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Dynamic return predictability in the Russian stock market

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ABSTRACT

This paper explores whether the relevance of a conditional multifactor model and autocorrelation in predicting the Russian aggregate stock return fluctuates over time. The source of return predictability is shown to vary considerably with information flow. In general, predictability of the Russian stock market return is at a high level. Autocorrelation increases during periods of low information flow. During periods of high information, conditional exposure to the local market risk and changes in oil price influence the expected return on the Russian stock market. The lagged global stock market factor and currency returns have insignificant influence.

1. Introduction

Asset pricing models such as Merton's (1973) intertemporal CAPM suggest that expected excess returns can be time-varying and predictable if conditional risk sensitivities or reward-to-risk coefficients change over time. While recent studies find support for the intertemporal risk-return relation (Brandt and Wang, 2010; Guo and Whitelaw, 2006; Nyberg, 2012), past returns should not have explanatory power for expected returns if the pricing model is correct and the financial market is efficient. In practice, lagged returns still often help to forecast future returns (see Bollerslev et al., 1988; Ghysels et al., 2005). Explanations for this apparent feature – stock returns exhibit serial correlation – range from nonsychronous trading induced spurious autocorrelation (Lo and MacKinlay, 1990) to autocorrelation caused by a relation between conditional mean and variance processes (Hong, 1991).[1]

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[1] For more explanations for autocorrelation in stock returns, see Campbell et al. (1997).

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Recently Kinnunen (2012) finds that market-level persistence in the US stock market return increases during periods of low volatility, leading to a failure of the conditional CAPM. Since volatility serves as a proxy for information flow (Andersen, 1996), it appears that asset pricing explanations fail when there is less new information to be subsumed in stock prices. By testing this explanation in the Russian stock market, which is one of the largest emerging stock markets, this paper considers this insight in a drastically different market environment. Whereas the US stock market can be assumed to be efficient and stable, features such as poor corporate governance (Black et al., 2006) and liquidity risk (Bekaert et al., 2007) characterize emerging markets. The Russian financial market is not an exception: its short history includes colorful economic and political events (for an overview, see Goriaev and Zabotkin, 2006).

In developing stock markets, the inadequacy of a pure risk premia explanation and the role of return autocorrelation are likely to be highlighted. Harvey (1995a, 1995b), for example, reports that the levels of return predictability and serial correlation observed in emerging stock market returns are both higher than those found in developed markets. De Santis and Imrohoroglu (1997) find significant first-lag autocorrelations in selected emerging market returns, but report simultaneously only weak support for a risk-return explanation. However, emerging market asset pricing studies often omit a first-order autoregressive term from their empirical models (see, for example, Carrieri et al., 2007; Chambet and Gibson, 2008).

The aim of this study is to investigate whether the relevance of a conditional multifactor model and autocorrelation in predicting the Russian stock market returns varies with information flow. Following Kinnunen (2012), the source of predictability is allowed to fluctuate between a risk-return explanation and autocorrelation with the assumption that both volatility and volume can approximate the level of information flow. Since both variables reflect changes in market conditions, further motivation for this approach is given by the adaptive market hypothesis (AMH) of Lo (2004).[2] Under the AMH, dynamic return predictability is possible due to changing market conditions in which investors constantly adapt with satisfactory rather than optimal behavior. Given the highly dynamic nature of the Russian financial market, it is likely that investors, at least partly, rely on heuristics in their decision-making process. Certain heterogeneous agent models also suggest that volatility or trading volume can contain useful pricing information (Campbell et al., 1993; Sentana and Wadhwani, 1992).

The difficulty of choosing an adequate equilibrium model for emerging market returns includes the question of whether the global or local market risk should command a risk premium. In other words, whether a country's financial market is integrated with world capital markets. Roll and Pukthuanthong (2009) find that the degree of global market integration has increased for most countries. Chambet and Gibson (2008) and Bekaert et al. (2011), on the other hand, report that, irrespective of improvements, emerging markets are still at least partially segmented. Goriaev and Zabotkin (2006) report a significant influence of the global equity market's performance on the Russian stock market using rolling regressions. Saleem and Vaihekoski (2008) provide similar support using a conditional modeling approach. However, both studies report that the Russian stock market appears to be partially segmented. Additional factors may also command risk premiums in emerging markets. For example, the Russian economy, as with many other emerging economies, depends heavily on commodity prices. Basher and Sadorsky (2006) and Goriaev and Zabotkin (2006) find that oil price changes affect stock returns in various emerging markets and Russia, respectively.

The contribution of this study is two-fold. First, using monthly Russian stock market data from 1999 to 2012, I find that the empirical model is able to capture considerable fluctuations in the source of return predictability in both economically and statistically significant way. For an emerging market such as Russia, a pure asset pricing model explanation for expected returns is insufficient. Any realistic model for emerging stock market returns has to recognize significant autocorrelation in returns. In Russia, the relative weight of a conditional multifactor model and autocorrelation in predicting the aggregate return fluctuates with information flow (measured by volatility). The empirical model fits the data better than benchmark models or the feedback trading model of Sentana and Wadhwani (1992) and the volume-autocorrelation model of Campbell et al. (1993). The results comport with Kinnunen (2012), who analyze the US stock market using daily data.

[2] My aim is not to relate autocorrelation to market efficiency. It is, however, worth noting that return predictability using past prices does not necessarily indicate market inefficiency as it may not be economically exploitable due to transaction costs.