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A CRITICAL REVIEW OF TESTS OF GRAY'S THEORY OF CULTURAL RELEVANCE AND SUGGESTIONS FOR FUTURE RESEARCH

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1.0 INTRODUCTION

Culture is considered to be a powerful environmental factor that affects the accounting system of a country as well as how individuals perceive and use accounting information. Previous literature has argued that accounting is determined by culture [Violet, 1983], and that the lack of consensus in accounting practices between countries is because their purpose is cultural rather than technical [Hofstede, 1986]. Arguments like these have led to the notion that the culture of a country influences its choice of accounting techniques.

There are three predominant areas in which the influence of culture on accounting has been studied: 1. financial reporting, 2. auditors' judgments and attitudes, and 3. management control systems.[1] This paper focuses on the literature relating culture to global diversity in financial reporting.

Based on Hofstede's [1980] model for the formation and stabilizing of culture patterns, Gray [1988] develops a framework to explain how culture affects national accounting systems. In brief, Gray argues that shared cultural values within a country lead to shared accounting values, which in turn influences the nature of a nation's accounting system. Gray develops four specific hypotheses with respect to the relationship between culture and accounting values.

Chanchani and MacGregor [1999] provide a chronological summary of the literature relating culture and financial reporting, dividing these studies into 1. the Pre-Gray (1988) Literature, 2. Gray's (1988) Theory of Cultural Relevance, and 3. the Post-Gray (1988) Literature. Their emphasis is on the conceptual developments in this area (1 and 2), with limited discussion of the related empirical research.

The objective of this paper is to build upon the summary begun by Chanchani and MacGregor [1999] to determine the current state of knowledge and provide a guide for future research. We constrain our scope to those studies that have attempted to empirically test Gray's theory of cultural relevance. We categorize the research questions investigated and critically evaluate the methodologies used to do so. We attempt to determine whether the frame-

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[1] The literature examining the impact of culture on management control systems has been thoroughly reviewed by Harrison and McKinnon [1999].

work has been subjected to adequate empirical inquiry so as to "prove" its validity. We conclude in the negative and we generate a number of suggestions for future research. We also formalize a partial refinement of Gray's cultural accounting framework to act as a guide to future research. Specifically, we suggest that future research should focus on the implications of Gray's framework for individual accountants' behavior with respect to application of financial reporting rules.

This paper is organized as follows. In Section 2, we explain the practical importance of research that examines the influence of culture on financial reporting. Section 3 describes general theoretical frameworks of accounting development and explains why these frameworks are inadequate for empirical testing. We then describe Hofstede's cultural framework in Section 4. This is the cultural framework used predominantly in accounting research. Section 5 introduces Gray's theoretical model of the influence of culture on financial reporting. The primary objective of this paper is achieved in Section 6, where we review the empirical studies examining the relationship between culture and financial reporting in the context of Gray's framework. These studies are divided into those that use countries and those that use individual accountants as the unit of analysis. Section 7 provides suggestions for future research. We note the areas that have not yet been subjected to sufficient empirical testing, and we propose that future research concentrate on individual level studies using an experimental approach. The final section presents conclusions.

2.0 IMPORTANCE OF STUDYING THE RELATIONSHIP BETWEEN CULTURE AND FINANCIAL REPORTING

The AAA Cultural Studies Committee suggests that there are six reasons to conduct cross-cultural research in accounting [AAA, 1991]. The first two appear to be particularly relevant for financial reporting. The first reason cited by the Committee is to establish the boundary conditions for accounting models and theories. In the context of financial reporting, the important question is whether financial reporting models and practices are universal or if their international applicability is constrained by differences in culture. For example, is the notion of "relevance" as a primary accounting quality universally applicable across countries? The second reason is to evaluate the impact of cultural factors on behavior in accounting contexts. The Committee distinguishes between cross-cultural research aimed at proving the cross-cultural generality of phenomena, and studies where differences have been predicted on theoretical grounds.

Existing cross-country diversity in financial reporting has negative implications for the globalization of capital markets. It acts as a barrier for companies to gain access to foreign capital markets and increases the cost to investors of adding foreign companies to their investment portfolios [Choi and Levich, 1991]. Efforts to reduce this diversity and harmonize financial reporting internationally have been underway for more than four decades [Choi, et al., 2002].

A country's culture, as well as institutions such as the tax system and the nature of the capital market, is thought to affect its financial reporting system

[Meek and Saudagaran, 1990]. Research investigating the effect of culture on financial reporting has potentially significant implications for the global harmonization of accounting practices. Culture changes very slowly over time. If culture is found to be an important factor influencing financial reporting within a country, the prognosis for harmonization is less optimistic. The increasing trend towards economic globalization makes the issue of accounting harmonization and the possible impact of culture on this process more important than ever.

3.0 GENERAL FRAMEWORKS FOR THE INFLUENCE OF CULTURE ON FINANCIAL REPORTING

Publications suggesting that accounting is influenced by culture and that cultural differences act as an impediment to international harmonization date back to the 1960s (see, for example, Bedford, 1966; Mueller, 1968; and Seidler, 1969). These early writers did not explain, however, how culture affects accounting.

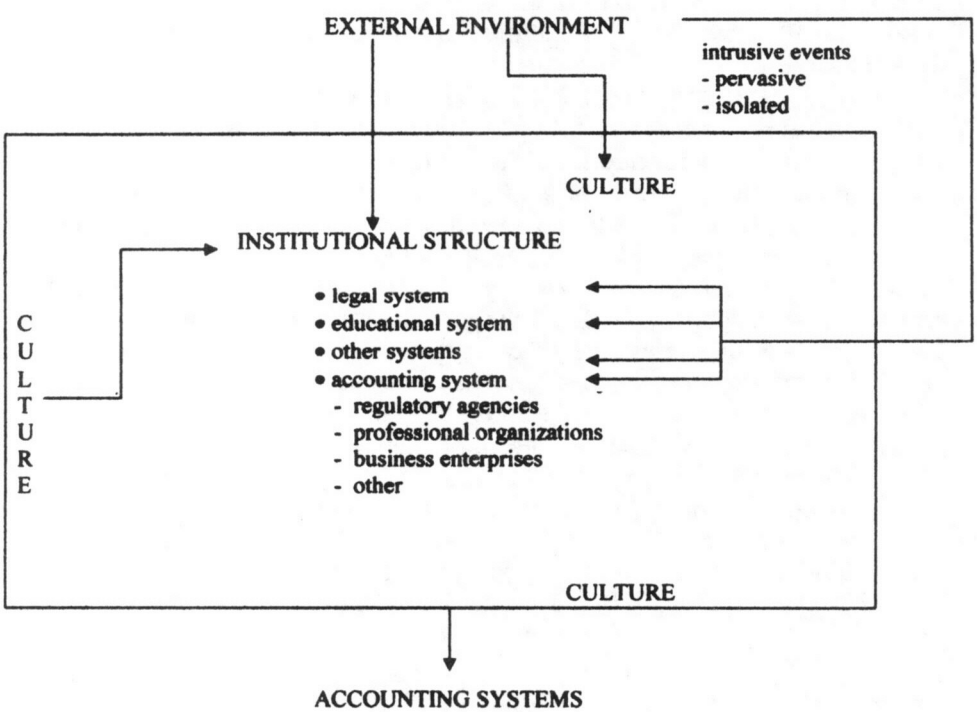
Violet [1983, p. 6] states that language is the most pervasive of the cultural variables: "Language is the foundation for establishing culture" and at the same time "language reflects the postulates established by the society which employs it." Viewing accounting as a symbolic language, he argues that an accounting system is based on and will reflect the postulates of its culture. "One can expect accounting principles to vary depending on cultural variances" [Violet, 1983, p. 6]. He suggests that accounting, in turn, will also affect its culture, implying a feedback loop between accounting and culture. Violet questions the relevance of cross-cultural comparisons of accounting that do not refer to the unique cultures that produced them. He concludes by suggesting that the success of the International Accounting Standards Committee in gaining acceptance for its standards will depend on cultural variables. Unfortunately, Violet does not explain how accounting principles will vary depending on cultural variables. Thus, his "theory" is not testable.

Harrison and McKinnon [1986] develop a framework that attempts to explain how changes in a country's financial reporting system occur. Viewed as a social system, changes in the accounting system are explained in terms of four major elements: intrusive events, intra-system activity, trans-system activity, and the cultural environment. According to their framework, changes to the accounting system are the product of both the intrusion of events and the interaction between the accounting system and neighboring social systems within the country. Changes occur as the accounting system identifies an intrusion, produces a set of suitable reactions to the intrusion, and then interacts with neighboring systems to develop a culturally appropriate way of dealing with the intrusion. Culture affects the change process in two ways: by influencing the norms and values of the accounting system and the other social systems with which it interacts, and by influencing the behavior of groups in their interactions within and across systems. Culture can either constrain or facilitate change through its influence on the nature of the interaction between systems.

Doupnik and Salter [1995] expand the framework developed by Harrison and McKinnon [1986] to develop a general model of accounting development.

Their model (shown in Figure 1) is based on nine propositions, five of which relate to the relationship between culture and the model's other components of external environment and institutional structure. Cultural norms and values are seen as influencing accounting practices through norms and values held by members of the accounting system and other systems that interact with the accounting system (i.e., the institutional structure). Cultural norms and values also influence the importance attached to intrusive events emanating from the external environment. The authors posit that if external environments, institutional structures, and cultural norms and values differ across countries, then countries' existing accounting practices should also differ.

Figure 1
A General Model of Accounting Development

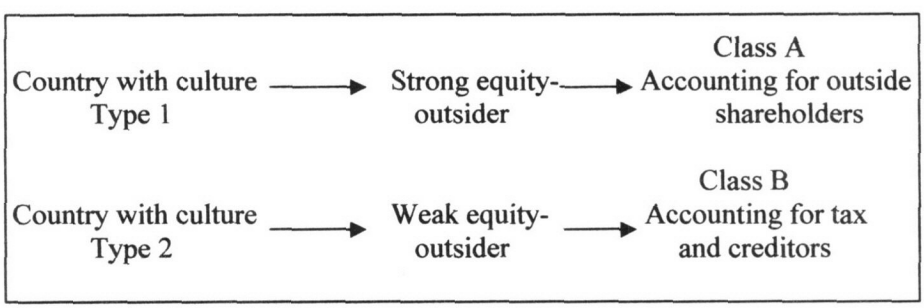


Source: Doupnik and Salter, 1995, p. 192.

Nobes [1998] develops a model of reasons for international accounting differences (presented in Figure 2). He classifies accounting systems into two types: (1) Class A (accounting for outside shareholders) and (2) Class B (accounting for tax and creditors). Two variables determine whether a country will have a Class A or a Class B accounting system: (1) the type of culture and (2) the strength of the equity-outsider financing system. According to the

model, countries with Type 1 cultures have developed strong outsider-equity financing systems that have led to the development of a Class A financial reporting system (sometimes referred to as the Anglo-Saxon model of accounting). Conversely, countries with Type 2 cultures have weak outsider-equity financing systems that have led to the development of a Class B financial reporting system (sometimes referred to as the Continental European model of accounting). Nobes focuses on the link between the financing system and accounting. A significant contribution is his clarification that equity financing alone does not lead to Class A accounting, but rather equity financing provided by outsiders is the key. Japan is presented as an example of a country with a large number of listed companies and a large equity market capitalization, but shares are extensively owned by insiders (banks and other companies). According to the model, financial reporting in Japan should exhibit the characteristics of a Class B accounting system.

Figure 2
A Proposed Model of Reasons for International Accounting Differences



Source: Nobes, 1998, p. 179.

The model in Figure 2 pertains to culturally self-sufficient countries, that is countries with strong indigenous cultures. Nobes further proposes that culturally dominated countries will use the class of accounting system imported from its dominating, culturally self-sufficient country regardless of the strength of the local outsider-equity financing system. Culturally dominated countries are those that because of their former colonial status, low level of development, or small size are strongly influenced by the culture of another country. This explains, for example, why the African nation of Malawi, which has a weak outside-equity financing system, nevertheless has a Class A accounting system.

As noted earlier, Nobes focuses his discussion on the link between financing systems and accounting. He assumes that some cultures lead to strong equity-outsider financing systems and others do not, but he leaves the examination of this assumed relationship for others. Nobes appears to assign a very broad view of culture to this variable in his model. In a simplified model presented earlier in his paper he refers to this variable as "culture, including institutional structures" [p. 177].

Harrison and McKinnon [1986], Doupnik and Salter [1995], and to a certain extent Nobes [1998] provide theoretical frameworks that attempt to explain the process by which culture in general affects accounting. However, from a research perspective, none of these models can be used to develop specific hypotheses as to how countries' accounting systems or aspects of those systems might differ because of differences in culture.

4.0 HOFSTEDE'S CULTURAL FRAMEWORK

In empirical research investigating the relationship between culture and accounting, culture is the independent variable. But, as Segall [1982, p. 135] succinctly states: "We can't expect culture, which is an inherently ambiguous concept, to serve as an independent variable." This sentiment is echoed by the AAA Cultural Studies Committee [1991, p. 188] which states "The search for the independent variable in cross-cultural research is complicated by the vagueness and ambiguity of "culture"; a concept that is nothing more than a superordinate name for its component parts." To be useful in financial reporting research, a concept of culture needs to provide a framework that identifies its component parts and that can be used to establish linkages between specific cultural attributes and specific attributes of financial reporting.

The cultural framework most widely used in accounting research is that of Hofstede [1980]. Hofstede's framework decomposes culture into component parts (or dimensions) and provides quantitative measures of those dimensions by country. As such, these quantitative measures lend themselves for use as independent variables in statistical analyses.[2]

Hofstede's framework for the formation of and stabilizing of societal culture patterns has four components: outside influences, ecological factors, societal norms, and institutional consequences. This framework is summarized in Figure 3. In this model, outside factors such as trade and scientific discovery influence ecological factors such as geography, demographics, economics, and technology. These ecological factors affect the development of societal norms (or values); differences in the environment across societies lead to differences in values. Societal values affect the structure and functioning of a society's institutions such as family patterns, social stratification, education, and political structure. Institutions in turn reinforce both outside influences and societal norms.

From an attitude survey of approximately 116,000 IBM employees, Hofstede identifies four underlying societal value dimensions along which countries can be positioned. These societal values are: Individualism, Power Distance, Uncertainty Avoidance, and Masculinity. Hofstede suggests that specific relationships exist between these societal value (or cultural) dimensions and individuals' preferences and actions. Hofstede's work on culture represents the most extensive research on national cultural differences conducted to date. These four dimensions are briefly described below.

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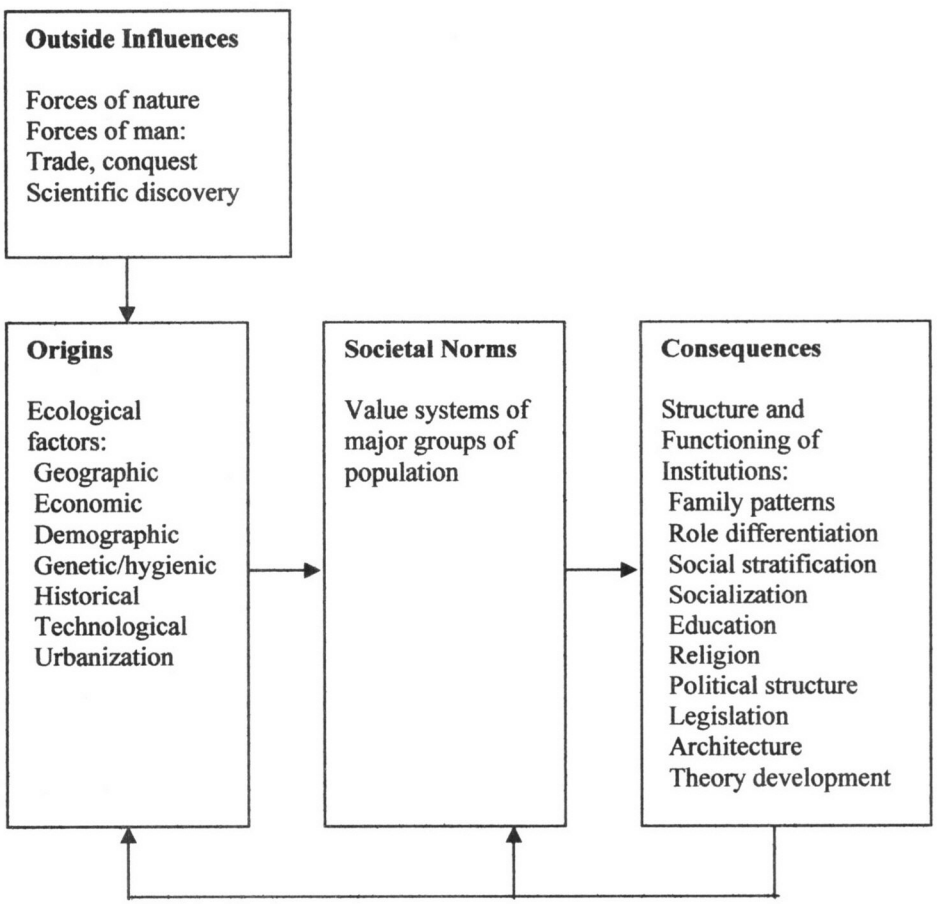
[2] We are aware of only two other frameworks that identify components of national culture and provide quantitative measures of those components. These are Schwartz [1994] and Trompenaars and Hampden-Turner [1994].

Figure 3
Hofstede's Framework



Source: Hofstede, 1980, p. 27.

The cultural dimension of Individualism (IND) relates to people's self-concept of "I" or "we". Hofstede suggests that Individualism is a preference for a loosely knit social fabric as opposed to Collectivism, which suggests an interdependent, tightly knit social fabric. The fundamental issue is the degree of interdependence a society maintains among individuals. People focusing on themselves rather than on the group(s) to which they may belong characterize a high level of Individualism. Under this perspective, an individual is seen as unique and whole, or having a self-identity which is separable from and does not depend on group affiliation. Conversely, the person seen as a whole only when considered in terms of an in-group affiliation characterizes a low Individualism society. It is the group, not the individual that is seen as the basic unit of society.

Power distance (PD) refers to the extent to which hierarchy and unequal power distribution in institutions and organizations are accepted. The main concern is the way in which societies handle the problem of human inequality. High PD societies are characterized by the acceptance of inequality and its institutionalization in hierarchies, which locate people in their "rightful" places. Conversely, low PD societies are characterized by a norm value that inequalities between people should be minimized, and to the extent that hierarchies exist within a society and its organizations, they exist only for administrative convenience.

Uncertainty avoidance (UA) refers to the degree to which individuals feel uncomfortable with uncertainty and ambiguity. Hofstede suggests that societies high on the UA dimension prefer to reduce uncertainty or ambiguity by relying on written or unwritten rules of behavior, formalization of organizational structure, and standardization of procedures. By contrast, societies low on the UA dimension are more flexible and tolerant of behavior and opinions that differ from their own.

Masculinity (MASC) refers to the extent to which gender roles are differentiated and the extent to which traditional masculine values of performance and visible achievement are emphasized relative to traditional feminine values of relationships, caring, and nurturing. A high score on the MASC dimension is characterized by competition and achieving material success. Conversely, a lower score is considered "feminine" and is characterized by mentoring and attaining a higher quality of life.[3]

The four cultural dimensions identify core values that attempt to explain the general similarities and differences in cultures around the world. While empirical validation of these dimensions is far from complete, the dimensions provide explicit constructs that accountants and others can benefit from when considering the impact of culture on accounting practices.

Hofstede [1980] provides quantitative measures for each of the four cultural dimensions for 40 countries. These cultural dimension indices are extended to 50 countries and 3 geographic regions in Hofstede [1983]. Hofstede [1991, p. 25] indicates that because of the way they were calculated, these indices "represent *relative*, not absolute positions of countries: they are measures of differences only"(emphasis in the original). Relative scores for selected countries on Hofstede's cultural dimensions are presented in Table 1.

The cultural dimension indices have been used to operationalize the concept of culture to investigate its effect on various aspects of business, including management practices [Newman and Nollen, 1996], compensation practices [Schuler and Rogovsky, 1998], work unit performance [Newman and Nollen, 1996], and cross-border acquisitions [Morosini, et al., 1998]. In the accounting domain, Hofstede's cultural dimensions have been used to examine the impact of culture on issues such as auditors' attitudes toward uncertainty qualifications [Gul and Tsui, 1993], managers' preference for management controls [Chow, et al., 1994], auditors' ethical perceptions [Cohen, et al.,

[3] Roberts and Salter [1999] rename this dimension "achievement orientation," indicating that the term masculinity has been heavily criticized as relying on gender specific roles that are highly suspect.

Table 1
Hofstede's Cultural Dimension Indices for Selected Countries

Country	Individualism (IND)	Power Distance (PD)	Uncertainty Avoidance (UA)	Masculinity (MASC)
Australia	90	36	51	61
Brazil	38	69	76	49
Canada	80	39	48	52
France	71	68	86	43
Germany	67	35	65	66
Italy	76	50	75	70
Japan	46	54	92	95
Mexico	30	81	82	69
Netherlands	80	38	53	14
United Kingdom	89	35	35	66
United States	91	40	46	62

Source: Hofstede, 1980, pp. 104, 165, 222, 279.

IND = People focusing on themselves rather than on the group(s) to which they may belong characterize a high score on the IND index. Conversely, the person seen as a whole only when considered in terms of an ingroup affiliation characterizes a low score on the IND index. It is the group, not the individual that is seen as the basic unit of society.

PD = High PD societies are characterized by the acceptance of inequality and its institutionalization in hierarchies, which locate people in their "rightful" places. Conversely, low PD societies are characterized by a norm value that inequalities between people should be minimized, and to the extent that hierarchies exist within a society and its organizations, they exist only for administrative convenience.

UA = Hofstede suggests that societies high on the UA dimension prefer to reduce uncertainty or ambiguity by relying on written or unwritten rules of behavior, formalization of organizational structure, and standardization of procedures. By contrast, societies low on the UA dimension are more flexible and tolerant of behavior and opinions that differ from their own.

MASC = A high score on the MASC dimension is characterized by competition and achieving material success. Conversely, a lower score is considered "feminine" and is characterized by mentoring and attaining a higher quality of life.

1995], as well as the impact of culture on national financial reporting systems [e.g., Salter and Niswander, 1995].

Hofstede and Bond [1988] add a fifth cultural dimension, Confucian Dynamism, later renamed as Long-term Orientation. Hofstede [2001, p. 359] provides a short definition of this dimension: "Long Term Orientation stands for the fostering of virtue oriented towards future rewards, in particular, perseverance and thrift. Its opposite pole, Short Term Orientation, stands for the fostering of values related to the past and present, in particular, respect for tradition, preservation of 'face' and fulfilling social obligations." This dimension was originally developed through the use of a Chinese Value Survey and may capture differences in value preferences between Western and Eastern cultures. This dimension is only starting to find its way into the accounting literature.[4]

5.0 GRAY'S FRAMEWORK

Based upon a review of accounting literature and practice, Gray [1988] identifies four widely recognized accounting values that can be used to define a country's accounting subculture: Professionalism, Uniformity, Conservatism, and Secrecy. Gray [1988, p. 8] describes these accounting subculture values in the following way:

Professionalism versus Statutory Control – a preference for the exercise of individual professional judgment and the maintenance of professional self-regulation as opposed to compliance with prescriptive legal requirements and statutory control.

Uniformity versus Flexibility – a preference for the enforcement of uniform accounting practices between companies and for the consistent use of such practices over time as opposed to flexibility in accordance with the perceived circumstances of individual companies.

Conservatism versus Optimism – a preference for a cautious approach to measurement so as to cope with the uncertainty of future events as opposed to a more optimistic, laissez-faire, risk-taking approach.

Secrecy versus Transparency – a preference for confidentiality and the restriction of disclosure of information about the business only to those who are closely involved with its management and financing as opposed to a more transparent, open, and publicly accountable approach.

Gray [1988] extends Hofstede's theoretical framework to develop a model that identifies the mechanism by which societal values become related to the accounting subculture, which directly influences the development of financial reporting systems on a national level. Gray's framework is presented in Figure 4.

[4] Only one published study investigating the relationship between culture and financial reporting has explicitly incorporated Long-term Orientation into the analysis [Sudarwan and Fogarty, 1996].

Figure 4
Gray's Framework

Source: Gray, 1988, p. 7. Items under SV, AV, and AS have been added to the original.

According to Hofstede, societal values (SV) are determined by external influences (ExIn) such as forces of nature and trade moderated by ecological influences (EcIn) that include economic, demographic, and technological factors. Symbolically, this relationship can be expressed as ExIn→EcIn→SV. In turn, societal values have institutional consequences (IC) in the form of the legal system, nature of capital markets, pattern of corporate ownership, and so on, i.e., SV→IC. Finally, the institutional consequences reinforce both ecological factors and societal values, i.e. IC→EcIn and IC→SV.

Gray extends Hofstede's model by adding the elements of accounting values (AV) and accounting systems (AS) and their links to societal values (SV) and institutional consequences (IC). Gray posits that accountants' attitudes or value systems are related to and derived from societal values. Accounting values, in turn, affect accounting systems. Symbolically, SV→AV and AV→AS, or SV→AV→AS. Accounting systems are also influenced by institutional consequences such as legal system and capital markets, which in turn are influenced by societal values (SV→IC→AS). Therefore, the model suggests that cultural factors influence the accounting system in two ways—through their influence on accounting values and through their influence on institutional consequences.

Gray introduces four propositions that hypothesize relationships between Hofstede's cultural dimensions and his accounting values (SV→AV):

1. The higher a country ranks in terms of IND and the lower it ranks in terms of UA and PD then the more likely it is to rank highly in terms of professionalism.

2. The higher a country ranks in terms of UA and PD and the lower it ranks in terms of IND then the more likely it is to rank highly in terms of uniformity.

3. The higher a country ranks in terms of UA and the lower it ranks in terms of IND and MASC then the more likely it is to rank highly in terms of conservatism.

4. The higher a country ranks in terms of UA and PD and the lower it ranks in terms of IND and MASC then the more likely it is to rank highly in terms of secrecy.

Table 2 summarizes the hypothesized relationships between Gray's accounting values and Hofstede's cultural dimensions.

Gray extends his analysis by describing how the accounting subculture values manifest themselves in four attributes of a national accounting system—authority, enforcement, measurement, and disclosure. Specifically, Gray suggests that the accounting values most relevant to the *authority* for accounting systems and their *enforcement* are **professionalism** and **uniformity** in that these are concerned with regulation and the extent of enforcement or conformity. The accounting value most relevant to accounting *measurement* practices is **conservatism**. The value most relevant to the *disclosure* of information is **secrecy**.

Table 2
Gray's Hypotheses

	Accounting Values			
Cultural Dimensions	Professionalism	Uniformity	Conservatism	Secrecy
Individualism	Pos.	Neg.	Neg.	Neg.
Power Distance	Neg.	Pos.	n/a	Pos.
Uncertainty Avoidance	Neg.	Pos.	Pos.	Pos.
Masculinity	n/a	n/a	Neg.	Neg.

Pos. Positive relationship hypothesized between cultural dimension and accounting value
Neg. Negative relationship hypothesized between cultural dimension and accounting value
n/a No relationship hypothesized

Hofstede identifies nine distinct cultural areas in which countries have a similar pattern of scores on the four cultural dimensions.[5] Based on the patterns of cultural dimensions within these cultural areas and the hypothesized relationships between cultural values and accounting values, Gray also hypothesizes classifications of country groupings by culture area as a basis for testing the relationship between culture and accounting systems. He does this in the context of the authority and enforcement attributes of accounting systems on the one hand, and the measurement and disclosure attributes on the other. For example, he hypothesizes that the accounting systems in countries comprising the Anglo cultural area will exhibit the least conservatism and the least secrecy. Conversely, accounting systems in the Less developed Latin cultural area will exhibit the most conservatism and secrecy.

Gray does not operationalize the hypotheses or conduct any empirical tests. In concluding, Gray [1988, p. 14] states "empirical research now needs to be carried out to assess the extent to which there is in fact a match between (a) societal values and accounting values, and (b) the proposed classification of country groupings, based on cultural influence, and the groupings derived from an analysis of accounting practices related to the value dimensions of the accounting subculture."

Several authors have attempted to extend or refine Gray's framework [e.g., Perera 1989; Fechner and Kilgore 1994; and Baydoun and Willett 1995]. Much of Chanchani and MacGregor [1999] is devoted to a discussion of this conceptual work, so we do not repeat it here. The next section focuses on the empirical tests of Gray's framework.[6]

[5] These cultural areas are: Anglo, Nordic, Germanic, More developed Latin, Less developed Latin, Asian-Colonial, Near Eastern, Japan, and African.

[6] Chanchani and MacGregor [1999] make note of only two of the papers described here, describing only one [Eddie, 1990] in any detail.

6.0 EMPIRICAL TESTS OF GRAY'S FRAMEWORK

A number of studies have empirically tested one or more aspects of the theoretical framework presented in Figure 4. Most research has focused on testing Gray's hypotheses using countries as the unit of analysis by examining relationships between Hofstede's cultural dimensions (independent variables) and one or more aspects of national accounting systems (dependent variables). In addition, five studies have examined Gray's hypotheses using individual accountants as the unit of analysis. These studies focus on the relationships between cultural dimensions and accountants' attitudes and beliefs. These two different types of study are reviewed below.

6.1 Empirical Tests of the Framework at the Country Level

Several studies test the specific hypotheses developed by Gray using one or more attributes of national financial reporting systems as the unit of analysis. The research methods used and results of these studies are summarized in Table 3. Three studies have attempted to test Gray's hypotheses with respect to all four accounting values. Another five studies focus on testing the hypothesis relating culture to the accounting value of Secrecy. The number of countries included in these studies ranges from one to 39.

6.1.1 Studies Testing All Four Hypotheses

Eddie [1990]

Eddie [1990] provides the first empirical test of Gray's framework, testing all four of Gray's hypotheses. Eddie [1990] uses an eclectic approach to construct indices of the accounting subculture values for thirteen countries in the Asia-Pacific region. Based on a review of the literature, he selects ten factors to measure each accounting value. He then scores each factor on a six-point scale and sums the scores to develop an index for each value. The accounting value indices are then correlated with Hofstede's cultural dimension indices for the 13 countries. In all cases, the predicted signs of association were confirmed.

Measurement of the accounting value constructs is key in assessing the reliability of Eddie's [1990] results, and the manner in which they are measured is the greatest limitation in this study. For example, the Conservatism index is based on only five items related to the valuation of assets and liabilities and only five items related to income recognition. As such, the index captures only a portion of the overall conservatism that might exist within a country's accounting system. Both the selection of the items used in the index, as well as the assignment of scores for each country, were done by the author with no independent validation. As Chanchani and MacGregor [1999, p. 19] point out, Eddie's results should be viewed with caution.

Table 3
Empirical Tests of Gray's Framework With Countries as the Unit of Analysis

Author(s)	Link(s) Tested	Independent Variables (IVs)	Dependent Variables (DVs)	Data Source(s)	# of Countries	Analysis	Support for Gray	Inconsistent with Gray
Studies Testing All Four Hypotheses								
Eddie [1990]	SV→AS	• Hofstede's cultural dimensions	• AS attributes - authority - enforcement - measurement - disclosure	IVs → Hofstede [1980] DVs → Index scores calculated by author from unidentified data sources (eclectic method)	13	Correlation	All of Gray's predicted relationships supported	None
Salter and Niswander [1995]	SV→AS IC→AS	• Hofstede's cultural dimensions • IC variables - mkt capitalization - marginal tax rate	• AS attributes - authority - enforcement - measurement - disclosure	IVs→Hofstede [1980]; archival economic data DVs→CIFAR [1993] disclosure index; DS [1993] survey data; audit opinion wording; professional exam; legal system	29	Regression	Six of Gray's thirteen predicted relationships supported. - IND→ Sec - UA→ Pro, Uni, Con, Sec - MASC→ Con	One significant relationship contrary to Gray's expectations - UA→ Uni
Sudarwan and Fogarty [1996}	SV→AS	• Hofstede's cultural dimensions	• AS attributes - authority - enforcement - measurement - disclosure	IVs→Economic data and statistical reports DVs→Annual reports; accounting and auditing standards	1	Structural Equation Modeling	Four of Gray's thirteen predicted relationships supported. -IND→ Pro -PD→ Uni -UA→ Uni, Con	Four significant relationships contrary to Gray's expectations -IND→ Uni, Con -UA→ Pro, Sec

Table 3 (Continued)
Empirical Tests of Gray's Framework With Countries as the Unit of Analysis

Author(s)	Link(s) Tested	Independent Variables (IVs)	Dependent Variables (DVs)	Data Source(s)	# of Countries	Analysis	Support for Gray	Inconsistent with Gray
Studies Testing Secrecy Hypothesis Only								
Gray and Vint [1995]	SV→AS	• Hofstede's cultural dimensions	• Disclosure index	IVs→ Hofstede [1980] DVs→1982/83 database of disclosure practices (survey data)	27	Regression	All components of Gray's secrecy hypothesis supported	None
Zareski [1996]	SV→AS IC→AS	• Hofstede's cultural dimensions • Control variables - firm size - debt ratio - multinationality	• Disclosure score	IVs→ Hofstede[1980] DVs→ Annual reports	7	Regression	Three components of Gray's secrecy hypothesis supported - IND - UA - MASC	One significant component contrary to Gray's secrecy hypothesis - PD
Wingate [1997]	SV→AS	• Hofstede's cultural dimensions	• Disclosure index	IVs→ Hofstede [1980] DVs→ CIFAR [1991] disclosure index	39	Regression	Two components of Gray's hypothesis supported - IND - UA	Two insignificant components - PD - MASC
Jaggi and Low [2000]	SV→AS IC→AS	• Hofstede's cultural dimensions • IC variables - legal system - mkt capitalization • Control variables - firm size - debt ratio - multinationality	• Disclosure index	IVs→ Hofstede [1980]; LaPorta et al [1996]; annual reports DV's→ CIFAR [1993] disclosure index	6	Regression	Full Sample Results One component of Gray's secrecy hypothesis supported - IND	Full Sample Results Three significant components contrary to Gray's secrecy hypothesis - PD - MASC One insignificant component - UA

Table 3 (Continued)
Empirical Tests of Gray's Framework With Countries as the Unit of Analysis

Author(s)	Link(s) Tested	Independent Variables (IVs)	Dependent Variables (DVs)	Data Source(s)	# of Countries	Analysis	Support for Gray	Inconsistent with Gray
Studies Testing Secrecy Hypothesis Only								
Hope [2003]	SV→AS IC→AS	• Hofstede's cultural dimensions • IC variables - legal system • Control variables - firm size - debt ratio - stock exchange listings - analysts following	• Disclosure index	IVs→ Hofstede [1980]; firm level data obtained from various sources DVs→ CIFAR [1993, 1995] disclosure index	39	Regression	Full Sample Results One component of Gray's secrecy hypothesis supported - IND - UA (when only UA and IND in model)	Full Sample Results One significant component contrary to Gray's secrecy hypothesis - MASC Two insignificant components - PD - UA (when all dimensions in model)

SV = Societal values
AS = Accounting system
IC = Institutional consequences
CIFAR = Center for International Financial Analysis and Research
IND = Individualism
PD = Power distance
UA = Uncertainty avoidance
MASC = Masculinity
Pro = Professionalism
Uni = Uniformity
Con = Conservatism
Sec = Secrecy

Salter and Niswander [1995]

Salter and Niswander [1995] use regression analysis to test Gray's hypotheses with measures of accounting system attributes as the dependent variables and Hofstede's cultural dimension indices serving as the independent variables. Similar to Eddie [1990], Salter and Niswander [1995] use an eclectic approach to measure the dependent variables, with more than one measure developed for each.

Three measures of Professionalism are used: (1) the key conclusion wording used in audit opinions (AUD), (2) whether an exam is used to restrict entry to the profession (EXAM), and (3) a composite variable (PROF = AUD + EXAM). These measures capture only one or at most two aspects of the professionalism construct, and therefore may not serve as an adequate proxy.

Two measures of Uniformity are developed: (1) whether a country has a code law or common law legal system (LEGAL), and (2) a "uniformity" measure that is operationalized by a count of the number of financial reporting practices for which a country used a single method of reporting less than 25% or more than 75% of the time (UNIFORM). The concept of legal system as a measure of uniformity is weak. Moreover, as legal system is one of the institutional consequences in Gray's model, its use as a measure of accounting systems is inappropriate. The "uniformity" index is a creative and more direct measure of this construct. It is calculated from data gathered by Doupnik and Salter (DS) [1993] in which local partners in 50 countries indicated the extent to which their clients used a particular accounting practice. Use of this data set to develop UNIFORM substantially removes researcher subjectivity from its measure.

Two measures also are used to operationalize Conservatism: (1) an index of a country's utilization of a list of financial reporting practices designed to reduce assets or income (CONM), and (2) an index of optimistic financial reporting practices which may be used to increase income and assets (PESS). These two measures also are developed from the DS data.

Finally, in measuring Secrecy, two variables again are used: (1) a broad index of disclosure developed by the Center for International Financial Analysis and Research (CIFAR)[7], and (2) an index of disclosure based on responses obtained by DS on some 56 disclosure items (DTOT).

Of Gray's 13 hypothesized relationships between cultural dimensions and accounting values, Salter and Niswander [1995] find a significant relationship in only six cases. Table 4 summarizes their findings. There is a significant relationship between Uncertainty Avoidance and one or more measures of each accounting value, and with the exception of UNIFORM, the relationships are in the hypothesized direction. The other cultural dimensions do not appear to be as closely related to Gray's accounting values. Specifically, Individualism is only related to Secrecy, and, quite contrary to Gray's expectations, Power Distance appears to have no influence on accounting values. Masculinity appears to be significantly related to Conservatism (and in the hypothesized direction), but not to Secrecy as hypothesized.

[7] CIFAR [1991, 1993, 1995] developed a country-level disclosure index based on an analysis of 90 possible items disclosed in an individual firm's financial statements.

Table 4
Salter and Niswander [1995] Results

Cultural Dimensions	Professionalism	Uniformity	Conservatism	Secrecy[1]
	Accounting Values			
Individualism	AUD→ns EXAM→ns PROF→ns Pos.	LEGAL→ns UNIFORM→ns Neg.	CONM→ns PESS→ns Neg.	CIFAR→ - DTOT→ns Neg.
Power Distance	AUD→ns EXAM→ns PROF→ns Neg.	LEGAL→ns UNIFORM→ns Pos.	CONM→ns PESS→ns n/a	CIFAR→ns DTOT→ns Pos.
Uncertainty Avoidance	AUD→ - EXAM→ - PROF→ - Neg.	LEGAL→ + UNIFORM→ - Pos.	CONM→ns PESS→ + Pos.	CIFAR→ + DTOT→ + Pos.
Masculinity	AUD→ns EXAM→ns PROF→ns n/a	LEGAL→ - UNIFORM→ + N/a	CONM→ns PESS→ - Neg.	CIFAR→ns DTOT→ns Neg.

[1] Salter and Niswander [1995] converted their indices of disclosure to an index of secrecy by multiplying raw disclosure scores by minus one.

+ / -	Sign of significant regression coefficient
Pos. / Neg.	Positive / Negative relationship hypothesized by Gray
n/a	Gray did not hypothesize a relationship between these variables
ns	Relationship between variables is not statistically significant

As noted above, legal system is used as a proxy for the accounting value of Uniformity. However, Gray [1988] identifies legal system as an institutional consequence. We believe that the significant relationships found between Uncertainty Avoidance and Masculinity and the dependent variable LEGAL provide evidence supporting the link between culture (SV) and its institutional consequences (IC), not between culture (SV) and accounting values (AV), as was the authors' intention. This is the only accounting study that, although inadvertently, has tested the linkage SV → IC.

By examining the relationship between Hofstede's cultural dimensions and attributes of the accounting system, e.g., disclosure and measurement practices, neither Eddie [1990] nor Salter and Niswander [1995] directly test Gray's hypotheses. Gray hypothesizes relationships between societal values (SV) and accounting values (AV) (SV→AV), whereas the empirical tests examine the relationship between SV and attributes of accounting systems (AS) (SV→AS). Neither study is able to operationalize Gray's accounting values independent of the manner in which they manifest themselves in the account-

ing system. This begs the question whether it is methodologically possible to directly test SV → AV using countries as the unit of analysis.

Salter and Niswander [1995] also test the relationship between two institutional consequences (the level of market capitalization and the marginal tax rate) and the various dependent variables. Because the dependent variables are derived from aspects of the accounting system, these represent tests of the link between IC and AS, not between IC and AV as the authors originally hypothesized. As such, their method does not allow any conclusions to be drawn about the impact these institutional consequences have on the values shared by members of the accounting subculture.

Compared to Eddie [1990], Salter and Niswander [1995] made significant methodological contributions by using data on actual accounting practices to develop measures of Conservatism and Uniformity, and by expanding the analysis to include 29 countries for which data were available for each of the dependent and independent variables.

Sudarwan and Fogarty [1996]

Rather than using a cross-sectional design to test Gray's hypotheses, Sudarwan and Fogarty [1996] employ a longitudinal approach focusing on a single country. They examine the relationships among the cultural characteristics of Indonesian society, reporting practices of Indonesian firms, and accounting standards promulgated by the Association of Indonesian Accountants. They hypothesize that, if culture and accounting are related, then *changes* in cultural dimensions should be related to *changes* in accounting values over time.

To test their hypotheses, Sudarwan and Fogarty [1996] develop their own measures of five cultural values at two points in time—1981 and 1992. This is the only study testing Gray that has measured cultural values independently rather than using Hofstede's index scores. It is also the only study to incorporate the fifth cultural dimension—Long-term Orientation—into the analysis. Each cultural value is proxied by multiple variables, many of which, however, are lacking in intuitive appeal. For example, the construct Power Distance is operationalized through variables such as telephone lines per capita, ratio of non-agricultural sector to GDP, total student enrollment, and number of economic sectors being deregulated. Although the authors explain their use of these variables as proxies for Power Distance, the variable that results from this approach appears to be a measure of the level of economic development and education and not a measure of Power Distance. The other cultural value constructs are also at least partially measured using macroeconomic data. As such, the independent variables in subsequent testing appear to more closely measure institutional consequences than the cultural values they purport to represent. The proxies used to measure attributes of the accounting system (dependent variables) are intuitively more appealing, based on data obtained from annual reports and Indonesian accounting standards.

Sudarwan and Fogarty [1996] use structural equation modeling (SEM) to analyze the hypothesized relationships.[8] The results are reported in Table 5. Changes in three of Hofstede's cultural dimensions from 1981 to 1992 have significant relationships with changes in one or more accounting value; there is no significant relationship between the change in Masculinity and any of the accounting values. Sudarwan and Fogarty [1996] find support for only four of Gray's 13 hypotheses. The results for Individualism are consistent with Gray's expectations for Professionalism only, and the results for Power Distance support the hypothesized relationship for Uniformity only. The results related to Uncertainty Avoidance support Gray's expectations with regard to Uniformity and Conservatism, but not Professionalism and Secrecy. The Uncertainty Avoidance results are the only results that support Gray's hypotheses that are common to both Salter and Niswander [1995] and Sudarwan and Fogarty [1996].

Table 5
Sudarwan and Fogarty [1996] Results

	Accounting Values			
Cultural Dimensions	Professionalism	Uniformity	Conservatism	Secrecy
Individualism	+ Pos.	+ Neg.	+ Neg.	- Pos.
Power Distance	ns Neg.	+ Pos.	+ n/a	ns Pos.
Uncertainty Avoidance	+ Neg.	+ Pos.	+ Pos.	- Pos.
Masculinity	ns n/a	ns n/a	ns Neg.	ns Neg.

+ / -	Sign of significant regression coefficient
Pos. / Neg.	Positive / Negative relationship hypothesized by Gray
n/a	Gray did not hypothesize a relationship between these variables
ns	Relationship between variables is not statistically significant

[8] The use of SEM, in conjunction with confirmatory factor analysis (to assess the measurement properties of constructs within the model), allows the path coefficients in the structural model to be adjusted for the effects of random measurement error. As a result, SEM permits an overall test of a model, essentially allowing the researcher to test how well the patterns of correlations between variables are "fitting" to a proposed theoretical model.

Sudarwan and Fogarty [1996] state that confirmatory factor analysis (CFA) was first conducted to ensure that their measures of Gray's accounting values and Hofstede's cultural dimensions represent independent theoretical constructs. However, they do not provide the reader with any correlation matrices to help in assessing the convergent or discriminant validity of their various scale measures. In addition, no fit indices (e.g., x^2, CFI, RMSEA) are provided, which are needed to assess how well a set of indicators load onto a latent theoretical construct. As a result, the reader is unable to determine whether the study's latent constructs actually represent what they purport to measure. Similarly, the authors provide little statistical detail in their discussion of tests of the overall model. As a result, it is not possible to assess whether Sudarwan and Fogarty's [1996] general lack of support for Gray's expectations is a result of a weak theory or the lack of representational faithfulness in construct measurement.

6.1.2 Studies Testing the Secrecy Hypothesis Only

Gray and Vint [1995]

Gray and Vint [1995] test Gray's hypothesis with respect to Secrecy only. Gray and Vint [1995, p. 36] state "in order to test Gray's secrecy hypothesis, it is *necessary* to operationalize the link between secrecy and accounting disclosure practices" (emphasis added). This statement suggests that it is not possible to directly test the relationship SV → AV; instead, empirical tests must focus on SV → AS.

Secrecy is operationalized by using a database of disclosure practices from a project conducted by Gray, et al. [1984]. Similar to the DS data used by Salter and Niswander [1995], the data used by Gray and Vint [1995] were gathered through a survey of local partners of an international accounting firm. The impact of culture on accounting disclosures is assessed by means of linear regression analysis using mean disclosure scores as the dependent variable and Hofstede's [1980] cultural dimension indices as the independent variables. Their results (along with those of other studies testing the Secrecy hypothesis) are summarized in Table 6.

With 27 countries in a univariate regression, Gray and Vint [1995] find that, as hypothesized, Individualism and Masculinity are positively related to accounting disclosure and Power Distance and Uncertainty Avoidance are negatively related to disclosure. The results support each component of Gray's [1988] hypothesis with respect to Secrecy (with disclosure used as a proxy). Results of stepwise regression suggest that Uncertainty Avoidance and Individualism have the greatest power in explaining disclosure practices. Gray and Vint [1995] conclude by suggesting that, in addition to culture, future research should examine the influence of institutional variables on accounting disclosure practices, i.e., the link IC → AS.

Table 6
Results of Tests of Gray's Secrecy Hypothesis
(Disclosure Used as Proxy for Secrecy)

	Cultural Dimensions			
Author(s)	Individualism	Power Distance	Uncertainty Avoidance	Masculinity
Gray [1988]-hypothesis[1]	Pos.	Neg.	Neg.	Pos.
Studies Testing all Four Hypotheses				
Eddie [1990]	+	-	-	+
Salter & Niswander [1995][2]	+, ns	ns, ns	-, -	ns, ns
Sudarwan & Fogarty [1996]	-	ns	-	ns
Studies Testing Secrecy Hypothesis Only				
Gray and Vint [1995]	+	-	-	+
Zarzeski [1996]				
- full sample	+	+	-	+
- split sample:				
Low int'l dependence	+	+	-	+
High int'l dependence	+	+	-	ns
Wingate [1997]	+	ns	-	ns
Jaggi & Low [2000]				
- full sample	+	+	ns	-
- split sample:				
Code law	+	+	+	-
Common law	ns	ns	ns	ns

Table 6 (Continued)
Results of Tests of Gray's Secrecy Hypothesis
(Disclosure Used as Proxu for Secrecy)

	Cultural Dimensions			
Author(s)	Individualism	Power Distance	Uncertainty Avoidance	Masculinity
Hope [2003]				
All four dimensions				
- full sample	+	ns	ns	-
- split sample:				
Code law	+	ns	+	-
Common law	-	-	-	+
Two dimensions (IND, UA)				
- full sample	+		-	
- split sample				
Code law	+		-	
Common law	+		-	

[1] The expected nature of relationship in this table is the opposite from Table 2. Gray's original hypotheses are stated in terms of the relationship between cultural dimensions and *secrecy*. The expected nature of relationship between cultural dimensions and *disclosure* reflected in this table is of the opposite sign.

[2] The signs of relationship reported in this table are the opposite of those in Table 4. The signs in this table relate to an index of disclosure as dependent variable, whereas the signs reported in Table 4 relate to the inverse index of secrecy.

+ / -	Sign of significant regression coefficient
Pos. / Neg.	Positive / Negative relationship hypothesized by Gray
ns	Relationship is not statistically significant

Zarzeski [1996]

Zarzeski [1996] focuses on the influence of both culture and market forces on investor-oriented disclosure practices. Her basic research question is: "Do enterprises in the international marketplace disclose contrary to the secretiveness of their home culture? If so, then what causes such "contrary" behavior?" [1996, p. 21].

Based on theory and the results of previous research, she hypothesizes that, in addition to culture, a company's multinationality (foreign sales/total

sales), leverage (debt ratio), and size will affect its propensity to provide "investor-oriented" disclosure practices. Investor-oriented disclosures are those that investors deem important. To develop the dependent variable, fifty-two disclosure items used in previous studies were selected to develop an "investor-oriented disclosure" score in which each item was assigned a weight used in previous disclosure studies. Unlike previous studies, Zarzeski [1996] obtained the data for her dependent variable and the market force variables from corporate annual reports. Because of this, her analysis covers a small number of countries. The data were obtained from the annual reports of 256 companies located in seven countries.

Hypotheses are tested using multiple regression analysis with the disclosure score as the dependent variable and the three market forces and Hofstede's four cultural dimension indices as the independent variables. Each of the explanatory variables had a significant regression coefficient, and except for Power Distance, each had the expected sign. Zarzeski [1996] suggests that the unexpected sign for Power Distance may be a function of its moderately high correlation with Individualism. Zarzeski's results with regard to Gray's hypotheses are summarized in Table 6.

Zarzeski [1996] also tests an international dependence model using a company's ratio of foreign sales to total sales to measure the construct "dependence on international resources." The sample of companies is split in half on the basis of the multinationality ratio, and Wald tests were conducted to test the following hypothesis: "Firms exhibiting low dependence on international resources are likely to exhibit a significant relationship between disclosure and the secretive nature of their home culture, but the firms exhibiting high dependence on international resources are likely to show little or less culture-accounting relationship" [1996, p. 28].

The results provide some support for the hypothesis and indicate that, in particular, Uncertainty Avoidance and Masculinity relate to disclosure differently depending upon the internationality of a firm. There is a significant positive relationship between disclosure and Uncertainty Avoidance for both samples of firms, but the strength of the relationship is considerably higher for the low international dependence sample. Zarzeski [1996, p. 35] concludes by stating that "*local* firms disclose more like their culture than do *international* firms" (emphasis in the original). Thus, Zarzeski [1996] shows that outside factors can influence the relationship between culture and the accounting system. In terms of Gray's framework, her finding can be stated as "international dependence" has a moderating influence on the relationship SV → AS.

Wingate [1997]

Wingate [1997] examines the influence of culture on the amount of disclosure required in a country. She uses CIFAR's 1991 International Financial Reporting Index as the dependent variable, and Hofstede's cultural dimension indices as independent variables. Her analysis relates to 39 countries common to both Hofstede and CIFAR. Uncertainty Avoidance and Individualism are significant in univariate and multivariate analyses and each has the expected sign. Contrary to Gray's hypothesis, Power Distance is not significantly related to the disclosure index.

Wingate [1997] also tests the relationship between the CIFAR disclosure index and country membership in different culture areas as identified by Hofstede. She finds that culture areas explain a greater percentage of the variance in the disclosure index (adj. R^2 = 62.4%) than the four cultural dimensions (adj. R^2 = 53.2%). She suggests that the culture area to which a country belongs will be more helpful in evaluating that country's auditing environment than looking at the country in isolation.

Jaggi and Low [2000]

Jaggi and Low [2000] develop and test an international financial disclosure model that focuses on the relationship between culture, legal systems, and accounting disclosures. They hypothesize that the strength of the influence that cultural values have on disclosure is mediated by a country's legal system. Specifically, they expect cultural values to be more important than market forces in influencing financial disclosures in code law countries, but that market forces would dominate culture in affecting disclosure in common law countries.

Jaggi and Low [2000] use CIFAR's 1993 International Financial Reporting Index as a measure of disclosure. Independent variables consist of Hofstede's cultural dimensions, nature of the legal system, and four company specific "market force" variables (firm size, leverage, market capitalization, and multinationality). Data requirements limited the analysis to 401 companies in six countries—three common law countries and three code law countries.

The model is tested first on the full sample of companies and then separately for the companies in common law countries and the companies in code law countries. For the full sample, the sign of the coefficients on Uncertainty Avoidance and Individualism are consistent with Gray's hypotheses but only Individualism is significant. The coefficients on Power Distance and Masculinity are significant but contrary to expectations. Thus, for this sample of six countries, Jaggi and Low [2000] find support for only one component of Gray's Secrecy hypothesis (see Table 6).

The results of the regression analyses for the two subsets of countries provide insight into the effect that the nature of the legal system has on disclosure. For the common law countries, none of the coefficients on the cultural variables is significant. For the code law countries, all of the cultural variables are significant but only Individualism is in the hypothesized direction. Subsequent tests conducted with only the multinational firms in the two groups of countries yield similar results. These results suggest that culture has no significant influence on disclosure in common law countries. The influence of cultural variables on disclosure in code law countries is significant but not always in the expected direction.

Jaggi and Low [2000] offer three possible explanations for finding a general lack of support for Gray's Secrecy hypothesis: (1) Hofstede's culture indices, developed in the 1970's, may have become outdated; (2) developed from questionnaire responses within only one company, Hofstede's scores may not reflect the diversity of attitudes within a country; and (3) Gray's hy-

pothesis with regard to Secrecy (and by extension, disclosure) may not be valid.

Hope [2003]

The results obtained by Jaggi and Low [2000] suggest that culture has little or no influence on disclosure levels once legal system is considered. Using CIFAR's 1993 and 1995 disclosure indices as the dependent variable, Hope [2003] examines this issue for a much larger sample of firms representing 39 countries. Regression results on the full sample of firms provide support only for Individualism being positively related to disclosure. Masculinity is also significant but of the wrong sign. In separate analyses of common law and code law countries, Hope obtains significant regression coefficients for most of Hofstede's cultural variables. Only Power Distance is insignificant and only for the code law group of countries. However, Hope [2003] obtains opposite signs on the coefficients between the two legal regimes for each of the four cultural values. The signs on UA and PD are as hypothesized in the common law group and the sign on IND is as hypothesized in the code law group. When only UA and IND are included in the analysis, each cultural dimension behaves similarly for both the code law and common law groups of countries, and in the direction hypothesized. Hope [2003] states that his analysis does not address the issue whether legal system and culture are substitutes or complements, but it does answer the question whether culture has any explanatory power for disclosure given the legal system. He concludes that "it is too early to write off culture as an explanatory variable for annual report disclosure levels" [2003, p. 239].

6.2 Empirical Tests of the Framework at the Individual Level

Hofstede suggests that because cultural dimensions represent basic differences in the culture and value systems of nations, they affect the thinking and behavior of individuals in systematic and predictable ways. Gray [1988, p. 5] states that "the value systems or attitudes of accountants may be expected to be related to and derived from societal values...Accounting 'values' will, in turn, impact on accounting systems." Perera [1989, p. 48] more explicitly attributes the relationships between accounting values and accounting practice to accountants' value orientations and concludes that "the extent of disclosure in financial reports would seem to differ between countries in line with differences in the value orientations of the preparers of those reports."

Most of the research investigating the culture-accounting framework has focused on the relationship between societal values and one or more attributes of the accounting system (symbolically, SV → AS), with countries as the unit of analysis. These studies implicitly assume that shared societal values result in shared values at the accounting subculture level (SV → AV), and that shared accounting values affect the nature of a country's accounting system (AV → AS). However, in the country-level studies reviewed thus far, neither the link SV → AV nor the link AV → AS has been directly tested.

Five studies have examined aspects of Gray's framework using individual accountants, rather than countries, as the unit of analysis (summarized in

Table 7). By capturing individual's opinions and attitudes with respect to specific accounting issues, three of these studies attempt to develop measures of accounting values and directly test the link SV → AV.

MacArthur [1996, 1999]

MacArthur [1996] investigates the influence of culture on the comments submitted by corporate managers on draft E32, *Comparability of Financial Statements*, issued by the International Accounting Standards Committee (IASC). His database consists of comment letters written to the IASC by 47 company managers located in 9 different countries. Based on Gray's framework and the pattern of cultural dimension indices computed by Hofstede for the 9 countries, MacArthur [1996] hypothesizes that the comments from the managers of companies in Anglo and Nordic countries will exhibit a preference for professionalism, flexibility, optimism, and transparency. Conversely, the comments from company managers in the Germanic and More-developed Latin countries will indicate a preference for professionalism, uniformity, conservatism, and secrecy.

Using content analysis, MacArthur [1996] identifies statements in the comment letters indicative of the accounting subculture values held by the writer. MacArthur [1996] indicates that the results of his analysis provide support for the hypothesis related to the Anglo and Nordic company managers. The results are less supportive of the hypothesis related to the Germanic and More-developed Latin managers. In particular, these groups do not express a preference for secrecy to the extent hypothesized.

Content analysis is by its nature a subjective method of data collection. In the current context, application of content analysis requires identification of the types of language indicative of each of Gray's accounting value. The researcher must read each comment letter to find and document such language. As MacArthur [1996, p. 216-7] points out, "(U)sing the content analysis methodology, the onus of language interpretation is on the researcher and not the subject as in the case of questionnaire surveys."

Appendix B to MacArthur [1996] provides examples of accounting value statements in the E32 comment letters. The example related to professionalism for the Germanic and More-developed Latin companies illustrates the interpretative nature of content analysis. MacArthur [1996, p. 235] reports that a Swiss company made the following statement: "We appreciate the efforts the International Accounting Standards Committee has undertaken to harmonise the international standards of accounting." MacArthur [1996] interprets this statement as being supportive of the self-regulation of international accounting standards and thus indicative of the value of professionalism. Given the context in which this statement was written, i.e., commenting on E32's attempt to reduce a number of previously accepted accounting options, and placing emphasis on the verb "harmonise," this statement could also be interpreted as being supportive of uniformity. Moreover, there is no way to know whether the writer might actually prefer legislated international accounting standards. There would be no reason to express such a preference in a comment letter written to the IASC.

Table 7
Empirical Tests of Gray's Framework with Individuals as the Unit of Analysis

Author(s)	Accounting Issue(s)	# of Countries	Method	Results
MacArthur [1996, 1999]	Conducts an empirical test of Gray (1988) by investigating the influence of culture on the comments submitted by corporate managers (1996) and accounting bodies (1999) on draft E32, *Comparability of Financial Statements*, issued by the IASC.	9 [1996] 23 [1999]	Based on Gray's framework and Hofstede's cultural dimensions, the author hypothesizes that comment letters from different regions of the world will result in different levels of professionalism, uniformity, conservatism, and secrecy. Using content analysis, the author identifies statements in the comment letters indicative of the accounting values held by the writer.	In both studies, Anglo and Nordic countries' comments provide strong support for Gray's framework while Germanic and More Developed Latin countries' comments provide weaker support. MacArthur [1999] also finds that African and Asian countries' comments provide some support for Gray's framework. Overall, the findings in MacArthur [1996, 1999] generally support Gray's hypotheses.
Roberts and Salter [1999]	Empirically test Gray's uniformity hypothesis by examining what factors help to explain the attitudes of accountants internationally towards the desirability of uniform accounting rules.	23	Create a uniformity score from a survey of accountants' attitudes towards uniformity. Uniformity score then used as the dependent variable in a regression model where Hofstede's cultural dimensions and stock market variables are the independent variables.	Results provide support for Gray's uniformity hypothesis for Power Distance and Individualism. The results hold even after controlling for the level of uniformity in current practice.

Table 7 (Continued)
Empirical Tests of Gray's Framework with Individuals as the Unit of Analysis

Author(s)	Accounting Issue(s)	# of Countries	Method	Results
Schultz and Lopez [2001]	Investigate whether financial reporting judgments made by accountants in different countries are consistent when they are faced with the same economic facts and similar reporting standards.	3	The authors suggest that accountants from countries with code-based legal systems, non-equity based sources of financing, and higher uncertainty avoidance (i.e., France and Germany) will resolve warranty estimates more conservatively than American accountants (from a country with a common-law system, equity-based financing, and lower uncertainty avoidance). An experiment is conducted to test the authors' hypotheses.	The results support the authors' expectations (and Gray's conservatism hypothesis) in that French and German accountants recommend recording warranty estimates that are higher (i.e., more cautious or conservative) than their American counterparts.
Doupnik and Richter [2004]	Examine the impact of culture on accountants' interpretation of verbal probability expressions used in IFRSs as thresholds for recognizing accounting elements.	2	Hypotheses are developed with respect to the effect that the interaction of the accounting value of conservatism and the context in which probability expressions are used will have on accountants' interpretations of those expressions. Hypotheses are tested through a survey of professional accountants in a high conservatism country (Germany) and a low conservatism country (U.S.).	Results provide some support for Gray's conservatism hypothesis in that German accountants exhibit a conservatism bias in their interpretation of positively framed probability expressions.

The subjective nature of content analysis notwithstanding, MacArthur's [1996] results are also severely limited in their generalizability. The More-developed Latin cultural area is represented by only three companies, and the Germanic area by only five companies. The commentators are self-selected and may or may not be representative of other companies in these areas.

In addition to searching for language in the comment letters indicative of the four accounting values, MacArthur [1996] also identifies language indicative of Hofstede's cultural dimensions. He develops hypotheses based on Hofstede's cultural dimension indices. For example, managers in Anglo and Nordic companies are expected to exhibit less uncertainty avoidance in their comments than managers in More-developed Latin and Germanic countries. The content analysis provides support for each of these hypotheses related to cultural values. This is the only accounting study reviewed thus far that attempts to independently verify Hofstede using information obtained from individuals.

MacArthur [1999] extends MacArthur [1996] by examining the comment letters on E32 submitted by IASC accountancy body members representing 19 countries. The analysis is extended to the African, More-developed Asian, and Asian Colonial cultural areas. Using the same methodology as in the previous study, MacArthur [1999] concludes that the IASC members' comments are even more consistent with Gray's hypotheses than were the company managers' comments in MacArthur [1996]. He suggests that this result might arise because the accountancy bodies must reflect the needs of members in many different organizational contexts and thus more precisely reflect their national culture.

Roberts and Salter [1999]

Roberts and Salter [1999] explore the issue of what factors help to explain the attitudes of accountants internationally towards the desirability of uniform accounting rules. They collect views on the desirability of uniform accounting rules through a questionnaire administered to partners in Big 6 accounting firms in 23 countries. Each respondent provided a yes/no response as to whether they wanted a single mandatory accounting method for each of 14 different accounting issues. Roberts and Salter [1999] then create a uniformity score from this information and use it as the dependent variable in a regression model in which Hofstede's cultural dimensions and the importance of capital markets (MKTCAP) serve as the independent variables. To avoid overfitting the model, Roberts and Salter [1999] use principal components analysis on Hofstede's indices for the 23 countries included in the sample to reduce the four cultural dimensions to two factors (CULT1 and CULT2). CULT1 combines Power Distance (positive loading) and Individualism (negative loading), and CULT2 combines Uncertainty Avoidance and Masculinity (both with positive loadings). Based on Gray's framework, Roberts and Salter [1999] expect countries with positive scores on CULT1 (high power distance and low individualism) to support uniformity, and vice versa. Countries with positive scores on CULT2 (high Uncertainty Avoidance and high Masculinity) are also expected to support uniformity. To control for the effect the ex-

isting level of uniformity within a country might have on respondents' opinions, a measure of the current level of uniformity is included in the analysis. Herfindahl concentration measures are developed for each accounting issue from respondents' self-reporting of the extent to which organizations in their country followed a particular accounting method.

Roberts and Salter [1999] find that accountants' attitudes toward uniformity are influenced significantly by both culture (positive relationship with CULT1, negative relationship with CULT2), and the importance of the domestic stock market. These results hold even after controlling for the level of uniformity in current practice. The results support Gray in that, through CULT1, Power Distance is positively related to Uniformity and Individualism is negatively related to Uniformity. However, through CULT2, Uncertainty Avoidance is negatively related to Uniformity, which is contrary to Gray's Uniformity hypothesis. Roberts and Salter [1999] suggest that the relationship with CULT2 may be driven by the Masculinity component, which Gray did not visualize as having a significant influence on uniformity.

Schultz and Lopez [2001]

Schultz and Lopez [2001] use an experiment to investigate the consistency of financial reporting judgments made by accountants in three different countries (France, Germany, and the U.S.) when they are faced with the same economic facts and similar reporting standards. Using Gray and other literature examining differences in national accounting systems, the authors posit that accountants will make different decisions based on their country's legal system, sources of financing, and national culture.

Schultz and Lopez [2001] suggest that accountants from countries with code-based legal systems where banks, governments, or families are the primary sources of financing (i.e., France and Germany) will resolve warranty expense estimates more conservatively than accountants from countries with common-law systems that rely on equity-based financing (i.e., the U.S.). The authors also employ Gray's conservatism hypothesis to posit that accountants in countries with higher levels of uncertainty avoidance (UA) will be more conservative than accountants in countries with lower levels of UA, as suggested by Gray. Based on the results of previous research that has found a consistent link between UA and differences in national financial reporting systems, the authors suggest that UA will be the dominant cultural value in driving estimated warranty amounts.

Therefore, the authors expect French and German accountants (from countries with a code-law system, non-equity based financing, and higher UA) to resolve warranty estimates more conservatively than American accountants (from a country with a common-law system, equity based financing, and lower UA). The results support the authors' expectations and Gray's [1988] conservatism hypothesis in that French and German accountants' recommend recording warranty estimates that are higher (i.e., more cautious or conservative) than their American counterparts, as hypothesized.

A significant limitation of this study is that the authors do not control for the effect of countries' current accounting practice on subjects' judgments,

and instead allow subjects to make their judgments in line with their country's standards. Differences in local practice regarding the accounting for warranties could have affected the results. Additionally, France and Germany represent two countries where the national tax code strongly influences the calculation of corporate income. It does not appear that the subjects were instructed to disregard the tax implications of their decisions. Therefore, differences in local practice and/or the connection between financial reporting and taxation represent potential alternative explanations for French and German accountants' higher warranty expense estimates.

Schultz and Lopez [2001] did not set out to test the influence of culture alone on warranty estimates. Therefore, their design does not allow them to separate the impact of culture on such estimates from the influence of equity markets and legal systems. The study is important, however, in that it introduces experiments as a methodology for examining the relationship between culture and financial reporting decisions made by individual accountants.

Doupnik and Richter [2004]

Doupnik and Richter [2004] examine the impact of culture on the interpretation of probability expressions used in International Financial Reporting Standards (IFRSs)[9] as thresholds for the recognition of accounting elements (assets, liabilities, and increases and decreases in income). An example of such a threshold is found in International Accounting Standard (IAS) 18, *Revenue*, which requires revenue from the sale of goods to be recognized when it is probable that the economic benefits associated with the transaction will flow to the enterprise. Relying on Gray's conservatism hypothesis, Doupnik and Richter [2004] posit that accountants in a country that ranks higher in terms of uncertainty avoidance and long-term orientation, and ranks lower in terms of individualism and masculinity will exhibit a higher level of conservatism in the numerical probability they associate with verbal probability expressions such as "probable." Based on Hofstede's index scores, they select Germany and the United States to represent countries with relatively high and low levels of conservatism. They hypothesize that German accountants will assign a higher (lower) numerical probability than U.S. accountants to verbal probability expressions that determine the threshold for recognition of assets and increases in income (liabilities and decreases in income). In the context of recognizing revenue under IAS 18, this hypothesis implies that German accountants will assign a higher numerical probability to the word "probable" than will U.S. accountants.

Doupnik and Richter [2004] conduct a mail survey of professional accountants in the U.S. and Germany to test their hypotheses. They provide subjects with 14 excerpts from IFRSs and ask them to assign a numerical probability to the 16 verbal probability expressions contained in the excerpts. They obtain significant differences in mean responses supporting their hypothesis

[9] International Financial Reporting Standards (IFRSs) are comprised of International Accounting Standards issued by the former International Accounting Standards Committee; International Financial Reporting Standards issued by the IASB; and Interpretations issued by the IASB's International Financial Reporting Interpretations Committee.

for five of 11 positively-framed expressions (such as "probable") but only one of five negatively-framed expressions (such as "no longer probable").

The results obtained by Doupnik and Richter [2004] appear to provide some support for Gray's conservatism hypothesis at the individual accountant level. Similar to Schultz and Lopez [2001], Doupnik and Richter [2004] do not control for the impact that institutional factors might have on accountants' responses. However, as the authors point out, by asking subjects to complete the relatively abstract task of assigning a numerical score to a verbal probability expression, rather than asking them to make an explicit recognition decision, institutional factors such as the extent to which accounting is influenced by taxation are less likely to operate. On the other hand, the abstract nature of their task limits the generalizability of their results to actual decision-making. Differences in the interpretation of verbal probability expressions do not necessarily result in differences in accounting recognition decisions.

7.0 SUGGESTIONS FOR FUTURE RESEARCH

In the remainder of this paper based we provide a number of suggestions for future research. Our suggestions are based on our analysis of the number of existing studies addressing a particular issue, methodological limitations in existing studies, and the issues that we believe are of particular importance. We categorize our suggestions as relating to country level studies (section 7.1), to research using individual accountants as the unit of analysis (section 7.2), and further theoretical work (sections 7.3 and 7.4).

7.1 Country Studies

7.1.1 Tests of the Secrecy Hypothesis

Gray's secrecy hypothesis has been subjected to the greatest amount of testing, probably because it is the least difficult (easiest) accounting system attribute to measure. Most studies provide support for Gray's hypothesized relationships between secrecy on the one hand and individualism and uncertainty avoidance on the other (see Table 6). These are the cultural dimensions that Gray expected to have the strongest effect on secrecy. These findings are robust across a variety of different measures of national disclosure levels and across a broad range of countries.

A country's disclosure requirements can change over time. Standard setters could establish disclosure requirements that conflict with a country's cultural values but with which firms nevertheless are required to comply. The most recently published study investigating the Secrecy hypothesis used disclosure data from 1994 annual reports. It would be interesting to replicate one or more of these studies with current data to determine whether the influence of culture on disclosure has remained constant over time. Unfortunately, there have been no updates of the International Financial Reporting Index since CIFAR [1995].

7.1.2 Tests of the Other Hypotheses

Few studies have examined the relationship between culture and the accounting values other than Secrecy (i.e., Professionalism, Uniformity, and Conservatism). Of the three studies that have done so, Eddie [1990] and Sudarwan and Fogarty [1996] have limitations in both independent variable and dependent variable measurement that brings the reliability of their results into question. Salter and Niswander [1995] represents the most rigorous study related to these accounting values. Their findings provide little support for Gray's expectations (see Table 4). The results of just one study, however, cannot prove or disprove these hypotheses. Therefore, additional testing is needed before any solid inferences can be drawn about tests of Gray's hypothesized relationships with respect to Professionalism, Uniformity, and Conservatism.

We suggest that researchers concentrate their efforts on Conservatism. Conservatism is the accounting value that affects the recognition and measurement of items that appear in financial statements and therefore would have the greatest implication for the cross-national comparability of financial statements.[10] Professionalism, on the other hand, is the least important accounting value from a financial reporting perspective.

7.1.3 Independent Variable Measurement

With the exception of Sudarwan and Fogarty [1996], all of the country level studies use Hofstede's cultural dimension indices as independent variables. Hofstede's indices were developed over twenty years ago, which may make them outdated. Although Hofstede suggests that culture changes only very slowly over time, it is not clear that his indices are still valid.

More importantly, because these indices are derived from data provided by non-accountants (i.e., IBM employees), it is not clear that they accurately reflect accountants' values. Stated differently, accountants, as a group, may not have value structures similar to other groups in their country. Montagna (1986) suggests, for example, that accountants are more likely to avoid uncertainty situations than members of other professions. This might be true either because of self-selection or through socialization.[11]

Analysis using Hofstede's cultural value dimension indices as independent variables would be more reliable if they were measures of the cultural values of accountants (rather than IBM employees). The four SV indices reported in Hofstede [1980] are derived from only 13 questions in Hofstede's Values Survey Module (VSM).[12] Hofstede indicates that as few as 20 responses are

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[10] Gray [1988] supports this notion. He notes that conservatism would seem to be a significant accounting value because "it is arguably the most ancient and probably the most pervasive principle of accounting valuation" [1988, p. 10].

[11] Soeters and Schreuder [1988] find differences in cultural values between Dutch accountants working for Big 8 (U.S.) accounting firms and Dutch accountants working for Dutch firms. Their analysis suggests that self-selection is more important than socialization in explaining this phenomenon as Dutch accountants working in Big 8 firms already conform to certain aspects of U.S. culture and find working for U.S. accounting firms attractive.

[12] The Values Survey Module, which may be freely used for research purposes, can be obtained at Geert Hofstede's website: http://www.geerthofstede.com.

needed to develop reliable indices, with 50 being the ideal number of responses [Hofstede, 1994]. Therefore, developing SV indices for the population of accountants within countries of interest is not an insurmountable task. In a recent accounting study, Patel, et al. [2002] used Hofstede's VSM to measure the cultural values of their subjects in a study of the judgments of Australian, Indian, and Malaysian accountants in auditor-client conflict situations.

7.1.4 Dependent Variable Measurement

A common limitation in all the studies of culture and financial reporting at the country-level is the difficulty in developing adequate measures of the accounting system attributes that serve as dependent variables. Future research may wish to focus on improving the quality in measuring these attributes, especially conservatism. The first step in measuring conservatism is the establishment of an operational definition. Gray [1988, p. 8] defines conservatism as "a preference for a cautious approach to measurement..." Williams, et al. [1987, p.57] provide a textbook definition of conservatism as "the solution that least favorably affects net income and net assets of the current period." This is achieved by:

1. measuring revenues, gains, net income, assets, and owners' equity lower rather than higher, and later rather than earlier, and
2. measuring expenses, losses, and liabilities higher rather than lower, and earlier rather than later.

From this operational definition, a list of specific rules and practices consistent with conservatism can be identified. Reporting inventory at the lower of cost or market value is a practice often used to exemplify conservatism. Other rules would include the immediate write-off rather than capitalization of research and development costs, and the recognition of losses on long-term construction contracts as soon as such losses become probable.[13] In some cases, it is difficult to determine whether a practice is conservative or not. For example, the upward revaluation of fixed assets increases assets but also results in a reduction in net income through additional depreciation.

Three primary data sources have been used in prior country-level studies to measure the dependent variables: annual reports, professional standards, and accountant surveys. Annual reports can be used relatively easily to develop measures of disclosure, but are of limited use in measuring conservatism. A country's financial reporting standards could be examined to develop a measure of conservatism. However, the difference between *de jure* and *de facto* practice can be substantial. Surveys of public accounting firms to ascertain the practices followed by their clients similar to Doupnik and Salter [1993] could be used to overcome this limitation.

[13] Eddie [1990] provides a list of 10 additional accounting practices that he used to develop a conservatism index.

7.1.5 Testing the Linkage SV→AV→AS

Gray [1988] hypothesizes that societal values influence accounting values (SV→AV) and that accounting values influence accounting systems (AV→AS). Yet, the primary relationship tested in the extant country-level studies is the influence of societal values on the accounting system (SV→AS). These studies implicitly assume that by examining SV→AS, the linkages SV→AV and AV→AS are being tested. However, without explicitly measuring AV, one cannot be certain that these relationships exist. As a result, none of the previous country-level studies has actually tested the SV→AV→AS relationship hypothesized by Gray [1988]. As noted earlier, the fact that this path has never been directly tested raises the issue of whether AV can be measured in a reliable manner at the country level.

One approach would be to administer a survey to individual accountants' in different countries to obtain their opinions and attitudes towards each of Gray's accounting values, as was done by Roberts and Salter [1999] for Uniformity. Factor analysis could then be employed to determine which sets of items on the questionnaire best represent each AV construct. The responses to those questions could be used to create an index for each accounting value.

In developing their Uniformity score, Roberts and Salter [1999] presented respondents with a list of 14 accounting practices and asked them to indicate whether or not they felt a single method should be mandated. As the authors point out, a limitation of this approach is that the strength of the respondent's preference was not examined. In addition, all questions were related to very specific accounting practices; there were no questions exploring respondents' attitudes toward uniformity at a more general level.

A research instrument designed to measure Conservatism might include a combination of statements related to specific practices as well as more general questions.[14] Respondents could be asked to indicate the extent to which they agree with each statement on a Likert-type scale with endpoints of "strongly agree" and "strongly disagree." The instrument might first be administered in 4-8 countries representative of different cultural areas. Factor analysis then could be used to identify those items that load most heavily on the conservatism construct to create a parsimonious instrument for measuring conservatism in other countries.

7.1.6 Testing the Linkage SV→IC→AS

Several country-level studies examine the influence of both societal values (SV) and institutional consequences (IC) on accounting systems (AS) by including both SV and IC variables as independent variables in regression analysis. In effect, these studies examine the links IC→AS and SV→AS simultaneously.

Gray's model suggests that societal values influence a society's institutions, which in turn influence the accounting system (SV→IC→AS). In this

[14] Examples of a specific practice item and a more general item, respectively, are: "Inventory should be reported on the balance sheet at cost or market value, whichever is lower," and "Unrealized gains should never be recognized in net income."

path, IC is a mediating variable. However, none of the studies that include IC variables in their models have tested IC as a mediator. Therefore, the linkage SV→ IC→AS remains unexplored.

Baron and Kenny [1986] present a potential method for testing this relationship. According to Baron and Kenny [1986], to establish mediation, one must demonstrate (using three regression equations) that (1) the independent variable significantly affects the dependent variable (SV→AS), (2) the independent variable significantly affects the proposed mediating variable (SV→IC), and (3) the effect of the independent variable (SV) reduces to non-significance (perfect mediation) or reduces in effect size (partial mediation) when the regression analysis includes the mediating variable (IC), which is itself significant. This procedure demonstrates that the variance that was previously explained by the independent variable (SV) can now be explained by the mediating variable (IC). This suggests that the independent variable (SV) exerts its effect on the dependent variable (AS) indirectly through the mediating variable (IC). This procedure could also be useful in testing the linkage SV→AV→AS.

Baron and Kenny's [1986] procedure envisions only one independent variable and one mediating variable. Although it would be relatively easy to examine one IC at a time, e.g., nature of the legal system, it would be difficult to identify only one SV that is most likely to influence the selected IC. Based on scores on all four SV, Hofstede grouped countries into culture areas, e.g., Anglo-American, Less-developed Latin, Asian-Colonial. An alternative to selecting only one SV to include in the mediation test would be to use membership in culture area as the independent variable in examining the linkage SV→IC→AS. SV would be measured through membership in a particular culture area, IC would be represented by, for example, nature of legal system, and AS would consist of various measures of actual practice with respect to Conservatism, Secrecy, Uniformity, and Professionalism. Subsequent mediation tests could be run using other IC variables, such as nature of the capital market.

7.1.7 Importance of Country-Level Studies

Examining the relationship between national culture and national financial reporting systems is interesting from a purely academic perspective because it helps us understand that accounting is a man-made tool affected by the environment in which it is developed. The pragmatic objective of conducting cultural research using countries as the unit of analysis is to determine whether culture acts as an impediment to the international harmonization of financial reporting. The basic research question related to this objective is: "Does national culture affect a country's financial reporting rules?"

Several countries from different culture areas already require the use of International Financial Reporting Standards (IFRSs).[15] As more countries

[15] The IASB provides information on its website (http://www.iasb.org) as to the extent that countries currently use IFRSs. Most significantly, the European Union will require publicly traded companies to use IFRSs in preparing their consolidated financial statements beginning in 2005.

adopt IFRSs, the relevance of the above research question declines. For example, after 2005, cultural differences across European countries will have limited, if any, impact on the accounting rules required to be followed by publicly traded companies.

However, even if all countries have the same set of financial reporting rules, cultural-relativism may still be relevant in explaining differences in the way those rules are interpreted and applied by accountants from different countries. The pertinent question then becomes: "Does national culture affect *accountants' application of* a country's financial reporting rules?" We recommend that future research concentrate on this question. Answering this question requires research to be conducted at the individual level.

7.2 Studies at the Individual Level

Three different methodologies have been used to examine Gray's framework using individuals as the unit of analysis: (1) content analysis, (2) opinion survey, and (3) experiment. We suggest that the experimental method holds the greatest promise for producing meaningful results in future research.

Content Analysis

MacArthur [1996, 1999] utilizes content analysis to investigate the influence of culture on comment letters submitted by corporate managers and accountancy body members. A strength of content analysis is that it permits a researcher to directly measure accounting values (AV) through the identification of language that is consistent with preferences for Professionalism, Uniformity, Conservatism, and Secrecy. In addition, demand bias on the part of the researcher is not a serious concern. However, content analysis is a subjective method that can only be used when the opportunity arises (e.g., when comment letters become available) and therefore may be of limited use in a proactive research program.

Opinion Survey

The opinion survey also permits a researcher to directly measure accounting values (AV), but unlike content analysis the researcher can actively solicit opinions from individuals without waiting for them to expressed. One of the greatest difficulties in measuring AV utilizing an opinion survey is the development of a valid survey instrument. Given the length of time required and challenges associated with validating a measurement instrument, this approach does not appear to be one that is very feasible, at least not in the short-term.[16]

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[16] There are many steps in determining whether a measure adequately assesses a construct of interest. Kazdin [1998] addresses many of the assessment methods and strategies a researcher must consider in developing a valid measurement instrument.

Experiment

Content analysis and opinion surveys have been used to examine the relation between culture and accounting values at the individual level, but not the relation between culture and the application of financial reporting rules. Of the three methodologies that have been used to examine Gray's framework using individuals as the unit of analysis, the experiment appears to be the one methodology best suited to answer the question posed at the end of the previous section: "Does national culture affect *accountants' application of* financial reporting rules?" As the prospect of global harmonization of accounting standards increases, tests of Gray's framework at the country level become less relevant. However, focusing on the implication of Gray's framework for individual accountants' behavior and the use of an experimental approach to answer the above question could present more long-term relevance from a research perspective.

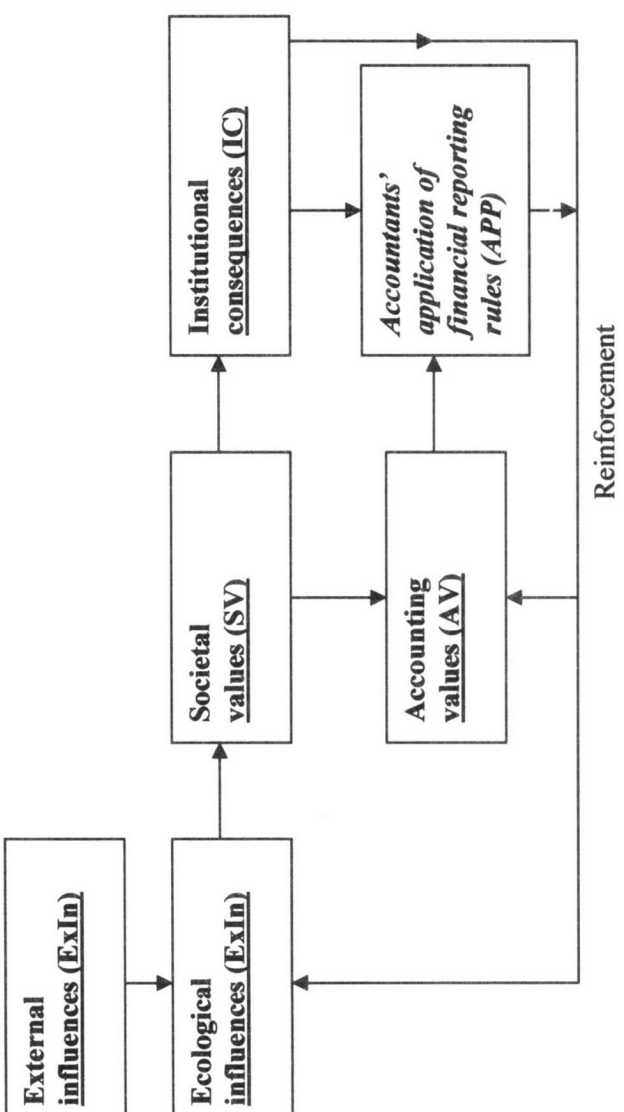
Gray [1988] discusses his cultural relevance framework primarily in terms of culture's influence on financial reporting systems, without specifically referring to culture's possible influence on accountants' behavior. However, as noted earlier, Perera [1989] argues that the extent of disclosure in financial reports will differ in line with differences in the value orientations of the accountants preparing those reports, and Schultz and Lopez [2001] explicitly hypothesize a relationship between culture and the manner in which accountants will apply a specific accounting measurement rule.

The work of Schultz and Lopez [2001] and Doupnik and Richter [2004] implies a partial refinement of Gray's framework in which "accounting system" (AS) can be replaced with "accountants' application of financial reporting rules" (APP), as reflected in Figure 5. We suggest that future research should focus on the relation between societal values, accounting values, and the application of financial reporting rules, expressed symbolically as SV→AV→APP.

According to this partial refinement of Gray's framework, accountants should be expected to apply financial reporting rules in a fashion consistent with their cultural values, and accountants' financial reporting decisions should differ between countries because of differences in cultural values of the accountants applying the rules. This is especially true for those financial reporting decisions that require the application of judgment. Hofstede [2001] supports this notion. Specifically, he suggests that the more judgment that an activity requires, the more it is ruled by values and thus influenced by cultural differences. As a result, he suggests that the rules of accounting and the way they are applied should vary along cultural lines. Based on this partial refinement of Gray's framework, Gray's conservatism hypothesis, as an example, can be restated as follows:

> *Accountants from countries that rank higher (lower) in terms of UA and lower (higher) in terms of IND and MASC will be more (less) conservative in their application of financial reporting rules.*

Figure 5
Partial Refinement of Gray's Framework



To test the restated conservatism hypothesis, subjects could be asked in an experiment to make a financial reporting decision that involves the construct of conservatism. As an example, Schultz and Lopez [2001] asked their respondents to make a decision regarding the accrual of warranty expense. To have the greatest relevance for worldwide harmonization, the financial reporting rule incorporated into the experimental task should be based on IFRSs. In this way, the impact of culture on the application of IFRSs can be examined using an experimental approach before IFRSs become the worldwide standards for financial reporting.[17]

Countries in which accountants are likely to differ on the accounting value of conservatism would also need to be identified. Previous literature suggests that stronger findings may be generated if subjects are chosen from countries with large differences on Hofstede's cultural values [Gernon 1993; Sivakumar and Nakata 2001]. The works of Hofstede [1980, 1991] and Gray [1988] could be used as guidelines for identifying countries that are most likely to differ on the accounting value of conservatism.[18] It is possible to isolate the effect that a focal SV has on a particular AV by selecting countries that are similar on all cultural dimensions other than one dimension expected to affect the particular AV. Sivakumar and Nakata [2001] have identified the optimal country pairs to investigate the effect of a single cultural factor controlling for non-focal variables. For example, to focus on Individualism, researchers should select France and Peru or France and Turkey as their countries of analysis.

One of the greatest challenges in designing an experiment to test the impact of culture on financial reporting decisions is to control for non-cultural, country-specific factors that might possibly affect individual accountants' financial reporting decisions. These factors include (1) current accounting rules with respect to the decision being made, (2) the influence of taxation on financial reporting, and (3) the relative importance of the equity capital market. Neutralizing the effect of these factors through experimental control will help in isolating the impact of culture on accountants' financial reporting judgments.

The most important independent variable or "treatment" in cross-cultural experiments is culture itself. But culture is an ecological variable that cannot be manipulated by the researcher. To ensure that accountants in countries selected for study differ on SV, Hofstede's [1994] VSM could be included as part of the experimental instrument. The VSM responses can be used to calculate SV indices for each group of subjects. The relative values of these indices then can be compared to ensure that they are directionally consistent with Hofstede's indices, and that directional hypotheses are properly stated.

To examine the complete linkage SV→AV→APP, an experimental instrument would need to include three components: (1) Hofstede's VSM to measure SV, (2) a questionnaire designed to measure one or more AV, and (3)

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[17] In discussing the value of experimental methods for practice-relevant research, McDaniel and Hand [1996] refer to this advantage as "timeliness."

[18] For example, Gray [1988] places "Less developed Latin" (e.g., Mexico) and "Near Eastern" (e.g., Iran) countries at the highest level of conservatism as opposed to "Anglo" (e.g., U.S. and U.K.) countries, which he suggests will exhibit the least conservatism.

an experimental decision task to elicit APP. As noted earlier, developing and validating the AV questionnaire will be quite a challenge. In the meantime, the relationship SV→APP can be tested relatively easily. The results of such tests have practical relevance as they will provide evidence of culture's influence, or lack thereof, on accountants' application of a common financial reporting rule.

The use of an experimental approach to test SV→AV→APP would probably permit the examination of only two to three countries and one or two financial reporting decisions at a time. Therefore, replications across countries and contexts will be required to validate the "universality" of the framework.

7.3 Modifications to the Theoretical Framework

Gray provides a framework for understanding the influence of culture on accounting that consists of four major components (SV, IC, AV, and AS) and two paths (SV→AV→AS and SV→IC→AS). Several previous studies have introduced modifications to the framework, and we have suggested a partial refinement that focuses on application of financial accounting rules (substituting APP for AS).

Additional theory-building research to further refine, extend, or modify the model might be worthwhile. To be of practical relevance, such research should focus on identifying and understanding variables and relationships that act as an impediment to the international comparability of financial statements. Some avenues of possible research of this nature would include:

1. Identification of other accounting values that could impede comparability. For example, "income smoothing" might be a fundamental accounting value that can help explain differences in application of financial reporting rules across countries.
2. Development of other linkages between the framework components. Future research might attempt to explain how IC influences AV, which IC will influence which AV, or how SV and IC might interact to affect AV.

7.4 An Alternative to Hofstede

Hofstede's cultural dimensions are only one way to describe national culture. His framework has been used extensively in empirical research, partly because his cultural dimension indices easily can be used as independent variables in statistical analyses. However, Hofstede's work is not without its critics [McSweeney, 2002; Baskerville, 2003].

Schwartz [1994] derives a new set of culture-level value dimensions that also have been quantitatively measured. He labels these value dimensions as Conservatism, Affective Autonomy, Intellectual Autonomy, Hierarchy, Mastery, Egalitarian Commitment, and Harmony.[19] Through smallest space analysis he develops a two-dimensional structure that highlights the relation between the various cultural dimensions. Schwartz [1994] provides scores for 38

[19] Some of these value dimensions are contradictory and others are compatible. For example, Egalitarian Commitment, exhorting voluntary commitment to promote the welfare of other people, and

countries on each of the seven value types. Chui, Lloyd, and Kwok [2001, p. 101] comment that the "sample used by Schwartz is perhaps more relevant to the world today than that which was used by Hofstede, as the data collected are more recent (1988-1992), and several socialist countries have also been included." Schwartz's scores also may better reflect national values because his sample consists of schoolteachers rather than employees from a single U.S.-based multinational corporation.[20]

Schwartz's cultural dimensions have some commonalities with Hofstede's but for the most part the two sets of values are not highly correlated and appear to measure different constructs. For example, Hofstede's Individualism dimension figures prominently in Gray's hypotheses linking culture and accounting values and it is the dimension most often used as an explanatory variable in cultural research [Schwartz, 1994, p. 87]. Schwartz [1994] also uncovers an Individualism element but he finds it to be comprised of two distinct dimensions; the extent to which an individual is viewed as an autonomous entity who voluntarily enters into relationships versus an entity who finds meaning only as part of a collectivity of interdependent, mutually obligated others (Autonomy vs. Conservatism), and the extent to which individuals are allowed to pursue personal rather than collective goals (Mastery/Hierarchy vs. Egalitarian Commitment/Harmony). Schwartz [1994, p. 94] argues that the Individualism dimension should be refined into these two more specific values to reduce confusion in the literature.

Schwartz's country scores are not simply a variation of Hofstede's. For example, whereas the United States ranks 1st in Hofstede's sample on the Individualism dimension, it ranks only in the middle of Schwartz's sample on the dimensions of Intellectual Autonomy (17th of 38), Affective Autonomy (11th), and Conservatism (24th). As Schwartz [1994, p. 110] states, "results of research will be seriously affected by choosing to order nations according to the new types or according to Hofstede's dimensions."

We do not claim that Schwartz's cultural framework is necessarily more relevant for accounting than Hofstede's. However, this alternative set of quantitatively measured cultural dimensions gives accounting researchers an opportunity to empirically explore the links between accounting and different, perhaps more refined dimensions that characterize national culture.[21] Schwartz's country scores have the advantage of being based on more recent and arguably more generalizable samples. Future research can investigate the possibility of using Schwartz's framework in lieu of Hofstede's to explain the

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Harmony, which emphasizes protecting the environment and harmony with nature, are compatible. On the other hand, it would be contradictory for a society to emphasis Conservatism, which is concerned with values such as security, conformity, and tradition, and Autonomy, in which a person is viewed as an autonomous entity entitled to pursue their individual interests and desired.

[20] Schwartz [1994, p. 91] justifies using schoolteachers as samples in cultural studies as follows: "Although no single occupational group can represent a culture, teachers may be the best available group when one is trying to characterize cultural priorities. They play an explicit role in value socialization, they are presumably key carriers of culture, and they are probably close to the broad value consensus in a society."

[21] Schwartz's framework has been introduced into the international business literature as an alternative to Hofstede. For example, Chui, Lloyd, and Kwok [2001] build a model to show how Schwartz's dimensions affect corporate capital structures, and empirically demonstrate this relationship.

influence of culture on financial reporting.[22] An important first step would be an attempt to develop testable propositions relating Schwartz's cultural values to accounting values similar to the analysis performed by Gray [1988].[23]

8.0 CONCLUSION

Understanding the impact culture has on financial reporting can provide insights into its importance as a determinant of worldwide accounting harmonization and cross-national comparability of financial reports. Gray provides a framework for developing expectations of how culture might affect financial reporting systems. Significant research opportunities continue to exist for those who choose to examine the impact of culture on financial reporting systems at the country level, as many of the relationships posited in the framework have not yet been subjected to adequate empirical testing.

By refining the framework to describe how culture might affect the manner in which accountants apply the rules that are a part of financial reporting systems, a fertile and perhaps more interesting avenue of research opens up for those who wish to explore it. In particular, we believe that the use of the experimental method to test the SV→AV→APP linkage will help in assessing the cause/effect relationship between culture and accountants' application of financial reporting rules, which in turn will help in determining the extent to which culture acts as an obstacle to the comparability of financial statements across countries. The increasing trend towards economic globalization makes the issue of cross-national comparability more important than ever.

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[22] Hope [2003] has begun this process by using Schwartz's cultural value scores in addition to Hofstede's to investigate whether culture explains disclosure levels conditioned on legal system. Hope's results are similar between the two sets of cultural values. His use of Schwartz's value scores was exploratory; he made no prediction of the relationships between Schwartz's values and disclosure.

[23] For example, Schwartz's Conservatism value dimension may have implications for Gray's accounting value of Uniformity. Conservatism (not to be confused with the similarly named accounting value) relates to maintaining the status quo, propriety, and avoidance of actions of individuals that might upset the traditional order. "Cultures that emphasize Conservatism values are primarily concerned with security, conformity, and tradition" [Schwartz, 1994, p. 101]. Countries that rank highly in terms of Conservatism might have a tendency to require Uniformity in accounting across companies and over time. Conversely, countries that rank highly on Schwartz's Autonomy dimensions (the counterpart to Conservatism) may have less need for accounting Uniformity and will rank less highly on this accounting value.

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