

Bizantine Capital



Automated Market Makers

A Paradigm Shift in the Properties of Currencies

Today, a currency must assume three roles to achieve widespread adoption: a store of value [1], a medium of exchange [2], and a unit of account [3]. Store of value tends to separate itself entirely from the other two characteristics. The assets that make the strongest stores of value have historically been the least transactable; today, wealth is primarily stored in equities, debt, and alternative assets (i.e. commodities and art). If you held USD cash for the past ten years, the value of that cash would be significantly less now, even though USD cash is the most useful currency to transact globally.

Store of values have failed to be transactable for two reasons: a) they exist on legacy, inefficient [transfer rails](#), which renders them a poor medium of exchange, and b) their value [fluctuates too frequently](#) to be a viable unit of account. Additionally, fiat currencies are able to be moved into stores of value efficiently enough such that those who acquire fiat can maintain their wealth; users of fiat currencies typically move their excess fiat (the money not used to purchase goods and services) into capital or commodities markets within a few days, via online brokerage accounts.

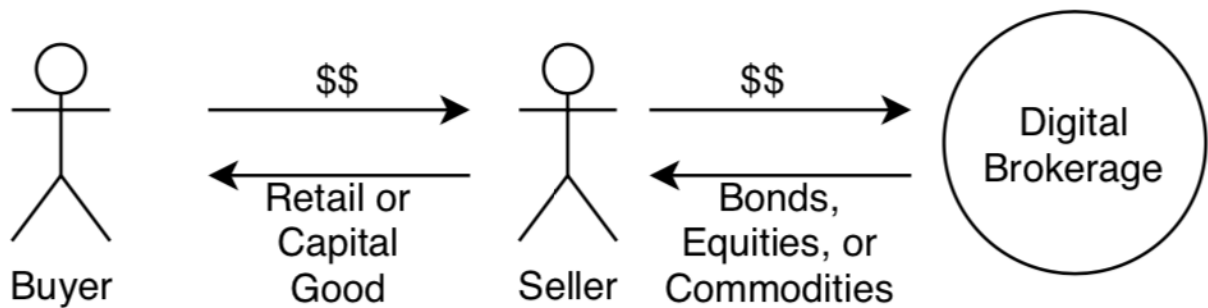


Image 1: Capital flows from buyers to sellers to capital/commodities markets

The process of going from: Selling a retail good/service or capital good for cash, and then selling that cash for equities/bonds/commodities will be made dramatically more efficient by automated market makers (AMMs) on public blockchains, consequently affording consumers of all income, and of all countries, dramatically improved savings capabilities .

The Tech

As a standalone technology, blockchains allow any asset that can be represented on a blockchain (i.e. bonds, securities, real estate, central bank digital currencies) to become a viable medium of exchange. The transfer of assets represented on a blockchain can be cleared in 13 seconds and settled in two minutes, for a few cents in fees [4].

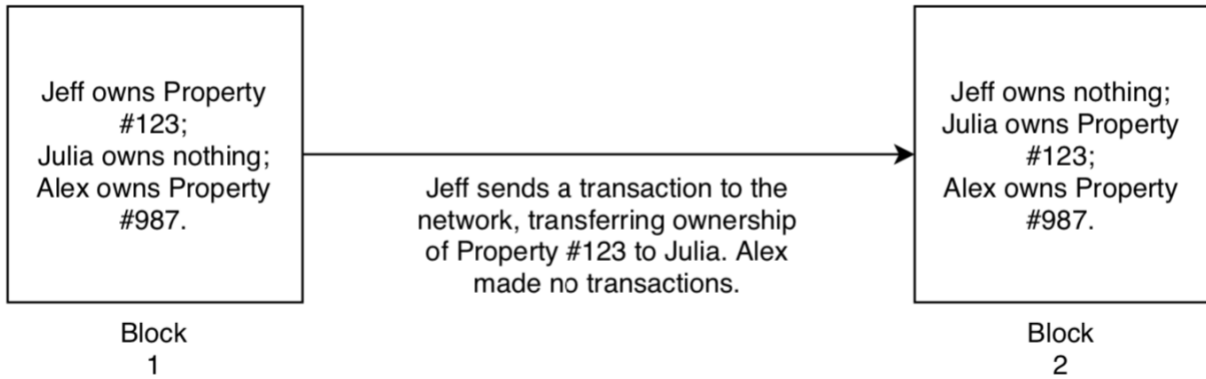


Image 2: The process of transferring assets on a blockchain

AMMs allow for the frictionless exchange between assets on a blockchain. An AMM on a blockchain is simply a [liquidity pool](#) of multiple assets [5] with a [pre-programmed pricing curve](#) that prices the assets in the pool relative to each other based on the amount of each asset in the pool [6]. The amount of each asset in the pool changes as users trade against the pool, consequently changing the price of the assets in the pool according to the curve.

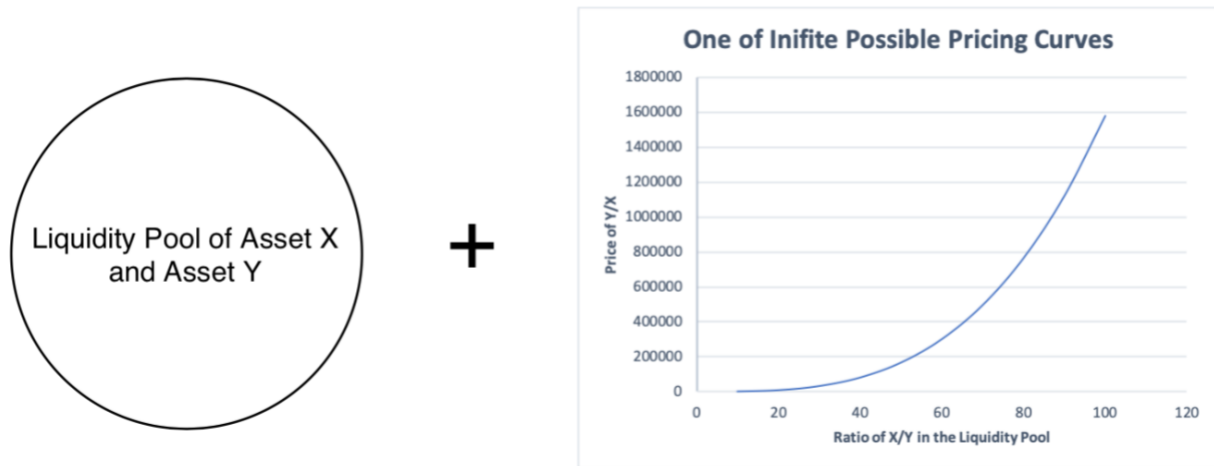


Image 3: The basics of AMMs

The combination of blockchains and automated market makers renders the following outcome in any exchange between parties: the asset that the payer uses to pay no longer must be the same asset that the payee accepts.

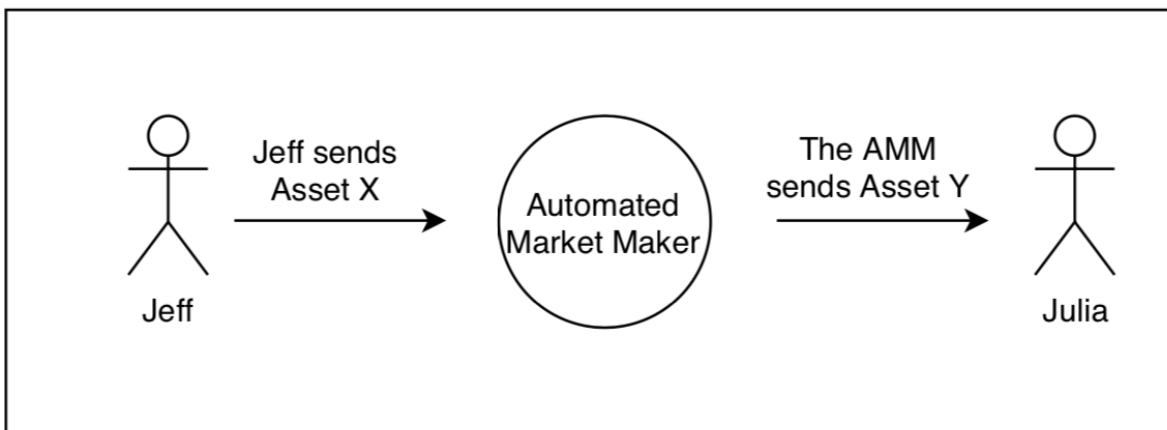


Image 4: The process of Jeff paying Julia, without ever holding the asset Julia wants

The entire process (of the payer exchanging assets with an AMM and sending that newly acquired asset to the payee) happens in one blockchain-native transaction, and thus only takes 13 seconds to clear and two minutes to settle [6]. Because an AMM’s liquidity pool can consist of any tokenized asset, Asset X and Asset Y in **Image 4** can be any asset, from digital fiat currencies to tokenized equities to tokenized real estate. Asset X and Asset Y could even represent a pool of assets: Jeff could pay with digital euros, Amazon stock and Chilean residential REITs, while Julia could receive digital dollars, Apple stock, and basket of American manufacturing REITs [7]. The total fees of a complete transaction, even one involving multiple AMMs, will be at a fraction of the cost of conducting a payment today in the same currency via modern payment rails, such as VisaNet.

AMMs completely alter the modern paradigm of a currency’s functionality. The store of value property grows in significance; the assets that make adequate stores of value remain constant, but with the addition of interest-bearing [neo-commodities](#) that make these types of complex, frictionless transactions possible [8]. The medium of exchange and units of account properties decrease dramatically in significance: any asset becomes a medium of exchange, and, consequently, the payer no longer needs to hold the asset the payee accounts in.

	Today (no AMMs at scale)	Future (AMMs at scale)
Store of Value	Real estate, bonds, equities, commodities, fiat currencies	Same as before + the neo-commodities that underpin public blockchains
Medium of Exchange	Barring outliers, only fiat currencies serve as medium of exchanges	Any asset (with sufficient liquidity in an AMM) can become a viable medium of exchange
Unit of Account	Payer must hold the currency	Payer can hold any asset

	that the payee accounts in	(with sufficient liquidity in an AMM), exchanging it in real-time for the asset that the payee accounts in
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Implications of the Paradigm Shift: Consumer Benefits

AMMs on public blockchains will generate profound changes for everyday consumers. The internet turned everyone into a journalist; public blockchains turn everyone into an investor. Consumers of all wealth classes will be able to fully optimize their digital wallets/bank accounts such that they passively earn as much as possible according to their risk threshold. Previously, this type of portfolio optimization was only afforded to the very wealthy (and even then, AMMs on public chains increase the efficiency of the very wealthy’s portfolio optimization).

What does this look like on the ground level? Consumers will have the option of merging their checking and saving accounts into one account, paying proportionately with all assets when spending from that account. Consumers could still maintain the status-quo of separating one portion of their account for checking and another for saving, but their checking account could be composed of stronger stores of value than non-interest bearing digital bank credits, today’s status quo for checking accounts.

Another substantial consumer benefit is reduced friction of foreign exchange when travelling globally. The excess fees charged by retail FX desks globally will disappear. However, this reduction in friction alone will not be not enough to significantly grow global travel; reduced travel time via [faster flights](#) will play a much larger influence in this sector.

Implications of the Paradigm Shift: the Macroeconomy

Personal consumption [accounts for between 60-70% of America’s gross domestic product](#) (GDP) [9]. Consumption’s majority share of GDP would indicate that AMMs on public chains would have their greatest impact via changing how consumers pay for goods. However, and while this may be counterintuitive at first, AMMs on public chains will have a greater impact on the world via their use in the macroeconomy, namely on how countries and international corporations transact [10]. AMMs give countries and corporations the same capabilities as consumers: these parties no longer need to hold the same currency to transact with each other.

Countries/corporations engaging in large transactions will require an extremely large liquidity pool in an AMM. It is unlikely that a liquid enough AMM will be created for every currency pair [11]. Thus, we expect that there will be a single currency, a reserve currency, that most fiat currencies have an extremely liquid AMM with, allowing for this single currency to be the middleman between all fiat-to-fiat transactions.

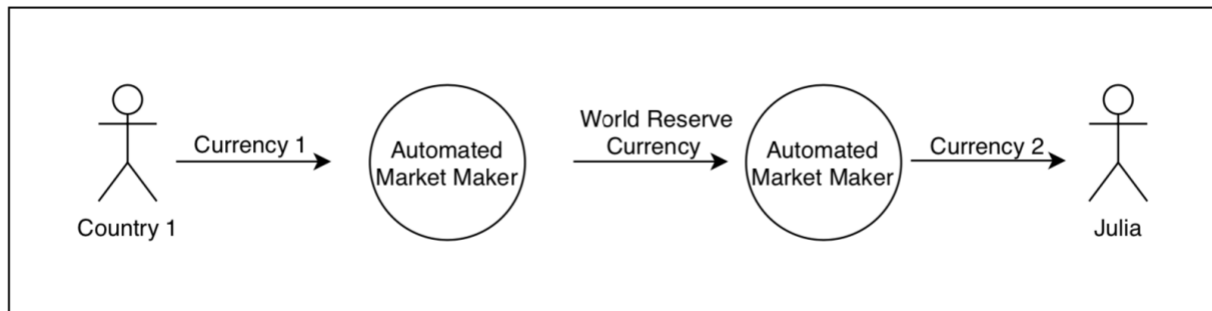


Image 5: The process of two countries conducting an FX transaction. The process of using two AMMs can still be programmed into one single transaction on a public blockchain (and thus the transaction in Image 5 would be cleared in 13 seconds and settled in two minutes, for a fee of a few cents).

Due to the impending decline of the dollar in the East and the extreme hesitancy to hold RMB in the West, [this single currency is most likely to become Ether](#), the same asset that will secure all foreign currency and asset exchanges. Ether will lead a new [Pareto distribution of reserve currencies](#), subsuming ~60% of market share, as the dollar does today. However, the road to the Ether standard (a neo-gold standard) will not be smooth. It will only happen after governments battle for the next decade, attempting to save their economies from the terrible position almost all of them are in.

You can find the rest of our insights on the macroeconomy, how we will go from today to the Ether standard, [here](#).

Endnotes

[1] People must be willing to hold the currency for extended periods of time; this can be achieved organically or through force (i.e. capital controls). Fiat currencies inflation rates exceeding their interest rates violate this condition and thus are poor currencies.

[2] People must be able to pay in that currency; numerous Fortune 100 companies have made their profits by significantly reducing the friction to pay with fiat currency globally. Currencies without efficient payment rails (i.e. commodities) violate this condition and thus are poor currencies.

[3] People must be able to buy items and services in the currency; if a currency is not a unit of account, it must eventually be exchanged for a more liquid currency that is a unit of account. A currency that requires two transactions follows a similar fate as currencies that do not have an efficient medium of exchange: increased friction (in other words, poor usability) renders poor currencies.

[4] These numbers are based on Ethereum, the most used public blockchain for the transfer of digital assets.

[5] A liquidity pool is pools of digital assets in a smart contract) with a [pre-programmed pricing curve](#).

[6] A pricing curve dictates the price of the assets relative to each other, based on how many of each asset are in the pool.

[7] This would require the use of six AMMs, one for each of the three assets being sold and one for each of the three assets being bought, but would still be possible in one transaction, cleared in 13 seconds and settled in two minutes.).

[8] The interest received for staking neo-commodities can be converted frictionlessly via AMMs into another asset, if desired. Staking entails locking one’s neo-commodities in a smart contract to secure a public blockchain.

[9] GDP is the total value of goods and services sold by a country.

[10] While the US’s trade exports only account for [12% of GDP](#), the US’s capital exports far exceed the US’s GDP; the combination of American government debt held by foreigners, American corporate debt held by foreigners, and foreign debt denominated in dollars exceeds \$70trn, over three times the US’s GDP [10a].

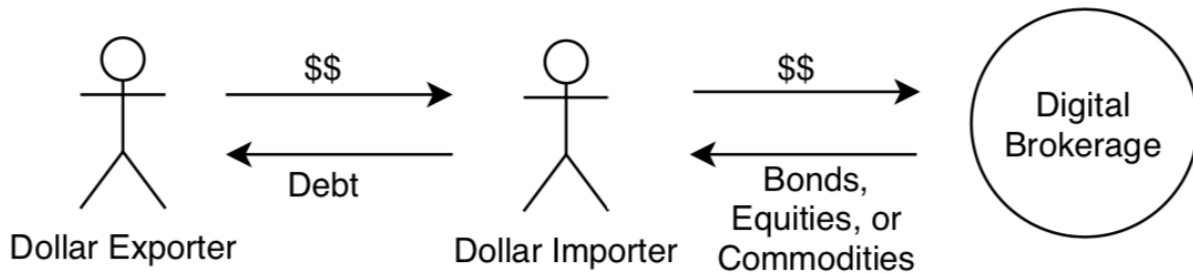


Image 6: The process of dollar exporters sending dollars in return for debt

[10a] The total outstanding debt issuance by foreign countries in dollars ([currently ~60trn](#)) alone is five times larger than the personal consumption of Americans (American GDP is ~20trn, which means consumption is approximately ~12trn). Additionally, the percentage of debt issued by the US government (~\$24 trn) and corporations (~\$10trn) held by foreign countries companies is somewhere around 30%, another \$11trn (34trn * 0.30) of dollar exports (It’s difficult to give precise numbers because a significant portion of debt is held by private individuals that can sell the debt. If only there was a universal ledger where all of this data could be completely transparent!). America’s greatest export is the dollar; the dollar accounts for 60% of the \$11trn fiat reserves held globally; dollar-denominated stocks accounts for [54% of the \\$120bn global stock market](#), and dollar-denominated debt accounts for at least 35% of the \$260trn global debt market (likely higher).

[11] If there is not enough liquidity in an AMM, large transactions will cause [slippage](#) outweighing the benefits of using an AMM.)