

**eFiat**

# eFiat - White Paper

**eFiat Inc.**

First Edition  
*25 March 2017*

Second Edition  
*17 August 2017*

# 1. Executive Summary

*“We don’t need a Fed. I have, for many years, been in favor of replacing the Fed with a computer, which would print out a specified number of paper dollars... Same number, month after month, week after week, year after year.”*

*- Milton Friedman*

Well, Milton’s dream comes true. The success of cryptocurrencies like Bitcoin and Ethereum proves that we don’t need the Fed or any central banks. Today, we go one step further with the blockchain technology. A computer may crash, runs out of capacity... but blockchains will never! Blockchain is a continuously growing list of transaction records distributed and shared over the global infrastructure of computers, linked and secured using cryptography, and it cannot be overwritten or altered. No central authority holds the rights to access the shared database.

However, despite the success of Bitcoin, Ethereum, and many other cryptocurrencies, most cryptocurrencies contradicts Milton Friedman's Monetary Theory, in which their money supply (or money stock) is limited or capped due to the increasingly difficulty to mine. As pointed out in his book, “A Monetary History of the United States,” Milton argued that the Great Depression (1929-1939) was caused by a severe monetary contraction due to banking crises and poor policy on the part of the Federal Reserve. If the money supply of a cryptocurrency is capped or limited and cannot catch up with the increasing transactions of goods and services, deflation is bound to occur.

Furthermore, the price volatility of Bitcoin, Ethereum, and many other cryptocurrencies is huge, which make those tokens very good instrument for speculation, but not a good candidate for medium of exchange as one of the most important and essential functions of a medium of exchange is to have relatively stable purchasing power (real value). The vigorous fluctuations of many cryptocurrencies make the pricing of goods very difficult and hence increase the transaction costs.

**Money, to serve as a medium of exchange, no matter if it is fiat money or cryptocurrencies, should be**

- 1. adequate in supply to fulfill its needs in transactions;**
- 2. able to preserve purchasing power with an inherent value of its own.**

To address the above requirement of money, we propose a cryptocurrency token, called eFiat, with its money stock determined by the demand and supply of the currency through a currency board system. But unlike traditional currency board systems which are backed by currency reserves, eFiat’s reserves is backed by a basket of commodities, and we hope by which the purchasing power of the holder of eFiat can be protected and preserved.

## 2. Deficiencies of Common Cryptocurrencies

Bitcoin became the first decentralized cryptocurrency in 2009. Since then, numerous cryptocurrencies have been created. These are frequently called altcoins, as a blend of bitcoin alternative. Bitcoin and its derivatives use decentralized control as opposed to centralized electronic money/centralized banking systems. Blockchains are auditable, unalterable and cryptographically secured global ledgers distributed and shared over the global infrastructure.

Bitcoin was created as “an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party.” [1].

However, Bitcoin, as well as many other crypto-currencies, has two major flaws in fulfilling a money’s function in economics: 1) limited money supply, 2) volatile price swings.

1. We take Bitcoins as an example. Bitcoin’s money stock will be eventually capped at 21m units. The limited supply of Bitcoins and many other crypto-currencies causing a number of coins not to catch up with the uses in the increasing economic activities as the economy grows. It will come to a point where, as the demand for Bitcoin rises, the value of the currency will go up, which implies the price of goods and services will fall, in order word, deflation. In fact, deflation is always a monetary phenomenon caused by money supply.

The quantity theory of money (QTM) asserts that aggregate prices (P) and total money supply (M) are related:

$$P = VM/Y$$

- V**, is the velocity of money;
- Y**, is the aggregate real output;
- P**, is the price level; and
- M**, is the total money supply.

As the aggregate real output (Y) increases, general price level (P) decreases given the velocity of money (Y), and money supply (M) level remain unchanged.

2. The volatility of cryptocurrencies is also a problem, as no one knows really where the price will be in six months or a year from now, which creates uncertainties if it is used as a medium of exchange.



1-year Bitcoin price as of 27 August 2018 (Source: Coinbase)



1-year Ethereum price as of 27 August 2018 (Source: Coinbase)

## 2.1 Money as a Medium to Store Purchasing Power

Purchasing power is the value of a currency expressed regarding the amount of goods or services one unit of money can buy. Consumers lose purchasing power when prices increase and gain purchasing power when prices decrease. Causes of purchasing power loss include government regulations, inflation, and natural and manmade disasters.

eFiat is proposed to protect the purchasing power and hence to fulfill the basic requirement of money, that is, to store value and hence purchasing power.

## 2.2 Steven Cheung's Monetary Theory - Anchoring to a Basket of Commodities

Steven Ng-Sheong Cheung (Chinese: 張五常; born 1 December 1935), a Hong Kong-born American economist who specializes in the field of transaction costs and property rights, following the approach of new institutional economics. He achieved his public fame with an economic analysis on China open-door policy after the 1980s. In his studies of economics, he focuses on the economic explanation that is based on real world observation. He is also the first to introduce core economics concepts from the Chicago School of Economics, especially price theory, into China.

**In 2003, Professor Cheung first proposed that Renminbi, the official currency of the People's Republic of China, should be anchored to a basket of commodities, which is made up of consumer goods generally purchased by households.** Cheung suggested the basket of commodities can be futures or spot commodities which can be traded in the market.

Professor Cheung believes the major function of money is to act as a medium of exchange in the transaction and therefore, currency stability is very important. If a currency is anchored to a basket of commodities, the stability of the currency can be achieved as the purchasing power of the currency, which is anchored to the basket of commodities, remains consistent over time.

The goals of eFiat are:

1. Eliminate the role of central banks;
2. Minimize the volatility;
3. Maintain the purchasing power;
4. Act as a medium of exchange in the daily transactions.

## 3. The Economics of eFiat

### 3.1 Monetarism

Money is one of the most complicated and controversial subjects in economics. We are the believers of monetarism, an economic theory which focuses on the macroeconomic effects of a nation's money supply and its central banking institution. Monetarism focuses on the supply and demand for money as the primary means by which economic activity is regulated. Formulated by Milton Friedman, it argued that excessive expansion of the money supply will inherently lead to price inflation and that monetary authorities should focus solely on maintaining price stability to maintain general economic health.

### 3.2 Our Solution - eFiat

Our proposed cryptocurrency is called “eFiat.”

eFiat is issued by utilizing smart contracts which are implemented from Ethereum Blockchain, the most widely used secure smart-contract platform today.

Each unit of eFiat issued is backed by a basket of commodities in the custody of California based eFiat Inc.

The basket of commodities will be represented as a portfolio of the futures contract of commodities which can be traded in worldwide commodities and futures exchanges like Chicago Mercantile Exchange. The futures contracts will be automatically rollover before expiration so as to approximate the holding of commodities. The initial weightings of futures contracts are as below:

Code	Futures	Percentage
<b>Energy</b>		
CL	Crude Oil	12%
NG	Henry Hub Natural Gas	12%
RB	RBOB Gasoline	10%
		<b>34%</b>
<b>Agriculture</b>		
C	Corn	11%
S	Soybean	11%
W	Chicago SRW Wheat	11%
LE	Live Cattle	8%
LN	Lean Hog	8%
		<b>49%</b>
<b>Precious Metals</b>		
GC	Gold	9%
SI	Silver	8%
		<b>17%</b>
	<b>Total:</b>	<b>100%</b>

### 3.3 The Money Supply of eFiat

eFiat is, in essence, a Currency Board system, which requires both the money stock issued and the flow of the monetary base to be fully backed by reserves. In eFiat’s case, it’s the basket of commodities approximated by a portfolio of long positions in futures contracts. The weighting of each commodity in the basket is initially defined by eFiat Inc prior to its initial coin offering. However, in order to achieve decentralization of eFiat, the weighting of each commodity **will be determined by the holders of eFiat through an Ethereum Blockchain based voting mechanism.** (See section 3.5 *Decentralization and Voting Mechanism in eFiat Basket of Commodities*).

The reserves behind eFiat’s currency board is a basket of commodities with a predefined weighting, which is represented by a portfolio of long positions of the futures contracts. eFiat’s value tends to mimic the

prevailing price of the basket of commodities, through the following operations required by an “orthodox” currency board:

- eFiat Inc's basket of good reserves must be sufficient to ensure that all holders of eFiat can convert them into real currencies or digital currencies, equivalent to the nominal value of the underlying portfolio of the commodities.
- eFiat Inc maintains absolute, unlimited convertibility between eFiat and equivalent nominal value of the basket of commodities during the redemption period.
- eFiat Inc always engages in long positions of commodities by acquiring the related futures contracts of the basket of commodities.
- 10% of the funds received will be held as a reserve in USD to facilitate the smooth process in the issuance and redemption of eFiat.
- eFiat Inc may earn interests on cash held as reserves (less the transaction of the cost of eFiat issuing).
- eFiat Inc does not engage in ANY speculative transactions.
- The major transactions engaged by eFiat Inc are the long positions of the required futures contracts of the basket of commodities.
- eFiat Inc will not issue extra eFiat that is not backed by the reserve represented by the basket of commodities.

### **3.4 How the Price of eFiat is determined**

eFiat is fully redeemable to a value of the underlying basket of commodities calculated based on the current prices of the commodities in the basket from eFiat Inc to basket of commodities during the redemption period i.e. between 1st and 15th (inclusive) of each month, during which holders of eFiat can convert eFiat to real currencies or digital currencies, equivalent to the nominal value of the underlying portfolio of the commodities.

The price of eFiat is always determined by the demand and supply of eFiat, and its value can be fluctuating. However, we believe, due to the redemption mechanism, the value of eFiat will be moving more or less the same as its underlying value of the basket of commodities.

eFiat can be transferred, stored, or spent, just like Bitcoins, Ethereum, or many other cryptocurrencies.

eFiat has the following advantages over other fiat pegged cryptocurrencies:

- Similar to Bitcoins, Ethereum, or many other cryptocurrencies, eFiat can be used pseudo-anonymously under decentralized, cryptographically secure environments.
- eFiat can be easily integrated with merchants as a low-cost payment solution, stored in wallets, and traded over cryptocurrency exchanges.
- eFiat will not have large volatility as it is operated under a currency board system and is fully backed by the reserve represented by the basket of commodities.

- eFiat can preserve holder's purchasing power as it is anchored to a basket of commodities.
- Anyone can purchase eFiat from eFiat Inc, or from cryptocurrency exchanges.

### **3.5 Decentralization and Voting Mechanism in eFiat's Basket of Commodities**

eFiat is targeted to be a decentralized and democratic cryptocurrency based on the Ethereum Blockchain. We allow the holders of eFiat to vote for the choice and weighting of eFiat's Basket of Commodities. The way this democracy works is that eFiat Inc will grant the holder of eFiat the voting right according to the amount of eFiat he/she owns. We propose a holder of 0.01 unit of eFiat will be granted 1 vote.

To achieve true democracy, any holder of eFiat can make a basket of commodities proposal, which consists of a proposed choice of commodities and weightings of each commodity. The proposal is in the form of blockchain transaction, and other members can vote in support or against the proposal. eFiat Inc decides to organize two voting campaigns each year, and an adoption of a new basket of commodities proposal only occurs if:

1. the basket of commodities proposal has received the highest number of votes in a voting campaign; and
2. more than 50% of the holders participate in the voting campaign.

## **4. Technology Stack and Processes**

### **4.1 eFiat's Blockchain**

eFiat utilizes smart contracts which are implemented from Ethereum Blockchain, the most widely used secure smart-contract blockchain platform today. Ethereum is a decentralized platform that runs smart contracts: applications that run exactly as programmed without any possibility of downtime, censorship, fraud, or third party interference.

The Ethereum Blockchain is currently an enormously powerful shared global infrastructure that can move value around and represent the ownership of assets, including eFiat. With the Ethereum Blockchain, eFiat Inc stores the ownership of eFiat creates exchange markets and allows the free float of eFiat.

The total amount of eFiat in circulation is set in accordance to a pre-defined basket of commodities in which the weighting of each commodity set by holders of eFiat via Ethereum Blockchain voting. Therefore, a unit of eFiat is always backed by a basket of commodities, which is represented by a portfolio of long positions of the futures contracts of these commodities.

### **4.2 Operation of Buying and Selling of Commodities in Futures Markets**

1. eFiat Inc will have at least two accounts with two execution brokers who can provide an application programming interface (API) for:
  - a. commodity trading;
  - b. real currencies exchange (*note*: eFiat Inc is not focusing on forex trading, we only do the FX exchange for non-US dollars into USD);

- c. fund deposit & withdrawal; and
  - d. market data for our basket of the commodity.
2. eFiat Inc will open at least two accounts with two cryptocurrencies exchanges who can provide an application programming interface (API) for:
    - a. cryptocurrencies trading;
    - b. fund and cryptocurrencies deposit & withdrawal; and
    - c. market data for cryptocurrencies.
  3. On every 30-min intervals (Note-1, Note-2), eFiat Inc will sum up the subscription and redemption requests of eFiat and calculate the '**Net Fund-in**' or '**Net Fund-Out**' signals.
  4. If 'Net Fund-In' signal is received:
    - a. The received cryptocurrencies will be automatically deposited into our accounts at crypto exchanges to convert to USD and further deposit into our accounts at execution brokers for our commodity trading.
    - b. The received real currencies will automatically deposit into our accounts at execution brokers and convert to USD (for non-USD) to be ready for our commodity trading.
    - c. A basket of buy orders will be automatically sent to the execution brokers which is based on our pre-defined strategy (Note-3).
  5. If 'Net Fund-Out' signal is received:
    - a. A basket of sell orders will be automatically sent to the execution brokers which is based on our pre-defined strategy (Note-3).
    - b. The required US dollars for eFiat redemption will be withdrawn from execution brokers and transfer to eFiat Inc's bank account for eFiat redemption.

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● Note-1, the time interval can be revised

● Note-2, since eFiat is back by a basket of commodities, the trading of eFiat is available on valid trade dates of commodity exchanges.

● Note-3, although the commodity contracts are traded on margin leverage, our strategy may not use the margin leverage to 'over hold' the commodity position that over our control. So, the chance of being margin call will be low.



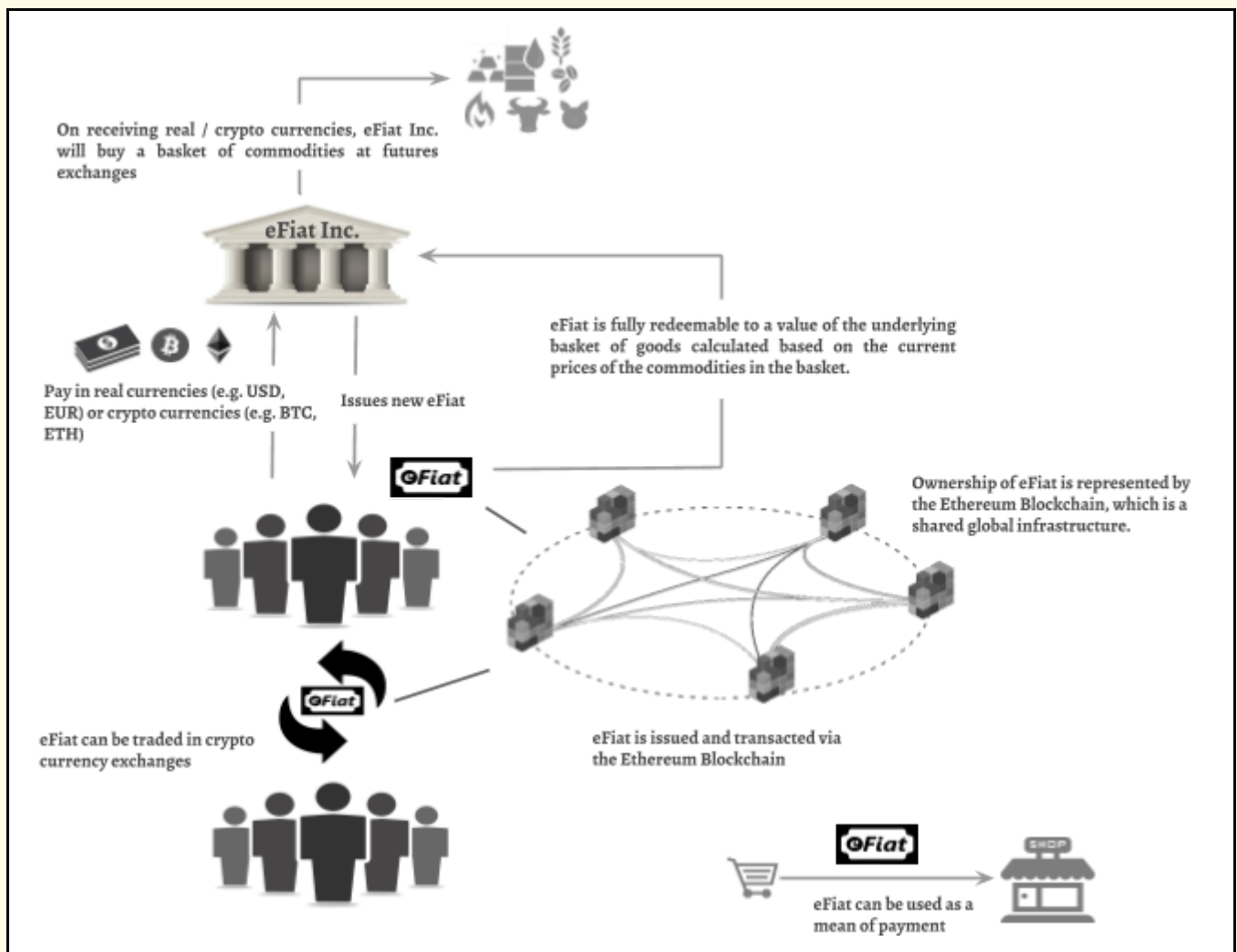


Figure 4.1 eFiat in action

### 4.3 Fair Value of eFiat and Arbitrage

The fair value of 1 unit of eFiat can be determined by the current market value of the long positions of the futures contracts of the basket of commodities divided by the number of eFiat issued.

**Current Market Value of Futures Contracts of Basket of Commodities**

$$\text{Fair Value of eFiat} = \frac{\text{Current Market Value of Futures Contracts of Basket of Commodities}}{\text{Number of eFiat Issued}}$$

To increase the transparency of eFiat and to minimize its price fluctuations, eFiat Inc decides to provide the fair value of eFiat on a near real-time basis on eFiat's official website. In fact, since the weighting of each commodity in the basket of commodities is an open information, traders of eFiat can always calculate the fair value of eFiat on a real-time basis and take arbitrage when it deviates from its fair value.

Whenever eFiat deviates from its fair value, arbitrage opportunities will emerge and investors can earn a risk-free arbitrage profit. For example, if it is trading below its fair value, an investor can buy eFiat and simultaneously short a relevant amount of futures contracts of the basket of commodities backing it, so as to earn an arbitrage profit, given such an arbitrage profit is higher than transaction costs.

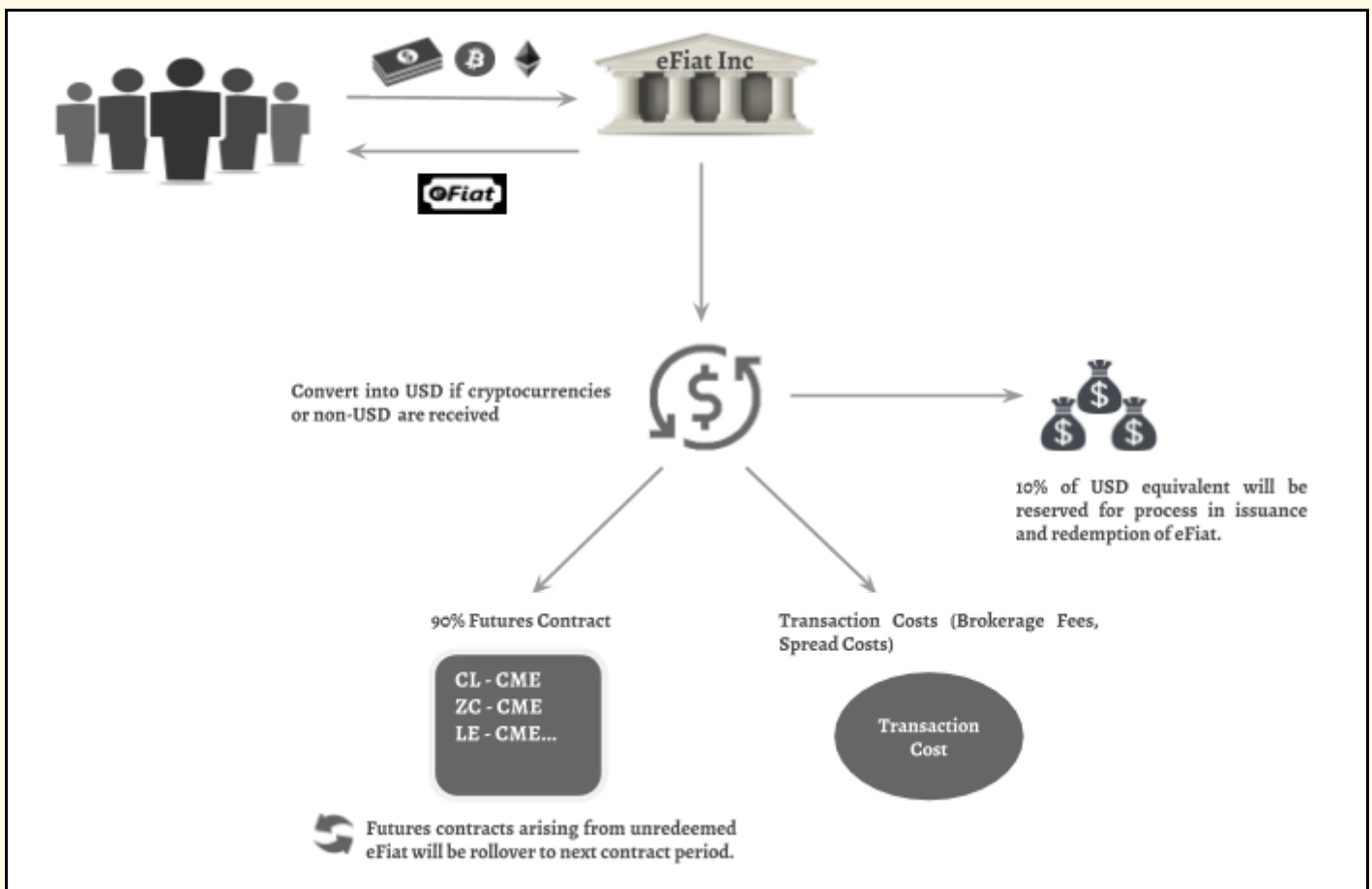
If the number of market participants is large enough, risk-free arbitrage profits tend to be diminished shortly and we believe such an arbitrage mechanism facilitates the stability of the price of eFiat, by

narrowing its price fluctuation around its fair value and thus making eFiat not a speculative cryptocurrency.

## 5. Issuance and Redemption of eFiat

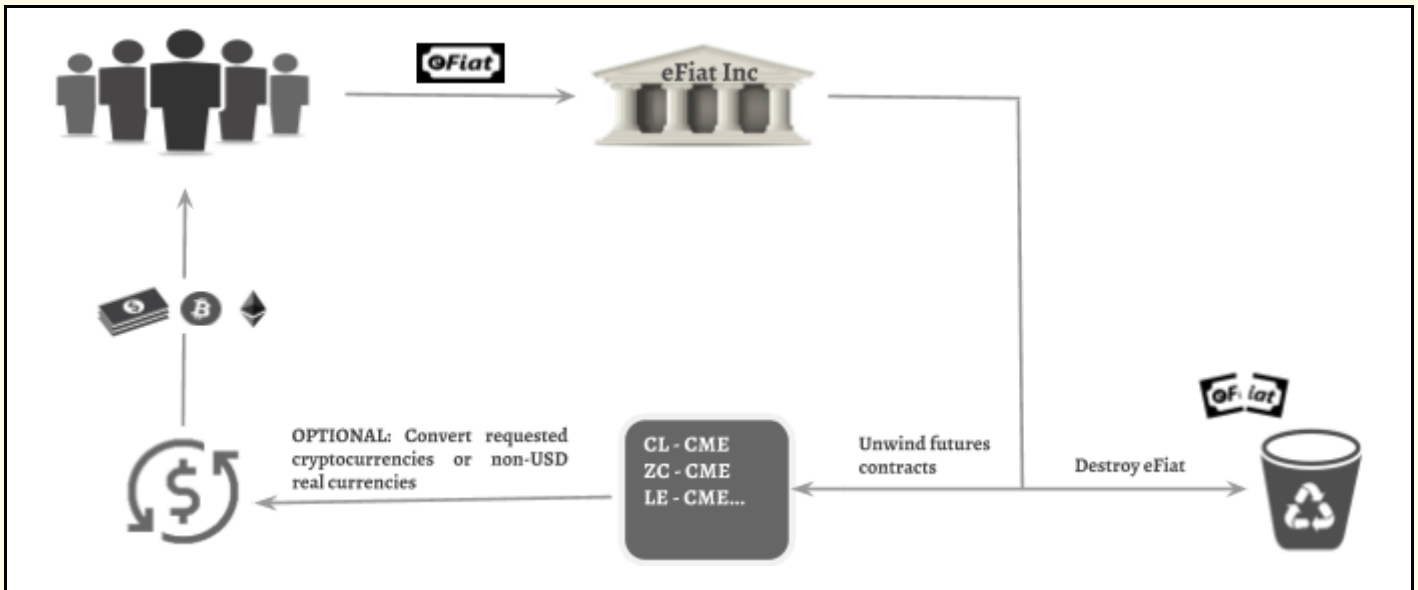
### 5.1 Issuing eFiat

- A buyer of eFiat can send real currencies (e.g., USD, EUR) or cryptocurrencies (e.g., BTC, ETH) to eFiat Inc.
- If cryptocurrencies or non-US dollars are received, eFiat Inc will convert them into USD.
- 10% of the funds received will be held as a reserve in USD to facilitate the smooth process in the issuance and redemption of eFiat.
- eFiat Inc generates and credits the buyer's eFiat wallet, via the Ethereum Blockchain. eFiat will then enter into circulation among people until its redemption.
- Initial Coin Offering of eFiat is set at 10:1 ratio to ETH.
- Holders of eFiat can trade eFiat in supported cryptocurrency exchanges. eFiat can also be transferred, exchanged, and stored via a p2p, open-source, and pseudo-anonymous platform.



## 5.2 eFiat Redemption

- Holders of eFiat can redeem eFiat to cryptocurrencies like Bitcoin, Ethereum or real currencies like USD from eFiat Inc.
- eFiat Inc will unwind the underlying futures contract and destroys the eFiat. eFiat Inc sends amount equivalent to the nominal value of the portfolio of the underlying commodities to holders. Holder can request USD, non-USD real currencies or other cryptocurrencies in redemption.
- Users can obtain eFiat via a supported exchange or from other holders of eFiat. Once an eFiat enters circulation it can be traded freely.



## 5.3 Monthly Redemption Schedule

Day			
1	T	00:00 EDT	New Token offering (if applicable)
	T+1		if $((r / i) > 0.1)$ , Buy Futures Bank transfer (Net USD)
15	D	00:00 EDT	Redemption Request Cut Off
	D+1		Portfolio Calculation if $((r / i) < 0.1)$ , Sell Futures Bank transfer (Net USD)
	D+3		Transfer USD, BTC or ETH
25-30	S		Contract Switch - Auto rollover

*r: reserved USD, i: eFiat issued*

## 6. Proof of Reserves

eFiat Inc strives to maintain a high transparency. The portfolio of eFiat Inc will be published on its website on a real time basis.

- Amount of eFiat issued
- Amount of eFiat in circulation
- Amount of USD in reserve
- USD reserve in Financial & Operational Costs
- Futures contract position holding
- Reference value of eFiat ( $v$ )

$$v \sim (r + n) / i$$

*n: futures contract N.A.V. in USD, r: reserved USD, i: eFiat issued*

## 7. Risks Factors of eFiat

### **Important Disclaimer:**

**A purchase of eFiat Tokens involves a high degree of risk. You should consider carefully the risks described below, together with all of the other information contained in this Whitepaper, before making a decision to purchase. The following risks entail circumstances under which, eFiat Inc's business, financial condition, results of operations and prospects could suffer.**

**This White Paper does not constitute an offer to sell, or a solicitation of an offer to buy, an interest in eFiat Tokens.**

### **Participation in token sales, including the Lydian token sale, involves a high degree of risk.**

A prospective purchase of eFiat Tokens involves a high degree of risk, volatility, and illiquidity. A prospective purchaser should thoroughly review the information contained herein and the terms of eFiat Tokens, and carefully consider whether the purchase of Tokens is suitable per the individual's financial situation and goals. The Ethereum Platform does not guarantee that there will be a market into which a Token holder may be able to sell their Tokens.

### **Risks associated with price fluctuations of eFiat Tokens**

Purchase of eFiat Tokens are denominated in United States Dollars and purchasers may tender United States dollars, Bitcoin or Ethereum in exchange for eFiat Tokens. Such currencies are subject to any fluctuation in the rate of exchange and, in the case of digital assets, the exchange valuations. Such fluctuations may have an adverse effect on the value or price of eFiat Tokens.

### **Risks associated with the liquidity of eFiat Tokens**

Since there could be no cryptocurrency exchanges for eFiat Tokens, it may be difficult or even impossible to sell eFiat Tokens. There is never a guarantee that there will be an active market for one to sell, buy, or trade eFiat Tokens. Furthermore, any market for eFiat Tokens may abruptly appear and vanish. We make no representations or warranties about whether eFiat Tokens that can be traded on cryptocurrency exchanges.

### **eFiat Inc may be forced to cease operations or take actions that result in a dissolution event.**

Should eFiat Inc be forced to cease operations or take actions that result in a Dissolution Event, eFiat Inc cannot provide assurance a market for its eFiat Tokens shall continue to exist.

### **The regulatory regime governing the blockchain technologies, cryptocurrencies, tokens and token sales such as eFiat Tokens is uncertain or nonexistent in many jurisdictions, and new regulations or policies may materially adversely affect the eFiat Tokens and eFiat Inc.**

As blockchain networks and blockchain assets have grown in popularity and in market size, federal and state agencies have begun to take interest in, and in some cases regulate, their use and operation. Regulation of tokens (including eFiat Tokens) and token sales such as this, cryptocurrencies, blockchain technologies and cryptocurrency exchanges is largely undeveloped and likely to rapidly evolve, varies significantly among international, federal, state and local jurisdictions and is subject to significant uncertainty in legal and regulatory interpretation and enforcement. Various legislative and executive bodies in the United States and in other countries may in the future, adopt laws, regulations, guidance, or other actions, which may materially adversely affect or otherwise severely impact the development and growth of eFiat Inc and the adoption and utility of eFiat Tokens. Failure of any party to comply with any laws, rules and regulations, some of which may not exist yet or are subject to interpretation and may be subject to change, could result in a variety of adverse consequences, including criminal and civil penalties, suspension of trading and fines.

### **Risks associated with the use of Ethereum Blockchain.**

- The Ethereum Blockchain Network may not be widely adopted and may have limited users.
- Alternative networks may be established that compete with or are more widely used than the Ethereum Network.
- The open-source structure of the Ethereum Blockchain Network protocol means that the Ethereum Blockchain Network may be susceptible to developments by users or contributors could damage the Ethereum Blockchain Network and eFiat Inc's reputation and could affect the utilization of eFiat Tokens.
- The Ethereum Blockchain Network may be the target of malicious cyberattacks or may contain exploitable flaws in its underlying code, which may result in security breaches and the loss or theft of Tokens.

### **Risks associated with patent and intellectual property claims**

We have had patent, copyright, and trademark infringement lawsuits filed against us claiming that certain of our products, services, and technologies infringe the intellectual property rights of others. Adverse results in these lawsuits may include awards of substantial monetary damages, costly royalty or licensing agreements, or orders preventing us from offering certain features, functionalities, products, or services, and may also cause us to change our business practices, and require development of non-infringing products or technologies, which could result in a loss of revenues for us and otherwise harm our business.

**Risks associated with legal proceedings.**

eFiat Inc undertakes global business operations and is involved from time to time in disputes, including lawsuits and other legal proceedings, and investigations by relevant authorities. It is possible that such cases may arise in the future.

**Our operations depend on the continuing efforts of our senior management team and other key personnel and our business may be harmed if we lose their services.**

Our operations depend upon the continuing services of our management team. We must continue to attract, retain and motivate a sufficient number of qualified personnel to maintain consistency in the quality and operation of our business. In addition, competition for experienced management and operating personnel in the FinTech industry is intense, and the pool of qualified candidates is limited. We may not be able to retain the services of our key management and operating personnel or attract and retain high-quality personnel in the future.

**This issuance of eFiat Tokens may constitute the issuance of a “Security” under U.S. Federal laws and regulations or those of other jurisdictions.**

eFiat Tokens may be considered a “security” as that term is defined in the Securities Act or under the securities law of any other jurisdiction. On July 25, 2017, the United States Securities and Exchange Commission (“SEC”) issued a Report of Investigation under Section 21(a) of the Securities Exchange Act of 1934 (the “Exchange Act”) describing an SEC investigation of The DAO, a virtual organization, and its use of distributed ledger or blockchain technology to facilitate the offer and sale of DAO Tokens to raise capital. The Commission applied existing U.S. federal securities laws to this new paradigm, determining that DAO Tokens were securities. The SEC stressed that those who offer and sell securities in the U.S. are required to comply with federal securities laws, regardless of whether those securities are purchased with virtual currencies or distributed with blockchain technology.

If the eFiat Tokens were deemed to be a security under U.S. federal securities laws then eFiat Inc will be required to register such issuance under the Securities Act absent an available exemption and/or may be subject to civil and/or criminal investigations, proceedings and penalties, any of which might have a material adverse effect on eFiat Inc. The registration of eFiat Tokens under the Securities Act could adversely affect the issuance of eFiat Tokens and would require eFiat Inc to incur substantial additional legal and compliance expenses. In addition to United States securities laws, eFiat Tokens may be deemed to be securities by regulators or monetary authorities in other jurisdictions under applicable securities or banking regulations, and thus eFiat Tokens could be subject to registration requirements. Failure to comply the related rules and regulations may lead us to civil and criminal investigations, proceedings and penalties, which might have a material adverse effect on eFiat Inc.

**Risks associated with taxation.**

The tax characterization of eFiat Tokens is uncertain. Your purchase of eFiat Tokens may result in adverse tax consequences to you, including withholding taxes, income taxes, and tax reporting requirements.