

F.ExtractVectorFormula

The ExtractVectorFormula function is used for extracting FactSet data that is stored in a vector data format, where the data array does not have a predefined size and is organized by the vector position (compared to much of FactSet data that is retrieved through FactSet OnDemand that is indexed by entity, data item, and date, such as 5 years of sales history for a security). A vector can be thought of as a list that has one dimension, a row of data. A vector position allows for a particular element of the array to be accessed.

ExtractVectorFormula handles non-sequential data with support for matrix or vector output. The nature of the data determines if the output is a matrix or vector, it is not specified in the function to choose which format the data is returned in. This type of data includes corresponding geographic or product segment breakdowns for a company or detailed broker snapshot or history estimates/analyst information.

For example, the FactSet Fundamentals business or geographic segment data for a specified data item would be in a vector output given that IBM has 5 business segments whereas GE has 8 segments. Alternatively, if requesting FactSet Mergers data, such as the current identifier of selected participant in deals. The default output of this FactSet data is in a matrix format, because if there are multiple companies playing for the sale role on the transaction, an array of data is returned. Therefore when extracting this data using the ExtractVectorFormula function, it will automatically retrieve it in a matrix format.

1. F.ExtractVectorFormula syntax

The syntax for the ExtractVectorFormula function is:

data = F.ExtractVectorFormula(ids, items, optional arguments);

where,

data	Variable name for the data returned
ids	CellString array with a list of one or multiple security identifiers
items	CellString array with a list of one or more FactSet data items in the FQL language

Optional arguments,

universe	Screening expression to limit the universe
ison	Ison-codes can be used to limit the universe ISON_MSCI_WORLD(0,1) is written as 'ison','msci_world','isonParams','0,1'
isonParams	The arguments within brackets in the ison-code
OFDB	Universe is the constituents of an OFDB file, default directory is Client, if the OFDB is stored in another location the path must be included
OFDBDate	Specific date for the constituents of the OFDB
combinedOutputTypes	Required argument when matrix and vector output formats are requested in the same call.

Example 1:

In this example, extract the business segment sales breakdown, with labels, as of the most recent fiscal year end for IBM and GE using the FactSet Fundamentals database. The ExtractVectorFormula function is used to extract this data because the output is a row of data, and it is not indexed by Id, data item and date. Rather it is a list where IBM has 5 business segments and GE has 8 segments.

```
R: data = F.ExtractVectorFormula('IBM,GE','FF_SEGMENT_RPT_DATA(ANN,0,,,,
\'SALES\',,BUS,\'SEG\'),FF_SEGMENT_RPT_LABELS(ANN,0,,,,BUS,\'SEG\')');
```

```
MATLAB: data = F.ExtractVectorFormula('IBM,GE','FF_SEGMENT_RPT_DATA(ANN,0,,,,
"SALES",,BUS,"SEG"),FF_SEGMENT_RPT_LABELS(ANN,0,,,,BUS,"SEG")');
```

R:

	Id	ff.segment.rpt.data	ff.segment.rpt.labels
1	IBM	20131231	
2	IBM	38551	Global Technology Services
3	IBM	25932	Software
4	IBM	18396	Global Business Services
5	IBM	14371	Systems & Technology
6	IBM	2022	Global Financing
7	GE	20131231	
8	GE	42917	General Electric Capital
9	GE	23777	Power & Water
10	GE	21411	Aviation
11	GE	18186	Healthcare
12	GE	16615	Oil & Gas
13	GE	8313	Appliances & Lighting
14	GE	6721	Energy Management
15	GE	5873	Transportation

MATLAB:

1x2 struct array with fields:

```
Id
ff_segment_rpt_data
ff_segment_rpt_labels
```

Note: Single quotes in an FQL formula needs to be escaped by a backslash (R) or single quote (MATLAB).

Example 2:

In this example, extract the business segment sales data for the universe of securities stored in the Open FactSet Database (OFDB) titled MyOFDB.

```
R: data = F.ExtractVectorFormula('','FF_SEGMENT_RPT_LABELS(ANN,0,,,, BUS,\'SEG\'),'ofdb','MyOFDB');
```

MATLAB: `data = F.ExtractVectorFormula('','FF_SEGMENT_RPT_LABELS(ANN,0,,,,BUS,"SEG")','ofdb','MyOFDB');`

Example 3:

In this example, extract the offer date (with the offer type being the follow-ons) from the FactSet New Issues database based on the pricing date for security associate with the specified company identifier. The specified universe is the constituents of the MSCI AC World Index. The code for this universe is ISON_MSCI_REGION. In the output, the ID field brings back the CUSIPs of the companies in the index.

R: `data = F.ExtractVectorFormula('','FNI_OFFR_DATE_CO(\'FO\',\'PRC\',3,1)','ison','MSCI_REGION','isonParams','892400,0,CLOSE');`

MATLAB: `data = F.ExtractVectorFormula('','FNI_OFFR_DATE_CO("FO", "PRC",3,1)','ison','MSCI_REGION','isonParams','892400,0,CLOSE');`

Example 4:

In this example, extract from the FactSet Mergers database, the current identifier of the seller participant on the deal for all of the most recent deals for IBM. If there are multiple companies playing for the same role on the transaction, an array of data will be returned. For example if there are two buyers on the deal, two data points will return from this formula. The default output format of this FactSet data is in a matrix format, and the ExtractVectorFormula function automatically retrieves this data as a matrix.

R: `data = F.ExtractVectorFormula('ibm','FMG_ID_CO_CO(-1,\'S\',\'TICKER\',0));`

MATLAB: `data = F.ExtractVectorFormula('ibm','FMG_ID_CO_CO(-1, "S", "TICKER",0));`

Example 5:

In this example, extract the Northfield Correlation Matrix of Factors using the NIS US Fundamental Model.

Note: A subscription to Northfield is necessary to be able to extract this data in MATLAB.

R: `data = F.ExtractVectorFormula('','NIS_CORREL_MATRIX(\'NIS:FUND\',0)')`

MATLAB: `data = F.ExtractVectorFormula('','NIS_CORREL_MATRIX ("NIS:FUND",0)')`

Example 6:

In this example, extract for IBM the geographic segments and corresponding annual sales data for those segments from the FactSet Fundamentals database for the date range 01/01/2005 until 01/01/2010. This type of request requires the addition of the optional argument combinedOutputTypes for the matrix and vector output combination.

R: `data = F.ExtractVectorFormula('IBM','FF_SEGMENT_RPT_LABELS(ANN,20050101,20100101,,,,GEO,\'SEG\'),FF_SEGMENT_RPT_DATA(ANN,20050101,20100101,,,\'SALES\',GEO,\'SEG\'),'combinedOutputTypes','y')`

MATLAB: `data = F.ExtractVectorFormula('IBM','FF_SEGMENT_RPT_LABELS(ANN, 20050101, 20100101,,,,GEO,"SEG"),FF_SEGMENT_RPT_DATA(ANN,20050101, 20100101,,, "SALES" ,,GEO,"SEG'),'combinedOutputTypes','y')`

2. Use case - FactSet Revere Supply Chain Data

FactSet Revere's supply chain data is used to view the complex networks of companies' key customers, suppliers, competitors, and strategic partners, including both direct (named by company) and reverse (named by other companies) relationships in your custom reports and templates with select formulas.

A subscription to FactSet Revere Supply Chain data is required to retrieve company relationship data. To access this data through ExtractVectorFormula, the FQL code FF_COMPANY_RELATIONSHIP is used. This returns relationship companies and related information for a given company based on your selections.

The syntax for FF_COMPANY_RELATIONSHIP is:

FF_COMPANY_RELATIONSHIP(relationship_type,company_type,identifier_output,data_output,relationship_direction)

Where:

Relationship_Type can be specified as:

- + Competitors (COMP)
- + Suppliers (SUPL)
- + Clients/Customers (CUST)
- + Partners (PRTR)

Company_Type can be specified as:

- + Public Companies Only (PUB)
- + Private Companies Only (PVT)
- + Public and Private Companies (ALL)

Identifier_Type can be specified as:

- + FactSet Entity Identifier (Public or Private Companies) (FEID)
- + Regional Ticker (Public Companies Only) (TICKER)
- + CUSIP/SEDOL (Public Companies Only) (CUSIP)
- + CUSIP/SEDOL/FactSet Entity Identifier (Public and Private Companies Only) (CUSIP_FEID)
- + Regional Ticker/FactSet Entity Identifier (Public and Private Companies Only) (TICKER_FEID)

Data_Output can be specified as:

- + Identifier Only (IDONLY)
- + Identifier and Name (IDNAME)
- + All Data (ALL)

Relationship_Direction can be specified as:

- + All (ALL)
- + Direct (CDEF)
- + Reverse (ODEF)

Note: Competitor and Partner relationships are the same type of stated relationship for any direction. "Other" Customer relationships are when the other company mentions the source company as a distinct supplier. "Other" Supplier relationships are when the other company mentions the source company as a distinct customer

More detailed information for FF_COMPANY_RELATIONSHIP is available on OA 17503

Example 7:

In this example the below earnings statement from Mattel is investigated through the FF_COMPANY_RELATIONSHIP code.

"On Thursday July 17th, Mattel is scheduled to report its earnings. Mattel's relationship with Walmart accounts for 18% of its total Barbie doll and Hot Wheels toy car sales."

To extract this data the Supplier (SUPL) report for Walmart (WMT) is retrieved.

```
data = F.ExtractVectorFormula('WMT','FF_COMPANY_RELATIONSHIP(SUPL,ALL, FEID,ALL,ALL)');
```

With the output:

```
....
WMT SUPPLIER 000PK1-E      Mattel, Inc 0 of 2 0 18.50      Rever
...
```

This is considered a REVERSE relationship – Mattel has determined this relationship although the search is from WMT .

Mattel also is a supplier to TGT, which accounts for 7.7 % of sales.

```
data = F.ExtractVectorFormula('TGT','FF_COMPANY_RELATIONSHIP(SUPL,ALL, FEID,ALL,ALL)');
```

With the output:

```
...
TGT SUPPLIER 000PK1-E Mattel, Inc. 0 of 2 0 7.70 Reverse
...
```

Customer (CUST) relationships from MAT

From the MATTEL perspective, their relationship to TGT and WMT is as a customer (CUST).

```
data = F.ExtractVectorFormula('000PK1-E','FF_COMPANY_RELATIONSHIP(CUST,ALL,FEID,ALL,ALL)');
```

With the output:

000PK1-E CUSTOMER 000YMS-E Wal-Mart Stores, Inc. 0 of 19 0 18.50 Direct
000PK1-E CUSTOMER 000XT7-E Toys R Us Inc. NA 10.80 Direct
000PK1-E CUSTOMER 002RXT-E Target Corporation 0 of 2 0 7.70 Direct
...

This is considered a DIRECT relationship – Mattel has determined this relationship.

Example 8:

In this example the Partners of Facebook is extracted, the symbol type here is set as Ticker.

```
data = F.ExtractVectorFormula('FB','FF_COMPANY_RELATIONSHIP(PRTR,ALL, TICKER,ALL,ALL)');
```

Example 9:

In this example the Private companies that are Competitors to Microsoft are extracted.

```
data = F.ExtractVectorFormula('MSFT','FF_COMPANY_RELATIONSHIP( COMP,PVT,FEID,ALL,ALL)');
```