Cryptocurrencies As a New Global Financial Asset

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Abstract

The distribution of the crypto-market across economies has received little attention despite the markets substantial size. I show that the distribution of fiat currencies across Bitcoin does not correspond to the distribution across the crypto-market in general, with some economies investing considerably more (or considerably less) in non-Bitcoin cryptos. Because cryptos represent their own medium of exchange I derive three different measures of fiat market shares: Direct, Purchase, and Implicit. All three measures find that while cryptos may be globally traded, the crypto-market is highly concentrated in just three economies—the US dollar, the South Korean Won, and the Japanese Yen account for over 90% of all crypto transactions. Fiat shares in the crypto market cannot be explained by size of the corresponding stock market, economic size, income, financial openness, or digital access. Some currencies with large exposures to the crypto-market have only a small market-share which may represent either increased diversification away from home-bias, a new route for financial contagion, or both.

1. Introduction

The crypto-market—consisting of cryptocurrencies, cryptotokens, and cryptoassets—is a completely digital, online market that has the potential to financially connect economies around the world. Cryptos—the most famous of which is Bitcoin—have no physically tradeable form. Unlike traditional currencies or assets, are usually unlinked to a physical location or market, and therefore they are not susceptible to the economic health of any single economy. There is also a low barrier to entry into the crypto-market: all that is required is internet access. Information about a particular crypto is available to all market participants—the lack of physical connection mean that there is no local information benefit. Taken together, this implies a country importance to to the crypto-economy should be dictated by economic

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size and predilection towards crypto-investment. Yet very little has been done to characterize the global distribution of crypto-purchases across fiat, state-issued currencies.[1] While we are aware that cryptos are traded internationally, we have no measure of the link between this new digital market and any given economy even as the first Bitcoin-based products have begun trading in formal financial markets, and daily crypto trading value exceed one quarter of the USA stock market trades.[2]

Bitcoin and the crypto-market do not follow a price or return series associated with any specific economy. Baur et al. (2017) show that Bitcoin prices do not have returns resembling that of gold, equity indexes, or fiat currencies—following a a different volatility process than other assets or exchange rates. Bouri et al. (2017) has similar findings using a portfolio-based approach, with results showing that Bitcoin is a poor hedge against major world stock indices, bonds, oil, gold, a commodity index, and the US dollar index, but instead acts as a good diversifier given its lack of correlation. Phillip et al. (2018) expands the scope to examine 224 cryptos, and similarly finds that they unique statistical properties.

One study that has examined the distribution of Bitcoin purchases, Hileman and Rauchs (2017b), found that Bitcoin trades are dominated by four currencies: the US dollar, the Chinese Yuan, the Euro and the Japanese Yen. However, Bitcoin now accounts for only 42% of the crypto market capitalization. Given the lack of country-specific correlations across the crypto market, it would be intuitive that if the US dollar is 40% of all Bitcoin purchases, it should also be approximately 40% of all Ethereum, Litecoin, and Ripple purchases as well. This paper is the first to document that the distribution of currencies across the crypto market as whole is different from that of the Bitcoin market. This implies that some links between economies and the crypto-market are stronger (or weaker) than Bitcoin purchases would suggest.

[1] I will use the term "fiat currencies" to refer to recognized national monies, such as the US dollar, or Japanese Yen.

[2] Bitcoin futures began trading on the Chicago Board Exchange Options (CBOE) on December 10, 2017, and Bitcoin derivatives began trading on the Chicago Mercentile Exchange (CME) on December 18, 2017.

This paper is also the first to take the crypto-measurement problem seriously: a crypto is a digital asset flow that can be denominated in a medium of exchange not associated with any fiat, state currency. It may also not be feasible to directly purchase some cryptos, instead a intermediate crypto may be purchased and used instead. I explore three different measures of fiat shares in the crypto market, including an implicit currency exposure measure that replaces all crypto-crypto purchases with their underlying fiat components. These measures change the relative market share of cryptos, causing half of them to exchange ranks.

Regardless of measure used, over 90% of all fiat transactions occur based in just three currencies: the South Korean Won, the US dollar, and the Japanese Yen. This concentration of this digital financial market cannot be explained by stock market behavior, economic size, income, financial openness, or internet access: our standard comparisons of cross-country financial investment behavior do not seem to apply to this new market.

In Section 2 I describe my data set: the daily transaction data from 151 exchanges for the top 50 cryptos. In Section 3 I construct the share of fiat transactions in the crypto-market using different measures. In Section 4 I compare the Bitcoin and crypto market transaction shares to global stock market transactions and show that they differ significantly. Additionally, I show that fiat investment in the crypto-markets do not correspond to economy size, income, or financial openness, and that the exposure to the crypto-market does not correspond to market share. Section 5 concludes.

2. Data Collection and Summary

I collected the 24 hour transaction volume (measured in USD) for the fifty largest cryptos as measured by market capitalization from Coinmarketcap[3] for Saturday, December 16, 2017. The data, shown in its original form in Figure 1, contains information on the total 24-hour transaction volume for each pairing on each exchange. All volumes are measured in USD dollars to ensure comparability. This data identifies 26 fiat currencies and 560 cryptos that

[3]http://www.coinmarketcap.com

Figure 1: Sample of Data Source

Bitcoin Markets

USD

#	Source	Pair	Volume (24h)	Price	Volume (%)	Updated
1	Bitfinex	BTC/USD	$796,043,000	$15,770.00	6.30%	Recently
2	Bithumb	BTC/KRW	$720,732,000	$20,254.70	5.71%	Recently
3	Bittrex	NXT/BTC	$420,831,000	$16,088.50	3.33%	Recently
4	GDAX	BTC/USD	$354,473,000	$15,820.00	2.81%	Recently
5	bitFlyer	BTC/JPY	$342,777,000	$16,127.00	2.71%	Recently
6	HitBTC	BCH/BTC	$324,857,000	$15,814.20	2.57%	Recently
7	BTCC	BTC/USD	$289,000,000	$17,000.00	2.29%	Recently
8	Binance	XVG/BTC	$255,643,000	$15,797.20	2.02%	Recently
9	OKEx	BTC/USDT	$234,280,000	$15,755.10	1.86%	Recently
10	Bitstamp	BTC/USD	$220,528,000	$15,809.90	1.75%	Recently
11	Binance	BTC/USDT	$182,662,000	$15,773.00	1.45%	Recently
12	Binance	ETH/BTC	$180,980,000	$15,768.00	1.43%	Recently
13	Bittrex	XVG/BTC	$174,553,000	$15,713.00	1.38%	Recently
14	Binance	BNB/BTC	$153,841,000	$15,890.20	1.22%	Recently
15	Binance	BCC/BTC	$152,578,000	$15,832.10	1.21%	Recently
16	Binance	TRX/BTC	$145,108,000	$15,844.90	1.15%	Recently
17	Binance	XRP/BTC	$144,209,000	$15,658.60	1.14%	Recently

Note: Screen capture from www.coinmarketcap.com showing the raw format of the data. For each crypto (Bitcoin in the example), Coinmarketcap reports 24-hour trade volume of pairs in each market. In the screenshot, the largest share of Bitcoin trades, 6.30%, occurred on exchange Bitfinex in which Bitcoin were traded for $796,043,000 US dollars over the course of 24-hours.

were exchanged across 151 exchanges in exchange for the fifty cryptos.

By construction, this data set does not report any transactions that do not occur on exchanges (for example, direct wallet-to-wallet transactions), however it does capture off-chain transactions that occur on exchanges. Off-chain transactions are transactions that are not reported to the decentralized ledger (the blockchain), and are instead merely recorded on the exchange's books. Off-chaining is employed by exchanges for transactions that occur between parties registered on the exchange to reduce transactions costs and increase transaction speed. The website blockchain.info[4] reports the transaction information from the Bitcoin

[4]https://blockchain.info/ It reports only the quantity of bitcoins exchanged between two wallets, it does not report what was received in return.

blockchain, and reports that on December 16, 2017 Bitcoin's total on-chain transaction volume was 262,598 Bitcoins. In contrast, CoinMarketCap recorded a transaction volume on exchanges of approximately 808,042 Bitcoins. This shows that the off-chain transactions dwarf the number of non-exchange transactions, and that focusing exclusively on data from exchanges does not result in a significant information loss for Bitcoin. I will assume that this pattern is sufficiently true for the other 49 cryptos as well, so that exchange transaction data reflects the majority of crypto-transactions.

Table 1 summarizes the age, market capitalization, and the the 24-hour transaction volume of the selected cryptos, and provides the full name associated with their code abbreviation. While the initial selection criteria required that the cryptos be one of the fifty largest by market capitalization (out of the 1,373 cryptos recorded as existing), the resulting selection varies greatly in age and transaction volume. Some are less than a month old (GNT), while others are over five years old (BCN). Some have amongst the highest daily transaction volume in the crypto market (BTC), while others are not in the top 10% (VERI). Some cryptos are sold on over 100 exchanges (LTC), while others trade on only 2 (BNB). Some are only sold on exchanges where no fiat currencies are accepted (KMD), while others (BTC) are sold on over 50 exchanges that accept fiat currency. I will use implicit currency exposure to control for this difference in direct fiat access.

The total daily transaction value—including both fiat and crypto trades—is $29 billion dollars. This is approximately one quarter of the $115 billion dollar traded daily on USA stock markets.[5] Table 2 summarizes top 20 of the 587 currencies and cryptos used as a medium of exchange to purchase the fifty cryptos. Table 2 provides implicit evidence that part of Bitcoin's value comes from its high degree of convertibility: it is the only medium of exchange, out of the 587 in the data set, that can be exchanged for all the top cryptos in the market. The second highest convertibility comes from Ethereum, which can be exchanged for only 42 of the top 50 cryptos, and the third is Tether, which can be exchanged for 35.

[5]Imputed by dividing the total value of 2016 USA stock trades according World Bank by 365 days.

Table 1: Summary of the Top Fifty Crypto

			Market Capitalization		24-Hour Volume		Exchanges	
Abbreviation	Full Name	Launch Date	Rank	USD Millions	Rank	USD Millions	Total	Fiat
ADA	Cardano	Sep 29, 2017	7	9,507	10	465.85	4	1
ARDR	Ardor	Jan 1, 2018	28	921	61	16.57	8	1
ARK	Ark	Mar 21, 2017	38	473	78	12.42	7	2
BCC	BitConnect	Jul 23, 2017	16	2,167	51	30.02	9	1
BCH	Bitcoin Cash	Aug 1, 2017	3	30,135	7	1,057.27	97	41
BCN	Bytecoin	Jul 4, 2012	31	652	96	8.96	3	0
BNB	Binance Coin	Jul 14, 2017	41	439	31	47.94	2	0
BTC	Bitcoin	Jan 3, 2009	1	324,300	1	15,639.73	94	55
BTG	Bitcoin Gold	Nov 12, 2017	11	4,886	22	141	33	16
BTS	BitShares	Jul 19, 2014	25	1,105	25	93.934	15	0
DASH	Dash	Jan 18, 2014	8	7,082	18	171.47	71	27
DCR	Decred	Feb 8, 2016	35	533	136	6.12	7	1
DOGE	Dogecoin	Dec 6, 2013	32	638	23	13	44	8
EMC2	Einsteinium	Mar 1, 2014	42	414	34	41.08	3	0
EOS	EOS	Jun 26, 2017	12	4,667	9	549.85	33	7
ETC	Ethereum Classic	Jul 30, 2015	14	3,423	6	1142.45	50	14
ETH	Ethereum	Oct 25, 2016	2	66,470	2	2089.92	97	39
GBYTE	Byteball Bytes	Dec 25, 2016	46	374	40	38.29	3	0
GNT	Golem	Dec 20, 2017	50	333	100	7.40	15	1
HSR	Hshare	Jul 5, 2017	27	999	26	105.16	19	3
KMD	Komodo	Sep 14, 2016	39	473	66	14.27	5	0
LSK	Lisk	Jul 24, 2016	23	1,226	33	45.89	19	6
LTC	Litecoin	Oct 7, 2011	5	16,101	5	1,300.63	119	48
MIOTA	IOTA	Nov 27, 2016	6	10,155	13	288.02	8	3
MONA	MonaCoin	Jan 1, 2014	29	791	69	20.18	11	3
NEO	NEO	Oct 1, 2016	15	3,152	21	157.97	24	7
NXT	Nxt	Nov 24, 2013	30	681	30	65.97	14	3
OMG	OmiseGO	Jun 23, 2017	20	1,434	12	30	30	7
PIVX	PIVX	Jan 29, 2016	48	341	123	5.87	10	3
PPT	Populous	Jun 24, 2017	19	1,981	114	6.01	5	0
QASH	QASH	Nov 8, 2017	45	385	42	39.77	8	2
QTUM	Qtum	Mar 17, 2017	18	2,143	8	751.38	32	7
REP	Augur	Oct 5, 2016	40	461	64	15.91	16	4
SALT	SALT	Aug 15, 2017	37	506	54	22.11	5	0
SC	Siacoin	Jun 7, 2015	44	387	90	14.5	6	0
SNT	Status	Jun 17, 2015	43	411	27	77.22	15	0
STEEM	Steem	Mar 24, 2016	36	525	120	5.55	5	0
STRAT	Stratis	Aug 9, 2016	26	1,055	39	38.55	14	5
TRON/TRX	TRON	Sep 9, 2017	17	2,146	11	419.57	12	1
USDT	Tether	May 1, 2014	24	1,126	3	1,642.93	24	5
VERI	Veritaseum	May 26, 2017	34	542	183	1.82	4	0
VTC	Vertcoin	Jan 10, 2014	49	335	60	17.72	9	2
WAVES	Waves	May 31, 2016	21	1,343	29	69.37	21	8
XEM	NEM	Mar 31, 2015	9	5,881	24	96.93	18	5
XLM	Stellar Lumen	Jul 31, 2014	13	3,754	14	210.55	20	5
XMR	Monero	Apr 28, 2014	10	5,022	19	159.87	31	11
XRB	RaiBlocks	Oct 4, 2015	47	351	115	6.28	4	1
XRP	Ripple	Dec 20, 2012	4	29,174	4	1,390.58	60	29
XVG	Verge	Sep 9, 2014	33	577	15	246.23	10	2
ZEC	ZCash	Oct 28, 2016	22	1,323	20	155.40	47	16
Total				553,302		29.402.84	151	94

Note: Market Capitalization is price times the quantity of coins in circulation, and is obtained from CoinMarketCap. The 24-Hour transaction volume is also measured in USD and obtained from CoinMarketCap. A large market cap does not correspond to large transaction volume (DCR), or vice verse (USDT). The cryptos have a mixture of ages: some are less than a month old (GNT), while others are almost five years old (XRP). Exchanges is the number of exchanges on which transactions are recorded: Total are all exchanges where transactions in the indicated crypto occur, while Fiat is only the exchanges on which Fiat transactions have occurred.

Table 2: Both Fiat Currencies and Cryptos Are Used As Mediums For Crypto Transactions

Rank	Currency	F/C	Volume (Million USD)	# of Crypto's
1	Bitcoin	Crypto	$6,669	49
2	US dollar	Fiat	$5,875	31
3	South Korean Won	Fiat	$3,616	19
4	Japanese Yen	Fiat	$1,645	10
5	US Dollar Tether	Crypto	$1,549	35
6	Ethereum	Crypto	$1,353	42
7	Litecoin	Crypto	$702	28
8	Ripple	Crypto	$657	9
9	Cardano	Crypto	$588	3
10	Euro	Fiat	$517	25
11	Ethereum Classic	Crypto	$497	6
12	Bitcoin Cash	Crypto	$451	9
13	Tron	Crypto	$350	3
14	BitConnect	Crypto	$284	6
15	Verge	Crypto	$268	5
16	Qtum	Crypto	$217	7
17	Eos	Crypto	$213	6
18	OmiseGo	Crypto	$201	5
19	Ink	Crypto	$184	4
20	Dash	Crypto	$154	11
	Remaining	Crypto	$2,926	
	Remaining	Fiat	$488	

Note: "Volume" represents the 24-hour traded volume captured in the data-set, while "Number of Crypto's" is the number of crypto's purchased using the indicated medium out of the 50 (or 49) in the dataset. Bitcoin, a crypto, is the most popular means by which to trade cryptos, with the US dollar, a fiat currency, second. Bitcoin can buy all of the crypto's, a feat that is not accomplished by any of the other medium.

Interestingly, the volume of transactions and the variety of crypto's a medium of exchange can purchase is not strictly related. ADA has a higher transaction volume than DASH, but ADA is used to buy only 3 cryptos while DASH is used to purchase 11.

Bitcoin is the most popular medium. The next most popular medium, and the most popular fiat currency, is the USA dollar, which is used to purchase 31 out of the fifty cryptos. Two Asian currencies, the South Korean Won and the Japanese Yen, are the third and fourth, though their combined volume is less than that of the US dollar. The fifth most used purchasing vehicle is a crypto known as US Dollar Tether (USDT). In theory, each USDT is backed by a US dollar held in reserve by the company Tether Limited, although there has

never been an accounting audit to verify the truth of this claim. USDT has become popular alternative amongst exchanges that do not wish to adhere to USA AML/KYC requirements required if they facilitate trades in US dollars.

3. Measuring Fiat Share of the Crypto Market

3.1. Share of Aggregate Market

Table 3 summarizes the 24-hour transaction for the 26 fiat currencies. Fiat purchases of Bitcoin, which represent about two-thirds of all crypto-fiat transactions (63.41%) are not representative of fiat transactions in the general crypto-market. Some fiats purchase no Bitcoin (CHF, CLP, CNH, CNY, HKD, ILS, NZD, RUR), while others purchase only Bitcoin (MYR). The importance of Bitcoin within each countries portfolio differs widely: Among fiat currencies that purchase both Bitcoin and other cryptos, the relative importance of Bitcoin varies from 32.73% (KRW) to 96.92% (JPY). This means that a study that examines only Bitcoin transactions may find difference different answers from one that studies the crypto market as whole.

The largest market share of all crypto-fiat transactions belongs to the USD: it accounts for nearly half of the market at 48.39% of all fiat transactions. This is followed by the KRW at almost one third of the market (29.78%), and then the Japanese Yen (13.55%), and then the Euro (4.26%). This differs from Bitcoin transactions: while the USD also accounts for nearly half of all Bitcoin transactions (54.83%), JPY is second and accounts for nearly one-fifth (20.71%). KRW has merely 15.37%, while the EUR share remains approximately at the same share as the overall market at 4.82%. Across all of the non-Bitcoin crypto markets, KRW dominates with over nearly half of all recorded non-Bitcoin transactions (54.76%), USD about a third (37.22%), the EUR third (3.27%), with JPY (1.14%) and AUD (0.87%) fourth and fifth. This is despite the fact documented in Hileman and Rauchs (2017a) that 54% of all new DLT ventures (ventures that create new cryptos) originate in North America, with only 19% starting in the Asia-Pacific.

Table 3: Daily Fiat Transactions of Cryptocurrencies

		Transactions (Mil. USD)			Market Share (%)		
	Name	Bitcoin	Crypto	$\frac{\text{Bitcoin}}{\text{Crypto}}$ (%)	BTC	Crypto	Non-BTC
AUD	Australian Dollar	42.68	81.50	52.37	0.55	0.67	0.87
BRL	Brazilian Real	25.86	30.79	84.00	0.34	0.25	0.11
CAD	Canadian Dollar	24.12	33.30	72.42	0.31	0.27	0.21
CHF	Swiss Franc	-	0.36	-	-	0.00	0.01
CLP	Chilean Peso	-	0.20	-	-	0.00	0.00
CNH	Offshore Chinese Yuan	-	1.51	-	-	0.01	0.03
CNY	Onshore Chinese Yuan	-	5.83	-	-	0.05	0.13
EUR	Euro	371.46	516.76	71.88	4.82	4.26	3.27
GBP	British Pound	54.05	62.07	87.08	0.70	0.51	0.18
HKD	Hong Kong Dollar	-	0.46	-	-	0.00	0.01
IDR	Indonesian Rupiah	16.78	43.68	38.43	0.22	0.36	0.61
ILS	Israeli New Shekel	-	0.31	-	-	0.00	0.01
INR	Indian Rupee	6.13	18.26	33.60	0.08	0.15	0.27
JPY	Japanese Yen	1,594.73	1,645.44	96.92	20.71	13.55	1.14
KRW	South Korean Won	1,183.43	3,616.19	32.73	15.37	29.78	54.76
MXN	Mexican Peso	8.81	12.69	69.38	0.11	0.10	0.09
MYR	Malaysian Ringgit	3.80	3.80	100	0.05	0.03	0.00
NZD	New Zealand Dollar	-	0.02	-	-	0.00	0.00
PLN	Polish Zloty	38.56	46.59	82.82	0.50	0.38	0.18
RUB	Russian Ruble	27.41	32.76	83.67	0.00	0.03	0.12
RUR	Old Russian Ruble	-	3.25	-	-	0.03	0.07
SGD	Singapore Dollar	3.68	6.38	57.68	0.05	0.05	0.06
THB	Thai Baht	12.29	27.82	44.15	0.16	0.23	0.35
TRY	Turkish Lira	41.25	52.64	78.37	0.54	0.43	0.26
USD	US Dollar	4,221.88	5,875.25	71.86	54.83	48.39	37.22
ZAR	South African Rand	22.69	24.11	94.09	0.29	0.20	0.03
	Total	7,699.65	12,141.99	63.41			

Note: Transaction values are in Millions of USD. $\frac{\text{Bitcoin}}{\text{Crypto}}$ is the share of the indicated currencies purchases in the cypto-market that are used to purchases Bitcoin. This varies from 0% (or 32.73% if some Bitcoins are purchased) to 100%. The final three columns are the share of all transactions value that the indicated currency represents: for only Bitcoin transactions (BTC), the entire crypto market (Crypto), or for the non-Bitcoin transactions in the Crypto markets (Non-BTC).

3.2. Crypto composition

Table 3 showed that there is a difference between a fiat's transaction share in the Bitcoin market and a fiat's transaction share in the crypto-market. However, Table 2 showed that there is a substantial share of purchases conducted not in fiat currencies, but rather in cryptos: Bitcoin is the most popular medium of exchange. Table 2 also revealed that there is a large variation in convertibility between the various medium of exchanges and the top 50 cryptos. These two observations are related: It is possible that a fiat with low direct

convertibility is instead being converted into an intermediate crypto (for example Bitcoin) which is then used to purchase the crypto of interest. This would then mean imply that the fiat transaction share in the crypto market is artificially low. The following section constructs different measures of crypto-currency market share, with the results summarized in Table 7.

3.2.1. Across fiat purchases

Among fiat currencies, the US dollar (USD) has the highest convertibility: it is used for direct fiat purchases of 31 cryptos, the Euro (EUR) 25 cryptos, and third is the South Korean Won (KRW) at 19 cryptos. It is not the case that all fiat currencies are used to buy all cryptos. This is consistent with the purchasing behavior of crypto mediums as well, as Bitcoin was the only crypto that could be used to purchase the remaining 49 cryptos.

Twelve crypto's have no direct purchases in fiat currencies. Nine have purchases only in one fiat currency: two in South Korean Won, three in Euro, three in US dollar, and one in Japanese Yen. One the other end of the spectrum, Bitcoin (BTC) is purchased by 18 fiat currencies, Ethereum (ETH) by 20, and Litceoin (LTC) by 18. While Bitcoin is used to purchase all cryptos, and has the greatest transaction volume, Ethereum has the greatest variety of direct fiat purchases.

The direct fiat market share ($D^{f,F}$) of any given fiat (f), previously reported without formal definition in Table 3, is simply the sum of all the crypto(c) expenditures of the fiat, ($\sum_c V_c^f$), over the sum of the expenditures of all fiat (g) in the crypto market

$$D^{f,F} = \frac{\sum_c V_c^f}{\sum_c \sum_g V_c^g} \tag{1}$$

Table 4 shows the fiat share for each crypto ($S_c^{f,F}$) calculated by comparing the US dollar denominated value of fiat currency's purchase of the crypto as a share all fiat purchases of the crypto to that of all fiat purchases of that crypto:

$$S_c^{f,F} = \frac{V_c^f}{\sum_g V_c^g} \tag{2}$$

Table 4: Share of Fiat Purchases Within Each Crypto (% of Fiat Transactions)

	# Fiat	AUD	BRL	CAD	CHF	CLP	CNH	CNY	EUR	GBP	HKD	IDR	ILS	INR	JPY	KRW	MXN	MYR	NZD	PLN	RUB	RUR	SGD	THB	TRY	USD	ZAR
ADA	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-
ARDR	1	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ARK	1	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BCC	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-
BCH	18	0.42	0.34	0.41	-	-	-	-	2.78	0.09	-	0.45	0.01	0.23	0.56	59.29	-	-	0.01	0.52	0.14	0.03	0.74	0.38	-	33.56	0.04
BCN	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BNB	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BTC	18	0.55	0.34	0.31	-	-	-	-	4.82	0.70	-	0.22	-	0.08	20.71	15.37	0.11	0.05	-	0.50	0.36	-	0.05	0.16	0.54	54.83	0.29
BTG	9	-	0.02	-	-	-	-	-	0.26	0.00	-	1.24	-	-	-	85.78	-	-	-	0.07	-	0.03	-	0.07	-	12.55	-
BTS	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DASH	12	-	0.00	-	-	-	1.79	-	5.18	0.01	-	-	-	-	-	39.09	-	-	-	0.45	1.39	1.32	-	0.31	0.45	49.91	0.09
DCR	1	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DOGE	6	-	-	-	-	-	-	-	10.49	0.11	-	-	-	-	-	-	-	-	-	-	0.12	3.28	-	-	76.1	9.90	-
EMC2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EOS	4	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	70.41	-	-	-	-	-	0.01	-	-	-	29.57	-
ETC	7	0.51	-	-	-	-	-	-	1.17	0.00	-	0.74	-	-	-	84.79	-	-	-	-	-	0.02	-	-	-	12.76	-
ETH	20	0.90	-	0.58	0.06	0.03	0.09	-	7.00	-	0.07	0.28	-	0.28	0.51	30.54	0.30	-	-	0.19	0.17	0.15	0.04	0.39	0.83	57.57	0.03
GBYTE	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GNT	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-
HSR	3	99.34	-	-	-	-	-	-	-	-	-	-	-	-	0.66	-	-	-	-	-	-	-	-	-	-	0.00	-
KMD	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LSK	3	-	-	-	-	-	-	-	0.54	-	-	-	-	-	-	-	-	-	-	90.16	-	-	-	-	-	9.30	-
LTC	20	0.58	0.60	0.68	-	-	0.04	0.00	6.91	1.25	0.00	0.16	0.05	0.32	0.04	15.91	-	-	-	0.45	0.08	0.17	-	0.11	0.60	71.98	0.06
MIOTA	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.78	-	-	-	-	-	-	-	-	-	75.22	-
MONA	1	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
NEO	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.05	-	-	-	-	-	-	0.00	0.00	-	96.94	-
NXT	3	-	-	-	-	-	-	-	0.78	-	-	99.13	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09	-
OMG	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.09	-	-	-	-	-	-	-	8.26	-	90.64	-
PIVX	3	-	-	-	-	-	-	-	92.46	-	-	-	-	-	-	-	-	-	-	6.83	-	-	-	-	-	0.71	-
PPT	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QASH	4	-	-	-	-	-	-	-	0.00	-	-	-	-	-	5.98	-	-	-	-	-	-	-	0.05	-	-	93.97	-
QTUM	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	96.25	-	-	-	-	-	-	-	-	-	3.75	-
REP	3	-	-	-	-	-	-	-	89.96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.03	-	5.02	-
SALT	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SC	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SNT	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
STEEM	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
STRAT	4	-	-	-	-	-	-	-	69.80	1.23	-	-	-	-	-	22.69	-	-	-	-	-	-	-	-	-	6.29	-
TRON	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-
USDT	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.18	-	-	-	-	99.82	-
VERI	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VTC	2	-	-	-	-	-	-	-	96.64	3.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WAVES	6	-	-	-	-	-	-	-	2.15	-	-	82.76	-	-	-	0.06	-	-	-	-	9.08	2.47	-	-	-	3.47	-
XEM	4	-	-	-	-	-	-	-	0.34	-	-	-	-	-	97.63	-	-	-	-	-	-	0.61	-	-	-	1.42	-
XLM	5	-	-	-	-	-	-	6.26	0.01	-	-	91.53	-	-	1.58	-	-	-	-	-	-	-	-	-	-	0.61	-
XMR	5	-	0.02	-	-	-	-	-	6.11	-	-	-	-	-	-	47.03	-	-	-	0.03	-	-	-	-	-	46.81	-
XRB	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-
XRP	14	1.13	0.01	-	-	-	-	0.73	4.26	0.00	-	0.64	-	1.07	1.46	62.55	0.28	-	-	-	0.3	-	-	0.45	-	27.05	0.07
XVG	2	-	-	-	-	-	-	-	99.79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.21	-
ZEC	7	-	-	-	-	-	-	-	4.26	-	-	-	-	-	-	46.51	-	-	-	0.1	0.70	0.24	-	-	-	47.83	0.35
# of Crypto		7	7	4	1	1	3	4	25	10	2	10	2	5	10	19	3	1	1	10	10	11	5	10	5	31	7
Direct Share		0.67	0.25	0.27	0.00	0.00	0.01	0.05	4.26	0.51	0.00	0.36	0.00	0.15	13.55	29.78	0.10	0.03	0.00	0.38	0.27	0.03	0.05	0.23	0.43	48.39	0.20
Purchase Share		0.77	0.32	0.36	0.06	0.03	0.12	0.35	4.74	0.61	0.04	0.41	0.03	0.18	16.34	30.10	0.14	0.05	0.01	0.49	0.32	0.12	0.07	0.27	0.59	48.94	0.24

Note: Each number represents the share the fiat currency (column heading) represents of all fiat purchases of the crypto (row heading). A "-" indicates no transactions were recorded. For example, the value of 100 for the ADA-KRW pair indicates that 100% of ADA fiat purchases were conducted using the Korean Won (KRW). The 0.42 BCH-AUD pair indicates that 0.42% of BCH fiat purchases were conducted using the Australian dollar. The "# Fiat" column indicates how many fiat currencies were used to directly purchase the indicated crypto, while the "# of Crypto" indicates how many crypto's the indicated fiat currencies purchased. The Direct Share is the the share of total crypto market transactions using the indicated fiat, while the Purchase share is the share of fiat crypto market transactions only in the cryptos purchased.

This fiat share reveals the skewed distribution of fiat purchasing: While the USD is about one half of all crypto-fiat purchases, the USD transaction share varies from 100% (BCC, GNT, XRB), down to 0.21% (XVG). Not only do fiat currencies purchase different number of crypto's, they account for a widely different share of that individual crypto when they do.

Therefore, in addition to to the fiat market share in equation 1, I use the data in Table

4 to construct a new measure called purchase share ($P^{f,F}$).

$$P^{f,F} = \frac{\sum_c V_c^f}{\sum_{g|V_c^f>0} V_c^g} \tag{3}$$

The purchase share differs from the market share in the denominator value. Purchase share uses only the market transaction value of cryptos purchased by the considered fiat, not the the entire market of cryptos. Suppose ExampleFiat (EF) purchases \$100 of Crypto1 (C1), \$200 of Crypto2 (C2), and \$0 of Crypto 3 (C3), while the total fiat purchases of Crypto1, Crypto2, and Crypto3 is \$500 each. The three shares of ExampleFiat is $S_{C1}^{EF,F} = \frac{100}{500} = 0.20$, $S_{C2}^{EF,F} = \frac{200}{500} = 0.40$, $S_{C3}^{EF,F} = \frac{0}{500} = 0.00$. The Market Share of Example Fiat is $M^{EF,F} = \frac{\$100+\$200+\$0}{\$500+\$500+\$500} = 0.20$, while the Purchase Share is $M^{EF,F} = \frac{\$100+\$200}{\$500+\$500} = 0.30$.

Given that the denominator associated with the purchase share will always be less than or equal to that of the market share, the purchase share of any given fiat will always be greater than or equal to that of its market share. The greatest difference in Table 4 between market share and purchase shares occurs for fiat currencies that are concentrated in only a few cryptos: the onshore Chinese Yuan has a market share of only 0.05%, but a purchase share seven times greater than that of 0.35%. This reflects the fact that it directly purchases only 4 cryptos in the market.

3.2.2. As a share of total purchases

Table 3 established that Bitcoin purchases are not a good measure of cryptocurrency fiat transactions, and Table 4 that there is not a uniform distribution of fiat currency purchases of cryptos. However, Table 1 showed that there were differences in exchange access to cryptos: some crypto's have very few purchases in fiat currencies. Table 5 reports the share of fiat purchases as a share of the total of purchases of the crypto, using both fiat (V_c^f) and cryptos (V_c^d) transaction values.[6]

[6]Note that $V_c^c = 0$. I have no record of same-currency transactions (for example, using Bitcoin to purchase Bitcoin).

Table 5: Distribution of Purchasing (% of total transactions)

	Fiat %	AUD	BRL	CAD	CHF	CLP	CNH	CNY	EUR	GBP	HKD	IDR	ILS	INR	JPY	KRW	MXN	MYR	NZD	PLN	RUB	RUR	SGD	THB	TRY	USD	ZAR
ADA	1.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.08	-	-	-	-	-	-	-	-	-	-	-
ARDR	0.06	-	-	-	-	-	-	-	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ARK	0.07	-	-	-	-	-	-	-	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BCC	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05	-
BCH	31.27	0.13	0.11	0.13	-	-	-	-	0.87	0.03	-	0.14	0.00	0.07	0.18	18.54	-	-	0.00	0.16	0.04	0.01	0.23	0.12	-	10.50	0.01
BCN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BNB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BTC	49.23	0.27	0.17	0.15	-	-	-	-	2.38	0.35	-	0.11	-	0.04	10.2	7.57	0.06	0.02	-	0.25	0.18	-	0.02	0.08	0.26	26.99	0.15
BTG	57.85	-	0.01	-	-	-	-	-	0.15	0.00	-	0.72	-	-	-	49.62	-	-	-	0.04	-	0.02	-	0.04	-	7.26	-
BTS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DASH	23.07	-	0.00	-	-	-	0.41	-	1.20	0.00	-	-	-	-	-	9.02	-	-	-	0.10	0.32	0.30	-	0.07	0.10	11.51	0.02
DCR	0.05	-	-	-	-	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DOGE	2.31	-	-	-	-	-	-	-	0.24	0.00	-	-	-	-	-	-	-	-	-	-	0.00	0.08	-	-	1.76	0.23	-
EMC2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EOS	60.27	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	42.44	-	-	-	-	-	0.00	-	-	-	17.82	-
ETC	55.61	0.29	-	-	-	-	-	-	0.65	0.00	-	0.41	-	-	-	47.16	-	-	-	-	-	0.01	-	-	-	7.10	-
ETH	30.28	0.27	-	0.18	0.02	0.01	0.03	-	2.12	-	0.02	0.08	-	0.09	0.15	9.25	0.09	-	-	0.06	0.05	0.05	0.01	0.12	0.25	17.43	0.01
GBYTE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GNT	1.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.23	-
HSR	16.15	16.04	-	-	-	-	-	-	-	-	-	-	-	-	0.11	-	-	-	-	-	-	-	-	-	-	0.00	-
KMD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LSK	4.95	-	-	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-	4.46	-	-	-	-	-	0.46	-
LTC	47.3	0.28	0.28	0.32	-	-	0.02	0.00	3.27	0.59	0.00	0.08	0.02	0.15	0.02	7.53	-	-	-	0.21	0.04	0.08	-	0.05	0.28	34.05	0.03
MIOTA	51.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.76	-	-	-	-	-	-	-	-	-	38.73	-
MONA	62.69	-	-	-	-	-	-	-	-	-	-	-	-	-	62.69	-	-	-	-	-	-	-	-	-	-	-	-
NEO	12.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.37	-	-	-	-	-	-	0.00	0.00	-	11.85	-
NXT	2.37	-	-	-	-	-	-	-	0.02	-	-	2.35	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	-
OMG	28.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.31	-	-	-	-	-	-	-	2.37	-	26.02	-
PIVX	0.60	-	-	-	-	-	-	-	0.55	-	-	-	-	-	-	-	-	-	-	0.04	-	-	-	-	-	0.00	-
PPT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QASH	55.66	-	-	-	-	-	-	-	0.00	-	-	-	-	-	3.33	-	-	-	-	-	-	-	0.03	-	-	52.3	-
QTUM	60.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57.80	-	-	-	-	-	-	-	-	-	2.25	-
REP	12.58	-	-	-	-	-	-	-	11.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.63	-	0.63	-
SALT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SNT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
STEEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
STRAT	0.36	-	-	-	-	-	-	-	0.25	0.00	-	-	-	-	-	0.08	-	-	-	-	-	-	-	-	-	0.02	-
TRON	28.62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28.62	-	-	-	-	-	-	-	-	-	-	-
USDT	2.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	-	-	-	-	2.16	-
VERI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VTC	0.46	-	-	-	-	-	-	-	0.44	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WAVES	4.07	-	-	-	-	-	-	-	0.09	-	-	3.37	-	-	-	0.00	-	-	-	-	0.37	0.1	-	-	-	0.14	-
XEM	21.96	-	-	-	-	-	-	-	0.07	-	-	-	-	-	21.44	-	-	-	-	-	-	0.13	-	-	-	0.31	-
XLM	4.41	-	-	-	-	-	-	0.28	0.00	-	-	4.04	-	-	0.07	-	-	-	-	-	-	-	-	-	-	0.03	-
XMR	32.95	-	0.01	-	-	-	-	-	2.01	-	-	-	-	-	-	15.50	-	-	-	0.01	-	-	-	-	-	15.43	-
XRB	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06	-
XRP	51.22	0.58	0.01	-	-	-	-	0.38	2.18	0.00	-	0.33	-	0.55	0.75	32.04	0.14	-	-	-	0.15	-	-	0.23	-	13.85	0.04
XVG	0.70	-	-	-	-	-	-	-	0.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	-
ZEC	27.57	-	-	-	-	-	-	-	1.17	-	-	-	-	-	-	12.83	-	-	-	0.03	0.19	0.07	-	-	-	13.19	0.1
Direct Share		0.28	0.10	0.00	0.00	0.00	0.01	0.02	1.76	0.21	0.00	0.15	0.00	0.06	5.60	12.30	0.04	0.01	0.00	0.16	0.11	0.01	0.02	0.09	0.18	19.98	0.08
Purchase Share		0.36	0.16	0.17	0.02	0.01	0.04	0.17	2.13	0.30	0.01	0.19	0.01	0.08	7.50	13.74	0.07	0.02	0.00	0.22	0.14	0.05	0.03	0.12	0.27	20.93	0.11

Note: Each number represents the share the fiat currency (column heading) represents of all purchases of the crypto (row heading). A "-" indicates no transactions were recorded. For example, the value of 0.06 for the ARDR-EUR pair indicates that 0.06% of ARDR purchases were conducted using the Euro (EUR). The "% Fiat" column indicates the share of total transactions that were conducted using Fiat currencies. Direct share is the share of all crypto transactions the indicated fiat is used in, while average share is the Purchase share is the share of all the purchased cryptos.

$$S_c^{f,T} = \frac{V_c^f}{\sum_g V_c^g + \sum_d V_c^d} \tag{4}$$

The share of each crypto directly purchased using any kind of fiat currency varies widely: from 0.06% (BCC) to 62.69% (MONA). Approximately half of Bitcoin transactions are direct to fiat (49.23%), so that approximately one quarter of all Bitcoin transactions are fiat transactions using the US dollar (26.99%).

The relative importance of each fiat amongst the cryptos they purchase decreases, but it still true that there is a skewed distribution of transaction shares: while the average purchase

share of KRW is 18.55%, for individual cryptos this varies from almost 0% (WAVES) to to 49.62% (BTG), for US dollars it varies from almost 0% (HSR) to 52.3% (QASH), while for the Japanese Yen it varies from 0.02% (LTC) to 62.69% (MONA).

While both the USD and the KRW accounted for about a half of all fiat purchases within the cryptos they bought, once all transactions are considered KRW accounts for 18.55% while the USD accounts for only 10.05% of the market share. Similarly, while the EUR and JPY accounted for 32.23% and 22.91% of fiat purchases, they now account for only 1.20% and 9.89% respectively. This indicates that cryptos purchased by the USD and EUR contain more transactions using alternative cryptos than cryptos purchased by KRW or JPY.

3.2.3. As an implied share

While it is difficult for government to ban crypto purchases, it may be harder to obtain some cryptos than others. A way around this is to purchase an easily accessible crypto, for example Bitcoin, and then use that to purchase the desired crypto. This poses a problem for the market and purchase shares calculated in Tables 4 and 5, as there are crypto transactions that are, in fact, fiat-like transactions. I will accommodate this issue by calculating the implicit currency exposure for each crypto-fiat pair.

Table 5 showed that about one quarter (26.99%) of all Bitcoin transactions are conducted using the US dollars. Suppose that another crypto, ExampleCoin, is purchased only by Bitcoin. That crypto then inherits 26.99% implicit exposure to the US dollar via the original Bitcoin purchases, assuming the same composition of purchasers.[7] Suppose ExampleCoin is 10% of the transaction share of another crypto, AnotherCoin. Another crypto would then inherent 2.699% (0.10x26.999%) exposure to the US dollar, in to addition to whatever direct US dollar exposure AnotherCoin already contained. This process continues on iteratively until all purchases by cryptos are replaced by their underlying fiat components.

[7]While this is a strong assumption, there is no empirical evidence that would allow a more refined analysis. It is highly probable that this behavior is more likely to be undertaken by highly regulated currencies, such as the USD, or by fiats associated with countries using capital controls or exchange rate manipulation (Pieters (2016)).

Table 6 shows the fiat shares using implicit currency exposure. As I did not have transaction data for all 560 cryptos, some transaction volume is lost. The column "Total %" reports the share the crypto transaction data that can be captured using the fiat purchases: it averages 84.84%, though ranges from a low of 70.31% (BTS) to a high of 93.25% (EOS). Almost half of all transactions can be traced back to USD (41.76%), the KRW representing about a quarter of all transactions (22.46%), and finally the JPY at about a tenth of all transactions (12.91%).

Under implicit currency exposure all fiats purchase some amount of all cryptos because Bitcoin purchases all cryptos. Even if a fiat doesn't purchase Bitcoin directly, the crypto(s) it does purchase will have some exposure to Bitcoin, which then links the fiat to all other cryptos. Because of this, the market share and the purchase share under implied currency exposure has the same value.

3.3. Summary

Table 7 summarizes each fiat's bitcoin share, market share, and purchase share of all fiat transactions, as well as the implicit currency share. It also shows the corresponding rank of each currency for each of the four measures ranging from the largest share (1) to the smallest share (26).

The top 9 and bottom 2 fiats, accounting for about 98% of all transactions in the crypto market, retain the same ranking for all the non-BTC-exclusive transaction shares, with the middle 15 cryptos rearranging ranks based on the different measurements. The important of the fiat in the crypto economy can vary based on the measure used. The largest basis point difference for the JPY which ranges between 13.55% and 16.34%, while the largest growth (of the non-near-zero fiat shares) belongs to the CNH which ranges from 0.01% to 0.12%.

Figure 2 shows how using the implicit currency exposure changes the distribution of fiats across cryptos. The color ranges from Red (the fiat is a low share of transactions for that crypto) to Green (the fiat is a high share of purchases for that crypto). A clear row indicates that no fiat purchase the indicated crypto. Figure 2a shows the distribution of fiat

Table 6: Distribution of Purchasing (% of total transactions, crypto-equivalent)

	Total %	AUD	BRL	CAD	CHF	CLP	CNH	CNY	EUR	GBP	HKD	IDR	ILS	INR	JPY	KRW	MXN	MYR	NZD	PLN	RUB	RUR	SGD	THB	TRY	USD	ZAR
ADA	83.90	0.59	0.24	0.25	0.00	0.00	0.01	0.03	3.87	0.50	0.00	0.28	0.00	0.11	13.69	19.13	0.09	0.03	0.00	0.37	0.26	0.02	0.04	0.18	0.41	43.60	0.20
ARDR	83.90	0.59	0.24	0.25	0.00	0.00	0.01	0.03	3.87	0.50	0.00	0.28	0.00	0.11	13.69	19.13	0.09	0.03	0.00	0.37	0.26	0.02	0.04	0.18	0.41	43.60	0.20
ARK	83.90	0.59	0.24	0.25	0.00	0.00	0.01	0.03	3.87	0.50	0.00	0.28	0.00	0.11	13.69	19.13	0.09	0.03	0.00	0.37	0.26	0.02	0.04	0.18	0.41	43.60	0.20
BCC	83.90	0.59	0.24	0.25	0.00	0.00	0.01	0.03	3.87	0.50	0.00	0.28	0.00	0.11	13.69	19.13	0.09	0.03	0.00	0.37	0.26	0.02	0.04	0.18	0.41	43.60	0.20
BCH	83.90	0.59	0.24	0.25	0.00	0.00	0.01	0.03	3.87	0.50	0.00	0.28	0.00	0.11	13.69	19.13	0.09	0.03	0.00	0.37	0.26	0.02	0.04	0.18	0.41	43.60	0.20
BCN	83.90	0.59	0.24	0.25	0.00	0.00	0.01	0.03	3.87	0.50	0.00	0.28	0.00	0.11	13.69	19.13	0.09	0.03	0.00	0.37	0.26	0.02	0.04	0.18	0.41	43.60	0.20
BNB	59.43	0.42	0.16	0.18	0.00	0.00	0.01	0.02	2.77	0.34	0.00	0.21	0.00	0.08	9.04	13.64	0.07	0.02	0.00	0.25	0.18	0.02	0.03	0.13	0.30	31.43	0.13
BTC	84.30	0.56	0.25	0.25	0.00	0.00	0.01	0.02	3.92	0.51	0.00	0.28	0.00	0.10	14.27	18.51	0.09	0.03	0.00	0.38	0.27	0.02	0.04	0.18	0.42	43.97	0.21
BTG	93.19	0.25	0.11	0.11	0.00	0.00	0.00	0.01	1.78	0.21	0.00	0.84	0.00	0.05	5.74	57.69	0.04	0.01	0.00	0.19	0.11	0.02	0.02	0.12	0.18	25.63	0.08
BTS	70.31	0.51	0.20	0.21	0.00	0.00	0.01	0.02	3.25	0.40	0.00	0.24	0.00	0.09	11.06	16.48	0.08	0.03	0.00	0.30	0.21	0.02	0.03	0.16	0.35	36.49	0.16
DASH	87.54	0.45	0.18	0.20	0.00	0.00	0.42	0.02	4.20	0.38	0.00	0.22	0.00	0.08	10.38	23.73	0.07	0.02	0.00	0.38	0.52	0.32	0.03	0.21	0.43	45.11	0.17
DCR	84.31	0.56	0.25	0.25	0.00	0.00	0.01	0.02	3.97	0.51	0.00	0.28	0.00	0.10	14.26	18.50	0.09	0.03	0.00	0.38	0.27	0.02	0.04	0.18	0.42	43.95	0.21
DOGE	80.69	0.53	0.23	0.24	0.00	0.00	0.01	0.02	3.88	0.48	0.00	0.26	0.00	0.10	13.10	17.37	0.09	0.03	0.00	0.35	0.25	0.09	0.04	0.17	2.15	41.11	0.19
EMC2	84.31	0.56	0.25	0.25	0.00	0.00	0.01	0.02	3.92	0.51	0.00	0.28	0.00	0.10	14.26	18.51	0.09	0.03	0.00	0.38	0.27	0.02	0.04	0.18	0.42	43.98	0.21
EOS	93.25	0.24	0.09	0.10	0.00	0.00	0.01	0.01	1.55	0.18	0.00	0.11	0.00	0.05	5.00	50.29	0.04	0.01	0.00	0.14	0.10	0.01	0.02	0.08	0.17	34.99	0.07
ETC	92.64	0.56	0.10	0.11	0.00	0.00	0.00	0.01	2.35	0.21	0.00	0.54	0.00	0.05	5.81	55.88	0.04	0.01	0.00	0.16	0.11	0.02	0.02	0.08	0.18	26.29	0.08
ETH	79.85	0.66	0.13	0.32	0.02	0.01	0.03	0.02	4.30	0.27	0.02	0.26	0.00	0.15	7.65	21.71	0.14	0.02	0.00	0.26	0.19	0.06	0.04	0.24	0.48	42.73	0.12
GBYTE	84.30	0.56	0.25	0.25	0.00	0.00	0.01	0.02	3.92	0.51	0.00	0.28	0.00	0.10	14.27	18.51	0.09	0.03	0.00	0.38	0.27	0.02	0.04	0.18	0.42	43.97	0.21
GNT	83.83	0.57	0.23	0.26	0.00	0.00	0.01	0.02	3.91	0.47	0.00	0.28	0.00	0.11	13.10	18.85	0.10	0.03	0.00	0.36	0.25	0.02	0.04	0.19	0.42	44.41	0.19
HSR	85.62	16.59	0.19	0.21	0.00	0.00	0.01	0.02	3.18	0.38	0.00	0.23	0.00	0.10	10.35	17.18	0.08	0.02	0.00	0.28	0.20	0.02	0.03	0.16	0.34	35.87	0.15
KMD	84.25	0.56	0.25	0.25	0.00	0.00	0.01	0.02	3.92	0.51	0.00	0.28	0.00	0.10	14.18	18.55	0.10	0.03	0.00	0.38	0.27	0.02	0.04	0.18	0.42	43.96	0.20
LSK	85.02	0.53	0.23	0.24	0.00	0.00	0.01	0.02	3.75	0.48	0.00	0.27	0.00	0.10	13.49	17.63	0.09	0.03	0.00	4.82	0.25	0.02	0.04	0.17	0.40	42.24	0.19
LTC	91.04	0.60	0.41	0.45	0.00	0.00	0.02	0.01	5.28	0.85	0.00	0.23	0.02	0.21	6.92	17.82	0.05	0.02	0.00	0.40	0.17	0.09	0.02	0.15	0.50	56.70	0.13
MIOTA	91.91	0.28	0.11	0.13	0.00	0.00	0.01	0.01	1.93	0.23	0.00	0.14	0.00	0.05	6.29	22.04	0.05	0.02	0.00	0.17	0.12	0.01	0.02	0.09	0.21	59.90	0.09
MONA	92.69	0.20	0.09	0.09	0.00	0.00	0.00	0.01	1.39	0.18	0.00	0.10	0.00	0.04	67.77	6.59	0.03	0.01	0.00	0.14	0.09	0.01	0.02	0.06	0.15	15.64	0.07
NEO	85.12	0.52	0.20	0.22	0.00	0.00	0.01	0.02	3.40	0.42	0.00	0.25	0.00	0.10	11.61	17.15	0.08	0.03	0.00	0.32	0.22	0.02	0.04	0.16	0.37	49.82	0.17
NXT	84.43	0.56	0.24	0.25	0.00	0.00	0.01	0.02	3.82	0.49	0.00	2.63	0.00	0.10	13.62	18.35	0.09	0.03	0.00	0.36	0.26	0.02	0.04	0.18	0.41	42.74	0.20
OMG	88.21	0.43	0.17	0.18	0.00	0.00	0.01	0.02	2.77	0.34	0.00	0.20	0.00	0.08	9.33	14.19	0.07	0.02	0.00	0.25	0.18	0.02	0.03	2.51	0.30	56.98	0.14
PIVX	84.40	0.55	0.25	0.25	0.00	0.00	0.01	0.02	4.45	0.51	0.00	0.28	0.00	0.00	14.18	18.40	0.09	0.03	0.00	0.42	0.26	0.02	0.04	0.18	0.42	43.72	0.20
PPT	81.78	0.62	0.18	0.29	0.01	0.01	0.02	0.02	4.14	0.38	0.01	0.27	0.00	0.13	10.51	20.33	0.12	0.02	0.00	0.31	0.23	0.04	0.04	0.22	0.46	43.26	0.16
QASH	92.26	0.27	0.09	0.12	0.00	0.00	0.01	0.01	1.77	0.19	0.00	0.12	0.00	0.05	8.52	8.88	0.05	0.01	0.00	0.15	0.11	0.01	0.04	0.09	0.19	71.49	0.08
QTUM	87.16	0.20	0.08	0.08	0.00	0.00	0.00	0.01	1.25	0.16	0.00	0.09	0.00	0.04	4.24	64.18	0.03	0.01	0.00	0.12	0.08	0.01	0.01	0.06	0.13	16.32	0.06
REP	85.43	0.54	0.20	0.22	0.00	0.00	0.01	0.02	14.71	0.41	0.00	0.25	0.00	0.10	11.20	17.29	0.09	0.03	0.00	0.31	0.22	0.02	0.04	0.80	0.36	38.45	0.16
SALT	83.48	0.58	0.23	0.26	0.00	0.00	0.01	0.02	3.98	0.47	0.01	0.28	0.00	0.11	13.05	19.13	0.10	0.03	0.00	0.36	0.25	0.02	0.04	0.19	0.43	43.71	0.19
SC	84.19	0.56	0.25	0.25	0.00	0.00	0.01	0.02	3.93	0.50	0.00	0.28	0.00	0.10	14.10	18.59	0.10	0.03	0.00	0.38	0.26	0.02	0.04	0.18	0.42	43.94	0.20
SNT	83.49	0.57	0.23	0.26	0.00	0.00	0.01	0.02	3.95	0.48	0.00	0.28	0.00	0.11	13.32	18.98	0.10	0.03	0.00	0.36	0.26	0.02	0.04	0.19	0.43	43.65	0.19
STEEM	84.02	0.56	0.25	0.25	0.00	0.00	0.01	0.02	3.91	0.51	0.00	0.28	0.00	0.10	14.16	18.49	0.09	0.03	0.00	0.38	0.27	0.02	0.04	0.18	0.42	43.83	0.20
STRAT	84.24	0.56	0.24	0.25	0.00	0.00	0.01	0.02	4.16	0.51	0.00	0.28	0.00	0.11	13.98	18.71	0.10	0.03	0.00	0.37	0.26	0.02	0.04	0.18	0.42	43.77	0.20
TRON	88.09	0.42	0.16	0.19	0.00	0.00	0.01	0.02	2.86	0.33	0.00	0.20	0.00	0.08	9.10	42.39	0.08	0.02	0.00	0.25	0.18	0.02	0.03	0.14	0.31	31.18	0.13
USDT	81.15	0.82	0.20	0.23	0.00	0.00	0.01	0.04	3.48	0.41	0.00	0.27	0.00	0.12	9.93	23.27	0.08	0.02	0.00	0.29	0.21	0.03	0.03	0.21	0.35	40.95	0.15
VERI	80.61	0.65	0.15	0.30	0.02	0.01	0.03	0.02	4.24	0.31	0.02	0.27	0.00	0.14	8.74	21.23	0.13	0.02	0.00	0.28	0.21	0.05	0.04	0.23	0.47	42.92	0.13
VTC	84.43	0.55	0.25	0.25	0.00	0.00	0.01	0.02	4.35	0.52	0.00	0.28	0.00	0.10	14.21	18.44	0.09	0.03	0.00	0.38	0.27	0.02	0.04	0.18	0.42	43.79	0.20
WAVES	83.51	0.53	0.23	0.24	0.00	0.00	0.01	0.02	3.79	0.48	0.00	3.64	0.00	0.10	13.29	17.57	0.09	0.03	0.00	0.36	0.62	0.12	0.04	0.17	0.40	41.58	0.19
XEM	87.69	0.44	0.19	0.20	0.00	0.00	0.01	0.02	3.14	0.39	0.00	0.22	0.00	0.08	32.42	14.54	0.07	0.03	0.00	0.29	0.21	0.15	0.03	0.14	0.33	34.61	0.16
XLM	84.70	0.55	0.23	0.24	0.00	0.00	0.01	0.30	3.73	0.47	0.00	4.31	0.00	0.10	13.19	18.19	0.09	0.03	0.00	0.35	0.25	0.02	0.04	0.18	0.40	41.81	0.19
XMR	89.26	0.39	0.17	0.17	0.00	0.00	0.01	0.02	4.63	0.34	0.00	0.19	0.00	0.07	9.20	28.20	0.06	0.02	0.00	0.26	0.17	0.01	0.03	0.12	0.28	44.79	0.13
XRB	78.00	0.56	0.24	0.24	0.00	0.00	0.01	0.00	3.61	0.49	0.00	0.27	0.00	0.07	13.60	15.98	0.09	0.04	0.00	0.36	0.25	0.02	0.04	0.16	0.41	41.35	0.20
XRP	91.56	0.86	0.12	0.12	0.00	0.00	0.00	0.39	4.03	0.24	0.00	0.47	0.00	0.60	7.25	41.30	0.20	0.03	0.00	0.18	0.28	0.01	0.02	0.32	0.20	34.82	0.13
XVG	84.43	0.56	0.24	0.25	0.00	0.00	0.01	0.02	4.61	0.50	0.00	0.28	0.00	0.10	13.97	18.51	0.10	0.03	0.00	0.37	0.26	0.02	0.04	0.18	0.42	43.72	0.20
ZEC	88.43	0.43	0.17	0.18	0.00	0.00	0.01	0.02	3.99	0.36	0.00	0.21	0.00	0.08	9.92	26.68	0.07	0.02	0.00	0.29	0.38	0.08	0.03	0.13	0.30	44.82	0.24
Implicit Share		0.74	0.26	0.28	0.00	0.00	0.02	0.05	4.40	0.53	0.00	0.39	0.00	0.15	13.85	28.01	0.11	0.03	0.00	0.39	0.28	0.03	0.04	0.24	0.40	49.53	0.20

Note: Each number represents the implicit share of the fiat currency (column heading) based all purchases of the crypto (row heading). For example, the value of 0.59 for the ADA-AUD pair indicates that 0.59% of ADA could be traced back to AUD. The "Total %" column indicates the share of transactions that could be accounted for within the crypto. Implicit share is the fiat share of crypto transactions.

currencies as a share of the fiat transaction for each crypto, with the last two rows indicating the market and purchase share respectively. Figure 2b shows the same using the implicit currency exposure data instead.

Within each crypto, the rankings may change depending on whether fiat share of implicit currency exposure is used. However, it is also easy to see that despite this the Market Share and Purchase Shares rankings of currencies do not drastically change across the two figures. This consistency in aggregate market and purchase is due to the small weight that most cryptos have in the overall crypto market.

Table 7: Different Measures of Crypto-Market Share (%)

	Share				Rank			
	BTC	Direct	Purchase	Implicit	BTC	Direct	Purchase	Implicit
AUD	0.55	0.67	0.77	0.74	6	5	5	5
BRL	0.34	0.25	0.32	0.26	10	12	13	12
CAD	0.31	0.27	0.36	0.28	11	10	10	11
CHF	-	0.00	0.06	0.00	-	21	21	22
CLP	-	0.00	0.03	0.00	-	23	24	23
CNH	-	0.01	0.12	0.02	-	19	19	21
CNY	-	0.05	0.35	0.06	-	18	11	17
EUR	4.82	4.26	4.74	4.40	4	4	4	4
GBP	0.70	0.51	0.61	0.53	5	6	6	6
HKD	-	0.00	0.04	0.00	-	24	23	24
IDR	0.22	0.36	0.41	0.30	13	9	9	9
ILS	-	0.00	0.03	0.00	-	25	25	25
INR	0.08	0.15	0.18	0.15	16	15	16	15
JPY	20.71	13.55	16.34	13.85	2	3	3	3
KRW	15.37	29.78	30.10	28.01	3	2	2	2
MXN	0.11	0.10	0.14	0.11	15	16	17	16
MYR	0.05	0.03	0.05	0.03	17	19	22	19
NZD	-	0.00	0.01	0.00	-	26	26	26
PLN	0.50	0.38	0.49	0.39	8	8	8	8
RUB	0.36	0.27	0.32	0.28	9	11	12	10
RUR	-	0.03	0.12	0.03	-	22	18	20
SGD	0.05	0.05	0.07	0.04	18	17	20	18
THB	0.16	0.23	0.27	0.24	14	13	14	13
TRY	0.54	0.43	0.59	0.40	7	7	7	7
USD	54.83	48.39	48.94	49.53	1	1	1	1
ZAR	0.29	0.20	0.24	0.20	12	14	15	14

Note: Share information from Table 4 and Table 6. Rank indicates the largest (1) to smallest (26) market share by each transaction share.

4. Comparison to Established Global Financial Markets

4.1. Relative Stock Market Size and Market Share

Cryptos represent a new global finance option. To understand how its transaction distribution compares to current financial instruments, I compare the value of stock market transactions in the country associated with each fiat currency in Table 8. Specifically, I use

Figure 2: Fiat Share of a crypto using (a) Fiat Shares and (b) Implicit Currency Exposure

	AUD	BRL	CAD	CHF	CLP	CNH	CNY	EUR	GBP	HKD	IDR	ILS	INR	JPY	KRW	MXN	MYR	NZD	PLN	RUB	RUR	SGD	THB	TRY	USD	ZAR
ADA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ARDR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ARK	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%
BCH	0.42%	0.34%	0.41%	0.00%	0.00%	0.00%	0.00%	2.78%	0.09%	0.00%	0.45%	0.01%	0.23%	0.56%	59.29%	0.00%	0.00%	0.01%	0.52%	0.14%	0.03%	0.74%	0.38%	0.00%	33.56%	0.04%
BCN	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BNB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BTC	0.55%	0.34%	0.31%	0.00%	0.00%	0.00%	0.00%	4.82%	0.70%	0.00%	0.22%	0.00%	0.08%	20.71%	15.37%	0.11%	0.05%	0.00%	0.50%	0.36%	0.00%	0.05%	0.16%	0.54%	54.83%	0.29%
BTG	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.26%	0.00%	0.00%	1.24%	0.00%	0.00%	0.00%	85.78%	0.00%	0.00%	0.00%	0.07%	0.00%	0.03%	0.00%	0.07%	0.00%	12.55%	0.00%
BTS	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
DASH	0.00%	0.00%	0.00%	0.00%	0.00%	1.79%	0.00%	5.18%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	39.09%	0.00%	0.00%	0.00%	0.45%	1.39%	1.32%	0.00%	0.31%	0.45%	49.91%	0.09%
DCR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
DOGE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.49%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.12%	3.28%	0.00%	0.00%	76.10%	9.90%	0.00%
EMC2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EOS	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	70.41%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	29.57%	0.00%
ETC	0.51%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.17%	0.00%	0.00%	0.74%	0.00%	0.00%	0.00%	84.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	12.76%	0.00%
ETH	0.90%	0.00%	0.58%	0.06%	0.03%	0.09%	0.00%	7.00%	0.00%	0.07%	0.28%	0.00%	0.28%	0.51%	30.54%	0.30%	0.00%	0.00%	0.19%	0.17%	0.15%	0.04%	0.39%	0.83%	57.57%	0.03%
GBYTE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GNT	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%
HSR	99.34%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.66%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
KMD	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
LSK	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.54%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	90.16%	0.00%	0.00%	0.00%	0.00%	0.00%	9.30%	0.00%
LTC	0.58%	0.60%	0.68%	0.00%	0.00%	0.04%	0.00%	6.91%	1.25%	0.00%	0.16%	0.05%	0.32%	0.04%	15.91%	0.00%	0.00%	0.00%	0.45%	0.08%	0.17%	0.00%	0.11%	0.60%	71.98%	0.06%
MIOTA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	24.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	75.22%	0.00%
MONA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NEO	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	96.94%	0.00%
NXT	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.78%	0.00%	0.00%	99.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.09%	0.00%
OMG	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.26%	0.00%	90.64%	0.00%
PIVX	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	92.46%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.83%	0.00%	0.00%	0.00%	0.00%	0.00%	0.71%	0.00%
PPT	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
QASH	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.98%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.05%	0.00%	0.00%	93.97%	0.00%
QTUM	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	96.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.75%	0.00%
REP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	89.96%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.03%	0.00%	5.02%	0.00%
SALT	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SNT	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
STEEM	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
STRAT	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	69.80%	1.23%	0.00%	0.00%	0.00%	0.00%	0.00%	22.69%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.29%	0.00%
TRON	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
USDT	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	99.82%	0.00%
VERI	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
VTC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	96.64%	3.36%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
WAVES	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.15%	0.00%	0.00%	82.76%	0.00%	0.00%	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	9.08%	2.47%	0.00%	0.00%	0.00%	3.47%	0.00%
XEM	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.34%	0.00%	0.00%	0.00%	0.00%	0.00%	97.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.61%	0.00%	0.00%	0.00%	1.42%	0.00%
XLM	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.26%	0.01%	0.00%	0.00%	91.53%	0.00%	0.00%	1.58%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.61%	0.00%
XMR	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	6.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	47.03%	0.00%	0.00%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	46.81%	0.00%
XRB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%
XRP	1.13%	0.01%	0.00%	0.00%	0.00%	0.00%	0.73%	4.26%	0.00%	0.00%	0.64%	0.00%	1.07%	1.46%	62.55%	0.28%	0.00%	0.00%	0.00%	0.30%	0.00%	0.00%	0.45%	0.00%	27.05%	0.07%
XVG	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	99.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.21%	0.00%
ZEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	46.51%	0.00%	0.00%	0.00%	0.10%	0.70%	0.24%	0.00%	0.00%	0.00%	47.83%	0.35%
Market Share	0.67%	0.25%	0.27%	0.00%	0.00%	0.01%	0.05%	4.26%	0.51%	0.00%	0.36%	0.00%	0.15%	13.55%	29.78%	0.10%	0.03%	0.00%	0.38%	0.27%	0.03%	0.05%	0.23%	0.43%	48.39%	0.20%
Purchase Share	0.77%	0.32%	0.36%	0.06%	0.03%	0.12%	0.35%	4.74%	0.61%	0.04%	0.41%	0.03%	0.18%	16.34%	30.10%	0.14%	0.05%	0.01%	0.49%	0.32%	0.12%	0.07%	0.27%	0.59%	48.94%	0.24%

(a) Fiat Share

	AUD	BRL	CAD	CHF	CLP	CNH	CNY	EUR	GBP	HKD	IDR	ILS	INR	JPY	KRW	MXN	MYR	NZD	PLN	RUB	RUR	SGD	THB	TRY	USD	ZAR
ADA	0.59%	0.24%	0.25%	0.00%	0.00%	0.01%	0.03%	3.87%	0.50%	0.00%	0.28%	0.00%	0.11%	13.69%	19.13%	0.09%	0.03%	0.00%	0.37%	0.26%	0.02%	0.04%	0.18%	0.41%	43.60%	0.20%
ARDR	0.59%	0.24%	0.25%	0.00%	0.00%	0.01%	0.03%	3.87%	0.50%	0.00%	0.28%	0.00%	0.11%	13.69%	19.13%	0.09%	0.03%	0.00%	0.37%	0.26%	0.02%	0.04%	0.18%	0.41%	43.60%	0.20%
ARK	0.59%	0.24%	0.25%	0.00%	0.00%	0.01%	0.03%	3.87%	0.50%	0.00%	0.28%	0.00%	0.11%	13.69%	19.13%	0.09%	0.03%	0.00%	0.37%	0.26%	0.02%	0.04%	0.18%	0.41%	43.60%	0.20%
BCC	0.59%	0.24%	0.25%	0.00%	0.00%	0.01%	0.03%	3.87%	0.50%	0.00%	0.28%	0.00%	0.11%	13.69%	19.13%	0.09%	0.03%	0.00%	0.37%	0.26%	0.02%	0.04%	0.18%	0.41%	43.60%	0.20%
BCH	0.59%	0.24%	0.25%	0.00%	0.00%	0.01%	0.03%	3.87%	0.50%	0.00%	0.28%	0.00%	0.11%	13.69%	19.13%	0.09%	0.03%	0.00%	0.37%	0.26%	0.02%	0.04%	0.18%	0.41%	43.60%	0.20%
BCN	0.59%	0.24%	0.25%	0.00%	0.00%	0.01%	0.03%	3.87%	0.50%	0.00%	0.28%	0.00%	0.11%	13.69%	19.13%	0.09%	0.03%	0.00%	0.37%	0.26%	0.02%	0.04%	0.18%	0.41%	43.60%	0.20%
BNB	0.42%	0.16%	0.18%	0.00%	0.00%	0.01%	0.02%	2.77%	0.34%	0.00%	0.21%	0.00%	0.08%	9.04%	13.64%	0.07%	0.02%	0.00%	0.25%	0.18%	0.02%	0.03%	0.13%	0.30%	31.43%	0.13%
BTC	0.56%	0.25%	0.25%	0.00%	0.00%	0.01%	0.02%	3.92%	0.51%	0.00%	0.28%	0.00%	0.10%	14.27%	18.51%	0.09%	0.03%	0.00%	0.38%	0.27%	0.02%	0.04%	0.18%	0.42%	43.97%	0.21%
BTG	0.25%	0.11%	0.11%	0.00%	0.00%	0.00%	0.01%	1.78%	0.21%	0.00%	0.84%	0.00%	0.05%	5.74%	57.69%	0.04%	0.01%	0.00%	0.19%	0.11%	0.02%	0.02%	0.12%	0.18%	25.63%	0.08%
BTS	0.51%	0.20%	0.21%	0.00%	0.00%	0.01%	0.02%	3.25%	0.40%	0.00%	0.24%	0.00%	0.09%	11.06%	16.48%	0.08%	0.03%	0.00%	0.30%	0.21%	0.02%	0.03%	0.16%	0.35%	36.49%	0.16%
DASH	0.45%	0.18%	0.20%	0.00%	0.00%	0.42%	0.02%	4.20%	0.38%	0.00%	0.22%	0.00%	0.08%	10.38%	23.73%	0.07%	0.02%	0.00%	0.38%	0.52%	0.32%	0.03%	0.21%	0.43%	45.11%	0.17%
DCR	0.56%	0.25%	0.25%	0.00%	0.00%	0.01%	0.02%	3.97%	0.51%	0.00%	0.28%	0.00%	0.10%	14.26%	18.50%	0.09%	0.03%	0.00%	0.38%	0.27%	0.02%	0.04%	0.18%	0.42%	43.95%	0.21%
DOGE	0.53%	0.23%	0.24%	0.00%	0.00%	0.01%	0.02%	3.88%	0.48%	0.00%	0.26%	0.00%	0.10%	13.10%	17.37%	0.09%	0.03%	0.00%	0.35%	0.25%	0.09%	0.04%	0.17%	2.15%	41.11%	0.19%
EMC2	0.56%	0.25%	0.25%	0.00%	0.00%	0.01%	0.02%	3.92%	0.51%	0.00%	0.28%	0.00%	0.10%	14.26%	18.51%	0.09%	0.03%	0.00%	0.38%	0.27%	0.02%	0.04%	0.18%	0.42%	43.98%	0.21%
EOS	0.24%	0.09%	0.10%	0.00%	0.00%	0.01%	0.01%	1.55%	0.18%	0.00%	0.11%	0.00%	0.05%	5.00%	50.29%	0.04%	0.01%	0.00%	0.14%	0.10%	0.01%	0.02%	0.08%	0.17%	34.99%	0.07%
ETC	0.56%	0.10%	0.11%	0.00%	0.00%	0.00%	0.01%	2.35%	0.21%	0.00%	0.54%	0.00%	0.05%	5.81%	55.88%	0.04%	0.01%	0.00%	0.16%	0.11%	0.02%	0.02%	0.08%	0.18%	26.29%	0.08%
ETH	0.66%	0.13%	0.32%	0.02%	0.01%	0.03%	0.02%	4.30%	0.27%	0.02%	0.26%	0.00%	0.15%	7.65%	21.71%	0.14%	0.02%	0.00%	0.26%	0.19%	0.06%	0.04%	0.24%	0.48%	42.73%	0.12%
GBYTE	0.56%	0.25%	0.25%	0.00%	0.00%	0.01%	0.02%	3.92%	0.51%	0.00%	0.28%	0.00%	0.10%	14.27%	18.51%	0.09%	0.03%	0.00%	0.38%	0.27%	0.02%	0.04%	0.18%	0.42%	43.97%	0.21%
GNT	0.57%	0.23%	0.26%	0.00%	0.00%	0.01%	0.02%	3.91%	0.47%	0.00%	0.28%	0.00%	0.11%	13.10%	18.85%	0.10%	0.03%	0.00%	0.36%	0.25%	0.02%	0.04%	0.19%	0.42%	44.41%	0.19%
HSR	16.59%	0.19%	0.21%	0.00%	0.00%	0.01%	0.02%	3.18%	0.38%	0.00%	0.23%	0.00%	0.10%	10.35%	17.18%	0.08%	0.02%	0.00%	0.28%	0.20%	0.02%	0.03%	0.16%	0.34%	35.87%	0.15%
KMD	0.56%	0.25%	0.25%	0.00%	0.00%	0.01%	0.02%	3.92%	0.51%	0.00%	0.28%	0.00%	0.10%	14.18%	18.55%	0.10%	0.03%	0.00%	0.38%	0.27%	0.02%	0.04%	0.18%	0.42%	43.96%	0.20%
LSK	0.53%	0.23%	0.24%	0.00%	0.00%	0.01%	0.02%	3.75%	0.48%	0.00%	0.27%	0.00%	0.10%	13.49%	17.63%	0.09%	0.03%	0.00%	4.82%	0.25%	0.02%	0.04%	0.17%	0.40%	42.24%	0.19%
LTC	0.60%	0.41%	0.45%	0.00%	0.00%	0.02%	0.01%	5.28%	0.85%	0.00%	0.23%	0.02%	0.21%	6.92%	17.82%	0.05%	0.02%	0.00%	0.40%	0.17%	0.09%	0.02%	0.15%	0.50%	56.70%	0.13%
MIOTA	0.28%	0.11%	0.13%	0.00%	0.00%	0.01%	0.01%	1.93%	0.23%	0.00%	0.14%	0.00%	0.05%	6.29%	22.04%	0.05%	0.02%	0.00%	0.17%	0.12%	0.01%	0.02%	0.09%	0.21%	59.90%	0.09%
MONA	0.20%	0.09%	0.09%	0.00%	0.00%	0.00%	0.01%	1.39%	0.18%	0.00%	0.10%	0.00%	0.04%	67.77%	6.59%	0.03%	0.01%	0.00%	0.14%	0.09%	0.01%	0.02%	0.06%	0.15%	15.64%	0.07%
NEO	0.52%	0.20%	0.22%	0.00%	0.00%	0.01%	0.02%	3.40%	0.42%	0.00%	0.25%	0.00%	0.10%	11.61%	17.15%	0.08%	0.03%	0.00%	0.32%	0.22%	0.02%	0.04%	0.16%	0.37%	49.82%	0.17%
NXT	0.56%	0.24%	0.25%	0.00%	0.00%	0.01%	0.02%	3.82%	0.49%	0.00%	2.63%	0.00%	0.10%	13.62%	18.35%	0.09%	0.03%	0.00%	0.36%	0.26%	0.02%	0.04%	0.18%	0.41%	42.74%	0.20%
OMG	0.43%	0.17%	0.18%	0.00%	0.00%	0.01%	0.02%	2.77%	0.34%	0.00%	0.20%	0.00%	0.08%	9.33%	14.19%	0.07%	0.02%	0.00%	0.25%	0.18%	0.02%	0.03%	2.51%	0.30%	56.98%	0.14%
PIVX	0.55%	0.25%	0.25%	0.00%	0.00%	0.01%	0.02%	4.45%	0.51%	0.00%	0.28%	0.00%	0.10%	14.18%	18.40%	0.09%	0.03%	0.00%	0.42%	0.26%	0.02%	0.04%	0.18%	0.42%	43.72%	0.20%
PPT	0.62%	0.18%	0.29%	0.01%	0.01%	0.02%	0.02%	4.14%	0.38%	0.01%	0.27%	0.00%	0.13%	10.51%	20.33%	0.12%	0.02%	0.00%	0.31%	0.23%	0.04%	0.04%	0.22%	0.46%	43.26%	0.16%
QASH	0.27%	0.09%	0.12%	0.00%	0.00%	0.01%	0.01%	1.77%	0.19%	0.00%	0.12%	0.00%	0.05%	8.52%	8.88%	0.05%	0.01%	0.00%	0.15%	0.11%	0.01%	0.04%	0.09%	0.19%	71.49%	0.08%
QTUM	0.20%	0.08%	0.08%	0.00%	0.00%	0.00%	0.01%	1.25%	0.16%	0.00%	0.09%	0.00%	0.04%	4.24%	64.18%	0.03%	0.01%	0.00%	0.12%	0.08%	0.01%	0.01%	0.06%	0.13%	16.32%	0.06%
REP	0.54%	0.20%	0.22%	0.00%	0.00%	0.01%	0.02%	14.71%	0.41%	0.00%	0.25%	0.00%	0.10%	11.20%	17.29%	0.09%	0.03%	0.00%	0.31%	0.22%	0.02%	0.04%	0.80%	0.36%	38.45%	0.16%
SALT	0.58%	0.23%	0.26%	0.00%	0.00%	0.01%	0.02%	3.98%	0.47%	0.01%	0.28%	0.00%	0.11%	13.05%	19.13%	0.10%	0.03%	0.00%	0.36%	0.25%	0.02%	0.04%	0.19%	0.43%	43.71%	0.19%
SC	0.56%	0.25%	0.25%	0.00%	0.00%	0.01%	0.02%	3.93%	0.50%	0.00%	0.28%	0.00%	0.10%	14.10%	18.59%	0.10%	0.03%	0.00%	0.38%	0.26%	0.02%	0.04%	0.18%	0.42%	43.94%	0.20%
SNT	0.57%	0.23%	0.26%	0.00%	0.00%	0.01%	0.02%	3.95%	0.48%	0.00%	0.28%	0.00%	0.11%	13.32%	18.98%	0.10%	0.03%	0.00%	0.36%	0.26%	0.02%	0.04%	0.19%	0.43%	43.65%	0.19%
STEEM	0.56%	0.25%	0.25%	0.00%	0.00%	0.01%	0.02%	3.91%	0.51%	0.00%	0.28%	0.00%	0.10%	14.16%	18.49%	0.09%	0.03%	0.00%	0.38%	0.27%	0.02%	0.04%	0.18%	0.42%	43.83%	0.20%
STRAT	0.56%	0.24%	0.25%	0.00%	0.00%	0.01%	0.02%	4.16%	0.51%	0.00%	0.28%	0.00%	0.11%	13.98%	18.71%	0.10%	0.03%	0.00%	0.37%	0.26%	0.02%	0.04%	0.18%	0.42%	43.77%	0.20%
TRON	0.42%	0.16%	0.19%	0.00%	0.00%	0.01%	0.02%	2.86%	0.33%	0.00%	0.20%	0.00%	0.08%	9.10%	42.39%	0.08%	0.02%	0.00%	0.25%	0.18%	0.02%	0.03%	0.14%	0.31%	31.18%	0.13%
USDT	0.82%	0.20%	0.23%	0.00%	0.00%	0.01%	0.04%	3.48%	0.41%	0.00%	0.27%	0.00%	0.12%	9.93%	23.27%	0.08%	0.02%	0.00%	0.29%	0.21%	0.03%	0.03%	0.21%	0.35%	40.95%	0.15%
VERI	0.65%	0.15%	0.30%	0.02%	0.01%	0.03%	0.02%	4.24%	0.31%	0.02%	0.27%	0.00%	0.14%	8.74%	21.23%	0.13%	0.02%	0.00%	0.28%	0.21%	0.05%	0.04%	0.23%	0.47%	42.92%	0.13%
VTC	0.55%	0.25%	0.25%	0.00%	0.00%	0.01%	0.02%	4.35%	0.52%	0.00%	0.28%	0.00%	0.10%	14.21%	18.44%	0.09%	0.03%	0.00%	0.38%	0.27%	0.02%	0.04%	0.18%	0.42%	43.79%	0.20%
WAVES	0.53%	0.23%	0.24%	0.00%	0.00%	0.01%	0.02%	3.79%	0.48%	0.00%	3.64%	0.00%	0.10%	13.29%	17.57%	0.09%	0.03%	0.00%	0.36%	0.62%	0.12%	0.04%	0.17%	0.40%	41.58%	0.19%
XEM	0.44%	0.19%	0.20%	0.00%	0.00%	0.01%	0.02%	3.14%	0.39%	0.00%	0.22%	0.00%	0.08%	32.42%	14.54%	0.07%	0.03%	0.00%	0.29%	0.21%	0.15%	0.03%	0.14%	0.33%	34.61%	0.16%
XLM	0.55%	0.23%	0.24%	0.00%	0.00%	0.01%	0.30%	3.73%	0.47%	0.00%	4.31%	0.00%	0.10%	13.19%	18.19%	0.09%	0.03%	0.00%	0.35%	0.25%	0.02%	0.04%	0.18%	0.40%	41.81%	0.19%
XMR	0.39%	0.17%	0.17%	0.00%	0.00%	0.01%	0.02%	4.63%	0.34%	0.00%	0.19%	0.00%	0.07%	9.20%	28.20%	0.06%	0.02%	0.00%	0.26%	0.17%	0.01%	0.03%	0.12%	0.28%	44.79%	0.13%
XRB	0.56%	0.24%	0.24%	0.00%	0.00%	0.01%	0.00%	3.61%	0.49%	0.00%	0.27%	0.00%	0.07%	13.60%	15.98%	0.09%	0.04%	0.00%	0.36%	0.25%	0.02%	0.04%	0.16%	0.41%	41.35%	0.20%
XRP	0.86%	0.12%	0.12%	0.00%	0.00%	0.00%	0.39%	4.03%	0.24%	0.00%	0.47%	0.00%	0.60%	7.25%	41.30%	0.20%	0.03%	0.00%	0.18%	0.28%	0.01%	0.02%	0.32%	0.20%	34.82%	0.13%
XVG	0.56%	0.24%	0.25%	0.00%	0.00%	0.01%	0.02%	4.61%	0.50%	0.00%	0.28%	0.00%	0.10%	13.97%	18.51%	0.10%	0.03%	0.00%	0.37%	0.26%	0.02%	0.04%	0.18%	0.42%	43.72%	0.20%
ZEC	0.43%	0.17%	0.18%	0.00%	0.00%	0.01%	0.02%	3.99%	0.36%	0.00%	0.21%	0.00%	0.08%	9.92%	26.68%	0.07%	0.02%	0.00%	0.29%	0.38%	0.08%	0.03%	0.13%	0.30%	44.82%	0.24%
Market Share	0.74%	0.26%	0.28%	0.00%	0.00%	0.02%	0.06%	4.40%	0.53%	0.00%	0.30%	0.00%	0.15%	13.85%	28.01%	0.11%	0.03%	0.00%	0.39%	0.28%	0.03%	0.04%	0.24%	0.40%	49.53%	0.20%

(b) Implicit Shares

Note: Color scale transitions from Red (Low Share) to Green (High Share) within each row (crypto). A clear row within the fiat share indicates that no fiats purchase the indicated crypto.

the USD-equivalent value of 2016 stocks transactions, normalized by the stocks traded in the USA stock markets, and compare that predicted share (relative to the US) with the transaction share of the fiat currency within crypto market using the three measures market measures derived in Section 3: crypto market share of fiat transactions, purchase share of fiat transactions, and implicit currency share.[8]

All but four fiats account have a smaller share of transactions in the crypto market than in their stock markets: IDR, JPY, KRW, and PLN: the KRW considerably so. All remaining cryptos have a strictly fewer comparative transactions on the crypto market than they do in their stock markets, with some below one-tenth of their stock market. This remains true for the two Chinese currencies (CNY and CNH) even if combined, however, if the two Russian currencies (RUR and RUB) are combined then the purchase share would exceed the stock market transaction values, while the market and implicit shares would remain the below stock market transactions.

4.2. Market Share and Economic Properties

Table 9 compares each currency's share of crypto-market transactions (sorted by their behavior relative to their stock market) to their economic properties. I consider economic size (GDP), average income (GDP per capita), as well as two measures of global integration: Trade Openness ($\frac{Exports+Imports}{GDP}$) and the Chinn and Ito (2006) Chinn-Ito Index of Financial Openness.[9] The Chinn-Ito index ranges from 0 (financially closed) to 1 (financially open). I also use the E-friction scores of Zwillenberg and Dean (2014) to capture ease of internet access. The E-friction score incorporates information on a countries infrastructure, industry development, individual frictions (such as payment systems or data security) and information frictions (language support, a country's commitment to internet access, etc.), with a lower score indicated lower internet frictions (easier, free-er internet access). As internet access is

[8] Stock trade valued is obtained from the World Bank, current USD value. Code: CM.MKT.TRAD.CD

[9] All data comes from the World Bank. GDP: NY.GDP.MKTP.CD. GDP per capita: NY.GDP.PCAP.CD. Exports: NE.EXP.GNFS.CD. Imports: NE.IMP.GNFS.CD.

Table 8: Transaction Shares in Crypto-market and Stock Markets (% of USD)

	Direct	Purchase	Implicit	Stocks
—All crypto shares greater than stock market shares				
IDR	0.36	0.41	0.30	0.21
JPY	13.55	16.34	13.85	12.43
KRW	29.78	30.10	28.01	3.81
PLN	0.38	0.49	0.39	0.11
—All crypto shares less than stock market shares				
MXN	0.10	0.14	0.11	0.27
TRY	0.43	0.59	0.40	0.67
CLP	0.00	0.03	0.00	0.06
RUB	0.27	0.32	0.28	0.33
—All crypto shares less than half of stock market shares				
AUD	0.67	0.77	0.74	1.89
BRL	0.25	0.32	0.26	1.33
CAD	0.27	0.36	0.28	2.74
EUR	4.26	4.74	4.40	15.89
GBP	0.51	0.61	0.53	6.05
ILS	0.00	0.03	0.00	0.21
MYR	0.03	0.05	0.03	0.23
NZD	0.00	0.01	0.00	0.03
RUR	0.03	0.12	0.03	0.33
SGD	0.05	0.07	0.04	0.45
THB	0.23	0.27	0.24	0.77
ZAR	0.20	0.24	0.20	0.96
—All crypto shares less than one-tenth of stock market shares				
CHF	0.00	0.06	0.00	1.99
CNH	0.01	0.12	0.02	43.49
CNY	0.05	0.35	0.06	43.49
HKD	0.00	0.04	0.00	3.21
INR	0.15	0.18	0.15	1.88

Note: Stock trades 2016 stock market trades normalized to USA transaction values. Data for EUR and GBP is 2014. CNY and CNH both use Chinese Stock Market transaction, while both RUR and RUB are compared to Russian Federation transactions. If RUB and RUR were combined, all crypto-transaction shares would exceed stock market transaction shares.

a key component of crypto markets, it is possible that a high frictions would reduce crypto transactions. The data is also represented in Figure 3, using both market share and the market deviation from the stock market, defined as the ratio of the crypto share and the stock market share.

There is no obvious correlation between crypto-share deviations from formal global financial assets and economic size, income, or the two measures of economic openness, or

Table 9: No Relationship Between Transaction Share in Crypto-market and Economy Properties

	Direct	Purchase	Implicit	$\frac{\text{GDP}^C}{\text{GDP}^{USA}}$	$\frac{\text{GDPpc}^C}{\text{GDPpc}^{USA}}$	TO^C	CI	e-Friction
—All crypto shares greater than stock market shares								
IDR	0.36	0.41	0.30	5.01	6.19	37.39	0.41	74
JPY	13.55	16.34	13.85	26.53	67.49	31.24	1.00	39
KRW	29.78	30.10	28.01	7.58	47.78	77.68	0.72	41
PLN	0.38	0.49	0.39	2.53	21.55	100.47	0.70	45
—All crypto shares less than stock market shares								
MXN	0.10	0.14	0.11	5.62	14.24	78.11	0.70	68
TRY	0.43	0.59	0.40	4.64	18.85	46.82	0.45	58
CLP	0.00	0.03	0.00	1.33	23.93	56.09	0.70	57
RUB	0.27	0.32	0.28	6.89	15.18	46.27	0.71	57
—All crypto shares less than half of stock market shares								
AUD	0.67	0.77	0.74	6.47	86.62	39.95	0.94	30
BRL	0.25	0.32	0.26	9.64	15.01	56.63	0.17	69
CAD	0.27	0.36	0.28	8.21	73.14	64.39	1.00	25
EUR	4.26	4.74	4.40	64.08	60.74	87.01	1.00	26
GBP	0.51	0.61	0.53	14.22	69.99	58.03	1.00	28
ILS	0.00	0.03	0.00	5.01	64.50	58.45	0.41	39
MYR	0.03	0.05	0.03	1.59	16.50	128.64	0.42	44
NZD	0.00	0.01	0.00	0.99	68.39	52.52	1.00	33
RUR	0.03	0.12	0.03	6.89	15.18	46.27	0.72	57
SGD	0.05	0.07	0.04	1.59	91.89	318.42	1.00	31
THB	0.23	0.27	0.24	2.19	10.25	123.07	0.17	64
ZAR	0.20	0.24	0.20	1.59	9.17	60.38	0.17	67
—All crypto shares less than one-tenth of stock market shares								
CHF	0.00	0.06	0.00	3.59	138.61	120.40	1.00	21
CNH	0.01	0.12	0.02	60.13	14.09	37.06	0.17	69
CNY	0.05	0.35	0.06	60.13	14.09	37.06	0.17	69
HKD	0.00	0.04	0.00	1.72	75.79	372.62	1.00	21
INR	0.15	0.18	0.15	12.15	2.97	39.81	0.17	73

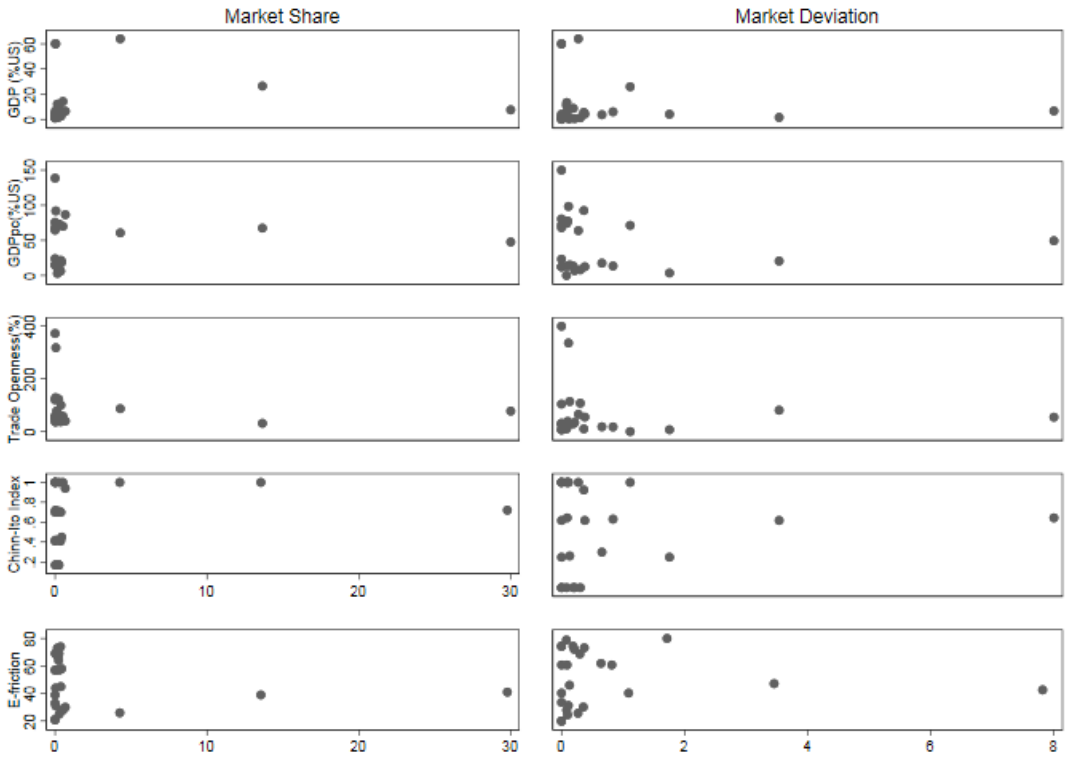
Note: Germany's values are used for the EUR Chinn-Ito Index and e-Friction score. All data is values from 2016, except for the Chinn-Ito Index of Financial Openness which is for 2015 and the e-Friction score which is from 2014.

electronic access. Both large and small economies have crypto shares greater than (and smaller than) the size of their stock market in the global economy, with the same true for rich/poor, open/closed, and high/low internet ease economies.

4.3. Economic Exposure to Crypto-markets and Market Share

To determine an economies exposure to cryptocurrencies I calculate the fiat value of daily transactions as a share of the value of the corresponding daily stock market transactions within the economy: $\frac{\sum_c V_c^f}{Stocks^f}$: how much is placed into the crypto-market relative to the stock

Figure 3: No Relationship Between Currency Share of Crypto And Four Economic Properties



Note: Visualization of the data in Table 9. Market Deviation is crypto market share divided by the stock market share: a number greater than 1 indicates a greater share of crypto-investment than would be predicted using stock market size.

market. Results are reported in Table 10 and Figure 4, and range from 0.00% (CNH) to 82.45 (KRW). The second largest exposure is Poland at 37.26%.

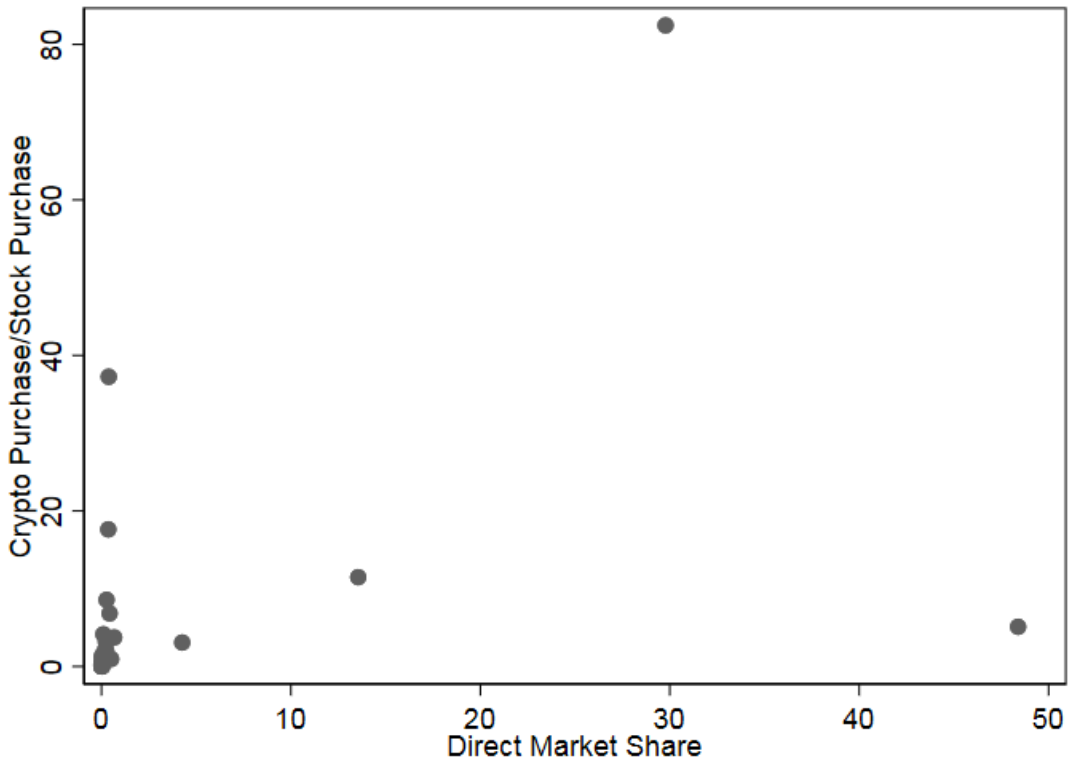
The economic exposure does not correlate with cryptocurrency market share. Some economies which have substantial exposure (PLN: 37.26%, IDR: 17.63%) have very little crypto-market share. Whether this is good or bad is open to interpretation. On one hand, cryptos represent a diversification asset (Bouri et al. (2017)), so this represents a reduction in home-biased investment. On the other, the crypto market is dominated by only three economies so that an economic crisis in one can generate contagion in the crypto-market which could then spread to the exposed economies.

Table 10: Economic Exposure To the Crypto-Market Does Not Correlate With Importance In the Crypto-Market

	Share				
	BTC	Direct	Purchase	Implicit	$\frac{\text{Crypto Purchase}}{\text{Stock Purchase}}$ (%)
AUD	0.55	0.67	0.77	0.74	3.74
BRL	0.34	0.25	0.32	0.26	2.00
CAD	0.31	0.27	0.36	0.28	1.05
CHF	-	0.00	0.06	0.00	0.02
CLP	-	0.00	0.03	0.00	0.31
CNH	-	0.01	0.12	0.02	0.00
CNY	-	0.05	0.35	0.06	0.01
EUR	4.82	4.26	4.74	4.40	3.08
GBP	0.70	0.51	0.61	0.53	0.96
HKD	-	0.00	0.04	0.00	0.01
IDR	0.22	0.36	0.41	0.30	17.63
ILS	-	0.00	0.03	0.00	0.22
INR	0.08	0.15	0.18	0.15	0.84
JPY	20.71	13.55	16.34	13.85	11.48
KRW	15.37	29.78	30.10	28.01	82.45
MXN	0.11	0.10	0.14	0.11	4.14
MYR	0.05	0.03	0.05	0.03	1.41
NZD	-	0.00	0.01	0.00	0.08
PLN	0.50	0.38	0.49	0.39	37.26
RUB	0.36	0.27	0.32	0.28	8.57
RUR	-	0.03	0.12	0.03	0.85
SGD	0.05	0.05	0.07	0.04	1.24
THB	0.16	0.23	0.27	0.24	3.12
TRY	0.54	0.43	0.59	0.40	6,82
USD	54.83	48.39	48.94	49.53	5.10
ZAR	0.29	0.20	0.24	0.20	2.19

Note: Share information from Table 4 and Table 6. Rank indicates the largest (1) to smallest (26) market share by each transaction share.

Figure 4: No Relationship Between Market Share And Stock Market Share



Note: Visualization of the data in Table 10. The size of the daily crypto purchases relative to the currency's daily stock market transactions is not related to its market share in the crypto-market.

5. Conclusion

Much like the internet that came before it, cryptos promise an increased linkage between economies. This paper has established that the fiat purchases of Bitcoin are not a good representation crypto market share, and introduced three different measures to accommodate the increasingly fragmented nature of the market when gauging market share: Direct, Purchase, and Implicit. The different measures affect the ranking for mid-rank fiats that have have concentrated purchasing in a few cryptos, and can increase or decrease the market share of each fiat.

All three measures reveal that while these digital financial instruments have the potential to link economies and increase financial flows, just three currencies—the KRW, USD, and JPY—account for over 90% of crypto transactions, with the top four—KRW, USD, JPY,

and EUR—accounting for over nearly 95%. The size of these transactions do not follow the relative sizes of the stock markets associated with these fiats, nor can this concentration be explained by by the relative economic size, income, or openness of the economy. Some currencies with large exposures to the crypto-market which may lead to an benefit from this new digital economy by reducing home-bias and increasing diversification, or it may lead a detrimental effect due to a new avenue of financial contagion that is much harder to shut down using standard economic policy tools.

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