

Book of market data

Types of market data

Getting market data

Errors in market data

Using market data with care

created by:

chart  oasis

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1 Introduction

1.1 READ THIS

Developers of Chartoasis.com have encountered different kinds of market data and problems related to market data. We would like to aid you with this book so that you avoid all problems which we met like errors in market data, unsafe and misleading use of tickers etc.

Reliable market data is very important. When this book or our website tells that we recommend a data source for a market we say it out of experience and you should take it seriously. It is also important that despite other analysis softwares, Chartoasis.com's chart software warns you of all data problems that can be recognized, hence using it is much safer than other analysis softwares.

This book introduces various kinds of market data and maybe you will also get some new ideas, like analyzing tick-by-tick data or the order book.

Audience – Who is this book meant to?

If you are using market data just for your studies or if you are a trader who cares what she/he sees on a chart you will find this book useful because it tells about factors that have influence on market data and analysis. To have a clear view of what is held in the data you should be aware of these things - otherwise there will be a chance of making wrong decisions based on erroneous data and you may lose money.

If you are new to stock trading you will find a lot of new things in this book. If you are an advanced trader you will see things in a different way and you may get some new ideas after reading this book. If you are writing a study this book can be more than useful.

What this book is and what it is not

Our intention with this book is to tell everything people have to know about using market data.

This is the first release of the book, and maybe it is far from complete. If you find something missing or there is a topic you would like to read about, contact us via email (chartoasis@chartoasis.com), tweet us (www.twitter.com/chartoasis) and let us share your ideas with others in the next release of this e-book!

A book is a book, and a website is a website. This book is not an extract of our website. There are topics that are discussed here with more details than in our website and there are topics that are discussed in a more detailed manner on our website. For more information please visit www.chartoasis.com!

Distribute it!

We believe that this information is useful and we are interested in informing people. That is why we made this book free: "Book of market data" is licensed under a [Creative Commons Attribution-Noncommercial-Share Alike 3.0 United States License](https://creativecommons.org/licenses/by-nc-sa/3.0/us/). It does not just mean that you can read it free of any charges but you are also allowed to distribute it if others do not have to pay for it. For more information please visit <http://creativecommons.org/licenses/by-nc-sa/3.0/us/>.

If you know people who might be interested, do not hesitate to send this e-book to them! If you are a website owner or you are writing a blog and you find this book worthy you may write a recommendation for it or you may cite a part of it or the whole book. There is one restriction: you have to mention the original source (www.chartoasis.com/e-book/free-market-data.html) in a link. Permissions beyond the scope of this license may also be available there, too.

About us

We are volunteer engineers and software developers with more than 6 years experience with measurements and general data processing and more than 3 years of processing market data. We developed the free technical analysis software of Chartoasis.com (<http://www.chartoasis.com/free-analysis-software/start.html>) along with other stand-alone stock analysis softwares based on unique ideas.

Special thanks

We would like to thank for her / his help: Susmita Paul, Judit Cseh, Vio, Dénes Gerencsér, Zsolt Felföldi.

2 Types of market data

Market data are different in many ways. Let's talk about the categorization by content, language & country, and the form of data!

2.1 Market data content

If you have ever made any security transaction, you can imagine how many kinds of data may exist. To find a way to get a certain kind of data go to chapter "Getting market data".

We have already met the following market data types:

- **Transaction list / tick by tick data:** this contains the price and volume information of each trade that has been made for an equity within the trading system. There is a timestamp for each record. You can see a bit of this kind of information in your trading system or you can get it from a data vendor (we found some free providers, too.) See also chapter "Getting tick by tick data / transaction list (commercial)".
- **"Open, close, min, max, volume" data:** it can be derived from the tick by tick data by specifying a time interval, i.e. the 5 minute opening price is the price of the first trade within a 5 minute interval, the closing price is the last one, the volume is the sum of the trade volumes over the 5 minutes etc. There are two main types of this kind of data:
 - **Intraday:** the time interval is less than 1 day. Data delay is important when using for day-trading. There are several ways to get it for free. Some trading systems with built in charting capabilities (Oanda, Thinkorswim) do not charge you even for the real time intraday data but this is usually a commercial service of independent data vendors. See also chapter "Getting intraday market data (commercial)".
 - **EOD (End of day):** this contains daily data and it is mostly provided for free. We have already found EOD data sources for 27 countries, forex, commodities and more. Chartoasis.com's free technical analysis software is specialized at using this kind of data with fast and easy data import. See also chapter "Getting free EOD data".
- **Order book:** The order book contains the best offers of buyers and sellers. Analyzing order book is reasonable because changes in the order book usually precede changes in the price. There are 2 types of order books:
 - **Order book level 1:** this contains the best bid / ask offer's price and volume information along with the price and volume information of the last trade. This data can be seen in most trading systems but it is hard to get such data for analysis. For personal analysis / custom use it is available at Yahoo! Finance for free. See also chapter "Getting free order book level 1 data"
 - **Order book level 2:** this contains the best 5 / 10 bid / ask offer's data and the last trade. It can be seen inside trading systems, but for personal analysis it is

quite hard to access – it can be obtained from a market analysis software's data stream with some programming. (It is a commercial service.) See also "Getting order book level 2 data (commercial)".

	price	volume
ask10	965,00	32
...
ask02	961,00	2
ask01	960,50	10
last trade	960,00	30
bid01	959,50	910
bid02	959,00	66
...
bid10	955,00	6

figure 1: Example of order book level 2

- **closing price only:** instruments valued daily (eg.: investment funds) belong to this type, these are mostly free data

2.2 Language and country

Language and country is important from the aspect of data importing, because local settings can influence the data format, like the format of date or the field separator (in .csv files decimal separator can be '.' and ',' according to local customs which makes necessary using different field separator - using ';' instead of ',' when decimal separator is ',').

There are softwares that recognize these differences automatically (like the tool of Chartoasis.com); others (like Amibroker, or Excel) need human instructions for importing data from file.

2.3 Form of data

Data can be in the form of:

- Text file, where fields are separated with comma (.csv) or semicolon (.csv) or tabulator (.tdp)
- Text file, formatted with spaces and line breaks only
- HTML file
- XLS file
- Data stream

3 Errors in market data

3.1 What is an error in the market data?

We have mentioned many kinds of data in the previous chapter, like opening price, volume, date etc. If you download the market data as a file you see a lot of numbers. Are these numbers all OK? When making an investment decision based on market data it is an important question if your market data is valid or not. Our experience says that market data is error-free in most cases. But what if you accidentally make your decision based on false data? What if the signal you read from an indicator is because the indicator magnified a data error? There are many reasons for such errors: extraordinary events, human error, badly recorded data from the past...

The answer to the question "How you can check if the market data is valid?" is simple: the values in market data are not independent, there are relations that must apply to them. These relations can be checked before using market data and you can be warned if there is some problem. This does not guarantee that all values in the data are true but it is a good way to check that the data does not contain "garbage".

Let's see some of the possible relations:

3.2 Timestamps and dates

Timestamp means the time of an event, like the time of a transaction or the time of a change in the order book. Date is a kind of timestamp, too. Let's see what can be demanded from timestamps!

Timestamps in the market data must follow each other in a rising or falling order.

For intraday data it is possible that a lot of timestamps are missing eg.: if the instrument is not too liquid. There are stock exchanges where the trading of a stock is stopped when the price changes too fast or an important announcement is made.

For daily data it is a natural thing that some day's market information is missing since there are national / religious holidays and weekends. It is also possible in some countries (eg.: Hungary) that a workweek is temporarily made 6 days long to make other holidays longer. (If you are trading in a foreign country you should be aware of the local customs of holidays.) These anomalies together can not cause the lack of data for more than a week. A date must not occur more than once.

It is less likely that market data is missing for a lot of days, since data providers usually repeat previous closing price for days where no trades have happened while the exchange was open.

Error must be suspected when a week or two is missing from the analysis. This often happens along with a jump in the price as seen in the figure below:

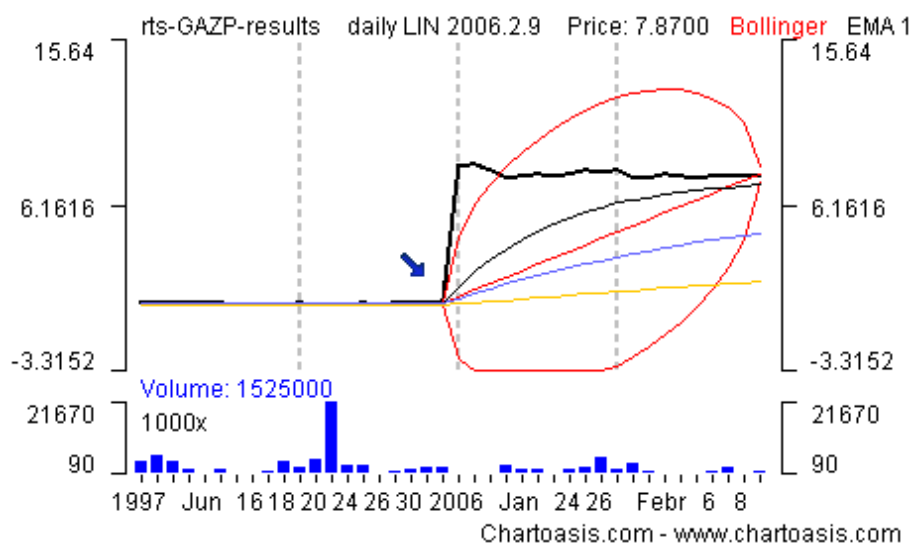


figure 2: Missing years in the data of the Russian stock Gazprom
(left side is 1997, right side is 2006!)

Errors like this are reported by Chartoasis.com's technical analysis software.

We have already met cases in our practice when one data provider had market data for a day while the other did not. Our inspection revealed that the mentioned day was an officially announced market holiday, so the provider with the missing data was right! The other provider's data was a copy of a different day's data.

3.3 Minimum, maximum, open and close values

As the name says maximum value is the maximum and minimum is the minimum within the period (15 minute, day, etc.). Minimum values must be less than or equal to maximum value, while open and close values must be between min. and max. All prices must be positive numbers.

Obvious, isn't it? But there is some reason for wasting time for it.

We experienced that these fields can be erroneous. It happens time to time, that for some days these values that are recorded are faulty.

These errors may come from the old times when there were no computers logging the market events. The likelihood of such errors is very high in data files of long time periods (eg.: you can download Dow Jones Industrial Average's data since 1928).

Computers can also be wrong when they are set up incorrectly. Unfortunately if computers are wrong they do that consistently:

We have already found a data provider in our practice who consistently replaced the minimum and the maximum column in the officially released data. Just imagine what kind of effect it could have on the analysis. We warned the provider to the error but it took them more than a year to replace the two columns!

Errors like this are reported by Chartoasis.com's free technical analysis software, too.

3.4 Trading volume

If there has been any transaction, the number of the shares that have been bought and sold should be positive.

From the aspect of market data, this is just partially true. Some providers do not have so much information about trading volume as much information they have about pricing. This means for example, that they have pricing information about the past 10 years, but they have volume data only for the last 5 years. In this case the missing volume information is filled with zeros.

Sometimes volume is not available at all, so this is not really an error.

3.5 Connection between tick by tick, intraday, EOD and weekly data

Transaction list contains all necessary information to derive intraday data, EOD data and weekly data.

Any time we are asked to work with some data that could be tested against other data, we do the test and we almost always find some errors. This was not only about testing data but about testing our own software, too. When an error is found we always check it with manual calculations.

First we found that the providers follow different manner when providing weekly data. This means that eg.: Yahoo! Finance provides weekly trading volume as an average daily volume over the week but other providers mean the total traded volume of the week.

Chartoasis.com's free technical analysis software calculates weekly data from the EOD data to avoid this kind of confusion and to make usage more comfortable. There is no need to download weekly data since our experiences prove that EOD data should be trusted more.

When comparing official EOD data with the one derived from the tick by tick data directly, we found that either the minimum, or the closing price or the volume etc. can be wrong. The errors were rare and not too big, but the comparison revealed missing data, too.

When comparing weekly data derived from the EOD data with official weekly data, we found rare and small problems except for the weeks around 9/11, when total chaos ruled. We found missing weeks (there were days when market was open and EOD data was available but there was no weekly data for that week), volume data turned upside down etc. See the example below:

Daily data:

Date	Volume	Adj Close	Weekly volume
2001-09-28	116641200	20,91	
2001-09-27	81191200	20,42	
2001-09-26	58524400	20,54	
2001-09-25	84940600	20,97	
2001-09-24	85580200	21,26	426877600
2001-09-21	184976600	20,32	
2001-09-20	117983200	20,75	
2001-09-19	126950200	22,02	
2001-09-18	83182600	22,2	
2001-09-17	127502000	21,62	640594600
2001-09-10	84471800	23,53	84471800
2001-09-07	89863800	22,64	
2001-09-06	112356800	22,89	
2001-09-05	89470600	23,6	
2001-09-04	67189200	22,93	358880400

Weekly data:

Date	Volume	Adj Close	Weekly volume	Test result
2001-09-24	85375500	20,91	426877500	OK
2001-09-17				Week missing
2001-09-10	120844400	20,32	120844400	Bad weekly data
2001-09-04	89720100	22,64	358880400	OK

table 1: Example for the market effects of 9/11 (MSFT stock): weekly data in the file downloaded from the data provider differs from weekly data calculated from daily data downloaded from the same data vendor. One week is missing and an other contains false information.

4 Using market data with care

Lots of ways are known to meet market data on the internet: you can download free EOD data and analyze it with a free software, or maybe you pay for a premium chart software using a data stream, or perhaps you use your trading system's charting service, but there are common things you have to know while using market data:

4.1 The observed security

You have to know exactly what you are analyzing. Never mistake similarly named securities like different series of shares and bonds of the same company. Some securities are also traded on more exchanges which are not priced completely alike, so you have to be sure that the data belongs to the security you are going to trade. To avoid confusion, we suggest the use of ISIN code where possible:

***ISIN:** International Securities Identification Number, a code that identifies a stock uniquely. A security has different ISIN code for each stock exchange it is traded at. For more information see [ISIN code's Wikipedia page](#). You can get a stock's ISIN code eg.: from the exchange where it is traded.*

4.2 Data update

How up-to-date the data is depends on many factors, which are:

- **Time of market closure:** In many cases market closure happens in the afternoon (according to local time) but if trading is continuous (eg.: like in the case of commodities) EOD data is summarized at midnight.
- **Delay of data:** it is an important quality factor of the market data. Intraday data usually comes with known delay (real-time, 15 minutes etc.). EOD data's delay may be less than 1 hour or more than a couple days. At Chartoasis.com we always list EOD data providers with the least known delay.
- **Data update of EOD data:** Some providers tell market data before market closure - in this case closing price is the actual price of the equity on the market. It may happen, that closing price is available before market closure but volume data is not accessible. If market data that you want to analyze is available at different providers you have to choose the one that suits you better. Visit <http://www.chartoasis.com/free-analysis-software/free-data.html> for alternative providers of free market data (the list is constantly improving).

4.3 Errors in market data

We think it is very important to inform users about inconsistencies found within the data.

- As we told it in chapter 3 Errors in market data, errors do happen. Any time we made some automatized consistency check on a large enough sample data of a provider we always find some problems. You may meet erroneous data, too.
- If you are **warned of an error** found in the market data (eg.: by Chartoasis.com's charting tool), check how far the error's timestamp is from the observed time interval. When analyzing the actual week, an error that happened yesterday can influence the indicators much more than an error that happened 20 years ago. The latest error is the most important one, that is why Chartoasis.com's chart software reports the latest error.
- The **scale of the error**: it is very hard to tell how large impact an error can have because calculations made on the faulty data can increase or decrease the error's effect. (eg.: if the error is that the closing price equals with the daily maximum, the %K in the stochastic oscillator is 100% but if closing price equals with the daily minimum, it is 0%. It maybe that there's only 1-2% difference between the right and the erroneous value but it can cause a large change in the value of the indicator.)
- **Extraordinary events**: Events causing extraordinary close of market may result in inconsistent data (see 9/11's example above). If something like that happens make sure you can trust your data.

4.4 Data content

- **Volume information**: you must know which markets are represented by the trading volume listed in the market before using trading volume dependent indicators (eg.: EUR/USD or oil are traded on many platforms). It is also important that some vendors mean the turnover (total value of the traded instruments) by trading volume and others mean the total number of the traded instrument. Chartoasis.com's free technical analysis software always loads the traded number of shares where it is possible. Remember that Yahoo! Finance returns the daily average volume instead of the total volume when downloading weekly market data.
- **Currencies, numbers, prices**: Currency of prices in downloaded data may not be univocal in all cases since some data providers provide data in more currencies. It may happen that you download data of Gazprom from RTS in USD but the dividend is given in RUR on the website of the company. Numbers may be rounded, too.
 - There can be numbers that are contradicting for the first sight. NSEINDIA.COM's data for equities contain '**close price**' and '**last price**' columns. '**Close price**' is the weighted average price of the last half an hour and '**last price**' is the last trade's price. You always have to check information like this.
- **Amount of data**: using too few data may cause inaccuracy of indicators and functions of market data. When selecting download interval take care that some methods depend

on the amount of data. Eg.: a SMA with a parameter of 200 on weekly data need at least 200 weeks' data to have a valid result at all, so it requires more than 3 years' data. It is recommended to use as much data as possible.

- **Split** and **dividend**: dividends and stock splits can cause jumps in market price that have effects on the indicators and signals read from them (see the examples on the next pages). Some data providers offer the option of downloading data with split and dividend correction for all columns (open, close, etc.) and some provide it for the closing price only (adj. close column in EOD data, where available). Make sure you know if data you are using contains split and dividend correction or not. Also take care that the usual percentage of dividends vary from year to year and from country to country, eg.: some companies pay dividend 4 times a year, having less effect on the market price, but others pay dividend once a year.

4.4.1 Split correction example

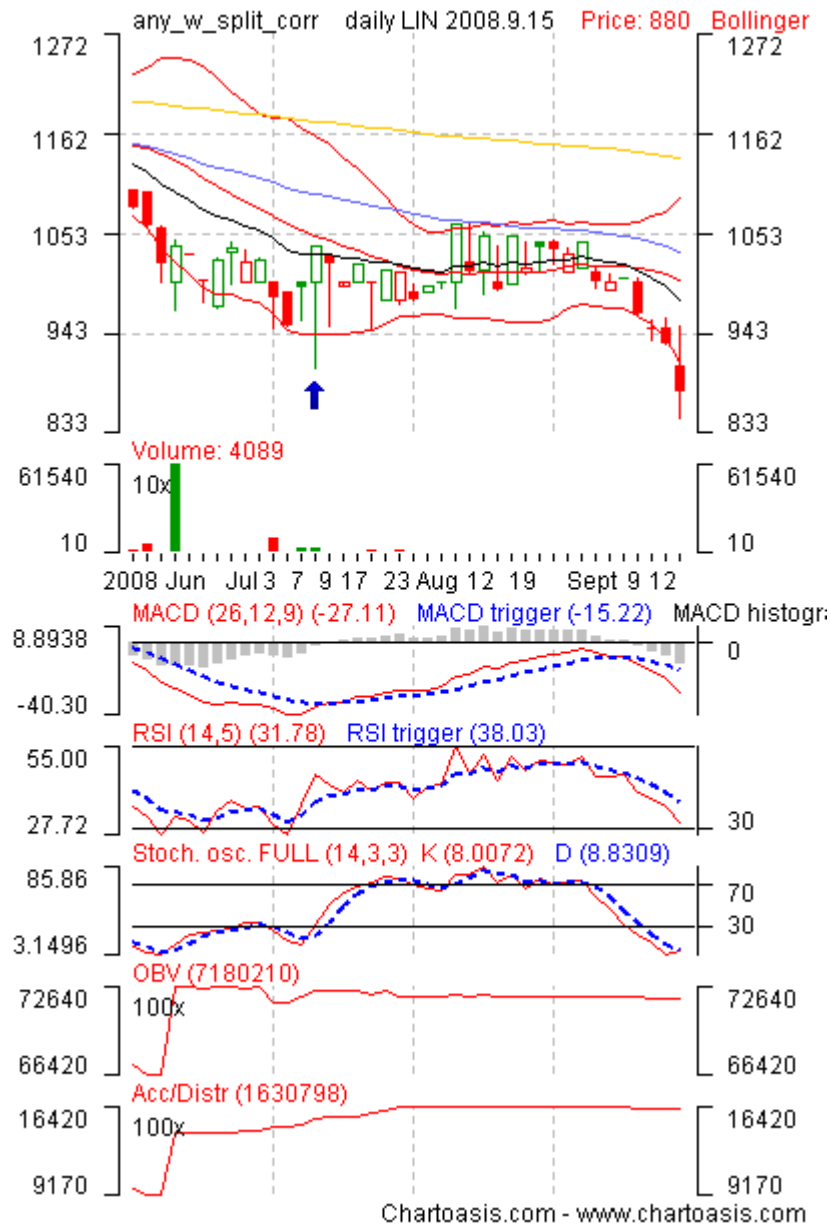


figure 3: ANY had a 1:10 stock split in July, 2008. Thanks to the correction, there is no jump in the prices.

Have a look at the same stock's chart without split correction:

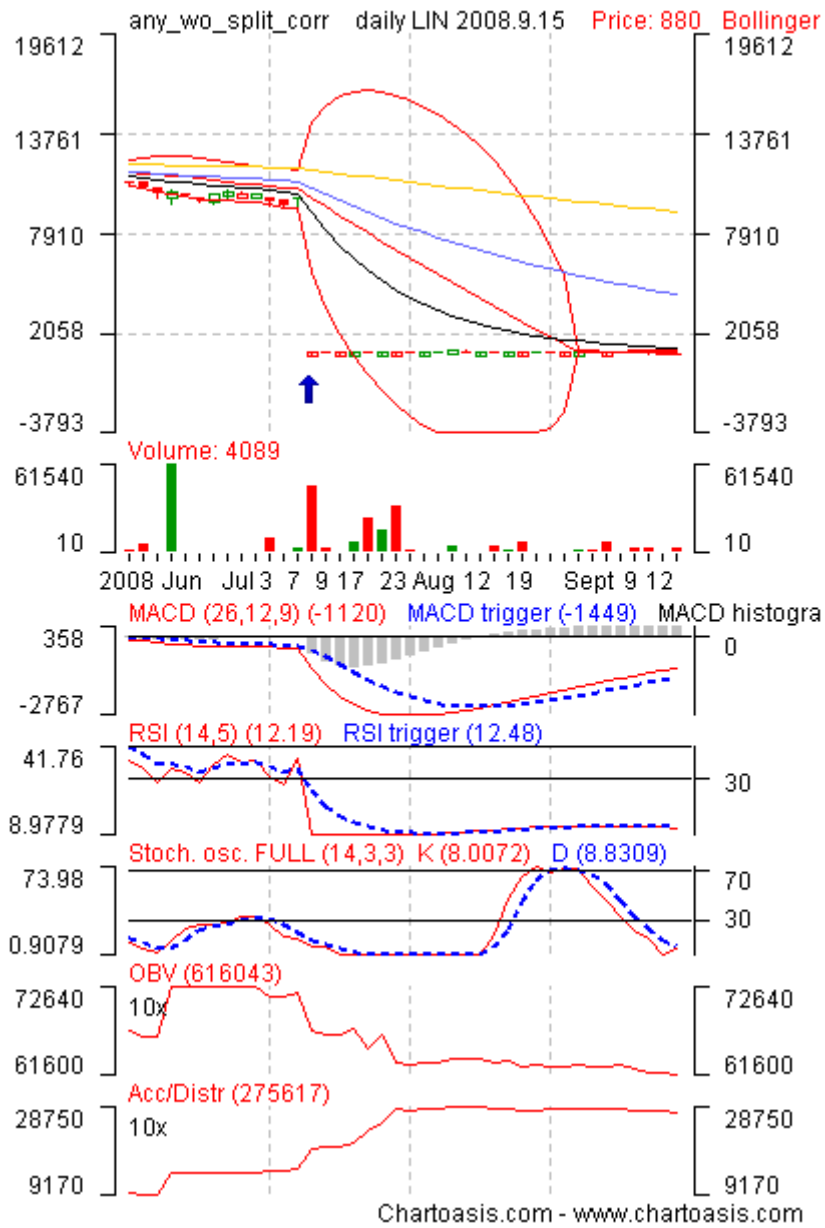


figure 4: If there is no correction for stock split, a huge jump can be seen in the market price. Indicators have totally different values though it is the same stock in the same time. (with correction it seems to be overbought in August while without correction is shows to be oversold – according to Stochastic oscillator)

4.4.2 Dividend correction example



figure 5: MTELEKOM paid a huge dividend (more than 10%) in April, 2009. Dividend correction hides the drop of market price after the dividend.

Have a look at the same stock's chart without dividend correction:



figure 6: Without dividend correction the market price drops when dividend is "paid". This change influences the indicators as well, giving totally different results though it is the same stock.

5 Getting market data

This chapter tells how you can get various kinds of market data. If you know a data provider (or you are a data provider) you would like to be listed here (either just listed or with a detailed description) just contact us and the next release of this e-book will contain it!

Let's have a look at the table below on how to get market data:

Data content	Free / commercial	Comment
EOD (page 16)	Free	Available for lots of countries and instruments
Transaction list (page 33)	Free	Quite rare, few examples
Order book level 1 (page 33)	Free	One example for lots of instruments
Order book level 2 (page 33)	Commercial	New service, very rare, only one example
Intraday (page 34)	Commercial	Provided by many companies

5.1 Getting free EOD data

EOD data is one of the most common data type, it is available for many countries free of any charge. To find EOD data, have a look at the table below (these countries and instruments are all supported by Chartoasis.com's free on-line analysis software – see <http://www.chartoasis.com/free-analysis-software/free-data.html> for more info). Beyond the table you can find some "How-tos" on downloading free EOD data.

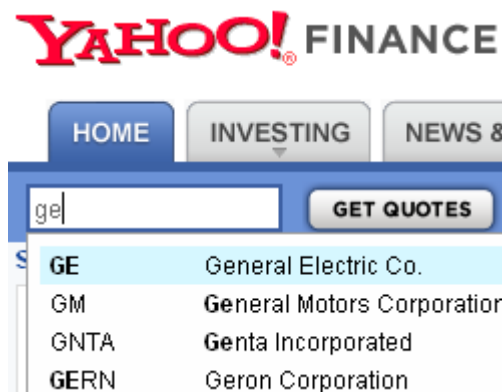
Country	Yahoo! Finance	Yahoo! Finance UK	Google Finance	RTS	Stooq.com	NSE India
Forex					X	
Commodity					X	
Index	X				X	
Australia's stocks	X					
Austria's stocks	X	X				
Belgium's stocks		X				
Canada's stocks	X					
China's stocks	X					

Denmark's stocks		X				
France's stocks		X				
Germany's stocks		X				
Hong-Kong's stocks	X					
Hungary's stocks					X	
India's stocks	X					X
Indonesia's stocks	X					
Israel's stocks	X					
Italy's stocks		X				
Japan's stocks					X	
Netherlands' stocks	X	X				
Norway's stocks		X				
Poland's stocks					X	
Portugal's stocks		X				
Russia's stocks				X		
South Korea's stocks	X					
Spain's stocks		X				
Sweden's stocks		X				
Switzerland's stocks		X				
Taiwan's stocks	X					
United Kingdom's stocks		X				
USA's stocks	X		X			

5.1.1 Yahoo! Finance free market data download help

You can find a stock on Yahoo! Finance by name and by ISIN code. We suggest using ISIN code because the probability of finding false equity is smaller.

1. Visit <http://finance.yahoo.com>.
2. Enter the name or a part of the name of the wanted stock into the text field on the top of the page until the complete name pops up in the list, then click "Get Quotes" OR enter the whole ISIN code of the stock and then click "Get Quotes".



3. Click "Historical Prices" on the next page.



4. On the next page you can set up the time interval's "Start Date" and "End Date" (this interval will be in the downloaded data file). Keep the resolution "Daily", "Start Date" and "End Date" is freely configurable. "End Date" is always the actual date by default.

SET DATE RANGE

Start Date: Jan 2 1962 Eg. Jan 1, 2003

End Date: Feb 21 2008

Daily
 Weekly
 Monthly
 Dividends Only


[Get Prices](#)

- Click "Download to spreadsheet" link on the bottom of the page to download the data file. We recommend that you change the name of the file you are downloading since it is always the same (table.csv) by default.

15-Nov-07	38.93	38.93	38.13	38.31	41,590,000	37.99
14-Nov-07	39.90	39.95	38.82	39.01	39,650,800	38.68

* Close price adjusted for dividends and splits.

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Hint: if you save the url of the download page to the "Favorites" or "Bookmarks" you do not have to do all the search process again but you can navigate to the page of the data download directly by recalling it from the "Favorites" or "Bookmarks".

5.1.2 Yahoo! Finance UK free market data download help

You can find a stock on Yahoo! Finance UK by name and by ISIN code. We suggest using ISIN code because the probability of finding false equity is smaller.

1. Visit <http://uk.finance.yahoo.com>.
2. Enter the name or a part of the name of the wanted stock into the text field on the top of the page, then click "Get Quotes" OR enter the whole ISIN code of the stock and then click "Get Quotes". It is recommended to set the drop down list to "All markets".



3. If the keyword / name you entered in the search box fits more than one stock (BMW in this case, which is traded at more stock exchanges), a table like below appears. You can choose the appropriate stock ticker (in this case BMW.DE, which means BMW shares traded on XETRA) and proceed with the next step. If you entered an ISIN code, or the keyword is recognized by Yahoo! Finance UK the stock's Yahoo! Finance UK page appears and you can proceed with the next step.

Views: [Summary](#) | [Columnar](#) | **[Basic](#)** [Edit](#) | [Columnar](#) | [Columnar](#) | [+ New View](#)

Symbol	Name	Time	Trade	Change	% Chg	Volume	Intraday
BMW	BAYERISCHE MOTOREN WERKE AG	1 Jan	N/A	0.00 \$	0.00%	0	Disabled ticker
BMW.BE	BMW	11 Sep	34.01	↓ 0.53 €	↓ 1.52%	8,924	
BMW.DE	BMW	11 Sep	34.45	↑ 0.18 €	↑ 0.53%	4,422,036	
BMW.DU	BMW	11 Sep	34.405	↑ 0.20 €	↑ 0.58%	4,116	
BMW.F	BMW	11 Sep	34.31	↓ 0.04 €	↓ 0.12%	51,858	
BMW.HA	BMW	11 Sep	34.16	↓ 0.17 €	↓ 0.48%	7,600	
BMW.HM	BMW	11 Sep	34.40	↑ 0.01 €	↑ 0.04%	3,180	
BMW.L	N/A	1 Jan	N/A	0.00	0.00%	0	Disabled ticker
BMW.MI	BMW	11 Sep	34.5000	↑ 0.3600 €	↑ 1.05%	2,001	
BMW.MU	BMW	11 Sep	34.32	↓ 0.03 €	↓ 0.09%	19,493	
BMW.SG	BMW	11 Sep	34.60	↑ 0.19 €	↑ 0.55%	27,287	
BMW.SW	BMW	11 Sep	52.00	↑ 0.05 CHF	↑ 0.10%	20	
BMW.VI	N/A	1 Jan	N/A	0.00	0.00%	0	Disabled ticker
BMW.VX	BMW	30 Jan	18.30	↓ 0.20 €	↓ 1.08%	500	Disabled ticker

- Click "Historical Prices" on the next page. Proceed with "Download historical data".

FTSE 100 ↑ 0.48%

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Finance Search

Check out our [new charts](#)

BMW (BMW.DE)

[More On BMW.DE](#) | streaming quotes: **OFF** ?

BMW (XETRA: BMW.DE / ISIN DE0005190003)

Last Trade: **34.45 €** | Day's Range

[Quotes](#)
[Summary](#)
[Last Trade](#)
Historical Prices

- On the next page you can set up the time interval's "Start Date" and "End Date" (this interval will be downloaded in the data file). "Start Date" and "End Date" is freely configurable. "End Date" is always the actual date by default.

SET DATE RANGE

Start Date: Eg. 1 Jan 2004

End Date:

Daily
 Weekly
 Monthly

- Click "Download to spreadsheet" link on the bottom of the page to download the data file. It is recommended that you change the name of the file you are downloading since it is always the same (table.csv) by default.

15-Nov-07	38.93	38.93	38.13	38.31	41,590,000	37.99
14-Nov-07	39.90	39.95	38.82	39.01	39,650,800	38.68

* Close price adjusted for dividends and splits.

[First](#) | [Prev](#) | [Next](#) | [Last](#)

 [Download To Spreadsheet](#)

Hint: if you save the URL of the download page to the "Favorites" or "Bookmarks" you do not have to do all the search process again but you can navigate to the page of the data download directly by recalling it from the "Favorites" or "Bookmarks".

5.1.3 Google Finance free market data download help

Google Finance (<http://www.google.com/finance>) provides market data of USA stocks only, but it has some interesting other functions.

1. Enter the name or a part of the name of the wanted stock into the text field on the top of the page until the complete name pops up in the list, then click "Get quotes".



2. Click "Historical Prices" on the next page.



3. If the default time interval for the download does not fit your needs you can change it through the left (start of interval) and right (end of interval) text field. The end date is the actual date by default.

Show: Daily Weekly		Sep 20, 2008	Sep 19, 2009	Update	Historical chart	
Date	Open	High	Low	Close	Volume	
Sep 18, 2009	23.50	23.61	23.24	23.40	52,202,649	
Sep 17, 2009	23.22	23.49	23.16	23.39	40,425,718	
Sep 16, 2009	23.07	23.45	23.00	23.36	53,658,457	
Sep 15, 2009	22.83	23.19	22.66	22.98	50,926,889	
Sep 14, 2009	22.85	22.99	22.61	22.79	60,622,743	
Sep 11, 2009	22.92	23.13	22.61	23.09	53,498,121	
Sep 10, 2009	22.15	23.05	22.01	23.01	76,624,178	
Sep 9, 2009	21.97	22.52	21.96	22.23	45,121,195	
Sep 8, 2009	22.00	22.21	21.79	21.92	39,951,465	
Sep 4, 2009	21.59	21.96	21.40	21.84	28,952,320	
Sep 3, 2009	21.73	21.90	21.34	21.49	33,835,239	
Sep 2, 2009	21.09	21.73	21.07	21.55	40,254,299	

Export [Download to spreadsheet](#)

4. Click "Download to spreadsheet" on the right to download data file. It is recommended to change the name of the downloaded file since the default file

name is always the same (data.csv).

Hint: if you save the URL of the download page to the "Favorites" or "Bookmarks" you do not have to do all the search process again but you can navigate to the page of the data download directly by recalling it from the "Favorites" or "Bookmarks".

5.1.4 RTS (Russian Trading System) free market data download help

You can download market data for Russian stocks from RTS.

1. If you already know the wanted stock's ticker / code on RTS, proceed with the searching by ticker in the next step. Otherwise:
 - Visit www.rts.ru/en
 - You can find the tickers / codes in the list of equities at Stock Market / RTS Standard / Members OR at Stock Market / RTS Classica / Members, in the column "Code" of the wanted equity.

RTS Standard Members

Data as of 27.09.2009

Total: 102

N:	Code	Company name	Contacts
1	ABSB	Absolut Bank (ZAO)	Phone: +7 (495) 935-5101, +7 (495) 777-7153 E-mail: StocksBack@absolutbank.ru Web: www.absolutbank.ru
2	AIKS	Aiaks-Capital Investment Company	Phone: +7 (495) 970-1055 E-mail: info@aiakscapital.ru Web: www.aiakscapital.ru
3	AKBF	AK BARS Finance	Phone: +7 (495) 644-2995 E-mail: isokol@akbf.ru Web: www.akbf.ru

2. Visit www.rts.ru/en, and choose Market Data / Archives then select Data by ticker in the middle of the page. Set up data download similar to the upper right part of the below picture.
 - Enter the RTS code of the equity into the "Ticker" field.
 - Keep "table" field checked, keep "graph" field unchecked if it is checked.
 - You can set the starting date of the data with the "from" field at "Date" and you can specify the end of the time frame with the "to" field.
 - Keep the drop down menu checked while "Market Trades" is selected.
 - Check "Display only the dates with the trade information".
 - Click search.
3. In the next page click "Data in CSV" next to the icon shaped like a floppy disc, and data is download-able.

GAZA

GAZ, Common

Market: **Classic Market**

Security Status: **Traded**

Available Data

Exchange Name	Begin Date	End Date
OJSC RTS	09.01.2007	19.12.2008
NP RTS	01.09.1995	29.12.2006

Period: **13.12.1995 - 19.12.2008**

Turnover, USD	194,991,200
Turnover, shares	2,828,312
Number of trades	2,789

Data by ticker

Ticker: table graph

Date from: **Market Trades** **List of transactions**

to: Display only the dates with the trade information

MARKET TRANSACTIONS

 [Data in CSV](#)

Date	Currency	Bid	Ask	Open	High	Low	Last trade			Volume			Trades	Market Cap
							Price	Change	Volume, shr	Monetary units	Currency	Volume, shr		
13.12.1995	USD	17.900	25.000	-	17.500	17.500	17.5	-	900	15,750	USD	900	1	-
14.12.1995	USD	17.900	25.000	-	-	-	-	-	-	-	USD	-	-	-
15.12.1995	USD	18.000	25.000	-	17.950	17.950	17.95	-	1,500	26,925	USD	1,500	1	-
18.12.1995	USD	18.000	25.000	-	-	-	-	-	-	-	USD	-	-	-
19.12.1995	USD	18.000	25.000	-	-	-	-	-	-	-	USD	-	-	-

5.1.5 Stooq.com free market data download help

Stooq.com is a Polish site with some parts translated to English. You can download market data for Polish, Japanese, Hungarian, German and USA stocks. You can find a security's data by two ways: searching by category first or by the security's name.

Searching for securities by category on Stooq.com

1. Select the appropriate category's link from the table below and open it.

Category	URL
Commodities	http://stooq.com/q/t/?c=9
Forex	http://stooq.com/q/t/?c=10
USA stocks	http://stooq.com/q/t/?c=1
German stocks	http://stooq.com/q/t/?c=2&u=38
Japanese stocks	http://stooq.com/q/t/?c=3
Polish stocks	http://stooq.com/q/t/?c=6&u=8
Hungarian stocks	http://stooq.com/q/t/?c=2&u=29

2. Within the category:

Lp	Symbol	Nazwa	Pełna nazwa
1	AB1.DE	AIR BERLIN	Air Berlin
2	ADS.DE	ADIDAS	adidas
3	AFX.DE	CARL ZEISS	Carl Zeiss Meditec
4	AIXA.DE	AIXTRON	Aixtron
5	ALT.DE	ALTANA	Altana
6	ALV.DE	ALLIANZ	Allianz

- The column "Pełna nazwa" contains the detailed names of the securities. You can find the wanted securities with this name (you may have to turn some pages using the numbered links). When the securities is found, click the link in the "Symbol" column then proceed with chapter "Downloading market data of the found equity". If the wanted security is not found try searching for it by the name of the stock.

Searching for securities by name on Stooq.com

Another way to find the wanted equity is by using Stooq.com's search box.

1. Visit <http://stooq.com/>.
2. Enter (at least a part of) the name of the equity into the search box on the top of the page. If the name of the wanted equity pops up (like MCDONALDS CORP in the

example), click on it or click "Kwotuj". Otherwise click "Kwotuj" to attempt searching for the equity.



3. If you have entered (at least a part of) the name or ticker of an equity supported by Stooq.com your browser will jump to the equity's page. If the name is ambiguous or misspelled (or it is not a supported equity) a page like below will pop up to resolve ambiguity by offering equities supported by Stooq.com having name similar to the name you just entered.



- If you have found the page of the wanted equity proceed with chapter "Downloading market data of the found equity".
- If you have not found the wanted equity this way try again with a different part of the name or try searching for it by category.

Downloading market data of the found equity

1. On the equity's page (see below) click "Dane historyczne".

Stooq Jesteś nowy? [Zarejestruj się](#)

Śro, 23 Wrz 2009, 21:06 CET

Symbol np: WIG Kwotuj [znajdź sym](#)

MCDONALDS CORP (MCD.US)

[ZUR -1.24%](#) | [RABA.HU +0.53%](#) | [CC.F +0.76%](#) | [MCI -1.66%](#)
[BMW.DE -2.22%](#)

Menu symbolu MCD.US

- [Ogólnie](#)
- [Wykres](#)
- [Analiza techniczna](#)
- [Dane historyczne](#)**
- [Wiadomości](#)

AutoQuote ON | OFF

<< **MCDONALDS CORP (Akcje ameryka**

Kurs	Data
\$ 56.05	2009-09-23 17:27:48
Zmiana	Max/min
+0.24 (+0.43%)	56.20 55.70
Zmiana 1r	Max/min 1r
-5.73	64.46

2. On the next page you can set up data download.

Start date:
eg. Jan 15 2008

Nov 14 1997

End date:

Dec 19 2008

Default date range

Show

Interval:

- Daily
- Weekly
- Monthly
- Quarterly
- Yearly

Skip:

- splits
- dividends
- preemptive rights
- prepurchase rights
- preaccession rights
- denominations

- "Start Date" and "End Date" tells the time interval to download. (When changing this please think of how many data points you need for the analysis. Some indicators may be inaccurate when using too little data.)
 - At "Interval" select (Daily).
 - "dividends" under "Skip" tells whether to download the market price or prices corrected with dividends. (This function does not have an effect in every case.)
 - "splits" under "Skip" tells whether to download the market price or prices corrected with splits. (This function does not have an effect in every case.)
3. Click "Download data in .csv file" at the bottom of the page to download data in a ".csv" file.

2735	28 Oct 2008	550	575	550	565	3,867,515
2734	27 Oct 2008	531	598	515	525	4,881,821

<< | < | > | >>

[Download data in csv file...](#)

Hint: if you save the URL of the download page to the "Favorites" or "Bookmarks" you do not have to do all the search process again but you can navigate to the page of the data download directly by recalling it from the "Favorites" or "Bookmarks".

5.1.6 Nseindia.com free market data download help

Chartoasis.com recommends downloading market data for Indian equities from NSE. To download market data:

1. Visit <http://nseindia.com/>
2. Select "Equity / Historical data" from the top menu.



3. Click "Security-wise Data" on the next page.



4. Set up download parameters in the next page.

Historical Security-wise Data

Security wise price volume data
 Security-wise Deliverable Positions Data
 Security-wise Price volume & Deliverable position data

Enter NSE Symbol Series:

From Date (dd-mm-yyyy)
 To Date (dd-mm-yyyy)

- Keep **Security wise price volume data** checked.
 - **NSE Symbol:** Enter the NSE Symbol of the wanted equity here. If you do not know the exact name you can find the [list of equities available on NSE here](#).
 - **Series:** Set to EQ. (This means normal market)
 - **From Date** and **To Date:** Set these up according to your needs. Do not forget to set the time interval long enough for the analysis. (The longer the better)
5. Click "Get results".
 6. Got to the bottom of the next page and find the link "Download file in csv format":

Data for GRASIM - ALL from 04-01-2005 to 06-01-2010

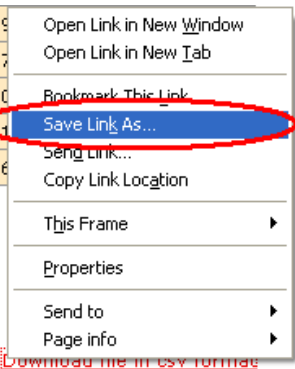
Series	Date	Prev Close	Open Price	High Price	Low Price	Last Price	Close Price	Average Price	Total Traded Quantity	Turnover in Lacs
EQ	04-Jan-2005	1,327.05	1,330.00	1,344.45	1,315.10	1,340.00	1,340.90	1,335.89	148243	1,980.36
EQ	05-Jan-2005	1,340.90	1,338.00	1,355.95	1,270.00	1,293.00	1,302.45	1,316.73	209025	2,752.29
EQ	06-Jan-2005	1,302.45	1,239.00	1,308.00	1,239.00	1,297.00	1,296.00	1,294.93	202868	2,627.00
EQ	07-Jan-2005	1,296.00	1,303.00	1,309.90	1,288.00	1,291.00	1,295.30	1,295.38	74694	967.57
EQ	10-Jan-2005	1,295.30	1,310.00	1,310.00	1,263.00	1,266.30	1,269.90	1,290.37	115236	1,486.97
EQ	11-Jan-2005	1,269.90	1,269.90	1,277.90	1,242.00	1,245.00	1,244.10	1,255.79	128111	1,608.81
• • •										
EQ	26-May-2005	1,124.10	1,130.00	1,143.90	1,106.00	1,129.00	1,137.45	1,127.16	176795	1,992.76
EQ	27-May-2005	1,137.45	1,140.00	1,147.90	1,125.15	1,136.50	1,136.20	1,138.64	111417	1,268.64

Since the number of records are more than 100, kindly download the csv file to view all records.

[Download file in csv format](#)

[Another Search](#)

7. Right-click on the "Download file in .csv format" link, and select "Save Link As...". Save data into a ".csv" file. (Set extension to ".csv")

EQ	23-May-2005	1,123.80	1,125.00	1,130.00	1,119.00	1,120.80	1,120.35	1,122.9	
EQ	24-May-2005	1,120.35	1,111.00	1,130.00	1,110.25	1,118.00	1,117.25	1,114.7	
EQ	25-May-2005	1,117.25	1,120.00	1,133.00	1,116.00	1,125.00	1,124.10	1,123.0	
EQ	26-May-2005	1,124.10	1,130.00	1,143.90	1,106.00	1,129.00	1,137.45	1,127.4	
EQ	27-May-2005	1,137.45	1,140.00	1,147.90	1,125.15	1,136.50	1,136.20	1,138.6	

Since the number of records are more than 100, kindly download the csv file to view all records.

[Download me in csv format](#)

5.2 Getting tick by tick data / transaction list (commercial)

Trading interfaces usually provide such data eg.: when placing your order you can see the list of the last N trades or can be found as an independent part of the trading software like the SpreadBook in Thinkorswim.

You can find a free (trading interface independent) example at <http://portfolio.hu/tozsde/koteslista.tdp> for the Budapest Stock Exchange, and you can find examples for other exchanges along with data service at <http://www.tickdata.com/html/downloads.shtml>.

You can see a live example of tick by tick data on <http://www.batstrading.com/book/C/> (works during trading hours, you can change ticker).

5.3 Getting free order book level 1 data

You can get a snapshot of the order book by invoking a link in your browser as it is described at: <http://www.gummy-stuff.org/Yahoo-data.htm>

In the above page there are examples for uses other than just viewing a snapshot of the order book, like using Excel for your portfolio's pricing and visualizing it in a well formatted, easy to handle way.

For custom use you may need a programmer's help.

5.4 Getting order book level 2 data (commercial)

Order book level 2 data could be seen integrated into many trading platforms. However using it for analysis needs more data than the actual best 5 / 10 offers so you have to have access to the data stream itself. LP-software.de provides a SW interface that allows access to the data stream of the order book when you are subscribed for their data service. Contact us for more details!

You can see a live example of order book level 2 data on <http://www.batstrading.com/book/C/> (works during trading hours, you can change ticker).

5.5 Getting intraday market data (commercial)

Many companies provide intraday market data. We list some of the major ones in the table below:

provider	features	url
eSignal	EOD, delayed intraday	http://www.esignal.com/ondemand/default.aspx
Quote Tracker	unites many provider's services	http://www.quotetracker.com/qsources.shtml
DTN IQFeed	data of many exchanges	http://www.iqfeed.net/index.cfm?displayaction=data&section=services
Interactive Brokers	news also available	http://interactivebrokers.com/en/p.php?f=marketData

6 Epilogue

We think that investment decisions must stand on solid ground. As a part of it investors need valid and reliable market data with the understanding of what kind of information is contained within market data.

We will continue to collect information about market data to keep investors informed and to be able to recommend the best data sources for each kinds of analysis.

If you find this book useful, please check out Chartoasis.com for further releases and tell others about it.

You can always acquire our latest information and recommendations on market data by visiting our website <http://www.chartoasis.com> and our blog, <http://chartoasis.blogspot.com/>.

The free EOD analysis software on Chartoasis.com has been created based on the aspects of this book. It contains the most popular technical analysis functions and it warns users for major data inconsistencies. You can find it at <http://www.chartoasis.com/free-analysis-software/start.html>.