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What drives investment bank performance? The role of risk, liquidity and fees prior to and during the crisis

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ABSTRACT

This paper examines factors that affect the performance of investment banks in the G7 and Switzerland. In particular, we focus on the role of risk, liquidity and investment banking fees. Panel analysis shows that those variables significantly impact upon performance as derived from Stochastic Frontier Analysis (SFA). Given our sample also comprises the financial crisis, we further test for regime switches using dynamic panel threshold analysis. Results show different underlying regimes, in particular over the financial crisis. In addition, a strong positive effect of Z-Score on performance for banks in the regime of low default risk is reported, while fee-income ratio has also a positive impact for banks with low level of fees. On the other hand, liquidity exerts a negative impact. Notably, there is a clear trend of mobility of banks across the two identified threshold regimes with regard to risk a year before the financial crisis. Our results provide evidence that recent regulation reforms regarding capital adequacy and liquidity requirements are on the right track and could enhance performance.

1. Introduction

The liberalization and globalization processes resulted in a rapid development of the investment banking industry in all the industrialised countries before the burst of the financial crisis in 2007. Investment banks primarily engage in the issuance of equity or debt securities and in mergers and acquisitions (M&A) advisory services. In addition, investment banks' activities include trading, securities, and merchant banking and investment management services. The wide operational spectrum of the investment banking industry has significantly increased the importance of these financial institutions for the global financial system.

The high level of financial integration in the first half of the 2000 decade has led to a rapid growth of the investment banking sector, particularly in the G7 and Switzerland (Baglioni, Beccalli, Boitani, & Monticini, 2013; Morana, 2008; Tomljanovich & Ying, 2005). Investment bank presence both in terms of number of institutions and operations is centred in these countries (Kalemli-Ozcan, Sorensen, & Yesiltas, 2012; Thomson Reuters, 2012). The development of investment banking activities reached its peak in 2006, when the industry's total income in the G7 and Switzerland amounted to 80.67 (US$bn). In particular, investment banking earnings constituted 62% of total bank income in the US and 30% of the gross output of the UK economy in 2006 (Burgess, 2011; Thomson Reuters, 2007). However, this strong growth came to an abrupt end due to the financial crisis in 2007. The investment banking sector in the G7 and Switzerland experienced a considerable deceleration in activity as revenue dropped more than half from its highest point in 2006, reaching a total value of 39.07 (US$bn) in 2008. The industry as a whole has been profoundly reformed by the turmoil.[1] The crisis revealed that investment banking activities are highly complex

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[1] To mention but a few events, JPMorgan acquired Bear Stearns with the financial aid of the Federal Reserve Bank, Bank of America merged with Merrill Lynch, while another prominent investment bank, Lehman Brothers, filed for bankruptcy.

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and interconnected (Adrian & Shin, 2010; Demirguc-Kunt & Huizinga, 2010), particularly between US and European investment banks (Eichengreen, Mody, Nedeljkovic, & Sarno, 2012). As a consequence the transmission of the US sub-prime mortgage meltdown led to a major recession in the G7 and Switzerland.

In response to the 2007 financial crisis, US regulators passed the Dodd–Frank Act (2010). This Act requires investment banks to have higher capital adequacy ratios as a 'buffer' against credit crunch. Moreover, it includes the 'Volcker Rule' that prohibits '*a banking entity to i) engage in proprietary trading; or ii) acquire or retain any equity, partnership, or other ownership interest in or sponsor a hedge fund or a private equity fund*' (Dodd–Frank Act, 2010). The Rule consequently aims to separate commercial banking from investment banking that is particularly comprised of proprietary trading. Moreover, the impact of the 'Volcker Rule' implementation is not limited within the US as it also applies to the US subsidiaries of foreign banks.[2]

Despite the importance of the investment banking for the G7 and Switzerland, existing research on investment bank performance determinants is limited, while there is no study that includes the years of the financial crisis. Radic, Fiordelisi, and Girardone (2012) is the only study to focus exclusively on the performance of investment banks but they cover just the pre-crisis period (2001–2007). The authors estimate profit and cost functions with investment banking fees as output, concluding that insolvency risk has a positive effect on cost inefficiency. Earlier studies, such as those by Allen and Rai (1996) and Vander (2002), examine the performance of universal banks that include investment banking activities. In particular, Allen and Rai (1996) review the efficiency of universal banks compared with conventional banks using both parametric and non-parametric methods. They find that universal banks operate more efficiently than traditional banks. The results of Vander (2002) back this finding of Allen and Rai (1996). A later study by Beccalli (2004) focuses on the performance of non-bank investment firms that engage solely in investment banking activities. Beccalli (2004) performs a comparison study between the UK and Italian investment firms over the 1995 to 1998 period. The author finds that the UK investment firms are more efficient than Italian firms.

Against this background, an examination of the performance determinants of investment banks for a period that includes the financial crisis could be of interest to both bankers and regulators. In this paper we focus on fees, risk and liquidity as drivers of the performance of these institutions. We give emphasis to fees because investment banks, as opposed to conventional banks, engage primarily on non-interest income operations (Demirguc-Kunt & Huizinga, 2010). This concentration on fee-based operations could increase the risk of investment banks because of the high volatility of earnings stemming from non-interest income operations (Demirguc-Kunt & Huizinga, 2010; Stiroh, 2004). On the contrary, conventional banks can exploit risk diversification benefits (Chiorazzo, Milani, & Salvini, 2008; De-Young & Rice, 2004). Thus, investigating the impact of default risk on investment bank performance is of vital importance in the context of this study. In addition, investment banks carry higher liquidity risk than commercial banks, as the latter, in case of a financial shock, can count on deposits (Gatev, Schuermann, & Strahan, 2009; Gatev & Strahan, 2006). Hence, the level of liquid assets availability could form another important contributing factor to the performance of investment banks, particularly at a period of high liquidity constraints.

This paper contributes to the banking literature in several ways. Firstly, this is the only study on investment bank performance that covers a period (1997–2010) that includes the crisis years. To this end, we employ SFA to estimate cost efficiency as a measure of performance of investment banks in the G7 and Switzerland. The next and main contribution of this paper is the application of the dynamic panel threshold model by Kremer, Bick, and Nautz (2013) in a second stage analysis. The advantage of this methodology is in allowing the data itself to reveal when the financial crisis occurs. This is achieved through testing for threshold effects of major bank determinants with respect to cost performance. In particular, we investigate the existence of thresholds in three bank-specific variables: a) we use Z-Score to measure default risk, as investment bank activities are related to high risk b) liquidity as a key factor that affects the performance of financial institutions. We account for the distinction between investment banks that are part of larger entities and stand-alone banks, as the former are able to draw liquidity from their group; c) we employ investment banking fees, which is the main income source of investment banks. Lastly, we extend the literature concerning investment bank performance determinants by including in fixed effects and dynamic panel models crisis related variables that capture the asset bubble burst and policy responses such as the quantitative easing.[3]

Our threshold results show that there is a strong positive effect of Z-Score on efficiency, particularly for banks in the low default risk regime. We also find liquidity to have a negative impact on cost performance for investment banks below a threshold value. This effect is mainly driven by banks that are not part of a larger banking entity. Moreover, a higher fee-income ratio has a stronger positive impact on efficiency for investment banks that earn lower fees than for banks with higher levels of non-interest income. Interestingly, we find significant changes in the number of banks that belong to each threshold regime before and during the financial crisis.

The rest of the paper is structured as follows. Section 2 develops our hypotheses. Section 3 describes the SFA and the dynamic panel threshold methodology. Section 4 discusses the investment banking industry in the G7 and Switzerland and presents our data and variables. Section 5 discusses our results and Section 6 concludes.

2. Hypotheses development

The operations of investment banks go far beyond the lending activities of traditional banks as they act as direct intermediaries between investors and capital acquirers in the capital markets. Furthermore, they are active participants in the capital markets by trading securities. An important function of investment banks that differentiates them from traditional banks is their advisory role concerning the wealth of acquirers and bidders. Investment banks assess the assets of target companies and advise acquirers to take the most value enhancing decisions with the aim of creating substantial synergies (Bao & Edmans, 2011). However, the type, the complex nature and the magnitude of investment banking operations carry significant risks that can be transferred to their shareholders and customers. To illustrate this, Fernando, May, and Megginson (2012) demonstrate that companies with Lehman Brothers as their lead equity underwriter suffered economically, experiencing significant reductions in their returns. Hence, it becomes vital to test the following hypotheses regarding the impact of default risk, liquidity and investment banking fees on the performance of these institutions.

[2] The Rule has given rise to concerns due to its extraterritorial effect on the activity of the non-US banking institutions (Baxter, 2012). Despite the initial opposition of many countries to the formal application of the Rule, countries such as Germany and the UK acknowledge that regulatory amendments should be employed, aiming to rationalize banks' operations in both commercial and investment banking activities. In particular, the UK, France and Germany have been seriously considering the introduction of a regulatory reform similar to the 'Volcker Rule' (Gambacorta & Van Rixtel, 2013; Liikanen, 2012; Vickers & Lagarde, 2013). The widespread criticism of the Rule is further bolstered by the proposition that only US banks should have the right to trade US government bonds. Banks in countries such as Canada, Japan and the UK issue substantial levels of foreign sovereign debt and their exemption from the US government debt market could harm their financial markets.

[3] The 2007 turmoil led to the implementation of unconventional monetary policies, such as quantitative easing (Q/E), by the central banks of the G7 and Switzerland (Klyuev, De Imus, & Srinivasan, 2009; Fratzscher, Lo Duca, & Straub, 2013).