Payments System Research Briefing

The Controversial Business of Cash-to-Crypto Bitcoin ATMs

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Bitcoin ATMs, standalone machines that convert cash to cryptocurrency, are a relatively new and less examined part of the cryptocurrency world. This controversial industry has garnered criticism in the press as well as the U.S. government for its association with illegal or financially predatory practices. However, despite the recent downturn in cryptocurrency prices, some U.S. consumers are still using Bitcoin ATMs, suggesting the industry meets a demand from consumers who want an alternative to crypto exchanges.

Bitcoin ATMs, or "BTMs," are a substantial industry in the United States. Despite the volatility of the cryptocurrency market and some controversy over potentially predatory or illicit uses, the cash-to-crypto BTM industry continues to experience consumer demand. However, data on the industry and its effects are sparse. This *Payments System Research Briefing* surveys the data available and reviews the industry's overall shape, size, and customer base in the United States.

How BTMs Work

BTMs allow consumers to purchase, and sometimes sell, Bitcoin and other cryptocurrencies. While all BTMs handle Bitcoin, many also handle cryptocurrencies such as Litecoin and Ether, as well as the stablecoins Tether and USDC. The standalone BTM machine resembles a traditional ATM and generates fees for the "operator"—the individual, small business, or corporation that manages the BTM. BTMs are generally placed in locations with heavy foot traffic, long hours, and convenient in-and-out locations, such as convenience stores, gas stations, cafes, and supermarkets; locations that are relatively cheap to rent and offer privacy and accessibility are preferred (Coin ATM Radar 2015; ChainBytes Bitcoin ATM 2021; Chad Otsuji ATM Business 2021; Nordqvist 2022).

Although the process of buying or selling Bitcoin at a BTM varies by machine, users follow some basic steps. First, the customer selects a purchase tier (such as $5–$1,999 or $2,000–$7,500). After providing the BTM with identification, such as a phone number, the customer enters the address of the digital wallet that will receive the Bitcoin purchased, usually using a QR code. If the customer prefers not to use a digital wallet, the BTM can create a paper wallet printed with the public and private cryptographic keys that allow access to the Bitcoin (again, usually via QR code). Finally, the customer feeds cash (or a debit card)

into the machine and receives a receipt of the transaction. Selling Bitcoin at a BTM mostly follows the same procedure except that the address to send Bitcoin is that of the BTM operator, and cash is dispensed.

Characteristics of U.S. BTM Users

About 10 to 25 percent of U.S. adults hold or use cryptocurrency, and while some of these adults use BTMs, the exact number is unknown (Board of Governors of the Federal Reserve System 2023; Faverio and Sidoti 2023; Arkana and Li 2023; Wheat and Eckerd 2022). Based on their reasons for using BTMs, consumers generally fall into at least one of four groups (Thinking Crypto 2023; ChainBytes Bitcoin ATM 2021; Tompor 2018).

- Cash users: People who prefer to transact in cash and may be unbanked or underbanked.
- Older consumers: Older users who may not be as adept with current technology but are used to traditional ATMs. These users tend to prefer familiar, personal, and tangible experiences.
- Privacy seekers: Users who want greater anonymity than is provided by a crypto exchange.
- Convenience-focused consumers: Users who want quick and easy transactions and are willing to pay a fee for this convenience.

Demographically, most BTM users are male and almost evenly distributed across age groups, with a slight majority age 30 to 44 (Bitcoin Depot and GSR II Meteora Acquisition Corp. 2023). These characteristics are roughly in line with other studies on cryptocurrency users, though BTM users may skew older (Board of Governors of the Federal Reserve System 2023; Faverio and Sidoti 2023; Wheat and Eckerd 2022).

According to one industry source, the vast majority of BTM users earn less than $80,000 per year (Bitcoin Depot and GSR II Meteora Acquisition Corp. 2023). Research reports from outside the BTM industry suggest that low- and middle-income consumers are in fact overrepresented among BTM users—a characteristic that news articles also support (Board of Governors of the Federal Reserve System 2023; Faverio and Sidoti 2023; Wheat and Eckerd 2022; Peters 2020; Tompor 2018).

News articles also point to a significant proportion of BTM users belonging to minority groups (Peters 2020; Tompor 2018; Mika 2023). This finding appears consistent with research that consistently shows that minority groups are the biggest holders and users of cryptocurrency in general, with Asian users slightly outpacing Black and Hispanic users (Board of Governors of the Federal Reserve System 2023; Faverio and Sidoti 2023).

A share of BTM users may also be immigrants. According to limited evidence from the BTM industry, a majority of users buy cryptocurrencies from BTMs to use in person-to-person transactions or remittances. Because many BTMs appear in

immigrant neighborhoods in major cities, news reports also stress the role of BTMs in remittances (Luthi 2022; Ajiboye 2022; Mika 2023). One explanation for this usage may be that the cost of using cryptocurrency obtained from a BTM in a remittance may be comparable to the cost of sending a remittance via third parties using cash, when factoring in convenience, time savings, and transactional certainty and speed.

After remittances, BTM users report using Bitcoin to an almost equal extent for investing or making online purchases. A minority of users also report using Bitcoin as a store of value or converting it into another form of cryptocurrency (Bitcoin Depot and GSR II Meteora Acquisition Corp. 2023). These reports are at odds with most research and news articles that show investment as the leading reason for buying or holding cryptocurrency among consumers overall (Board of Governors of the Federal Reserve System 2023; Arkana and Li 2023; Tompor 2018; Luthi 2022).

How the U.S. Bitcoin ATM Industry Operates

Customers pay high fees to use a BTM, on top of a possible exchange fee. The median fee for buying Bitcoin from a BTM, as self-reported by BTM operators in the United States, is 16 percent of the value of the transaction (Coin ATM Radar 2023). When selling Bitcoin, the median fee (again, self-reported) is 15 percent (Coin ATM Radar 2023). Sometimes added to these usage fees are unfavorable exchange rates derived from the operator charging above-market prices for the Bitcoin. Hearsay evidence puts exchange rate costs at between 5 and 7 percent of the value of the transaction (Knight 2023). In total, fees of 20 percent may not be uncommon.

Because the total cost of operating a BTM is estimated at only 3 to 6 percent of revenue, Bitcoin ATMs are a high-margin industry for operators (Wanna, Irrera, and Butt 2022). Operator costs can be roughly broken into "direct" and "indirect" costs. The direct costs are the BTM machines, the rent for their locations, and the cryptocurrency transacted. BTMs are usually bought new or used, but they can also be rented. Operators must also maintain Bitcoin and cash balances to run their BTMs, usually by buying the Bitcoin from an over-the-counter dealer (Coin ATM Radar 2023; ChainBytes Bitcoin ATM 2021; Thinking Crypto 2023).

The main indirect or overhead cost of operating a BTM is regulatory compliance. BTMs are basically money services businesses and therefore are supposed to follow state and federal rules related to the Bank Secrecy Act and anti-money laundering (AML) rules (BitAML 2019; ChainBytes Bitcoin ATM 2021). Many BTM suppliers provide guides and documents to new BTM owners to manage compliance on their own. Large operators have their own staffs to handle regulatory compliance, and some third-party businesses do all AML work for smaller BTM operators.[1] However, many BTM operators do little or nothing to comply with existing regulations (PYMNTS 2022; Thomson Reuters 2022; State of New Jersey Commission of Investigation 2021).

Size of the U.S. Bitcoin ATM Industry

The lack of data makes it hard to determine the size of the Bitcoin ATM industry in the United States. However, the number of BTMs, the number of operators, and revenue can give a broad outline.

The total number of BTMs in use varies widely depending on the data source. For example, Coin ATM Radar reports 30,712 BTMs in operation as of July 2023. However, the website "How Many Bitcoin ATMs" reports 67,962 BTMs as of January 2023. A very rough approximation of the number of BTMs may be the average of the two figures: 49,337 BTMs. (See the appendix for more information on these data.)

Data on the number of U.S. BTM operators are again scarce and probably inaccurate. "How Many Bitcoin ATMs" reports only 19 operators. In contrast, Coin ATM Radar reports 220 operators; however, this number is still likely on the low side given that some operators do not record their presence on this website. The United States may have significantly more than 220 BTM operators, especially considering the potential for numerous small operators with just a few BTMs (Coin ATM Radar 2023).

Again, data on revenue in the BTM industry are sparse and questionable. Based on industry and news sources, the industry average for monthly income from a BTM in the United States ranges between $5,000 and $7,250, resulting in an average of $6,125 (see the appendix for the derivation of these monthly figures). Multiplying the monthly income average ($6,125) by the estimated number of BTMs (49,337) results in an average monthly income across the industry of $302,189,125—an estimated annual revenue of $3.63 billion, though this is only an approximate figure. If the usual fee involved in a transaction is 16 percent, consumers buying and selling Bitcoin and other cryptocurrencies at BTMs must spend $22.69 billion in cash in a year to produce this annual industry revenue.

The rapid growth of the BTM industry in the United States was significantly affected by the 2022 "crypto winter," when cryptocurrency prices declined dramatically. Growth in the industry came to a halt, with some retrenchment before the number of BTMs stabilized (Wanna, Irrera, and Butt 2022). The operator of Coin Cloud ATMs, for example, filed for bankruptcy in early 2023, removing thousands of BTMs from use in the United States (CoinCodeCap 2023).

Nevertheless, some BTM operators are expanding, notably Bitcoin Depot, which became a publicly traded company on the NASDAQ in July 2023, with a market cap of around $45 million. In early 2023, Bitcoin Depot started a partnership with convenience store chain GetGo to install BTMs in its stores (Dworski 2023). At the same time, Coinhub entered into agreements with gas stations and convenience stores to host its BTMs (Coinhub Bitcoin ATM 2023). By mid-2023, the overall

number of BTMs began to grow again (Sarkar 2023).

Risks of Bitcoin ATMs

The BTM industry has been charged repeatedly with predatory and illicit behavior, gaining a reputation that may eventually affect consumer use as well as future regulation. BTM operators have already formed the Cryptocurrency Compliance Cooperative to get ahead of potential conflicts with regulators and law enforcement (Partz 2021).

The industry is most often charged with "predatory inclusion," or disguising high-risk, high-cost services as ways for the financially disadvantaged to gain entry to lucrative financial investments. Some argue that BTMs are marketed to the unbanked, low-income, and migrant communities, consumers who tend to use cash more often. Further, cryptocurrencies are marketed as an investment that can be purchased without a broker or bank account, with effectively no minimum dollar amount, and with the potential for large returns. However, the volatility of Bitcoin and other cryptocurrencies and the transaction fees involved are not clearly presented (Tompor 2018; Knight 2023; Peters 2020; Luthi 2022; U.S. Department of the Treasury 2022; Mika 2023).

Law enforcement have received reports of scam victims being directed to send money to scammers through BTMs. Victims are usually sent a QR code (the scammer's digital wallet address) and directed to go to a BTM, convert cash into cryptocurrency, and send it to the address provided. These funds are unrecoverable. Chainalysis reports that BTMs are the source of around 1 percent of payments by scam victims, reaching over $35 million in 2022 (TRM 2023; U.S. Department of the Treasury 2022; FBI Internet Crime Complaint Center 2021; Chainalysis 2023).

According to one report, BTMs are the most common way to launder money, with an individual BTM operator able to process tens of millions of dollars in dirty cash (TRM 2023). The relative anonymity of transactions, along with the speed, convenience, and irreversibility of the cash-to-crypto conversion make BTMs ideal for money launderers. Cash from illicit activities is converted into cryptocurrency and sent to a wallet that serves as an off-ramp for the illicit funds via an online exchange (TRM 2023; Thomson Reuters 2022; State of New Jersey Commission of Investigation 2021).

Conclusion

The multi-billion-dollar U.S. BTM industry, built on a cash-to-crypto service, continues to grow, with the number of BTMs increasing after the "crypto winter" retrenchment. Despite high fees attached to BTMs, consumers seem likely to use them—perhaps for remittances, investment, or both.

Growth in the industry should not obscure charges of predatory and illicit behavior. Given the size of the Bitcoin ATM industry in the United States, the losses to uneducated crypto investors using BTMs to purchase volatile cryptocurrencies could be substantial. Further, the industry's role in facilitating money laundering and scams may pose significant risks to the public.

Appendix: Notes on U.S. BTM Industry Data and Calculations

Number of BTMs

Only two sources exist for nationwide data on BTMs, and both have some reliability issues. The website "Coin ATM Radar" covers many aspects of the U.S. BTM industry, but all data on the site are self-reported by operators, who get exposure and free marketing for their businesses. Data are not comprehensive, as some large operators and perhaps many small BTM operators do not report to the website.

The other source of data on the U.S. BTM industry is "How Many Bitcoin ATMs," a website run by an anonymous group of researchers who use "company websites and official directories" as their sources. These data sources appear to leave out large BTM operators that appear on Coin ATM Radar. Further obscuring the data on "How Many Bitcoin ATMs" is whether a Bitcoin ATM is defined as a BTM, as a retailer providing an over-the-counter service, or both. The potential inclusion of non-BTM operations likely inflates the number provided.

Total Revenue

Given sparse and questionable revenue data, perhaps the best way to get a sense of the industry's overall revenue is by first estimating the revenue per BTM and then combining it with the number of BTMs we estimate. For this, we use information from the publicly traded Bitcoin Depot and estimates put forth by other sources to try to determine the revenue per BTM.

Various sources have put the estimated monthly revenue of a BTM as between $1,000 and $10,000, depending on use and transaction volume (ChainBytes Bitcoin ATM 2021; Wanna, Irrera, and Butt 2022). This gives a midpoint monthly revenue per BTM of $5,000.

If we assume that a Bitcoin Depot BTM earns at an industry average (a big assumption), we may be able to get a more focused number. Using their 2021 revenue of $548,980,000 and an estimated 6,300 BTMs in the United States, we calculate the average monthly income per BTM was $7,262 (Yahoo! Finance 2023; Bitcoin Depot and GSR II Meteora Acquisition Corp.

2023; Bitcoin Depot 2021).

Endnotes

[1] One example is BTM Compliance, which can handle registration in the U.S. Treasury's Financial Crimes Enforcement Network and Suspicious Activity Reports (BTM 2023).

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Franklin Noll began his professional life as a businessman. Coming from a small farming town in the Pennsylvania Dutch country, he studied business and computer science at Lehigh University. He then worked in the plastics industry before returning to school to study history. Earning a PhD in history at the University of Maryland, he taught history at the university level for several years, winning the Rundell Award for Teaching and being named a University of Maryland Distinguished Teacher. Noll then left academia to begin his own company, Noll Historical Consulting, LLC, which is no longer in operation.Noll is a recognized authority on the history of money, Treasury securities, Civil War finance, and the US public debt. He has extensively written and spoken upon these topics, including making film and radio appearances and writing blogs for the US Treasury and Bloomberg News. Noll has embraced the new world of cryptocurrencies and DeFi, examining how a knowledge of monetary history can aid in their development. He is an expert columnist for CoinDesk, Cointelegraph, Be In Crypto, New Money Review, and other crypto news agencies and was elected a member of the Association of Cryptocurrency Journalists and Researchers and the Digital Euro Association. He was also an advisor to the Vemanti Group, Inc. on monetary history and policy and authored its stablecoin white paper.Noll has recently completed his fourth term as the President of the Treasury Historical Association and is featured in the production of an upcoming documentary film on the history of the Treasury Building being created by the Treasury Historical Association.