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The association between the mandatory adoption of XBRL and the performance of listed state-owned enterprises and non-state-owned enterprises in China

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ABSTRACT

This paper investigates the impact of the mandatory adoption of the eXtensible Business Reporting Language (XBRL) on the performance of listed state-owned enterprises (SOEs) and non-SOEs. Building on institutional theory, we hypothesize and determine that non-SOEs benefit from the adoption of XBRL by operating more effectively, which results in better performance. Due to the institutional factors, for SOEs, financial report users still need much more information in addition to financial reports before they can make appropriate decisions. Implications on the use of XBRL-formatted financial reporting information for international business with the existence of SOEs in China are discussed herein.

1. Introduction

The use of financial reporting information is often limited even with the advancement of information technology. To improve the re-usability and integration of financial reporting information, the eXtensible Business Reporting Language (XBRL), a standard XML reporting language, was developed to electronically communicate business information [38,82]. XBRL is expected to make financial reports more understandable and more accurately represent the underlying economics of the business (including financial reporting choices and assumptions) [38,69,70]. It also has the potential to be a global standard for financial and non-financial data that facilitates information exchange across countries [16]. Given the expected benefits, the U.S. as well as European and Asian countries have started to mandatorily adopt XBRL for financial reporting for all listed firms. This is the first time that most of the countries in the world have mandatorily adopted the same financial reporting technology.

XBRL is expected to facilitate the accessing and processing of firms' financial reporting information [38]. The improved transparency helps external users of a firm's financial reporting information better understand the firm's decisions, which may potentially serve as an external monitoring function to cause the firm to make decisions more appropriately and consequently may then improve the firm's performance. However, prior literature suggests that the ownership structure, and state-owned enterprises (SOEs) in particular, can be an important factor that may affect a firm's performance [42]. Many prior studies, such as [11], show that state-owned firms are inefficient. For example, Dewenter and Malatesta [27] demonstrate that public offerings of state-owned firms are significantly underpriced as these firms are directed not by social welfare improvement, but by political interests and objectives including creating jobs, promoting industrialization, and subsidizing underdeveloped areas of the country [30,42]. In a multi-country setting, La Porta et al. [49] show that state ownership is related to lower economic growth, while Barth et al. [8] show that state ownership of banks are associated with a less developed banking system and security market. Compared with non-SOEs, the boards of SOEs are less independent, and SOEs are often characterized with complicated shareholding structure as well as different governance systems [41]. In this vein, the benefits of improved transparency and firm performance through XBRL adoption may be different for SOEs and non-SOEs.

In this paper, we investigate whether the mandatory adoption of XBRL in China would lead to more effective business operations

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due to the transparency of financial reports and the ease of access of such information. We focus on China as China is the first country that officially adopted XBRL and is still leading the development of XBRL with other countries. In addition, SOEs are playing a critical role in China's economy. We also examine whether the impact is different between SOEs and non-SOEs. Institutional theory provides us a framework to understand the mandatory adoption of XBRL. In particular, the coercive force and the regulatory pressure seem to ensure the conformity of its adoption. Such conformity may bring the potential benefits of using XBRL-formatted information, which, in turn, results in more effective business operations, as reflected by better performance. However, although prior studies, such as Refs. [78] and [61], have highlighted how the characteristics of SOEs and non-SOEs affect business decisions, it is not clear from institutional theory how different ownership structure, especially its political affiliation or ties to the government, would affect the mandatory adoption of a new technology. Given the characteristics of SOEs, we provide arguments that may supplement institutional theory in understanding the effectiveness of the adoption of a new technology, XBRL in particular. To determine whether a firm is more effective after the adoption of XBRL, we use two performance measurements in our analysis: one is accounting-based (return-on-assets, *ROA*) and the other one is market-based (market-to-book ratio, *MB*). We collect our data from the China Security Market and Accounting Research (CSMAR) database during the period from 2003 to 2010. Our findings show that overall, firm performance (both *ROA* and *MB*) is better in the post-mandatory-adoption period compared to the pre-mandatory-adoption period. However, when we split the firms into SOEs and non-SOEs, non-SOEs show a better improvement in both *ROA* and *MB* in the post-mandatory-adoption period compared to SOEs.

Our paper contributes to the literature and sheds lights on the use of financial reporting information for international business in the following ways. Our paper fills in the gaps of the literature when applying institutional theory to the mandatory adoption of information technology. Although prior studies have emphasized the importance of SOEs in business decisions (e.g., [61,78]), the prior literature does not emphasize how the ownership structure, SOE in particular, would affect the effectiveness of the mandatory adoption of an information technology. These findings also supplement the literature regarding how political affiliations may affect the mandatory adoption of a new technology.

The rest of the paper is organized as follows. In Section 2, we discuss the institutional background and develop our hypotheses. We present our research methodology in Section 3. Our main results and additional tests are provided in Section 4. We conclude with a discussion of the limitations of the study and possible future research in Section 5.

2. Institutional background and hypothesis development

2.1. Institutional background in China

SOEs are business entities that are *de facto* controlled by the government [73] and have a long history in China. In the past, they dominated the market and created approximately 75% of the national industrial output value [18]. China underwent a reform starting in the late 70s, which was originally set to make SOEs more efficient [10,52,65], but has transformed the economy into a market economy with private ownership. Private firms began to emerge in the market. The privatization of firms caused the non-state-owned firms to obtain more control apart from the government/central planning (e.g., [72]). As the liberalization continued, some SOEs were sold or dissolved, while other SOEs were encouraged to merge into business groups [45] or become joint stock firms [76]. It seems that the private firms became a major player in the market, and China became an economy with less central planning and more market competition. However, the government simultaneously imposed certain restrictions and set protection policies in certain so-called strategic industries, such as telecommunication, petrochemical, civil aviation, and shipping. In its latest five-year plan, these restrictions and policies were also applied to emerging industries, such as health care, energy, and technology [73]. Furthermore, although banking is not explicitly included in the list of strategic or emerging industries, it is tightly controlled by SOEs (75% of China's bank assets and 11 out of 13 major joint stock commercial banks) [73]. SOEs still play an important role in the market, and this role has been strengthened by the subsidies and preferential financing, taxes and regulations for SOEs [15]. Not surprisingly, currently, 70% of the ultimate owners of the listed firms in China are SOEs [50], and SOEs directly or indirectly control approximately 50% of non-agriculture GDP [73].

Nevertheless, on the road to liberalization and privatization, the Chinese government has noticed that China needs to develop new strategies not only to modernize its financial market but also to improve its SOE operations. In addition to the marketization and the involvement of professional managers, the transparency of financial reporting is one of the elements that the government would like to promote [41]. In particular, a more reliable financial reporting system can improve the transparency of firms, which can help the market better oversee the firms, attract foreign investors, and link the China market to the global economy. To achieve its goal, the Chinese authority has decided to adopt a new technique, the eXtensible Business Reporting Language (XBRL), to potentially streamline and standardize the business information supply chain and to make financial reporting information more accessible and transparent.

2.2. eXtensible Business Reporting Language (XBRL)

The eXtensible Business Reporting Language (XBRL) is an XML-based technique proposed in the late 90s to early 2000s in the U.S. with the expectation of increasing the re-usability and integration of financial reporting information [24,25,63,64]. XBRL was later developed by XBRL International (XII) with more than 600 members from different countries and constituencies of the business information value chain. This consortium consists of regulatory bodies, public audit firms, financial institutions, and software vendors as well as international and national standard setters and public entities. XBRL is considered a global revolutionary technology for the electronic communication of business and financial data that transforms business reporting intra- and inter-organizationally around the world [14,35].

XBRL provides an identifying tag for financial facts, such as earnings per share, to help financial report users more precisely obtain the information they need [39]. As all the financial reporting elements are standardized through a widely accepted taxonomy (i.e., a dictionary of terms used in financial reports) and are separated from its format, XBRL-formatted business data are computer-readable and searchable so that users can download it directly into analytical software [4,5,33,75,83]. Accordingly, it is expected to improve accessibility and transparency for the adopting organizations [19,57,68,75,83]. In addition, XBRL is expected to facilitate the integration of different items in financial reports even in the case when such a link(s) does not exist explicitly and could not be found easily before [38]. Due to this integration of information, it becomes easier for users to observe management's disclosure decisions as well as the motivation for such decisions [37,38]. XBRL can also potentially reduce the