Know your Market

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Chapter 1

Introduction

Ethereum (ETH) is an is the second biggest crypto-currency (crypto) following Bitcion (BTC). ETH is programmable, so one can also use it apps, games, digital contracts (smart contracts).

Chapter 2

Background

2.1 Who are the main participants in this product?

ETH is used by individuals, Developor and enterprises.

2.2 Where are they from?

The advantage of using ETH over more traditional currency is that it allows direct transfer of funds without any intermediate parties thus, reducing transaction fees. In addition, ETH also allows for more accessible banking services for example borrowing.

ETH is extremely secure and private, applications created on the ethereum network protect user information from third parties. Governments or companies are unable to censor information on the ETH network as it is decentralised.

Developers use ETH to create applications and smart contracts. A smart contract is a computer program executed under some pre-specified conditions by the parties. For example, an individual may wish to purchase items online. Said individual can send funds to a smart contract then once the items have arrived at the individual doorstep the postman may scan the item and the funds will be released to the sender.

Enterprises see if ETH favourably because it provides a secure network for business operations such as making payments. ETH provides a protocol infersturce for tasks such as issuing or verifying credentials and allows for features enabling privacy, permissioning and performance. [1]

Big banks, tech giants, and other organizations including J.P. Morgan Chase, Microsoft, and Intel are uniting to build business ready versions of the software behind Ethereum. Its ability to record and execute transactions without the need of a middleman is making this blockchain technology more popular amongst businesses. [2]

2.3 What is their main agenda and what is their typical trading style?

ETH can be used as a long-term investment and shorter term trading instruments. Long-term investors will use ethereum to diversify their portfolios and engage in secure transactions without a middleman. In contrast to that short term traders seek to make profits in small movements of the price of ETH. They will trade on Spot and derivative exchanges. Retail traders and institutions trade cryptos and their derivatives.

According to a recent report by coin news most parties that trade BTC are retail but professional traders dominate most of the market. These professionals account for more than four fifths of all bitcoins sent to exchanges. [3]

2.4 What creates supply and demand for this asset?

In addressing this question we will discuss the supply and demand of cryptos in general. Cryptocurrencies either have a limited or predetermined coin supply and so it is a deflationary asset. Since there is a limited supply of cryptocurrency this will increase demand and eventually drive prices up.

The main factors that drive supply in demand in the crypto market are media coverage, pumping and dumping schemes, marketing schemes, community support, trading bots, innovation and regulation. [4]

- Media coverage - Media coverage can bring awareness or influence the perception of certain cryptocurrencies in the market. For example a positive review of a cryptocurrency will have more buyers therefore, increasing price.
- Pumping and Dumping - Pumping refers to a rise in price while dumping refers to a fall in price. Since prices are affected by supply and demand one can manipulate the prices via pumping and dumping schemes. A concentrated effort to match all the open orders on a particular crypto across several exchanges will create an artificial shortage. When the market adjusts, the price shoots up. Large holders of that crypto can then cash in on the gains by dumping their coins, bringing the price down.
- Marketing schemes - Influencers can disseminate information about coins via various media outlets. If coins have a high coverage the market is more aware of their existence. Hence, there will be more buyers driving the price up. Price can also fall if the influencer disseminates negative information about the coin.
- Community support - A cryptocurrency with good community support and a strong vision for the future will thrive in the crypto markets as the project will bring value to members of that community.
- Trading Bots - Trading bots are very easily scalable so a program can command many bots to artificially inflate or deflate the price of a certain cryptocurrency.
- Innovation - Developers can add new functionality to particular coins. The new functionality will make the coin more valuable thus driving the price up.
- Regulation - Governments have control about the rules of cryptocurrency trading within their country hence impacting the utility of a certain coin. For example the chinese government has banned ICOs and Chinese based financial institutions are not allowed to deal in or fund cryptocurrencies.

2.5 What's are the tick increments and contract specifications for this product?

For the ETH-PERPETUAL Deribit contract the tick increments are 5 cents.
The lists below show the product specifications for ETH traded products.

2.5.1 Deribit ETH-PERPETUAL [5]

- Underlying Asset/Ticker - Deribit ETH Index
- Contract - 1 USD per Index Point, with contract size USD 1
- Trading Hours - 24/7
- Minimum Tick Size - 0.05 USD
- Settlement - Settlements take place every day at 8:00 UTC. Realized and unrealized session profits (profits made between settlements) are always added in real-time to the equity, however, they are only available for withdrawal after the daily settlement. At the settlement, session profits/losses will be booked to the ETH cash balance.
- Contract Size - 1 USD
- Initial Margin - The initial margin starts with 2.0% (50x leverage trading) and linearly increases by 1% per 5,000 ETH increase in the position size. For example

  Initial margin = 2.0%+(Position Size in ETH) $*0.0002\%$
- Maintenance Margin - The maintenance margin starts with 1% and linearly increases by 1% per 5,000 ETH increase in the position size.
- Mark Price - The mark price is the price at which the perpetual contract will be valued during the trading hours. This can (temporarily) vary from the actual perpetual market price in order to protect market participants against manipulative trading.

  Mark Price = Index price + 30 seconds EMA of (Perpetual Fair Price − Index Price)

  The perpetual fair price is the average of bid and ask price for 1 ETH size order
- Delivery/Expiration - No Delivery / Expiration

- Fees maker - 0.00%, taker - 0.05%. However, for cryptoprop traders the maker rebate is 0.01% while the taker fee is 0.037%.
- Position Limit - Maximum allowed position is 10,000,000 contracts (USD 10,000,000). Portfolio margin users are excluded from this limit and can build up larger positions. On request, the position limit could be raised based on an account evaluation.

2.5.2 Deribit Eth futures [6]

- Underlying Asset/Ticker - Deribit ETH Index
- 1 USD per Index Point, with contract size USD 1
- Trading Hours - 24/7
- Minimum Tick Size - 0.05 USD
- Settlement - Settlements take place every day at 8:00 UTC. Realized and unrealized session profits (profits made between settlements) are always added in real-time to the equity, however, they are only available for withdrawal after the daily settlement. At the settlement, session profits/losses will be booked to the ETH cash balance.
- Expiration Dates - Expirations always take place at 08:00 UTC, on the last Friday of the month. Currently, there are 3 quarterly futures (Expiring the last Friday of March, June, September, and December). A new future with a new expiry date will be added 1 hour before the expiry of the front future.
- Contract Size - 1 USD
- Initial Margin - The initial margin starts with 2.0
  Initial margin = 2% + (Position Size in ETH) $*0.0002\%$
- Maintenance Margin - The maintenance margin starts with 1.0 % and linearly increases by 1.0% per 5,000 ETH increase in position size.
- Mark Price - The mark price is the price at which the futures contract will be valued during trading hours. This can (temporarily) vary from the actual futures market price in order to protect market participants against manipulative trading. Mark Price = Index price + 30 seconds EMA of (Futures Market Price - Index Price) The market price is the last traded futures price if it falls between the current best bid and the best ask. Otherwise, if the last traded price is lower then the best bid, the market price will be the best bid. If the last traded price is higher than the best ask, the market price will be the best ask.
- Delivery/Expiration -Friday, 08:00 UTC.
- Delivery price - Time-weighted average of Deribit ETH index as measured between 07:30 and 08:00 UTC.
- Delivery Method - Cash settlement in ETH.
- Fees - Check this page for Deribit fees.
- Position Limit - The maximum allowed position is 5,000,000 contracts (USD 5,000,000). Portfolio margin users are excluded from this limit and can build up larger positions. On request, the position limit could be increased based on an account evaluation.
- Block Trade - Minimum USD 100,000.00

2.6 What other products are closely correlated?

ETH is highly correlated with other coins that also have large market caps. Figure 2.6 compares ETH with a section of other high market cap coins. Over time these coins achieve a correlation upward of 0.8.

Figure 2.6 also shows correlation between ETH, Gas and the SPY. Gas and the SPY have lower correations than high market cap coins.

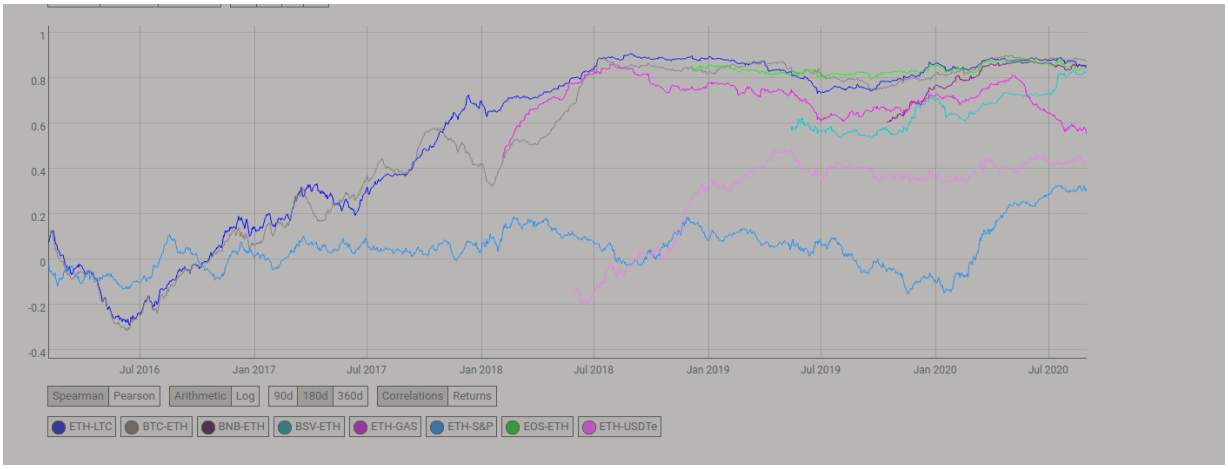

Figure 2.1: Screenshot from https://coinmetrics.io/. ETH correlation with LTC, BTC, BNB, BSV Gas, S&P, EOS and USDTe for mid 2016 to mid 2020

Ethereum			24 HOURS			7 DAYS			30 DAYS		
PAIR - EXCHANGE	PRICE	1H %	CHNG%	LOW - HIGH	VOLUME	CHNG%	LOW - HIGH	VOLUME	CHNG%	LOW - HIGH	VOLUME
ETH / USD Perp HuobiDM	477.200	+1.43	+7.16	443.230 - 489.630	1.7b	+24.50	371.200 - 489.630	5.9b	+27.91	361.000 - 489.630	27.3b
ETH / USD Qtly HuobiDM	484.629	+1.39	+7.45	448.744 - 496.950	1.4b	+25.39	375.000 - 496.950	5.5b	+26.07	368.920 - 496.950	23.8b
ETH / USD Qtly OKEx	484.347	+1.41	+7.14	449.791 - 496.956	617.2m	+25.45	246.254 - 496.956	2.8b	+26.32	246.254 - 496.956	11.0b
ETH / USD Perp OKEx	477.050	+1.44	+7.02	443.500 - 489.440	466.5m	+24.49	370.980 - 489.440	1.7b	+28.02	360.970 - 489.440	7.2b
ETH / USD Perp Bybit	477.300	+1.40	+7.02	443.800 - 489.700	391.9m	+24.56	371.500 - 489.700	1.3b	+28.01	360.900 - 489.700	5.9b
ETH / USD Wkly HuobiDM	478.147	+1.44	+7.13	443.999 - 490.691	231.8m	+24.66	370.938 - 490.691	847.7m	+27.86	363.057 - 490.691	3.7b
ETH / USD Wkly OKEx	478.062	+1.45	+7.01	444.380 - 490.508	201.9m	+24.69	371.320 - 490.508	508.0m	+27.90	362.189 - 490.508	2.1b
ETH / USD BiWkly OKEx	480.495	+1.46	+7.17	445.892 - 492.808	189.7m	+24.94	371.427 - 492.808	410.7m	+27.91	363.303 - 492.808	2.1b
ETH / USD BiQtly OKEx	495.606	+1.45	+7.64	458.102 - 508.400	182.7m	+26.30	379.299 - 508.400	503.4m	+27.56	374.839 - 508.400	2.1b
ETH / USD Perp BitMEX	477.200	+1.49	+7.02	444.000 - 490.600	166.9m	+24.58	371.800 - 490.600	646.8m	+27.92	362.000 - 490.600	3.0b
ETH / USD Perp Deribit	477.200	+1.44	+7.08	443.650 - 490.350	133.8m	+24.60	370.750 - 490.350	390.8m	+28.04	362.500 - 490.350	1.6b
ETH / USD BiQtly HuobiDM	495.628	+1.43	+7.51	458.624 - 508.823	111.8m	+25.76	371.670 - 508.823	406.7m	+27.62	371.670 - 508.823	1.3b
ETH / USD BiWkly HuobiDM	480.228	+1.45	+7.20	445.671 - 492.529	63.0m	+24.82	372.374 - 492.529	338.1m	+27.79	363.849 - 492.529	1.5b
ETH / USD Perp Binance	477.820	+1.40	+7.34	442.710 - 490.340	57.6m	+24.63	372.000 - 490.340	176.7m	+16.54	370.300 - 490.340	327.7m
ETH / USD Qtly Binance	484.110	+1.41	+7.31	448.780 - 495.780	54.8m	+25.26	374.040 - 495.780	221.1m	+26.50	369.200 - 495.780	1.1b
ETH / USD Perp Kraken	476.600	+1.31	+6.78	443.650 - 489.550	37.5m	+24.39	370.850 - 489.550	177.7m	+27.88	361.700 - 489.550	556.3m
ETH / USD Sep25 Deribit	483.250	+1.47	+7.12	448.950 - 495.000	26.0m	+25.19	374.250 - 495.000	100.7m	+26.37	367.750 - 495.000	404.4m
ETH / USD BiQtly Binance	498.970	+1.63	+7.93	460.100 - 510.070	25.8m	+26.01	383.850 - 510.070	99.6m	+25.69	374.250 - 510.070	303.6m
ETH / USD Mtly BitMEX	230.070	-0.42	-1.87	228.650 - 235.250	9.7m	-1.41	227.400 - 249.850	23.9m	+9.69	209.550 - 270.100	100.9m
ETH / USD Dec25 Deribit	496.450	+1.41	+7.55	460.050 - 509.000	7.5m	+26.07	380.850 - 509.000	34.3m	+28.03	370.850 - 509.000	165.9m
ETH / USD Qtly Kraken	484.150	+1.27	+7.49	448.600 - 495.850	3.1m	+25.38	374.150 - 495.850	8.8m	+25.33	370.000 - 495.850	44.7m
ETH / USD Mar26 Deribit	503.000	+0.60	+7.38	465.350 - 516.350	1.7m	+26.73	387.150 - 516.350	12.5m	+29.36	370.350 - 516.350	45.7m
ETH / USD Perp FTX	477.270	+1.44	+7.07	443.290 - 490.000	741.3k	+24.58	371.000 - 490.000	2.6m	+28.08	361.390 - 490.000	9.8m
ETH / USD Mtly Kraken	391.400	+0.00	+2.10	371.350 - 393.200	625.3k	-6.61	370.000 - 419.100	3.3m	+22.70	309.700 - 452.400	22.4m
ETH / USD Sep25 FTX	484.040	+1.46	+7.20	448.460 - 496.440	19.6k	+25.57	374.900 - 496.440	121.4k	+25.72	370.740 - 496.440	735.9k

Figure 2.2: A screen shot taken from https://coinalyze.net/. Listed is the percentage change, high low range and volume for the last 24 hours, 7 days and 30 days for futures exchanges. The exchanges are ordered by volume.

2.7 Where is most of the volume done on this product? exchange, product type, future, perp etc

Figure shows the percentage change, high low range and volume for the last 24 hours, 7 days and 30 days for futures exchanges. The exchanges are ordered by volume. We see that with in each exchange a perpetual contract has more volume than a futures contract. HuobiDM has the most volume out of all the exchanges. Then in descending order of most volume is bybit, bitmex, deribit and finally binance.

2.8 What is the mark price and how do you calculate it?

Mark price is a reference price of a derivative that is calculated from underlying index. It will usually be a weighed moving average of the index spot price. The mark price is used so to avoid price manipulation of a single exchange. For the ETH-PERP on Deribit [5] the mark price is given by

Mark Price = Index price + 30 seconds EMA of (Perpetual Market Price - Index Price)

2.9 Explain the effect of a positive funding rate on a long and short position.

When the funding rate is positive, long position holders pay funding to the short position holders.

Below we show how the funding rate is calculated [5]

- Find the premium rate

  Premium Rate = ((Mark Price - Deribit Index) / Deribit Index) * 100%

- The find the funding rate

  Funding Rate = Maximum (0.05%, Premium Rate) + Minimum (-0.05%, Premium Rate)

  It should be noted that the funding rate is capped at ±0.5%

If one wishes to find the funding payment, perform the addition steps

- calculate the time fraction

  Time Fraction = Funding Rate Time Period / 8 hours

- calculate the funding payment

  Funding Payment = Funding Rate * Position Size * Time Fraction

2.10 Explain the effect of a negative funding rate on a long and short position.

When the funding rate is negative, short position holders pay funding to the long position holders.

2.11 If your account has 10BTC and you buy with 100,000 lots ($) worth at the BTC price of 10,000 with 10x leverage. At what price will your account get liquidated? (keeping in mind your margin is in btc)

Liquidations happen when there are no longer enough funds (margin) in your account to support your open positions. Your positions are then taken out of your control and closed (liquidated) by the platform. Another name for this is a margin call .Your positions will be liquidated when maintenance margin requirements get above your account equity [7].

It should be noted that account equity is calculated from the mark price of the instrument and not from the the last price.

Also extra fees are paid to close positions during the liquidations process. The fees go to the insurance fund.

For BTC the maintenance margin starts with 0.525% and linearly increases by 0.5% per 100 BTC increase in the position size. When the account's margin balance is lower than the maintenance margin, positions in the account will be incrementally reduced in order to keep the maintenance margin lower than the equity in the account. Maintenance margin requirements can be changed without prior notice if market circumstances demand such action.

Maintenance Margin= 0.525% + (Position Size in BTC) * 0.005%

2.12 Explain the difference between Deribit and Bitmex indices.

2.13 What is DeFi and what are the lead applications.

2.14 If you buy 100.000 bitmex contracts for Ethereum how much is that in $?

2.15 What is a stop limit and what is a stop market order? Give an example of when and how each can be used.

Chapter 3

Statistics

For the next four question we use data from Tradeview taken from coinbase going back to 2016 to the present day. After cleaning the data the head is a follows

```
time open high low close Volume range
date_time
2016-05-23 10:00:00 1463961600 13.91 13.91 13.61 13.61 0.78673 0.30
2016-05-24 10:00:00 1464048000 13.68 13.74 12.00 12.77 2753.23998 1.74
2016-05-25 10:00:00 1464134400 13.00 13.18 11.93 12.61 9697.18313 1.25
2016-05-26 10:00:00 1464220800 12.61 12.95 12.15 12.47 2989.89229 0.80
2016-05-27 10:00:00 1464307200 12.47 12.47 10.25 10.98 19334.80484 2.22
```

3.1 What is the average daily range.

Summary statistics for range.

```
count    1565.000000
mean       21.331188
std        34.627367
min         0.100000
25%         4.440000
50%        11.080000
75%        24.380000
max       433.570000
```

The average daily range is 21.331188. Figure 3.1 shows the range distribution.

3.2 What is the average daily volume.

Summary statistics for Volume.

```
count    1.565000e+03
mean     1.333461e+05
std      1.276997e+05
min      7.867300e-01
25%      5.343518e+04
50%      9.512464e+04
75%      1.669171e+05
max      1.322283e+06
```

The average daily Volume is 1.333461e+05. Figure 3.2 shows the volume distribution.

3.3 What would you define as a low volume days?

We will define volume below the 25th percentile to have low volume. Thus, a day with volume below 5.343518e+04 is low.

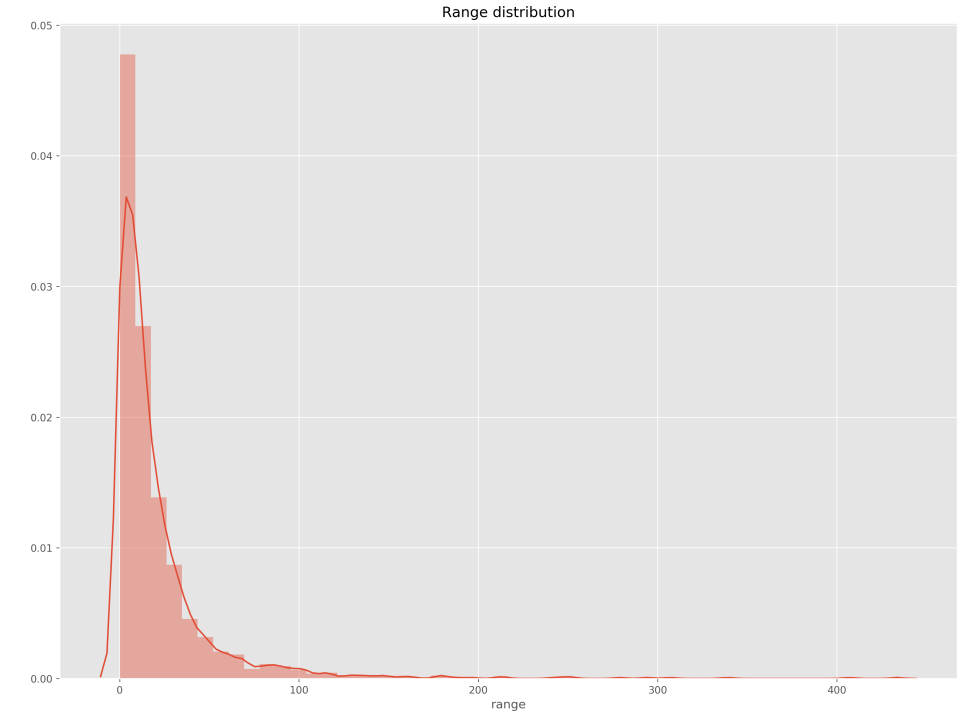

Figure 3.1: Range distribution

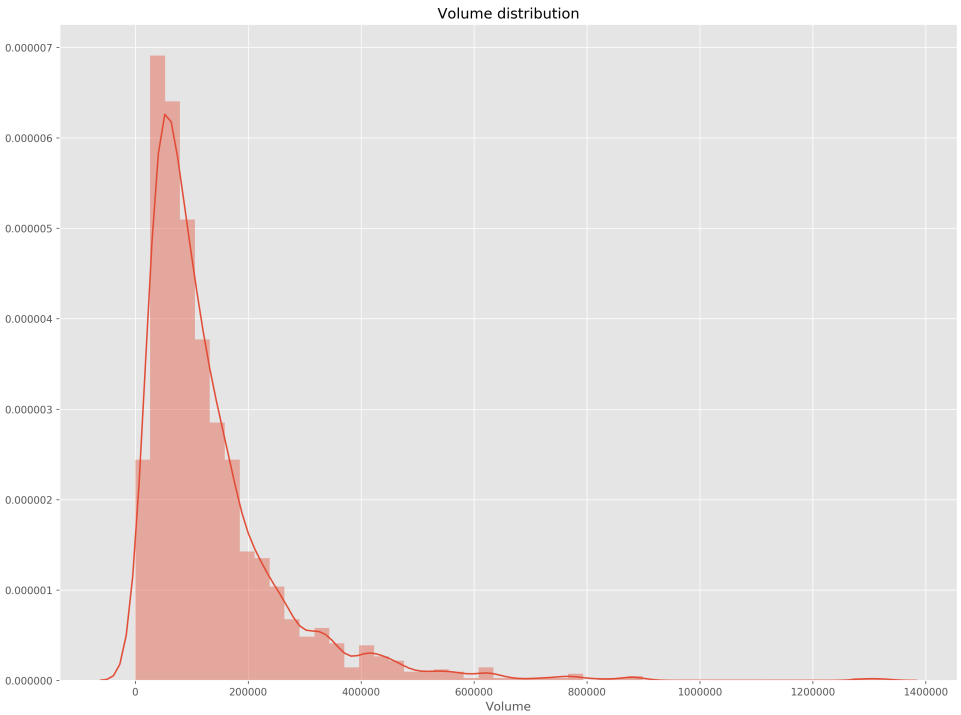

Figure 3.2: Volume distribution

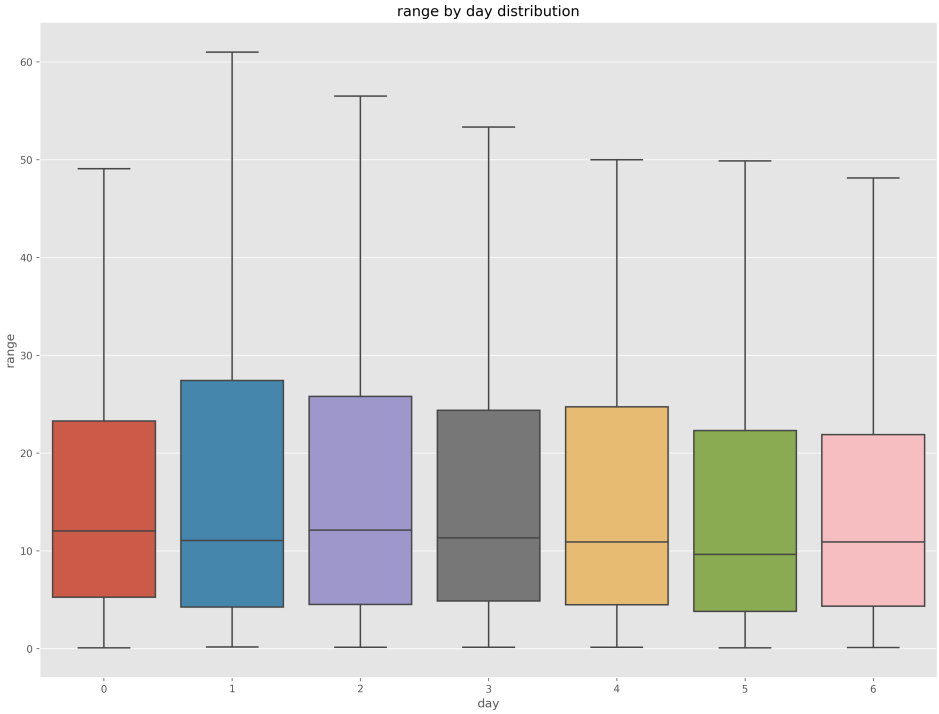

Figure 3.3: Range box plots by day

3.4 What is the average weekend range.

The data is grouped by day of the week. 0 = Monday,..., 6= Sunday.

The summary statstics for the groups are

day	time	open	high	low	close	Volume	range
0	1531396800	244.666652	254.059286	233.163839	244.640179	139691.779979	20.895446
1	1531483200	244.642768	254.736205	231.990179	245.165446	145372.288791	22.746027
2	1531569600	245.172812	255.199821	230.065089	243.928795	150107.028572	25.134732
3	1531656000	243.915134	253.779531	231.644643	242.454085	151790.895260	22.134888
4	1531440000	241.549215	251.391749	229.833072	243.245695	141879.322847	21.558677
5	1531526400	243.247578	253.825830	236.150538	246.119417	100524.152772	17.675291
6	1531612800	246.120852	254.312287	235.164081	245.684126	103816.814631	19.148206

Thus the average weekend range

$$\frac{17.675291 + 19.148206}{2} = 18.4117485$$

In addition we plot the boxplots of ranges per day give by Figure 3.3. There is no evidence to suggest weekends range more.

3.5 What affect does an increase in open interest have on price?

cfgh

3.6 What affect does a decrease in open interest have on price?

fgb

3.7 Does any relationship exist between open interest and price?

fgnb

3.8 What is the average session range and volume - asia euro usa.

We define the asia, usa, euro session in UTC time.

```
exchange_times = {
    'asia': [time(),time(hour = 6)],
    'usa': [time(hour=13,minute=30),time(hour = 20)],
    'euro': [time(hour=8),time(hour=16,minute=30)],
}
```

The `time()` is the amount of time past $00:00$ UTC. For example `time(hour=13,minute=30)` is $13:30$ UTC.

We perform the following on a data set for the past 3 years from coinbase with an hourly resolution. Note that there were rate limits on the api so 88 separate http requests had to sent.

- data was categorised into asia, usa, euro sessions
- For session it was resampled to daily data

This yielded the following statistics for volume and range

```
For the asia session
              range         volume
count  1100.000000   1100.000000
mean      5.053318   7559.744723
std       7.499806   7136.945473
min       0.292857    798.873352
25%       1.608571   3196.329492
50%       2.829286   5258.516808
75%       5.315714   9015.883759
max      84.672857  55962.362899
--------------------------------------------------
For the usa session
              range         volume
count  1100.000000   1100.000000
mean      4.340860   4472.978179
std       6.641011   4877.610076
min       0.190000    407.690536
25%       1.266786   1813.502618
50%       2.240000   3046.332611
75%       4.462143   5280.163938
max      75.645714  62737.359162
--------------------------------------------------
For the euro session
              range          volume
count  1101.000000    1101.000000
mean      4.691296    6347.743122
std       7.187887    6717.636049
min       0.212222     692.604705
25%       1.443333    2548.551281
50%       2.537778    4424.716103
75%       4.984444    7611.190454
max     106.830000  102992.740244
```

3.9 Work out the ATR of Eth in excel and read the ATR pdf.

Here is the python code that computes the 14 period ATR.

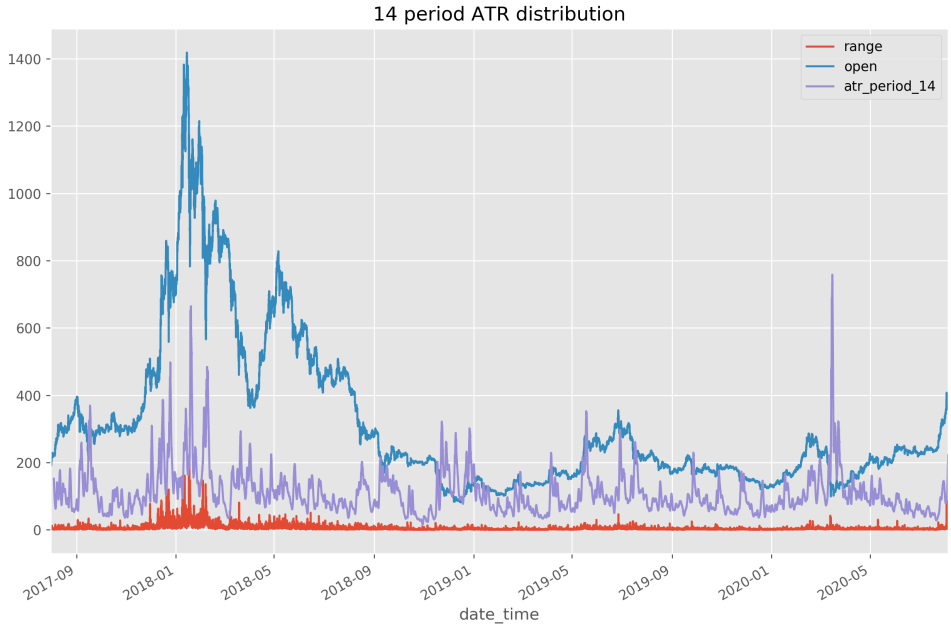

Figure 3.4: 14 period ATR for 3 years of hourly data on ETHUSD

```
x = 14
df_ATR[f"atr_period_{x}"] = df_ATR["range"]
for i in range(1,x):
    df_ATR[f"atr_period_{x}"] = df_ATR[f"atr_period_{x}"] +  df_ATR[f"atr_period_{x}"].shift(i)
df_ATR[f"atr_period_{x}"]  = df_ATR[f"atr_period_{x}"]/df_ATR["open"].shift(x-1)

df_ATR.plot(figsize=(12,8))

plt.title("14 period ATR distribution")
plt.savefig("../../../report/fig/atr.png",dpi=250)
plt.show()
```

Figure 3.4 plots the ATR along with the range and open.

3.10 Work out the distribution of returns and read the pdf.

The summary statistic for the returns distribution

```
count    26387.000000
mean         0.000090
std          0.011256
min         -0.196000
25%         -0.003853
50%          0.000060
75%          0.004015
max          0.183455
```

3.11 What is the most common time of day for price movements.

Figure 3.6 shows price movements by time of day. A higher variance means a higher price move. Thus, price moves the most at 2:00 UTC.

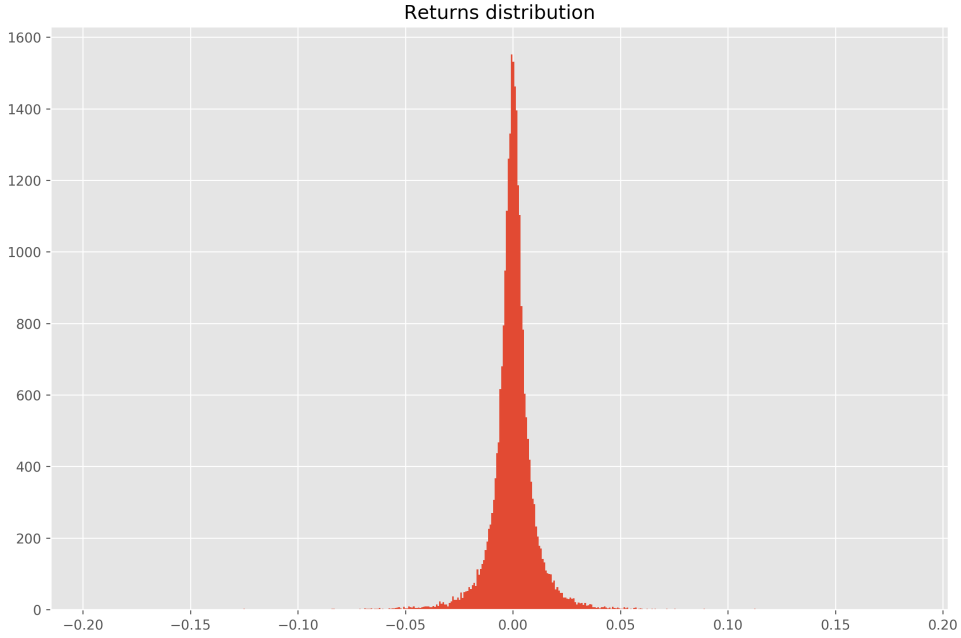

Figure 3.5: Returns for 3 years of hourly data on ETHUSD

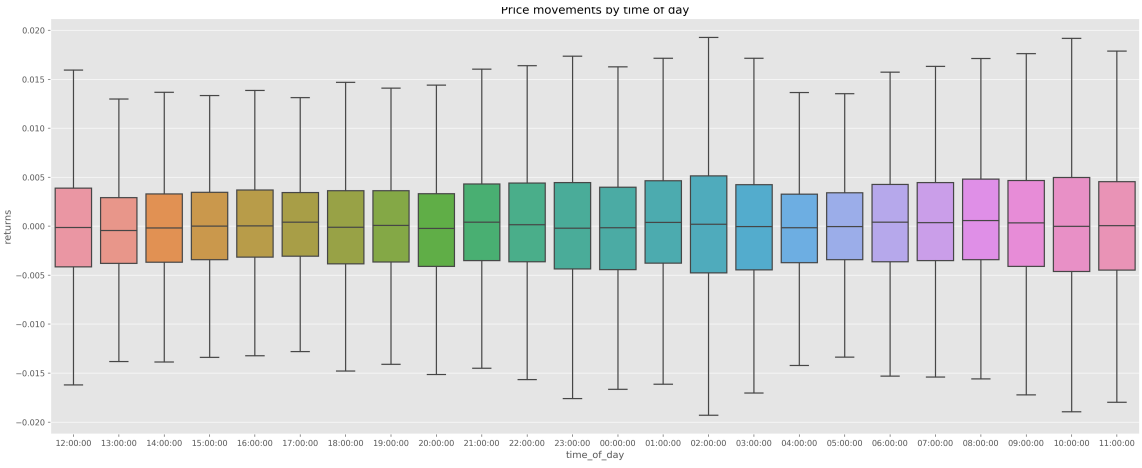

Figure 3.6: Price movements by time of day for 3 years of hourly data on ETHUSD

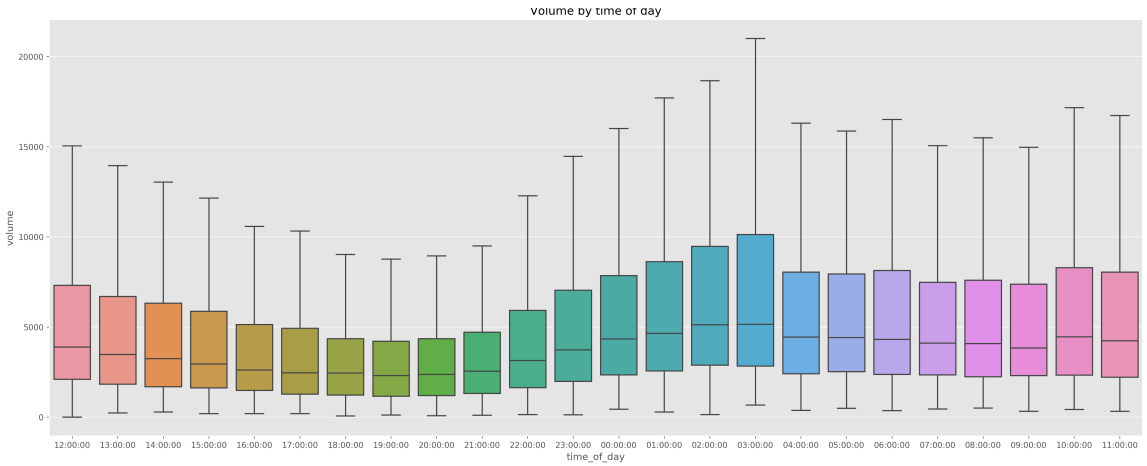

Figure 3.7: Volume by time of day for 3 years of hourly data on ETHUSD

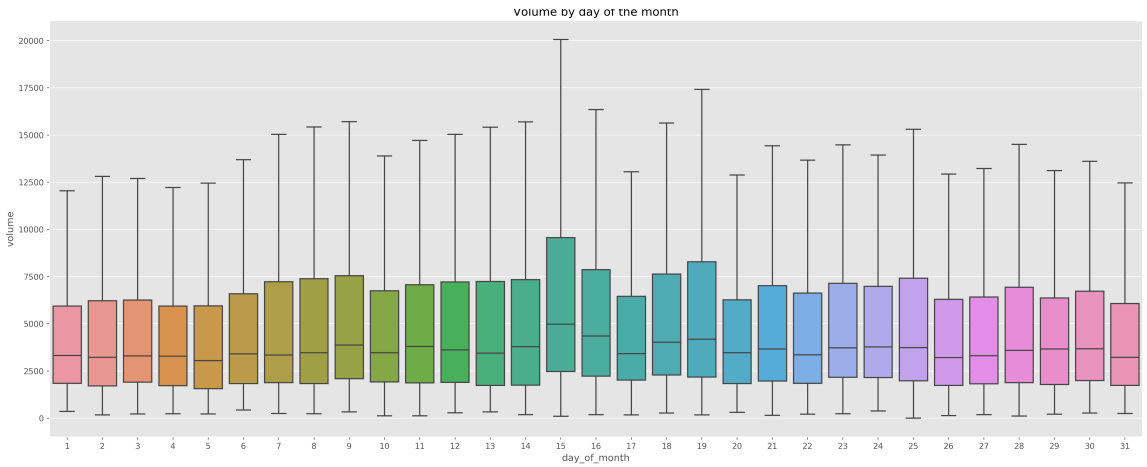

Figure 3.8: Volume by time of day for 3 years of hourly data on ETHUSD

3.12 What are the most common times with the most volume.

Figure 3.7 shows volume by time of day. Thus, most volume is at 2:00 and 3:00 UTC.

3.13 Is beginning of the month typically quieter then end of month?

Figure 3.8 shows volume by day of the month. Thus, most volume is in the middle of the month. The start and the end of the month have roughly the same volume.

3.14 List of days where it trades greater then its Standard deviation, check (1SD, 2SD, 3SD)

Using z scores of the resampled daily return we have

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For days between 1 and 2 SD
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 Timestamp('2020-03-13 00:00:00'),
 Timestamp('2020-03-20 00:00:00'),
 Timestamp('2020-04-07 00:00:00')]
```

3.15 Is the market more likely to go up or down?

We will consider the daily resampled data for which the return are greater than 1SD (all element in the list above).

```
is_up
False    0.508065
True     0.491935
```

So on moves greater than 1SD 51% of the time the market moves down while 49% of the time the market moves up.

3.16 How does the market move when it is $> 5\%$ move in a day

3.17 How does the market move when its $> 10\%$ in a day

3.18 How does it move when its under $< 5\%$?

3.19 What are the days before and after like of both $> 5\%$ and $< 5\%$ and $> 10\%$

3.20 Does it tend to trend or range more?

fdlgjlskdjgvsdgvdsvsadvfgasdvf

3.21 Do stationary test

3.22 If you used the POC as the fair value for the next trading day, how often does price come back to test this area? (Point of Control)

3.23 Does over average in volume generally relate to bigger price movements? Does this generally last for more then one day?

3.24 Average transactions on the network per day

3.25 Does increase in transactions increase demand and price?

Chapter 4

Fundamental

4.1 Is there any news that drivers eth or btc

4.2 What does risk on / risk off mean?

4.3 How does this market react to risk on / risk off scenarios

4.4 Look into what caused the biggest moves (moves over 10% over the past 3 years)

4.5 When do options expire? what effect does this have?

4.6 What effect does this have on the market in the lead up to and the day of?

Chapter 5

Technical

5.1 What is the average size of a move: Small, medium, large.

5.2 Most amount of candles in a row with one color

5.3 Does the market respond to triangles / wedges?

5.4 Does the market respond to flags? bull flags vs bear flags, flat flags.

5.5 Are double top / bottoms good? are head and shoulders patterns good?

5.6 Ascending channel vs descending channels

5.7 Does the market fill the CME gap from the weekends trading? If so what are some statistics around this?

5.8 Are weekends more likely to trend or range?

5.9 How does changes in volume affect the market

5.10 Does volatility drop and volume drop at the same time or do they move inline

5.11 Do liquidations occur with or against the trend

5.12 When it ranges how big are the moves and what size reversions do they have?

5.13 When it goes quiet what sort of ranges and volumes does it do right before a big move?

5.14 When we have days of abnormally low volume what type of days do we see after this?

5.15 Once it has a big move (define this) what does the following 5 days look like

5.16 What does the next 12, 24 hours look like after a large move?

5.17 Are moves more likely to retrace or continue on longs or

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