Sustainability KPIs for Integrated Reporting

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〈 Abstract 〉

Integrated reporting presents a panoramic view of a firm's status. However, the framework of the International Integrated Reporting Council (IIRC) is principles-based and does not provide specific key performance indicators (KPIs) for integrated thinking and reporting. Through empirical analyses of all listed firms in 34 countries, our study provides the first evidence that value added information is actually useful for evaluating a firm's financial stability and sustainability. We focus on firms that have survived for more than 100 years and that have already achieved sustainability. We find two distinguishing facts: the value added that is distributed to stakeholders other than shareholders is significantly larger, and the stability of profitability is significantly higher, in sustainable firms. These two KPIs are equivalent to the two interrelated aspects of value under the IIRC framework. We therefore propose value added distribution and the stability of profitability as sustainability KPIs for integrated reporting.

Key word : Created Value, Integrated Reporting, Sustainability

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1. Introduction

Integrated reporting, which involves concise communication about the creation of value in the short, medium, and long terms, is a growing trend. According to CorporateRegister.com, the world's largest online database of corporate responsibility (CR) reports, 268 firms had issued integrated reports as of July 2014. Among them, 216 firms issued their first integrated report in or after 2011.

Integrated reporting presents a panoramic view of a firm's status as disclosed through various types of report, including sustainability, governance, and remuneration reports along with annual reports. However, currently, many firms' integrated reports seem merely "connected" and not "integrated" (Van Zyl, 2013). Among the 268 firms previously mentioned, 71% have an integrated report that is more than 100 pages, with the largest report having 432 pages. Nonetheless, the size of the sustainability section in many firms' reports is less than 10% of the total pages, despite an observation by Solomon and Maroun (2012) that the impact of mandatory integrated reporting has been a significant increase in the quantity of social and environmental information that is disclosed.

In the 2013 International Integrated Reporting Framework of the International Integrated Reporting Council (IIRC), we read the following: "The cycle of integrated thinking and reporting, resulting in efficient and productive capital allocation, will act as a force for financial stability and sustainability." The framework continues: "The more integrated thinking is embedded in the business, the more likely it is that a fuller consideration of key stakeholders' legitimate needs and interests is incorporated as an ordinary part of conducting business [emphasis added]."

IIRC Chief Executive Paul Druckman said, "Japan's business leaders increasingly appreciate the contribution that integrated reporting reform and integrated reporting specifically, can make towards achieving greater financial stability and a focus on long-term investment" (IIRC, 2014), acknowledging that Japan has the largest number of long-established firms in the world, many of which have survived for several hundred years. Worldwide, the number of firms more than 200 years old is 5,586. Among these, more than half are Japanese (3,146 firms, 56.3%), 837 (15.0%) are German, 222 (4.0%)

are Netherlandish, and 196 (3.5%) are French (Yonhap News Agency, 2008). In addition, according to the Guinness Book of World Records, the world's oldest firm is Kongo-gumi, a Japanese firm established in 578. We use the phrase "sustainable firms" here to refer to long-established firms; that is, firms that have survived for more than a century and that have already achieved sustainability.

One of the reasons why Japan has so many sustainable firms is that, instead of emphasizing business succession by blood relationship, firms recognize that they have a social and public existence. A well-known management philosophy in Japan is sanpou-yoshi (good for three sides), which means providing satisfaction to sellers, buyers, and society. Sanpou-yoshi has been regarded as the best way to business success for several centuries and is still followed today. In this study, we focus attention on the management philosophy of sustainable firms in Japan: "providing satisfaction to stakeholders." This philosophy is related to the concept of integrated reporting, wherein consideration of key stakeholders' legitimate needs and interests is incorporated as an ordinary part of conducting business, leading a firm to acquire financial stability and sustainability.

Over the last few years, several Japanese firms, including Unicharm, Aeon, and Ito-Yokado, have disclosed value added distribution in their sustainability reports under the heading of "Corporate Social Responsibility Accounting" to show how they are "providing satisfaction to stakeholders." The fundamental concepts section of the IIRC's Integrated Reporting Framework states that an integrated report explains how an organization creates value over time. This value has two interrelated aspects: (1) value created for the organization itself, which gives financial returns to the providers of financial capital, and (2) value created for others (i.e. stakeholders and society at large). These aspects exactly represent value added information.

Since the 1960s, a lot of research has considered the concept of value added (e.g. Burchell et al., 1985; Meek and Gray, 1988; Aldama and Zicari, 2012). Value added has also been used in corporate reporting worldwide. Although profits are an essential part of any market economy, they are only part of value added. Further, value added is the simplest and most immediate way of putting enterprise profit into proper perspective in terms of a collective effort by various stakeholders. At the same time, value added distribution shows how value added has been used as wages, dividends and interest, taxes, and funds for new investment to pay those contributing to its creation (see

Riahi-Belkaoui, 1999). This duality can show how an organization creates value and allocates it to the organization itself and its stakeholders. This is exactly what an integrated report aims to explain, thereby overcoming the problem of merely "connected" financial and non-financial reporting. In addition, the traditional measure of value added is practical, effective, efficient, and reliable; thus, it is a useful reporting instrument that complements and represents the concept of integrated reporting (Haller and van Staden, 2014).

Further, because IIRC's framework is principles-based, it does not provide specific key performance indicators (KPIs). Thus, major integrated reporting firms currently apply the Global Reporting Initiative's (GRI) Sustainability Reporting Guidelines because they provide KPIs. Among the 268 integrated reporting firms previously mentioned, 160 (60%) apply the GRI guidelines. With regard to KPIs, numerous studies explore environmental and social KPIs and investigate their usefulness (e.g. Burritt and Saka, 2006; Adams and McNicholas, 2007; Bebbington et al., 2009; Saka and Oshika, 2014); however, as far as we know, these studies do not provide evidence that any proposed KPIs are actually useful for evaluating a firm's financial stability and sustainability.

Although KPIs for integrated reporting are critical, the reason why it has been difficult to confirm whether specific KPIs actually lead to firms' financial stability and sustainability is that an experimental period is needed that is long enough to be considered a mark of sustainability. Thus, as a proxy of firms' financial stability and sustainability, we focus on firms that have survived for more than 100 years and that have already achieved sustainability. We depart from the research design of prior studies and analyze these firms to reveal the financial features that distinguish sustainable firms and other firms. We also propose these features as KPIs for integrated reporting in order to decipher a firm's sustainability.

We find two distinguishing facts. Our first result shows that the value added distributed to stakeholders other than shareholders is significantly larger in sustainable firms. This is the first evidence that value added information is actually useful for deciphering a firm's financial stability and sustainability; thus, we propose value added distribution as a sustainability KPI for integrated reporting. However, value added distribution deals with shareholders as just one group of many stakeholders. The IIRC framework also mentions that a primary goal of integrated reporting is to explain to providers of financial capital how an organization creates value. Thus, firms should also

satisfy shareholders. In this regard, our second result shows that stability of profitability is significantly higher in sustainable firms. Such stability generates "financial returns to the providers of financial capital" over the medium and long terms. We therefore also propose the stability of profitability as a sustainability KPI for integrated reporting. These two KPIs are equivalent to the two interrelated aspects of value under the IIRC framework: (1) value created for the organization itself and (2) value created for others. Our first result relates to aspect (2) and our second result relates to aspect (1).

Our study contributes to the literature on three key points. First, we empirically explore sustainability KPIs based on two aspects of value under the IIRC framework and provide the first evidence that value added distribution and the stability of profitability distinguish a firm's financial stability and sustainability. Since the IIRC framework does not provide specific KPIs, we propose that these KPIs should be included in integrated reporting. Second, we provide a new perspective in the search for sustainability KPIs. A long experimental period is required to confirm whether specific KPIs actually lead to a firm's sustainability. Thus, we employ a research design that is different from prior studies. As a proxy of firms' financial stability and sustainability, we focus on firms that have survived for more than 100 years and that have already achieved sustainability. We analyze these firms to reveal the financial features that distinguish sustainable firms and other firms, and we propose these features as KPIs for integrated reporting. Third, since our empirical data consists of all listed companies worldwide, our results should be robust and general.

The remainder of this paper is organized as follows. Section 2 provides the background to the analysis and reviews the related research. Section 3 develops our hypotheses. Sections 4 and 5 describe, respectively, the empirical models and samples, and the results for our two hypotheses and supplementary analysis. Section 6 concludes the paper.

2. Background and Prior Research

2.1. Integrated reporting and stakeholders

In recent years, integrated reporting has been a fast-growing research category. The research also includes several subcategories. First, conceptual research discusses and

proposes frameworks and templates for integrated reporting (Eccles and Krzus, 2010; Mora Gonzálbez and Mora Rodríguez, 2012; Abeysekera, 2013; Dumitru et al., 2013; Brown and Dillard, 2014; Cheng et al., 2014). Second, case study research investigates the internal and disclosure mechanisms employed by early adopters of integrated reporting (Higgins et al., 2014; Stubbs and Higgins, 2014). Third, content analyses of integrated reports aim to find compliance levels with guidelines (Hindley and Buys, 2012; Van Zyl, 2013; Maubane et al., 2014) and levels of integration (Gurvitsh and Sidorova, 2012). Other research investigates the utilization of integrated reports by stakeholders (Rensburg and Botha, 2014) and the effect of mandatory integrated reporting on the volume of disclosure (Solomon and Maroun, 2012). Further, research on integrated reporting and firm characteristics shows that the following factors affect the implementation of integrated reporting: firm size and industry (Frías-Aceituno et al., 2013b; Sierra-García et al., 2013), financial performance (Dragu and Tiron-Tudor, 2013a), the intensity of market coordination and ownership concentration (Jensen and Berg, 2012), corporate governance mechanisms (Frías-Aceituno et al., 2013b; Velte, 2014), and country, political, and cultural factors (Eccles and Serafeim, 2011; Jensen and Berg, 2012; Dragu and Tiron-Tudor, 2013b; Frías-Aceituno et al., 2013a; Garcia-Sánchez et al., 2013). However, the absence of specific sustainability KPIs for integrated reporting remains an issue.

The primary purpose of an integrated report is to explain how an organization creates value over time; that is, value created through relationships with stakeholders and not by or within an organization alone. Thus, an integrated report should provide insight into the nature and quality of an organization's relationships with its key stakeholders, including how and to what extent the organization understands, takes into account, and responds to their legitimate needs and interests (IIRC, 2013). In this regard, stakeholder engagement by an integrated reporting firm reflects enlightened value maximization (Parrot and Tierney, 2012).

Stakeholder theory discusses the relationship between firms and stakeholders. The central proposition of stakeholder theory is that a firm's success is dependent upon the successful management of all the relationships that the firm has with its stakeholders. Further, stakeholders can be managed successfully only if a firm has the continued support of the relevant stakeholders (Elijido-Ten, 2007; Elijido-Ten et al., 2010). Under stakeholder theory, not only is the consideration of specific stakeholders such as

shareholders important but also the way in which a firm manages to satisfy them. In this regard, showing how a firm takes into account the financial needs of various stakeholders represents value added. Value added has the potential to serve as a practical and effective reporting instrument for integrated reporting (Haller and van Staden, 2014). However, there is no evidence, as far as we know, investigating the relationship between a firm's sustainability and value added. In sections 2.2 and 2.3, we discuss the two aspects of value under the IIRC framework: (1) value created for stakeholders and (2) value created for the organization itself—and the relationship between these and value added, which has been a subject of prior research.

2.2. Created value for stakeholders

Profits (i.e. created value for an organization) are an essential part of any market economy. However, profit is only a part of value added. Indeed, value added is the simplest and most immediate way of putting profit into proper perspective vis-à-vis the whole enterprise in terms of a collective effort by employees, creditors, shareholders, government, and so on (ASSC, 1975). Thus, given the fact that a firm is inevitably a social entity involving not only shareholders but also other various stakeholders, more comprehensive analysis based on value added, not profit, is needed.

Value added measures how much input is invested in a firm's business activities in order to produce output and represents how effectively the firm utilizes the input. In a case where the input is only financial capital and the output is only profit, profitability would be a suitable measure of efficiency. However, firms' inputs usually include other management elements besides financial capital; thus, it is inappropriate to recognize output as profit only. Further, the distributional aspect of value added shows how it has been used as wages, dividends and interest, taxes, and funds for new investment to pay those who contribute to its creation.

A firm's value added can be measured by the difference between the value of the goods it has produced and the cost of these goods, including the materials purchased from other producers. This measure excludes the contribution of other producers to the total value that the firm produces; thus, essentially, value added is equal to the value created by the firm. Value added represents the wealth created by the firm through its business activities and, at the same time, the value distributed to major stakeholders of

the firm. Thus, value added shows how the benefits of the business's efforts are shared between stakeholders. Further, as previously described, value added has a productive aspect and a distributional aspect. The productive aspect is shown by a deductive method of calculation (value created = total productive value − the value of all inputs), and the distributional aspect is shown by an additive method of calculation (value created = the sum of the distributions to each stakeholder). Thus, value added carries with it the concept of duality (see Riahi-Belkaoui, 1999).

Since the first corporate report in 1970, much research has been conducted on value added (e.g. Burchell et al., 1985; Meek and Gray, 1988; Aldama and Zicari, 2012). Further, for several decades, value added has been used in corporate reporting and productivity management in countries such as England, France, Germany, Japan, Singapore, Australia, and South Africa. Indeed, several countries require value added statements, most recently Brazil. One of the reasons why value added has attracted such attention is that firms pursuing only profit have caused environmental pollution, unemployment, and other social problems that have a negative impact on societal sustainability. Thus, value added has been studied as an index of aspects of a firm's results that profit alone cannot express. This prior research shows that value added has usefulness, superior explanatory power, lower variability, and higher persistency (Riahi-Belkaoui and Fekrat, 1994; Riahi-Belkaoui and Picur, 1994; Evraert and Riahi-Belkaoui, 1998).

The fundamental concepts section of the IIRC framework states that "an integrated report explains how an organization creates value over time" and that "value has two interrelated aspects—(1) value created for the organization itself, which gives financial returns to the providers of financial capital, and (2) value created for others (i.e. stakeholders and society at large)." The GRI guidelines also have the same concept of created value: "direct economic value generated and distributed." These concepts are equivalent to value added. The value added concept can integrate a firm's performance and its efficiency with regard to the "six capitals" of the IIRC framework: financial, manufactured, intellectual, human, social and relationship, and natural. Thus, a firm's individual benefit can be linked to its stakeholder benefits by value added. Value added is a practical, effective, efficient, reliable, and therefore useful reporting instrument that complements and represents the concept of integrated reporting. Consequently, value added has great potential to contribute to the usefulness of integrated reporting; indeed,

it could and should become one of the key reporting instruments for integrated reporting (Haller and van Staden, 2014). Thus, we investigate whether value added is useful as a sustainability KPI for integrated reporting.

2.3. Created value for the organization

Integrated reporting takes into account the whole spectrum of factors that affect an organization's success and, therefore, its long-term investment returns (IIRC, 2011); in other words, the organization's sustainability. The value added mentioned in the last section takes into account the factors through stakeholders, but the fundamental concepts section of the IIRC framework states another aspect: "value created for the organization itself, which gives financial returns to the providers of financial capital." To satisfy the providers of financial capital, a firm should also seek financial performance that leads to its financial stability and sustainability over the medium and long terms. Thus, the following question arises: What are the factors that lead to a firm's financial performance and sustainability?

"Financial performance" and "sustainability" are subjects of a great deal of research. Over the last three decades, many studies have analyzed the relationship between corporate social performance and financial performance. The results are not consistent, although recently they have tended to conclude that a firm's social performance relates to its financial performance (Margolis and Walsh, 2003; Orlitzky et al., 2003; Allouche and Laroche, 2005; Beurden and Gössling, 2008). If this is true, one might then ask how financial performance is related to sustainability. Most integrated reports apply GRI guidelines and disclose KPIs; however, prior research on integrated and sustainability reporting has not provided evidence on whether specific KPIs lead to firms' financial stability and sustainability. The reason why it has been difficult to confirm whether specific KPIs actually lead to firms' financial stability and sustainability is that an experimental period is needed that is long enough to be considered a mark of sustainability. Thus, as a proxy of firms' financial stability and sustainability, we focus on sustainable firms that have survived for more than 100 years and already achieved sustainability. We analyze the financial features that distinguish sustainable firms and other firms to find sustainability KPIs.

3. Hypothesis Development

3.1. Created value for stakeholders

Integrated reporting explains how an organization creates value over time; that is, value created through relationships with stakeholders including employees, customers, suppliers, business partners, and local communities, and not by or within an organization alone. In addition, it should provide insight into the nature and quality of the organization's relationships with its key stakeholders (IIRC, 2013). In this regard, as discussed in the prior section, value added can show the amount of value for stakeholders and the relationship with them through the value's distribution.

In Japan, the country with the largest number of sustainable firms in the world, a management philosophy of merchants since the sixteenth century has been "good for three sides," which means giving satisfaction to sellers, buyers, and society. This philosophy places a high value on a long-term relationship with stakeholders and remains a feature of many Japanese firms today. Japanese firms such as Panasonic and the Sumitomo Corporation place a high value on operating "as public institutions for society" or "for the public benefit." These firms conduct business by considering the benefits for all stakeholders. This concept can be linked, in its accounting aspects, to the idea of value added distribution. Based on stakeholder theory, firms need to broadly distribute their value added among stakeholders to achieve and share sustainability.

Since stakeholder theory tells us that proper stakeholder management is critical for firms' sustainability, we investigate whether sustainable firms distribute more of their value added to non-shareholding stakeholders. Thus, our first hypothesis follows one aspect of value in the fundamental concepts section of the IIRC framework: value created for others (i.e. stakeholders and society at large).

Hypothesis 1: Distributions to stakeholders other than shareholders are larger in sustainable firms.

3.2. Created value for the organization

Hypothesis 1 depicts the importance of proper stakeholder management. However, value added distribution deals with shareholders as just one group of many stakeholders. The IIRC framework mentions that a primary goal of integrated reporting is to explain to providers of financial capital how an organization creates value over the short, medium, and long terms (IIRC, 2013). To satisfy shareholders, firms need stability of profit, which provides "financial returns to the providers of financial capital" and also financial stability and sustainability over the medium and long terms.

Firms pursuing profitability are short-term oriented. To be sustainable, firms need to achieve high and stable profitability over the long run. Ohlson (1995) shows that firm value can be calculated using linear information dynamics (LID) based on the standard residual income model. The model, which expresses firm value as the sum of book value and the present value of residual income, is written as follows:

$$V_t = BV_t + \sum_{\tau=1}^{\infty} \frac{X_{t+\tau} - BV_{t+\tau-1} \times r}{(1+r)^{\tau}} \qquad (1)$$

where V_t is the firm value at time t, BV_t is the book value at time t, X_t is the income for period t, and r is the discount rate. LID tells us that next year's income depends on a persistent portion related to the current year's income and a new portion of income from "other information." In addition, the "other information" exhibits a degree of persistence over time. Thus,

$$X_{t+1} = \omega_1 X_t + Y_t + \varepsilon_1, \qquad Y_{t+1} = \omega_2 Y_t + \varepsilon 2 \qquad (2)$$

where Y_t is the "other information" at time t, and ω_1 and ω_2 are the persistence parameters for income and "other information" respectively. In this sense, persistence (i.e. stability) of income is one of the important factors determining firm value and hence sustainability. Thus, we compare the stability of profitability between sustainable firms and other firms and propose the following hypothesis.

Hypothesis 2: The stability of profitability is higher in sustainable firms.

4. Sample Selection and Data Collection

In this section, we conduct empirical analyses on the hypotheses previously derived. To gain the broadest possible perspective, we examine listed firms from across the world. Using the Orbis database, we first collect the year each firm was founded. Sustainable firms are defined as firms whose foundation year is in or before 1913. Firms founded in or after 1914 are categorized as "other firms." We omit firms listed in countries where the number of listed sustainable firms is less than ten to ensure comparability between the sustainable firms and the other firms. Thus, our sample consists of 39,172 firms listed in 34 countries.

Using this criterion for sustainable firms extracts those that "have already achieved sustainability." Also, "other firms" are firms that "have not already achieved sustainability" and are not necessarily firms without sustainability. To conduct empirical analysis more precisely, it is clear that we should use the firms that existed in 1913, but this is not feasible because of data constraints.[1)]

For the analysis of Hypothesis 1 (i.e. distributions to stakeholders other than shareholders), we look at four groups of stakeholders: employees, creditors, government, and shareholders. To calculate the value added distributed to each group, we use the costs of employees, interest paid, tax paid, and net income respectively. The sum of these is defined as total value added. The data for FY2012 is used in the analysis. By limiting the sample to firms with available data, our final sample becomes 12,345, of which 714 (approximately 5.8%) are sustainable firms.[2)]

For the analysis of Hypothesis 2 (i.e. stability of profitability), we look at the stability of several kinds of profitability. We use gross margin (gross profit divided by operating revenue), EBIT ratio (EBIT divided by operating revenue), net income ratio (net income divided by operating revenue), ROE (net income divided by shareholders' equity), and two types of ROA (EBIT or net income divided by total assets). We calculate the standard deviation of each profitability ratio over nine years, FY2004 to FY2012. Firms

1) We also tried to conduct empirical analysis on the firms existing in 1985, the first available year of the Orbis database; however, this approach limits our sample to 1,094 firms for Hypothesis 1, where as we obtain 12,345 firms if we use the criterion mentioned in this paragraph.

2) The reduction in the sample used to test Hypothesis 1 is due mainly to the lack of data on costs of employees, which is not a mandatory disclosure in most countries.

with available data for fewer than nine years are omitted. The result is a sample of 6,817 firms, 563 (approximately 8.3%) of which are sustainable firms.[3)]

Exhibit 1 shows the sample size used in the testing of Hypotheses 1 and 2.[4)]

5. Results of the Analysis

5.1. Empirical results for Hypothesis 1 (value added distribution)

To examine differences between the value added distributions of sustainable firms and other firms, we compare the proportions of the total distribution made to each stakeholder group. We define "total value added" as the sum of the costs for employees, interest paid, tax paid, and net income, which are proxies for the distribution made to each stakeholder group. We then calculate the proportion of total value added that the distribution to each group represents. A Wilcoxon rank-sum test was chosen to test for statistical difference. Since the distribution of each variable does not resemble a t-distribution, we consider it unwise to use a t-test.

Panel A of Exhibit 2 shows the result. The median proportion of the distribution to employees in sustainable firms is greater than that in other firms (0.681 vs. 0.461), and the difference is statistically significant at the 1% level. Thus, consistent with Hypothesis 1, sustainable firms distribute a higher proportion of their value added to stakeholders other than shareholders. Moreover, the distributions to creditors and government are also greater in sustainable firms. As a result, we obtain empirical results that support Hypothesis 1. Thus, we propose that the distribution ratios to stakeholders should be included as integrated reporting KPIs because these ratios tell us something about the sustainability of the disclosing firms.

However, by distributing more value added to stakeholders other than shareholders (i.e. employees, creditors, and government), the proportion distributed to shareholders is less in sustainable firms than in other firms (0.178 vs. 0.247, a result that is statistically

3) The smaller sample size used to test Hypothesis 2 is mainly due to the lack of data for all nine years.

4) Note that the number of sustainable firms remaining in the final sample may be less than ten in each country because a two-step selection was made. Namely, we first choose the countries with more than nine sustainable firms and then select firms that have all available data.

significant). This may seem odd from the perspective of shareholders, who perhaps should argue for a larger distribution. Thus, we compare the total value added, which is shown in Panel B of Exhibit 2. After deflation by the amount of sales in order to achieve consistency in scale, the total value added of sustainable firms is about 48% more than that of other firms, and the difference is statistically significant. This means that the size of the "pie" to be distributed is much larger in sustainable firms and thus the "slice" to their shareholders is not small, even if the proportion is smaller. In fact, the size of the "'slice" is 0.052 (0.291 × 0.178) in the sustainable firms and 0.048 (0.196 × 0.247) in the other firms.

Even so, it may be puzzling why shareholders do not argue for a larger proportion of the larger pie. For this reason, in the next subsection, we look at the stability of profitability. Valuation models, e.g. discounted cash flow and residual income, demonstrate that shareholder value depends on future cash flow or income, not on current income. As shown in section 3.2, Ohlson (1995) adds LID to the standard residual income model and shows that persistency of income is one of the factors that determines shareholder value. Thus, it is plausible that shareholders might willingly give up a portion of the current year's distribution if they believe that they will prosper by doing so over the long run.

5.2. Empirical results for Hypothesis 2 (stability of profitability)

In this subsection, we present the empirical results for Hypothesis 2 (i.e. stability of profitability), which predicts that we will see evidence of higher stability of profitability in sustainable firms. The rationale is that shareholders in sustainable firms are willing to relinquish a portion of the current year's value added distribution if they are convinced that they will receive more distribution in the future. If the foregoing statement is true, we propose that information on stability of profitability should be included as an integrated reporting KPI since it is indicative of sustainability.

To measure stability of profitability, we calculate the standard deviation of each profitability ratio for the nine years FY2004 to FY2012. The ratios used are: gross margin (gross profit divided by operating revenue), EBIT ratio (EBIT divided by operating revenue), net income ratio (net income divided by operating revenue), ROE (net income divided by shareholders' equity), and two types of ROA (EBIT or net income divided by

total assets). A Wilcoxon rank-sum test is employed to test the difference between sustainable firms and other firms.

Panel A of Exhibit 3 shows the result. The stability of profitability is higher (i.e. the standard deviation is smaller) in sustainable firms than in other firms. All differences are significant at the 1% level. The empirical result is consistent with Hypothesis 2; thus, we conclude that shareholders relinquish a higher current year distribution in expectation of much higher distributions in the future.

Even so, shareholders may not be satisfied if the "level" of profitability is low. By contrast, shareholders are satisfied if the level of profitability is high and stable. Thus, we compare the profitability of sustainable firms and other firms. The result is shown in Panel B of Exhibit 3. All of the profitability ratios are higher in sustainable firms. Although the significance levels are not uniformly high, the difference in ROE—a ratio of intense shareholder focus—is significant at the 1% level. Thus, we can conclude that shareholders are sufficiently satisfied with high and stable profitability that they are willing to wait for future distributions.

6. Summary and Conclusion

Integrated reporting is a growing trend worldwide. It promotes efficient and productive capital allocation, acting as a force for financial stability and sustainability. However, the current situation suggests that many integrated reports merely "connect" financial and sustainability information, and that KPIs for sustainability are lacking. Although there is prior research on KPIs for sustainability reporting, one of the reasons it has been difficult to confirm whether specific KPIs actually lead to firms' financial stability and sustainability is that an experimental period is needed that is long enough to be considered a mark of sustainability. Further, KPIs for integrated reporting are critically needed because the IIRC framework is principles-based and does not provide specific KPIs. Thus, we employ a research design that differs from prior studies in its focus on firms that have survived for more than 100 years and that have already achieved sustainability. We analyze these firms to reveal the financial features that distinguish sustainable firms and other firms, and we propose these features as KPIs for integrated reporting.

In our analysis, we turn our attention to the management philosophy of sustainable Japanese firms, which, because it emphasizes "providing satisfaction to stakeholders," hints at the way that sustainability is achieved. This management philosophy matches the IIRC framework in its emphasis on considering the legitimate needs and interests of key stakeholders. Value added provides information that can show how firms "provide satisfaction to stakeholders" from a financial perspective. Although a theoretical discussion of the usefulness of value added as an integrated reporting instrument is presented in Haller and van Staden (2014), the authors offer no evidence to show whether value added information is actually useful in judging a firm's financial stability and sustainability.

Thus, our study provides the first evidence that value added information is actually useful to evaluate a firm's financial stability and sustainability. We focus on sustainable firms and analyze these to reveal the financial features that distinguish sustainable firms and other firms. We find that sustainable firms and other firms have two distinguishing features—different value added distributions and different degrees of stability in profitability. These two KPIs are equivalent to the two interrelated aspects of value under the IIRC framework: (1) value created for the organization itself, and (2) value created for others (i.e. stakeholders and society at large) (IIRC, 2013).

Our first result, related to aspect (2) of the above, shows that value added distribution is useful for deciphering a firm's sustainability because the value added distributed to stakeholders other than shareholders is significantly larger in sustainable firms. We therefore propose value added distribution as a sustainability KPI for integrated reporting.

However, value added distribution deals with shareholders as just one of many groups of stakeholders. The IIRC framework also mentions that a primary goal of integrated reporting is to explain to providers of financial capital how an organization creates value over the short, medium, and long terms (IIRC, 2013). Thus, firms should also satisfy shareholders. Stability of profit generates "financial returns to the providers of financial capital" and helps such providers to judge a firm's financial stability and sustainability over the medium and long terms. Our second result, related to aspect (1) of the IIRC framework above, shows that information on the stability of profitability is also useful for deciphering a firm's sustainability because stability of profitability is significantly higher in sustainable firms. We therefore propose stability of profitability as a sustainability KPI for integrated reporting.

Our study contributes to the literature on three key points. First, we empirically explore sustainability KPIs based on two interrelated aspects of value under the IIRC framework and provide the first evidence that value added distribution and the stability of profitability distinguish a firm's financial stability and sustainability. Since the IIRC framework does not provide specific KPIs, we propose that our suggested KPIs should be included in integrated reporting. Second, we provide a new perspective in the search for sustainability KPIs. A long experimental period is required to confirm whether specific KPIs actually lead to firms' sustainability. Thus, we employ a research design that is different from prior studies. As a proxy of firms' financial stability and sustainability, we focus on firms that have survived for more than 100 years and already achieved sustainability. We analyze these firms to reveal the financial features that distinguish sustainable firms and other firms and propose these features as KPIs for integrated reporting. Third, since our empirical data consists of all listed firms worldwide, our results are robust and general.

Our study still has some limitations. First, our empirical results only show the characteristics of sustainable firms (i.e. firms that already have achieved sustainability) and not the characteristics of firms that will become sustainable. Future researchers could collect the data required to analyze value added distribution and the stability of profitability of firms in existence 100 years ago to see if a larger distribution of value added to stakeholders other than shareholders, and higher stability of profitability, yield sustainability. Second, we only show a few potential KPIs and not a comprehensive list. Future research should widen the list of potential KPIs.

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Exhibit 1 Number of samples for each analysis

Country	Hypothesis 1			Hypothesis 2		
	No. of sustainable firms	No. of other firms	Proportion of sustainable firms	No. of sustainable firms	No. of other firms	Proportion of sustainable firms
Argentina	4	72	5.3%	6	41	12.8%
Australia	24	763	3.0%	12	291	4.0%
Austria	20	44	31.3%	14	32	30.4%
Belgium	20	80	20.0%	7	15	31.8%
Bermuda	29	492	5.6%	17	272	5.9%
Bosnia and Herzegovina	3	272	1.1%	0	0	N/A
Brazil	8	130	5.8%	14	107	11.6%
Bulgaria	10	180	5.3%	0	1	0.0%
Canada	2	522	0.4%	5	347	1.4%
Chile	1	28	3.4%	11	96	10.3%
Croatia	4	46	8.0%	0	4	0.0%
Denmark	16	96	14.3%	9	45	16.7%
Finland	15	97	13.4%	12	68	15.0%
France	63	508	11.0%	40	206	16.3%
Germany	139	478	22.5%	92	251	26.8%
Hong Kong	28	158	15.1%	21	95	18.1%
India	45	3,039	1.5%	0	48	0.0%
Indonesia	10	375	2.6%	9	210	4.1%
Italy	28	192	12.7%	19	113	14.4%
Japan	1	335	0.3%	17	528	3.1%
Mauritius	1	4	20.0%	0	2	0.0%
Netherlands	21	81	20.6%	20	48	29.4%
Norway	16	130	11.0%	7	25	21.9%
Pakistan	6	328	1.8%	2	92	2.1%
Poland	7	430	1.6%	2	39	4.9%
Russia	0	21	0.0%	19	195	8.9%
South Africa	12	202	5.6%	3	43	6.5%
Spain	11	132	7.7%	11	75	12.8%
Sri Lanka	7	183	3.7%	4	14	22.2%
Sweden	19	348	5.2%	15	103	12.7%
Switzerland	66	120	35.5%	56	74	43.1%
Ukraine	0	0	N/A	1	0	100.0%
United Kingdom	73	919	7.4%	42	328	11.4%
United States	5	826	0.6%	76	2,446	3.0%
Total	714	11,631	5.8%	563	6,254	8.3%

Exhibit 2 Distribution of the total added value to each stakeholder

Panel A: Proportion of distribution of the total added value

	N	Distribution to employees	Distribution to creditors	Distribution to government	Distribution to shareholders
Sustainable firms	714	0.681	0.049	0.051	0.178
Other firms	11631	0.461	0.043	0.043	0.247
Wilcoxon Z-score		9.848 ***	2.061 **	1.388	-6.344 ***

Panel B: Total added value to sales

	N	Total added value / sales
Sustainable firms	714	0.291
Other firms	11631	0.196
Wilcoxon Z-score		10.080 ***

※ Distribution to employees is defined as the costs for employees. Distribution to creditors is defined as the interest paid. Distribution to government is defined as the tax paid. Distribution to shareholders is defined as net income.

※ The total amount of the distribution to the four groups is defined as the total added value.
※ The exhibit shows the median of all the samples of the proportion of the distribution of the total added value to each of four groups. Since the median is shown, the sum is not required to be 1.
※ ***, **, and * show that the Z-score is significant at 1%, 5%, and 10% (two-tailed) respectively.

Exhibit 3 Stability of profitability

Panel A: Stability of profitability

	N	Gross margin	EBIT ratio	Net income ratio	ROE	ROA (EBIT)	ROA (Net income)
Sustainable firms	563	0.033	0.034	0.035	0.086	0.034	0.033
Other firms	6254	0.039	0.054	0.056	0.114	0.052	0.050
Wilcoxon Z-score		-3.904 ***	-8.560 ***	-8.061 ***	-6.764 ***	-9.743 ***	-9.836 ***

※ Gross margin is gross profit divided by operating revenue. EBIT ratio is EBIT divided by operating revenue. Net income ratio is net income divided by operating revenue. ROE is net income divided by shareholders' equity. ROAs are EBIT and net income divided by total assets.
※ We calculate the standard deviation for nine years between FY2004 and FY2012.
※ The exhibit shows the median of all the samples.
※ ***, **, and * show that the Z-score is significant at 1%, 5%, and 10% (two-tailed) respectively.

Panel B: Profitability

	N	Gross margin	EBIT ratio	Net income ratio	ROE	ROA (EBIT)	ROA (Net income)
Sustainable firms	563	0.434	0.072	0.043	0.097	0.060	0.038
Other firms	6254	0.417	0.066	0.036	0.080	0.058	0.034
Wilcoxon Z-score		1.062	1.628	2.888 ***	3.493 ***	1.210	2.095 **

※ The profitability ratios are the same as shown in Panel A.
※ The exhibit shows the median of all the samples.
※ ***, **, and * show that the Z-score is significant at 1%, 5%, and 10% (two-tailed) respectively.