The Power of Money: Lessons from Introducing Digital Currency to a Barter Community

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Abstract

I investigate how digital currency issuance by a private online platform affected the exchange of used goods in a large North American barter community. Since the community banned cash, users initially relied on beer, gift cards, and transit tokens to complete transactions. The community then introduced a digital token that could be transferred among users and redeemed at designated local stores for retail goods. Using comprehensive transactions data, I show that a large monetary expansion persistently increased transaction volume by 70% but did not create inflation. However, when token redemption was suddenly halted at a subset of stores, a run on the token ensued and transaction volume fell. I use a search-theoretic model of money to interpret these findings.

Keywords: barter, monetary non-neutrality, currency crisis
JEL: E42, E52, E65

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1 Introduction

The recent rise of private digital currencies has renewed public interest in fundamental questions about the nature and purpose of money.\(^1\) A large theoretical literature in monetary economics uses micro-founded models to understand how the presence or absence of money affects economic exchange (e.g. Samuelson 1958; Townsend 1980; Kiyotaki and Wright 1989, 1993; Lagos and Wright 2005; Lagos, Rocheteau and Wright 2017). However, there is very limited empirical evidence on the topic, since money is nearly omnipresent in the modern economy, and transaction data featuring decentralized trade without money are exceedingly rare.\(^2\)

In this paper, I investigate how the introduction of a digital currency by a private online platform affected the exchange of used goods in a large barter community named Bunz. The Bunz community consisted primarily of young adults in Toronto meeting in person to trade second-hand items such as clothing, plants, groceries, and other household items. The community arranged transactions through a mobile app, which had roughly 10 thousand daily active users. For this reason, comprehensive transaction data is available for analysis.

Two unique features of the community allow me to measure the impact of money on barter exchange. First, the community forbade cash transactions for ideological reasons, thus creating an environment where users had to barter in order to complete transactions. Since it was rare for two parties to hold items of similar value that the other wants, app users often used beer, gift cards, and transit tokens to complete transaction. Second, the platform introduced a digital token to facilitate trade among its users. Tokens were digitally transferable among users. They were also accepted by designated local stores, such as coffee shops and retail stores, who could then convert tokens into Canadian dollars from the platform at a fixed exchange rate.

Since app usage was stable prior to the introduction of the digital token, I use an interrupted time series design to measure the effects of token issuance on token price and transaction volume.

\(^1\)Emerging digital currencies include Bitcoin and Ethereum, as well as stablecoins such as Tether and Facebook’s Diem (formerly “Libra”). As of May 26, 2021, the market capitalization of stablecoins surpassed 100 billion USD. https://cryptobriefing.com/stablecoins-surpass-100-billion-market-cap/.

\(^2\)Only occasionally in recent memory has decentralized exchange proceeded without money, such as during the Argentinian currency and Greek financial crises (Pearson 2003; Poggioli 2011). Furthermore, only a handful of studies document decentralized trade without money. For example, Radford (1945) describe the emergence of cigarettes as money in a POW camp. Marin and Schnitzer (1995) study the emergence of barter and countertrade in international trade due to financing frictions.
To measure user transaction volume, I use high-frequency data on ratings that users provide for each other upon trade completion, which are available both before and after the introduction of the digital token. To measure the perceived token price, I use the ratio of the posted token price of store gift cards and their dollar-denominated face value. I focus on two waves of increased digital currency issuance. First, when the token was introduced in April 2018, all active users were endowed with some units of the token. Second, the platform quintupled token supply through helicopter drops to users in September and October 2018.

The first wave of token issuance led to little change in transaction volume among app users. However, the second and much larger wave of token issuance led to a roughly 70 percent increase in peer-to-peer in-person transactions. This increase was driven neither by new users, nor by an increased supply of goods. Instead, it coincided with increased token peer transfers, which suggests that users transitioned from barter to monetized trade. Furthermore, the increase in transaction volume persisted for almost a year, even after token issuance was significantly reduced and token supply stabilized.

At the same time, the second wave of token issuance did not affect the perceived value of the token, nor did it lead to any immediate change in token velocity, as measured by the token value of peer transfers and redemption divided by the total token supply. The dual findings of long-run monetary non-neutrality and no inflation is consistent with Kiyotaki and Wright (1993), which features both frictional barter and a fixed exchange value of money, and predicts that monetary expansion persistently increases transaction volume.

There was a subsequent currency crisis, however. Since token redemption drained the platform’s finances and the platform struggled to raise funds, the platform laid off most of its employees in September 2019 and announced abruptly that tokens would no longer be redeemable except at coffee shops and restaurants. An interrupted time series design reveals that token redemption immediately increased after the announcement, as users rushed to spend down token balances, even though there were no corresponding change in token issuance.

Both total transaction volume and the number of new items posted on the app fell by roughly 25 percent after the announcement. This reduction in transaction activity is related to reduced token acceptance among users, since the number of token peer transfers fell by roughly a third and the
share of items posted with a token price also immediately and sharply fell by 10 percentage points. These findings illustrate how economic activity can rapidly deflate when confidence in a currency is undermined and traders become less willing to accept the currency as payment. This episode can be interpreted through the lens of Kiyotaki and Wright (1993) as a shift from one equilibrium where many agents accept tokens to one where fewer do.

This paper contributes transaction-level evidence to a theoretical literature on the micro-foundations of money and barter. Since Adam Smith (1776, chap. 4), economists have believed that money overcomes the inefficiencies of a barter system (see also Jevons 1875). Most recently, a large literature on search-theoretic models of money has emerged to explicitly model the dynamic process wherein buyers and sellers randomly meet over time and money enables trade without the double coincidence of wants (see, e.g., Kiyotaki and Wright 1989, 1993; Lagos and Wright 2005; Rocheteau and Wright 2005). To the best of my knowledge, this study is the first to use comprehensive transaction data to measure how the introduction of money affects barter exchange.

This paper also contributes new evidence to the literature on monetary non-neutrality. A long-standing and controversial literature in macroeconomics tests for the effects of monetary policy on aggregate economic output (e.g., Romer and Romer 2004; Nakamura and Steinsson 2018). Sweeney and Sweeney (1977) provide a famous account of the Great Capitol Hill Baby Sitting Co-op Crisis in 1970s, wherein a recession in baby sitting was averted through monetary expansion (see also Krugman 1998). To this literature, I add quantitative evidence that currency issuance in a barter community generated a large and persistent increase in transaction volume. 

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3 Lagos, Rocheteau and Wright (2017) and Rocheteau and Nosal (2017) provide comprehensive surveys of search-theoretic models of money. Earlier formal models of money view money as a record-keeping device to facilitate trade when agents are spatially separated (Ostroy and Starr 1974; Townsend 1980, 1989; Kocherlakota 1998) or as an intergenerational store of value (Samuelson 1958; Tirole 1985). Banerjee and Maskin (1996) argue that a single commodity may mediate all trade even in the presence of complete markets, so long as the value of some commodities are more uncertain than others. Kranton (1996) and Prendergast and Stole (2000) study the role of bilateral relationships in sustaining trade in the absence of money. A large literature in anthropology documents that money historically emerged from debt ledger systems (e.g., Graeber 2011).

4 The literature on the effects of digital payment systems on consumer outcomes is closely related. For example, Jack and Suri (2014) show that the adoption of M-Pesa, a mobile payment system in Kenya, reduced transactions costs and improved risk-sharing. Xu, Ghose and Xiao (2019) show that the adoption of mobile payment in China increased the size and frequency of transactions. Alvarez and Argente (2020a,b) study the effects of a ban on cash payments for Mexican Uber riders. This study differs by focusing on the effects of money issuance rather than that of payment system adoption on consumer behavior. There is also a growing literature on cryptocurrencies, primarily concerned with the determination of Bitcoin and other cryptocurrency prices (e.g. Abadi and Brunnermeier 2018; Biais et al. 2019; Schilling and Uhlig 2019; Sockin and Xiong 2020), initial coin offerings (e.g., Catalini and Gans 2018; Howell,
Finally, this paper contributes new evidence to a large literature on currency pegs and runs (e.g., Eichengreen, Rose and Wyplosz 1994, 1995) and a nascent one on stablecoins (e.g., Lyons and Viswanath-Natraj 2020). One strand of this literature considers how macroeconomic factors can cause a currency to trade at prices discounted from the pegged value (Eichengreen, Rose and Wyplosz 1994; Engel and West 2005; Gabaix and Maggiori 2015; Itskhoki and Mukhin Forthcoming). Another strand focuses on the collapse of pegged exchange rates due to inadequate central bank reserves and speculative attacks that are potentially self-fulfilling (Krugman 1979; Obstfeld 1986; Eichengreen, Rose and Wyplosz 1995; Morris and Shin 1998; Chamley 2003). To this literature, I contribute a case study of a currency crisis using comprehensive transaction data in the Bunz community, wherein partial cessation of token redemption resulted in reduced token acceptance, lowered transaction activity, and a transition back to barter.

The paper proceeds as follows. Section 2 describes the community and the available data. Section 3 provides a conceptual framework. Section 4 documents changes in currency issuance and corresponding changes in user activity. Section 5 documents the currency crisis. Section 6 concludes.

2 Background

2.1 History of the Bunz Community

The barter community Bunz began in 2013 as a Facebook group, created “to make city living easier for a cohort of millennials who graduated into a post-recession labour market and felt squeezed by precarious employment, stagnant wages and the soaring cost of living” (McIntyre 2019). During its early days, community members would publish posts indicating that they were either in search of some item or were looking to get rid of some other item. Interested members would write back and offer to trade. Initially known as “Bumz”, the community was highly popular among cash-constrained young adults in Toronto, who often posted funny commentary about local happenings

Niessner and Yermack 2019), and central-bank digital currencies (e.g., Kumhof and Noone 2018, Brunnermeier. James and Landau 2019; Fernández-Villaverde et al. 2020). You and Rogoff (2019) theoretically study redeemable platform currencies and argue that issuing non-transferable tokens can be more profitable for the platform in the absence of convenience yields.
in addition to items they wished to trade. The community grew rapidly between 2013 and 2016. Due to this growth, roughly 200 Facebook groups were created, each dedicated to trading different types of items and discussion of different topics, some with thousands or even tens of thousands of members.

In early 2016, the community leaders decided to migrate the community’s trading activities to a dedicated mobile app. The app’s interface was designed specifically to enable users to post, search, and message each other about items to trade. The app had in fact been independently developed by a separate company (Shuff Inc.) and had functionality similar to other apps that later emerged, like Facebook Marketplace. However, the app lacked users. The migration of Bunz community members onto the app therefore benefited both parties. It provided the app with a significant user base, while the community benefited from improved trading experiences. But the merger also created a long-standing ideological divide within the community. The app developers (henceforth, “Bunz HQ”) were interested in growing the user base beyond the initial community and eventually monetizing the app, while the community leaders, who continued to administer the Facebook discussion groups on a voluntary basis, wanted to preserve the anti-capitalist ethos of the community.5

2.2 Trading Mechanics on the Bunz Platform

Because of its anti-capitalist spirit, the Bunz community had one (and only one) rule: no cash. Instead, users were to transact through “true trades,” i.e. barter (see Bunz FAQ in the Appendix). Bunz HQ enforced this ban by taking down any item postings that requested cash, and the ban on cash was by and large observed by the app’s users. Interviews with app users in May 2019 revealed a range of opinions about the ban on cash transactions among users. Many interviewees, especially those who were involved in the administration of the Facebook groups, expressed strong agreement with the cash ban. However, at least one frequent seller admitted that they prefer transacting in cash and sometimes to tried to gently steer buyers towards paying in cash.

Figure 1, Panel (a) shows photos of the mobile app in 2017, before the introduction of its

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5 A fascinating article by McIntyre (2019), published in The Logic, provides a detailed and colorful account of the history of this merger, as well as useful context for the launch of BTZ and subsequent currency crisis.
digital token, BTZ. The left panel shows the app home screen, where the users can browse or search for items to trade. The right panel shows an example of a posted item on the app, which typically included a photo, a description, as well as the location of the seller. In addition, all users maintained a public profile, which displays a short description of the user’s trading interests and an “ISO” (in search of) list, which indicates what types of items that user would be willing to accept in exchange for items that she posts. The items that the user that has posted for sale is also shown in the profile.

Figure 2 shows examples of typical in-app interactions taken from a local newspaper article that provided trading tips for Bunz users (Kaur 2017). In the app, when a user comes across an item she liked, she would click a button to send an offer message to the seller, asking if he would be interested in any item that she posted (“Anything in mine?”). He would then browse her profile and message back to indicate whether there was any such item. If a possible trade was found, then the two would then message to arrange a time and location to meet. In the message screen, users are prompted to rate each other once they complete a trade.

Due to the ban on cash, the need for double coincidence of wants posed an impediment to transactions on the Bunz app. As shown in Figure 2, transactions frequently failed because the buyer did not have an item that the seller desired. When this occurred, sellers often offered to complete the transaction using common commodities instead, such as beer, gift cards, and transit tokens. These offers were common, but were occasionally rejected in favor of a proper barter transaction, i.e. a “true trade”. These example messages confirm that the lack of double coincidence is an empirically important impediment to trade in the absence of money, as theorized first by Adam Smith (1776) and featured in monetary models such as Ostroy and Starr (1974) and Kiyotaki and Wright (1989, 1993).

2.3 Introduction of BTZ

In April 2018, Bunz HQ introduced a new app feature, BTZ, which was marketed as “a brand new digital currency.” The stated purpose of BTZ was to facilitate trade within the app, and the new
Figure 1: App interface

(a) Before BTZ introduction

(b) After BTZ introduction

Source: Panel (a) is from an official blog post by Bunz, published on September 1, 2017. Panel (b) is taken by the author on June 18, 2019, with red circles added.
Figure 2: Examples of in-app interactions

Source: Article from a weekly local free newspaper providing tips for Bunz traders, published on December 28, 2017 (Kaur 2017).
feature was designed such that it was easy to transfer these tokens from user to user. At the time of BTZ introduction, each user was endowed with 1000 BTZ upon wallet activation. In addition to receiving BTZ from other users, users could earn extra BTZ directly from the app through the “Daily BTZ Drop” by opening the app and answering a survey. The goal of “Daily BTZ Drop” was to increase user traffic and BTZ adoption in the app. Users could also earn more BTZ by inviting friends to join the app or posting new items.

To promote the token and to ensure price stability, Bunz HQ created the “Shop Local” program, which allowed users to purchase goods using BTZ at partner local stores around Toronto, such as coffee shops, at a fixed exchange rate of 100 BTZ / 1 Canadian dollar. After accepting BTZ payments, the owners of local stores could then redeem BTZ for cash from Bunz HQ at the same fixed exchange rate. Other than token redemption through the Shop Local program, users could neither buy nor sell BTZ for cash in the Bunz app. As such, the total supply of tokens on the app was strictly determined by token issuance by the app and token redemption by users at local stores.

Figure 1, Panel (b) shows photos of the mobile app after the introduction of its digital token, BTZ. On the top left of the home screen is the user’s BTZ balance. In the center, users were prompted to participate in the “Daily BTZ Drop”. Each item could now be posted with a BTZ price. BTZ could also be transferred among users by tapping on buttons on another user’s profile or by scanning another user’s QR code. All of these features were introduced in an major app update in April 2018.

2.4 Data and Descriptive Statistics

Bunz HQ provided timestamped data for all item postings and descriptions, all user ratings, and meta-data on user messages, including indicators for offer messages. Detailed data on all BTZ transactions following its introduction are also available, including timestamps, BTZ amount, as well as the identities of the sender and receiver. An additional source of information is the “Daily BTZ Drop” surveys, which were conducted daily and for which answers were required before users received the daily issuance of BTZ from Bunz HQ.

The Bunz user base consisted primarily of young college-educated adults, as shown in Appendix Figure A1. Roughly 75 percent of BTZ Drop survey respondents reported to be between
18 and 34 years old. More than half reported to have completed a university degree at the bachelors or higher level. Users also exhibit a wide range of annual incomes. While roughly 27 percent of users reported annual incomes of less than $20,000, nearly 40 percent reported annual incomes higher than $50,000.

A small fraction of users account for a large share of completed in-person transactions on the platform. In March 2018, 4,243 users completed 17,284 transactions. The 569 users with the most transactions account for half of these transactions. The top 118 users account for 20% of these transactions.

### 3 Conceptual Framework

To provide intuition for how digital currency issuance affects transaction behavior in the Bunz community, this section presents a simplified version of Kiyotaki and Wright (1993). In the model, the problem of double coincidence of wants in barter creates a use for transferable tokens to enable decentralized trade.

#### 3.1 Setup

Consider a unit mass of infinitely-lived agents who produce, trade, and consume commodities. Consumption of a unit of a commodity yields utility \( U \). However, agents cannot consume their own product. Furthermore, agents are able to consume a random agent’s product only with probability \( x \in (0, 1) \). Initially, fraction \( M \in [0, 1] \) of agents are endowed with one unit of fiat money, while \( (1 - M) \) are endowed with one real commodity. Both fiat money and commodities can be stored at zero cost. However, fiat money cannot be consumed. Following consumption of a commodity, an agent produces one unit of a commodity instantaneously.

An agent who holds an inconsumable commodity looks for an agent with whom to trade. Agents randomly meet pairwise at Poisson rate \( \beta \). With probability \( x^2 \), the pair has “double coincidence of wants,” so they are able to consume each other’s commodity. Whenever a commodity is traded, a transactions cost \( \varepsilon \) is incurred, where \( 0 < \varepsilon < U \), so agents who are indifferent between two commodities never trade. The transactions cost of accepting fiat is zero. Exchange takes place
if and only if mutually acceptable.

Agents choose strategies for deciding when to accept various commodities and money in order to maximize their expected discounted utility from consumption net of transactions, taking as given the strategies of others. Let $\pi$ denote probability a trader accepts money in exchange for a commodity. We solve for the symmetric steady-state Nash equilibrium.

Importantly, both money and commodities are indivisible in this model. If money trades, it must trade one-for-one against a commodity. The implied exchange value of money is therefore fixed whenever it is used for trade. This assumption is inappropriate in settings where the exchange value of money is flexible, but it is reasonable in the Bunz context, since the BTZ token is redeemable at a fixed exchange rate. Furthermore, as shown below in Section 4, the perceived BTZ price remains anchored at the fixed exchange rate throughout the monetary expansion.\(^7\)

The model also assumes that the Bunz community is a closed economy. This assumption comes at some expense of realism, since Bunz users are also regular participants in the urban Canadian cash economy. However, it is justified for two reasons. First, many of the used personal possessions traded on the Bunz platform are not easily bought or sold in physical stores or other online platforms. Second, the conversion of BTZ tokens into Canadian dollars is highly frictional.\(^8\)

### 3.2 Empirical Predictions

There are three Nash equilibria in this model: (1) a non-monetary equilibrium, where $\pi = 0$; (2) a mixed-monetary equilibrium, where $\pi = x$; and (3) a pure-monetary equilibrium, where $\pi = 1$. The symmetric mixed-strategy equilibrium can be reinterpreted as a non-symmetric pure-strategy equilibrium, where fraction $x$ of agents accept money with probability 1 and the remainder accept it with probability 0.

In equilibrium, all agents either hold one unit of money or one unit of commodity. Agents who hold commodities complete a barter exchange with other commodity traders at rate $(1 - M) \beta x^2$.\(^9\)

\(^7\)In models with divisible money and flexible token prices (Trejos and Wright 1995; Shi 1997; Lagos and Wright 2005; Rocheteau and Wright 2005; Molico 2006), monetary expansion leads to inflation, as predicted by the quantity theory of money. For tractability, Shi (1997) assumes transfers within families and Lagos and Wright (2005) assume a periodic centralized market, but these assumptions do not match the Bunz setting.

\(^8\)Consider an open economy with a pegged currency with limited convertibility or capital controls (e.g. Calvo 1981). Monetary expansion would lead to a trade imbalance that lowers the money supply slowly back to its original level, with consumption rising during this transition.
and complete an exchange with agents who hold money at rate $M \beta x \pi$.

How does consumption and welfare vary with $M$ and $\pi$? Aggregate consumption is

$$\varphi = \beta (1 - M) \left[ M x \pi + (1 - M) x^2 \right].$$

The ex ante expected utility of all agents is

$$W = \frac{1}{r} (U - \epsilon) \varphi,$$

where $r$ is the rate of time preference.

First consider a monetary expansion in the pure-monetary equilibrium where $\pi = 1$. If barter is sufficiently difficult (i.e. $x < 1/2$), then increasing $M$ away from zero persistently increases aggregate consumption and improves ex ante welfare. In other words, money is non-neutral.

Next compare consumption and welfare in the three equilibria. The pure-monetary equilibrium where all agents accept money yields the highest aggregate consumption and ex ante expected utility for agents. The non-monetary equilibrium where no agents accept money yields the lowest aggregate consumption and ex ante expected utility. In other words, money is essential. If fewer agents in the economy are willing to accept fiat money as a consequence of movement from one equilibrium to another, then aggregate consumption and welfare fall.

The next two sections empirically assess the above two predictions. Section 4 evaluates whether monetary expansion persistently increases consumption in the Bunz community. Section 5 tests whether aggregate consumption fell when Bunz HQ partially halted its token redemption program, a move that could be interpreted as an exogenous reduction in the willingness to accept tokens by a subset of agents in the economy.

4 Effects of Currency Issuance

In this section, I first document that Bunz HQ dramatically increased token issuance in September 2018, resulting in a fivefold monetary expansion. I then show that this expansion caused the total number of peer-to-peer transactions completed to persistently increase by roughly 70%. This
finding confirms the first prediction of the conceptual framework.

### 4.1 Changes in Token Supply

There were two waves of token issuance in the history of Bunz. The first wave came in April 2018 (w15), when the token was first introduced and any user who activated the wallet received 1000 BTZ (equivalent to 10 CAD). The second wave occurred in September and October 2018 (w36-42), when Bunz HQ increased the amount of Daily BTZ Drop to 100 BTZ per day from 10 BTZ per day, in hopes of increasing use of the token. Bunz HQ then realized that the resulting pace of token redemption would be financially unsustainable. After roughly eight weeks of increased token issuance, the app slowed the printing presses, reverting back to Daily BTZ Drops of 10 BTZ per day.

Figure 3 shows the effect of monetary expansion on token supply. Panel (a) plots the trend in weekly sum of tokens issued by Bunz HQ to users, excluding local stores and Bunz employees. As mentioned in Section 2, the “Daily BTZ Drop”, wherein some quantity of the token was transferred from Bunz HQ to a user after the user answered a survey question each, was the primary method for Bunz HQ to change the amount of the token in circulation. The “Daily BTZ Drop” is highly similar to the idea of a “helicopter drop” in monetary economics (Friedman 1969; Bernanke 2002), wherein cash were directly added to the bank accounts of all citizens, as if dropped from a helicopter overnight.

Panel (b) plots token redemption per week, as measured by BTZ transferred to local stores. In May 2018, there was a wave of token redemption after the first wave of token issuance, as users flocked to affiliated local stores to use tokens to purchase goods. In October to December 2018, there was another wave of heightened token redemption, after the second wave of token issuance. However, after Christmas Day that year, BTZ redemption fell again.

Panel (c) plots the total supply of tokens in circulation, calculated as the cumulative sum of BTZ issued minus the cumulative sum of BTZ redeemed. After the first wave of monetary expansion in April and May 2018, the total value of token in circulation stabilized at roughly 20 million BTZ (equivalent to 0.2 million CAD). BTZ supply then grew rapidly in September 2018 due to increased token issuance, but was stabilized after November 2018 at a level of roughly 100 million
Figure 3: Token supply before and after monetary expansions

(a) BTZ issued
(b) BTZ redeemed
(c) BTZ supply
(d) BTZ velocity

Notes: Figure shows the weekly trend in (a) BTZ issuance, i.e., the total amount of tokens sent from Bunz directly to users, (b) BTZ redemption, i.e., total amount of tokens sent from users to local stores, (c) BTZ supply, i.e., the cumulative sum of BTZ issued minus the cumulative sum of BTZ redeemed, and (d) weekly BTZ velocity, i.e., the ratio of total BTZ redemption and peer transfer and the total BTZ supply in a given week. All numbers are denominated in the Canadian dollar (CAD) at the fixed exchange rate: 1 CAD = 100 BTZ. Gray bars indicate the first and second wave of monetary expansion.

BTZ (equivalent to 1 million CAD). In other words, the second monetary expansion increased total token supply by about five times.

Panel (d) plots the weekly token velocity, computed as the ratio of total BTZ payments by users in a given week and the total BTZ supply.\(^9\) The figure shows that weekly velocity hovered around 0.08 both before and after the second wave of monetary expansion. This is equivalent to a rate at which each token changes hand roughly four times a year. However, weekly token velocity then

\(^9\)BTZ payments include peer transfers and redemption, but exclude issuance.
fell to roughly 0.05 around Christmas of 2018, about two months after the end of the monetary expansion, when BTZ redemption fell.

4.2 Effect on Token Price

Many economic theories of money, beginning with the quantity theory, suggest that monetary expansion leads to inflation. Despite the fivefold monetary expansion, however, the token price remained anchored at the fixed exchange rate of the token redemption program.

To measure the token price as perceived by users in the app, I use item postings for store gift cards and take the ratio of their posted BTZ price and their dollar-denominated face value. Since BTZ were not freely exchangeable with other currencies, but rather redeemable at a fixed exchange rate through good purchases at local stores, this measure provides the best available proxy for the BTZ token price as perceived by users in the app.

Figure 4 shows the effect of monetary expansion on token price. Panel (a) shows the median posted exchange rate for gift cards by month, which hovered unchangingly from July 2018 until May 2019 around the official fixed exchange of 100 BTZ / 1 CAD. Panel (b) plots all available relative token price from gift card posting over time. This plot shows that there was considerable dispersion in gift card exchange rates, as might be expected in an app where exchange is subject to search frictions. For a large fraction of gift cards, however, the posted token prices were exactly 100 BTZ / 1 CAD, the official exchange rate for token acceptance at local stores.

4.3 Effect on Transaction Volume

Given that the token price remained anchored at the token’s face value, economic theory predicts that monetary expansion should lead to an increase in transaction volume. Consistent with this prediction, monetary expansion significantly increased in-person transaction activity arranged through the app.

To measure the volume of goods exchanged on the battering app, I count the number of user ratings. This measure is the closest available proxy for total trade volume, since barter transactions are not associated with any prices, the goods traded on the app are highly heterogeneous, and exchange is typically arranged through in-app messages. Since users almost always provide a
Figure 4: Effect of monetary expansion on token price

(a) Median posted token price
(b) All posted token prices

Source: The sample is all posted items on Bunz tagged as a store gift card with an associated BTZ value and a discernible gift card value in the post title or description. Panel (a) shows the median exchange rate for each month. Panel (b) plots every posted gift card as a dot.

Figure 5 plots the effects of monetary expansion on transaction activity. Panel (a) shows our headline result. The figure plots the trend in the number of peer-to-peer transactions per week, as measured by user ratings. The dashed line plots the average between 2016w12 to 2018w35, during the period before monetary expansion. Note, first, that total peer-to-peer transaction volume was remarkably unchanging in the two years before the introduction of BTZ. Throughout, the number of user ratings per week hovered close to roughly 1700, the average between 2016w12 and 2018w35. The introduction of BTZ in April 2018 also had little effect on transaction activity. If anything, there was a small dip in completed transactions following April 2018. This dip is likely to be driven seasonal trends, since a dip of similar magnitude is seen during the year before.\(^\text{10}\)

Following the expansion of money supply in September 2018, however, there was a large increase in the number of transactions completed. Remarkably, this increase was not only large, but persistent. As shown in the figure, the average number of completed peer-to-peer transactions

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\(^{10}\)Figure 9, Panel (b) shows that a similar dip occurred in the year after too.
Figure 5: Effect of monetary expansion on transaction activities

(a) Number of transactions

(b) Number of BTZ peer transfers

(c) New vs return users

(d) Number of new item posts

Notes: Figure shows the weekly trend in (a) the number of peer-to-peer transactions (as measured by user reviews), (d) the number of peer-to-peer BTZ transfers, (c) the number of peer-to-peer transactions (as measured by user reviews) decomposed by prior trades of the user (as measured by the reviewer’s number of past reviews in the week prior to the review), and (d) the number of new items posted in the app. Gray bars indicate the first and second wave of monetary expansion.

per week between 2018w44 to 2019w30 was roughly 2800, which was 68 percent higher than the pre-expansion average. This finding suggests that the increased availability of tokens boosted trade volume by reducing transaction frictions in the economy.

Panel (b) plots the number of weekly peer-to-peer token transfers among users. This figure shows that the use of BTZ in peer-to-peer transactions was rising even before the second monetary expansion, but was significantly boosted during the second monetary expansion. It then gently declined in the months after, stabilizing at a level of roughly 1800 transfers per week. This trend
is consistent with the idea that the rise in transaction activity was caused by the increased use of tokens.

Panel (c) shows that the increase in transaction volume is not driven by an increase in first-time traders, but rather by seasoned traders with at least 10 transactions prior. The fact that transactions increased primarily for existing users is also consistent with the hypothesis that monetary expansion reduced transaction frictions.

Panel (d) shows that there was an increase in new items posted on the platform occurred after the monetary expansion. Importantly, however, the number of new items posted increased gradually, while the increase in the number of complete transactions was immediate. This finding suggests that the increase in transaction volume was not driven by increases in the supply of items in the app.11

4.4 Relationship to Theory

To briefly summarize, the fivefold monetary expansion on the app platform had no impact on the token price, but caused the total number of peer-to-peer transactions completed to increase by roughly 70%. This increase was neither driven by new users nor new supply of items on the platform, but coincided with an increase in peer-to-peer token transfers. It also persisted long after monetary expansion slowed and token redemption fell.

What economic theories are consistent with these findings? As described in Section 3, Kiyotaki and Wright (1993) provide a model where the exchange value of the token is fixed and the lack of double coincidence prevents trade. In this model, monetary expansion can persistently increase not only consumption, but also the number of transactions and the share of transactions mediated by money, as confirmed in the data.

Models that feature fully flexible prices, however, cannot easily explain the observed patterns. Consider, for example, search-theoretic models of money where token prices are flexible (Trejos and Wright 1995; Shi 1997; Lagos and Wright 2005; Molico 2006). These models may feature monetary non-neutrality in the transition. However, money is neutral in the long run, since mone-

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11The composition of item categories that were posted and requested was also stable over time, as shown in Appendix Figure A3. This suggests that monetary expansion did not significantly alter the types of goods that were being transacted, even as it altered the volume of trade.
tary expansion leads to inflation. Since we observe a persistent effect of monetary expansion and no inflation, these models do not explain the data.

Models that feature nominal rigidity without monetary frictions also cannot explain all of the observed patterns in the Bunz economy. Consider, for example, a cash-in-advance model with a fixed token price. In this model, monetary expansion can raise consumption by persistently expanding the budget set of agents. However, the model generates no prediction on the effects of monetary expansion on the number of transactions and the share of transactions mediated by money. As such, micro-founded models of monetary frictions are better able to explain the observed data than models that only feature sticky prices.

5 Currency Crisis

The conceptual framework in Section 3 predicted that a reduction in the willingness of users to accept tokens would decrease the volume of trade and aggregate welfare. This section describes a run on the BTZ token that occurred in September 2019, a year after the monetary expansion considered in the previous section. I first recount the sequence of events leading to the currency run. I then describe the effects of the currency run on token redemption and supply, before turning to its contractionary effects on in-person transaction activity.

5.1 Timeline of Events

After introducing BTZ, Bunz HQ worked on developing other new features to drive user and revenue growth, including expanding the Shop Local program to include additional local stores and makers, introducing a community discussion feature, and selling in-app advertising. As 2019 progressed, however, Bunz HQ’s financial position became increasingly untenable. There were roughly 18 employees on its payroll, token redemption continued to drain its coffers, and its budding advertising sales were insufficient to offset the cash outflow. Though Bunz HQ worked to raise funds, it soon became clear that neither new investment nor an acquisition was forthcoming (Galang 2019).

On September 9, 2019, Bunz HQ abruptly announced that tokens would henceforth only be
redeemable at local partner stores selling coffee or food. Figure 6 shows the letter that Bunz HQ sent to partner businesses that were part of the Shop Local program. The letter said, "Effectively immediately, you will no longer be able to accept BTZ and convert them into CAD currency. We will be locking your wallets, and everyone will be paid up to September 10th inclusive, so please don’t worry about any revenue that you brought in through the program as we will be settling your account with you and removing you from the application.

If you have any questions or concerns, please don’t hesitate to reach out. I will be by within the week to come and collect the Bunz assets in your possession, so please do not throw them away!"

Notes: Email from Bunz to Shop Local partners announcing immediate cessation of token redemption except for coffee shops and restaurants. Taken from item post by Alisa Yao on September 10, 2019.

Shocked and disgruntled, Shop Local partners took to announcing these changes on the app to the wider Bunz community, criticizing Bunz HQ for the abruptness of the decision, their lack of transparency, and their reneging on a promise to provide a 30-day notice of changes to the Shop Local program. One wrote, “While I respect their decision to end the program, more notice would have been nice. This was literally [zero] notice and not professional. I now have customers that can no longer support me on this platform, many who saved BTZ for months. And now their BTZ is no longer of use to them.”

The next day, Bunz HQ provided an update to the broader community in a blog post. The post confirmed that it would no longer accept BTZ except at coffee shops and restaurants. Apologizing
for “any inconvenience and disappointment this may have caused”, the blog post went on to explain that Bunz HQ also had to make the difficult decision to lay off 15 employees that same day.12

The turmoil resulting from the sudden partial cessation of token redemption was widely reported by local newspapers. One article emphasized the disappointment of users, some of whom had been saving up their BTZ for bike repairs, records and other large purchases (Posadzki 2019).13 Another reported that Bunz’s Facebook community was especially furious (McIntyre 2019). A group of Facebook administrators announced online that they would sever their affiliation with Bunz and rename their Facebook groups as “PALZ”, writing, “Today, we would like to reclaim our communities. We would like to bring Bunz back to what it once was. We want our groups to remember why they exist. We do not want to profit. We do not want your app sign-ups. We do not want you to buy into an online currency that will let you down.”14

There was an immediate loss of confidence in the token among app users. Figure 7 shows user profiles and item posts about ten days after the scaling back of the Shop Local program. Many users had stopped accepting BTZ for trades, with one users writing that “I don’t accept BTZ anymore due to uncertainty. I believe BTZ & BUNZ will cease to exist shortly.” Another wrote, “I’m paused on BTZ for now, until we get some stability.” Yet another wrote, “I will only be doing TRUE TRADES from now on. I no longer believe that BTZ is a sustainable form of currency because of the lack of choices that the users have, and the fluctuating rate at which they are rewarded.”

In an interview on October 18, 2019, a frequent seller of used books on the app confirmed that there was tremendous uncertainty about the value of BTZ after the announcement. Like many other app users, he stopped accepting BTZ immediately after the announcement. He then rapidly spent down his stock of tokens at local restaurants by “eating like a king”. Two weeks after, however, he realized that BTZ now traded among users at a discount. Since Bunz HQ still redeemed tokens at restaurants at the same fixed exchange rate, this made it profitable for him to accept BTZ again. At

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12See Appendix for the full text of this blog post. The digital wallets of employees were also suddenly locked (Galang 2019).

13An administrator for several Bunz-related Facebook groups, for example, was to quoted to say that the announce-ment “felt like a punch in the gut.” She had amassed roughly $600 worth of BTZ, and treated her stockpile as a sort of safety net, in case she ran out of money and needed to buy something for her two-year-old son. ‘Now, it’s worthless,’ She said. ‘He doesn’t drink coffee” (Posadzki 2019).

14See Appendix for the full text of this statement.
the time of the interview, he was willing to accept BTZ at a 10-15% discount from other users in exchange for books, but would immediately redeem the tokens for food at token-accepting stores. This way he maintained only a very small balance of tokens in his wallet and thus minimized his exposure to the risk that the token might become worthless if the Shop Local program ceased altogether.\footnote{See the Appendix for a transcript of this interview.}

### 5.2 Effects on Token Redemption and Supply

The data confirm that the partial cessation of token redemption undermined confidence in the currency among users. There was an immediate increase in token redemption at local stores, despite no change in token issuance. However, this amounted to only a small reduction in the nominal value of the token supply.

Figure 8 shows token issuance, redemption, and supply before and after the currency crisis. To smooth over seasonal fluctuations over the course of a week, I plot the 7-day moving average...
in dark maroon. The daily value is shown in light maroon. The red dash line marks the date of the partial cessation of the Shop Local program, namely, September 10, 2019, which triggered the currency crisis.

Panel (a) plots the trend in the total amount of tokens sent from Bunz directly to users. Before the crisis, token issuance was largely stable, except for a brief spike on 13 August, 2019, which was driven by unusual and likely fraudulent activity by a small number of users.\textsuperscript{16} Other than this spike, token issuance was essentially unchanged immediately before and after the currency crisis. Therefore, changes in token issuance were not a concomitant driver of changes in user behavior.

Panel (b) plots the trend in total amount of tokens redeemed by users through the Shop Local program. Before the crisis, token redemption was largely stable, except for two brief spikes that were driven by unusual activity by a small number of users.\textsuperscript{17} Immediately after September 10, however, there was a large increase in BTZ redemption that lasted several days. BTZ redemption continued to be elevated above the pre-crisis level for almost two weeks, and never fell much below the pre-crisis level for the remaining month and a half of available data. The fact that token redemption remained at the pre-crisis level despite the drastically reduced Shop Local program implies that users were redeeming tokens much more heavily at the remaining token-accepting stores.

Panel (c) plots the trend in token supply, calculated as the cumulative sum of BTZ issued minus the cumulative sum of BTZ redeemed. Before the crisis, the BTZ supply was steadily increasing, since the token issuance exceeded redemption. Immediately after the announcement, token supply fell. As shown above, this reduction is driven by a sharp increase in token redemption and no change in token issuance. Even though this reduction was sharp, its magnitude was in fact quite small relative to the total token supply. This likely reflects the fact that Bunz’s sudden restriction of token redemption to small-value and perishable items at coffee shops and restaurants made it

\textsuperscript{16}The spike in BTZ issuance on 13 August reflects fraudulent activity wherein some user created numerous accounts and then immediately redeemed these BTZ through the Shop Local program. The data show a sudden increase in new user sign-ups and referrals, which were rewarded by Bunz HQ with 1000 BTZ and 500 BTZ, respectively. There was coincidentally a sudden increase in token redemption at four local stores from these same accounts on the same day and the day after.

\textsuperscript{17}The spike in token redemption on 13 and 14 August are driven by fraudulent activity (see previous footnote). The spike on 30 August is due to a large redemption of 304778 BTZ by a single user. By contrast, the increase in token redemption after 10 September was neither specific to a small number of stores nor a small number of users.
Figure 8: Token supply before and after currency crisis

(a) BTZ issuance  
(b) BTZ redemption  
(c) BTZ supply  
(d) BTZ velocity

Notes: Figure shows the trend in (a) BTZ issuance, i.e., the total amount of tokens sent from Bunz directly to users, (b) BTZ redemption, i.e., total amount of tokens sent from users to local stores, (c) BTZ supply, i.e., the cumulative sum of BTZ issued minus the cumulative sum of BTZ redeemed, and (d) daily BTZ velocity, computed as the ratio of total BTZ payments and the total BTZ supply on a given day. All are denominated in Canadian dollars (CAD) at the fixed exchange rate: 1 CAD = 100 BTZ. The dark and light maroon lines show the 7-day moving average and the daily trend, respectively. The red dashed line indicates September 10, the day of partial cessation of Shop Local program. The pre-crisis spikes in issuance and redemption reflect unusual activity by a small number of users (see text for details).

much more difficult for token holders to spend down their tokens. Since the perceived token price was widely reported to have fallen during the crisis, the real value of total token supply must have fallen more than shown in the figure.

Panel (d) plots the daily token velocity, computed as the ratio of total BTZ payments by users in a given day and the total BTZ supply. The figure shows that BTZ velocity initially hovered
around 0.004 per day, or 1.5 per year. However, spikes occurred on several days during the three weeks leading up to the crisis, once again driven by unusual activity by a small number of users. BTZ velocity then increased to roughly 0.01 per day, or 3.7 per year, immediately after September 10, before gradually falling back towards the baseline level over the subsequent two weeks.

5.3 Effect on Transaction Volume

Consistent with undermined confidence in the token, the data reveal that the share of new items posted with a BTZ price immediately and sharply fell after the partial cessation of the Shop Local program. Furthermore, trade volume also began to deflate, as prediction by the conceptual framework in Section 3.

Figure 9 Panel (a) shows the trend in the number of peer-to-peer transactions, as measured by user ratings. This number was largely stable around 400 transactions per day prior to the currency crisis. However, it began to decline immediately after the crisis, falling eventually to roughly 300 transactions per day about a month later. This finding suggests that the partial cessation of the Shop Local program not only affected confidence in the token, but also had real consequences on the volume of trade in the Bunz community.

Panel (b) shows that the number of new items posted in the app also immediately began to fall. Before the crisis, the number of new items posted per day hovered around 3300. This number sharply began to fall after the date of the crisis, reaching roughly 2500 a month later. This finding suggests the partial cessation of the Shop Local program had an immediate negative impact on seller activity on the platform.

Panel (c) shows that this reduction in completed transactions coincided with a decline in number of peer-to-peer BTZ transfers. While the number of BTZ transfers hovered around 300 per day prior to the crisis. Immediately after the announcement, the number began to fall with a clear trend break around the date of the announcement, reaching roughly 200 transfers per day a month later. This finding confirms that the partial cessation of the Shop Local program negatively affected confidence in the token and resulted in reduction in the circulation of the token.

Panel (d) shows the share of new items with a posted BTZ price. The share of new items with a posted BTZ price hovered right around 35 percent during the two months before the crisis.
Figure 9: Effect of currency crisis on transaction activity

(a) Number of transactions

(b) Number of new items posted

(c) Number of BTZ peer transfers

(d) Share of new items with BTZ price

Notes: Figure shows the trend in (a) the number of peer-to-peer transactions (as measured by user ratings), (b) the number of new items posted in the app, (c) the number of peer-to-peer BTZ transfers, and (d) the share of new items with a posted BTZ price. The dark maroon line shows the 7-day moving average, while the light maroon line shows the daily trend. The red dashed line indicates September 10, the day of partial cessation of Shop Local program.

However, after the crisis, the share immediately plunged to roughly 27 percent. In other words, there was an immediate reduction in the demand among sellers for BTZ after the partial cessation of the Shop Local program.

The fact that users immediately became much less willing to accept BTZ once Bunz HQ became less willing to redeem tokens can be interpreted through the lens of Kiyotaki and Wright (1993) as a shift from a monetary equilibrium to a mixed-monetary equilibrium. The consequent negative effect on aggregate consumption is also consistent with the predictions of Kiyotaki and Wright (1993), as discussed in Section 3.
5.4 Aftermath and Post Mortem

Even with its scaled down Shop Local program, Bunz HQ continued to suffer large cash outlays from token redemption. In early 2020, the Shop Local program was fully halted. Having laid off almost all of its employees, Bunz’s CEO departed from the company and only one employee, the Bunz community manager, remained. Management of the app was transferred to one of the company’s investors, who continued to operate the app by selling in-app digital advertising.

In spite of these changes, as well as the splintering of the Facebook community, bartering activity on the app continued. As of June 2021, there was still a steady stream of new items being posted on the platform every day. However, the app now showed a banner ad at the bottom of almost every page. It was also exceedingly rare for items to still be posted with a BTZ price. Once while using the app, I encountered a user who was willing to accept BTZ in exchange for a used book. But upon further investigation, I learned that this was because he had hoped to give the item to someone who could use it, since "BTZ right now has $0 value," he told me.

Could BTZ have survived as a medium of exchange had Bunz HQ taken a different set of actions? With hindsight, it is clear that the BTZ token faltered because Bunz HQ lacked a viable revenue model, failed to conduct prudent financial management, and did not maintain adequate reserves. Bunz HQ’s unsustainable financial outflows stemmed from its decisions to invest heavily in a community discussion feature that ultimately generated little revenue and to continue to expand the Shop Local program to include additional local stores. These obligations ultimately forced them to have to cease token redemption. Had they instead focused on establishing revenue sources sooner, it is likely that they could have extended their financial runway.

In addition to selling advertisements, one potential source of revenue is to sell or lend tokens to users. Interviews with community members revealed that in fact there was considerable residual demand for tokens after it began to circulate, since there were not enough tokens in circulation to mediate all trades. As a consequence, users frequently waited to accumulate BTZ in order to complete transactions. Instead of continuing to issue redeemable tokens for free through helicopter drops to users long after the currency began to circulate, a more profitable business strategy for Bunz HQ would have been to sell tokens or lend them to users with interest.
6 Conclusion

This paper investigates how issuance of a redeemable digital token by an online platform affected the physical exchange of used goods in a large North American barter community. I leverage unique barter and token transaction data from this setting to quantify the effects of digital currency issuance at high frequency. Using these micro-data, I provide novel empirical confirmation of predictions of Kiyotaki and Wright (1993), who theoretically show that fiat money with a fixed exchange value is both non-neutral and essential in settings where the problem of double coincidence makes barter difficult.

While this paper establishes that the rise and fall of a digital currency had real effects on transaction volume in the Bunz community, further analysis of the micro-data is possible. In ongoing work, I am exploring the dynamics of individual user token holdings and token use, with the eventual goal to combine micro-founded theoretical models of money with these transaction-level data to quantitatively distinguish between various mechanisms underlying the impact of monetary action.

This case study has two implications for practitioners in the emerging world of digital currencies. First, I show that a private platform digital currency can have large and positive effects on aggregate welfare. This success illustrates how private-sector technological innovation by online platforms with bank-like abilities to issue and redeem transferable digital tokens can potentially generate large economic benefits, especially in settings with significant transaction frictions, such as developing countries.

Second, the creation of private digital currencies may bring about increased risk of currency runs. When many users stopped accepting tokens after Bunz partially halted token redemption, the volume of trade in the community quickly deflated. The Bunz experience therefore suggests a need for proper governance to ensure that private-sector token-issuing entities hold adequate reserves and conduct sound financial management, as advocated by Gorton and Zhang (2021) among others.
References


BUNZ TRADING ZONE: FAQ

WHAT IS THE BUNZ TRADING ZONE:
It’s a cashless trading zone, inhabited by a community of barterers.
“I’ll trade you my bag of sour keys for your bar of soap.”

What is Bunz for?
To get what you want for what you have and connect with your community.

Do you have rules?
We only have one BIG RULE: NO CASH IN THE ZONE.
What we do have are guidelines/etiquette, some of which are learned
through trades, many are in the Community Guidelines (which you should
read!) and some are below in the answers.

How do I Bunz?
Posts take two forms:
1) Either you have something to get rid of, which you describe and/or post a
    photo of, or make a service offer, and then you post what you’d like (ideally)
    in return.
2) You post something you’re looking for (ISO = “In Search Of”, or “I’m
    Seeking Out”) and either suggest what you may have to offer in exchange or
    say “Name your trade”.
3) The BEST AND MOST EFFICIENT WAY TO BUNZ IS THROUGH THE APP. We
    built it for that purpose alone! It’s available on iOS, Android and on the web at
    www.bunz.com use invite code 777 777

An ISO can literally be anything, but something important to keep in mind
about VALUE:
- Something that someone is getting rid of might still be valuable to them,
  either in cash or emotional value. It’s not wrong to want equal dollar value for
  something, but then be explicit about that in your post. Please also consider
  that material goods depreciate in value, quickly.

People are looking for deals, so give them! You’ll get them in return, pinky
swear. PAY IT FORWARD, BUNZ!! On the flip side, you might try to lowball a
trade, like offering 2 tokens for an iPhone. Not likely to go through, but you
can always try.
So, the solution for both is: be realistic. Nobody is going to give you a PS4 for
your stained + broken chair, so get creative and offer combos! You need a
vacuum? Offer tokens AND beer AND cheese!
Either way, we really like a concept floated by our community called
#TRUETRADES:

The #true trades principle is simple: it’s when the person looking to get rid of
something is willing to take something you already have around (as opposed
to buying things just to trade with) - on principal of paying things forward
and being a good bun. You’ll sometimes see posts tagged this way, and that’s
what it means.

Where can I trade?
As long as you and the other person agree on a place, you can trade
anywhere in the city. Many Bunz will include the neighbourhoods they live /
work in somewhere in their posts so that others get a sense of how far they
will be traveling for the exchange. If you do set up a trade with someone on
the other side of town, we recommend picking a midway point that works for
both of you. TTC Stations are a great, safe place to meet.
Many people are more than happy to do trades from their homes, but for
those who may not be comfortable giving out their address, we have been
partnering up with local coffee shops and bars around Toronto to create
actual Bunz Trading Zones! These places are all run by Bunz and will have
your back! There’s 7 now but there will be dozens by the fall, stay tuned as
our listings grow, and check out the Bunz blog for featured zones:

What are common trade ‘currencies’, if we can’t use cash?
The most common currencies in the zone is booze, TTC tokens, houseplants
and consumables.

What’s a consumable?
Things you consume - food mostly, but may include things like toiletries.

I lost my bike or pet! Can I post it here?
Sure. But if you get it back, please update the thread and celebrate your
reunion with the group.

Someone broke my heart! Can I post ISO good vibes and pictures of cats?
No, please don’t. It clogs up the feed and there’s Bunz Helping Zone for things
like that.

A bun flaked on me like a day-old croissant! I want to yell about it!
Well, the trading zone isn’t the best place for that. It happens. People forget,
things come up, people miscommunicate, etc.
It helps to BE FIRM with times and places and make sure you’re on the same page. It happens to everyone, and it’s rarely malicious flakey-ness. In the app, we have the ‘review’ feature which helps keeps people accountable to each other.

Hey, where’d my post go?
Probably deleted because it didn’t have a place in the zone. Please read the Community Standards document to see where you may have gone wrong. Maybe explore the BUNZ MULTIVERSE and you can find a better home for your post.

Is there a list of groups in the BUNZ MULTIVERSE?
YEP: HERE! There are also many ‘secret’ groups which you can learn about by just engaging with the community - there’s a zone for everything!

Can I make a new Bunz group for whatever I want?
Short answer: We kindly ask you not to. There’s over 100 Bunz groups, and chances are that one exists for what you want - ask about it in BTZ, or in Helping Zone. If you think a niche or geographic area is being underserved, please message an admin!

How can I make my BunzLyfe EVEN BETTER?
Get social with us!! Come to events, meet-ups and trade parties. Follow us on Twitter @bunztradingzone / Instagram @bunztradingzone / Snapchat @bunztradingzone

Bottom line: trade culture is fun, exciting and addictive.
Be the best Bunz you can be! Trade right, and your life will improve, 100% guaranteed.
Bunz,

As you may have noticed, yesterday we had to make the very difficult decision to reduce the merchants and makers who accept BTZ to just coffee and food. We are sorry for any inconvenience and disappointment this may have caused and want to keep you informed as to why we had to make this decision.

Trying new ideas is really hard. There are very few examples of companies that have attempted to share their revenue with its community like Bunz. We are still learning and adjusting the platform as we learn more about how it’s used. This requires us to make hard choices at times and this, unfortunately, was one of them. This change to the program is not an ideal outcome and we are sorry for any difficulty this may cause to individuals, merchants, and the community. As a start up trying to do things differently, this was a necessary change we had to make on short notice for sustainability reasons.

In addition to this, we made another difficult decision today that allows us to sustain Bunz and BTZ going forward. This was having to say goodbye to 15 members of our team. This decision was equally difficult because a number of us have been working on Bunz since day one. I’m sad to see them go, but also know they have great things ahead of them.

The reality we face is that it’s expensive to build and maintain a platform that hundreds of thousands of people use every day. It gets more expensive when you try to ensure those people see material benefits from using it. Reducing the merchant list was necessary to continue Bunz and BTZ for the community. We believe that these changes put us in the best position possible to allow you continue to use BTZ day-to-day.

Having said all this, we’ve still achieved something amazing over the last 14 months — since first launching BTZ. Our community of users and local businesses have earned and spent over $1.4 million because of this program. This is something we can all be proud of.

As a result of these decisions, we are able to continue to make Bunz and BTZ a community-focused platform in a more sustainable way. We admire our community for caring so much — you are the reason why Bunz exists and the reason we get up every day to try and change who benefits from platforms.

To the merchants and makers we’ve had to part ways with, we appreciate everything we achieved together through the Shop Local program and we wish you nothing but success.

Thank you for your understanding.

Sascha + Bunz HQ
Hey everyone,

Former Bunz Admins here. We wanted to reach out to our community(ies) and talk a little bit about what happened today.

Here's a background:

- Yesterday, September 11th, Bunz HQ announced that its BTZ (in-app currency) would no longer be accepted by vendors or makers that are not coffee shops, restaurants, or bars.
  - This means that small businesses that relied on BTZ to bring in new business, or even vendors who started facilitating their goods and services through the Bunz app and by accepting BTZ as a form of currency, are now out of luck.
  - These vendors and makers were not informed about these changes within the appropriate time frame which, as per their contracts, was to be informed of any changes within two weeks.
  - As a result, makers specifically have now been shut out of the previous Bunz app/BTZ system of trade and had no time to inform consumers of this change. They haven't only lost potential customers and clients, but have also lost income streams that are crucial to the survival of small businesses in Toronto.

- On top of changes to BTZ, Bunz announced that they have fired 15 of their staff. We estimate that this is approximately three-quarters of people whose livelihood depended on the Bunz brand.

Here's what we have to say about it:

- Makers, innovators, artists, creatives, activists, advocates, and regular, everyday people are the backbone of what was once the Bunz community. We all came together several years ago as people who believed in the value of the little things. The value of a half-eaten pizza, an old cassette tape, a joint, a tall boy, a jar of spaghetti. Most of us didn't have much money, and none of us had the means to create apps, or profit off of our relationships with one another.

- Monetizing our communities completely contradicts the barter system that birthed the Bunz lifestyle, as well as the anti-capitalist practices that have shaped our collective communities.

- Today, we would like to reclaim our communities. We would like to bring Bunz back to what it once was. We want our groups to remember why they exist. We do not want to profit. We do not want your app sign-ups. We do not want you to buy into an online currency that will let you down.

- By returning Bunz to its original form, as a pushback against the absolute exhaustion—financial, emotional, and physical—that goes hand in hand with living in cities that are dynamic, fast-paced, expensive, and ever-changing.

- We fundamentally love our communities. As admins of Bunz, and the people who have spearheaded the growth of our communities, and of the app alongside you all, we have a vested interest in your wellbeing. Only your wellbeing. No app sign-ups, no growth, no “buy-
in,” only genuine human connections and a commitment to kindness, compassion, and community-building.

With all that said and done, we want to introduce Palz, a collective comprised of former Bunz admins who believe in something bigger than profit.

Our groups will stay the same, our values will stay the same with a commitment to hearing from you, a commitment to existing outside of the scope of trademarks, corporations, advertisements, and the monetization of human connections. We hope that this new chapter can sustain our community’s health, growth, and compassion.

With Love,
Your Palz
D Interviews with a frequent user

First interview: May 28, 2019

On May 28, 2019, the Bunz staff introduced me to a self-described "power user," who specialized in trading vintage books and had completed more than a thousand trades on the platform. Because of his deep engagement with the app, he had many insights about the mechanics of trade on the app. His observations therefore provide useful context for understanding the quantitative results in this paper. For this reason, I provide a partial transcript of the interview, which is reconstructed from handwritten notes and reorganized for clarity.

Author: How did you learn about Bunz?
User: I learned about it from Reddit. I’ve been on Bunz for four years now. I started when Bunz was still entirely on Facebook. I started trading because my friends had to give away their book collections, so I had two libraries to get rid of.

Author: How is the app different from the Facebook groups?
User: The Facebook groups are more chatty. The app provides a more durable posting. I can optimize for search visibility and time my posts. When app was new, about half of the trades in the community happened on Facebook, so sometimes I would post on both. Now 90% of trades happen on the app. I don’t post on Facebook for transactions anymore. I post on Facebook only for discussion.

Author: What do you trade on Bunz? Do you face competition on the platform?
User: I focus on vintage books. Books that don’t have ISBN codes, hence cannot be fulfilled by Amazon (FBA). I source books from garage sales, library sales, Craigslist, and other platforms. I don’t really have any competition on the platform. I’m the only “predator” bookseller on Bunz platform. My real competition is mass market book sellers like Amazon. I cannot make that much money on Bunz because of competition from FBA.

Author: Why you do trade on Bunz?
User: Here are my options: Bunz, doUser, or sell. I enjoy trading on Bunz, much more so than Craigslist. I can have conversations with the people I trade with. There is a feeling of community.

Author: How often do you trade?
User: I complete on average 2 trades per day. This is much more than most users, for sure. The value of trade is $3-25 per transaction. This is on the low end for users. Each day, I post 3 or 4 sets of books. There are many subcommunities on Bunz trading different things. The clothing subcommunity is totally different from books, for example.

Author: Do you have repeat customers?
User: Yea sometimes, up to 4-5 transactions. Sometimes I’d message them to market products.

Author: Do you prefer certain currencies?
User: BTZ and tokens are preferred. BTZ are useful, but it is like a hot potato. I also take cash or food. Sometimes, I’ll take books to use as currency at a later date or sell them to used book store. I put hints into postings as to what is wanted (BTZ and token). I take BTZ for probably a third to a half of my transactions. The main thing is I want something that holds value. Gift cards are not personally useful for me, and I don’t want to flip it for a loss. For BTZ, there is default risk. You don’t want to accumulate it, so pass it around like a hot potato. The problem with BTZ is there’s no exchange anywhere.

Author: Who pays in BTZ?
User: Two types: New users. They get a free book from opening a new Bunz wallet. Also heavy users who accumulate and then use BTZ.

Author: What do you do with your BTZ?
User: If I’ve accumulated BTZ, I mostly spend it down by eating at local merchants.

Author: How do trades happen?
User: About half of the time, the first message I get from an interested buyer is “I’ll give you X tokens or X BTZ.” The other half of the time, the first message I get is “I’m interested.” I’ll respond with “What can you offer?” I’ll scan their profiles, but 90% of the time I’ll steer towards BTZ or token. There are important breakpoints in conversation, where a buyer might drop out, such as when arranging a location. I don’t typically negotiate much, since books are pretty low value.

Author: Do you choose whom to trade with / care about buyer reviews or reputation?
User: Reviews are not a super informative signal of buyer reliability. Many people will not review informatively. Number of reviews is more likely to be a reliable signal. For users with <20 reviews, I’ll take a different approach. I’m less flexible and won’t travel to trade. The main issue is flakiness and ghosting.

Author: Do you ever receive delayed payments or payments in advance?
User: Majority of time, trades are simultaneous. Occasionally, I may get advanced payment as deposit or because cellular data is wonky. Occasionally, I get deferred payment. Sometimes it’s a new user who can’t remember PIN, or bad cell data; sometimes it’s repeat user who is low on cash but can deliver BTZ later (pre-arranged before meeting). I’m usually nice and forgiving to new users because I want to be a good representative for the platform. Bunz’s “Have fun” ethos is important to me. Building a good platform requires building a good culture: If everyone on the platform is nice, eventually you will be nice as well. I’m not sure you can replicate this culture anywhere else. Cool people were participating on Bunz at its start. That matters a lot.

Author: Has the introduction of BTZ changed the platform over time?
User: The original demographic was impoverished art students. Trades that are unequal in value were part of the appeal of Bunz. The lack of double coincidence of wants was a real thing. People can get lucky with a deep discount occasionally. This feels like magic. The introduction of BTZ cut
down on this “magic.” It’s not as fun anymore. Over time, people on the platform care much more about monetary value of items. They moved more towards a Craigslist view of the world. After introduction of BTZ, frictions are lower, so margins are lower, but I make this up with volume.

**Second interview: October 18, 2019**

*About five weeks after the currency crisis, I spoke with User to hear his perspective. Below is a transcript of the interview, which is reconstructed from handwritten notes and reorganized for clarity.*

**Author:** Tell me what happened.

**User:** It was about a month ago now. It was like a very little miniature demonstration of what a crisis of confidence in a currency looks like. It was like Venezuela trying to impose capital controls on spending. You could almost predict what would happen.

From the users’ perspective, there was a reduction of the scope of the Shop Local program. The change was that you can now only redeem at restaurants instead of the full set of merchants. This was seen as a serious reduction in the utility of BTZ. Coupled with the layoffs, this change put into people’s minds the question of the viability of the whole operation. This is something, apparently, many people had not considered. A large majority of users had never thought about the underlying financials and economics of what’s going on.

A lot of the outrage is understandable but also manufactured. A lot of people had balances of BTZ, and were saving up for some service. For example, tattoos. Some lady saved up a hundred dollars for wedding gifts but could no longer buy those items. The CEO had commented that they would commit to a 30 days notice, but they did not do so. People discovered at the shops. The merchants just got this notice that their relationship was terminated. Not ideal management. But they needed to close the gate before everyone went running for the exit.

What’s interesting is they have continued to operate restaurants. There still was a rush to the exit. I’ve been eating like a king. At some point, these BTZ may become valueless. So people are driven to spend.

Things have kind of stabilized now. BTZ are still being accepted at the reduced number of merchant. There were interesting effects on liquidity of BTZ. Lots of people stopped accepting BTZ. But at the same time there’s a weird little force in the other direction. If you were to accept BTZ, then transactions are temporarily really fluid.

**Author:** How were you personally affected?

**User:** I’ve managed my BTZ very well, so it wasn’t so bad. I held only about a hundred dollars of BTZ at the time. Others may be in a different economic strata too. For a period of time, I stopped taking BTZ. Took a trip away for two weeks. I’ve turned on the tap again now. Started about a week ago. Balance is low enough that I don’t care about the risk. It is a fortuitous coincidence: I
always spent my BTZ mostly by eating. So I’m still able to cash out in the same way. And actually, trading is easier now, since people really want to get rid of their BTZ.

**Author:** Has the nominal BTZ price of books have gone up?

**User:** Yes! Absolutely. There is a premium. People are just making up whatever premium for the risk. I’ll add on 10-15%. What’s the actual risk premium is quite unclear. No one knows what the risk is.

**Author:** At what price of BTZ did trade after the announcement?

**User:** Immediately someone decided to profit off of this situation. They tried to sell TTC tokens at a rate of 10 to 1. The reaction to that post was very interesting. Lots of people reacted negatively to it, saying he was profiteering from the situation. But this is hypocritical because they themselves are no longer taking BTZ. They would say: Capitalism is terrible. And they piled on this guy. Somehow he crossed a social norm.

There is premium for taking BTZ, but market consensus regarding the exchange rate has not occurred. There’s no public record of trades. You cannot look up a price. So the valuation of BTZ is opaque. You can see the posted prices, so you don’t know what the final trades are.

**Author:** Did your personal transaction volume change?

**User:** Things were somewhat unchanged for me, since I sell books. For larger value items, liquidity is more impaired. For trading with someone who might have been willing to take BTZ before, you would now have to use a different currency. Some people are still taking BTZ, but the premia are all over the place. Some even at face value. But immediately, 50% of sellers stopped taking BTZ.

**Author:** Have people left the platform?

**User:** Yes. The noisiest departures were for ideological reasons. This is related to the historical genesis of the Bunz community, which has a communist/hippie mindset, utopian ideals. So the Facebook groups decided to disassociated with Bunz. Renamed themselves to PALZ. Whether this will affect the trading on the app, I don’t know.

**Author:** Were most people on the app aware of what happened to the Shop Local program?

**User:** It was widely known because there are people who stopped taking BTZ. You see this on people’s profiles and in the messages. It’s unfortunate, because the currency was operating smoothly. Adoption was pretty decent. Currency was circulating before it "leaked" out through people like me. The problem in fact is more that people could not get BTZ readily. Even if someone wanted a thousand dollars of BTZ, they could not get it. There was a liquidity crunch in the other direction.

**Author:** Have sentiments shifted in the month after the initial shock?

**User:** Things have settled down. More people accepting BTZ and risk premia is now lower. All the outraged people have just left. The only people left are the pragmatic people and newbies who don’t know better. They think platform still works, so I’ll post my armchair here. People have
short memories. But overall confidence in the currency is still low because no one knows whether they can continue to operate the shop local program. Nobody knows what their runway is. For sure, trade volume has decreased.

It could also be good for the platform to get rid of the ideologues. A lot of emotions flying around. They have a certain mental model for how the company should behave, but the company sort had to do what they had to do. They chose not to shut down. Bunz is still perfectly usable in terms of functionality. Shop Local still operates. It’s effectively like going back to launch time. They started out at just a handful of coffee shops. But the perception has now changed. Lots of cynical people knew this was going to happen.

**Author:** Do you know how the Shop local merchants were affected?

**User:** Merchants were redeemed up to some date. Everybody was made whole. They didn’t receive their 30 days notice. If accepting BTZ had been part of your sales/marketing, e.g. 10% more sales due to accepting BTZ, then suddenly there’s a revenue decrease. Negative is future cash flow is shut off. Negative reputation effects of that.

Some restaurants stopped accepting BTZ as well. Over the course of history, restaurants and stores have joined and left, but this was never a problem. There was a lot of confusion in terms of what was happening. IQ foods was still taking BTZ, but they temporarily froze on taking BTZ. But presumably this uncertainty was resolved and they began to take BTZ again.

**Author:** Is the pressure of money flowing out through redemption still the same?

**User:** It is definitely harder to spend a thousand dollars at once if the valve is coffee.

**Author:** Do you know what Bunz HQ’s plans for the future are?

**User:** Listing BTZ on an exchange seemed like a long-term intention, like they would eventually allow the currency to float. But it ended up working more like corporate loyalty points. People are still using it because its convenient to do so. But this much more limited now. Rumors are the pause was driven by a failure to find financing. They could take the code and re-brand, try to launch elsewhere. There is no news, so nobody knows where the company is.
E  Additional figures

Figure A1: User demographics: Survey responses

Source: User response from BTZ drop survey.
Source: User response from BTZ drop survey. Users who report having never traded are excluded from Panel (a).
Figure A3: Composition of items on the platform

(a) Items posted

(b) Offer messages received

Notes: Figure plots the distribution of item categories that (a) were posted and (b) was associated with an offer message.
Figure A4: The currency run in long-run perspective

(a) BTZ issued

(b) BTZ redeemed

(c) BTZ supply

(d) Number of BTZ peer transfers

Notes: Figure shows the weekly trend in (a) BTZ issuance, (b) BTZ redemption, (c) BTZ supply, and (d) the number of peer-to-peer BTZ transfers. The red dashed line indicates the week before Bunz ceased to redeem tokens from a subset of stores.
Figure A4: The currency run in long-run perspective (cont’d)

Notes: Figure shows the weekly trend in (e) number of peer-to-peer transactions (as measured by user reviews), (f) number of peer-to-peer transactions (as measured by user reviews) decomposed by prior trades of the user (as measured by the reviewer’s number of past reviews in the week prior to the review), (g) the number of new items posted in the app, and (h) the share of items posted with an BTZ price (as of November 1, 2019). The red dashed line indicates the week before Bunz ceased to redeem tokens from a subset of stores.