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## Size, value, and momentum in developed country equity returns: Macroeconomic and liquidity exposures<sup>☆</sup>



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The paper investigates value and momentum factors in 23 developed international stock markets. We find that typically value and momentum premia are smaller and more negatively correlated for large market capitalization stocks relative to small. Momentum factors are more highly correlated internationally relative to value. We provide international evidence on three sets of risk exposures of value and momentum returns: macroeconomic risk, funding liquidity risk, and stock market liquidity risk. We find that value returns are typically lower prior to a recession while momentum returns often exhibit little sensitivity. Value returns are typically lower in times of poor funding liquidity, whereas, with notable exceptions, momentum returns are typically unaffected. Lastly, for almost all countries, value returns are high in poor stock market liquidity conditions.

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### 1. Introduction

Value and momentum effects documented in the finance literature continue to challenge asset pricing theory. In the United States, among many other important papers, [DeBondt and Thaler \(1985\)](#), [Fama and French \(1992, 1996\)](#), and [Lakonishok et al. \(1994\)](#) provide evidence for the value effect:

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Stocks with high ratios of fundamentals (such as book value or cash flows) to price tend to have higher average returns relative to stocks with low ratios. Pioneering work by [Jegadeesh and Titman \(1993, 2001\)](#) provides evidence for the momentum effect: Stocks with high cumulative returns over the past year continue to perform better. This paper contributes to the value and momentum investing literatures by exploring momentum and value factor returns in 23 developed international stock markets.

There is a sizeable body of research on value and momentum in international stock markets as researchers have strived to extend the analysis and evidence found for the United States to the international arena. [Asness et al. \(2013\)](#), [Chui et al. \(2000, 2010\)](#), [Fama and French \(1998, 2012\)](#), [Griffin \(2002\)](#), [Griffin et al. \(2003\)](#), [Hou et al. \(2010\)](#), and [Rouwvenhorst \(1998, 1999\)](#) all document value and momentum effects in international stock markets. Our paper contributes to the existing literature by working with country-level data rather than regional data, focusing on the size patterns in value and momentum returns, and exploring the macroeconomic and liquidity loadings of value and momentum returns.

Working with firm-level monthly return data from January 1990 to March 2012, we have five sets of results. Each set addresses a specific economic question. First, we provide country-level evidence of the size patterns in value and momentum returns. The economic interest here is to understand whether investors can earn the same value and momentum returns if they restrict their analysis to large capitalization (big) stocks, which typically have lower transaction costs relative to small capitalization (small) stocks. We find that for almost all countries, value and momentum effects are smaller for big stocks. In the United States, [Korajczyk and Sadka \(2004\)](#) and [Lesmond et al. \(2004\)](#) question if returns can survive the high portfolio turnover implied by momentum. Our analysis shows that potentially the same concern exists for the international stock markets studied in this paper: Big stocks come with lower transaction costs and lower momentum (and value) premia. Our finding corroborates the results of [Fama and French \(2012\)](#), who work with the same set of countries and provide results for four regions: North America, Europe, Japan, and Asia Pacific.

Second, we report the correlations between value and momentum factors in the same country. The economic question is whether investors in a given country can earn significant diversification benefits by combining value and momentum strategies. We find that value and momentum factors are negatively correlated in any given country. We also find that correlations are more negative and significant for the value and momentum factors constructed using big stocks relative to small stocks. This finding is important since even though big stocks have smaller value and momentum premia, in addition to trading with lower transaction costs, the diversification benefits of combining them are larger.

Third, we correlate the value factor in one country with the momentum factor in another. These correlations are useful for quantifying diversification benefits of international value and momentum strategies. The economic issue here is whether investors could pursue value and momentum returns in different countries, and, yet still enjoy portfolio diversification. We find that a majority of intercountry correlations between value and momentum factors are statistically significant and negative. In addition, we find that momentum factors are more highly correlated internationally relative to value.

Because the majority of the papers in the literature focuses either on the value or the momentum effect; surprisingly, the correlations are not widely reported, particularly for international data. One exception is [Asness et al. \(2013\)](#), who find corroborating evidence for value and momentum factors calculated for the United States, the U.K, Continental Europe, and Japan regions without making a distinction between small or big stocks. [Griffin \(2002\)](#) reports correlations between value factors in the United States, Japan, the U.K, and Canada. Recent work by [Cakici et al. \(2012\)](#) examines correlations for three regions of emerging markets: Asia, Latin America, and Eastern Europe.

Fourth, we explore if country value and momentum returns generate significant and positive abnormal returns with respect to the Capital Asset Pricing model (CAPM). We use four different CAPMs estimated relative to the same-country, global, or U.S. benchmark market returns. The alpha values are economically important since they represent how attractive the country value and momentum returns are to various local, U.S., or global investors. Our alpha results indicate that the value and momentum

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