Parsing Georgian Stock Market Data

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Contents

Abstract

The `GeorgianStockParser` package provides basic tools to download data of stock market in Republic of Georgia. Basic data organizing and analyzing tools are also offered.

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1 Introduction

The stock market in Georgia is still much under development. Although the number of stocks and the volume of trades are still relatively small compared with developed economics, Georgian stock market will eventually grow, and it is the right time to be interested, if not investing yet, in the market. This package aims to provide a few tools to download and analyze the Georgian stock market, and be used as a data set updater.

2 Georgian Stock Exchange Website and Data

The Georgian Stock Exchange website is still primary compared to the websites of stock exchange centers in more developed economics. On the website, there is no direct link to download the data. However, data of stock symbols and trade results are accessible after clicking into links.

Session #	Data	Trades	Min. price	Max. price	Avg. price*	Closing price*	Volume in securities	Volume in GEL
302	11/03/03	1	0.0500	0.0500	0.0500		6,676	333.80
330	17/06/03	3	0.1000	0.1000	0.1000		13,783	1,378.30
332	24/06/03	6	0.1000	0.1000	0.1000		110,564	11,056.40
662	10/10/06	1	0.2500	0.2500	0.2500		16,691	4,172.75
663	12/10/06	1	1.5000	1.5000	1.5000		4,500	6,750.00
664	17/10/06	1	1.5000	1.5000	1.5000		4,530	6,795.00
668	31/10/06	1	1.5000	1.5000	1.5000		2,069	3,103.50
673	16/11/06	1	1.5000	1.5000	1.5000	1.5000	667	1,000.50
682	21/12/06	1	1.8000	1.8000	1.8000	1.8000	1,669	3,004.20
683	26/12/06	1	1.2500	1.2500	1.2500	1.2500	3,200	4,000.00
684	28/12/06	1	1.0000	1.0000	1.0000	1.0000	4,461	4,461.00

Figure 1: GSE data taken on Jan. 14th, 2015 for Akhmeta Winery Company (stock symbol AGVQ). Information includes Session number, Date (written as "Data" on screenshot, probably misspelling), Trades, Min. Price, Max. Price, Avg. Price (weighted), Closing Price (weighted), Volume in Securities, and Volume in GEL (Georgian Lari). Basic summary is provided on the top-left corner. Notice that no direct download link available.

We can also view the list of registered stock symbols.

Figure 2: GSE data taken on Jan. 14th, 2015 of all registered stock symbols. Notice that no direct download link available.

In addition to viewing the trade result of each stock, we can view trades on every session.

Figure 3: GSE data taken on Jan. 14th, 2015 for "all" sessions of trading. However, as we see, the list is very uncomprehensive and the list ends on Dec. 5th, 2002. Therefore, it is very difficult for potential investors to follow the market, since daily update of stock trade results are not available. In addition, notice again that no direct download link is available.

Fortunately, all data on the website are organized in an XML-accessible way. Therefore, we can use

`R` and `XML` package to write a downloader of the stock data.

3 Introducing GeorgianStockParser Package

3.1 Downloading Functions

There are four downloading functions: `download.stockIDs`, `download.single.stock.trade`, `download.multi.stock.trade`, and `download.all.stock.trade`.

`download.stockIDs` scans the data from the webpage (see Figure 2) and returns a data frame containing all the stock symbols and corresponding company names. The parameter `export` specifies whether to export the data frame to an `.csv` file (`export` defaultly set to `FALSE`).

```
> library(GeorgianStockParser)
> stocks <- download.stockIDs(export = FALSE)
> head(stocks)

  Trade Symbol             Name of JSC
1      $GLC01H Georgian Leasing Company
2         AEST                   Telasi
3         AGVQ           Akhmeta Winery
4         AKAT                    Aqati
5          AMA                  Amaltea
6         AMCE          Amtse (Tbilisi)

> tail(stocks)

    Trade Symbol         Name of JSC
124         UNVR           Universal
125         UQQS Uksovadi Ksovilebi
126          UTC     United Telecom
127         VAZI             Vaziani
128         VERE        Laguna Vere
129         WINE     Teliani Valley
```

`download.single.stock.trade` scans the data from the webpage (see Figure 1) and returns a data frame containing all the trade results of the stock. The parameter `ID` takes a character string of the stock symbol we want trade results of, and `export` means the same as previously.

```
> AGVQ <- download.single.stock.trade(ID = "AGVQ", export = FALSE)
> tail(AGVQ)

  Session       Date Trades Min. price Max.price Weighted avg. price
6     664 2006-10-17      1       1.50      1.50                1.50
```

						Weighted avg. price
7	668	2006-10-31	1	1.50	1.50	1.50
8	673	2006-11-16	1	1.50	1.50	1.50
9	682	2006-12-21	1	1.80	1.80	1.80
10	683	2006-12-26	1	1.25	1.25	1.25
11	684	2006-12-28	1	1.00	1.00	1.00

	Weighted closing price	Volume in Securities	Volume in GEL
6	NA	4530	6795.0
7	NA	2069	3103.5
8	1.50	667	1000.5
9	1.80	1669	3004.2
10	1.25	3200	4000.0
11	1.00	4461	4461.0

download.multi.stock.trade scans the data from the website and returns a data frame containing trade results of multiple stocks we specify. The parameter ID takes a data frame of the stock symbols we want trade results of, and export means the same as previously.

```
> multiID <- data.frame(ID = c("AGVQ", "VAZI"))
> multi <- download.multi.stock.trade(ID = multiID, export = FALSE)
> head(multi)
```

	ID	Session	Date	Trades	Min. price	Max.price	Weighted avg. price
1	AGVQ	302	2003-03-11	1	0.05	0.05	0.05
2	AGVQ	330	2003-06-17	3	0.10	0.10	0.10
3	AGVQ	332	2003-06-24	6	0.10	0.10	0.10
4	AGVQ	662	2006-10-10	1	0.25	0.25	0.25
5	AGVQ	663	2006-10-12	1	1.50	1.50	1.50
6	AGVQ	664	2006-10-17	1	1.50	1.50	1.50

	Weighted closing price	Volume in Securities	Volume in GEL
1	NA	6676	333.80
2	NA	13783	1378.30
3	NA	110564	11056.40
4	NA	16691	4172.75
5	NA	4500	6750.00
6	NA	4530	6795.00

```
> tail(multi)
```

	ID	Session	Date	Trades	Min. price	Max.price	Weighted avg. price
12	VAZI	304	2003-03-18	5	0.3	0.3	0.3
13	VAZI	319	2003-05-08	4	0.3	0.3	0.3
14	VAZI	489	2005-01-13	2	3.0	3.0	3.0

```
15 VAZI      540 2005-07-26      5         3.0       3.0             3.0
16 VAZI      558 2005-09-27      1         3.0       3.0             3.0
17 VAZI      638 2006-07-13      1         2.0       2.0             2.0
   Weighted closing price Volume in Securities Volume in GEL
12                     NA                 9149       2744.7
13                     NA                 9149       2744.7
14                     NA                 1830       5490.0
15                     NA                 1830       5490.0
16                     NA                   11         33.0
17                     NA                 2872       5744.0
```

download.all.stock.trade scans the data from the website and returns a data frame containing all trade results of all registered stocks. The parameter export means the same as previously. This function can create a good sample for time-series analysis on Georgian stock market. All analyzing functions and results will be based on the all data set generated by this function.

```
> ## all <- download.all.stock.trade(export = FALSE)
> ## tail(all)
> ## dim(all) ## the first number is the current number of trades that ever happened
```

There is still yet one more downloading function to add, which is daily.update. daily.update should take a date parameter of Date type, and download all the trade results that happen on that specified date. This function should be used as a survey tool of what happened after a specific event, say Russian-Georgian War in 2008. Or it can be used as a data set update function, since we don't want to slowly run download.all.stock.trade every time. The function can be most easily created by going into the "All Session Report" on GSE website, but since the website only contains data before 2003, we have to come up with a new way. Due to limited time availability on this project, I will not create this function, since with the all data set we can already start the analysis.

4 Conclusion

In this paper, ...