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MakerDAO

DeFi Project Deep-Dive

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Research and Insights

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Contents

1. Executive Summary

Welcome to our Deep Dive into DeFi with a study on MakerDAO, a decentralized lending and stablecoin issuance platform

Key Takeaways

- Maker is an innovative system that give users the means to borrow without having to go through a centralized exchange;
- Dai (DAI) is a crypto-backed, trustless stablecoin that acts as an on-chain alternative to its fiat-backed counterparts;
- Baked in incentives for all actors in the system should work well to maintain the protocol's relative stability in the long run;
- Despite the theoretical soundness of the Maker protocol, there are major flaws in practice. The most significant is smart contract risk and the operation of the system under periods of network congestion, which in the past has led to periods of under-collateralization;
- DAI, though reasonably effective as a stablecoin, has much weaker price stability mechanisms compared to traditional stablecoins;
- It is unclear whether enough DAI can be issued to serve the needs of the crypto community, as this depends on many external factors;
- Maker governance will continue to iterate and improve on the protocol, as they have done in the past, so there is hope that they can fulfill their vision

2. Introduction

MakerDAO is a decentralized lending platform that takes crypto collateral to issue a crypto-backed stablecoin called Dai (DAI). The protocol is governed by holders of Maker (MKR).

2.1 Stablecoins

Before the creation of stablecoins, cryptocurrency investors had to rely on either fiat or crypto deposits and withdrawals, both of which had significant problems. Cryptocurrencies often exhibited significant price volatility, while fiat, though more stable, was cumbersome to use due to low wire speeds and higher transaction costs.

Hence stablecoins were created, tokens whose value are pegged to a fiat currency, typically the US Dollar. The first widely adopted stablecoin, Tether (USDT), was founded in 2014. Each Tether is purportedly backed by an equivalent value of US dollars in its accounts.

Tether was initially a huge success as the crypto community had sorely needed a stablecoin. But in 2018, users began to question whether Tether was indeed fully backed by dollars. The situation was made worse as Tether failed to show assurances to the community. We won't cover the controversy in full detail, but suffice to say, many in the crypto community began looking for a stablecoin that could be trusted.

2.2 MakerDAO's Origins

Around the same time in 2015, the concept of MakerDAO and DAI was conceived by Rune Christensen as an alternative to fiat-backed stablecoins. After multiple years in development, DAI was launched in 2018. Each DAI is backed by crypto collateral held in smart contracts on the Ethereum blockchain. This removes the need to trust a third party with fiat custody, giving DAI its stablecoin properties.

Maker's design mechanisms help to ensure that the DAI price does not stray too far from the target exchange rate of one USD per DAI, thus fulfilling its purpose as a stablecoin. With 2.2 million ETH (almost US$400 million at today's price of $170) locked in, MakerDAO has become the largest DeFi application on the Ethereum network.

3. Mechanisms

Next we will explain the mechanisms behind the Maker Protocol. The two main components are the stablecoin Dai (DAI), and Maker (MKR), the equity and governance token. We will first discuss DAI.

3.1 DAI Issuance and Burn

DAI is Collateralized Debt

The Maker protocol is a lending platform which makes loans backed by crypto collateral. Users create a Vault (also called Collateralized Debt Position or CDP) which holds the collateral in a smart contract. The borrower then receives DAI, which represents debt. Rune Christensen, the founder of MakerDAO, chose the name 'Dai' from the Chinese 貸 (pinyin: dài), meaning 'to lend.'

When MakerDAO first launched, the only collateral accepted was ETH, but multi-collateral Dai was later launched in November 2019. Today, both single- and multi-collateral Dai coexist (SAI and DAI respectively). Since SAI is slowly being phased out by the Maker team, we will be limiting the scope of this article to just MCD.

Collateralization Ratio

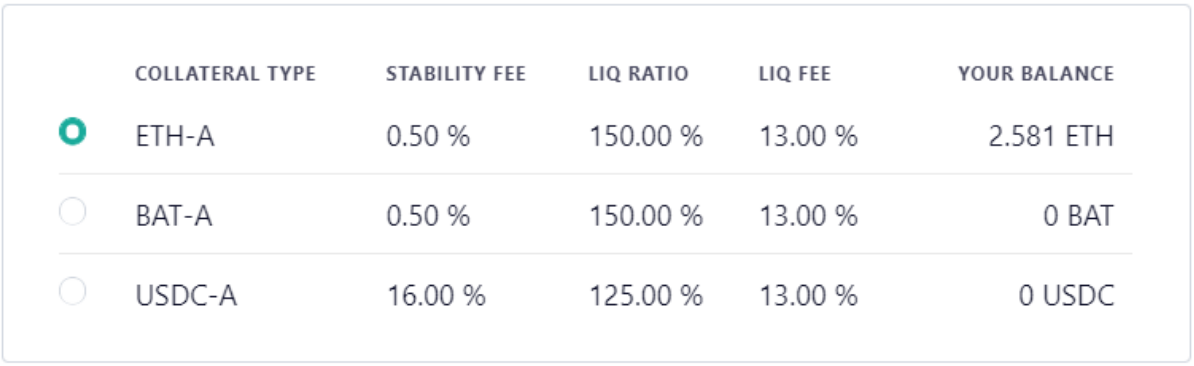
The *collateralization ratio* is the ratio of collateral value divided by the amount of DAI borrowed. For example, the collateralization ratio of $200 worth of ETH backing $100 of debt would be 200%. This represents the health of a debt position.

In MakerDAO, the minimum collateralization ratio must be greater than 150% at all times. This limit is in place to protect the system from a rapid decline in the market value of collateral, which would lead to an under-collateralized debt position and system insolvency.

This collateralized debt system is similar to a home mortgage. When a homeowner puts a house up as collateral, the bank will only to lend an amount less than the value of the house. This is called *over-collateralization*.

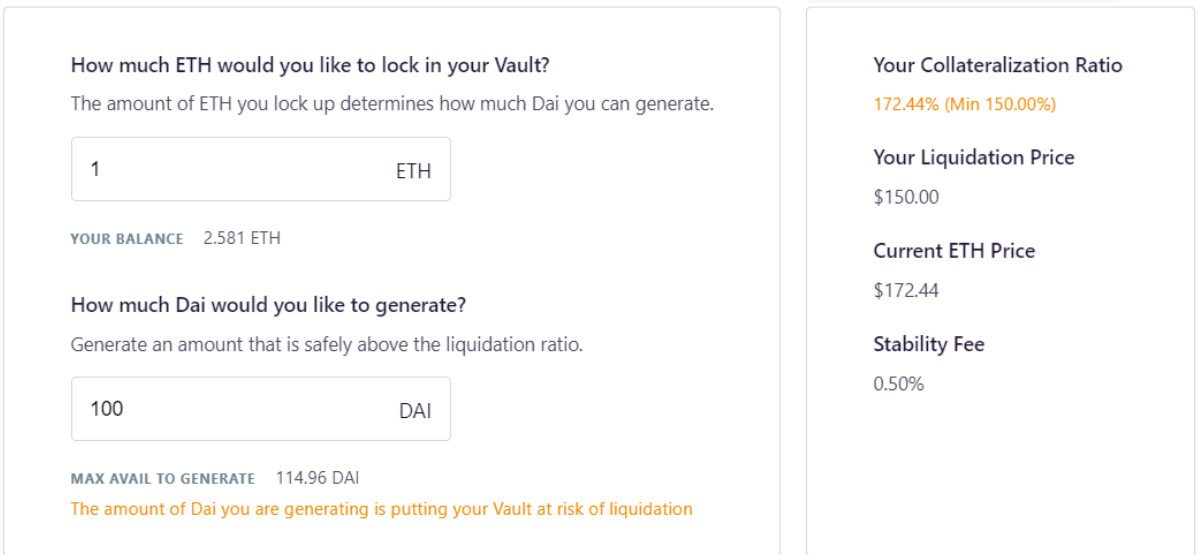
The main interface for generating DAI is called Oasis. When you go onto Oasis, you can elect to borrow after connecting a Web3 wallet such as Metamask. We will go through the borrowing process step-by-step:

1. Select the collateral type you would like to deposit. Notice each collateral type has different interest rates and minimum collateralization ratio parameters.



	COLLATERAL TYPE	STABILITY FEE	LIQ RATIO	LIQ FEE	YOUR BALANCE
◉	ETH-A	0.50 %	150.00 %	13.00 %	2.581 ETH
○	BAT-A	0.50 %	150.00 %	13.00 %	0 BAT
○	USDC-A	16.00 %	125.00 %	13.00 %	0 USDC

2. Select how much collateral you would like to deposit and how much DAI to generate. In this case, the system is advising that our position is risky since the ratio is too close to 150%.



3. We can generate less DAI instead to increase our collateralization ratio to safe levels. After accepting the terms of the loan, we can confirm, and our wallet will then be credited with the corresponding DAI.

Auto-Liquidations

If the value a collateral position falls below 150% of the amount of debt outstanding, an auction is automatically held to sell off enough of the collateral to repay the outstanding DAI, plus any stability fees and a liquidation penalty of 13%. After this, any remaining collateral is returned to Vault creators. The liquidation penalty is in place to encourage Vault creators to maintain a healthy collateral ratio.

Auctions are held in a two-step process. First, liquidators bid on collateral to see if there are sufficient bids to cover the outstanding debt, including stability fees and the liquidation penalty. If not enough DAI is raised, then the missing amount is converted into system debt and paid for by MKR holders.

If there is enough DAI bid to cover the debt, then the system converts to a reverse collateral auction. Bidders bid lower and lower amounts of collateral for the outstanding debt to ensure that only enough collateral is sold to cover the debt and maximize the collateral returned to Vault holders.

Why is collateral auctioned off instead of directly sold to liquidators or at market? Maker chose to implement this 2-step auction to ensure that the protocol can remain over-collateralized even when external price information from price oracles is not available.

Stability Fee

Vault Creators accrue interest (called the stability fee) over the duration of their outstanding loan. These fees, along with liquidation penalties, go towards compensating the holders of the Maker token (MKR).

Stability fees are an essential component in maintaining DAI's USD peg. As stability fees are increased, the supply of DAI will decrease as fewer users will want to borrow, and vice versa if stability fees are decreased. These adjustments are done by MKR holders, who can vote to change the rate based on market conditions.

Auction Example

Below is an example of a liquidation. Let's assume 1 ETH is worth 100 DAI, and the stability fee is 10% per year:

1. Example: Vault with 2 ETH collateral (worth 200 DAI) and outstanding debt of 100 DAI	Collateralization ratio = 200/100 = 200%
2. One year later, price of ETH falls 30% to 70 DAI/ETH, so the 2 ETH collateral is now only worth 140 DAI	Collateral Ratio = 140/100 = 140%
3. Vault is liquidated since it is below the 150% minimum collateral ratio. Let's calculate how much DAI is owed	DAI owed at liquidation = Original Debt + Interest Accrued + Liquidation Penalty = 100 + (100 x 10%) + (100 x 13%) = 123 DAI
4. Collateral auction is held. Auction keepers bid for the 2 ETH in the vault to repay the 123 DAI debt. Auction ends with 140 DAI bid for the 2 ETH	Dai bid = 140 DAI 140 DAI is bid for the 2 ETH collateral, which is greater than the 123 DAI owed
5. Reverse collateral auction is held. Bidders bid increasingly lower amounts of collateral they are willing to receive. Auction ends with 1.8 ETH bid for 123 DAI	Collateral bid = 1.8 ETH
6. Winner of reverse collateral auction receives 1.8 ETH and pays 123 DAI.	Implied auction price = 123 DAI/1.8 ETH = 68.3 DAI/ETH
7. There is ETH left in the vault, which is returned to the vault creator	Collateral returned = Initial Collateral – Collateral Sold = 2 – 1.8 = 0.2 ETH
8. Vault creator still has possession of the original 100 DAI, which has now been repaid by the winner of the auction	Vault creator loss assuming he bought ETH with the DAI loan during step 1 = Collateral Lost - Loan Value in ETH = 1.8 - 1 = 0.8 ETH

3.2 Main Actors in MakerDAO

There are three main groups who play a major part in the Maker ecosystem, which we will go through one by one.

Actor	Incentive	Contribution
MKR Holders	Receive profits via MKR burn	Governance, Equity Holder, Price Stabilization
Vault Creators	Leverage	Borrower, Price Stabilization
DAI Holders	Price stability, DSR	Lender, DAI Price Risk

MKR Holders

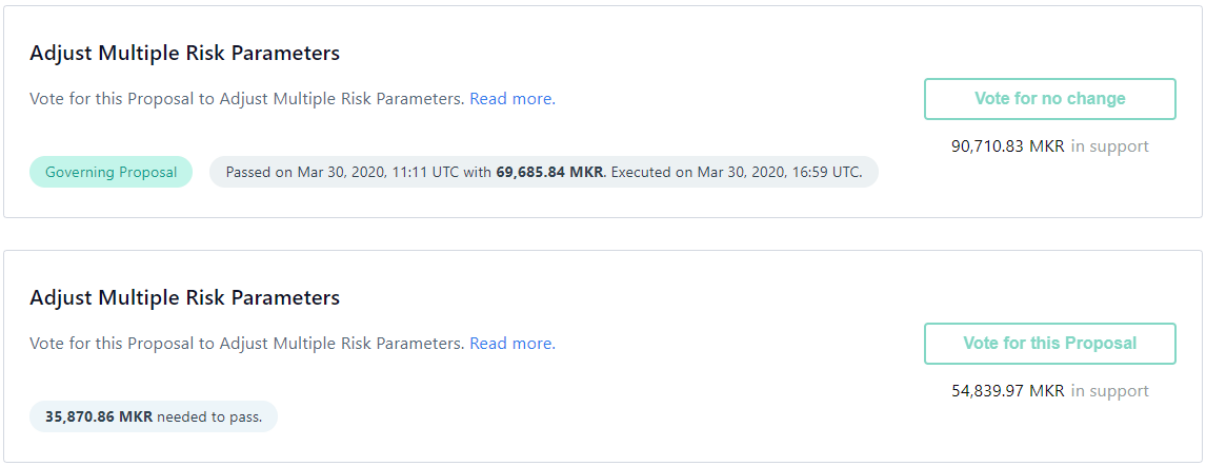
MKR holders are akin to the shareholders in the Maker Protocol, and have two main functions.

MKR holders partake in profits and losses of the protocol. When there are under-collateralized loans, MKR is minted and sold to re-collateralize the whole system, in this way diluting MKR holders and passing on losses. This is how Maker ensures that DAI is always backed by a sufficient amount of collateral. In return for this risk, stability fees and liquidation penalties received in excess of the DSR will be passed to MKR holders by buying back and burning MKR.

MKR holders also perform the role of governance, having the power to vote on and enact changes to the Maker Protocol. This includes changes to stability fees, the DSR, types of collateral accepted, and more. Stability fees and the DSR affect the supply and demand for DAI respectively, which is essential when maintaining DAI's dollar peg.

MKR holders can vote on polls and enact changes on the Maker Governance Dashboard, with discussions and consensus-building on Maker forums.

Below is a screenshot showing the governance voting dashboard:



Vault Creators

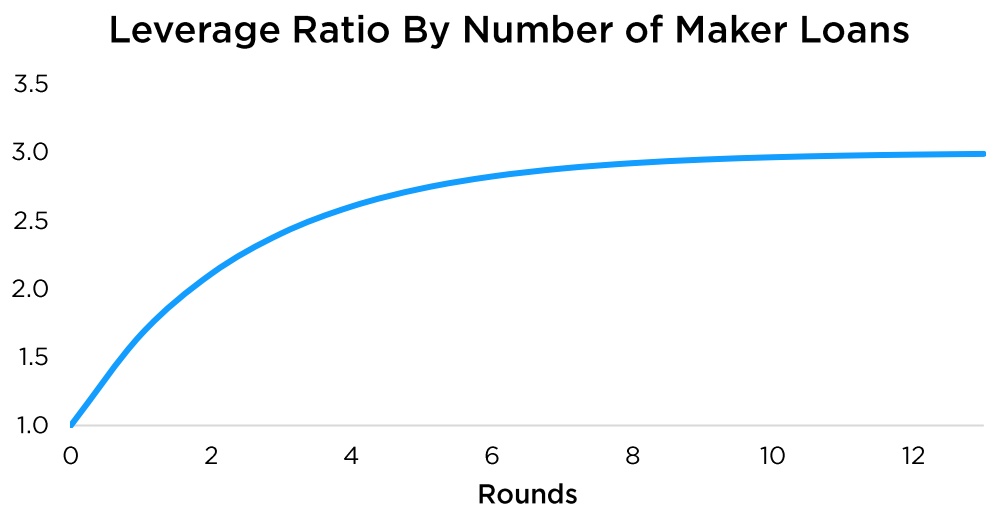
Vault creators deposit collateral, usually ETH, in order to borrow newly minted DAI. Although creators could be doing this for any number of reasons, the most common is to obtain trading leverage.

Upon receiving the DAI, vault creators will usually purchase additional collateral and place it in their vault to increase their collateralization ratio. In this way, they effectively gain leveraged exposure to the collateral and reduce the price at which they are liable for auto-liquidation.

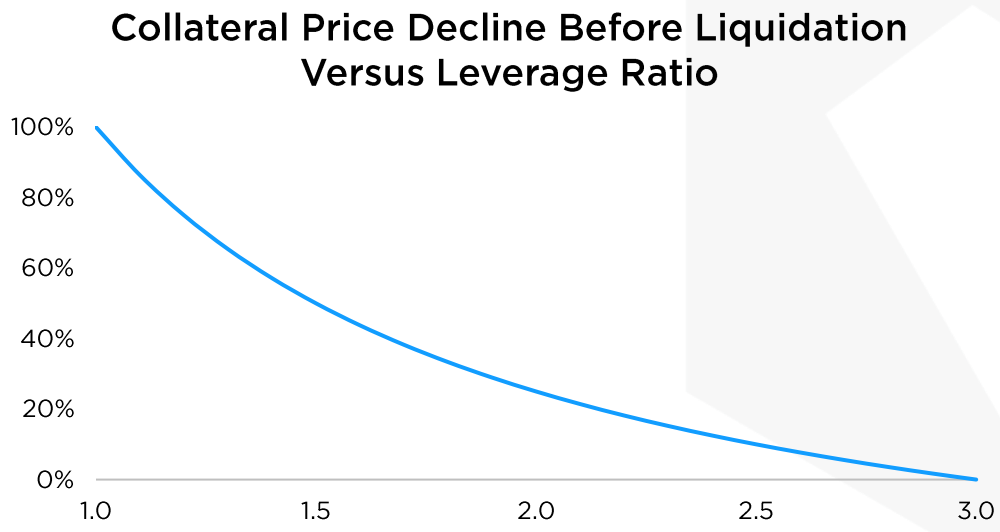
Here's an example of a user borrowing (assuming ETH/DAI price of 100):

Action	Collateral	Total Loan Value	Collateralization Ratio
1. Deposit ETH and withdraw the maximum loan amount	1 ETH	66.6 DAI	150%
2. Buy ETH with borrowed DAI and pledge the newly purchased ETH	1.66 ETH	66.6 DAI	250%
3. Withdraw loan using the recently pledged ETH	1.66 ETH	111.1 DAI	150%
4. Buy and pledge ETH	2.11 ETH	111.1 DAI	190%

This process can be repeated indefinitely to increase leverage. Each time the process repeats, the collateralization ratio decreases, and leverage ratio increases. The maximum leverage obtainable with a 150% minimum collateralization ratio is 3x. The chart below shows this effect.



It is worth noting that as the user takes on more leverage, risk of liquidation also goes up. With a 150% minimum collateralization ratio at 3x leverage, the vault creator is liable for liquidation as soon as the collateral price falls by any amount. This is why it might not be wise to borrow the maximum possible amount.



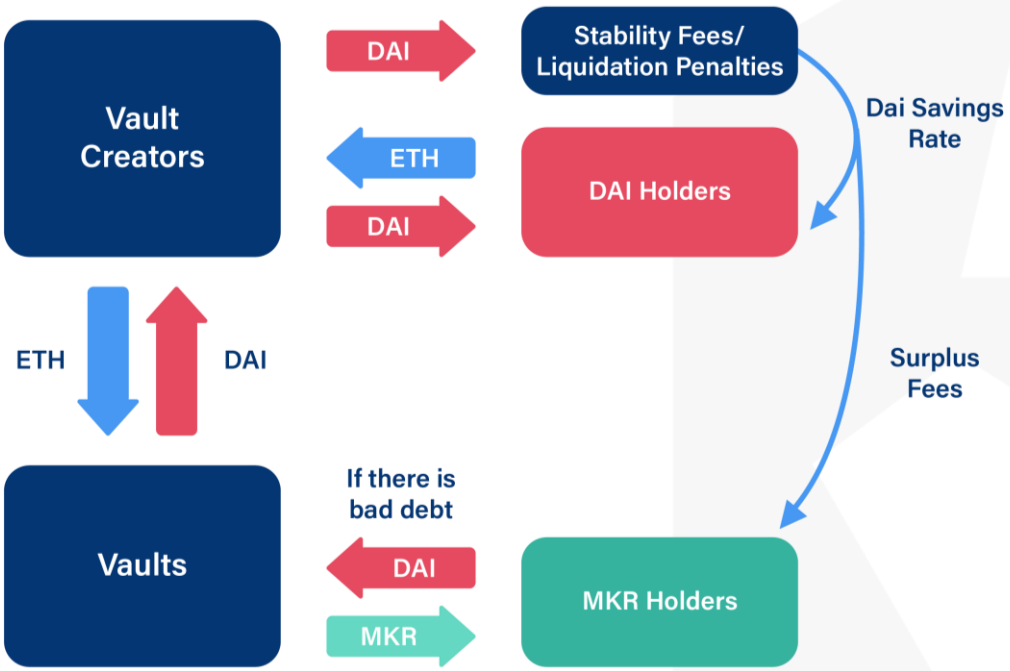
DAI Holders

Another crucial piece of the Maker ecosystem are DAI Holders. DAI holders buy DAI from vault creators, and effectively are the lenders in this system. Just like lenders who buy bonds, they bear the risk of default, although any losses resulting from under-collateralization will first be absorbed by MKR holders.

As compensation for lending, DAI holders receive the Dai Savings Rate (DSR). Similar to how stability fees affect vault creators' willingness to borrow, the DSR affects Dai holders' propensity to hold DAI.

Though it may seem like DAI holders have limited risk, if the system's losses are so great such that MKR holders are unable to absorb them (i.e. MKR's price goes to zero), then the DAI's value will also decline as the system will then be under-collateralized.

Maker Ecosystem Overview



In summary, the Maker system can be seen as a circular flow of DAI. In its entirety, the Maker Protocol creates a balance sheet where there are borrowers (Vault creators), lenders (DAI holders), and shareholders (MKR holders). MKR holders are first in line to take any losses and last in line for profits, effectively assuming the collateral risk and leaving DAI holders with a stablecoin.

3.3 Other Key Actors

In addition to the three groups mentioned above, Oracles and Keepers also play important roles in the MakerDAO ecosystem.

Actor	Incentive	Contribution
Oracle	Fees	External Price Feed
Keepers	Profits	Price Stabilization, Participate in Auctions

Oracles

The market value of different tokens (including collateral, MKR, etc.) are fed to the Maker Protocol by a group of service providers called *price oracles*. Maker uses the median of these price feeds to determine the 'canonical' prices of collateral in the protocol to assess the collateral ratio of vaults.

Due to the risk of an oracle attack whereby an attacker could compromise the oracles and feed false prices to the system to wrongly inflate or deflate the value of collateral, prices are only updated once an hour or every +/- 1% move to give MKR governance time to freeze the protocol in the event of such an attack.

Keepers

Keepers are (usually automated) parties that facilitate essential functions in the protocol. There are two types of keepers that help maintain system stability: Market Maker Keepers, and Auction Keepers.

Market Maker Keepers buy DAI when it is under $1, and short when it is over $1, and hence maintain the stability of the peg during periods of market dislocation They are incentivized by the high likelihood of profits on their trades.

Auction Keepers are actors that bid on collateral auctions whenever a vault falls below 150% collateral ratio and is auto-liquidated. Auction Keepers are incentivized to bid on auctions because they could purchase collateral at a discount.

4. Dai Price Stabilization

We think DAI's stabilization mechanisms deserves its own section. We have split these mechanisms into short and long term.

Short Term	Long Term
• Vault Creators • Keepers/Speculators	• Stability Fee, DSR • Global Settlement / Emergency Shutdown

4.1 Short-Term Mechanisms

We will first discuss mechanisms that promote DAI's price stability over the short-term. These mechanisms are only intended to work on DAI price action, and do little to affect longer term supply and demand.

Vault Creators

When the price of DAI falls below $1, Vault creators are incentivized to buy DAI and repay their debts, thus reducing DAI supply and putting upward pressure on prices. Similarly, when DAI is trading at a premium, it becomes more attractive for Vault creators to pledge additional collateral and mint more supply.

Although this is a powerful price stabilization feature in the short-term, it is only temporary in nature. Let's examine why. If a Vault creator sees high DAI prices and borrows additional DAI to sell on the market, once prices reach parity they will then be incentivized to buy back the DAI and close out their loan in order to realize their profits. Thus, any effect on price is only temporary in nature, and indeed causes DAI's price to oscillate.

Keepers/Speculators

The aforementioned Market Maker Keepers and other speculators can also have a similar effect on DAI's price. They are betting on DAI's long-term price stability in the anticipation of global settlement and/or a change in the stability fee/savings rate.

4.2 Long-Term Mechanisms

Now, we will go over stability mechanisms that work over the long run. These can be used to adjust DAI's fundamental supply and demand, hence alleviating persistent pressures on the peg.

Stability Fee, Dai Savings Rate

MKR Holders can enact constant changes to these two key rates that determine Dai's supply-demand curve, similar to how central banks use short-term interest rates to adjust the value of currencies depending on economic conditions. Currently the stability fee and DSR are set to 0.5% and 0% respectively. We will get into why these two rates are so low in the next section.

Expectation of Global Settlement

Last but not least, the fundamental idea behind MakerDAO is that each DAI is backed by more than $1 of collateral. The confidence of market participants in this fact is essential to maintaining the peg.

Global settlement, or Emergency Shutdown can be invoked by MKR holders if deemed necessary. When this happens, DAI holders are entitled to redeem one unit of DAI for $1 USD of collateral. There are two situations in which global settlement can be invoked: 1) when the protocol needs to be shut down temporarily for updates, or 2) during extreme market conditions which cause the DAI price to consistently trade away from the peg.

The expectation that global settlement could happen is a long-term stabilizer for the exchange rate, as MKR holders could call this at any time if the protocol is facing an attack, or if any critical malfunctions are detected.

It is important to note that, however, if emergency shutdown is activated while the system is under-collateralized, DAI holders will not be able to receive full value for their DAI. In this scenario, DAI will most likely trade below the peg unless MKR holders agree to backstop the losses.

In theory this could be a strong mechanism, but enacting it constitutes a catch-22 since it could harm the protocol's longevity. As such, it has never been used.

5. Analysis

Now that we understand what MakerDAO is and how it works, let's explore some of the advantages and disadvantages. We will go through them one by one below.

Advantages	Disadvantages
Crypto-Backed Stablecoin	Smart Contract Risk
Decentralized and Trustless	Governance Process
Alternative Source of Leverage	Volatility Risk
MKR Holders Backstop Losses	Relatively Weak Peg
	Over-collateralized
	Debatable Scalability

5.1 Advantages of MakerDAO

Crypto-Backed Stablecoin

DAI is the first crypto-backed stablecoin, a welcome change from the plethora of fiat-backed stablecoins on the market today. But being backed by cryptocurrencies is not, in itself, an advantage. The main benefit is that the entire system can live on the Ethereum blockchain.

Decentralized and Trustless

This leads us to the next major advantage, and in our view, the main reason why anyone would choose to use DAI over a fiat-backed stablecoin. Because the Maker protocol is on-chain, the system can be fully decentralized and trustless.

Unlike with fiat-backed stablecoins, there is no need to trust that a custodian has enough USD in reserve. All price stability mechanisms for DAI are baked into incentives for the actors in its ecosystem, which in theory helps to ensure its stable operation.

Alternative Source of Leverage

Opening a vault and pledging collateral is an alternative way to gain access to leverage for those who do not wish to custody assets with a centralized exchange. Borrowing from Maker could also be cheaper when stability fees are low.

MKR Holders Backstop Losses

Any losses incurred by DAI holders are backstopped implicitly by MKR holders, who will be diluted in case the system as a whole becomes under-collateralized. This is a major advantage that Maker has versus other lending platforms on the market, where any losses are borne by the lender.

5.2 Disadvantages of MakerDAO

Smart Contract Risk

As with all DeFi applications, the soundness of the entire system depends on whether the smart contracts have vulnerabilities.

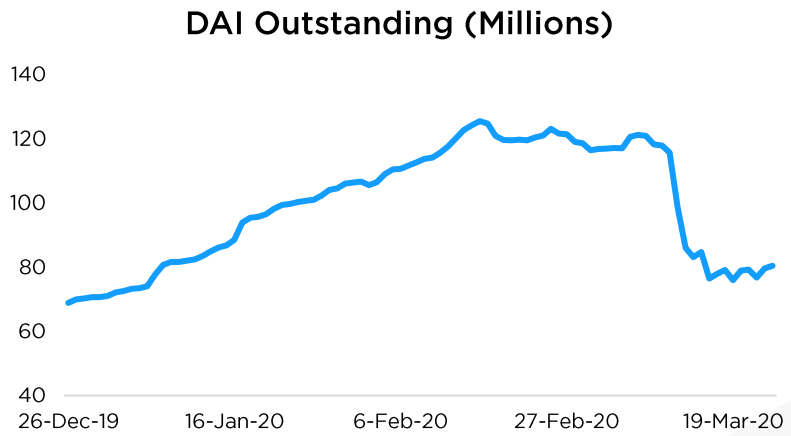
One such vulnerability was highlighted during the crypto market crash on Black Thursday. When the price of ETH plunged by more than 50%, auto-liquidations were triggered and ETH collateral was auctioned off in lots of 50. In normal market conditions, keepers would have bid on these auctions to limit losses to the system. Due to the massive volume of trades occurring, however, network congestion led to unusually high gas prices.

Most keepers could not submit their bids to the system, and some keepers were even able to purchase collateral for a price of zero. As a result of these zero- and low-bid auctions, the Maker protocol became under-collateralized by $5 million.

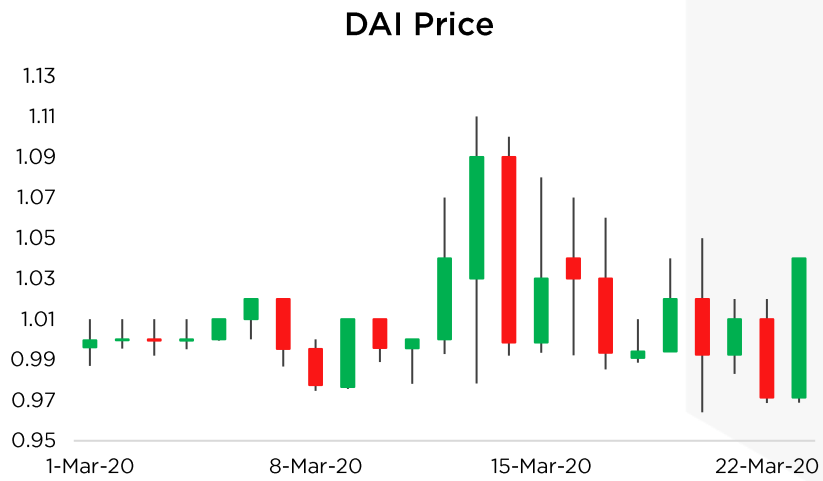
There were multiple factors at play here: 1) auctions were set to last only 10 minutes, which was not enough time for network congestion to subside; 2) auction lots were a relatively small 50 ETH, which meant that there were hundreds of auctions ongoing simultaneously, exacerbating network congestion issues; and 3) Keeper bots are notoriously difficult to set up from a technical perspective. As a result, people who would have bid on these auctions simply could not.

Moving forward, MKR holders have increased auction time to four hours and lot size to 500 ETH so that network issues are less likely to adversely impact the system.

In the aftermath of the incident, users became reluctant to open new vaults for fear of losing their collateral, and vault creators began to buy DAI back to repay their loans, rapidly reducing the supply of DAI on the market.



DAI faced sustained upward pressure, at one point trading as high as US$1.11 (chart below). To ease this, MKR holders voted in an emergency measure to accept as collateral USD Coin (USDC) to incentivize users to issue additional DAI.



In a first for Maker, MKR was also minted and sold at auction to re-collateralize the system.

Governance Process

Because the Maker governance process happens by way of polls, votes, and discussions on the correct course of action, it can take some time before changes can happen. Since changes to the stability fee and savings rate are voted on, instead of algorithmically determined like in Compound, DAI could trade away from the peg for sustained periods if governance does not react quickly enough.

Volatility Risk

Though having a stablecoin backed by cryptocurrencies is a novel idea, it can be risky in collateral prices fall too quickly for the system to liquidate in time. In these cases, the system can become under-collateralized, leading to losses for MKR or DAI holders (depends on whether MKR holders are willing to assume losses). During periods when the price of collateral is falling rapidly, vault creators tend to rush to buy DAI to close out their vault positions, leading to high DAI prices relative to the peg.

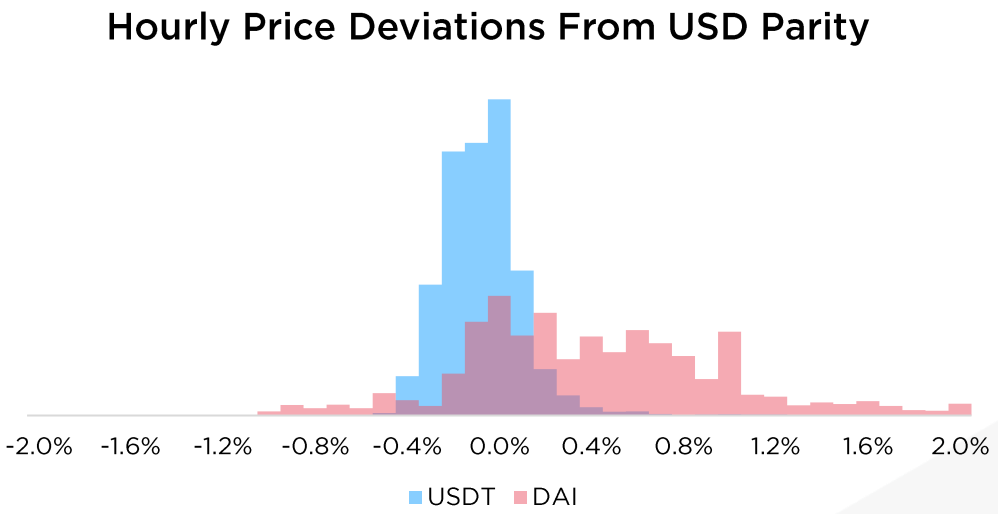
Relatively Weak Peg

Unlike many fiat-backed stablecoins, users cannot redeem DAI for their fair share of collateral, except when global settlement is activated. This removes one of the strongest price stabilization mechanisms available to maintain the peg, and instead replaces it with the expectation of future redeemability, which is far weaker.

Stability fee and savings rate adjustments by MKR holders could be a powerful long-term stabilizer, but it can difficult to achieve optimal levels of monetary expansion and contraction using interest rates. Although we do admit that, if done correctly, this will likely be the primary means for MKR holders to hold the price of DAI steady – a tough balancing act compared to the simple mechanism used by fiat-backed stablecoins!

Furthermore, vault creator and keeper arbitrage of the DAI price only functions over the short term, since any buying or selling done by arbitrageurs will reverse once the price reaches the intended level (i.e. they will have to take profit by unwinding their trades).

Below is a chart showing DAI and USDT hourly exchange rates from September 2020 until now. Although both have maintained their pegs to a degree, DAI is generally more volatile than USDT with greater deviations from the peg. This is expected due to DAI's weaker peg.



Over-collateralized

The 150% collateral ratio works great to maintain DAI stability. But for a lending platform, high collateralization is actually a drawback since users cannot borrow an amount larger than their collateral balance. It is possible to design a system that is under-collateralized – centralized exchanges in both cryptocurrencies and traditional assets have long offered under-collateralized margin loans.

In these platforms, margin loan balances must remain within the confines of the exchange's systems, making it easy to liquidate assets to repay the loan. System-wide losses during collateral price crashes can also be mitigated through features such as an insurance fund.

Debatable Scalability

Despite being the most popular DeFi application with 2.9 million ETH locked up on its smart contracts, it is debatable whether Dai can grow substantially enough to fulfill its primary goal of becoming a dominant stablecoin and means of exchange. Let's take a look at why this is the case.

A successful and widely used stablecoin needs two properties to be successful, price stability and liquidity. Since DAI's peg is likely to be mostly stable in the long run, the question becomes whether enough DAI can be issued to create a liquid enough market for DAI users. In our view, this is difficult. While the demand for DAI is theoretically unlimited up to a very large value, its supply will always be capped.

Firstly, MKR holders have a maximum risk tolerance for different collateral. If all the collateral types accepted by Maker are crypto, the high correlation between most cryptocurrencies will expose them to large price shocks that could wipe out the value of MKR. Given this risk, it is unlikely that MKR holders will be willing to substantially raise the debt ceiling to extremely high levels.

For DAI issuance to grow substantially, the system would need an uncorrelated portfolio of collateral whose prices move independently of one another. This includes tokenized real world assets such as stocks, bonds, commodities and real estate. Whether or not these tokenized assets will thrive as an asset class is, unfortunately, not within the control of the Maker team and MKR holders, but dependent on the success of platforms like Synthetix (which we will cover in another DeFi report).

Furthermore, DAI supply is tied to market participants' demand for debt from Maker. With all the competing options for lending available today (centralized exchanges, decentralized lending protocols), Maker would have to massively outcompete these alternatives to be able to issue significantly more DAI.

5.3 Interactions with Other Platforms

MakerDAO has grown tremendously since its launch to become the leading DeFi application. How does it tie into the wider world of crypto and DeFi?

Decentralized Exchanges

DAI is widely traded as a stablecoin paired with another token on decentralized exchanges, most notably on Uniswap, where the ETH-DAI liquidity pool is the third largest with a total of 27k ETH liquidity available. DAI liquidity is also present on the newly launched curve.fi stablecoin swapper.

Lending Platforms

Users can lend and borrow DAI on decentralized lending protocols such as Compound, where the rates offered are algorithmically determined. As of April 2020, DAI loaned and borrowed on Compound was a combined US$60 million, making it the most actively utilized token market on the platform.

Centralized Exchanges

DAI is currently listed on a number of centralized exchanges, including Coinbase, Bitfinex, and Kraken. The combined DAI trading volume has averaged roughly US$24 million from February to March 2020. See section below for more detailed statistics on MakerDAO and DAI.

6. Summary

6.1 Conclusion

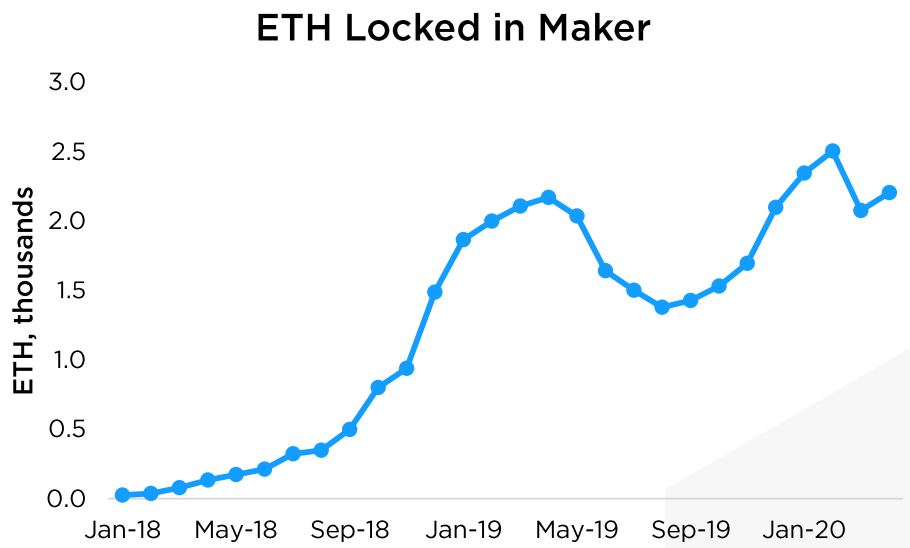
In conclusion, MakerDAO is a novel and innovative protocol that allows for on-chain collateralized borrowing, while also creating a reasonably effective stablecoin. This gives the crypto community an alternative to fiat-backed stablecoins like Tether. Furthermore, MKR holders continue to make iterative improvements to the protocol, so it is likely that one day the risks we outlined here can largely be mitigated.

Key Takeaways

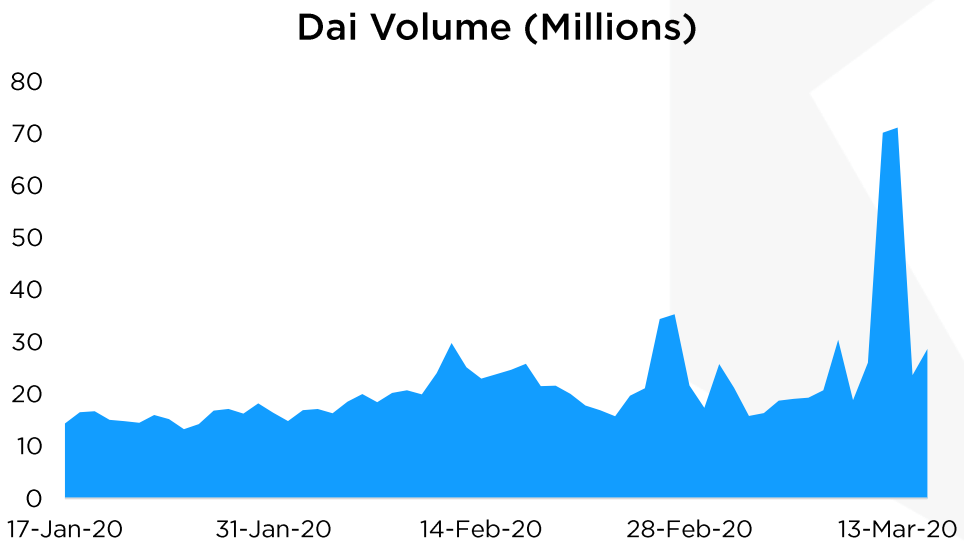
- Maker is an innovative system that give users the means to borrow without having to go through a centralized exchange;
- Dai (DAI) is a crypto-backed, trustless stablecoin that acts as an on-chain alternative to its fiat-backed counterparts;
- Baked in incentives for all actors in the system should work well to maintain the protocol's relative stability in the long run;
- Despite the theoretical soundness of the Maker protocol, there are major flaws in practice. The most significant is smart contract risk and the operation of the system under periods of network congestion, which in the past has led to periods of under-collateralization;
- DAI, though reasonably effective as a stablecoin, has much weaker price stability mechanisms compared to traditional stablecoins;
- It is unclear whether enough DAI can be issued to serve the needs of the crypto community, as this depends on many external factors;
- Maker governance will continue to iterate and improve on the protocol, as they have done in the past, so there is hope that they can fulfill their vision

6.2 Statistics

The value of assets locked in Maker by vault creators has grown significantly since its launch, and stands today at 2.2 million ETH (almost US$400 million at today's price of $170). After a four-month dip in assets in mid-2019, assets began to rise again in late 2019 with the launch of Multi-Collateral DAI.



Since the beginning of the year, DAI volume has averaged around $24 million per day. The large spike seen in mid-March is the result of Black Thursday-related buying activity from liquidators and vault creators.



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