Readme-file for the Replication of "The Value of Arbitrage",

Journal of Political Economy, 2023
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The replication folder contains code to replicate all the figures in the paper. Note that Figures 1, 2, and 3 are simply drawn in Tikz.

1 CIP

- First, for microstructure analysis one must obtain data from CME DataMine or other comparable source with properly sequenced bid, offer, and trade updates (L1 data) for the applicable markets. Our dataset included every update, with millisecond precision on the timestamps.
- Our market universe for the CME Data is 6A (AUD/USD), 6B (GBP/USD), 6C (CAD/USD), 6E (EUR/USD), 6J (JPY/USD), and 6S (CHF/USD, optional), with time periods described in the paper. The specific contracts are H20, M20, U20, Z20, and H21 (March 20, June 20, September 20, December 20, March 21).
- Save those files in the same format as our sample file 6BH21.csv in the CIPArb\microstructure\data_raw directory, using GMT as the time zone (it will be converted later).
- Second, (skip first step if you do not wish to conduct microstructure estimations) one must obtain the data for CIP calculations from a Bloomberg terminal or similar source. Section G.2 CIP Application: Price/Rates Data of the online appendix contains detailed information on the specific Bloomberg data required, which must be inputed into the Excel files located in the CIP/input folder, "CIPAll_WithCHF.xlsx" and "CIPAll_ReplicationWithAllLIBORValues.xlsx" under the appropriate column headings. CHF (Swiss currency) was not analyzed in the main paper, using correct data for those columns is optional (fill in arbitrary data for CHF basis). "CIPAll_WithCHF.xlsx" is used in the main specification, while replicating with all LIBOR bases uses "CIPAll_ReplicationWithAllLIBORValues.xlsx."
- Run the script 'main.m' in the CIP folder, commenting out any main routine calls that you do not wish to run (for instance, if you do not wish to generate figures, only care

about the main specification, or only care about LIBOR spreads). The first line "run microstructure\main_microstructure_all;" is already commented out as a default - uncomment if you have the specificed CME data and wish to run the microstructure analysis.

- The "main.m" routine takes approximately 745 seconds to run on a machine with a 12 core Intel Xeon E5-2687W v4 processor. When uncommented, the microstructure routines take many hours to run due to the large amount of data and sequential processing.
- When the solver computes the gap-closing trade sizes and welfare gains using numerical integration, you may notice a warning about imprecision because the settings used set the solver tolerances extremely low; this can be changed by using a different tolerance level.

2 Twin Shares

- Run the 'main.m' script in the TwinShares subfolder; all calculations are automatically performed and graphs generated.
- The data are obtained from the URL (http://www.mathijsavandijk.com/dual-listed-companies) and have been processed into the input Excel files. Thanks to Professor van Dijk for making this data available.
- The "main.m" routine takes approximately 30 seconds to run on a machine with a 12 core Intel Xeon E5-2687W v4 processor.
- When the solver computes the gap-closing trade sizes and welfare gains using numerical integration, you may notice a warning about imprecision because the settings used set the solver tolerances extremely low; this can be changed by using a different tolerance level.