Conceal Banking Whitepaper

**Introducing Conceal Banking**

The main purpose of the Conceal Banking System, referred from here forth simply as “Banking”, is to generate extra wealth, while storing Value – the CCX Cryptocurrency – over shorter or longer periods of time. More options will be introduced in the future, like Lending, and DIRA (Dynamic Interest Rate Adjustment)

**Banking 1.0**

**Deposits 1.0**

Initially Banking had a single option, called Deposits, referred from here forth as Deposits 1.0. This was the basic implementation of Deposits, where people could lock CCX in month interval and let it generate extra CCX.

Requirement for Deposits was set at 1 CCX.

1 Month = 30 Days = 21.600 Blocks.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Months | Interest % | Months | Interest % | Months | Interest % | Months | Interest % |
| **1** | **0,33%** | **4** | **1,33%** | **7** | **2,33%** | **10** | **3,33%** |
| **2** | **0,66%** | **5** | **1,66%** | **8** | **2,66%** | **11** | **3,66%** |
| **3** | **1,00%** | **6** | **2,00%** | **9** | **3,00%** | **12** | **4,00%** |

With the first implementation of Deposits, a 4% Interest per Year was taken as starting point, and from this 4%, the monthly interest rates were then derived.

While this was the very first implementation of Deposits, it had several limitations, and needed to be revised, this Revision which happened in Banking 2.0

* **Granularity**
  + The first obvious limitation was the “Month Granularity”, meaning, you could lock CCX only in Month intervals. (1 Month = 30 Days = 21.600 Blocks)
* **Mathematical Relevance**
  + The second not so obvious limitation, was however a much bigger problem that needed to be addressed, and that was the fact that it wasn’t mathematically relevant to make deposits longer than 1 Month, because consecutively depositing CCX for a month, yielded more CCX than doing longer deposits of the same length of months.
  + Example:
    - Depositing 1000 CCX for 1 month, yielded 3.3 CCX, depositing 1003.3 CCX for another month yielded a total of 1006.61089;
    - Depositing 1000 CCX for 2 months, yielded 1006.6 CCX.
    - There was therefore **NO INCENTIVE** in using longer periods of time.

Even with these limitations, Deposits 1.0 set the laying foundations of the CCX Banking System, and is only described here for the purpose of remembering and comparing.

**Banking 2.0**

Banking 2.0 was created to refine the Deposits Formula introduced in Banking 1.0, while offering a new option called Investments.

**Deposits 2.0**

As described previously, Deposits 1.0 wasn’t mathematically relevant, and had a “Month Granularity”. This is being fixed in Deposits 2.0

* **Granularity**
  + With Deposits 2.0, granularity is changed from Monthly to Weekly. Instead of only 12 “monthly” Intervals, we now have 52 “weekly” Intervals.
* **Mathematical Relevance**
  + The mathematical relevance is being fixed with Deposits 2.0, which means, now, there is a **PROPER INCENTIVE** to deposit CCX longer than the shortest available Interval.

Entry point for Deposits remains set a 1 CCX, this is the option that will be available to every CCX owner, provided he has more than 1 CCX.

1 Week = 7 Days = 5.040 Blocks.

52 Weeks are the equivalent of the former 12 Months, and represents the maximum period CCX could be deposited for, which is 1 Year.

A similar, roughly 4% Interest rate, is considered for the whole period of 1 Year, however the Interest for 52 Weeks is a bit higher than 4%.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Week  Number | Weekly Rates | | Week  Number | Weekly Rates | | Week  Number | Weekly Rates | | Week  Number | Weekly Rates | |
| Total % | Weekly % | Total % | Weekly % | Total % | Weekly % | Total % | Weekly % |
| **1** | **0.0698** | 0.0698 | **14** | **1.0136** | 0.0724 | **27** | **2.0250** | 0.0750 | **40** | **3.1040** | 0.0776 |
| **2** | **0.1400** | 0.0700 | **15** | **1.0890** | 0.0726 | **28** | **2.1056** | 0.0752 | **41** | **3.1898** | 0.0778 |
| **3** | **0.2106** | 0.0702 | **16** | **1.1648** | 0.0728 | **29** | **2.1866** | 0.0754 | **42** | **3.2760** | 0.0780 |
| **4** | **0.2816** | 0.0704 | **17** | **1.2410** | 0.0730 | **30** | **2.2680** | 0.0756 | **43** | **3.3626** | 0.0782 |
| **5** | **0.3530** | 0.0706 | **18** | **1.3176** | 0.0732 | **31** | **2.3498** | 0.0758 | **44** | **3.4496** | 0.0784 |
| **6** | **0.4248** | 0.0708 | **19** | **1.3946** | 0.0734 | **32** | **2.4320** | 0.0760 | **45** | **3.5370** | 0.0786 |
| **7** | **0.4970** | 0.0710 | **20** | **1.4720** | 0.0736 | **33** | **2.5146** | 0.0762 | **46** | **3.6248** | 0.0788 |
| **8** | **0.5696** | 0.0712 | **21** | **1.5498** | 0.0738 | **34** | **2.5976** | 0.0764 | **47** | **3.7130** | 0.0790 |
| **9** | **0.6426** | 0.0714 | **22** | **1.6280** | 0.0740 | **35** | **2.6810** | 0.0766 | **48** | **3.8016** | 0.0792 |
| **10** | **0.7160** | 0.0716 | **23** | **1.7066** | 0.0742 | **36** | **2.7648** | 0.0768 | **49** | **3.8906** | 0.0794 |
| **11** | **0.7898** | 0.0718 | **24** | **1.7856** | 0.0744 | **37** | **2.8490** | 0.0770 | **50** | **3.9800** | 0.0796 |
| **12** | **0.8640** | 0.0720 | **25** | **1.8650** | 0.0746 | **38** | **2.9336** | 0.0772 | **51** | **4.0698** | 0.0798 |
| **13** | **0.9386** | 0.0722 | **26** | **1.9448** | 0.0748 | **39** | **3.0186** | 0.0774 | **52** | **4.1600** | 0.0800 |

In the Table above, the Interest rates are being displayed for their given Weeks, and it can clearly be seen that the interest rate per Week increases by 0.0002%, thus properly incentivising the longer periods of time. Thus Deposits are mathematically relevant, as you get a higher interest rate, the longer you deposit CCX for.

**Investments 1.0**

Banking 2.0 introduced a new “Deposit” mechanic called Investments. The purpose of Investments is to offer roughly 50% more interest per year, amounting to approximately 6%, provided a lot more coin is locked up. Additionally, Investments allows locking CCX for longer amounts of time, properly incentivising **“Time”** and **“Quantity”**. Simply put it, the longer, the more CCX you lock, the greater the return.

* **Granularity**
  + With Investments, the Granularity is set to a Quarter Year, henceforth referred to as Quarter.
* **Mathematical Relevance:** 
  + When calculating the Final Investment Interest Rate, the calculations start with what is designated as the “MQ%” – also called the **Master Quarter Percent**.
  + The **Time-Tier – 20 Tiers**, to incentivise Investment Time.
    - Each T-Tier increases the “MQ%” by 0,5% per Tier.
  + The **Quantity-Tier – 15 Tiers**, to incentivise Investment Amount.
    - Each Q-Tier increases the “MQ%” by 1,0% per Tier.
* **Investment Formulas**
  + **Calculating the “Master Quarter Percent”**
    - Initially “Deposits 2.0” were considered using an exponential rate for the generation of the weekly interest rate. The interest rate would increase exponentially with the number of Weeks CCX would be locked, up to that yearly 4%. This system was eventually discarded (Deposits 2.0 Interest Rates scale linearly with the number of Weeks), as it would have meant far lower interest rates for the lower number of weeks. However, these calculation were the basis upon which **Master Quarter Percent** was later to be derived from.
    - A *theoretical exponential interest Rate* was considered for 13 Weeks (which is roughly equivalent to 1 Quarter), that would be similar to the 13 Week Interest Rate in Deposits 2.0, the **0.9386.** This was labelled **13W%**.
    - Then an interest rate was calculated, that would be equal to two consecutive “deposits” of 13 Weeks, this was labelled D13W%. Thus the formula for D13W% is as follows:
    - Next, the 26W% is calculated similarly to 13W%, represents the exponential interest rate for a theoretical 26 Week deposit
    - The MQ% is calculated as HALF the middle point between **D13W%** (representing the compounded interest rate when considering a double consecutive theoretical exponential 13 Week Interest rate with a given Potency P) and **26W%** (representing the direct theoretical exponential 26 Week interest rate with the same Potency P), and thus has the following formula:
    - The **Master Quarter Percent** aka **MQ%** is the base percent upon which the quarterly investments are derived from. Thus the Potency P – the only variable left in its formula – must be chosen so that the resulting Investment Percent when taking in consideration the minimum Investment amount of 50.000 CCX and 1 Year (represented by 4 Quarters), is roughly 50% more than the Interest Rates offered by Deposits 2.0 for the same Year; meaning an Interest Rate of approximately 6% for one year.
    - Thus the Potency chosen is Potency=57, and when completing 57 in the formula, we get the following numbers for the MQ%
    - Since CCX has 6 decimals only, actual % have only 4 Decimals, thus the above resulted number is rounded up to **1.4473** %
  + **Compounding the MQ%** – **the Time Tier**
    - There are **20 Time Tiers**, 20 different lengths of time for Investments, equivalent to 20 Quarters which in turn are equivalent to 5 Years.
    - With each extra quarter chosen, the MQ% gets compounded, according to this formula:

Where n represent the number of Quarters; 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20.

* + - The “Compounded Percent” is what you would get if you were to make n consecutive investments. So far there would be no difference if you were to make 3 consecutive 1Quarter investments, as opposed to a single 3Quarter Investment. However, this is where the Time-Tier comes in play.

Where n represent the number of Quarters; 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20

* + - Thus, if you were to choose 20 Quarters, you would get a flat 10% Bonus as opposed to 20 consecutive 1 Quarter Investments.
  + **Finalizing the Investment Percent** **– the Quantity Tier**
    - There are 15 Quantity Tiers, which incentivise the amount of CCX invested, the first Quantity Tier is considered Q-Tier 0.
    - In order to commit for an Investment, a minimum of 50 000 CCX is required, however the more CCX that is invested, the bigger the percentage that is yielded according to the following brackets, starting with 110.001 CCX (Q-Tier I):
    - Thus the following Investment formula is

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Quantity Tier** | **From** | **To** | Extra CCX  Required | Quantity Bonus %  (1% per Tier) |
| **Investment Requirement** | **50.000,000000** | **110.000,999999** |
| **Q-Tier I** | **110.001,000000** | **180.000,999999** | **60.001** | **1%** |
| **Q-Tier II** | **180.001,000000** | **260.000,999999** | **70.000** | **2%** |
| **Q-Tier III** | **260.001,000000** | **350.000,999999** | **80.000** | **3%** |
| **Q-Tier IV** | **350.001,000000** | **450.000,999999** | **90.000** | **4%** |
| **Q-Tier V** | **450.001,000000** | **560.000,999999** | **100.000** | **5%** |
| **Q-Tier VI** | **560.001,000000** | **680.000,999999** | **110.000** | **6%** |
| **Q-Tier VII** | **680.001,000000** | **810.000,999999** | **120.000** | **7%** |
| **Q-Tier VIII** | **810.001,000000** | **950.000.999999** | **130.000** | **8%** |
| **Q-Tier IX** | **950.001,000000** | **1.100.000,999999** | **140.000** | **9%** |
| **Q-Tier X** | **1.100.001,000000** | **1.260.000,999999** | **150.000** | **10%** |
| **Q-Tier XI** | **1.260.001,000000** | **1.430.000,999999** | **160.000** | **11%** |
| **Q-Tier XII** | **1.430.001,000000** | **1.610.000,999999** | **170.000** | **12%** |
| **Q-Tier XIII** | **1.610.001,000000** | **1.800.000,999999** | **180.000** | **13%** |
| **Q-Tier XIV** | **1.800.001,000000** | **2.000.000,999999** | **190.000** | **14%** |
| **Q-Tier XV** | **2.000.001,000000** | **Max Supply** | **200.000** | **15%** |

* **Investment Percentages**
  + According to the formulas above this is how the Investment percentages look in a single table.
  + Note that the actual, in Wallet percentages might differ in their last 4th decimal, which is due to how Excel calculates the percentages, as opposed to how the code calculations are actually done and rounded.
  + The numbers in red, represent the MQ% compounded, based on time period. Under QT-0 are the actual percentages where the Time Bonus is added. These numbers with in **Green Lime**, are the values you would get for Quantity Tier 0, the base Percentages. Coloured in **Brown** are the yearly percentages highlighted. We can thus clearly see that the Investment Percentage, for 50.000 CCX and 4 Quarters (1 Year) is 6.0343%, roughly 50% more than the 52 Week, almost 4% Deposit Interest.
  + The further numbers in **Green** are the Investment percentages as they scale up based on Quantity Tier.
  + You can clearly see, that for QT-0, the 6% yearly scales above 6% per year, the longer the Investment period gets, going to 12.6692 for 2 years, 19,9477% for 3 years, 27,9157% for 4 years, and to 36.6223% for 5 years, which is a 6 fold increase as opposed to a 5 fold expected increase. This is the reward the Investor gets by choosing a longer time to invest his assets. The scaling is similar in all other Quantity Tiers, as can be clearly seen below.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | MQ% | **QT-0** | **QT-I** | **QT-II** | **QT-III** | **QT-IV** | **QT-V** | **QT-VI** | **QT-VII** | **QT-VIII** | **QT-IX** | **QT-X** | **QT-XI** | **QT-XII** | **QT-XIII** | **QT-XIV** | **QT-XV** |
|  | **1.4473** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **1Q** | **1.4473** | **1.4545** | **1.4691** | **1.4836** | **1.4981** | **1.5127** | **1.5272** | **1.5418** | **1.5563** | **1.5709** | **1.5854** | **1.6000** | **1.6145** | **1.6290** | **1.6436** | **1.6581** | **1.6727** |
| **2Q** | **2.9155** | **2.9446** | **2.9741** | **3.0035** | **3.0330** | **3.0624** | **3.0919** | **3.1213** | **3.1508** | **3.1802** | **3.2097** | **3.2391** | **3.2686** | **3.2980** | **3.3274** | **3.3569** | **3.3863** |
| **3Q** | **4.4050** | **4.4710** | **4.5157** | **4.5604** | **4.6052** | **4.6499** | **4.6946** | **4.7393** | **4.7840** | **4.8287** | **4.8734** | **4.9181** | **4.9628** | **5.0075** | **5.0523** | **5.0970** | **5.1417** |
| **4Q** | **5.9160** | **6.0343** | **6.0946** | **6.1550** | **6.2153** | **6.2757** | **6.3360** | **6.3963** | **6.4567** | **6.5170** | **6.5774** | **6.6377** | **6.6981** | **6.7584** | **6.8187** | **6.8791** | **6.9394** |
| **5Q** | **7.4489** | **7.6351** | **7.7114** | **7.7878** | **7.8641** | **7.9405** | **8.0168** | **8.0932** | **8.1695** | **8.2459** | **8.3222** | **8.3986** | **8.4749** | **8.5513** | **8.6276** | **8.7040** | **8.7803** |
| **6Q** | **9.0039** | **9.2741** | **9.3668** | **9.4595** | **9.5523** | **9.6450** | **9.7378** | **9.8305** | **9.9232** | **10.0160** | **10.1087** | **10.2015** | **10.2942** | **10.3869** | **10.4797** | **10.5724** | **10.6652** |
| **7Q** | **10.5815** | **10.9519** | **11.0614** | **11.1709** | **11.2804** | **11.3899** | **11.4995** | **11.6090** | **11.7185** | **11.8280** | **11.9375** | **12.0471** | **12.1566** | **12.2661** | **12.3756** | **12.4851** | **12.5947** |
| **8Q** | **12.1819** | **12.6692** | **12.7959** | **12.9226** | **13.0493** | **13.1760** | **13.3027** | **13.4294** | **13.5561** | **13.6827** | **13.8094** | **13.9361** | **14.0628** | **14.1895** | **14.3162** | **14.4429** | **14.5696** |
| **9Q** | **13.8055** | **14.4268** | **14.5710** | **14.7153** | **14.8596** | **15.0038** | **15.1481** | **15.2924** | **15.4366** | **15.5809** | **15.7252** | **15.8694** | **16.0137** | **16.1580** | **16.3022** | **16.4465** | **16.5908** |
| **10Q** | **15.4526** | **16.2252** | **16.3875** | **16.5497** | **16.7120** | **16.8742** | **17.0365** | **17.1987** | **17.3610** | **17.5232** | **17.6855** | **17.8477** | **18.0100** | **18.1722** | **18.3345** | **18.4967** | **18.6590** |
| **11Q** | **17.1235** | **18.0653** | **18.2459** | **18.4266** | **18.6072** | **18.7879** | **18.9685** | **19.1492** | **18.0653** | **19.5105** | **19.6912** | **19.8718** | **20.0525** | **20.2331** | **20.4138** | **20.5944** | **20.7751** |
| **12Q** | **18.8186** | **19.9477** | **20.1472** | **20.3467** | **20.5461** | **20.7456** | **20.9451** | **21.1446** | **21.3440** | **21.5435** | **21.7430** | **21.9425** | **22.1419** | **22.3414** | **22.5409** | **22.7404** | **22.9399** |
| **13Q** | **20.5382** | **21.8732** | **22.0919** | **22.3107** | **22.5294** | **22.7481** | **22.9669** | **23.1856** | **23.4043** | **23.6230** | **23.8418** | **24.0605** | **24.2792** | **24.4980** | **24.7167** | **24.9354** | **25.1542** |
| **14Q** | **22.2827** | **23.8425** | **24.0809** | **24.3194** | **24.5578** | **24.7962** | **25.0346** | **25.2731** | **25.5115** | **25.7499** | **25.9883** | **26.2268** | **26.4652** | **26.7036** | **26.9420** | **27.1805** | **27.4189** |
| **15Q** | **24.0525** | **25.8564** | **26.1150** | **26.3735** | **26.6321** | **26.8907** | **27.1492** | **27.4078** | **27.6664** | **27.9249** | **28.1835** | **28.4421** | **28.7006** | **28.9592** | **29.2178** | **29.4763** | **29.7349** |
| **16Q** | **25.8479** | **27.9157** | **28.1948** | **28.4740** | **28.7532** | **29.0323** | **29.3115** | **29.5906** | **29.8698** | **30.1489** | **30.4281** | **30.7073** | **30.9864** | **31.2656** | **31.5447** | **31.8239** | **32.1030** |
| **17Q** | **27.6692** | **30.0211** | **30.3213** | **30.6215** | **30.9217** | **31.2219** | **31.5222** | **31.8224** | **32.1226** | **32.4228** | **32.7230** | **33.0232** | **33.3234** | **33.6236** | **33.9238** | **34.2241** | **34.5243** |
| **18Q** | **29.5169** | **32.1735** | **32.4952** | **32.8169** | **33.1387** | **33.4604** | **33.7821** | **34.1039** | **34.4256** | **34.7473** | **35.0691** | **35.3908** | **35.7125** | **36.0343** | **36.3560** | **36.6777** | **36.9995** |
| **19Q** | **31.3914** | **34.3736** | **34.7173** | **35.0610** | **35.4048** | **35.7485** | **36.0923** | **36.4360** | **36.7797** | **37.1235** | **37.4672** | **37.8109** | **38.1547** | **38.4984** | **38.8421** | **39.1859** | **39.5296** |
| **20Q** | **33.2930** | **36.6223** | **36.9885** | **37.3547** | **37.7209** | **38.0872** | **38.4534** | **38.8196** | **39.1858** | **39.5521** | **39.9183** | **40.2845** | **40.6507** | **41.0170** | **41.3832** | **41.7494** | **42.1156** |