

Read FAME databases from R

FAME databases map names to data structures. FAME data types include:

- BOOLEAN
- DATE (at various frequencies)
- NUMERIC
- PRECISION
- STRING

The *rhli* package maps FAME data types to compatible basic R data types. The *qoma.smuggler* package constructs more complex *tidyverse* data structures such as `Date` and `tibble`. *qoma.smuggler* defines an R reference class `List` which implements a mutable `list` to hold FAME data.

The utility function `open_hli()` opens the FAME environment and prints diagnostic information.

```
library(qoma.smuggler)
library(rhli)

if(!open_hli())knitr::knit_exit()
```

```
Linux 4.9.0-4-amd64 #1 SMP Debian 4.9.65-3+deb9u1 (2017-12-23) GNU/Linux
```

```
R version 3.5.0 (2018-04-23)
```

```
Joy in Playing
```

```
x86_64-redhat-linux-gnu
```

```
lubridate      1.7.4
qoma.smuggler   0.0.1
rhli            0.0.2.9000
tibble         1.4.2
FAME HLI       11.63000
```

The FAME distribution includes a number of sample databases. We will use the DRI Economics *driecon* sample database for this notebook.

```
dbname <- paste(Sys.getenv("FAME"), "util", "driecon", sep="/")
cat(dbname)
```

```
/opt/pkg/fame116linux/util/driecon
```

The *qoma.smuggler* function `read_fame()` reads FAME data objects into a *qoma.smuggler* `List`. By default, the function `read_fame()` loads the entire specified database to a *qoma.smuggler* `List`.

```
famedata <- read_fame(dbname)
```

```
read_fame() returns 55 objects from /opt/pkg/fame116linux/util/driecon
```

The method `get_data(objectName)` returns FAME data for `objectName` from the *qoma.smuggler* `List`. For FAME SCALAR objects, `get_data(objectName)` returns one value. For FAME SERIES objects, `get_data(objectName)` returns a `tibble` with multiple values.

```
famedata$get_data('GDP')
```

```
# A tibble: 74 x 2
  date      GDP
<date>    <dbl>
```

```

1 1929-12-31 104.
2 1930-12-31 91.3
3 1931-12-31 76.6
4 1932-12-31 58.8
5 1933-12-31 56.4
6 1934-12-31 66
7 1935-12-31 73.3
8 1936-12-31 83.7
9 1937-12-31 91.9
10 1938-12-31 86.1
# ... with 64 more rows

```

The method `get_meta(objectName)` returns FAME object meta data as a string from a *qoma.smuggler* List.

```
cat(famedata$get_meta('GDP'))
```

```

SERIES GDP : PRECISION BY DATE(ANNUAL) 1929 to 2002
GROSS DOMESTIC PRODUCT
-
GROSS DOMESTIC PRODUCT
BILLIONS OF CURRENT DOLLARS
U.S. DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS
'SURVEY OF CURRENT BUSINESS' AND OTHER MATERIALS
U.S. NATIONAL INCOME & PRODUCT ACCOUNTS - TABLE 1.1,1.3,1.5,1.9

```

Specifying a wildcard pattern will select a subset of the data objects with a compatible pattern. You may specify an full name, retrieving one series.

```

wilnam <- "ip?"
famedata <- read_fame(dbname,wilnam)

```

`read_fame()` returns 9 objects from `/opt/pkg/fame116linux/util/driecon`

The function `print_catalog()` will display summary meta data for the contents retrieved. For brevity, we specify optional parameter `list.len = 3` to limit output.

```
print_catalog(famedata,list.len = 3)
```

```

SERIES IPSB50001 : PRECISION BY DATE(MONTHLY) Jan1919 to Jul2003
INDUSTRIAL PRODUCTION INDEX - TOTAL INDEX
-
INDUSTRIAL PRODUCTION INDEX - TOTAL INDEX
UNITS 1997=100, SEASONALLY ADJUSTED
FRB, INDUSTRIAL PRODUCTION, G.17;

```

```

SERIES IPSB51214 : PRECISION BY DATE(MONTHLY) Jan1954 to Jul2003
INDUSTRIAL PRODUCTION INDEX - PAPER PRODUCTS
-
INDUSTRIAL PRODUCTION INDEX - PAPER PRODUCTS
UNITS 1997=100, SEASONALLY ADJUSTED
FRB, INDUSTRIAL PRODUCTION, G.17;

```

```

SERIES IPSB52100 : PRECISION BY DATE(MONTHLY) Jan1947 to Jul2003
INDUSTRIAL PRODUCTION INDEX - BUSINESS EQUIPMENT
-
INDUSTRIAL PRODUCTION INDEX - BUSINESS EQUIPMENT
UNITS 1997=100, SEASONALLY ADJUSTED

```

FRB, INDUSTRIAL PRODUCTION, G.17;

[catalog output truncated, 6 more entries not displayed because list.len=3]

Specifying a date range will select a subset of the database with specified frequency. Here we use the FAME HLI constant HANDEC which means *ANNUAL(DECEMBER)* frequency. See the FAME support website CHLI documentation for available codes. Data returned will be limited to the specified date range.

```
range <- to_fame_range(HANDEC,"1993","2002")
famedata <- read_fame(dbname,fame_range_ = range)
```

read_fame() returns 16 objects from /opt/pkg/fame116linux/util/driecon

```
print_catalog(famedata,list.len = 2)
```

```
SERIES $N : PRECISION BY DATE(ANNUAL) 1993 to 2002
POPULATION INCLUDING ARMED FORCES OVERSEAS (P25E)
```

```
-
POPULATION INCLUDING ARMED FORCES OVERSEAS (P25E)
MILLIONS OF PERSONS, ESTIMATES ARE FOR JULY 1
U.S. DEPARTMENT OF COMMERCE, BUREAU OF THE CENSUS
CURRENT POPULATION REPORTS, SERIES P-25
INCLUDING ALASKA AND HAWAII BEGINNING IN 1940
```

```
SERIES BOPMERCH : PRECISION BY DATE(ANNUAL) 1993 to 2002
US INTERNATIONAL TRANSACTIONS - BALANCE ON GOODS (BOP)
```

```
-
US INTERNATIONAL TRANSACTIONS - BALANCE ON GOODS (BOP)
BILLIONS OF CURRENT DOLLARS
U.S. DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS
U.S. INTERNATIONAL TRANSACTIONS
```

[catalog output truncated, 14 more entries not displayed because list.len=2]

Note the data retrieved is for the specified date range only; not an objects full date range:

```
famedata$get_data('GDP')
```

```
# A tibble: 10 x 2
  date      GDP
  <date>    <dbl>
1 1993-12-31 6642.
2 1994-12-31 7054.
3 1995-12-31 7400.
4 1996-12-31 7813.
5 1997-12-31 8318.
6 1998-12-31 8782.
7 1999-12-31 9274.
8 2000-12-31 9825.
9 2001-12-31 10082.
10 2002-12-31 10446.
```

The *goma.smuggler* utility function `close_hli()` closes the FAME environment.

```
close_hli()
```

[1] TRUE