Book-to-Market Equity, Asset Correlations and the Basel Capital Requirement

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Abstract: This paper examines the effect of book-to-market equity (BE/ME) on asset correlations under the Basel capital requirement. We find that BE/ME captures variations in asset correlations after controlling for firm size, default probability and industry effects from 1987 to 2011. Obligors with higher BE/ME exhibit lower asset correlations compared to those with lower BE/ME. Decomposing BE/ME into assets-in-place and growth options based on the asset pricing literature shows that obligors with more assets-in-place or more fixed assets have higher BE/ME and lower asset correlations than those with more growth options. Overall, our findings suggest that BE/ME is an additional important factor that may improve the estimates of asset correlations and thereby banks' capital adequacy.

Keywords: bank capital requirement, asset correlation, book-to-market equity, firm size, default probability

1. INTRODUCTION

Asset correlation, which measures the co-movement between a borrower's asset returns and the common risk factor that summarizes general economic conditions, is a key parameter in determining a bank's minimum capital requirement under the Basel II Accord. A higher asset correlation for the borrower implies a higher systematic risk to the lender (i.e., the bank), which then means that the bank is required to hold more capital. Under the current regulatory capital requirement, asset correlations are conditioned on the borrower's firm size and default probability. For example, asset correlation is a decreasing function of default probability, and there is a size adjustment factor for small and medium sized enterprises (SMEs) in the asset correlation function.

In addition to firm size and default probability, we explore the potential effect of another well known firm characteristic, book-to-market equity (BE/ME), on asset

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