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Borrower's moral hazard, risk premium, and welfare: A comparison of universal and stand-alone banking systems

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ABSTRACT

Does the unification of retail and investment banking necessarily heighten risk in financial markets? Using a simple two period intertemporal model with borrower's moral hazard and uninsured risk, we argue that the integration in financial service markets under universal banking could give rise to a greater risk sharing arrangement. This could eliminate the stock market premium attributed to borrower's moral hazard. Absent any other frictions, we show that there is an unambiguous output and welfare gain from switching to a universal banking system from retail banking because of this efficient risk sharing. This welfare gain is higher in economies prone to greater information friction caused by borrower's moral hazard.

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1. Introduction

Following the great depression in the US, the Glass–Steagall Act of 1933 imposed a separation between investment banking and commercial banking activities. The former primarily deals with the activity of underwriting of securities while the latter engages in the business of taking deposits and making loans. Thus financial intermediaries could not participate in both equity and debt markets simultaneously. A series of financial reforms, beginning in the late eighties and culminating in the Gramm–Leach–Bliley Act of 1999 (referred to as GLB Act hereafter), had put an end to this separation between commercial banking and investment banking, leading to a greater integration in financial services market.

In recent times, bank's multifarious activities under the umbrella of universal banking have been a subject of a heated debate. The regulators in the UK and the USA are contemplating to curb multifarious activities of these institutions, especially in areas where commercial banks enter the business of underwriting equities.¹ In light of the current debate about the financial crisis a natural question arises whether this financial integration heightened the risk in the financial markets emanating from moral hazard of borrowers²? The answer to this question requires a careful theoretical analysis of the relative

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¹ The Financial Times (21th December, 2012) reported "In a 146-page assessment of the government's planned Vickers reforms, the 10-member panel endorses the central idea that "universal" banks should be made to erect a protective "ringfence" around their high-street banking activities. The report also raises the prospect of a ban on proprietary trading – whereby banks trade securities for their own account – in line with the incoming Volcker rule in the US." In an earlier report (April 21st, 2011), the newspaper also discussed about "global convergence" of the policy makers views regarding separation of various segments of activities that fall under the purview of Universal Banking.

² A voluminous literature now exists explaining the anatomy of the US financial crisis. For a lucid exposition of the origin and progression of the US financial crisis, see Choi (2013).

performance of a fully integrated financial system with respect to a stand-alone system where both systems are vulnerable to the problem of moral hazard.

There are two distinct types of moral hazard in the context of banking system. The first type refers to borrower's moral hazard where a bank cannot observe efforts chosen by the borrower. The second type of lender's moral hazard, known as risk shifting, is the selection of risky borrowers by banks unobserved by depositors.³ In this paper, we exclusively focus on the first type. We analyze issues of risk sharing and the stock market premium (equity risk premium) in this context.⁴

We address the following questions in this paper: (a) does an integrated financial market exacerbate or mitigate risk emanating from moral hazard between borrowers and the financial institutions? In other words, which system (stand-alone or the universal banking) handles the issue of borrower's moral hazard better? (b) How is this risk priced in the equity issued by firms in each system? (c) What is the real effects of financial integration, which include investment, output and consumer welfare?

The primary issue under moral hazard is how to provide insurance to risk-averse agents without jeopardizing their incentives to work harder. This trade-off between risk-sharing and efficiency of effort is resolved via optimal financial contracts between borrowers and financial intermediaries. While both stand-alone and integrated (or universal) banking systems strike optimal contracts to resolve the twin problems of insurance and provision of effort, the latter has more instruments which are more effective in an environment with multiple financial markets such as equity and debt. The integrated system can also take into account the feedback effects between these two markets on the borrower's portfolio choice between debt, loan (savings) and equity and their consequent impact on the allocation decisions such as consumption, investment and work efforts.⁵ Thus overall risk undertaken by risk-averse agents is smaller in magnitude in an integrated system. We argue that in the presence of borrower's moral hazard, the banking unification *per se* cannot heighten risk premium in financial markets. It will indeed give rise to an efficient risk sharing among lenders and borrowers and eliminate the risk premium caused by borrower's moral hazard.⁶ In addition, such a financial integration enhances efficiency by decreasing the wedge between expected marginal productivity of capital and the risk free rate, which results in a rise in investment, output and welfare.

Although a large number of papers deal with the issue of universal banking just after passing of GLB act, very little work is done about the riskiness of universal banking vis-à-vis stand alone banking system which is the main focus of our paper. [Boyd, Chang, and Smith \(1998\)](#) model moral hazard between banks vis-à-vis depositors and regulatory agency like FDIC. They show that banks' equity stakes in borrowing firm might make moral hazard problems severe. Our paper differs from [Boyd et al. \(1998\)](#) on several counts. First, in our model, information friction arises due to moral hazard of the borrower as opposed to costly state verification. Second, unlike them, deposit insurance is not an issue in our context. Instead, we focus on the conflict between incentives and risk sharing latent in financial contracts. In light of this conflict, we evaluate the riskiness of alternative banking systems.

In recent years, there are empirical papers appraising the riskiness of alternative banking systems for either Europe and US. [Geyfman and Yeager \(2009\)](#) found that there was some risk reductions under universal banking but it is not statistically significant. [Lepetit, Nys, Rous, and Tarazi \(2008\)](#), found with a disaggregative analysis that risk shrank for relatively smaller banks due to increased fees in underwriting and investment banking activities. [Demirgüç-Kunt and Huizinga \(2010\)](#), on the other hand, found that while there was some reductions of risk at the lower level of non-deposit related activities, it rose after a certain level which gives rise to a U-shaped pattern of risks for the banks combining multiple activities. None of these papers explicitly focus on the relationship between stock market risk and borrower's moral hazard which is the main focus of our paper.

Our paper is a theoretical investigation whether universal banking can reduce stock market risk induced by borrower's moral hazard. We consider a scenario where borrowers are risk averse and risk neutral banks offer contracts to the risk averse agents with the goal to achieve efficient consumption risk sharing. In our model, the risk sharing under universal banking could be mimicked by a constrained social planning optimum. On the other hand, such efficient risk sharing is not possible in a non-integrated banking system due to the legal separation between retail and investment banking. To the best of our knowledge, our paper is the first paper which shows such equivalence between the risk sharing arrangement under universal banking and a constrained social planning optimum.

We also analyze the real effects of alternative banking arrangement on capital accumulation and output in a general equilibrium. We demonstrate that the investment and output are less in a stand-alone banking system compared to a universal banking system. This happens because in a stand-alone system, bankers do not control the borrower's trade in stocks as well as storage decision. An endogenous borrowing constraint stemming from the borrower's moral hazard thus

³ For a comprehensive treatment on this issue, see [Freixas and Rochet \(1997\)](#).

⁴ [Banerji and Basu \(2013\)](#) explore the implications of lender's moral hazard issue emanating from asymmetric information.

⁵ It is well known that integration between two branches of activities could generate diversification effects resulting in reduction of risk. What the extant literature does not focus is the interrelation between moral hazard, stock market risk and diversification which we do in this paper.

⁶ For simplicity, we abstract from aggregate risk in this paper to demonstrate the inefficiency of the contracting arrangement in a stand-alone banking system. In the absence of aggregate risks, equity premium does not exist in a frictionless world. However, in the presence of information friction, financial intermediaries may not be able to write efficient contracts unless they have adequate number of instruments. See [Freixas and Rochet \(1997\)](#) for a comprehensive study on the financial contracting and banking. We introduce information friction due to borrower's moral hazard under both regimes to examine its impact on prices of equity in a similar way dealt by [Kahn \(1990\)](#) and [Kocherlakota \(1998\)](#).

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