Robust estimation of Jensen's alpha

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1 Introduction

While traditional fund managers target returns relative to standard market benchmarks, hedge fund managers target absolute returns, independently of general market conditions. The underlying premise is, of course, that they are skilled to outperform the market. Several papers have addressed hedge fund performance and risk issues. Ackermann et al. (1999) use a CAPM framework (S&P500) and find positive excess returns for hedge funds. A similar result is found in a multi-factor setting by e.g. Agarwal and Naik (2000a, 2000b and 2000c). After adjusting for equity market exposure and other sources of systematic risk, these studies find that hedge funds still produce significant excess returns or alphas. In existing research it is thus found that hedge funds persistently add value. However, these results are often based on standard ordinary least squares (OLS) estimates, using standard errors which are not corrected for autocorrelation and heteroskedasticity. Moreover, the few studies that use HAC standard errors are still subject to another problem, namely the presence of outliers.

The goal of this paper is to "robustify" the results found in this literature. To this end, robust regression techniques (namely MM-regression, Yohai (1987)) and robust standard errors (Croux, Dhaene and Hoorelbeke (2003)) are used.

2 Estimating excess returns

To estimate excess returns for hedge fund indices, we use the standard CAPM model:

$$(R_{i,t} - R_{f,t}) = \alpha_i + \beta_i (R_{M,t} - R_{f,t}) + \varepsilon_{i,t}, \tag{1}$$

where $R_{i,t}$ is the return of a hedge fund strategy i, $R_{f,t}$ is the risk-free rate and $R_{M,t}$ is the return on the market portfolio. In this decomposition α_i captures the average managerial skill, whereas $\beta_i (R_{M,t} - R_{f,t})$ refers to market exposure.

This equation is estimated using MM-estimators of regression. The standard errors used are as proposed in Croux et al. (2003). These standard errors are robust against vertical outliers and bad leverage points. On top they are consistent in the presence of heteroskedasticity and autocorrelation (so-called HAC standard errors).

This study uses CSFB/Tremont monthly data for the period 1994.1-2004.10. CSFB hedge fund returns are asset-weighted and we use 12 hedge fund strategies: convertible arbitrage (CA), dedicated short (DS), emerging markets (EM), equity market neutral (EMN), risk arbitrage (RA), distressed securities (D), event driven multi-strategy (EDMS), fixed income arbitrage (FIA), global macro (GM), long/short equity (LSE), managed futures (MF) and the CSFB hedge fund index (HFI). The return on the market portfolio R_M is composed of 70% Russell 3000 return and 30% Lehman US aggregate.The risk free rate R_f is the US 1 month certificate of deposit.

The data contain several small outliers. There is, however, one huge outlier (in fact it is a bad leverage point) around august 1998 which biases the OLS-estimated alphas downwards. In this

period the LTCM-crisis took place. This outlier is found back in all (but one) of the hedge fund strategies.

In line with previous studies, we find that hedge fund managers earn returns in excess of the return due to market exposure: in 9 cases the estimated alpha is positive and significantly different from zero. The major difference compared to standard OLS is that the reported alphas are higher and have a higher significance, indicating that standard regression techniques tend to underestimate the skill of hedge fund managers.

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