

# Replicating the paper: Integration Among US Banks

2020/08/10

## 1 Data collection

In order to collect data on the set of US banks, we rely on the ‘Wharton Research Data Services’ (WRDS) interface.

### 1.1 Data for computing banks’ Integration

Integration for US banks is calculated on the basis of US banks’ daily returns collected between the time period 1993-01-01 to 2019-12-31. In order to collect information on daily returns, we rely on the Center for Research in Security Prices (CRSP).

To compile the full dataset used in our paper, we access the WRDS platform, select CRSP as the database, choose the heading ‘Stock/Security Files’, then the heading ‘Daily Stock File’.

Finally, we choose the date range 1993-01-01 to 2019-12-31, search the entire database, and select all variables.

## 1.2 Data for explanatory variables

In order to explain the quarterly integration series for each bank, we collect quarterly balance sheet information for as many banks in our sample as possible. In order to do so, we rely on the Compustat Capital IQ database accessible from the WRDS interface.

To compile the full dataset, we access the WRDS platform, select the Compustat Capital IQ database, choose the Compustat North America Daily data collection, and then select the ‘Fundamentals Quarterly’ heading.

Finally, we choose the date range 1993-01-01 to 2019-12-31, search the entire database, and select all variables.

## 2 Replication

The base script file is ‘*US\_Bank\_Int.R*’ which contains code for accessing the daily return data for computing US banks’ integration. Running this script produces quarterly integration for the full list of US banks in our sample.

Once all integration estimates are produced, we generate the plots, tables and other results included in the paper using the script file ‘*US\_Bank\_int\_results.R*’. Note that this script instructs in its first line to run the script ‘*US\_Bank\_Int.R*’. This means that directly running this script will automatically produce all individual banks’ integration from daily return data, and then produce the figures and tables included in the paper.

The third script file used in this paper is ‘*US\_Bank\_int\_panel\_est\_policy.R*’ which produces the results of panel regressions and the policy analysis done in the paper. The first line of this script instructs the computer to run the script ‘*US\_Bank\_int\_results.R*’ which implies that running this file directly will produce *all* results in the paper. Thus in terms of hierarchy of codes, the lowest

level is occupied by ‘US\_Bank\_Int.R’ followed by ‘US\_Bank\_int\_results.R’ and then finally ‘US\_Bank\_int\_panel\_est\_policy.R’.<sup>1</sup>

All script files are extensively commented and the ordering of steps is lucidly explained.

Finally we produce the details of the programming environment (in R) that was used to generate the results.

```
## R version 3.6.3 (2020-02-29)
## Platform: x86_64-pc-linux-gnu (64-bit)
## Running under: Ubuntu 18.04.4 LTS
##
## Matrix products: default
## BLAS:   /usr/lib/x86_64-linux-gnu/blas/libblas.so.3.7.1
## LAPACK: /usr/lib/x86_64-linux-gnu/lapack/liblapack.so.3.7.1
##
## locale:
##  [1] LC_CTYPE=en_IN.UTF-8      LC_NUMERIC=C
##  [3] LC_TIME=en_IN.UTF-8      LC_COLLATE=en_IN.UTF-8
##  [5] LC_MONETARY=en_IN.UTF-8  LC_MESSAGES=en_IN.UTF-8
##  [7] LC_PAPER=en_IN.UTF-8     LC_NAME=C
##  [9] LC_ADDRESS=C             LC_TELEPHONE=C
## [11] LC_MEASUREMENT=en_IN.UTF-8 LC_IDENTIFICATION=C
##
## attached base packages:
## [1] stats      graphics  grDevices  utils      datasets  methods    base
##
## other attached packages:
##  [1] Matrix_1.2-18      fitdistrplus_1.1-1 survival_3.1-12     MASS_7.3-51.6
```

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<sup>1</sup>For the simple purpose of replicating the whole paper’s results, it is enough to run just the last file ‘US\_Bank\_int\_panel\_est\_policy.R’, which contains the second file ‘US\_Bank\_int\_results.R’, which in turn contains the first script file ‘US\_Bank\_Int.R’.

```

## [5] tseries_0.10-47    powerLaw_0.70.6    plm_2.2-3          sandwich_2.5-1
## [9] lmtest_0.9-37      zoo_1.8-8          moments_0.14       forcats_0.5.0
## [13] stringr_1.4.0      dplyr_1.0.1        purrr_0.3.4        readr_1.3.1
## [17] tidyr_1.1.1        tibble_3.0.3       ggplot2_3.3.2      tidyverse_1.3.0
##
## loaded via a namespace (and not attached):
## [1] httr_1.4.2          splines_3.6.3       jsonlite_1.7.0      modelr_0.1.8
## [5] Formula_1.2-3       Rdpack_1.0.0        assertthat_0.2.1    TTR_0.23-6
## [9] blob_1.2.1          cellranger_1.1.0    yaml_2.2.1          pillar_1.4.6
## [13] backports_1.1.8     lattice_0.20-41     glue_1.4.1          quadprog_1.5-8
## [17] digest_0.6.25       rvest_0.3.6         colorspace_1.4-1    htmltools_0.5.0
## [21] pkgconfig_2.0.3     bibtex_0.4.2.2      broom_0.7.0         haven_2.3.1
## [25] scales_1.1.1        pracma_2.2.9         generics_0.0.2      ellipsis_0.3.1
## [29] withr_2.2.0         maxLik_1.4-0         cli_2.0.2           quantmod_0.4.17
## [33] magrittr_1.5         crayon_1.3.4         readxl_1.3.1        evaluate_0.14
## [37] fs_1.5.0            fansi_0.4.1          nlme_3.1-147        xts_0.12-0
## [41] xml2_1.3.2          tools_3.6.3          hms_0.5.3           gbRd_0.4-11
## [45] lifecycle_0.2.0     munsell_0.5.0        reprex_0.3.0        compiler_3.6.3
## [49] rlang_0.4.7         grid_3.6.3           rstudioapi_0.11     miscTools_0.6-26
## [53] rmarkdown_2.3       gtable_0.3.0         curl_4.3            DBI_1.1.0
## [57] R6_2.4.1            lubridate_1.7.9      knitr_1.29          bdsmatrix_1.3-4
## [61] stringi_1.4.6       parallel_3.6.3       Rcpp_1.0.5          vctrs_0.3.2
## [65] dbplyr_1.4.4        tidyselect_1.1.0     xfun_0.16

```