Computer-based Trading, Institutional Investors and Treasury Bond Returns

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Summary

Computer-based trading (CBT) refers to the set of activities that employ automated programs for generating, routing, executing and canceling orders in electronic markets and it is widely used by institutional traders to manage market impact and risk. Various studies widely recognize that trading carried out by machines without human supervision can entail both benefits and risks. However, the overall effect of CBT on asset prices is still uncertain, as it is still unclear how CBT impact on excess returns.

In this paper we provide a comprehensive empirical analysis of the effect of CBT on the cross-section of expected returns of US Treasury bonds. We focus on the US Treasury market since it is one of the largest in the world, with a daily trading volume nearly 5 times that of

the US equity market, and because CBT has been increasing substantially during the last decade.

With the help of various data sources containing very granular information about market and limit orders for the main on-the-run Treasury benchmarks, we compute a measure that captures the intensity at which CBT takes place in the secondary Treasury interdealer market. We then adopt a portfolio approach to examine the effect of CBT on the cross-section of Treasury expected returns.

We find that, over the sample period 2003-2011, investing in bonds with the largest beta to the aggregate CBT intensity and shorting those with the smallest generates large and significant returns. The returns from the strategy are not a mere compensation for conventional sources of risk or due to transaction costs. We explain our findings by linking CBT in the Treasury market to institutional investors' fund flows originating from the management their Treasury holdings. In light with the theory, we explain why bonds with largest beta to CBT intensity exhibit the largest excess returns and negative CBT intensity beta. Furthermore, we test and validate the hypothesis that excess returns from the bond investment strategy are due to the risk premium accruing to bonds whose returns positively correlate with the ones of the portfolio of institutional investors.