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The non-diversifiable risk of financial reporting system: Evidence from the German market

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ABSTRACT

Zhang (2013) proposes a theoretical model to argue that financial reporting system is a non-diversifiable risk for investors. However, there is little empirical evidence to support this argument. We use German data to empirically test the validity of Zhang's (2013) argument. Our results show that investors would require systematic premiums on the non-diversifiable risks related to financial reporting systems, and the findings are consistent with the argument of Zhang (2013). Furthermore, this study compares International Financial Reporting Standards (IFRS), German Generally Accepted Accounting Principles (German GAAP), and U.S. Generally Accepted Accounting Principles (U.S. GAAP) from the perspective of systematic risk. Our results show that firms that switched their accounting systems from German GAAP or U.S. GAAP to IFRS experience significant declines in the premiums on non-diversifiable accounting risk and costs of capital after adopting IFRS. The findings suggest that the systematic risk of IFRS is perceived to be lower than the systematic risks of German GAAP and U.S. GAAP. Moreover, we also find that firms with high accounting sensitivities before adopting IFRS have benefited more from adopting IFRS in the form of reduced premiums on systematic accounting risk and cost of capital than firms that had low accounting sensitivities before adopting IFRS.

1. Introduction

Zhang (2013) proposes a theoretical model to argue that financial reporting system is a systematic (non-diversifiable) risk factor for investors (hereafter, systematic accounting risk). However, there is little empirical evidence to support this argument. Our objective is to empirically test Zhang's (2013) argument. More specifically, we analyze whether financial reporting system represents a systematic risk for stock pricing and whether investors require additional premiums for bearing systematic accounting risk.

In the setting of Zhang's (2013) model, all firms in an economy adopt a specific financial reporting system. When systematic measurement errors exist in a given financial reporting system, those firms that adopt the same accounting standards commonly suffer from systematic measurement errors in their financial statements. Investors would then be unable to construct large portfolios to diversify the influences of the systematic measurement errors on stock pricing because all of the firms in the economy in question have to follow the same accounting standards. As a result, financial reporting system is a systematic (non-diversifiable) risk factor for investors.

Generally, it is problematic to directly test Zhang's (2013) prediction using data in a given economy because it is difficult to disentangle the role of systematic accounting risk from market risk. As a result, the effect of the non-diversifiable accounting risk on expected stock returns is encompassed by the effect of CAPM-Beta on expected stock returns. Fortunately, Germany provides a unique setting to facilitate distinguishing systematic accounting risk from market risk because German listed firms were allowed to choose International Financial Reporting Standards (IFRS), U.S. Generally Accepted Accounting Principles (U.S. GAAP) or German Generally Accepted Accounting Principles (German GAAP) as their financial reporting standard before 2005. The variety of financial reporting systems within the same market facilitates the measurement of the systematic accounting risks associated with IFRS, German GAAP and U.S. GAAP without confounding this measurement with the market risk of the entire German market.

After identifying the systematic risk related to IFRS, German GAAP, and U.S. GAAP, we compare the three financial reporting systems from the perspective of systematic accounting risk. Several German listed firms experienced a voluntary or a mandatory change in their financial reporting systems. Some of them changed their financial reporting systems from German GAAP to IFRS, whereas others changed from U.S. GAAP to IFRS. We conduct tests on the firms that experienced a change in their financial reporting system to identify whether the premiums on the firms' non-diversifiable accounting risk decreases after adopting IFRS. If the premiums on non-diversifiable accounting

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risk are significantly reduced after switching to IFRS, this evidence would suggest that investors perceive IFRS as a less risky accounting system than German GAAP and U.S. GAAP.

The comparison of IFRS with other country-specific Generally Accepted Accounting Principles, for example, U.S. GAAP and German GAAP, has been broadly discussed among standard setters, market practitioners, and accounting researchers. Proponents of IFRS argue that IFRS could improve analyst forecast accuracy (Byard, Li, & Yu, 2011; Tan, Wang, & Welker, 2011; Kim & Shi, 2012), reduce cost of capital (Daske, Hail, Leuz, & Verdi, 2008; Li, 2010), increase accounting transparency and earnings quality (Horton & Serafeim, 2010; Bartov, Goldberg, & Kim, 2005; Barth, Landsman, & Lang, 2008; Chen, Tang, Jiang, & Lin, 2010), and alleviate information asymmetry among investors (Daske et al., 2008; Ferrari, Momente, & Reggiani, 2012). However, skeptics of IFRS believe that IFRS would lower financial reporting quality (Van Tendeloo & Vanstraelen, 2005; Ahmed, Neel, & Wang, 2013) and have little effect on reducing information asymmetry among investors (Leuz, 2003). Considerable disagreement remains over the consequences of adopting IFRS. Hence, we provide further evidence from the perspective of risk on this debated issue.

Because investors lack complete information on a firm, financial reporting thus serves as crucial information for investors to value stock prices (Duffie & Lando, 2001; Frey & Schmidt, 2009). However, the information contained in financial reports presents several limitations. For example, many assets are reported at historical costs in financial statements, and the historical asset value is often criticized for not reporting relevant fair value information. In addition, certain items, such as reputation, customer relationship, and skilled employees are valuable to a firm; however, such items are not recognized in financial statements. Consequently, accounting book value cannot adequately reveal the true value of a firm to investors, and thus, the gap between reported accounting book value and true firm value might mislead investors into mispricing stock values. We refer to the situation in which investors are misled by financial information as the risk produced by accounting standards (hereafter, accounting risk).

We further dichotomize accounting risk into non-diversifiable (systematic) accounting risk and idiosyncratic accounting risk. Non-diversifiable accounting risk refers to the risk that investors are misled by financial statements because of the existence of *systematic measurement errors* in a specific accounting system. By contrast, if the values of firms are mispriced by investors because of the existence of firm-specific measurement errors in financial reports, this risk is referred as to idiosyncratic accounting risk. The firm-specific measurement errors are independent and are not linked across firms. The concept of systematic measurement error first appears in the theoretical model proposed by Zhang (2013), who argues that systematic measurement errors exist in every financial reporting system. For example, certain intangible assets cannot be recognized in the balance sheet, hence causing the asset book values to be systematically understated. Another example of systematic measurement errors in financial reports is the use of historical costs. Historical costs would cause accounting earnings to overstate true firm performance and understate firm value. Therefore, the firms that adopt a common financial reporting system typically suffer from non-diversifiable measurement errors in their financial statements. In the presence of cross-correlations, *investors cannot diversify systematic measurement errors by establishing portfolios*. As a result, the systematic measurement errors would prevent investors from correctly pricing stocks. We refer to the non-diversifiable risk caused by systematic measurement errors as systematic accounting risk.

As noted above, systematic accounting risk cannot be diversified using portfolios, but idiosyncratic accounting risk can. Motivated by portfolio theory, we establish three large portfolios associated with IFRS, U.S. GAAP, and German GAAP to diversify firm-specific risks and capture the non-diversifiable risk with respect to the three financial reporting systems. Next, using the expected returns on the IFRS portfolio as a benchmark, we construct two variables to measure the premiums on the systematic accounting risk of German GAAP and one variable to measure the premiums on the systematic accounting risk of U.S. GAAP. One of the two measures of the premiums on the systematic risk of German GAAP is defined as the difference in returns between the German GAAP portfolio and the IFRS portfolio (denoted GMI), and the other is defined as the return on the German GAAP portfolio in excess of the return on the U.S. GAAP portfolio (denoted GMU). Analogously, the difference in returns between the U.S. GAAP portfolio and the IFRS portfolio is used to measure the excess returns on the systematic accounting risk of U.S. GAAP (denoted UMI).

After constructing the measurements of the premiums on the non-diversifiable risk of U.S. GAAP and German GAAP, multifactor pricing models are employed at a portfolio level to test whether accounting standards represent a non-diversifiable risk. More specifically, GMI and GMU are each used to test whether the premium on the systematic accounting risk associated with German GAAP is a determinant of the expected returns of German GAAP adopters. UMI is used to identify whether investors require systematic premiums on the non-diversifiable risk associated with U.S. GAAP.

Instead of measuring the gap between the accounting book value and the true value of a firm, we estimate non-diversifiable accounting risk based on the linkage between risk and stock returns because precisely measuring the true value of a firm is difficult. According to the Arbitrage Pricing Theory (APT), investors require systematic premiums on the non-diversifiable risks they bear. Hence, if financial reporting system is a source of non-diversifiable risk for investors, we predict that investors would require *systematic premiums* on the non-diversifiable accounting risk.

Our research sample comprises the firms listed on the seven stock exchanges in Germany, including the Berlin, Dusseldorf, Frankfurt, Hamburg, Hannover, Munich, and Stuttgart stock exchanges, from 1998 to 2010. Business groups in Germany could choose one accounting system, namely, IFRS, U.S. GAAP, and German GAAP, to follow between 1998 and 2005. Since 2005, all of the business groups were required to adopt IFRS when preparing consolidated financial statements; however, even after 2005, non-business groups could still adopt German GAAP to prepare individual financial statements. Additionally, firms that use U.S. GAAP to prepare consolidated financial statements were required to adopt IFRS after 2007. This data set allows various sample firms that adopt different accounting standards to be obtained.

Our empirical results show that the difference in returns between the German GAAP portfolio and the IFRS portfolio (GMI) is a significant determinant of the expected returns of the German GAAP adopters, and the difference in returns between the German GAAP portfolio and the U.S. GAAP portfolio (GMU) also provides explanatory power for the expected returns of the German GAAP adopters. Additionally, the returns on the U.S. GAAP portfolio in excess of the returns on the IFRS portfolio (UMI) have significant explanatory power for the expected returns of the firms adopting U.S. GAAP. The results suggest that accounting standards serve as a source of non-diversifiable risk for investors, and investors require systematic premiums on the non-diversifiable accounting risk.

After confirming that investors regard the accounting system as a non-diversifiable risk, we turn to a comparison of IFRS, German GAAP, and U.S. GAAP from the perspective of accounting risk. A total of 106 firms in our sample changed their financial reporting systems from German GAAP to IFRS, and 29 firms changed from U.S. GAAP to IFRS. This characteristic facilitates the investigation of whether the premium on the firms' non-diversifiable accounting risk exhibits a significant change after the shift to a new system and a comparison of the risks of different financial reporting systems. Fair value information is generally perceived to be used to a greater extent in the financial statements prepared under IFRS than in the statements prepared under German GAAP and U.S. GAAP. Therefore, the systematic accounting risk of IFRS is predicted to be lower than the risk of German GAAP and U.S. GAAP.

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