



Contents lists available at ScienceDirect

Journal of Business Research

Data analytics in banks' audit: The case of loan loss provisions in Uruguay[☆]Nicolás Gambetta^{a,*}, María Antonia García-Benau^b, Ana Zorio-Grima^b^a Universidad ORT Uruguay, Bulevar España 2633, Montevideo, Uruguay^b Universitat de València, Av. dels Tarongers s/n., Valencia, Spain

ARTICLE INFO

Article history:

Received 1 February 2016

Received in revised form 1 March 2016

Accepted 1 April 2016

Available online xxxxx

Keywords:

ERP

XBRL

CAATs

Bank risk profile

Loan loss provisions

ABSTRACT

The purpose of this study is two-fold: firstly, to analyze the benefits of implementing an enterprise resource planning (ERP) system and using eXtensible Business Reporting Language (XBRL) format to report in the banking industry considering the industry's specific risks and complexities. Secondly, to show that both, ERP and XBRL are necessary to successfully use Computer Assisted Audit Techniques (CAATs) while performing audit procedures to verify the compliance of certain crucial regulatory requirements. The study shows the possible consequences of not using CAATs to audit the compliance of loan loss provisions' regulatory requirements in Uruguay.

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1. Introduction

Banks are companies with specific risks and complexities (Rose & Hudgins, 2004). Financial institutions play an important social role in the financial inclusion process, which has recently become a global policy objective to improve the lives of the poor (Swamy, 2014). Financial inclusion is also a tool to monitor financial transactions and to expand the surveillance of regulators (de Koker & Jentzsch, 2013). Research analyzes moral hazard in the financial sector in relation to loans granted to clients that are not creditworthy, and to high-risk sophisticated financial products offered to financially unsophisticated clients (Dow, 2011). In this context, financial institutions operate in a highly-regulated business because those institutions capture public savings. During a period of financial crisis, regulators increase their supervisory efforts to maintain financial stability.

To address the complexity of the banking business operations and regulations, financial institutions heavily rely on information technology (IT) to process the data (Chowdhury, 2003). Enterprise resource planning (ERP) systems are useful to align business process and IT and also have compliance and regulatory functionalities that can help banks to address regulatory requirements.

The rapid change in the current business environment conditions require companies to have innovative, flexible, and agile systems and

processes (Kloviene & Gimzauskiene, 2015). ERP systems help an organization to deal with administrative and core-business processes (Kanellou & Spathis, 2013). One of the main advantages of ERP systems is that they unify data that comes from different functional areas in the company (Hedman & Borell, 2004), thus avoiding inconsistencies and mistakes in the information the company uses to operate.

Using a survey to study the ERP usage in the 1000 largest banks worldwide, Fuß, Gmeiner, Schiereck, and Strahringer (2007) find that about half of the participating banks use an ERP system, mainly SAP (53.6%), Oracle (19.6%), and PeopleSoft (10.7%) as a way to increase information transparency and quality and to develop more efficient business processes.

The Bank for International Settlements (BIS) identifies loan loss provisions (LLP) as an account having significant risk of material misstatement (Bank for International Settlements, 2013). LLP relate to assets quality because the higher the provisions the lower the loans quality. Recently, the criticism toward bank provisioning practice is increasing, partly in response to the perceived failure of banks prior to the recent financial crisis, to anticipate losses that are not identifiable from current exposures (Dahl, 2013).

The potential of data analytics to help auditors to gather evidence about LLP is quite significant. However, the adoption of data analytics in accounting firms' auditing practices is slower than in other fields (Whitehouse, 2014) and in this line, additional research is necessary to understand how the adoption of data analytics impacts on the audit firm from the standpoint of being subject to regulatory sanction (Earley, 2015).

This study looks into recent filing requirements for banking institutions using the eXtensible Business Reporting Language (XBRL), and reflects on its potential together with an ERP in this specific sector. This

[☆] The authors gratefully acknowledge the financial support from the University of Valencia (ref. UV-INV-AE15-332959). The authors also thank Laura Sierra-García, Universidad Pablo de Olavide, and Pascual Garrido, Universidad de Alicante, for their detailed and useful comments.

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research draws on a literature review and a case study approach. A case study supports the theory and is suitable to examine the questions of “how” and “why” (Yin, 2003). The objective of a case study is to build a theory in the preliminary phase of a research study and to find new research avenues. This study analyzes the benefits of implementing an ERP system and of using XBRL format to report in the banking industry considering the industry’s specific risks and complexities. The study posits that ERP and XBRL both are necessary to successfully use Computer Assisted Audit Techniques (CAATs) while performing audit procedures to verify the compliance of certain crucial regulatory requirements in banking. Using information from Big 4 auditors that audit banks in Uruguay, this study confirms this statement by explaining the possible consequences of not using CAATs to audit the compliance of loan loss provisions’ regulatory requirements in Uruguay.

2. The use of ERP and XBRL in the financial sector

Disclosing into XBRL the financial data integrated through the implementation of an ERP system (Liu, 2013) makes that data available to outside users such as stockholders and regulators (Kloeden, 2007). In addition, banks can also significantly reduce the time and costs of data manipulation while performing the key business processes. Because financial institutions deal with a high volume of financial information, they can take a big advantage of the XBRL technology (Tesnière, Smith, & Willis, 2002).

Since October 2005, the Federal Financial Institutions Examinations Council (US Banking Regulator) requires quarterly “Call Reports” in XBRL; a requirement that 8,000 banks must comply (KPMG, 2008). This requirement implies that banks must collect, validate, manage, and distribute data into a central data repository accessible to regulators and the public. The rate of data free of mistakes submitted can measure the success of project implementation: research reports that 95% of bank data submitted is free of errors (Jones, 2013).

The European regulator has also implemented XBRL to receive information from the supervised entities (European Banking Authority, 2013). The Banco Central del Uruguay (the Uruguayan banking regulator) leads a recent XBRL reporting initiative in South America, which is implementing XBRL reporting for the supervised institutions. Banks must report the 2015 financial statements in XBRL format by mid-2016 (Banco Central del Uruguay, 2016).

The financial sector is pioneer in the implementation and use of XBRL to exchange financial information in a standard format. The success in this sector motivates other regulators such as the Security and Exchange Commission (SEC) to mandate all public companies to disclose their financial information using XBRL since 2009 (see for instance the benefits for financial analysts in Liu, Yao, Sia and Wei (2013) and Liu, Wang and Yao (2013), and the effect in the decrease in the systematic risk of banks or the effects on liquidity in Blankespoor, Miller, and White (2012)).

After the recent financial crisis, requirements from regulators are significantly higher (Gandrud & Hallerberg, 2014), giving a higher level of complexity and importance to the financial institution’s risk management function. ERP systems and XBRL can help financial institutions to comply with these new and complex requirements such as Basel policies, Sarbanes-Oxley Act, and IFRS.

3. Risk management in the banking industry

Regulators commonly use the CAMELS rating system to assess the strength of financial institutions and to evaluate their risk level (Office of the Comptroller of the Currency, 2013). The CAMELS rating covers the following risk areas: The level of capital risk, the quality of assets, managerial skills, the level of earnings and profitability, the level of liquidity risk, and the sensitivity to market risk. Prior studies in the banking research identify proxies for the different risk areas that the CAMELS rating system covers (Gambetta, Zorio-Grima, & García-Benau, 2015).

These proxies use banks’ financial information. The use of ERP and XBRL can help not only the financial institution but also the regulators to monitor the different types of risk that are inherent to the banking industry.

Research commonly uses the capitalization ratio to capture the capital adequacy. Capitalization ratio equals total equity to total assets (Jin, Kanagaretnam, & Lobo, 2011). Loan loss provision (LLP) captures asset quality. The higher the LLP the lower the asset quality (Jin et al., 2011; Kerstein & Kozberg, 2013). The efficiency ratio defined as cost to income is a common proxy for management skills (Fields, Fraser, & Wilkins, 2004). The ratio of operating income to total assets is a proxy for earnings and profitability (Fields et al., 2004). Other ratios such as return on assets and return on equity are proxies for earnings and profitability (de Claro, 2013; Martínez-Campillo, Cabeza-García, & Marbella-Sánchez, 2013). Total loans is a proxy for bank liquidity, because the main factors in the financial crisis are a loss in liquidity and an increase in the default risk of loans from interest rate resets (Kerstein & Kozberg, 2013). Additionally, total liquid assets are a proxy for liquidity.

The financial institution itself and auditors can use all the above risk proxies to monitor the compliance of the requirements of regulators, who can also take advantage of these proxies to monitor compliance of financial institutions with regulatory requirements.

4. High-risk areas in banking compliance: the auditor’s role

A simplification of the regulatory requirements compliance and the monitoring using the CAMELS approach could exist if the financial institution has an ERP system and reports under XBRL. The use of XBRL also makes the supervisory activity easier for the regulator, because the regulator receives the information in a standardized format with IT usage potential. Note that XBRL improves information re-usability: As the production costs diminish, the reliability and processing speed increases, yielding more accurate, timely, and informed regulatory assessments and analytics. As a result, XBRL substantially enhances the efficiency of these assessments (Efendi, Dong Park, & Murphy Smith, 2014).

Another important stakeholder in the banking sector is the external auditor. Auditors use data analytics to test a greater number of transactions, to increase the audit quality by providing greater insights into the clients’ processes, and to detect fraud. Using data analytics, auditors can easily increase the sufficiency of audit evidence and can identify data that does not match the auditors’ expectations based on their knowledge of the client’s business (Earley, 2015). Audit standards suggest that the use of CAATs may enable more extensive testing of electronic transactions, which may improve audit efficiency and effectiveness (IFAC, 2010). In a recent study about the factors that influence auditors’ use of CAATs in the United States, Bierstaker, Janvrin, and Lowe (2014) obtain data from 181 auditors representing Big 4, national, regional, and local firms and show that CAATs use may be dependent on predictable cost effectiveness tradeoffs.

LLP are accounting estimates; therefore, they have high risk of material misstatement. Banks make complex calculations using information from different sources to estimate them, while the auditor performs extensive audit procedures to audit these high-risk accounts. The regulator also assesses these processes using the CAMELS rating-system approach, where the letter A identifies assets quality.

Auditors with high reputation have incentives to provide high quality audits to mitigate reputation and litigation risk. Given that LLP is a significant accrual for banks and given that LLP is an accounting estimate with high inherent uncertainty associated, bank managers use judgment and inside information to estimate LLP. Thus, auditors are important to mitigate information asymmetry between bank managers and stakeholders such as investor and regulators (Kanagaretnam, Krishnan, & Lobo, 2009). LLP ranks number one among the main deficiencies regulators find (AICPA, 2006). This rank indicates that auditing LLP is challenging and audit quality is important in assessing LLP’s adequacy.

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