values would allow the homeowner to sell their property for more than what was owed and even capture a profit. In short, the home was an investment rather than a lifestyle decision.

It was not just new home buyers who were taking out new mortgages. Dramatic increases in home prices meant that existing homeowners often had significant equity in their property that could be borrowed against. Many borrowers saw this increased mortgage debt as a relatively cheap and safe way to tap into the equity and pay off more expensive consumer debt, make home improvements, or finance other lifestyle choices. Thus, from 2004-2008 over 58% of subprime loans were issued to refinance or improve existing homes rather than buy new ones (Gruenstein Bocian 2010).

The borrowers' strategy remained viable so long as they could afford the payments or home prices continued to increase. Once the housing bubble burst, however, things quickly deteriorated for aggressive borrowers. As home prices fell, homeowners' equity positions shrank and in some cases the homes became less valuable than the mortgages taken out against them. In areas where the housing prices fell the most, many borrowers were strapped with mortgages that were tens or even hundreds of thousands of dollars "under water." Not surprisingly, many homeowners decided that defaulting on the loan was less costly than continuing to make mortgage payments on a home with insurmountable negative equity. The resulting wave of foreclosures drove home prices down further, which caused more borrowers to default on their loans as well.

Increasing mortgage rates on adjustable rate mortgages forced lenders to record huge losses that inhibited their ability to make new loans, thereby further eroding the housing market by reducing the number of potential borrowers. Decreased lending by banks also effected both home builders who could not sell the homes they built on spec and other businesses that had their lines of credit rescinded. The resulting cash flow problems for businesses forced them to lay off employees who in turn could not make their mortgage payments, thereby creating a vicious cycle. Thus, some home owners' aggressive and reckless borrowing helped fuel the housing bubble and eventually trigger the subprime crisis.

Summary

The US housing market is a complex industry with a number of public, quasi-public and private entities all playing significant roles. The federal government has an interest in a strong economy and increased home ownership. The Federal Reserve Board's dual mandate is to ensure price stability with maximum employment, goals that are best achieved by a vibrant economy. Commercial banks profit from home mortgages made to responsible borrowers who pay their debts, and those borrowers only prosper if they can build equity in homes they can afford. Mortgage brokers are in business to bring these parties together, but they make no

money if the housing market collapses. Fannie Mae and Freddie Mac were established to securitize home mortgages. Both they and investment banks profit from a strong housing market and suffer losses when the underlying mortgages prove suspect. Finally, home builders prosper in a vibrant housing market but face ruin when that market collapses.

Each of the entities described above benefited from a strong housing market, and they each had both an incentive and a specific role in protecting the industry. However, for a variety of reasons each market participant abrogated their responsibilities in order to capture a short term gain. This led to a systemic breakdown in the housing market and a subsequent financial disaster. A brief description of this chain reaction is provided in the following section.

HOW EACH ELEMENT OF THE CONTROL ENVIRONMENT BROKE DOWN

Just as success has many fathers, so does epic failure. A financial crisis of this magnitude would not be possible without a chain of breakdowns at every level, in effect a series of “internal control failures” that taken together resulted in the current crisis. Flawed government policy and too low interest rates increased home mortgage riskiness and created a “subsidy for debt” that encouraged home mortgage securitization. This was spurred on by Fannie Mae and Freddy Mac, which leveraged their quasi-government guarantee to profit handsomely. As securitization increased and became more profitable, investment banks increased demand for “raw materials” (i.e., home mortgages), which in turn encouraged commercial banks and mortgage brokers to reduce underwriting standards.

As concern for safety and soundness waned it encouraged the development of exotic mortgage products for less credit worthy borrowers, which helped further spur demand for housing. Borrowers with poor credit ratings accepted the terms because they expected to profit from continuously rising home prices. The resulting increase in demand induced home builders to produce more homes “on spec” even as home prices continued to rise.

By 2007 the home mortgage market had become significantly riskier, which should have caused the credit rating agencies to downgrade the securitized mortgage products. However, a combination of ignorance, greed, and fear prevented this from happening before the bubble burst. Thus, the housing collapse was precipitated by a chain reaction of failures by the major players involved, as illustrated in Table 2 below:

The Chain of Events Leading to the Financial Crisis

- The federal government pressures lenders to expand home loans to riskier creditors.
- Lenders expand the use of securitization to diversify increased credit risk.
- Federal Reserve Board leaves rates too low for too long, creating a subsidy for debt.
- Wall Street realizes that enormous profits can be made from securitization and demand for more home mortgages increases.
- As Wall Street demand increases, commercial banks keep fewer home mortgages on their books and lending standards fall.
- Bearing no risk, mortgage brokers aggressively attract subprime borrowers, causing home mortgage loan quality to further decrease.
- Credit rating agencies continue to give AAA ratings to mortgage backed securities portfolios that have clearly declined in quality.
- Rapidly increasing home prices entice borrowers to take on excessive debt and home builders to build too many units “on spec.”
- When the bubble inevitably pops borrowers cannot repay their loans, home values plummet, and the scheme collapses.

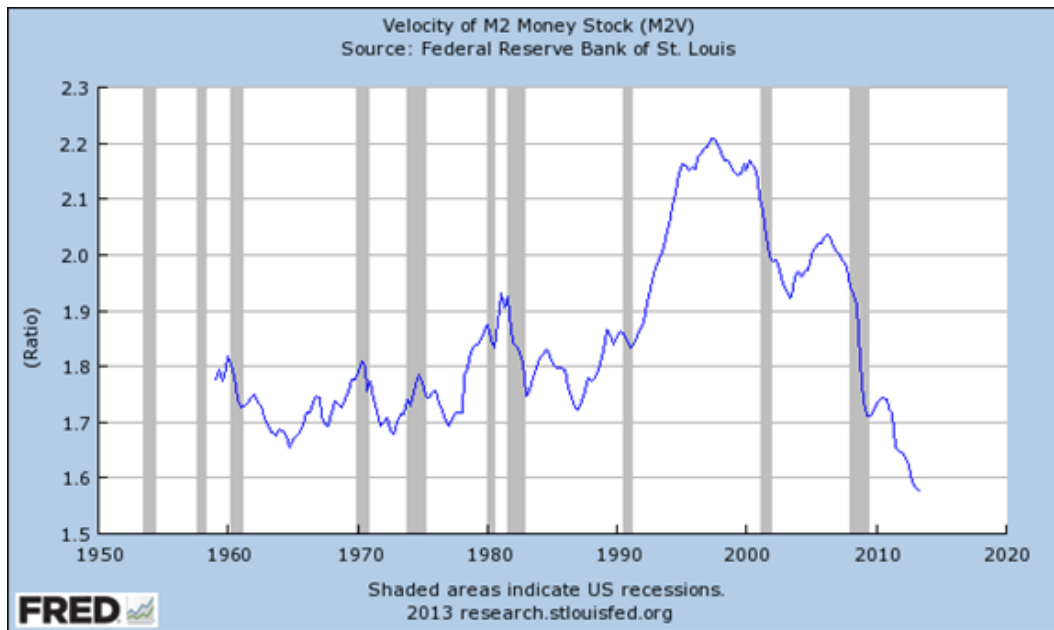
The Consequences

The collapse of the US housing market resulted in a continuing financial crisis. There have been enormous opportunity costs incurred vis-a-vis GDP differences, consumer wealth, job losses, and general national (and global) trauma. Although exact costs are not available, we will provide some examples that help to explain the severity of the crisis.

The amount of lost consumer wealth is staggering. From the third quarter 2007 to the first quarter of 2009, total US household net worth dropped \$16 trillion (24%). Additionally, since the recovery began in 2009 there has been decreased growth in nondurable goods and services relative to pre-crisis levels. Before the crisis, nondurable goods and services grew at 1.7% annually, but after 2009 they have only grown at 1.2%. If the growth differences are extrapolated, then economy is 8.4% below where it would have been had the financial crisis been averted (Atkinson et al 2013).

The US unemployment rate peaked at 10% during the financial crisis (Gallup 2013), and it has been estimated that rising unemployment resulted in \$900 billion dollars in lost earnings. While the unemployment has fallen to 6.9% as of September 2014, this decline is misleading. According to the Bureau of Labor Statistics, the labor participation rate has fallen to 62.7%, the lowest level since at least the 1970s (“Labor force statistics...” October 9, 2014). As the labor participation rate influences both the numerator and the denominator of the unemployment rate, a decline in the labor participation rate causes the unemployment rate to fall even as discouraged job seekers leave the work force. There is also the problem of underemployment, which is not included in the “headline” unemployment rate. The number of people with part time jobs who are seeking full time work has risen 94%, to 12 million people (Atkinson et al 2013).

A decreasing labor participation rate coupled with increased underemployment has had a significant effect on average Americans. Median annual household income has dropped 8.3% since the start of the recession (Hargreaves 2013) *and 5.6% since the official end of the recession in 2009* (Green and Coder 2013). This also has a predictable impact on the velocity of money, as seen in the chart below (Federal Reserve Bank of St. Louis 2013). Taken together, these facts illustrate a far weaker economic environment than the official unemployment rate would indicate.



SUMMARY AND CONCLUSIONS

Summary

As the US housing market is a highly complex enterprise, a financial crisis of this magnitude required each of the major “gatekeepers” to fail almost simultaneously. First, the federal government’s focus on increasing home ownership resulted in policies that encouraged home sales to people who could not afford them.¹ The Fed’s unusually low interest rate policy in the early 2000s created a “subsidy for debt” that further encouraged risky lending. The resulting increased credit risk caused lenders to securitize more home mortgages. This generated enormous profits for both investment banks and Freddie and Fannie, which in turn increased demand for more home mortgages to securitize. Eventually these mortgages were viewed as “raw materials” by both lenders (who off-loaded their risk via securitization) and investment banks, leading to lower underwriting standards. The resulting decline in loan quality was facilitated by mortgage brokers who bore little risk from the deals they arranged and credit rating agencies that failed to recognize fundamental changes in the home mortgage market.

¹ Market distortions driven by federal housing policy also played a significant role in the S&L Crisis of the 1980s. See Mitschow (1994) for more details.

As financing became more available demand for homes increased, leading home builders to dramatically increase construction. Nevertheless, increased demand caused prices to continue rising, which encourage subprime borrowers to pay more for homes in the belief that they could always sell at a higher price. This all contributed to a housing bubble that burst in 2007 with disastrous consequences.

By the time the market collapsed in 2007 securitized mortgage portfolios had spread throughout the world. Unfortunately, the complex packaging of these investment vehicles often made it impossible to identify who actually owned the defaulting mortgages. The resulting panic froze lending and greatly exacerbated the initially housing-driven recession by turning it into a global liquidity crisis. As lenders focused on debt load and quality they began to focus on the unsustainable deficit spending in many developed countries, which led to the sovereign debt crisis.

Limitations

The financial crisis will be analyzed for decades. Therefore, any “concise explanation” will have certain unavoidable limitations. First, it is not possible to provide either a detailed explanation of how each element in the housing market worked or examine all of the consequences for each player in the crisis. It is also impossible to analyze the policy steps taken by national governments and central banks or to propose alternative solutions. Finally, while we have provided a fairly extensive reading list for those who wish to further examine the issues, it is by no means exhaustive. Again, the need for brevity dictated by a “concise explanation” made such extensions impossible.

Future Research Opportunities

The size and scope of the financial crisis provides numerous future research opportunities. For example, each of the “gatekeepers” could be examined in greater detail regarding their proper functioning and role in the financial crisis. Future research could also analyze the impact of financial reforms (e.g., Dodd-Frank) on the players. Researchers can also assess the results of

national governments and central banks attempts to stem the crisis and restore prosperity (e.g., deficit spending, quantitative easing). Case studies could also be developed around any of the parameters described above, and educators could assign readings and term papers involving this material in a number of classes.

Conclusion

The US housing market is a highly complex industry involving an impressive array of governmental, private sector, and international participants. Over time a combination of public policy failures and private greed caused this industry to collapse, eventually resulting in the largest financial crisis since the Great Depression. The subprime crisis and the resulting recession destroyed \$16 trillion dollars in wealth and left millions of Americans un-or-under employed, and contributed to the sovereign debt crises of several European countries. While national governments and central banks have taken steps to control the disaster, it has not yet been resolved.

Like all Americans, students are directly affected by the financial crisis, and they will eventually be asked to pay for it in higher taxes, so it is important that they have some understanding of what happened. While many explanations for the crisis have been attempted, most of these are either overly simplistic or too complex to be presented to an audience of undergraduates. This manuscript has attempted to provide a concise overview of the major players in and causes of the financial crisis. Despite the shortcomings inherent in any such explanation, this manuscript should help educators teach their students about the crisis and provide numerous ideas for future research on the topic.

REFERENCES

- Atkinson, T., D. Luttrell, and H. Rosenblum (2013): "How Bad Was It: The Costs and Consequences of the 2007-09 Financial Crisis." *The Federal Reserve Bank of Dallas*. Dallas, TX (July).
- Beachy, B. (n.d.). A Financial Crisis Manual - Causes, Consequences, and Lessons of the Financial Crisis. *Tufts University*. Retrieved September 16, 2013, from <http://www.ase.tufts.edu/gdae/Pubs/wp/12-06BeachyFinancialCrisis.pdf>
- Christie, L. (2012): "Foreclosures fall to lowest level since 2007." *CNNMoney*. http://money.cnn.com/2012/01/12/real_estate/foreclosures/ January 12.
- Databases, Tables & Calculators by Subject. (n.d.). *Bureau of Labor Statistics Data*. Retrieved September 25, 2013, from <http://data.bls.gov/timeseries/LNS11300000>
- Durbin, T. (2013): "The Entire Housing Market in One Chart." <http://www.zerohedge.com/news/2013-06-05/one-chart-schematic-entire-us-housing-market> June 5.
- Federal Reserve Bank of St. Louis (2013): "Velocity of M2 Money Stock (M2V)." <http://research.stlouisfed.org/fred2/series/M2V?cid=32242> October 1.
- Five years after crisis, families are hoarding cash. (n.d.). *CNBC.com*. Retrieved October 10, 2013, from <http://www.cnbc.com/id/101089982>.
- Gallup Daily: U.S. Employment. (n.d.). *Gallup Daily: U.S. Employment*. Retrieved September 19, 2013, from <http://www.gallup.com/poll/125639/gallup-daily-workforce.aspx>
- Gallup (2012): "US Home Ownership Hits Decade Low." <http://www.gallup.com/poll/154124/u.s.-homeownership-hits-decade-low.aspx> April 26.
- Green, G. and J. Coder (2013): "Household Income Trends: February 2013." *Sentier Research*. http://www.sentierresearch.com/reports/Sentier_Household_Income_Trends_Report_February2013_03_25_13.pdf March 25.
- Hargreaves, S. (2013): "15% of Americans Living in Poverty." *CNNMoney*. <http://money.cnn.com/2013/09/17/news/economy/poverty-income/> September 17.
- Hellerstein, R. and P. Pesenti. "International Dimensions of the Crisis and Policy Responses." New York Fed Conference (January 13, 2010).

Isidore, C. (2011): "America's Lost Trillions." *CNNMoney*.
http://money.cnn.com/2011/06/09/news/economy/household_wealth/ June 9.

"Labor Force Statistics from the Current Population Survey." *Bureau of Labor Statistics*.
<http://data.bls.gov/timeseries/LNS11300000> October 9, 2014.

Lederman, E. and C. Reid: "Lending in Low and Moderate Income Neighborhoods in California: The Performance of CRA Lending During the Subprime Meltdown." Presented at the *Federal Reserve System Conference on Housing and Mortgage Markets* (December 4, 2008)

Lewis, M. *The Big Short: Inside the Doomsday Machine*. W.W. Norton and Co. New York (2010).

Mitschow, M. *Auditor Independence and the Savings and Loan Crisis: Two Research Essays*. UMI Dissertation Abstracts. Ann Arbor, MI (1994).

National Association of Home Builders (2012): "New and Existing Home Sales, US."
http://www.nahb.org/fileUpload_details.aspx?contentID=55761

_____ (2014): "Housing's Contribution to Gross Domestic Product (GDP)."
<http://www.nahb.org/generic.aspx?genericContentID=66226>

News, B. (2013, September 16). No Confidence in China Markets Inflates Housing Bubble. *Bloomberg.com*. Retrieved October 10, 2013, from <http://www.bloomberg.com/news/2013-09-15/no-confidence-in-china-markets-inflates-housing-bubble.html>

Peach, R.W. "The Recent Housing Cycle." *The Fed in the 21st Century Conference*. Federal Reserve Bank of New York (January 9, 2009).

Posner, R.A. *The Crisis of Capitalist Democracy*. Harvard University Press. Cambridge, MA (2010).

S&P/Experian Credit Default Indices. (n.d.). *HousingViews*. Retrieved October 10, 2013, from <http://www.housingviews.com/2011/11/18/second-consecutive-increase-in-first-mortgage-default-rates/>

Sherk, J. (2014): "Not Looking for Work: Why Labor Force Participation Has Fallen During the Recovery." *The Heritage Foundation*.
<http://www.heritage.org/research/reports/2014/09/not-looking-for-work-why-labor-force-participation-has-fallen-during-the-recovery> September 4.

Simpson, D. (n.d.). The Recession - Causes and Cures. *Adam Smith Institute*. Retrieved September 14, 2013, from <http://www.adamsmith.org/sites/default/files/images/stories/the-recession.pdf>

"The Financial Crisis: Five Years Later." *Executive Office of the President*. September, 2013.

Unemployment in the U.S.-Google Public Data Explorer. (n.d.). *Unemployment in the U.S.-Google Public Data Explorer*. Retrieved September 25, 2013, from http://www.google.com/publicdata/explore?ds=z1ebjpgk2654c1_&met_y=unemployment_rate&hl=en&dl=en&idim=country:US&fdim_y=seasonality:S

Additional Suggested Reading: Uncited References

The following references were not cited in this manuscript but may provide instructors with useful supplementary readings.

From *The Fed in the 21st Century Conference*. Federal Reserve Bank of New York (January 8-9, 2009)

Rosen, R.D.: "The Fed Response to the Subprime Crisis"

Federal Reserve Bank of New York: "Policy Responses to Financial Crisis: Lender of Last Resort Facilities."

Hirtle, B.: "Financial System Losses and the Capital Purchase Program"

Cetorelli, N.: "The Response of Banks to the Crisis."

Morgan, D.P.: "Alternatives Policy Responses to High Expected Foreclosures"

White, L.J.: "Capital, Leverage, and the Subprime Crisis" NOTE: White is NOT a Fed employee (he is N Professor)

Bech, M.L.: "The Roles and Behavior of Lenders of Last Resort in the U.S."

Stackhouse, J.L.: "Why is the Country Facing a Financial Crisis?"

From *The Fed in the 21st Century Conference*. Federal Reserve Bank of New York (January 13-14, 2010)

Hilton, S.: "Exit Strategies from Credit Easing"

Sbordone, A.M.: "The Federal Reserve and Monetary Policy."

Schuermann, T.: "Financial Market Stability and Systemic Risk."

Hrung, W.B.: "The Federal Reserve Balance Sheet."

Other Readings

<http://www.nytimes.com/library/financial/glossary/bfglosa.htm> An excellent glossary of business terminology.

<http://www.newyorkfed.org/> Huge amounts of information on the current financial crisis.

Boatright, J.R.: "Why Risk Management Failed: Ethical and Behavioral Aspects." Presented at the *20th Annual International Vinencian Business Ethics Conference*. Chicago (October 17-19, 2013)

Melloan, G.: "Fannie, Freddie and the Government's House of Cards." *The Wall Street Journal* (3/13/2013).

Anonymous. 2008. "Confessions of a Risk Manager: A Personal View of the Crisis." *Economist*, August 7.

Bernstein, Peter L. 1996a. "The New Religion of Risk Management." *Harvard Business Review* 74: 47–51.

Bernstein, Peter L. 1996b. *Against the Gods: The Remarkable Story of Risk*. New York: Wiley.

Bhidé, Amar. 2010a. *A Call for Judgment: Sensible Finance for a Dynamic Economy*. New York: Oxford University Press.

Bhidé, Amar. 2010b. "The Judgment Deficit." *Harvard Business Review*. September: 44-53.

Boatright, John R. 2010. *The Ethics of Risk Management in the Information Age*. Waltham, MA: Bentley University Center for Business Ethics.

Boatright, John R. 2011a. "The Ethics of Risk Management: A Post-Crisis Perspective." *Ethics and Values for the 21st Century*. Madrid: BBVA.

Boatright, John R. 2011b. "Risk Management and the Responsible Corporation: How Sweeping the Invisible Hand?" *Business and Society Review*, 116: 145-170.

Cassidy, John. 2010. "What's Wrong with Risk Models?" *New Yorker Blog*, April 27.

Daniélsson, Jón. 2002. "The Emperor Has No Clothes: Limits to Risk Modelling." *Journal of Banking and Finance*, 26: 1273–1296.

Daniélsson, Jón, Bjørn N. Jorgensen, Casper G. de Vries. 2002. "Incentives for Effective Risk Management." *Journal of Banking and Finance*, 26: 1407–1425.

Davis, Gerald F. 2009. *Managed by the Markets: How Finance Re-Shaped America*. New York: Oxford University Press.

- Douglas, Mary, and Aaron Wildavsky. 1982. *Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers*. Berkeley: University of California Press.
- Einhorn, David, and Aaron Brown. 2008. "Private Profits and Socialized Risk." *Global Association of Risk Professionals*, June-July, 10–26.
- Ferguson, Niall. 2008. "Wall Street Lays Another Egg." *Vanity Fair*, December.
- Hubbard, Douglas W. 2009. *The Failure of Risk Management: Why It's Broken and How to Fix It*. New York: Wiley.
- Jones, Sam. 2009. "The Formula that Felled Wall St." *FT Magazine*, April 24.
- Lewis, M. 2011. *The Big Short: Inside the Doomsday Machine*. W.W. Norton & Company. New York.
- Nocera, Joe. 2009. "Risk Management: What Led to the Financial Meltdown." *New York Times*, January 4.
- Pollock, Alex J. 2008. "The Human Foundations of Financial Risk." *American Enterprise Institute for Public Policy Research*, May.
- Power, Michael. 2004. *The Risk Management of Everything: Rethinking the Politics of Uncertainty*. London: Demos.
- Power, Michael. 2007. *Organized Uncertainty*. Oxford: Oxford University Press.
- Rajan, Raghuram G. 2010. *Fault Lines: How Hidden Fractures Still Threaten the World Economy*. Princeton, NJ: Princeton University Press.
- Rebonato, Ricardo. 2007. *The Plight of the Fortune Tellers: Why We Need to Manage Finance Risk Differently*. Princeton, NJ: Princeton University Press.
- Rogoff, Kenneth, and Carmen M. Reinhart. 2009. *This Time is Different: Eight Centuries of Financial Folly*. Princeton, NJ: Princeton University Press.
- Salmon, Felix. 2009. "Recipe for Disaster: The Formula that Killed Wall Street." *Wired Magazine*, February 23.
- Senior Supervisors Group. 2008. *Observations on Risk Management Practices during the Recent Market Turbulence*. Washington, DC: Securities and Exchange Commission.
- Storey, Louise. 2010. "Panel's Blunt Questions Put Goldman on Defensive," *New York Times*, April 27.
- Stulz, René M. 2008. "Risk Management Failures: What Are They and When Do They Happen." *Journal of Applied Corporate Finance*, 20: 58–67.

Taleb, Nassim. 2007. *The Black Swan: The Impact of the Highly Improbable*. New York: Random House.

Trevino, Linda, Gary R. Weaver, and Scott J. Reynolds. 2006. "Behavioral Ethics in Organizations: A Review." *Journal of Management* 32: 951-990.

THE IMPACT OF IFRS ADOPTION: A LITERATURE REVIEW

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THE IMPACT OF IFRS ADOPTION: A LITERATURE REVIEW

ABSTRACT

Globalization of capital markets has increased the need for harmonized accounting standards all over the world. Regulators believe that International Financial Reporting Standards (IFRS) developed by International Accounting Standards Board (IASB) provide harmonized financial statements. Although, a large number of empirical studies examined the aftermath of IFRS adoption, these studies were limited in scope. This paper reviews the extant literature, which deals with harmonization of accounting standards and presents the overall consequences of IFRS adoption. The paper then provides some future research options.

INTRODUCTION

As the world is moving towards globalization, capital markets are becoming more and more homogeneous. Roussey (1992), Wyatt and Yospe (1993), and Nobes and Parker (1995) suggest that capital market globalization has increased the foreign investors' need for information as well as their desire for harmonized financial reporting standards. In order to invest in foreign markets, investors need reliable and comparable information. Globalization has increased the demand for universal financial reporting standards among investors. Aitken and Wise (1984), Collins (1989), Moulin and Solomon (1989), and Radebaugh and Gray (1993) suggest that harmonization facilitates the development of world trade and international capital markets which in turn promotes the economic growth of countries. Regulators believe that International Financial Reporting Standards (IFRS) developed by International Accounting Standards Board (IASB) provide harmonization of accounting standards across countries. International Financial Reporting Standards (IFRS) has emerged as the dominant reference for financial reporting in most countries around the world, perhaps due to the influence of investors' demand, cost minimization in financial reporting, security listing requirements, foreign investments, free trade, and global competition (Nulla, 2014).

The underlying benefit of harmonization is to provide comparable and reliable statements to decision makers and investors all over the world. Since financial markets are moving towards

globalization, there is a definite need to develop uniform accounting standards that can benefit investors, accounting firms, multinational corporations (MNCs), and financial institutions. Zeghal and Mhedhbi (2006) suggest that the main factors behind the IFRS development include: (1) international accounting firms, (2) Multinational Corporations, (3) foreign investors, and (4) international financial institutions.

A number of studies examined the consequences of IFRS adoption. These early studies investigated the impact of International Accounting Standards (IAS) adoption on countries from particular regions (Africa (Larson, 1993) and Asia (Woolley, 1998)), or from a particular level of economic development (developing countries (Larson & Kenny, 1995)) (Zaidi & Huerta, 2014) and others were limited to voluntary and mandatory adoptions of IFRS. Zaidi and Huerta (2014) is the only country level study that examine the impact of IFRS adoption on the economic growth rate of adopting countries around the world regardless of their geographic location or development status. The main purpose of this paper is to review the extant international accounting literature and examine the consequences of IFRS adoption around the world.

The remainder of the paper is structured as follows. Section 2 provides brief history of IFRS. Section 3 discusses the importance of IFRS. Section 4 presents some benefits and drawbacks of IFRS adoption. Section 5 provides the impact of IFRS adoption on developing and developed countries. Section 6 discusses enforcement mechanism. Section 7 reviews extant international accounting literature and provides a summary and discussion of our findings. Section 8 concludes the paper and section 9 presents some ideas for future research.

A BRIEF HISTORY¹

International Financial Reporting Standards are a set of high quality, transparent, and comparable global accounting standards developed by International Accounting Standards Board (IASB), an independent standard-setting board. In order to develop these standards, IASB follows an international consultation process, a practice of involving interested individuals and

¹ <http://www.iasb.org/About+Us/International+Accounting+Standards+Board+-+About+Us.htm>

organizations from all over the world in the development of accounting rules. IASB has been developing these standards since 2001. Before the establishment of IASB, International Accounting Standards Committee (IASC) was responsible for developing the accounting rules between 1973 and 2000. The IASC developed regulations known as International Accounting Standards (IAS).² Since 2001, over 100 countries including all European Union (EU) member countries have either required or permitted IFRS. Many non-adopter countries are seeking convergence, a process of narrowing the differences between the country's accounting standards and IFRS. Some of them are pursuing IFRS adoption.

IMPORTANCE OF IFRS

Lee (1987) suggests that a well-developed accounting structure is required for the development of efficient capital markets. Efficient capital markets are the backbone of economic development of countries (Lee, 1987). Lee (1987) and Wallace (1990) suggest that accounting infrastructure directly relates to the economic growth of a country. Reliable financial information is the cornerstone of a robust market economy and efficient public sector (Birău, Birău, & Trivedi, 2014). Larson and Kenny (1996) suggest that IFRS provide accounting infrastructure that helps developing countries in promoting their economic growth by providing translucent accounting standards across countries. However, deficiency in accounting infrastructure leads to the emaciation of the market, which impedes the economic growth of a country (Lee, 1987). Adoption of well-developed accounting standards can meet a country's specific accounting needs. IFRS provide a coherent set of accounting standards and practices that help adoptees to improve both quality and credibility of accounting information. Extant literature suggests that IFRS improve disclosure and transparency of financial reporting. Moreover, IFRS not only enhance comparability and credibility of financial statements, but also reduce uncertainty and information asymmetry. Reduction in uncertainty and information asymmetry attracts more investors to the capital market, which in turn improves the market liquidity and increases the capital market efficiency. Efficient capital markets promote

² For consistency, we refer the terms IFRS and IASB throughout this paper to describe IAS and IASC respectively.

economic growth of countries (Lee 1987). Therefore, IFRS adoption leads to higher economic growth.

IFRS BENEFITS AND DRAWBACKS

This section discusses the benefits and drawbacks associated with the adoption of IFRS.

Benefits

Proponents of IFRS suggest that a single set of international standards such as IFRS promote economic development. The International Federation of Accountants (IFAC) has recently conducted a worldwide survey, which involved leaders of the accounting profession all over the world. The survey was designed to find leaders' perceptions about IFRS and the impact IFRS has on economic growth. Eighty-nine percent (143 leaders) of the respondents selected from 91 countries responded that the convergence to IFRS was either "very important" or "important" for their countries' economic growth (The CPA Letter, 2008). According to Ball (2006) and Choi and Meek (2005), IFRS has the potential to facilitate cross-border comparisons, increase reporting transparency, decrease information costs, reduce information asymmetry and thereby increase the liquidity, competitiveness, and efficiency of the markets (Nulla, 2014).

Moreover, IFRS provide reliable and comparable financial statements which help foreign investors and financial statement users in the decision making process. Adopting uniform standards such as IFRS eliminates informational externalities that arise from lack of comparability (Ball, 2006). In order to make investment decisions, foreign investors need accurate, timely, reliable, and comparable information. Ball (2006) suggests that IFRS reduce investors' cost of processing financial statement information by not only eliminating cross-border differences in accounting standards and standardizing reporting formats, but also providing comparable, accurate, comprehensive, and timely information. Reduction in cross-border differences in accounting standards helps investors in cross-border acquisitions and divestitures. Similarly, Jermakowicz and Gornik-Tomaszewski (2006) suggest that, by reducing differences in cross-border accounting, IFRS adoption reduces impediments in cross-border

trading. Tyrrall, Woodward, and Rakhimbekova (2007) report that most interviewees in their study believe that access to international funding is the major advantage of IFRS adoption.

Furthermore, IFRS promises increased transparency of financial statements. Increased transparency of financial statements reduces “agency costs between managers and shareholders,” and improves corporate governance (Ball, 2006). Reduction in agency costs benefits investors since managers will act in the interests of shareholders (Ball, 2006). In two surveys conducted by Jermakowicz (2004) in Belgium and Jermakowicz and Gornik-Tomaszewski (2006) in the European Union, most respondents believe that IFRS improve comparability and transparency of the financial statements. Improved quality, comparability, and transparency of financial statements lead to more efficient investment decisions, lower preparation cost, lower cost of capital, and increased market efficiency. Choi and Meek (2005) and Ball (2006) believe that IFRS has the potential to facilitate cross border comparability, increase reporting transparency, decrease information costs, reduce information asymmetry and thereby increase the liquidity, competition, and efficiency of markets. In addition, Ball (2006) notes that the fair value orientation of the IFRS could add volatility to the financial statements in the form of both good and bad information (Nulla, 2014).

IFRS are part of the accounting infrastructure that helps countries to promote their economic growth (Larson & Kenny, 1996). Researchers suggest that IFRS adoption improves the transparency and disclosure of financial statements (Leuz & Verrecchia, 2000; Ball, 2006; Lambert, Leuz, & Verrecchia, 2007; Barth, Landsman, & Lang, 2008). Improved transparency and disclosure should reduce uncertainty, agency cost, information asymmetry, cost of capital, and estimation risk, while enhancing credibility, comparability, accuracy, information quality, accounting quality, corporate governance, market liquidity, and capital market efficiency (Leuz & Verrecchia, 2000; Jermakowicz, 2004; Ball, 2006; Jermakowicz & Gornik-Tomaszewski, 2006; Lambert et al., 2007; Armstrong, Barth, Jagolinzer, & Riedl, 2008; Barth et al., 2008; Zaidi & Huerta 2014).

Most developing countries do not have local accounting standards or standard-setting bodies. Peasnell (1993) argues that it is very costly to develop accounting standards from scratch and most developing countries lack financial resources. Therefore, it will be a cost-saving strategy for developing countries to adopt IFRS. The major advantages of IFRS adoption include time savings, cost savings, and increased credibility of financial statements of listed companies (Mir & Rahaman, 2005). Larson and Kenny (1996) suggest that IFRS provide accounting infrastructure that could be helpful in economic development of developing countries.

Drawbacks

Opponents of IFRS argue that IFRS not only ignore cultural and country differences, but also categorize in the lowest acceptable levels of reporting (Samuels & Piper, 1985). Opponents believe that IFRS adoption negatively impacts economic development of developing countries due to their different accounting needs and the differences in their cultural, political, social, and economic environment from those of developed countries (Hove, 1989; Briston, 1990). Respondents of the survey believe that cultural and socio-economic differences between developing and developed countries make IFRS adoption unsuitable for developing countries (Mir & Rahaman, 2005).

Moreover, Jermakowicz (2004) and Jermakowicz and Gornik-Tomaszewski (2006) suggest that IFRS is a complex set of standards which is very costly to implement and transitioning from local standards to IFRS is a burdensome process. One of the biggest challenges in implementing IFRS is the sophisticated nature of its standards, which requires voluminous efforts to implement (Jermakowicz & Gornik-Tomaszewski, 2006). Similarly, Larson and Street (2004) suggest that the complicated nature of standards is one of the major barriers to IFRS convergence. Moreover, the two major hindrances in IFRS convergence include: (1) lack of guidance to implement them, and (2) differences in their interpretation (Jermakowicz, 2004; Jermakowicz & Gornik-Tomaszewski, 2006). In a survey performed by Jermakowicz and Gornik-Tomaszewski (2006), most respondents cite that the major challenges of IFRS adoption/conversion include

lack of education, lack of training, and lack of IFRS knowledge. Continuous training is required to learn more about such a complex set of standards.

Jermakowicz (2004) and Jermakowicz and Gornik-Tomaszewski (2006) find that the use of fair value approach to measure assets or liabilities is one of the major problems in conversion to IFRS. IFRS require the use of fair value accounting. In the reported values of both assets and earnings, the fair value approach brings increased volatility (Jermakowicz, 2004; Jermakowicz & Gornik-Tomaszewski, 2006). Jermakowicz (2004) argues that, in the movement towards fair value accounting, banks and insurance companies are two major institutions that experience significant problems. These industries are already highly regulated. Moreover, the transition process from local standards to IFRS is very costly. Different countries have different environmental influences causing deviation in the accounting standards. In order to eliminate those differences, tremendous amount of capital and resources are required (Jermakowicz & Gornik-Tomaszewski, 2006). Additionally, the move to fair value accounting makes accounting earning figures more volatile (Nulla, 2014). The survey also indicates that the use of fair values is the key challenge in IFRS adoption since it may increase the volatility in reported values of assets and earnings (Jermakowicz, 2004). Furthermore, the survey findings reveal that IFRS lack implementation guidance and are not only complex but also very costly to implement (Jermakowicz, 2004).

Furthermore, most respondents in the study conducted by Tyrrell et al. (2007) believe that difficulty in transition from local accounting system to IFRS is the major disadvantage of IFRS adoption. Mir and Rahaman (2005) suggest that IFRS are not the solution for developing countries' accounting problems. IFRS is not a "one-size-fits-all" solution. Effective implementation of IFRS in developing countries requires modification of standards or corporate laws (Mir & Rahaman, 2005).

DEVELOPING/DEVELOPED COUNTRIES

Decision makers and investors need reliable information in order to make optimal assessments. Developed countries include (in alphabetical order) : Australia, Austria, Belgium/Luxembourg, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, South Korea, Spain, Sweden, Switzerland, UK and USA (Birău et al., 2014). Developing countries lack reliable sources of information. Samuels and Piper (1985) suggest that adequate and reliable accounting information plays a crucial role in the economic growth of developing countries. Inappropriate or inadequate accounting systems may hamper economic growth (Lee, 1987). Financial statements are a critical source of information for the capital-market investors in both developing and developed countries (Zeghal & Mhedhbi, 2006). Moreover, Belkaoui (1988) suggests that IFRS facilitate economic growth. If a developing country adopts IFRS, arguably more reliable compared to the country's local standards or GAAP, the flow of foreign investment in a country will increase since international investors can have both comparable and reliable information available. Increase in foreign investment will promote economic growth. However, investors have to consider other factors before making their investment decisions since merely adopting IFRS does not increase the reliability. Larson and Kenny (1995) suggest that mere adoption of IFRS does not lead to greater equity market development and economic growth. Enforcement plays an important role in this regard. Enforcement is as crucial as standards themselves (La Porta, Lopez-De-Silanes, Schleifer, & Vishny, 1997). The reliability of financial statements can be doubtful with the adoption of IFRS when the enforcement mechanism is not active. Harmonization of accounting statements exists when enforcement mechanisms are active. Since accounting harmonization provides not only the better-quality standards but also the best quality accounting framework, it is beneficial for developing countries.

Furthermore, in order to increase their economic growth, developing countries need foreign investment inflow. To make investment decisions, foreign investors need reliable information, which IFRS provides. Therefore, a large number of developing countries have already adopted

IFRS. A majority of countries have adopted IFRS since they do not have their national standard-setting bodies (Chamisa, 2000). Lack of national standard-setting bodies in the developing countries is due to lack of financial and human resources and experience in developing their own standards (Chamisa, 2000). Similarly, Ball (2006) argues that developing accounting standards is costly. This process is long, tedious, and exhaustive.

Developed countries already have well developed accounting standards such as United States has U.S. GAAP (Generally Accepted Accounting Principles). Most developed countries follow U.S. GAAP or derive their standards from U.S. GAAP. Hove (1989) and Nobes and Parker (1991) find many similarities between IFRS and U.S. and U.K. GAAP. Similarly, Mir and Rahaman (2005) argue that most IFRS are “carbon copies” of either U.S. or U.K. GAAP. The authors argue that predominant Anglo-American had a tremendous influence in the development of IFRS. Hoarau (1995) also suggest that the U.S. accounting standards influences IFRS. Based on these findings, we concluded that developed countries have an advantage over developing countries in adopting or adapting IFRS due to similarities between IFRS and their local standards. Therefore, it is less costly for developed countries to transition from their local accounting standards to IFRS. Larson (1993) suggests that for countries that follow U.S. or U.K. accounting standards, transition from their local standards to IFRS is less burdensome process since they have a higher base of expertise. Even though IFRS are costly to implement, unlike developing countries, developed countries do not lack financial resources albeit limited as all others.

ENFORCEMENT

Ball (2006) argues that IASB can persuade individual companies or countries to adopt IFRS but cannot enforce its standards. IASB is a standard-setter, which lacks enforcement mechanism (Ball, 2006). Similarly, Soderstrom and Sun (2007) argue that although IASB issues IFRS, it does not have a power to enforce these standards. Only security exchanges and the courts of the firms’ country have power to enforce the standards (Soderstrom & Sun, 2007). IASB has no authority to penalize any country or a company in the situations where managers, auditors, or regulators are unable to implement IFRS completely (Ball, 2006). Based on low quality, IASB has

not yet disallowed any company or a country to use its “brand name” which has increased the risk of using its “brand name” inappropriately (Ball, 2006). International Organization of Securities Commissions (IOSCO), which not only develops but also promotes security regulation standards, persuades member countries towards IFRS adoption; however, it also lacks enforcement authority (Ball, 2006). Moreover, Ball (2006) suggests that countries’ political and economic factors have a significant impact on its financial reporting practices. The author warns against drawing inferences from IFRS adoption without proper enforcement. The main problem in adopting and implementing IFRS consists of the activity of ensuring the effective and sustained implementation of the standards (Birău et al., 2014).

La Porta et al. (1997) suggest that enforcement of standards is as crucial as standards themselves. Better enforcement of standards directs positive changes in the financial statements. Application of proper enforcement mechanism will enhance the quality of IFRS worldwide. Ashraf and Ghani (2005) argue that Pakistan’s adoption of IFRS standards in 1985 has not improved financial reporting quality in the country. They conclude that enforcement mechanisms, not just mere adoption, play a crucial role in improving financial reporting quality (Ashraf & Ghani, 2005). Similarly, Mir and Rahaman (2005) suggest that enforcement mechanisms as well as auditing functions, and disciplinary procedures for non-compliance would influence the adoption and implementation of IFRS. Daske, Hail, Leuz, & Verdi, (2008) suggest that only countries with strict enforcement mechanisms and institutional environment, which promotes transparency, experience capital market benefits. Country’s legal system plays a crucial role in accounting quality improvement after IFRS adoption (Soderstrom & Sun, 2007).

LITERATURE REVIEW

Whether IFRS adoption has a positive impact on a country’s economic growth or not has been a topic of constant debate among academic researchers, accounting professionals, and regulatory authorities. Several studies explore arguments for and against IFRS adoption and their impact on economic growth of adopting countries; however, limited empirical research remains in the area to prove a particular point of view. Most research conducted in this area is

limited in scope. For example, some studies were limited to developing countries while others were limited to particular geographical regions, such as Africa and Asia (Zaidi & Huerta, 2014). Generalization of results is inhibited, since these studies concentrate on a particular region or a group of countries.

Economic Growth

Larson (1993) conducts a cross-sectional empirical study in African countries to determine whether the economic growth rates of countries that adopt IFRS differ from those of non-adopter countries. Although, several studies have been conducted in the past and many arguments have been made “both for higher and lower economic growth to be associated with” the adoption of IFRS, no empirical research has been conducted to test whether IFRS adoption has a positive or negative impact on the economic growth of a country (Larson, 1993, p.39). Larson (1993) fills this vacuum in literature by empirically testing the arguments previously made in descriptive papers without supporting results. The results confirm that countries that adapt IFRS with the adjustments to meet local environmental factors experience better economic growth than countries that either adopt them without adjustments or do not adopt them at all.

Larson and Kenny (1995) conduct an empirical study in 27 developing countries with equity markets to determine the effects of IFRS adoption on equity market development and economic growth. Extending Larson’s (1993) prior research, Larson and Kenny (1995) examine the effect of IFRS adoption on equity market development in addition to economic growth. The authors find no major association between IFRS adoption and equity market development or economic growth of developing countries. Their findings suggest that, compared to non-adopter countries, IFRS adopter countries have lower equity market development and economic growth. Larson and Kenny (1995) further suggest that any conclusion drawn based on these results would be premature without further research to explore the other factors that could play crucial roles in equity market development and economic growth of a country.

Similarly, Samuels and Piper (1985) and Hove (1989) do not find any benefits from IFRS adoption in developing countries.

According to Zeghal and Mhedhbi (2006), Woolley (1998) examines the differences in economic growth rates between IFRS adoptee and non-adoptee Asian countries. However, Woolley (1998) finds no significant differences in the economic growth rates of adoptee and non-adoptee countries (Cited in Zeghal & Mhedhbi, 2006). The results from Woolley (1998) cannot be generalized since they are based on a study conducted in a particular continent.

Zaidi and Huerta (2014) examine the impact of IFRS adoption on the economic growth rate “of the adopting countries taking into consideration the level of enforcement of the adopting countries” (p.1). Their study was different from previous country level studies in two ways. First, their sample includes countries from all over the world regardless of their geographical location and development status. Second, they include level of enforcement as a moderator variable. The authors hypothesize that there is a positive relationship between IFRS adoption and the economic growth rate of a country when enforcement level is high. The authors use several statistical procedures and models to estimate regression; however, they find partial support for their hypotheses. Some models confirm a positive relationship between IFRS adoption and the economic growth rate of a country when enforcement level is high while the others show no relationship.

In summary, Larson (1993) conducts first empirical research to examine the impact of IFRS adoption or adaption on the economic growth of African countries. Although the results show positive relationship between IFRS adaption and the economic growth of adapting countries, these findings cannot be generalized since this study was limited to a particular continent. Larson and Kenny (1995) extend Larson’s (1993) research to examine the impact of IFRS adoption on equity market development and economic growth of developing countries. This research is different from Larson’s (1993) study in two ways. First, in addition to economic growth, this study examines the impact of IFRS adoption on equity market development.

Second, the sample taken for this study is not limited to a particular continent. Findings from both studies are surprisingly different. Larson and Kenny (1995) finds negative relation between IFRS adoption and equity market development or economic growth of developing countries. Similar to Larson's (1993) research, Woolley (1998) conduct a study focusing only Asian countries. However, Woolley's (1998) finds no relationship between IFRS adoption and economic growth. Zaidi and Huerta (2014) extend their sample size and include countries from all over the world. They also include enforcement as a moderator variable. However, they find partial support for their hypotheses. Some models confirm a positive relationship between IFRS adoption and economic growth rates of adopting countries.

Harmonization

Jermakowicz (2004) investigates the impact of IFRS adoption on BEL-20 companies (publicly traded companies) in Belgium and their internal organization and finance strategies. The author finds that harmonization of both internal as well as external reporting across the firms is the major benefit of adopting IFRS. The survey results suggest that IFRS provide superior information, which not only meets stockholders' expectations but also helps management in making strategic decisions. Moreover, the results suggest that IFRS adoption enhances transparency of financial statements and increases the comparability of consolidated accounts for many companies. However, strong enforcement of IFRS attains comparability of financial statements across the European Union. The survey results further reveal that IFRS has a positive impact on competitiveness and the growth of European companies.

Murphy (2000) investigates the effect of IFRS adoption on harmonization of accounting practices of firms. Murphy's (2000) study is different from prior research since this is the first study on a firm level to examine the impact of IFRS adoption on harmonization level among firms. The author does not find any strong evidence, which suggests IFRS adoption leads to increased harmonization. Jermakowicz (2004) conducts a similar study in Belgium. However, contrary to Murphy's (2000) findings, Jermakowicz (2004) finds increased harmonization after IFRS adoption.

In summation, Jermakowicz (2004) examines the impact of IFRS adoption on BEL-20 companies. The author finds that IFRS adoption leads to harmonization of both internal and external reporting across the firm. The authors find that IFRS provide superior information, which enhances transparency of financial statements and increases the comparability of consolidated accounts for many companies. Murphy (2000) examines the effect of IFRS adoption on the harmonization of accounting practices of firms. Murphy's study is different from prior studies in that no such study has been conducted in the past, which investigates the impact of firms' IFRS adoption on harmonization level among firms (Murphy, 2000). The results indicate increased level of harmonization; however, Murphy (2000) does not find any strong evidence that supports the conjecture that the increased harmonization was due to IFRS adoption.

Earnings

Jong, Rosellon, and Verwijmeren (2006) empirically examine the impact of IFRS regulation 32 on preferred stocks in the Netherlands. This is the first study of its kind that tests the consequences of a particular IFRS regulation instead of the impact of overall IFRS adoption. The authors argue that the IFRS consequences are not limited to financial statements rather they have some significant economic consequences as well. The authors conclude that IFRS cause firms to change their capital structure by reducing their capital structure diversity.

Gassen and Sellhorn (2006) conduct an empirical study to examine the determinants and consequences of IFRS adoption in Germany. The authors first analyze the determinants of voluntary IFRS adoption and then they investigate whether there are any differences in the earnings quality and information asymmetry between IFRS and German-GAAP firms. While analyzing the determinants, Gassen and Sellhorn (2006) find that four important drivers (firm size, international exposure, dispersion of ownership, and recent IPOs) influence voluntary adoption of IFRS. Finding the differences in earnings quality of IFRS and German-GAAP firms, the authors suggest that IFRS firms have higher quality earnings compared to German-GAAP firms. Their findings suggest that firms that adopt IFRS not only have more persistent and less

predictable earnings, they have more conditionally conservative earnings. Moreover, their findings show a lower level of information asymmetry in IFRS adopters compared to German-GAAP firms. These results show that IFRS adopters experience a decline in bid-ask spread on one hand and higher level of volatility in stock prices on the other hand.

Stenka and Ormrod (2007) investigate how IFRS adoption influences listed firms' reported net profit and equity. The authors try to fill the vacuum in international accounting literature by focusing on group accounting issues, whereas most extant research focuses on broad issues such as comparing countries' accounting practices with IFRS procedures. The authors find a negative impact of IFRS adoption on firms' earnings. Their findings highlight large differences between IFRS and UK GAAP earnings in the goodwill treatment. IFRS adoption increases the combined value relevance of the book value and earnings in particular. Outcomes of relative value relevance analysis highlight that earnings markedly improve their ability to explain stock prices in the post-adoption period compared to the pre-adoption one (Nulla, 2014).

In synopsis, Jong et al. (2006) examine the impact of IFRS regulation 32 on preferred stocks in Netherlands. This study is different from prior research in that it examines the impact of a particular IFRS regulation, whereas most prior research has examined the impact of overall IFRS adoption. Jong et al. (2006) find that IFRS regulation 32 causes firms to modify their capital structure but does not affect firms' net earnings. Gassen and Sellhorn (2006) conduct a similar study in Germany but find contrasting results. The authors find an increase in the earnings quality of IFRS adoptee firms. Their findings also show lower information asymmetry after IFRS adoption. In contrast to Jong et al. (2006) and Gassen and Sellhorn's (2006) findings, Stenka and Ormrod (2007) find negative impact of IFRS adoption on firms' earnings.

Cost of Capital

Daske (2006) study in Germany examines the effect of adopting internationally recognized standards (i.e., IFRS or US-GAAP) on cost of equity capital of adoptee firms. Due to the presence of the highest number of IFRS adoptee firms, Daske (2006) chooses Germany for this empirical

research. The study examines a large sample of German firms that pre-adopted mandatory IFRS. The author finds no evidence that supports adoption of IFRS reduces the cost of equity capital of adopting firms. In fact, the author finds an increase in the cost of equity capital for firms that adopt either IFRS or US-GAAP.

Christensen, Lee, and Walker (2007) conduct a firm-based study to investigate the economic consequences of mandatory IFRS adoption in the UK. The purpose of their study is twofold: (1) to examine the price response to IFRS adoption news in the short-term, and (2) to find the changes in implied cost of equity of UK firms “between a date before the mandatory adoption was expected and a date by which mandatory adoption effectively certain” (Christensen et al., 2007, p.342). The authors find that the costs and benefits associated with IFRS adoption are not uniform across firms. The authors find no consistent evidence that suggests whether mandatory IFRS adoption is associated with an increase or decrease in the cost of capital. Benefits associated with the mandatory adoption of IFRS depend on firm-specific characteristics. The authors find positive relation between stock-price reaction and firms’ willingness to adopt IFRS and negative reaction between implied cost of equity and firms’ willingness to adopt IFRS.

Daske et al. (2008) examine the relationship between mandatory adopters and economic consequences in adopting countries. The authors use firm-year panel regression to analyze the effects of mandatory IFRS adoption on stock market liquidity, cost of equity capital, and equity valuations. They also conduct country-month liquidity analysis. Their results show a significant increase in the market liquidity and a decrease in firms’ cost of capital of mandatory adopters after adopting IFRS. Moreover, their findings suggest that the magnitude of benefits of IFRS adoption is higher for voluntary adopters than for mandatory adopters. The authors find that only countries, whether voluntary or early adopters, that have strict enforcement mechanisms and “countries where the institutional environment provides strong incentives to firms to be transparent” experience capital-market benefits (Daske et al., 2008, p.1089).

Daske, hai, Leuz, and Verdi (2013) empirically investigate the economic consequences of voluntary IFRS adoptions around the world. Since firms vary in their reporting as well as disclosure policies, economic consequences of voluntary IFRS adoptions show significant heterogeneity. In order to explain the heterogeneity in economic consequences of IFRS adoption, the authors split firms into two groups: (1) “label” adopters, firms that adopt the standards to get IFRS brand name and (2) “serious” adopters, firms that adopt the standards as a serious commitment to transparency. The authors hypothesize that the economic consequences of IFRS adoption differs between “label” adopters and “serious” adopters. Leuz and Verrecchia (2000) and Lambert et al. (2007) suggest that adopting IFRS seriously increases transparency and reduces uncertainty, information asymmetry, and estimation risk which in turn lead to higher market liquidity and lower cost of capital. Daske et al. (2013) find that compared to “serious” adopters, “label” adopters experience weaker effects on both the cost of capital as well as the market liquidity. In other words, the authors find large decline in the cost of capital of “serious” adopters compared to “label” adopters. The authors find a positive relationship between “serious” adoptions and cost of capital and between serious adoptions and market liquidity.

To summarize, Daske (2006) examines the impact of IFRS adoption and the firms’ cost of equity in Germany. The author finds negative relation between firms’ cost of capital and IFRS adoption. Christensen et al. (2007) conduct a similar study but on mandatory adopters. However, the authors find no consistent evidence that supports a positive or negative relationship between IFRS adoption and firms’ cost of capital. Daske et al. (2008) conduct a study similar to that of Christensen et al. (2007) to examine the relationship between mandatory adopters and cost of capital. However, Daske et al. (2008) discover contradictory findings. The authors find positive relationship between IFRS adoption and firms’ cost of capital. Daske et al. (2013) conduct a similar study but on voluntary adopters. The authors find a positive relationship between voluntary adopters and cost of capital.

Accounting Quality

Soderstrom and Sun (2007) review the extant accounting literature and discuss the impact of widespread IFRS adoption on accounting quality of the European Union. Most studies conducted before Soderstrom and Sun (2007) examine either the economic consequences or market reactions to IFRS adoption. Soderstrom and Sun's (2007) study is different from others' in that it examines the impact of IFRS adoption on accounting quality, which is the basis for economic growth of countries. Their findings suggest that voluntary adoption of IFRS (having more transparent and global accounting principles) has a positive impact on country's accounting quality. The authors suggest that their findings cannot be generalized to mandatory IFRS adoption in the European Union setting since their findings are based on voluntary IFRS adoption. They argue that the quality of accounting standards, legal and political systems of a country, and incentives of financial reporting are three major factors that play a crucial role in enhancing the accounting quality of a country after IFRS adoption. Overall, their findings suggest that accounting quality of IFRS adopting countries differs due to cross-country differences in firms' institutional settings as well as countries' legal and political system.

Barth et al. (2008) conduct an empirical study to examine the association of IFRS application with accounting quality. This study is similar to Soderstrom and Sun's (2007) study in that both examine the accounting quality after IFRS adoption. However, Soderstrom and Sun's (2007) study is limited to European Union whereas Barth et al. (2008) use countries across the world. The authors examine whether the application of IFRS enhances the accounting quality or not. The authors measure accounting quality using earnings management, timely loss recognition, and value relevance metrics with a sample of firms from 21 countries (Barth et al., 2008). Their findings suggest that firms that apply IFRS exhibit not only less earnings smoothing and less earnings management, but also more timely loss recognition as well as higher value relevance of accounting amounts. Furthermore, their results show that, compared to non-adopting firms, firms that adopt IFRS exhibit higher accounting quality. The accounting quality of IFRS adopting firms improves between the pre-adoption and post-adoption period. Overall, the results suggest that application of IFRS is associated with improved accounting quality.

In closing, Soderstrom and Sun (2007) examine the impact of IFRS adoption on accounting quality of the European Union. The authors do not find any consistent results across different countries. Barth et al. (2008) conduct a similar study to examine the relationship between IFRS adoption and accounting quality. However, contrary to Soderstrom and Sun's (2007) findings, Barth et al. (2008) find positive relationship between IFRS adoption and accounting quality.

CONCLUSION

Globalization of capital markets has increased the investors' demand for harmonized financial statements across the world. In order to invest in foreign markets, investors need reliable and comparable information. Harmonization of financial statements is helpful in promoting economic growth of a country. The goal of harmonization is to provide comparable and reliable statements to decision makers and investors across the world. Regulators believe that International Financial Reporting Standards (IFRS) developed by International Accounting Standards Board (IASB) provide harmonization of accounting standards. A large number of studies investigate the consequences of IFRS adoption with limited scope. Some studies were limited to certain geographic regions such as Asia, Africa, or Europe, some were limited to certain group of countries such as developing or developed nations, and others were limited to voluntary or mandatory IFRS adoptee countries. This paper reviews the extant literature and examines the consequences of IFRS adoption all over the world regardless of countries' geographic region or group.

FUTURE RESEARCH

We compile findings of previous studies to direct future research. Several studies note IFRS adoption and their economic consequences on both developing and developed countries; however, limited empirical research is conducted. Some studies focus on a particular continent, such as African countries (Larson, (1993) and Asian countries (Woolley, 1998), other studies observe a particular group of countries (developing or developed) such as Larson and Kenny's (1995) study on developing nations, and some other focus on voluntary or mandatory IFRS

adoption such as Christensen et al. (2007), Daske et al. (2008), and Daske et al. (2013). However, Zaidi and Huerta (2014) is the only study that examines the worldwide impact of IFRS adoption on the economic growth of countries regardless of their region or group. However, due to mixed findings, we cannot generalize their results. One reason of mixed findings is the lack of available data. Future research may be conducted by increasing sample size and by including more data.

Moreover, most of the studies that examine the impact of IFRS adoption on the economic growth of a country fail to consider other factors such as level of enforcement and level of compliance with IFRS, which can have a tremendous impact on the economic growth of adopting countries. Zaidi and Huerta (2014) use level of enforcement as a moderator variable; however, level of enforcement is the general level of law and enforcement in a country measured by rule of law. It does not measure the country's level of compliance with IFRS. There is no compliance index available at this time. Therefore, future research may include level of compliance with IFRS, once it is available, as a moderator variable. Additionally, some other factors play crucial roles in the economic growth of a country. These factors include corporate governance, economic status, existence of capital market, composition of workforce, and tax status of a country, to name a few. Future research may be conducted by including some or all of the missing variables as control variables.

A large number of studies test the economic consequences of IFRS adoption on African, Asian and European countries. However, we do not find any empirical study that examined the consequences of IFRS adoption on Middle Eastern countries. Middle Eastern countries are full of natural resources such as gasoline and gold. A large number of countries depend on gasoline supply from Middle East. In addition, the oil industry has more complex and specialized accounting standards. Due to their large oil exports, some Middle Eastern countries like Kuwait and Saudi Arabia has very high and positive balance of trade. IFRS adoption can have a significant impact on the accounting numbers of oil and gold producing countries in that region particularly since the oil industry mandates more complex accounting standards. Future

research can be conducted in Middle Eastern countries due to their extra-ordinary supply of natural resources and dissemination of those resources all over the world. These are just a few unexplored areas. We look forward to these future studies.

REFERENCES

- Aitken, M. J., & Wise, T. D. (1984). The real objective of the International Accounting Standards Committee. *International Journal of Accounting Education and Research*, 171-178.
- Armstrong, C. S., Barth, M. E., Jagolinzer, A. D., & Riedl, E. J. (2008). Market Reaction to the Adoption of IFRS in Europe. *Working Paper, University of Pennsylvania*.
- Ashraf, J., & Ghani, W. I. (2005). Accounting development in Pakistan. *The International Journal of Accounting*, 40, 175-201.
- Ball, R. (2006). International Financial Reporting Standards (IFRS): pros and cons for investors. *Accounting and Business Research*, 36, 5-27.
- Barth, M. E., Landsman, W. R., & Lang, M. H. (2008). International Accounting Standards and Accounting Quality. *Journal of Accounting Research*, 46(3), 467-498.
- Belkaoui, A. (1988). *The New Environment in International Accounting: Issues and Practices*. Westport: Quorum Books.
- Birău, R., Birău, G., & Trivedi, J. (2014). The Economic Consequences of IFRS Adoption in the Latin American Countries. *International Journal of Business Quantitative Economics and Applied Management Research*, 1-11.
- Briston, R. J. (1990). Accounting in Developing Countries: Indonesia and the Solomon Islands as Case Studies for Regional Cooperation. *Research in Third World Accounting*, 1, 195-216.
- Chamisa, E. E. (2000). The Relevance and Observance of the IASC Standards in Developing Countries and the Particular Case of Zimbabwe. *The International Journal of Accounting*, 35(2), 267-286.
- Choi, F., & Meek, G. K. (2005). *International Accounting*. New Jersey: Prentice-Hall.
- Christensen, H. B., Lee, E., & Walker, M. (2007). Cross-sectional variation in the economic consequences of international accounting harmonization: The case of mandatory IFRS adoption in the UK. *The International Journal of Accounting*, 42, 341-379.
- Collins, S. H. (1989). The move to globalization: Is a common international accounting language feasible? *Journal of Accountancy*, 82-85.
- Daske, H. (2006, April/May). Economic Benefits of Adopting IFRS or US-GAAP - Have the Expected Cost of Equity Capital Really Decreased? *Journal of Business Finance & Accounting*, 33(3 & 4), 329-373.

- Daske, H., Hail, L., Leuz, C., & Verdi, R. (2008). Mandatory IFRS Reporting Around the World: Early Evidence on the Economic Consequences. *Journal of Accounting Research*, 46, 1085-1142.
- Daske, H., Hail, L., Leuz, C., & Verdi, R. (2013). Adopting a Label: Heterogeneity in the Economic Consequences Around IAS/IFRS Adoptions. *Journal of Accounting Research*, 51(3), 495-547.
- Gassen, J., & Sellhorn, T. (2006). Applying IFRS in Germany - Determinants and Consequences. *Betriebswirtschaftliche Forschung und Praxis*, 58(4), 365-386.
- Hoarau, C. (1995). International Accounting Harmonization: American Hegemony or Mutual Recognition with Benchmarks? *The European Accounting Review*, 4(2), 217-233.
- Hove, M. R. (1989). The Inappropriateness of International Accounting Standards in Less Developed Countries: The Case of International Accounting Standard Number 24 - Related Party Disclosures - Concerning Transfer Pricing. *International Journal of Accounting*, 24, 165-179.
- Jermakowicz, E. K. (2004). Effects of Adoption of International Financial Reporting Standards in Belgium: The Evidence from BEL-20 Companies. *Accounting in Europe*, 1, 51-70.
- Jermakowicz, E. K., & Gornik-Tomaszewski, S. (2006). Implementing IFRS from the perspective of EU publicly traded companies. *Journal of International Accounting, Auditing and Taxation*, 15, 170-196.
- Jong, A. D., Rosellon, M., & Verwijmeren, P. (2006). The Economic Consequences of IFRS: The Impact of IAS 32 on Preference Shares in the Netherlands. *Accounting in Europe*, 3, 169-185.
- La Porta, R., Lopez-De-Silanes, F., Schleifer, A., & Vishny, R. W. (1997). Legal Determinants of External Finance. *Journal of Finance*, LII(3), 1131-1150.
- Lambert, R., Leuz, C., & Verrecchia, R. E. (2007). Accounting Information, Disclosure, and the Cost of Capital. *Journal of Accounting Research*, 45(2), 385-420.
- Larson, R. K. (1993). International Accounting Standards and Economic Growth: An Empirical Investigation of their Relationship in Africa. *Research in Third World Accounting*, 2, 27-43.
- Larson, R. K., & Kenny, S. Y. (1995). An Empirical Analysis of International Accounting Standards, Equity Markets, and Economic Growth in Developing Countries. *Journal of International Financial Management and Accounting*, 6(2), 130-157.

- Larson, R. K., & Kenny, S. Y. (1996). Accounting Standard-Setting Strategies and Theories of Economic Development: Implications for the Adoption of International Accounting Standards. *Advances in International Accounting*, 9, 1-20.
- Larson, R. K., & Street, D. L. (2004). Convergence with IFRS in an Expanding Europe: Progress and Obstacles Identified by Large Accounting Firms' Survey. *Journal of International Accounting, Auditing and Taxation*, 13, 89-119.
- Lee, C. W. (1987). Accounting Infrastructure and Economic Development. *Journal of Accounting and Public Policy*, 6, 75-85.
- Lee, C.-W. J. (1987). Accounting Infrastructure and Economic Development. *Journal of Accounting and Public Policy*, 6, 75-85.
- Leuz, C., & Verrecchia, R. E. (2000). The Economic Consequences of Increased Disclosure. *Journal of Accounting Research*, 38, 91-124.
- Mir, M. Z., & Rahaman, A. S. (2005). The adoption of international accounting standards in Bangladesh. *Accounting, Auditing & Accountability Journal*, 18, 816-841.
- Moulin, D. J., & Solomon, M. B. (1989). Practical means of promoting common international standards. *CPA Journal*, 38-48.
- Murphy, A. B. (2000). The Impact of Adopting International Accounting Standards on the Harmonization of Accounting Practices. *The International Journal of Accounting*, 35(4), 471-493.
- Nobes, C. W., & Parker, R. (1991). *Comparative International Accounting* (4th ed.). London: Prentice-Hall.
- Nulla, Y. M. (2014). IFRS Impact on Accounting Quality in Telecommunications Industry. *Working Paper SSRN*.
- Peasnell, K. (1993). Accounting in Developing Countries: A Search for Appropriate Technologies. *Research in Third World Accounting*, 2, 1-16.
- Radebaugh, L. H., & Gray, S. J. (1993). *International Accounting and Multinational Enterprise* (3rd ed.). New York: John Wiley.
- Roussey, R. S. (1992). Developing international accounting and auditing standards for world market. *Journal of International Accounting, Auditing and Taxation*, 1(1), 1-12.
- Samuels, J. M., & Piper, A. G. (1985). *International Accounting*. New York: St. Martin's Press.

- Soderstrom, N. S., & Sun, K. J. (2007). IFRS Adoption and Accounting Quality: A Review. *European Accounting Review*, 16, 675-702.
- Stenka, R., & Ormrod, P. (2007). The Impact of IFRS Adoption in the UK - Issues in Group Accounting. *Accounting in Europe*, 1-27.
- The CPA Letter. (2008, Jan). One Set of International Standards Important for Economic Growth: World Accountancy Leaders. 88(1), p. 4.
- Tyrrall, D., Woodward, D., & Rakhimbekova, A. (2007). The relevance of International Financial Reporting Standards to a developing country: Evidence from Kazakhstan. *The International Journal of Accounting*, 42, 82-110.
- Wallace, R. S. (1990). Accounting in Developing Countries: A Review of the Literature. *Research in Third World Accounting*, 1, 3-54.
- Woolley, R. (1998). International Accounting Standards and Economic Growth: An Empirical Investigation of their Relationship in Asia. Working Paper Series, School of Accounting and Law, RMIT, Australia
- Wyatt, A. R., & Yospe, J. F. (1993). Wake-up call to American business: International Accounting Standards are on the way. *Journal of Accountancy*, 80-85.
- Zaidi, S. K., & Huerta, E. (2014). IFRS Adoption and Enforcement as Antecedents of Economic Growth. *International Journal of Accounting and Financial Reporting*, 4(1), 1-27.
- Zeghal, D., & Mhedhbi, K. (2006). An Analysis of the Factors Affecting the Adoption of International Accounting Standards by Developing Countries. *The International Journal of Accounting*, 41, 373-386.

ECONOMIC CONSEQUENCES OF ADOPTING GLOBAL ACCOUNTING STANDARDS ON THE SOCIAL WELFARE OF EACH COUNTRY*

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ECONOMIC CONSEQUENCES OF ADOPTING GLOBAL ACCOUNTING STANDARDS ON THE SOCIAL WELFARE OF EACH COUNTRY

ABSTRACT

This paper investigates the conditions under which the adoption of a set of global accounting standards benefits countries and predicts the consequences of adopting global accounting standards, using a simple two-player game in three different settings. The results of the analysis show that the adoption of a set of global accounting standards does not always benefit countries because (1) the adoption of a set of global accounting standards can only be the dominant strategy if the expected rent from adopting a set of global accounting standards is larger than the particular threshold value and (2) the expected rent depends on the circumstance of the corresponding country. These results indicate that the expected rent from IFRS which is high enough to ensure benefits is not always unconditional, unchangeable or uniquely dominant. Furthermore, this paper clarifies that the countries that once adopted a set of global accounting standards are vested in a set of global accounting standards.

INTRODUCTION

This study is motivated by the debate concerning the adoption of a set of global accounting standards, such as the International Financial Reporting Standards (IFRS) or the US-Generally Accepted Accounting Principles (US-GAAP). Much of the accounting literature contributing to this debate focuses on whether the adoption of IFRS provides potential advantages such as a decrease in the costs of preparing and interpreting financial statements, a decrease in the cost of capital, or an increase in the transparency and comparability of financial statements (Barth, Landsman and Lang, 2008; Bradshaw, Bushee and Miller, 2004; Daske and Gebhardt, 2006; Hail, Leuz and Wysocki, 2009; Saudagaran and Diga, 1998).¹ However, these previous studies, which mostly use empirical methods, do not yield consistent results, because the economic outcomes

¹ The IFRS Foundation addresses one of their principle objectives as follows: "To develop, in the public interest, a single set of high quality, understandable, enforceable and globally accepted financial reporting standards based upon clearly articulated principles. These standards should require high quality, transparent and comparable information in financial statements and other financial reporting to help investors, other participants in the world's capital markets and other users of financial information make economic decisions." (IFRS Foundation: Constitution, 2010, para. 2[a]) Most of the academic literature with regard to the adoption of IFRS is guided by this objective and examines whether IFRS brings about beneficial consequences with an improved disclosure quality.

are the net pros and cons of adopting global accounting standards under each economic environment, and the outcomes can be affected by different enforcement mechanisms by country (Barth, Landsman and Lang, 2008; Bradshaw, Bushee and Miller, 2004; Daske, 2006; Daske and Gebhardt, 2006; Ball, Robin and Wu, 2003).² Furthermore, many studies have analyzed relatively short-term outcomes after adopting a set of global accounting standards and have rarely examined the circumstances that would arise after the adoption of the standards. Hence, the objective of this paper is to investigate under what conditions the adoption of a set of global accounting standards benefits countries and to deliberate the consequences of adopting a set of global accounting standards by modifying and expanding the basic model of Kimura and Ogawa (2007).³

Kimura and Ogawa (2007) examine whether a convergence of accounting standards can occur and which, if any, domestic accounting standards will become “Global Generally Accepted Accounting Principles (GGAAP)” as a Nash equilibrium using a two-player game. They show that, under a particular condition, domestic accounting standards with more rent will deserve to be called GGAAP. Their model, however, shows that under another condition, GGAAP can become any accounting standard, including domestic accounting standards α , domestic accounting standards β or even other accounting standards. Furthermore, their model assumes a case of $A < B$, where rent A is the rent of country α and rent B is the rent of country β . This paper analyzes the mechanism through which accounting standards are selected without this assumption in Kimura and Ogawa (2007).

In this paper, I modify and expand the basic model of Kimura and Ogawa (2007). I examine a range of parameter values and a mechanism to follow a Nash equilibrium or the dominant strategy equilibrium with a model in three different settings. The rest of the paper is organized

² For alternative explanations, perspectives, and background reading about critical issues on IFRS adoption, the interested reader is directed toward the works of Tsujiyama (2011), Saito (2011), Sunder (1988), Sunder (2011), Ball (2006), Biondi and Suzuki (2007), Bushman and Landsman (2010) and Schipper (2005).

³ Recent research has attempted to analyze this issue using game theory. This approach is considered to provide a lateral approach that complements research conducted under different methodologies (Kimura and Ogawa, 2007, p.217).

as follows: section 2 presents the model of two countries; section 3 analyzes this model and derives its implications; section 4 discusses the implications. Finally, I summarize and conclude in section 5.

THE MODEL

This paper modifies and expands the basic model of Kimura and Ogawa (2007). Their model is as follows. Country α and country β have their own government regulatory body or a standard setter, already have domestic accounting standards α and β , and obtain economic rent A and B , where $A > 0$ and $B > 0$.⁴ Because investors can invest in both domestic and foreign markets in globalized capital markets, i.e., an open economy, two costs may be incurred in each country: *comparability costs* and *reformulation costs*. Comparability costs occur because of different accounting standards. For example, managers and investors in one country face the costs of preparing and interpreting financial statements to investors in the other country. If these comparability costs are too onerous to investors and managers, the government regulatory body has an incentive to change their domestic accounting standards, leading to reformulation costs. Kimura and Ogawa (2007) define and calculate comparability costs as $c \times k$ ($k = A, B$) and reformulation costs as $r \times k$ ($k = A, B$), where $0 < c < 1$ and $0 < r < 1$.⁵

Next, I modify the model of Kimura and Ogawa (2007) by adopting a new parameter G , where $G > 0$.⁶ G denotes the rent of a country using 'I' accounting standards or the expected rent of a country that adopts 'I' accounting standards, which can be interpreted as global

⁴ This rent can be regarded as the collective economic rent, i.e. social welfare, to be distributed to agents in each country.

⁵ Reformulation costs, i.e., ex post costs, are not realized at this point; for simplicity, this paper follows the same reformulation costs' rule as Kimura and Ogawa (2007).

⁶ Strictly speaking, rent G , rent A and rent B in each payoff matrix can be interpreted as the expected rent of respective random variable; i.e., $E(\tilde{G}) = G$, $\tilde{G} = G + \varepsilon_G$, $G > 0$ is a constant, and ε_G is a random variable distributed on a closed interval $[\underline{\varepsilon}_G, \overline{\varepsilon}_G]$ with $E(\varepsilon_G) = 0$ and $\text{Var}[\varepsilon_G] = \sigma^2$. $E(\tilde{A}) = A$, $\tilde{A} = A + \varepsilon_A$, $A > 0$ is a constant, and ε_A is a random variable distributed on a closed interval $[\underline{\varepsilon}_A, \overline{\varepsilon}_A]$ with $E(\varepsilon_A) = 0$ and $\text{Var}[\varepsilon_A] = \sigma_A^2$. $E(\tilde{B}) = B$, $\tilde{B} = B + \varepsilon_B$, $B > 0$ is a constant, and ε_B is a random variable distributed on a closed interval $[\underline{\varepsilon}_B, \overline{\varepsilon}_B]$ with $E(\varepsilon_B) = 0$ and $\text{Var}[\varepsilon_B] = \sigma_B^2$. For simplicity, this paper treats rent G , rent A and rent B as parameters, because there is no substantive difference.

accounting standards or internationally recognized accounting standards, such as IFRS or US-GAAP. Country α chooses from two accounting standard systems: system α or system I . Country β additionally chooses from two systems: system β and system I .

Subsequently, I expand the scenario into three cases according to the different initial states of the two countries as follows. First, Case 1 is a setting in which each country has developed its domestic accounting system as an initial system. Next, Case 2 is a setting in which country α has developed system α and country β has adopted and stabilized system I as an initial system. Lastly, Case 3 is a setting in which country α and country β have adopted and stabilized system I as an initial system.

For each case, payoffs can be determined from the initial accounting standards, which lead to a diverse payoff matrix. For example, in the game of Case 1, payoffs are determined as follows. If both countries maintain their own domestic accounting standards, the comparability costs would be involved in their economic rent, which lead to $(A - cA, B - cB)$. Similarly, if both countries change their own domestic accounting standards to system I , the reformulation costs would be incurred in their economic rent, which is $(G - rA, G - rA)$. Otherwise, the economic rent would be $(G - rA - cG, B - cB)$ or $(A - cA, G - rB - cG)$, if one country decides to change its own standards to system I and the other country maintains its own system. Likewise, Case 2 and Case 3 follow the same procedure as Case 1. The expected payoffs to country α and country β are summarized in Table 1, which is a normal form representation of the game.

[See table 1]

For simplicity, I make the following assumptions. I assume that there is no subjective preference among players regarding accounting standards. This assumption is required to focus

on the debate on a set of global accounting standards, not the quality of the accounting standards.⁷

ANALYSIS

Dominant Equilibrium and Two Nash Equilibria

Advocates for adopting IFRS expect that IFRS will benefit countries, because a single set of global accounting standards is better than different domestic accounting standards owing to increased transparency and comparability and decreased capital and other relevant costs. The benefit is predicated on the assumption that the welfare of a single set of global accounting standards would be much larger than that of different domestic accounting standards, at least larger than the initial state of each setting. That is, (I, I) will always be the dominant equilibrium and Pareto optimality.

This section investigates the conditions under which the adoption of a set of global accounting standards would be the dominant strategy equilibrium for each country. Figure 1 summarizes the conditions of several equilibria in each case.

[See figure 1]

Proposition

(1) If the expected rent G satisfies a range of parameter values, that is, (e) in Figure 1, then

the (I, I) strategy will become dominant; i.e., $\left(\frac{1-c+r}{1-c}\right)_A \leq G$ and $\left(\frac{1-c+r}{1-c}\right)_B \leq G$ in Case 1,

$\left(\frac{1-c+r}{1-c}\right)_A \leq G$ and $\left(\frac{1-c}{1-c+r}\right)_B \leq G$ in Case 2, or $\left(\frac{1-c}{1-c+r}\right)_A \leq G$ and $\left(\frac{1-c}{1-c+r}\right)_B \leq G$ in Case 3.

(2) If the expected rent G satisfies a range of parameter values, that is, (c) in Figure 1, then

there exist two Nash equilibria: (D, D) and (I, I) ; i.e., $(1-c+r)_A < G < \left(\frac{1-c+r}{1-c}\right)_A$ and

⁷ This assumption is set in order to avoid justifying a set of global accounting standards with high quality. Recently, Isidro and Raonic (2012) find that the adoption of a single set of global accounting standards *per se* is not prone to make financial statements more comparable and transparent, without some level of the institutional conditions and the firm-specific reporting incentives: the above assumption can be supported by their findings.

$(1-c+r)B < G < \left(\frac{1-c+r}{1-c}\right)B$ in Case 1, $(1-c+r)A < G < \left(\frac{1-c+r}{1-c}\right)A$ and $\left(\frac{1-c}{1+r}\right)B < G < \left(\frac{1-c}{1-c+r}\right)B$ in Case 2, or $\left(\frac{1-c}{1+r}\right)A < G < \left(\frac{1-c}{1-c+r}\right)A$ and $\left(\frac{1-c}{1+r}\right)B < G < \left(\frac{1-c}{1-c+r}\right)B$ in Case 3.

Proposition (1) clarifies that the social welfare (i.e., G) of a set of global accounting standards would not always be the dominant strategy equilibrium and bring economic benefits to each country because the strategy requires that the expected rent from adopting a set of global accounting standards is more than the particular threshold value.

Moreover, proposition (2) establishes that there exists a range of parameter values (c) under which country α and country β can choose either (D, D) or (I, I) as their best response. Under this (c) condition, both (D, D) and (I, I) become Nash equilibria and appear *equally compelling*, which suggests that there may be games, without providing a unique solution. In this game, where each country can choose its accounting standards among two pure strategy equilibria, we assume that there is a possibility of converging on a *mixed strategy equilibrium* from maintaining either (D, D) or (I, I) .⁸ This explains why countries that have *sufficient bargaining power* and satisfy a range of parameter values (c) choose the *partial adoption, adaptation, or convergence* of global accounting standards.

Social Welfare in Adopting Global Accounting Standards

Social welfare may be affected by the adoption of global accounting standards. Specifically, how many economic benefits can be earned from the adoption? Proponents of adopting IFRS expect that IFRS will benefit countries. However, different settings of two countries may lead to different social welfare conditions of (I, I) . Hence, I compare the welfare of (I, I) in Case 1, Case 2, and Case 3 when the welfare of (I, I) is larger than that in (D, D) . This situation is depicted in Figure 2.

⁸ To understand this sort of game, the interested reader is directed toward the so-called “*Battle of the Sexes*” game which has two pure strategy equilibria and a single mixed strategy equilibrium.

[See figure 2]

For (I, I) to be dominant, the expected rent G must satisfy the following conditions: (1) In Case 1, the expected rent G should be larger than $(1-c+r) \times \left(\frac{A+B}{2}\right)$. (2) In Case 2, the expected rent G should be larger than $(1-c+r) \times \left(\frac{A+B}{2+r}\right) - r \times \left(\frac{B}{2+r}\right)$. (3) Likewise, in Case 3, the expected rent G should be larger than $\left(\frac{1-c}{1+r}\right) \times \left(\frac{A+B}{2}\right)$. Thus, the threshold of expected rent G for (I, I) to be dominant depends on the situations of the each country. Therefore, we *cannot confirm* that adopting a single set of global accounting standards is *optimal for all countries* if we consider the different settings.

Furthermore, even though we suppose that (I, I) of Case 1 or Case 2 satisfies the condition to be dominant, this circumstance *does not ensure fairness* to country α and country β . For example, in Case 1, the adoption of a set of global accounting standards can lead to Pareto optimality under particular conditions. However, the adoption *cannot guarantee fairness* to each country because the rent A of country α is not always equal to the rent B of country β (i.e., $G - rA$ is not always equal to $G - rB$). The same is true for Case 2 because $G - rA$ is not always equal to G .

The Inextricability of Global Accounting Standards after the Adoption

I consider a specific game where each country developed a domestic accounting system as an initial system, then adopted a set of global accounting standards, and now maintains (I, I) . Figure 3 is a game tree of this game (see the bold line in Figure 3).

[See figure 3]

This game corresponds to adopting a set of global accounting standards in Case 1 and maintaining that state. We can make the expected payoff matrix of this game by considering Case 1 and Case 3 consecutively and following the same procedure as the previous game. The expected payoffs are summarized in Table 2, and the social welfare of this game is compared in Figure 4.

[See table 2]

[See figure 4]

Once a set of global accounting standards is adopted as (I, I) , even if the realized rent G turns out smaller than $(1-c+r) \times \left(\frac{A+B}{2}\right)$ which was expected before, the country would have only a set of global accounting standards to go on, because the adoption of a set of global accounting standards changes the game of Table 1 to a *new game* of Table 2. As shown in Table 2 and Figure 4, the choice of (I, I) replaces the previous threshold of $(1-c+r) \times \left(\frac{A+B}{2}\right)$ with a smaller threshold of $\left(\frac{1-c}{1+r}+r\right) \times \left(\frac{A+B}{2}\right)$. Accordingly, after choosing (I, I) and (II, II) consecutively, even if the realized rent G is found to be smaller than expected before, the country would have little motivation to return to (D, D) , which was the initial state of country α and β . In other words, countries that have already adopted a set of global accounting standards have no choice but to maintain it.

DISCUSSION

It is known that “Approximately 120 nations and reporting jurisdictions permit or require IFRS for domestic listed companies, although approximately 90 countries have fully conformed with IFRS as promulgated by the IASB and include a statement acknowledging such conformity in audit reports.”⁹ Under these circumstances, the movement toward accounting convergence seems to be an indispensable and essential component of globalization. However, some

⁹ http://www.ifrs.com/ifrs_faqs.html

countries maintain their own domestic accounting standards, and other countries have postponed adopting a set of global accounting standards. According to the progress report of the United States Securities and Exchange Commission (SEC) in 2010, IFRS adoption varies as follows: (1) full IFRS adoption or the use of IFRS as issued by the IASB, such as in Canada and (2) the use of IFRS after some form of a domestic arrangement. Furthermore, this second category is divided into a “Convergence Approach”, where countries converge their domestic accounting standards with IFRS, such as in Japan, the U.S.A. and China, and an “Endorsement Approach”, where countries incorporate IFRS into their jurisdictions’ standards, undertaking some form of local endorsement, such as in the EU and Australia (SEC, 2010; Tsujiyama, 2011). If some countries do not adopt a set of global accounting standards fully, a single set of global accounting standards *may not be the only natural consequence*. This paper examines whether the adoption of a set of global accounting standards would be the best option for each country and the consequences for those countries that adopted a set of global accounting standards.

By analyzing a two-player game in the previous section, we *cannot assert* that adopting an (I, I) strategy always benefits countries; an (I, I) strategy does not become dominant if the expected rent G is less than the particular threshold value of G . This finding explains that those countries that already adopted (I, I) *are vested in* a set of global accounting standards. Therefore, *before* deciding to adopt a set of global accounting standards, each country needs to calculate the expected impact, even considering the (II, II) circumstance. Furthermore, the impact depends on whether the country is in Case 1, Case 2, or Case 3. In the case that some countries, having already adopted the full global accounting standards, try to persuade the others that (I, I) is *beneficial and favorable*, the argument *does not appear convincing* because those countries have no motivation to *choose* (D, D) , as described in Figure 3.

Currently, the work plan from the IFRS’s side is in progress to promote and facilitate “full IFRS adoption or the use of IFRS as issued by the IASB”. Most proponents and supporters of IFRS insist that IFRS ensure high benefits to each country. Their assertion *is focusing mainly on the*

right side of Figure 1, and is limited in the condition of the high expected rent G . However, the expected rent G which is high enough to ensure benefits is not always unconditional, unchangeable or uniquely dominant, as examined in the previous section.

CONCLUDING REMARKS

This paper investigates under which conditions the adoption of a set of global accounting standards would be beneficial to countries and predicts outcomes for countries after adopting a set of global accounting standards. The assertion from the IFRS's side is focusing mainly on the right side of Figure 1; however, I give attention to the left side of Figure 1 and prominence to the problem of the social welfare of each country after adoption of IFRS under the low expected rent G . This study modifies and expands the basic model of Kimura and Ogawa (2007) by introducing a new parameter G , i.e., the (expected) rent of a country using internationally recognized accounting standards, and expands the model into three settings. Then, I examine a range of parameter values and a mechanism to follow a Nash equilibrium or the dominant strategy equilibrium with a model in three different settings. Furthermore, I compare the conditions for (I, I) to become the dominant strategy in each setting.

This paper derives the following overall implications. We cannot assert that adopting of a set of global accounting standards always benefits each country because (1) the adoption of a set of global accounting standards can only be the dominant strategy if the expected rent from adopting a set of global accounting standards is more than the particular threshold value and (2) the expected rent depends on the circumstance of the country. These results indicate that the expected rent from IFRS is *not always unconditional or uniquely dominant* enough to ensure great benefits to each country. Furthermore, this paper clarifies that the countries that once adopted a set of global accounting standards are vested in a set of global accounting standards, and now have no choice but to maintain it.

REFERENCES

- Ball, R. (2006), "International Financial Reporting Standards (IFRS): Pros and cons for investors", *Accounting & Business Research*, Vol. 36, No. 2, pp. 5–27.
- Ball, R., Robin, A. and Wu, J. S. (2003), "Incentives versus standards: Properties of accounting income in four East Asian countries", *Journal of Accounting and Economics*, Vol. 36, No. 1-3, pp. 235–270.
- Barth, M. E., Landsman, W. R. and Lang, M. H. (2008), "International Accounting Standards and accounting quality", *Journal of Accounting Research*, Vol. 46, No. 3, pp. 467–498.
- Biondi, Y. and Suzuki T. (2007), "Socio-economic impacts of international accounting standards: An introduction", *Socio-Economic Review*, Vol. 5, No. 4, pp.585-602.
- Bradshaw, M. T., Bushee, B. J. and Miller, G. S. (2004), "Accounting choice, home bias, and U.S. investment in non-U.S. firms", *Journal of Accounting Research*, Vol. 42, No. 5, pp. 795-841.
- Bushman, R., and Landsman, W. R. (2010), "The pros and cons of regulating corporate reporting: A critical review of the arguments", *Accounting and Business Research*, Vol. 40, No. 3, pp. 259-273.
- Daske, H. (2006), "Economic benefits of adopting IFRS or US-GAAP: Have the expected cost of equity capital really decreased?", *Journal of Business Finance & Accounting*, Vo. 33, No. 3-4, pp. 329–373.
- Daske, H. and Gebhardt, G. (2006), "International Financial Reporting Standards and experts' perceptions of disclosure quality", *ABACUS*, Vol. 42, No. 3-4, pp. 461-498.
- Hail, L., Leuz, C. and Wysocki, P. (2009), "*Global accounting convergence and the potential adoption of IFRS by the United States: An analysis of economic and policy factors*", working paper, The Wharton School, University of Pennsylvania, available at: <http://grammatikhilfe.com/accounting/news/MAFG/Leuzpaper.pdf> (accessed 2 August 2014).
- IFRS Foundation. (2010), *Constitution*.
- Isidro, H. and Raonic, I. (2012), "Firm incentives, institutional complexity and the quality of "harmonized" accounting numbers (Forthcoming). *The International Journal of Accounting*, Vol. 47, No. 4, pp. 407-436.
- Kimura, S. and Ogawa, H. (2007), "A model for the convergence of accounting standards", *Research in Accounting Regulation*, No. 19, pp. 215-229.
- Saito, S. (2011), "Accounting standards and global convergence revisited: Social norms and economic concepts", *The Japanese Accounting Review*, No. 1, pp. 71-104.

Saudagaran, S. M. and Diga, J. G. (1998), "Accounting harmonization in ASEAN: Benefits, models and policy issues", *International Accounting, Auditing & Taxation*, Vol. 7, No. 1, pp. 21-45.

Schipper, K. (2005), "The introduction of International Accounting Standards in Europe: Implications for international convergence", *European Accounting Review*, Vol. 14, No. 1, pp. 101–126.

Sunder, S. (1988), "Political economy of accounting standards", *Journal of Accounting Literature*, No. 7, pp. 31-41.

Sunder, S. (2011), "IFRS monopoly: The pied piper of financial reporting", *Accounting and Business Research*, Vol. 41, No. 3, pp. 291–306.

Tsujiyama, E. (2006), "The convergence of accounting standards", *Kigyokaikei (Accounting)*, Chuo keizaisha, Vol. 58, No. 10, pp. 4–14. (In Japanese)

Tsujiyama, E. (2011), "Recent trends and prospects with regard to the adoption of IFRS", *Kansayaku (Corporate Auditor)*, Japan Corporate Auditors Association, No.582, pp. 4–16. (In Japanese)

United States Securities and Exchange Commission (SEC). (2010), "Progress report: Work plan for the consideration of incorporating International Financial Reporting Standards into the financial reporting system for U.S. issuers", Retrieved November 30, 2012, from <http://www.sec.gov/spotlight/globalaccountingstandards/workplan progress102910.pdf>

Table 1: Payoff Matrix

(1) Case 1

		country β	
		D (initial)	I
country α	D (initial)	$(A - cA, B - cB)$	$(A - cA, G - rB - cG)$
	I	$(G - rA - cG, B - cB)$	$(G - rA, G - rB)$

(2) Case 2

		country β	
		D	I (initial)
country α	D (initial)	$(A - cA, B - cB - rG)$	$(A - cA, G - cG)$
	I	$(G - rA - cG, B - cB - rG)$	$(G - rA, G)$

(3) Case 3

		country β	
		D	I (initial)
country α	D	$(A - cA - rG, B - cB - rG)$	$(A - cA - rG, G - cG)$
	I (initial)	$(G - cG, B - cB - rG)$	(G, G)

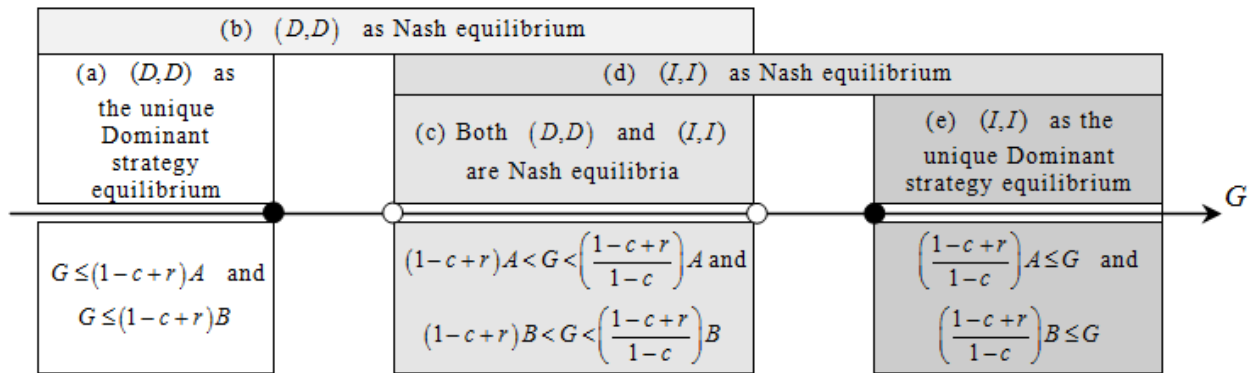
Note: ' I ' represents global accounting standards or internationally recognized accounting standards, and ' D ' represents the domestic accounting standards α or β of both countries.

Table 2: Payoff Matrix of Game in Figure 3

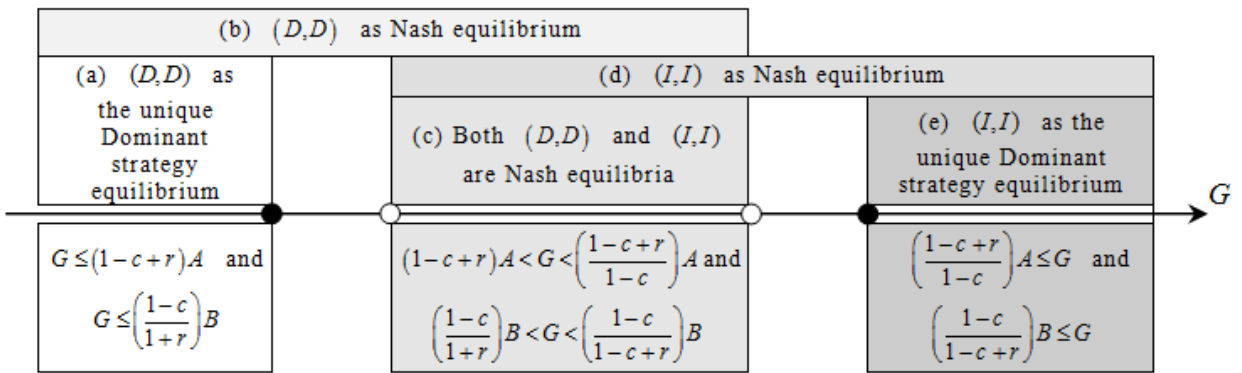
		country β	
		ID	II
country α	ID	$(A - cA - r(G - rA), B - cB - r(G - rB))$	$(A - cA - r(G - rA), (1 - c)(G - rB))$
	II	$((1 - c)(G - rA), B - cB - r(G - rB))$	$(G - rA, G - rB)$

Figure 1: Equilibria of Each Case

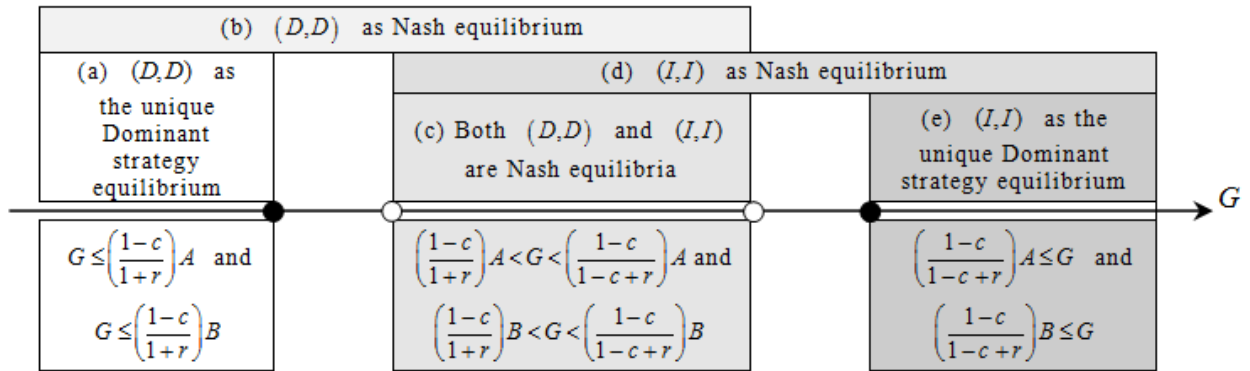
(1) Case 1



(2) Case 2

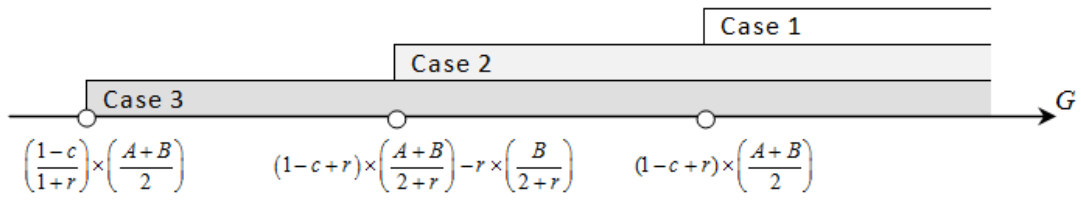


(3) Case 3



Proof and Supplement Figures: See Appendix.

Figure 2: The Expected Rent G for (I, I) to be dominant



Proof: See Appendix.

Figure 3: Game Tree

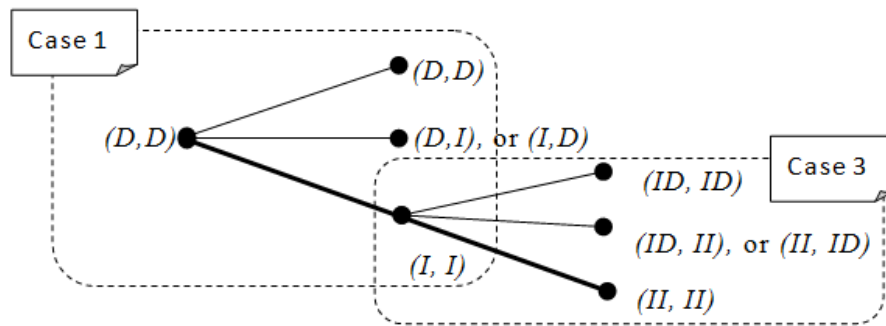
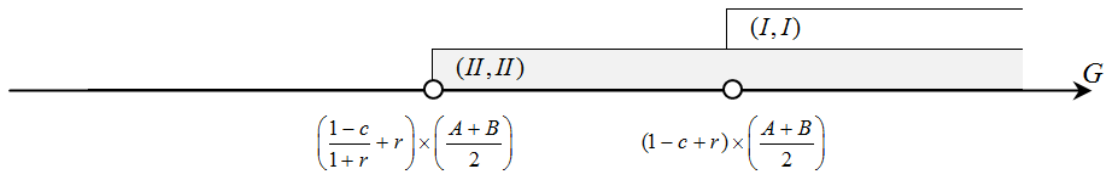


Figure 4: The Expected Rent G in Figure 3

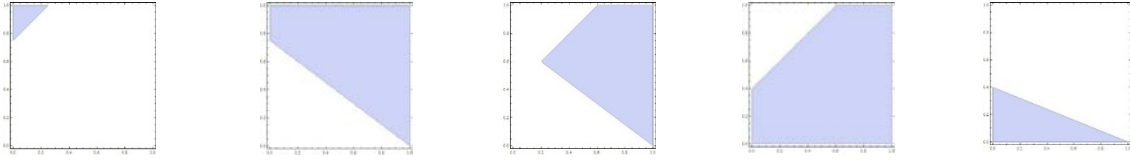


Proof: See Appendix.

APPENDIX

Supplement of Figures 1:

The following figure simplifies the each equilibrium of Case 1 in Figure 1 for an intuitive understanding.



(a) A shaded area represents (D, D) as the unique Dominant strategy equilibrium.

(b) A shaded area represents (D, D) as Nash equilibrium.

(c) A shaded area represents both (D, D) and (I, I) are Nash equilibrium.

(d) A shaded area represents (I, I) as Nash equilibrium.

(e) A shaded area represents (I, I) as the unique Dominant strategy equilibrium.

Note: The x-axis represents comparability costs c , where $0 < c < 1$, and the y-axis represents reformulation costs r , where $0 < r < 1$. This figure is a simplified version, in a case of $A = 4, B = 5$ and $G = 7$.

Proof of Figure 1 Case 1 (a):

The condition for (D, D) to become the unique dominant strategy equilibrium is as follows. Suppose that country α chooses domestic accounting standards α . Then, country β 's best response is to choose domestic accounting standards β if, and only if, $B - cB \geq G - rB - cG$. Likewise, if country β chooses domestic accounting standards β , the best response of country α is to choose domestic accounting standards α if, and only if, $A - cA \geq G - rA - cG$. By symmetry, if country α chooses global accounting standards I , country β should satisfy $B - cB \geq G - rB$. Likewise, if country β chooses global accounting standards I country α should satisfy $A - cA \geq G - rA$. Therefore, (D, D) becomes the unique dominant strategy equilibrium, where $G \leq (1 - c + r)A$ and $G \leq (1 - c + r)B$.

Proof of Figure 1 Case 1 (b):

The condition for (D, D) to become a Nash equilibrium is as follows. Suppose that country α chooses domestic accounting standards α . Then, country β 's best response is to choose domestic accounting standards β if, and only if, $B - cB > G - rB - cG$. Likewise, if country β chooses domestic accounting standards β , the best response of country α is to choose domestic accounting standards α if, and only if, $A - cA > G - rA - cG$. Therefore, (D, D) becomes a Nash equilibrium, if $G < \left(\frac{1 - c + r}{1 - c}\right)A$ and $G < \left(\frac{1 - c + r}{1 - c}\right)B$ are satisfied.

Proof of Figure 1 Case 1 (c), (d), (e):

This proof follows the same procedure as above.

Proof of Figure 1 Case 2, Case 3:

This proof follows the same procedure for Case 1.

Proof of Figure 2:

For (I, I) to become Pareto Optimal rather than (D, D) , each country should have more payoffs in (I, I) state than in (D, D) state. Thus, Case 1 needs to satisfy $G - rA > A - cA$ and $G - rB > B - cB$: i.e., $G > (1 - c + r)A$ and $G > (1 - c + r)B$. With the same procedure, Case 2 needs to satisfy $G > (1 - c + r)A$ and $G > \left(\frac{1 - c}{1 + r}\right)B$. Likewise, Case 3 needs to satisfy $G > \left(\frac{1 - c}{1 + r}\right)A$ and $G > \left(\frac{1 - c}{1 + r}\right)B$.

Here, to compare the conditions for (I, I) to maintain Pareto Optimality in the three cases, I calculate the average social welfare of country α and country β as follows, for simplicity. For Case 1 to maintain $(I, I) > (D, D)$, the condition of $2G - r(A + B) > (A + B) - c(A + B)$ needs to be satisfied. Likewise, for Case 2 to maintain $(I, I) > (D, D)$, the condition of $2G - rA > (A + B) - c(A + B) - rG$ needs to be satisfied. Finally, for Case 3 to maintain $(I, I) > (D, D)$, the condition of $2G > (A + B) - c(A + B) - 2rG$ needs to be satisfied. These conditions are summarized in Figure 2.

Proof of Figure 4:

This proof follows the same procedure as Figure 2.