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Working Paper

A New Era of Entrepreneurial Finance? Venture Tokenization and Public Markets for Startups

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Abstract

After initial coin offerings (ICOs), decentralized digital platforms (DDPs) decide whether to go public or remain private. We explore the implications of the public-versus-private decision for the growth and decentralization of DDPs. Employing a difference-in-differences framework, we find that public DDPs scale faster post-listing relative to matched private DDPs. An important driver behind public DDPs' superior growth is a spillover effect of financial speculation on fundamental platform activity, especially when DDPs are undervalued, hastening network effects. The going-public decision also facilitates DDP decentralization, although this stems mostly from the left tail of the token ownership distribution, while blockholders largely remain in control. Exploring the trade-off between going public through token exchange listings and remaining private with the help of institutional investors, we find that crypto fund-endorsed token listings yield more platform growth than unendorsed listings, while crypto fund backings without listings create the least value. Overall, our study suggests that early-stage startups may economically benefit from tokenization and creating liquid markets for venture tokens.

JEL-Codes: G240, G320, K220, L260.

Keywords: entrepreneurial finance, decentralized platforms, tokenization, blockchain technology.

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1 Introduction

Recent studies in entrepreneurial finance focus on parallels between initial coin offerings (ICOs) and initial public offerings (IPOs), such as the valuation of the offering (e.g., Fisch, 2019), the short-term underpricing (e.g., Benedetti and Kostovetsky, 2021; Momtaz, 2021b), and the long-term underperformance (e.g., Cumming et al., 2025; Drobetz et al., 2025; Fisch and Momtaz, 2020). However, there is a critical difference between ICOs and IPOs that has been largely neglected in the literature thus far: in ICOs, the public sale of tokens (i.e., the primary market) is not necessarily followed by the public listing of the token (i.e., the secondary market). The gap between the primary and the secondary markets means that tokenized ventures, also known as decentralized digital platforms (DDPs) (Cumming et al., 2025), can decide whether to go public by entering the secondary market or remain private (or semi-public) by deferring secondary market entry. Therefore, unlike IPOs, the external financing decision is independent of the listing decision in ICOs, providing entrepreneurs with option value. The aim of our paper is to explore whether token exchange listings are related to the growth and decentralization of DDPs.

Our research question relates to the fundamental platform coordination problem of how to ensure platform adoption if early adopters have no incentive given that platform value comes from network effects that emerge only from a large user base (Bakos and Halaburda, 2022a; Rochet and Tirole, 2003; Weyl, 2010). The studies closest to ours are Cumming et al. (2025) and Drobetz et al. (2025). They show that crypto funds may help overcome coordination problems on DDPs by pre-buying tokens at a discount and attracting, through signaling and real activities, retail adopters. The implication, especially from Cumming et al. (2025), is that privately negotiated crypto fund deals may suffice to successfully scale DDPs. However, prior literature offers nothing to inform DDPs' trade-off in choosing between *remaining private* with the help of crypto fund investments and *going public* by means of token exchange listings. Thus, our study is a natural sequel to Cumming et al. (2025) by addressing the research gap concerning how the token listing decision relates to DDP growth. Importantly, to link our study of the going-public decision with Cumming et al.'s (2025) study of the remaining-private decision, we also compare the DDP growth implications of pure going-public, pure remaining-private, and hybrid crypto-fund-endorsed going-public strategies. It is important to close this research gap to inform how blockchain technology may improve social welfare in the intersection of entrepreneurial finance and platform economics.

The post-ICO listing of tokens on cryptocurrency exchanges may help smooth coordination frictions on DDPs. Figure 1 presents stylized facts indicating that the listing is associated with spikes in DDP activity (number of on-chain transactions) and DDP adoption (number of on-chain users). While most of the "listing effect" is short-lived, roughly 15-20% of the activity and adoption are sustained in the long run, suggesting that exchange listings effectively overcome the platform coordination problem of early adoption.

[PLEASE INSERT FIGURE 1 HERE.]

Several reasons may help explain the pattern in Figure 1. First, listings may directly facilitate network externalities of DDPs because (i) token tradability attracts financial speculators who generate product-agnostic traction for DDPs (Athey et al., 2016; Bellavitis et al., 2022), (ii) token liquidity provides early-stage adopters with a realistic exit option to recover the investment at least partially in the event of a lack of DDP success (Drobetz et al., 2019; Momtaz, 2021b), (iii) token liquidity also helps early-stage DDP operators cash-out mining (in proof-of-work blockchains) or staking (in proof-of-stake blockchains) rewards (Benedetti and Nikbakht, 2021), (iv) liquid markets provide investors and adopters with the threat of exit as a corporate governance mechanism to discipline DDP founders and powerful stakeholders (Lo Monaco et al., 2025; Yermack, 2017), and (v) the token equilibrium price in public markets provides important information for individual investors and adopters and the decentralized network that may reduce collective action problems and facilitate early-stage DDP joining decisions (Benedetti and Nikbakht, 2021; Cong and He, 2019; Momtaz, 2021b). Second, listings may enhance platform credibility and increase trust in DDPs' growth intentions because (i) token exchanges' approvals of listing requests provide certification-type signals of DDP quality to the market (Bellavitis et al., 2021; Fisch, 2019; Momtaz, 2021b) and (ii) regulated exchanges have practices in place to reduce the threat of embezzlement of ICO proceeds and related financial fraud (Bellavitis et al., 2021; Hornuf et al., 2025), thereby mitigating an entry barrier for early-stage adopters. Third, listings may indirectly facilitate DDP growth because (i) token liquidity means that DDPs can sell treasury tokens as a means of external follow-on financing and (ii) DDPs can learn from public market behavior to infer demand for DDPs' products and services along the development phase (Benedetti and Nikbakht, 2021; Catalini and

Gans, 2018; Howell et al., 2020).

Following this logic is our overarching hypothesis, the "***Listing Hypothesis***," that post-ICO token exchange listings facilitate DDP growth.[1] An implication of the rationale behind our overarching hypothesis, and hence constituting our *second hypothesis*, is that listings that are perceived by the market as being very successful may amplify the listing's positive effects on long-term DDP growth. Listings perceived as very successful reconfirm the credibility of and further increase trust in DDPs by means of market affirmation and positive sentiment in equilibrium (Drobetz et al., 2019) and an amplification of personal founder-CEO traits (Colombo et al., 2022; Momtaz, 2021a; Xia et al., 2024), direct network effects by convincing adopters who were hesitant in the primary markets and investors who missed the primary market or for whom the positive listing is news that makes them change their more skeptical prior, and indirect network effects, for instance, by increasing the value of capital stock held in treasury tokens that can be used to finance further DDP growth initiatives (Benedetti and Nikbakht, 2021; Howell et al., 2020).

The uniqueness of DDPs relative to all other platform models is that adopters and investors share the *same asset of interest*, namely, the token. Because of the feature of the shared asset, an increase in token demand by one stakeholder group may create network value that spills over to the other stakeholder group (Athey et al., 2016; Bakos and Halaburda, 2022a; Momtaz, 2024). Positive demand shocks may create network value for several reasons, including increased market liquidity and information dissemination. While it is well established that on traditional platforms (such as eBay, Meta, and Amazon), platform growth translates into investors' equity value, the opposite spillover effect from investors to platform growth is a novelty on DDPs because of the shared assets (Bakos and Halaburda, 2022a; Cumming et al., 2025). Therefore, our third hypothesis, the "***Spillover Hypothesis***," posits that financial activity on token exchanges spills over to fundamental activity on DDPs' token protocols. The implications of the spillover mechanism are far-reaching as the mutual reinforcement of adopter and investor activities should lead to a more efficient DDP growth path. Deviations from DDPs' growth equilibria should be "arbitraged away" by financial speculators (Momtaz, 2024). Consequently, we posit in our fourth hypothesis that spillover effects

[1] Pros and cons for public markets are controversially discussed, in particular for small firms, inter alia because of short-termism problems (Stein, 1989) and overly intrusive external corporate governance by activist investors (e.g., certification exploitation by crypto funds in Drobetz et al., 2025). Therefore, it is an empirical question whether listings benefit DDPs and, hence, our paper fills an important empirical gap.

on DDP growth are more pronounced when DDP tokens are temporarily undervalued. That is, if the token price is below the equilibrium price due to a shortage of underlying protocol activity, investors' demand will increase due to higher *expected* returns, which will increase the token price to its fair level and, hence, bring back the attention of DDP users.

Finally, our fifth hypothesis, the "***Asymmetric Decentralization Hypothesis***," posits that listings democratize economic surplus capture on DDPs by promoting the dispersion of token ownership. Whereas the primary market distributes token ownership often to a privileged group in private pre-sales or wealthy bidders in ICOs due to minimum investment amounts, secondary market listings open (fractional) token ownership to every interested party. However, listings do not decentralize DDPs symmetrically in both tails of the token ownership distribution. Rather, the ownership structure in the secondary market is path-dependent on the primary market, where powerful ownership positions in the right tail of the ownership distribution were created. These control positions are rarely broken up in secondary markets for several reasons, often including insufficient market depth. Nevertheless, we expect substantial decentralization dynamics in the left tail of the token ownership distribution. This is in line with Fisch et al. (2022) and follows from the strict formal (e.g., minimum investment amounts) and informal (e.g., pre-sale participation privileges) investment conditions in the primary market. In a sense, secondary market listings may serve DDPs for market clearing by bringing aboard the mass of smaller-ticket individual investors that miss the primary market.

We test our empirical predictions in a novel hand-collected database that merges DDP-level data from the *TORD* with primary on-chain data from the *Ethereum* ledger and token exchange data, among several other data sources. The number of observations reaches up to 553,958 DDP-weeks depending on the model specification. Our identification strategy is a staggered difference-in-differences framework that compares DDPs that went public with matched DDPs that remained private along several DDP growth dimensions before and after the listing decision. Of course, for the parallel trends assumption to hold (i.e., listed and unlisted DDPs have the same pre-listing growth trajectories), we need to ensure a precise matching of listed and unlisted DDPs. As most DDPs in our sample will list at some point, only the timing of the listing is an endogenous decision, which is a more tractable econometric task than if the listing decision *per se* were to be fully endogenous in our sample. We employ numerous matching approaches based on both observable and unobservable covariates, as well as an instrumental variable approach. Graphical checks support the parallel trends assumption and our results are consistent across all econometric approaches.

The empirical findings support the ***Listing Hypothesis***. Specifically, we find significantly positive effects of token exchange listings on various proxies for DDP growth, such as platform activity (# transactions), platform turnover (% traded tokens of total tokens), and platform adoption (# users, # new users, # recurring users, and # parting users). Economically, listings increase the weekly number of blockchain transactions by 143 to 283, the relative amount of tokens traded per week by 1.0 to 1.5%, and the weekly number of distinct protocol users by 103 to 191. We also find support for the second hypothesis that the positive effects from the listing hypothesis are amplified if the listing is perceived as successful. We proxy for successful listings with the abnormal token return in the first post-listing week and the market sentiment toward the listing. Strikingly, these first-week proxies have strong explanatory power for DDP growth over the following three years, in some cases even doubling the R-squared. The abnormal first-week token return has significantly positive marginal effects on DDP activity and adoption, but negative marginal effects on DDP turnover even after three years.

We also find strong support for the ***Spillover Hypothesis***. Financial speculation on token exchanges significantly positively impacts non-speculative fundamental DDP activity a week later. In economic terms, one speculative transaction on a token exchange leads to 1.7 additional non-speculative transactions on the underlying blockchain protocol, 1% speculative token turnover leads to 1.4% additional non-speculative token turnover, and one speculative investor leads to 2.8 additional non-speculative DDP adopters. The spillover mechanism from speculative to fundamental activity is more pronounced when the DDP is undervalued, supporting our fourth hypothesis and suggesting that financial arbitrageurs promote a more efficient DDP growth path.

Our results are also supportive of the ***Asymmetric Decentralization Hypothesis***, which posits that listings disperse token ownership in the left but not in the right tail of the token ownership distribution. Listings are associated with an increase of 2,590 tokenholders that own less than 1%, 1.2 tokenholders that hold between 1 and 5%, 0.4 tokenholders that hold between 5 and 20%, and statistically zero blockholders with more than 20% token ownership. Similarly, we estimate a listing effect of 1.0 on the *Nakamoto* coefficient, suggesting that the minimum number of largest wallets to majority-control (i.e., 51%) a DDP increases through listings by (only) one additional wallet.

In post-hoc analysis, we explore the impact of the listing decision on DDP survival. The listing, positive market sentiment toward the listing, and financial speculation improve the probability of DDP survival. The results are consistent with the theoretical arguments and empirical results discussed above.

Finally, given that our results suggest that the going-public decision is positively related to DDP growth, it is important to qualify our results with the findings in Cumming et al. (2025) that remaining private with the help of institutional crypto fund investments facilitates DDP growth. To better understand the relative merits of DDP's private versus public decision, we estimate average treatment effects of a pure going-public strategy (i.e., exchange listing without crypto fund backing), a pure remaining-private strategy (i.e., crypto fund backing without listing), and a hybrid strategy (listing with crypto fund backing) in a triple differences model. The results suggest that DDP growth benefits most from the hybrid strategy followed by the pure going-public strategy, while the pure remaining-private strategy leads to DDP growth only in some cases. In other words, the going-public decision facilitates DDP growth, which is amplified if listings are backed by crypto funds. The findings are important as they qualify the implications in studies that find crypto fund backed DDPs outperform non-crypto fund backed DDPs in the secondary market (Cumming et al., 2025; Drobetz et al., 2025; Fisch and Momtaz, 2020). While these results remain true, our study adds the important nuance that obtaining crypto fund backing is less important than going public for long-term DDP growth.

The remainder is organized as follows. Section 2 provides some background on DDPs and develops testable hypotheses, section 3 describes our data and the econometric approach, section 4 presents our results, and section 5 discusses theoretical contributions, practical implications, limitations, and avenues for future research, and concludes the paper.

2 Background and hypotheses

2.1 Decentralized digital platforms (DDPs), tokenization, and the feature of the shared asset

Digital platforms are multi-sided platforms that leverage technology to facilitate connections between multiple parties who might not otherwise be able to connect (Gawer, 2021). Perhaps more so than non-digital platforms, digital platforms suffer from coordination frictions related to early adoption. Digital platforms will create value for users proportionate to the number of users and, by implication, the first user has no incentive to join the platform, rendering early-stage platform adoption and the generation of positive network externalities challenging (Katz & Shapiro, 1985; Rochet & Tirole, 2003). The recent emergence of decentralized digital platforms is addressing the early-adoption problem with new technology (Bakos and Halaburda, 2018; Cumming et al., 2025).

Decentralized digital platforms (*DDPs*) are digital platforms that "tokenize" the platform. Tokenization refers to the securitization (in an *economic* and not necessarily in a *legal* sense) of the DDPs' assets through blockchain technology. Tokens represent claims on the DDPs' future revenue streams from their products and services (Cumming et al., 2025; J. Lee & Parlour, 2022). For example, *FileCoin* is a tokenized file-storage platform, the DDP version of *Dropbox* so to speak. *FileCoin* provides a computer protocol that lets individuals connect their personal computers to the network through the internet. The aggregate file-storage volume is tokenized, and individuals who want to store files need to pay for the storage space with *FileCoin*'s native tokens. Individuals who provide storage space on their personal computers' hard drives to the network are compensated with the tokens paid by file storers. Tokens are often cryptographically secured smart contracts that are sold in ICOs (Bellavitis et al., 2021; Fisch, 2019; Howell et al., 2020; Lyandres et al., 2022). The sale of the *FileCoin* token was the most successful crowdfunding campaign ever, raising about $4.3 billion. Sold tokens can then be exchanged over-the-counter or, if listed, on token exchange platforms, sometimes even before the DDP launches a product (Drobetz et al., 2025; Momtaz, 2021b).

Tokenization is the feature that critically sets DDPs apart from other digital platforms. On digital platforms, such as *eBay*, *Meta*, and *Amazon*, platform users and investors are interested in different assets, that is, products or services vis-á-vis equity, respectively. On DDPs, in stark contrast, platform users and investors share the same asset, i.e., the token. The feature of the shared asset of interest is important because it aligns, DDP users' and investors' objective functions, and thereby, tokenization helps reduce the coordination problem of early-stage platform adoption. In the *FileCoin* example, the first supplier of storage space would have no incentive to connect their personal computer to the network because the technical set-up costs exceed expected payments from (non-existing) storage demand without tokenization. Tokenization, however, attracts financial speculators who invest based on expected returns. Financial returns *in expectation* exceed platform user utility *in the presence*; hence, speculators buy tokens early on to secure low prices, which, in turn, provides early-adoption incentives for DDP users. Another example is *Akash*, a decentralized marketplace for computing resources such as central and graphic processing units (CPUs, GPUs). *Akash* creates utility for individual and institutional users requiring additional computing power (demand side), which is largely determined by the number and capability of available GPUs and CPUs. However, the utility for the supply side, such as data centers or individuals with unused computing resources, depends on the size of Akash's user demand. Because speculators have an early-investment incentive, they increase token demand, which hastens supply, kickstarting network effects. The example illustrates how the feature of the shared asset helps resolve the early-adoption coordination problem for platforms.

DDP adoption can be further accelerated in two ways. One is through the certification of institutional investors whose presence may help attract individual investors and DDP users. This is because institutional investors may credibly strengthen the ability of early-stage DDP adopters to monetize and exit DDPs. Cumming et al. (2025) argue that crypto funds can provide a transaction counterparty for DDP tokenholders, facilitating tokenholders' potential exit and thereby mitigating DDP coordination challenges. The other way, which has yet to be empirically explored, is the creation of public markets for tokenized platforms. Hence, the purpose of our paper is to show that, independent of crypto funds, token exchange listing may also overcome the early-stage DDP adoption problem because listing the DDP token on a public exchange facilitates the tradability of the asset and provides a liquid market, allowing DDP users to exit the DDP. In what follows, we lay out the rationale behind the "listing conjecture" regarding DDP adoption.

2.2 Hypotheses

2.2.1 Token listing and DDP growth

For the economic benefits of the feature of the shared asset to materialize, DDP tokens need to be listed on a token exchange, which creates a public and liquid market for the token. Token exchange listings may facilitate DDP growth for several reasons related, inter alia, to token tradability, access to external financing, and the listing's signaling effect.

First, listing the DDP token on a public exchange enables token tradability. Token tradability facilitates DDP growth because early adoption does not result in lock-in situations, as early adopters can exit anytime through public markets. Secondary-market exiting lowers DDP adoption costs *in expectation* and, in combination with the expected presence of financial speculators and investors, partially resolves the 'chicken-egg' problem (Bakos and Halaburda, 2022a; Cumming et al., 2025). In principle, the tokenization of DDP assets enables tradability over-the-counter even without listings; however, listings on exchanges create a central point where token supply and demand meet, reducing search costs and, therefore, facilitating DDP growth (Momtaz, 2024). Another important implication of the token exchange listing is the readily available and ubiquitously visible equilibrium token price. Market prices reduce entry barriers for risk-averse adopters because they abandon price uncertainty, leading to more efficient information production, as every trade reveals price-relevant information of the transaction counterparties (Grossman and Miller, 1988; Kyle, 1985). Information reduction reduces uncertainty about DDP valuations, facilitating informed adoption decisions (Ambrus and Argenziano, 2009; Weyl, 2010), as empirically shown for token markets in Momtaz (2021b).

Second, token exchange listings allow DDPs to raise additional funding to finance growth (Colombo et al., 2023). Liquid markets for listed tokens enable an efficient treasury liquidation to finance growth initiatives. Similarly, when token supply is uncapped, additional tokens can be minted with direct sale intentions. Liquid markets may also help raise additional growth capital from certain crypto funds (Dombrowski et al., 2023) or through proprietary trading strategies. Similarly, listed tokens can also be used as currency. For example, there is an emerging crypto M&A market, in which DDPs take over other DDPs and use their native tokens as acquisition currency.[2] Also, treasury tokens can be used to pay developers and community builders, and this type of incentivization for growth enablers is most effective when tokens have secondary markets.

Third, token exchange listings may overcome early-adoption problems because listings may function as a certification-type signal of DDP quality to potential platform adopters. Given the prevalent informational asymmetries in cryptocurrency markets (Hornuf et al., 2022; Meoli and Vismara, 2022), DDPs may convey credible information about their otherwise unobservable qualities to potential adopters (Bafera & Kleinert, 2023; Connelly et al., 2011; Spence, 1974; Vismara, 2018). Because the ex-post payoff for high-quality firms exceeds that for low-quality firms, high-quality DDPs are motivated to signal, whereas low-quality DDPs are not, creating a separating equilibrium and, thus, helping potential adopters discern high- from low-quality DDPs. For signals to be effective, they must be observable and costly to imitate, typically involving ex-ante implementation costs or ex-post penalty costs (Bafera & Kleinert, 2023; Momtaz, 2021b; Wang et al., 2019). Token exchange listings are widely disseminated through exchanges' websites, social media accounts, news outlets, and ICO aggregators, ensuring the signal's observability to potential adopters. There are also at least three types of signaling costs in the context of token exchange listings. First, with and average of 31% of retained tokens (Fuchs and Momtaz, 2024), token retention accounts for costs amounting to almost one-third of total DDP valuation in the event of DDP failure. Second, DDPs incur ex-ante implementation costs in terms of time and often monetary resources to facilitate an exchange listing, as exchanges charge a substantial listing fee (Howell et al., 2020; Momtaz, 2020). Lastly, there are costs related to reputational risks if the exchange listing fails, public scrutiny, regulatory compliance and disclosure costs, and investor relations in the secondary market. Therefore, listings plausibly deter low-quality DDPs from pursuing a public listing, making it an effective signal that enables potential adopters to distinguish between high- and low-quality firms, leading to more efficient capital allocation and increased platform growth rates in listed DDPs.

Hypothesis 1: *Token exchange listing has a positive impact on DDP growth.* (***Listing Hypothesis***)

As an implication of the above reasoning, if token exchange listings were very successful, the

[2] Crypto M&A deals and transaction details are available from https://messari.io/screener/deal, retrieved March 10, 2025.

perceived success may amplify the exchange listing's signaling effect. For example, a positive post-listing return (i.e., token underpricing) indicates that the market consensus values the token higher than the DDP's set token launch price. When issuers possess informational advantages over investors, underpricing is perceived as a positive quality signal (Allen & Faulhaber, 1989; Connelly et al., 2011; Ritter & Welch, 2002), sometimes with longer-term token return predictive power (Drobetz et al., 2019). Because of the risk of deceptive signals (Johnstone & Grafen, 1993), signal receivers are sensitive to subsequent data that can confirm or disprove the initial signal (Bafera and Kleinert, 2023; Momtaz, 2021b). Validation of the token exchange listing signal may further reduce information asymmetry between the DDP and potential adopters, hastening network effects.

Hypothesis 2: *Initial token exchange listing success amplifies the listing's positive impact on DDP growth.*

2.2.2 Spillover effects from DDP investor to DDP user

Post-listing exchange-based (i.e., speculative) investor activity may positively influence non-exchange-based (i.e., non-speculative, fundamental) DDP user activity due to several spillover effects, including (i) liquidity spillover, (ii) information spillover, and (iii) demand spillover.

First, an increase in trading activity by financial investors also increases the liquidity available to DDP adopters. The decision to list an asset on a public exchange attracts speculative trading and increases the liquidity of the asset (Amihud & Mendelson, 1986). Improved token liquidity, facilitated by platform-agnostic cryptocurrency investors like quantitative crypto hedge funds, also increases the likelihood of DDP adopters finding trade counterparts, thereby reducing coordination frictions by (i) giving early adopters a greater chance to realize potential gains from the DDP's success and (ii) reducing the risk of DDP operators, such as miners and stakers, being "locked in" with the DDP.

Second, the coordination problem of DDP adopters may be further mitigated due to information aggregation and price discovery in liquid financial markets. Traditional finance literature, such as Grossman and Stiglitz (1980), has shown that the information utilized by speculative traders contributes to a more accurate reflection of the asset's price based on available information. Put differently, trading predicated on asymmetric information aids the price discovery process (Kyle, 1985). For cryptocurrency markets, Momtaz (2021b) shows that post-listing equilibrium prices post hoc inform ICO investors about the fair token value, often leading to divestments. Consequently, trading reduces information asymmetry for DDP adopters and hastens network effects of DDPs.

Third, we anticipate a demand spillover from DDP token trading to non-speculative, fundamental DDP adoption and usage. Existing literature on demand spillovers on platforms primarily identifies positive spillover effects across complementary products and services offered on platforms (e.g., Garthwaite, 2014; M. H. Lee et al., 2023; Xu et al., 2014). The primary mechanism for most of these within-platform spillover effects is consumer awareness (e.g., Liang et al., 2019; Song et al., 2020), suggesting that awareness generated by one platform component naturally extends to and enhances the visibility of related components within the platform ecosystem and the platform itself. In the context of DDPs, speculative demand for the DDP token may spill over to non-speculative, fundamental demand for the platform's utility. DDP-agnostic token investors are naturally exposed to information about the underlying DDP, e.g., during the due diligence. DDP information is shared on exchange websites, external price aggregator websites, and other trading-related media. We anticipate that these factors will significantly increase awareness of the DDP, leading to a user demand spillover from exchange-related activities. Overall, these positive spillovers are expected to hasten network effects and increase DDP growth rates.

Hypothesis 3: *Financial speculation increases fundamental DDP growth.* (***Spillover Hypothesis***)

Financial speculation may be particularly critical for non-speculative, fundamental growth when the DDP token is trading below its fair value. First, the expected demand spillover effect from token investor demand to fundamental DDP activity may be stronger if the DDP is undervalued. As outlined in *Hypothesis 3*, the primary mechanism for demand spillovers is consumer awareness (e.g., Liang et al., 2019; Song et al., 2020). However, even after becoming aware of the underlying DDP, potential users still face initial financial costs to engage with the DDP, such as those they incur for the technical setup. Access to the products and services is granted through traded utility tokens, with the token market price directly determining the adoption cost. An undervaluation of the platform would decrease these costs, thus increasing the likelihood that potential users join. Second, the importance of increased speculative trading volume may become more critical when the DDP is undervalued. The ability to sell tokens at prices reflecting future revenues is crucial for initiating platform adoption and resolving the 'chicken-egg' problem (Bakos and Halaburda, 2022a). Financial uncertainty from token undervaluation might remove this fallback option for early investors, negatively impacting DDPs' network effects. To rebuild potential users' trust in their ability to exit the DDP, increasing token liquidity is essential, to which speculative trading significantly contributes (Amihud & Mendelson, 1986). Third, addressing DDP-related information asymmetry through speculative trading activity might be especially important when the platform is undervalued, as a deviation of the DDP from its fair market value may stem from asymmetric information. Reducing this asymmetry could close the gap between the token's market price and its fair value. Financially motivated investors attracted by the misvaluation are likely to increase financial speculation and facilitate the aggregation of information (Grossman & Stiglitz, 1980; Kyle, 1985). Reducing informational asymmetries is expected to moderate DDP coordination frictions and hasten network effects.

Hypothesis 4: *The positive impact of financial speculation on non-speculative, fundamental DDP growth is amplified for DDPs that are ex-ante undervalued.*

2.2.3 Token listing and DDP decentralization

Token exchange listings may promote the dispersion of token ownership and increase DDP decentralization for several reasons, including, inter alia, opening access to new investor groups and providing exit options for insiders and institutional investors. First, token listings on exchanges can broaden the investor base by lowering entry barriers to the DDP (Fisch et al., 2022). Primary market mechanisms often restrict token distribution to a select group through private pre-sales or require substantial minimum investments because regulatory KYC requirements would make it prohibitively expensive to issue small tickets to retail investors (Bellavitis et al., 2021), limiting access to affluent participants. In contrast, secondary market listings democratize access by enabling fractional ownership of tokens for all interested parties. Second, token exchange listings offer founders and other internal shareholders a liquid exit option for their token holdings (Drobetz et al., 2025). Prior IPO literature shows that public offerings reduce stock ownership among these groups (Brennan & Franks, 1997). A study by Larrain et al. (2024) analyzed 1,172 IPOs across 33 different European stock markets and found that, on average, insider shareholding decreased by 19%. We anticipate a similar outcome for DDPs after the token exchange listing, as network effects necessitate decentralization, leading to a more dispersed ownership structure. Lastly, token exchange listings may facilitate the exit of institutional investors. Institutional investors, such as crypto venture funds, often support DDPs before the project issues any tokens (e.g., Cumming et al., 2025; Fisch and Momtaz, 2020; Momtaz, 2024). To realize gains from potential increases in valuation, these investors may use token exchange listings as an exit strategy. This pattern mirrors practices in the traditional financial market, where venture capital funds commonly exit their investments post-IPO (Giot & Schwienbacher, 2007; Paeglis & Veeren, 2013). Consistent with this reasoning, in the token context, Drobetz et al. (2025) relate post-listing token price depreciation to large-scale divestments of institutional holdings.

However, exchange listings may not uniformly decentralize ownership along all points of DDPs' token ownership distributions. The structure of token ownership in the secondary market often reflects the initial conditions set in the primary market, where dominant ownership stakes at the right tail of the distribution are established. These controlling stakes are rarely fully dissolved in secondary markets due to factors such as limited market depth, the ability of major tokenholders to accumulate additional tokens, and the reduction of coordination frictions. First, insufficient market depth on token exchanges stems from at least three reasons: (i) the number of token launches outpaces the influx of new capital into the market, (ii) for most DDPs, token liquidity is spread across several exchanges, and (iii) often only a small portion of DDPs' total token supply is freely floating in the market, as much of it is retained (Davydiuk et al., 2023; Fuchs and Momtaz, 2024). Second, the tradability of tokens may lead to increased centralization as it enables large shareholders to acquire more tokens. Bakos and Halaburda (2022b) find evidence of a positive correlation between the tradability of a platform token and the concentration of holdings. Furthermore, Fuchs and Momtaz (2024) show that DDPs typically retain a portion of their total issued tokens for release after the initial offering. Retained tokens are then sold on the open market once listed, providing an opportunity for liquid tokenholders to further increase their stakes and increase centralization. Lastly, an increased dispersion of tokenholders in a DDP might increase the risk that decision-making power becomes more widely dispersed. Coordinating decisions among an increased number of individuals can complicate processes and lead to inefficient decision-making (Chen et al., 2021; Cumming et al., 2025). To avoid negative consequences associated with such collective action problems, such as reduced DDP utility and dampened network effects, controlling tokenholders might prefer to maintain their holdings.

Hypothesis 5: *Token exchange listings disperse token ownership only in the left tail of the ownership distribution.* (***Asymmetric Decentralization Hypothesis***)

3 Data and methods

3.1 Data sources and sample construction

We construct a comprehensive DDP-week panel of 553,958 observations starting in April 2016 by merging four different data types: (i) primary market information from the *Token Offerings Research Database* (*TORD*), (ii) cross-sectional DDP information from various sources, (iii) secondary market information form *CoinMarketCap*, and (iv) on-chain DDP transactions from the *Ethereum* ledger.

First, we obtain primary market data from the updated *TORD*[3], which includes data on over 10,000 token offerings up to September 2024. Variables we extract from the *TORD* include *MVP*, *Pre-sale*, *Whitelist*, *KYC*, *Bonus*, *Bounty*, *Open source*, *Team size, in # FTE*, and *Expert rating*. Second, we collect and match investor data from all DDP fundraising rounds from *Messari* and *CryptoRank*, as well as the overview of crypto fund portfolio companies from *CryptoFundResearch* to identify DDPs with crypto fund backing and the dates of investment. Third, we manually map the *TORD* to secondary-market DDP token performance data via several characteristics, including the name, token code, website link, *Twitter* page link, and whitepaper link. Performance data come from *CoinMarketCap* and include closing prices, market capitalization, and trading volumes until October 2024.[4] We use the secondary market data also to infer the DDP token listing dates based on the earliest available price date. Fourth, we obtain on-chain metrics for each DDP with an *ERC20* contract address from the *Ethereum* blockchain through *Google BigQuery*.[5] The on-chain data include details of every transaction executed on the DDPs, including sender and receiver wallet addresses, transferred token amounts, timestamps, and the token balances of each wallet address at any given

[3] Available from www.paulmomtaz.com/data/tord. Retrieved October 1, 2024

[4] Depending on the variable, we trim the data at the 0.1 to 1.0% levels to mitigate potential measurement errors with which the data might be reported.

[5] Dataset: https://console.cloud.google.com/marketplace/product/bigquery-public-data/blockchain-analytics-ethereum-mainnet-us Retrieved December 1, 2024.

time. These immutable data points enable us to construct various DDP growth variables, as defined in Section 3.2. We lose some observations because some DDPs are not built on *Ethereum*, and others may lack information to identify the main *ERC20* contract address for matching purposes.

Overall, this leads to a final sample of 2,769 DDPs organized as a weekly panel going back to the token generation event (TGE) that might predate the primary market, resulting in a total of 553,958 observations spanning from April 2016 to September 2024.

3.2 Variable definitions

3.2.1 Dependent variables: DDP growth and decentralization

DDP growth variables. We gauge DDP growth with six distinct proxies obtained from on-chain *Ethereum* ledger data. *DDP activity* measures the total number of weekly transactions on the DDP. *DDP turnover* is the weekly number of tokens traded over the total token supply, in %. *DDP adoption* is measured as the weekly total number of unique wallet addresses interacting with the DDP. *New users* are identified as wallet addresses interacting for the first time with the token addresses in any given week. *Recurring users* encompass all users who have had at least one prior interaction with the protocol in any given week. *Last users* refer to wallet addresses that have no further interactions with the token address after any given week. For the DDP growth proxies, we distinguish growth related to speculative versus non-speculative behavior. Transactions are viewed as *speculative* if they involve wallet addresses associated with cryptocurrency exchanges. Information for whether wallet addresses belong to cryptocurrency exchanges come from *Etherscan*.

DDP decentralization. We proxy for DDP decentralization with (i) the total number of tokenholders (and by token ownership buckets as follows: less than 1%, 1-5%, 5-20%, and more than 20% token ownership) in any given week and (ii) the "Nakamoto coefficient" (see Lo Monaco et al., 2025), which quantifies the minimum number of the largest wallets required to hold more than 50% of the circulating token supply.

3.2.2 Independent variables: Token exchange listing information

Token exchange listing. Our main independent variable, $\mathbb{1}[\textit{Listing}]$, is an indicator variable that takes the value of one if a platform is listed on a public token exchange on all days of the week of the observation and zero otherwise. We derive the initial listing date from the first available price data point on *CoinMarketCap*.

Initial listing success. Similar to Drobetz et al. (2019), we proxy for the first-week listing success with the variable *Listing Success*, which equals one if the DDP token's price return exceeds that of *Bitcoin* in the first week following the exchange listing, and zero otherwise.

Listing sentiment. *Listing Sentiment* is constructed as a crypto market sentiment score based on the 30 days preceding the token listing. It is calculated by subtracting the sum of days with negative *Bitcoin* returns from the sum of days with positive *Bitcoin* returns, yielding a higher score for more positive sentiment, with a maximum value of $+30$ and a minimum of -30.

Undervaluation. We proxy for ex-ante DDP undervaluation with an indicator variable equal to one if the DDP token return was lower than the *Bitcoin* return in four consecutive weeks and zero otherwise.

3.2.3 Control variables and fixed effects

We control a comprehensive list of variables related to (i) DDP-level controls, such as the availability of a minimum viable product, expert ratings, and team size, (ii) ICO-level characteristics, such as pre-sale arrangements and whitelists, as well as (iii) token-level controls, such as token volatility and liquidity.

Our large panel dataset allows to control for time-variant and -invariant confounders with a rich fixed effects specification. In particular, to control for time-invariant confounders, we include DDP fixed effects; and we also include calendar week fixed effects for time-variant confounders and post-listing week fixed effects for DDP lifecycle-variant confounders.

All variables are defined in Table A.1 in the Appendix.

3.3 Summary statistics

Table 1 shows summary statistics for DDP growth-related (Panel A), all listing-related (Panel B), and control variables (Panel C). We report the number of observations, arithmetic mean, standard deviation, and the 25th, 50th, and 75th percentiles. Panel A shows that DDPs have, on average, 219.4 transactions per week (SD = 1,321.0), of which 39.2 are speculative (SD = 239.7) and

174.2 are non-speculative, fundamental activity (SD = 1,120.0). The average total DDP token turnover is 2.3% (SD = 12.7%), of which 0.2% (SD = 1.4%) is speculative and 2.0% (SD = 11.6%) is non-speculative, fundamental turnover. Regarding DDP adoption, on average, 146.5 unique users (SD = 801.0) interact with a DDP each week. Of these, 130.6 (SD = 745.5) engage in non-speculative, fundamental protocol activities, and 20.4 (SD = 103.9) stem from speculative activities. The proxies for DDP dynamics show that there are, on average, 54.5 new users (SD = 379.9) and 87.0 recurring users (SD = 421.4) per week. Among these users, an average of 56.2 (SD = 355.6) are last-time users. For all three proxies of DDP dynamics, we observe similar distributions for speculative and non-speculative, fundamental dynamics. On average, there are 6.1 new (SD = 39.1), 14.0 recurring (SD = 65.6), and 6.6 last (SD = 38.0) speculative investors per week, while there are 51.8 new (SD = 366.6), 73.9 recurring (SD = 376.3), and 53.3 last (SD = 348.3) non-speculative DDP users per week.

As per DDP decentralization and token ownership, each DDP has, on average, 14,907 unique tokenholders (SD = 28,613), of which 14,891 tokenholders (SD = 28,608) own less than 1% of the token supply, 5.5 (SD = 5.1) hold between 1 and 5%, 2.0 (SD = 1.9) between 5 and 20%, and 1.0 (SD = 0.7) more than 20%. On average, the largest 4.9 tokenholders per DDP (SD = 10.6) hold together more than 50% of the circulating DDP token supply, constituting a simple majority of governance rights.

Panel B shows that 43% of all DDPs are listed on a public cryptocurrency exchange. Of these listed DDPs, 31% outperformed the market in their first week of being publicly traded. The average listing sentiment score is 2.0 (SD = 5.0), and we observe that 16% of the tokens are undervalued post-listing.

Panel C indicates that, on average, 15% of DDPs received crypto fund backing, and 19% had a minimum viable product at the time of the ICO. Additionally, 30% conducted a pre-sale, 24% implemented a whitelist, 37% had a KYC process, 11% offered specific bonus structures, 24% provided a bounty program, and 53% made their code publicly available. The average DDP team consists of 10.3 full-time members (SD = 6.9), with an average expert rating of 14.6 (SD = 12.8). Regarding token characteristics, the average DDP token has a weekly USD trading volume of 1.05% (SD = 35.4%) of its total market cap, with 4% of all tokens being overvalued. The statistics for our control variables are comparable to those in related studies (e.g., Cumming et al., 2025; Drobetz et al., 2025; Fisch, 2019; Xia et al., 2024).

[PLEASE INSERT TABLE 1 HERE.]

3.4 Correlations

Pairwise correlations are in Table 2. All correlations are below the commonly agreed threshold of 0.7, suggesting that multicollinearity is not an issue in our sample.

[PLEASE INSERT TABLE 2 HERE.]

3.5 Econometric approach

The main part of our empirical analyses evaluates the effect of DDP token exchange listing on DDP growth. Our baseline model is a staggered difference-in-differences approach, estimating the effects of DDP token exchange listing on various DDP-level proxies for growth and decentralization. We control for DDP fixed effects, which capture all time-invariant characteristics of DDPs, post-listing week fixed effects, which account for the time-varying maturation process of DDPs, and calendar week fixed effects, which capture external time-variant factors affecting all DDPs. A potential concern regarding the identification of any effect of the token exchange listing on DDP growth is that DDPs endogenously select into the exchange listing. However, note that most of our sample DDPs will list eventually, thus it is not the listing decision that is endogenous *per se*, it is rather the listing timing decision that could suffer from selectivity. To address this concern, we adopt various methods that control for such potential selectivity from previous studies (Bertoni et al., 2011; Cumming et al., 2025; Drobetz et al., 2025). This involves estimating a selection model in the first stage, which calculates the likelihood of a DDP's token being listed on an exchange, as shown in Table A.2 in the Appendix. This probability is derived from a vector of exogenous control variables influencing the selection mechanism. The selection probabilities are then utilized in two distinct second-stage models: (i) using generalized residuals as instrumental variables (IV) to control for potential selectivity in unobservables, based on Heckman and Navarro-Lozano (2004) and Gourieroux et al. (1987), and (ii) employing propensity score matching (PSM model) with inverse Mills ratios to control for potential selectivity in observables, following Bertoni et al. (2011)

and Colombo and Grilli (2010). For a detailed description of the methods, we refer to Section 3.4 in Cumming et al. (2025).

4 Empirical results

4.1 Token listing and DDP growth

Regression results from our staggered difference-in-differences model of the impact of token exchange listing on various measures of DDP growth are in Table 3. The dependent variables are (i) *DDP activity*, proxied with the weekly number of on-chain transactions; (ii) *DDP turnover*, proxied with the percentage of tokens traded of total token supply per week; (iii) *DDP adoption*, measured as the weekly number of on-chain users; and *DDP dynamics*, measured by the weekly number of (iv) new on-chain users, (v) recurring on-chain users, and (vi) last on-chain users. All DDP growth proxies can be decomposed into on-chain activity from speculative and non-speculative, fundamental DDP activity. All models include DDP, calendar week, and post-listing week fixed effects to absorb any time-invariant DDP-level characteristics and time-variant market-wide covariates. We report three regressions for each dependent variable. The first is our baseline staggered difference-in-differences regression, the second is our instrumented staggered difference-in-differences regression where we instrument the listing decision with the generalized residuals from a first-stage selection-into-listing model (Cumming et al., 2025; Gourieroux et al., 1987; Heckman and Navarro-Lozano, 2004), and the third is a staggered difference-in-differences regression with matched samples from our PSM-on-observables first-stage procedure described in Section 3.5.

The results in Table 3 consistently indicate that token exchange listing has a positive effect on DDP growth across all proxies and model specifications. We estimate that token exchange listings increase (i) DDP activity by 149 to 283 additional transactions per week, (ii) DDP turnover by 1.0 to 1.5% more tokens traded relative to the total token supply, (iii) DDP adoption by 103 to 191 additional on-chain users per week, and (iv) to (vi) DDP dynamics by 35 to 61 additional new users, 64 to 134 additional recurring users, and 38 to 72 additional abandoning users per week, respectively. It is interesting to note that the listing-related increase in weekly on-chain users stems from new users by roughly one-third and recurring users by two-thirds. The positive listing effect on the number of last users can be explained with speculators who join DDPs only with the myopic interest to pocket DDPs' "money left on the table" due to commonly-observed underpricing (e.g., Momtaz, 2020). All estimated average treatment effects in Table 3 are statistically significant at the 1% level. R-squared values vary across proxies, ranging from 2.1% (lowest) for the number of transactions in the IV model specification to 25.0% (highest) for the percentage of traded tokens in the IV model specification, which we conclude are satisfactory values for an imbalanced panel of up to 520,995 observations in Table 3. Further, note that the estimated treatment effects per proxy are relatively similar for the IV and PSM model specifications and lower than the baseline OLS model specification, indicating that, without our adjustment for selectivity-related endogeneity in the timing decision of DDP listings, one would overestimate the actual effect of the token exchange listing on DDP growth. The only exception is the percentage of traded tokens, for which the pattern is reversed, suggesting that the treatment effect would be underestimated, which makes sense given that this is the only metric that depends directly on the listing. Taken together, the evidence in Table 3 supports our ***Listing Hypothesis*** that token exchange listings positively impact DDP growth.

[PLEASE INSERT TABLE 3 HERE.]

The results in Table 3 report *average* treatment effects of token exchange listing on DDP growth; however, we are also interested in exploring how DDP growth *evolves over time* post-listing. To that end, we plot all six DDP growth proxies for listed (solid line) and matched unlisted DDPs (dashed line) for the [0, 48] post-listing months in Figure 2. The overarching pattern is consistent across all six DDP growth proxies: There is a spike in activity immediately after the listing, which subsides dramatically in the six to twelve post-listing months, after which listed DDPs start growing again, although at a much slower yet sustainable rate. Also, comparing listed to matched unlisted DDPs, we observe that the initial patterns over the first six to twelve months are comparable, although activity on listed DDPs always exceeds that on matched unlisted DDPs, and, unlike for listed DDPs, longer-term growth is actually negative after the first post-listing year. It should be noted that we zero the x-axis for listed DDPs at the listing date and for matched unlisted DDPs at the token generation event (TGE) date, which is comparable, as tokens of unlisted DDPs can also be exchanged over-the-counter post-TGE. Overall, the patterns in Figure 2 clearly indicate that the listing effect is not fully sustained over time, but listed DDPs nevertheless exhibit larger growth rates in the long run, suggesting that token exchange listings help platform entrepreneurs grow traction on their DDPs, further supporting the ***Listing Hypothesis***.

[PLEASE INSERT FIGURE 2 HERE.]

Next, we test whether a *successful* first week of the token exchange listing and the *sentiment* around the token exchange listing moderate the positive long-term relation between token exchange listing and DDP growth. To that end, we interact our listing indicator with proxies for successful listings and listing sentiment for a moderated staggered difference-in-differences approach. Initial listing success is defined as a dummy variable equal to one if the DDP token outperforms *Bitcoin* in the first post-listing week, and zero otherwise. Listing sentiment is based on the 30 days preceding the token listing and is calculated as the difference between the sum of days with positive *Bitcoin* returns and the sum of days with negative *Bitcoin* returns. For each of the six dependent variables proxying for DDP growth, we estimate the baseline staggered difference-in-differences model (i.e., the first column for each DDP growth proxy in Table 3) for years 1, 2, and 3 following the token exchange listing to explore whether any potential effects of initial listing success and sentiment are sustained over time. For each dependent variable, the three columns in Table 4 therefore represent the baseline staggered difference-in-differences model estimated for different time horizons.

The results in Table 4 indicate that initial listing success can amplify the growth impact token exchange listings have on DDPs in the long term of up to three years after the listing, although the marginal effect decreases over time, at least for DDP activity, adoption, and dynamics. In economic terms, depending on the post-listing year, a successful initial listing leads, on average, to an additional 100.4 to 314.7 weekly transactions, 99.1 to 207.3 additional weekly platform users, and 78 to 147 additional weekly users. In contrast, for the listing sentiment, we observe shorter-lived effects, some of which may reverse over the course of the first three post-listing years. For example, platform activity (# transactions) and platform dynamics (# recurring users and # last users) are amplified by positive sentiment around the token exchange listing for, at most, the first two post-listing years, after which the effect evaporates. Similarly, for platform adoption (# users) and dynamics (# new users), a positive market sentiment around the listing also amplifies DDP growth in the first post-listing year, although the effect evaporates in the second post-listing year and is then eventually reversed in the third post-listing year, when a positive listing sentiment is associated with negative DDP growth rates relative to matched unlisted DDPs. Finally, in line with the pattern for DDP turnover above, we also find that the percentage of traded DDP tokens is negative when the market sentiment was positive at the time of the listing, and this effect is stable over all three post-listing years in our sample. It is noteworthy that the inclusion of the two initial listing success and sentiment moderators has a decisively positive effect on the model fit. The lowest R-squared for a baseline model in Table 3 was 2.9% (for platform activity proxy), which almost doubles in Table 4 to a range between 4.0 and 6.1%, which is reducing over time, highlighting the fading importance of the moderation effects of initial listing conditions over time.

Overall, the evidence in Table 4 partly supports our *Hypothesis 2* that initial token exchange listing success and positive market sentiment around the listing have an amplifying impact on the positive listing-growth relation for DDPs, although some of the effects evaporate and, in some cases, reverse in the long run.

[PLEASE INSERT TABLE 4 HERE.]

4.2 Spillover effects from DDP investors to DPP adopters

The unique feature of the shared asset (i.e., the token) between investors and users may enable demand spillovers from speculative to non-speculative, fundamental activity on DDPs. Demand spillovers might be more likely to occur when tokens are undervalued because informed investors will be able to pocket the token price appreciation *in expectation*. Intuitively, speculators may increase token turnover (e.g., because of high expected returns), kickstarting network effects, which reduce the early adoption-related coordination problem of users. The availability of identity information for token contract addresses that belong to cryptocurrency exchanges, allows to track and decompose DDP activity into speculative and non-speculative, fundamental activity on DDPs.

Table 5 explores whether speculative activity drives fundamental activity on listed DDPs a week later and whether any such effect is stronger for undervalued tokens. Panels A and B of Table 5 test the effect of speculation on *total* (i.e., speculative and non-speculative, fundamental) activity and the moderating effect of undervalued tokens, respectively. The dependent variables are our six proxies for DDP *total* growth, which measure aggregate growth from speculation and fundamental activity. Panels C and D of Table 5 test the effect of speculation on *fundamental* activity and the moderating effect of undervalued tokens, respectively. The dependent variables are our six proxies for DDP *non-speculative, fundamental* growth. We measure speculative activity in each of the six DDP growth proxies as the fraction of on-chain activity in total activity with token contract counterparties that can be traced back to crypto exchanges. We measure undervaluation as an indicator equal to 1 if the DDP token underperformed *Bitcoin* over four consecutive weeks, and zero otherwise. All models include all controls, as in Table 4, including DDP, calendar week, and post-listing week fixed effects. For brevity, we suppress control variables in Table 5.

The results in Table 5 lend strong support to the ***Spillover Hypothesis***. Speculative activity drives total and fundamental activity the week later. All coefficients are highly statistically significant at the 1% level, and the R-squared values explain a substantial amount of variation in our on-chain activity, ranging from 9.3% to 34.5% for non-speculative, fundamental, and from 15.8% to 44.3% for total activity on DDPs. The R-squared is noteworthy in comparison to Table 3, suggesting that most of the DDP growth is not actually driven by the listing *per se*, but by the speculation *enabled* by listing DDP tokens.

Coefficient estimates in Panel C suggest that increasing speculative activity by one percentage point increases non-speculative, fundamental activity the week later by 1.4 (DDP turnover) to 2.9 (new DDP users) percentage points. These estimates suggest a multiplier effect of speculative activity (coefficients$>$1), hinting at the presence of positive network effects originating from financial speculators. The interaction coefficients in Panel D further suggest that undervalued tokens benefit more from speculation, also supporting *Hypothesis 4*.

[PLEASE INSERT TABLE 5 HERE.]

4.3 Token listing and DDP decentralization

A central premise of DDPs is that decentralization facilitates network effects (Cumming et al., 2025). We explore in this section whether the DDP growth documented above is associated with an increasing degree of decentralization. For motivation, Figure 4 plots the cumulative ownership distributions of DDPs before (dashed line) and after (solid line) the listing, showing a strong pattern of post-listing dispersion of token ownership. Prior to the listing, the absolute number of tokenholders in approximately 90% of all DDPs is below 20,000 and never above 175,000, while the listing is associated with a notable shift, with more than 10% of all listed DDPs exceeding 50,000 tokenholders and some even surpassing 250,000 tokenholders.

[PLEASE INSERT FIGURE 3 HERE.]

Regression results from our staggered difference-in-difference models, as estimated in Tables 3, 4 (for the one-year horizon), and 5 Table, are in Panels A, B, and C of Table 6, respectively, with the only difference of regressing new dependent variables as proxies for DDP decentralization. The first model of Table 6 fits the number of tokenholders and the second fits the *Nakamoto* coefficient (i.e., the smallest number of the largest tokenholders in a DDP that would have enough token ownership to majority-control the DDP). The third to sixth models repeat the first regression of the number of tokenholders for the subsamples of tokenholders with less than 1% of token ownership, between 1 and 5%, between 5 and 20%, and more than 20%, respectively. The first model suggests that the listing leads to 2,515 additional tokenholders. The second model suggests, however, that the listing leads to an increase of 1.0 in the *Nakamoto* coefficient, meaning that the listing changes the smallest number of large tokenholders to majority-control a DDP only by requiring one additional large tokenholder. Taken together, these diverging results may indicate that the listing leads to many more small tokenholders and not many large tokenholders. To corroborate the interpretation, we test the listing effect in different buckets of tokenholder ownership stakes in models three to six. Consistent with our interpretation, the number of small tokenholders with less than 1% of ownership increases because of the listing by 2,590, and this effect increases dramatically for larger ownership shares. Specifically, the number of tokenholders with 1% to 5% of ownership increases by 1.2, the number of tokenholders with 5% to 20% of ownership increases by 0.4, and the number of tokenholders with more than 20% is not impacted by the listing, supporting our ***Asymmetric Decentralization Hypothesis***.

These results are consistent for our replications of Tables 4 (for the one-year horizon) in Panel B of Table 6 and 5 in Panel C of Table 6 and thus, for brevity, not further discussed.

[PLEASE INSERT TABLE 6 HERE.]

Figure 4 plots the evolution of DDP decentralization over time, i.e., from the listing month to

48 months after the listing, for the number of tokenholders and the *Nakamoto* coefficient. Two observations are noteworthy. First, listed DDPs experience a disproportionately higher increase in the number of tokenholders compared to matched unlisted DDPs over the four-year post-listing period, suggesting that the listing effect has a persistent effect on DDP decentralization. Second, the *Nakamoto* coefficient spikes in the listing month, before subsiding to levels comparable to those of matched unlisted DDPs. This pattern is consistent with the interpretation that certain large tokenholders enter just after the listing, e.g., crypto hedge funds (Conlon et al., 2025; Cumming et al., 2025; Dombrowski et al., 2023), while others exploit the temporary liquidity increase to exit, which is why the *Nakamoto* coefficient subsides in the secondary market. Note that in the long term, after three years of listing, the *Nakamoto* coefficient of listed DDPs starts to rise above the level of that of matched unlisted DDPs.

[PLEASE INSERT FIGURE 4 HERE.]

Finally, Figure 5 shows the evolution of the number of tokenholders by ownership share buckets ($<$1%, 1 to 5%, 5 to 20%, and $>$20%) for the four-year post-listing period. Three observations are noteworthy. First, it becomes clear that there is increasing decentralization on listed DDPs, primarily driven by small tokenholders ($<$1% token ownership). Second, there is no noticeable time trend for the medium buckets (1 to 5% and 5 to 20% token ownership), although listed DDPs have more tokenholders because of the initial listing effect. Third, for the largest bucket ($>$20% token ownership), there is no decentralization trend and matched unlisted DDPs are more decentralized than listed DDPs, plausibly because unlisted DDPs are backed by crypto funds, which leads to more larger tokenholders.

[PLEASE INSERT FIGURE 5 HERE.]

4.4 Post-hoc analyses

4.4.1 Token listing and DDP survival

Despite the benefits for DDP growth, token exchange listings may also bring substantial disadvantages, such as entrepreneurial myopia to cope with token price-related market pressures and an exposure to market misconduct by activist investors (Drobetz et al., 2025; Hornuf et al., 2025).

Aggressive DDP growth may thus amplify existential threats to DDP survival. It is an empirical question whether the DDP growth effect of token exchange listings is also associated with higher DDP survival rates, which we explore in this section. Frailty analyses of DDPs' duration to failure are in Table 7. We employ frailty analyses, rather than, e.g., fixed-effects Cox proportional hazards models, because of their demonstrated robustness when working with entrepreneurial data. Momtaz (2021c) shows by simulation that, because of the endogeneity associated with duration dependency in entrepreneurial survival data, only frailty models deliver unbiased estimates, while Cox models yield biased coefficient estimates, where the bias may potentially even lead to coefficients on variables of interest even changing signs.

Models 1 and 2 in Table 7 re-run the main models from Tables 3, models 3 and 4 re-run those from 4, and models 5 and 6 re-run those from 5. All coefficients in Table 7 are hazard ratios (i.e., exponentiated coefficients), so that hazard ratios >1 (<1) suggest a longer (shorter) duration until failure. The uneven models contain results from Cox proportional hazard models for comparison, while the even models contain our frailty models. The frailty-based hazard ratios are smaller, suggesting that Cox proportional hazard models would overestimate the impact of token exchange listings on DDP survival. The hazard ratio in model 1 is 1.679, statistically significant at the 1% level. Economically, the output suggests that, on average, DDP exchange listings lead to a 57.3% longer survival time compared to matched unlisted DDPs. Models 3 and 4 suggest that DDP token exchange listing success does not significantly moderate the impact of token listing on DDP survival, and a positive market sentiment at the time of the listing tends to reduce this effect. For instance, Model 4 suggests that an increase in market sentiment by one standard deviation (5.0) reduces the positive impact of DDP exchange listing by, on average, 27.2 percentage points. Furthermore, Table 7 shows statistically significant effects of financial speculation and DDP token undervaluation. According to the frailty estimates in model 6, DDPs that are ex-ante undervalued exhibit, on average, a 9.5% shorter survival time compared to those that are fairly valued.

[PLEASE INSERT TABLE 7 HERE.]

4.4.2 Going public versus remaining private: the role of crypto funds

Cumming et al. (2025) show that crypto funds may help DDPs raise funding and grow, while our paper shows that the exchange listing of DDP tokens facilitates DDP growth. A natural next question is the relative contribution of exchange listings vis-à-vis crypto fund backing for DDP growth. To that end, we re-run our models from Tables 3, 4, and 5, with the only modification of interacting exchange listings with an indicator for whether the DDP was backed by a crypto fund. For brevity, we also summarize our empirical findings in Figure 6. We plot the average treatment effects of remaining private with the help of crypto fund backings, going public without crypto fund backing, and going public with crypto fund backing. The overarching finding is that crypto-fund endorsed exchange listings have the strongest impact on DDP growth, followed by non-endorsed going-public decisions and remaining private. Therefore, as for the relative importance of the two strategies of going public versus remaining private, we qualify the evidence in Cumming et al. (2025) by showing that token exchange listings are more beneficial for DDPs than crypto fund investments *per se*.

[PLEASE INSERT FIGURE 6 HERE.]

For completeness, regression results from our modified staggered difference-in-difference models, as estimated in Tables 3, 4 (for the one-year horizon), and 5 are in Panels A, B, and C of Table 8, respectively. The dependent variables are, as before, proxies for DDP activity (# transactions), turnover (traded tokens relative to token supply), adoption (# users), and dynamics (# new, recurring, and last users). In Panel A, the first model suggests that the exchange listing leads to 216 more transactions, while crypto fund backing is not associated with a significant increase in the number of transactions; nevertheless, crypto fund-endorsed exchange listings lead to 635 additional transactions per week, of which 418 transactions are associated with the interaction of listing and crypto fund backing. We observe the same pattern (i.e., a significant increase driven by exchange listings and amplified by crypto fund endorsement, but no significant effect of crypto fund backing *per se*) for all four DDP adoption and dynamics proxies. For DDP turnover, we also find a significant listing effect, as before, however, no amplification effect of crypto funds. In Panels B and C, the same pattern prevails: crypto fund backing amplifies the listing effect.

[PLEASE INSERT TABLE 8 HERE.]

5 Discussion and concluding remarks

5.1 Summary of main results

This paper tests five hypotheses. Our overarching hypothesis, the ***Listing Hypothesis***, posits that DDPs with an exchange-listed token experience stronger growth than matched non-listed DDPs. Examining a large DDP-week panel of 553,958 observations in the period 2016–2024, we find that an exchange listing is associated with significant growth in platform metrics, including weekly transactions, token turnover, and user adoption rates. Specifically, when a DDP is listed on a public token exchange, weekly transactions increase by 283.3, platform turnover by 1.0 percentage points, and the number of users by 191.6. In post-hoc analysis, we find that exchange listings increase the probability of DDP survival. Similarly, our second hypothesis posits that successful token exchange listings may amplify the listing's positive long-term effects on DDP growth, for which we also find supporting evidence. The first-week token price performance predicts DDP growth over the next three years.

Further, our ***Spillover Hypothesis*** posits that speculative activity spills over to non-speculative, fundamental activity on DDPs because of the feature of the shared asset; i.e., financial speculators and DDP adopters both own tokens. Consistent with this rationale, we find evidence that financial speculation increases subsequent non-speculative, fundamental DDP growth. Moreover, financial arbitrageurs might speculate especially on undervalued tokens, creating demand pressure until the equilibrium price is reached, thereby also impacting non-speculative, fundamental DDP activity, which we posit as our *fourth hypothesis*, for which we also find strong support.

Lastly, our ***Asymmetric Decentralization Hypothesis*** posits that listings promote the dispersion of DDP token ownership. Our results reveal substantial decentralization dynamics in the left tail of the token ownership distribution, but not in the right tail. We also explore whether DDPs' growth benefits more from the going-public than the remaining-private decision. Cumming et al. (2025) show that crypto fund investments have a positive effect on DDP growth. Extending this line of research, we find, however, that crypto fund-endorsed going-public strategies benefit DDP growth most, followed by non-endorsed going-public strategies and crypto fund-endorsed remaining-private strategies.

5.2 Theoretical contributions and practical implications

Our study offers at least two theoretical contributions. First, our study contributes to the emerging literature on DDPs. Similar to non-decentralized digital platforms, DDPs face an early-adoption challenge, stemming from the coordination problem of incentivizing first adopters to join the platform when the platform will create value only if it is widely used (Rochet and Tirole, 2003; Weyl, 2010). Unlike non-decentralized digital platforms where investors and adopters are interested in different assets (equity versus products and services, the tokenization of DDPs creates a shared asset (i.e., the platform token), better aligning investors' and users' interests (Bakos and Halaburda, 2022a; Cumming et al., 2025). What remains to be shown is how exactly the feature of the shared asset helps DDPs overcome the early-adoption problem. Our study contributes to this question by exploring the role of the token exchange listing. Our empirical findings add to the literature in at least two regards. First, we show that, even though the listing-related spike in DDP adoption is rather short-lived, 15 to 20% of the peak adoption immediately after the listing is sustained in the long term, showing that token listings mitigate the early-adoption problem. Second, our spillover results suggest that the feature of the shared asset mitigates the early-adoption problem in large part because speculation appears identical to fundamental, non-speculative activity on the blockchain, thus attracting platform adopters by signaling prospects for network effects. Importantly, the spillover effect of speculation is particularly salient when DDPs are undervalued, suggesting that DDP tokenization leads to a more efficient platform adoption path. These results are noteworthy as they empirically demonstrate the economic value of blockchain technology for platform economics.

Second, we contribute to the growing literature on blockchain-based entrepreneurial finance (Alshater et al., 2023; Belitski and Boreiko, 2022; Block et al., 2018, 2021). The literature has focused on various aspects of ICOs, such as offering valuations (e.g., Fisch, 2019; Momtaz, 2021b) short-term underpricing (e.g., Benedetti and Kostovetsky, 2021; Momtaz, 2020), long-term performance (e.g., Benedetti and Nikbakht, 2021; Cumming et al., 2025; Drobetz et al., 2025; Fisch and Momtaz, 2020; Lyandres et al., 2022), the impact of the regulatory environment (e.g., Bellavitis et al., 2021, 2022; Huang et al., 2020), and the signaling effects of founders' personal traits (e.g., Colombo et al., 2022; Momtaz, 2021b; Xia et al., 2024). A novelty of blockchain-based entrepreneurial finance is that the primary market (i.e., ICOs) is independent of the secondary market (i.e., the exchange listing). However, the listing decision's impact has not yet been studied for DDP growth, which is the gap we aim to fill. Our results indicate that listed DDPs grow faster than matched unlisted DDPs and, notably, the superior growth is driven by the attention received *because* of the listing (Figure 1). We also address the logical next question of how going-public decisions (i.e., the listing) compare to remaining-private decisions (i.e., crypto fund backing without listing) studied in Cumming et al. (2025). The marginal benefit for DDP growth is the highest for crypto fund-endorsed going-public strategies, followed by non-endorsed going-public and crypto fund-endorsed remaining-private strategies. Thus, the evidence from our study suggests that public markets for tokenized ventures may increase the welfare of market participants.

Finally, our study has practical implications for policymakers, entrepreneurs, and investors. First, for policymakers, our findings suggest that allowing early-stage DDPs access to public token markets — even with limited regulation — enhances DDP growth and survival. Given our finding that financial speculation can bolster fundamental protocol growth, policymakers should develop novel regulatory frameworks that support regulated token listings, rather than applying existing securities laws that may restrict access to public markets for early-stage DDPs. Second, for entrepreneurs, going public correlates with positive network effects and should be a strategic target for the typical DDP. Founders should consider key factors that maximize the long-term impact of a listing on DDP growth, including securing prior crypto fund backing, timing the market to coincide with positive sentiment at launch, and implementing effective pricing and marketing strategies to ensure post-listing success. Lastly, for investors, investing in listed DDPs correlates with higher fair token values. Exchange listings enhance network effects, leading to more fundamental traction for the platform, and extend DDPs' expected lifetime. Institutional investors, such as crypto funds, should guide portfolio companies toward public listings to maximize their success prospects.

5.3 Limitations and avenues for future research

Our study represents only a first step toward understanding the impact of token exchange listing on DDP growth. In the following, we suggest several avenues for potentially fruitful further research.

Public market type. Our study focuses on tokenized DDPs, a novel platform type that emerged in the last 5-10 years. DDPs rely on asset tokenization, which raises concerns about the external validity of our findings, prompting several intriguing questions for further research. First, it would be interesting to analytically explore whether the tokenization of centralized digital platforms may function in a similar way and promote platform growth. Second, with regulations governing public token markets tightening and aligning more closely with those of traditional financial markets, it remains to be examined whether DDPs continue to benefit from token exchange listings to the same extent, as they did during our observation period.

Disaggregating financial speculation. Our results provide evidence that financial speculation increases future non-speculative, fundamental DDP growth. We suggest that this effect is driven by several spillover effects from token investors to platform users, including liquidity, information, and demand spillovers. To further uncover the underlying mechanisms of this effect, a more granular approach could be beneficial. First, analyzing the behavior of individual wallet addresses could yield insights into the behavioral patterns of financial token investors who transition to fundamental platform users. Second, distinguishing between different types of financial speculation seems to be interesting.

Finally, an increasing body of literature has been published around the optimal design of decentralized autonomous organizations (DAOs) (e.g., Chen et al., 2021; Cristiano Bellavitis and Momtaz, 2023; Lo Monaco et al., 2025; Tsoukalas and Falk, 2020). It would also be interesting to explore how different governance approaches affect listing probabilities and, ultimately, DAO growth. Moreover, we argue that token exchange listings provide DDPs with new opportunities to raise external finance through follow-on financing by divesting their treasury. Further analyses using on-chain data could explore the growth implications of this capital acquisition strategy and its impact on the operational performance of DDPs. Further, Drobetz et al. (2025) show that the timing of financing decisions in DDPs plays a crucial role for their future financial performance. A similar analysis related to the timing of token exchange listings and their impact on future DDP growth also appears as an interesting contribution to the platform literature.

5.4 Concluding remarks

This study has sought to shed light on the role of token exchange listings for the growth of decentralized digital platforms (DDPs), utilizing on-chain platform metrics. Our findings suggest that DDPs with a listed token attract more users, achieve higher platform activity, and experience increased token turnover. Token exchange listings disperse token ownership in the left but not in the right tail of the ownership distribution. Overall, our study contributes to the emerging literature on venture tokenization and public markets for startups and outlines several promising avenues for future research.

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Exhibits

Figure 1: **Exchange listing and DDP activity (# tx) and adoption (# users)**

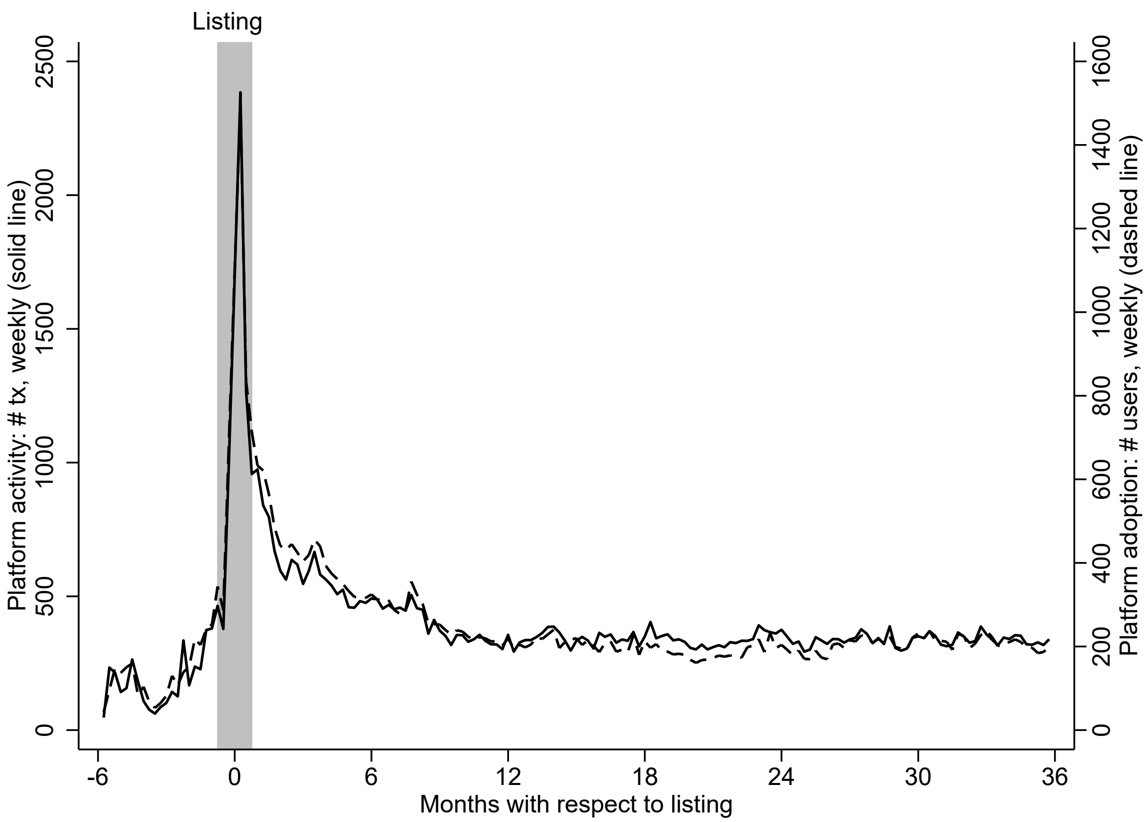


Table 1: **Summary statistics**

Panel A: Summary statistics for DDP growth and decentralization variables

	Obs	Mean	SD	Q1	Median	Q3
DDP activity:						
Total: # tx, weekly	520,995	219.40	1,321.00	0.00	0.00	21.00
Fundamental: # tx, weekly	520,995	174.20	1,120.00	0.00	0.00	15.00
Speculative: # tx, weekly	520,995	39.22	239.70	0.00	0.00	1.00
DDP turnover:						
Total: $\frac{\text{tokens traded}}{\text{token supply}}$, in %, weekly	519,443	2.32	12.70	0.00	0.00	0.40
Fundamental: $\frac{\text{tokens traded}}{\text{token supply}}$, in %, weekly	519,443	2.02	11.59	0.00	0.00	0.28
Speculative: $\frac{\text{tokens traded}}{\text{token supply}}$, in %, weekly	519,449	0.23	1.43	0.00	0.00	0.00
DDP adoption:						
Total: # users, weekly	520,995	146.50	801.00	0.00	0.00	26.00
Fundamental: # users, weekly	520,995	130.60	745.50	0.00	0.00	21.00
Speculative: # users, weekly	520,995	20.42	103.90	0.00	0.00	2.00
DDP dynamics:						
Total: # new users, weekly	520,995	54.50	379.90	0.00	0.00	5.00
Fundamental: # new users, weekly	520,995	51.79	366.60	0.00	0.00	5.00
Speculative: # new users, weekly	520,995	6.12	39.12	0.00	0.00	0.00
DDP dynamics:						
Total: # recurring users, weekly	520,995	87.02	421.40	0.00	0.00	19.00
Fundamental: # recurring users, weekly	520,995	73.93	376.30	0.00	0.00	14.00
Speculative: # recurring users, weekly	520,995	14.04	65.56	0.00	0.00	2.00
DDP dynamics:						
Total: # last users, weekly	520,995	56.21	355.60	0.00	0.00	8.00
Fundamental: # last users, weekly	520,995	53.32	348.30	0.00	0.00	7.00
Speculative: # last users, weekly	520,995	6.63	37.97	0.00	0.00	1.00
DDP decentralization:						
# token holders	429,237	14,907	28,613	1,115	4,717	14,729
# token holders (<1% ownership)	429,409	14,891	28,608	1,103	4,706	14,723
# token holders (1-5% ownership)	433,471	5.54	5.10	2.00	4.00	8.00
# token holders (5-20% ownership)	435,053	1.98	1.86	0.00	2.00	3.00
# token holders (>20% ownership)	436,558	1.03	0.69	1.00	1.00	1.00
Nakamoto coefficient	432,980	4.899	10.63	1.00	2.00	4.00

Panel B: Summary statistics for listing-related variables

	Obs	Mean	SD	Q1	Median	Q3
$\mathbb{1}$[Listing]	521,516	0.43	0.50	0.00	0.00	1.00
Listing success	255,381	0.31	0.46	0.00	0.00	1.00
Listing sentiment	255,381	2.03	5.03	−2.00	2.00	6.00
Undervaluation	233,052	0.16	0.37	0.00	0.00	0.00

Panel C: Summary statistics for control variables

	Obs	Mean	SD	Q1	Median	Q3
Platform controls:						
Crypto fund backing	521,516	0.15	0.36	0.00	0.00	0.00
Minimum viable product	451,860	0.19	0.39	0.00	0.00	0.00
Pre-sale	451,861	0.30	0.46	0.00	0.00	1.00
Whitelist	446,389	0.24	0.43	0.00	0.00	0.00
KYC	451,861	0.37	0.48	0.00	0.00	1.00
Bonus	451,861	0.11	0.31	0.00	0.00	0.00
Bounty	451,860	0.24	0.43	0.00	0.00	0.00
Open source	451,861	0.53	0.50	0.00	1.00	1.00
Team size, in # FTE	414,852	10.31	6.89	6.00	9.00	13.00
Expert rating	414,063	14.64	12.76	6.30	8.10	27.00
Token controls:						
Token volatility (z–standardized)	203,766	0.00	1.00	−0.02	−0.02	−0.02
Token liquidity (% of market cap)	233,052	1.05	35.38	0.00	0.01	0.37
Overvaluation	233,052	0.04	0.21	0.00	0.00	0.00

Table 2: **Correlations**

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.
Listing-related variables:																																				
1. 𝟙[Listing]																																				
2. Listing success	.41																																			
3. Listing sentiment	.28	.09																																		
4. Undervaluation	./.	-.01	.02																																	
Project success variables:																																				
5. Total platform activity	.13	.01	.08	-.01																																
6. Fundamental platform activity	.11	.08	.08	-.00	.97																															
7. Speculative platform activity	.16	.10	.05	-.02	.61	.48																														
8. Total platform turnover	.05	.03	.02	-.01	.26	.23	.23																													
9. Fundamental platform turnover	.04	.03	.02	-.01	.25	.23	.20	.98																												
10. Speculative platform turnover	.12	.03	.03	-.01	.20	.12	.39	.31	.21																											
11. Total platform adoption	.13	.10	.08	-.01	.91	.91	.57	.24	.23	.18																										
12. Fundamental platform adoption	.12	.09	.07	-.00	.89	.92	.50	.22	.22	.13	.99																									
13. Speculative platform adoption	.18	.10	.06	-.02	.56	.45	.91	.23	.19	.42	.55	.48																								
14. Total new users	.09	.08	.06	-.01	.78	.78	.49	.23	.22	.15	.89	.88	.48																							
15. Fundamental new users	.08	.08	.06	-.01	.77	.79	.45	.22	.22	.12	.88	.89	.44	.99																						
16. Speculative new users	.14	.08	.04	-.03	.52	.42	.82	.22	.18	.38	.52	.45	.93	.48	.44																					
17. Total recurring users	.17	.11	.09	-.00	.85	.82	.62	.23	.21	.20	.89	.88	.60	.69	.68	.55																				
18. Speculative recurring users	.16	.11	.09	.00	.82	.83	.53	.21	.21	.15	.87	.89	.51	.67	.68	.47	.98																			
19. Fundamental recurring users	.21	.11	.06	-.01	.56	.45	.90	.21	.18	.42	.54	.48	.96	.45	.42	.82	.61	.52																		
20. Total last users	.10	.08	.06	-.00	.78	.80	.47	.21	.20	.13	.90	.90	.46	.90	.90	.44	.77	.77	.45																	
21. Fundamental last users	.09	.08	.06	-.00	.77	.80	.44	.20	.19	.11	.89	.90	.43	.89	.90	.41	.76	.77	.41	1.00																
22. Speculative last users	.16	.09	.05	-.02	.53	.43	.84	.22	.18	.39	.53	.47	.95	.48	.44	.95	.58	.49	.88	.46	.42															
23. Token holders	.22	.12	.13	.01	.26	.26	.21	.08	.08	.04	.27	.28	.19	.20	.20	.15	.33	.34	.22	.24	.24	.16														
24. Nakamoto coefficient	.03	.02	.01	.01	.05	.05	.06	.01	.00	.05	.06	.06	.07	.05	.05	.06	.07	.06	.08	.06	.05	.07	.10													
Control variables:																																				
25. Crypto fund backed	.35	.09	.07	-.03	.16	.15	.19	.06	.06	.08	.16	.15	.19	.12	.12	.14	.19	.18	.21	.13	.12	.16	.22	.04												
26. Minimum viable product	-.01	.03	-.01	.00	-.03	-.03	-.02	-.00	-.00	.00	-.03	-.03	-.02	-.02	-.02	-.02	-.03	-.03	-.02	-.02	-.02	-.02	-.05	-.06	-.07											
27. Pre-sale	-.03	-.04	-.02	.01	-.02	-.02	-.02	-.01	-.01	-.01	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.02	-.03	-.02	-.02	-.02	-.00	-.03	-.06	.08										
28. Whitelist	-.00	.01	-.04	-.01	.00	-.00	.01	-.00	-.00	.00	.00	.00	.01	-.00	-.00	.00	.00	.00	.01	-.00	-.00	.00	.01	-.00	-.01	.20	.11									
29. KYC	-.03	.02	-.07	.02	-.02	-.03	-.00	-.01	-.01	.00	-.02	-.02	-.01	-.02	-.02	-.01	-.03	-.03	-.00	-.02	-.02	-.01	-.03	-.01	-.07	.30	.14	.55								
30. Bonus	.00	.01	-.04	.01	-.03	-.03	-.02	-.01	-.01	-.00	-.03	-.03	-.02	-.03	-.03	-.02	-.04	-.04	-.03	-.03	-.03	-.02	-.07	.02	-.06	.13	.07	.04	.10							
31. Bounty	-.08	-.03	-.06	.00	-.04	-.04	-.04	-.02	-.02	-.02	-.04	-.04	-.04	-.03	-.03	-.04	-.05	-.05	-.04	-.04	-.04	-.04	-.06	-.04	-.09	.35	.18	.24	.27	.13						
32. Open source	.00	-.03	.01	.03	.02	.01	.03	.00	.00	.02	.03	.03	.03	.02	.02	.02	.04	.04	.03	.02	.02	.02	.07	.02	-.01	.16	.13	.12	.11	-.02	.16					
33. Team size	.08	.03	.04	.01	.01	.01	.00	-.01	-.00	-.01	.02	.02	.00	.01	.01	.00	.02	.02	.00	.01	.01	.00	.07	.06	.06	.07	.14	.18	.17	-.07	.09	.15				
34. Expert rating	.16	.04	.09	.03	.08	.08	.06	.03	.03	.02	.09	.09	.06	.06	.06	.05	.11	.11	.06	.07	.07	.06	.23	.07	.07	.02	.30	.12	.08	-.13	.06	.22	.27			
35. Token volatility	./.	.00	-.00	-.07	.16	.13	.19	.14	.13	.12	.18	.15	.21	.18	.16	.24	.17	.14	.19	.16	.14	.24	-.03	-.00	-.00	-.00	.00	.00	-.00	-.00	-.00	-.00	-.00	.00		
36. Token liquidity	./.	.01	.00	-.00	.00	.00	.00	.00	.00	-.00	.00	.00	-.00	.00	.00	-.00	.00	.00	-.00	.00	.00	-.00	-.00	-.01	.02	.02	.02	.01	.02	-.02	.00	.04	.02	.02	-.00	
37. Overvaluation	./.	.01	-.00	-.10	.03	.03	.03	.01	.01	.01	.03	.03	.03	.03	.02	.04	.03	.02	.03	.02	.02	.03	-.00	.00	.03	-.00	-.01	-.01	-.02	.01	-.00	-.00	-.01	-.01	.04	-.00

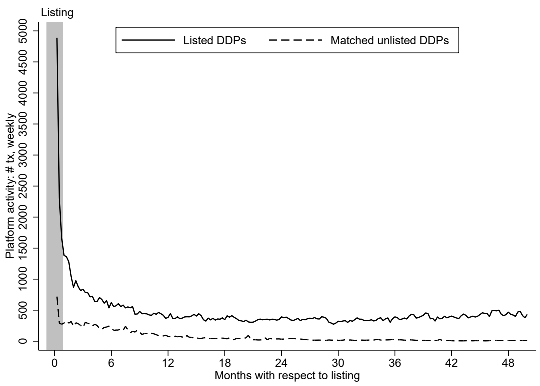
Table 3: **Staggered difference-in-differences analysis of exchange listing and DDP growth**

Dependent variable:	DDP activity: # tx			DDP turnover: $\frac{\text{tokens traded}}{\text{token supply}}$, in %			DDP adoption: # users		
Model:	Baseline	IV	PSM	Baseline	IV	PSM	Baseline	IV	PSM
$\mathbb{1}$[Listing]	283.3***	143.9***	149.2***	1.0***	1.2***	1.5***	191.6***	103.7***	123.6***
	(32.1)	(27.7)	(27.9)	(0.3)	(0.3)	(0.3)	(20.8)	(15.5)	(30.2)
IV	✗	✓	✗	✗	✓	✗	✗	✓	✗
PSM	✗	✗	✓	✗	✗	✓	✗	✗	✓
DDP FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Post-Listing week FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Obs.	520,995	213,742	109,945	519,443	212,400	109,371	520,995	213,750	109,952
R^2	0.029	0.021	0.026	0.215	0.250	0.248	0.043	0.029	0.031

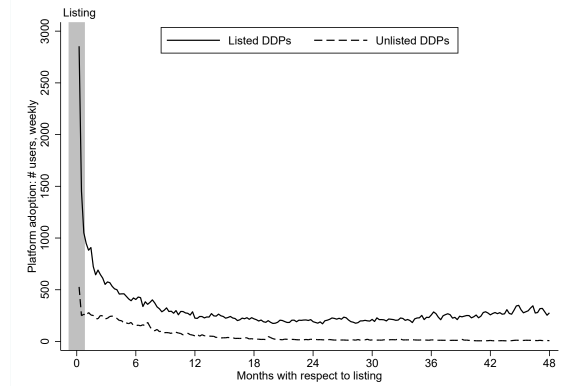
Dependent variable:	DDP dynamics: # new users			DDP dynamics: # recurring users			DDP dynamics: # last users		
Model:	Baseline	IV	PSM	Baseline	IV	PSM	Baseline	IV	PSM
$\mathbb{1}$[Listing]	61.4***	35.3***	42.2***	134.0***	64.1***	71.1***	72.8***	38.9***	42.5***
	(8.8)	(8.3)	(11.1)	(11.7)	(10.5)	(12.0)	(7.7)	(7.7)	(10.5)
IV	✗	✓	✗	✗	✓	✗	✗	✓	✗
PSM	✗	✗	✓	✗	✗	✓	✗	✗	✓
DDP FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Post-Listing week FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Obs.	520,995	213,724	109,948	520,995	213,756	109,945	520,995	213,721	109,948
R^2	0.045	0.033	0.037	0.038	0.023	0.027	0.033	0.028	0.029

Note: These are regression results for the impact of exchange listing on DDP growth. The dependent variables are DDP activity, proxied with the number of transactions, DDP turnover, proxied with the percentage of tokens traded in total token supply, DDP adoption, measured as the number of users, new users, recurring users, last users. For each dependent variable, we estimate average treatment effects of exchange listing (i) in a basic staggered difference-in-differences model, (ii) in an augmented staggered difference-in-differences model that accounts for potential unobserved heterogeneity between the treatment and control group through an instrumental variable (IV) approach, and (iii) in another augmented staggered difference-in-differences model that accounts for potential observed heterogeneity between the treatment and control group through a propensity matching score (PSM) approach. The IV and PSM approaches show second-stage results, with the first-stage model shown in Table A.2 in the Appendix, and the econometric methodology is described in Section 3.5. Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

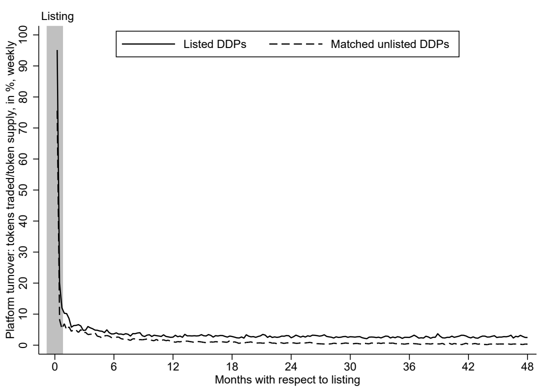
Figure 2: **Long-term impact of exchange listing on DDP growth**



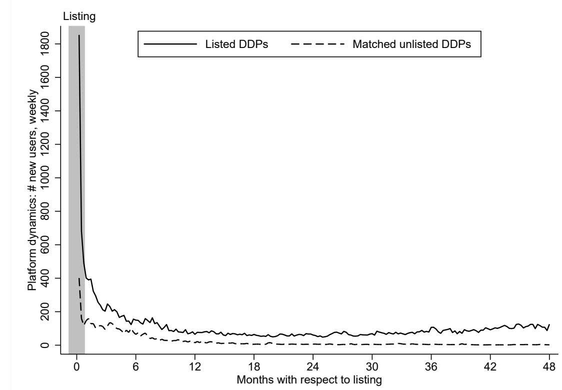
(a) DDP activity: # tx



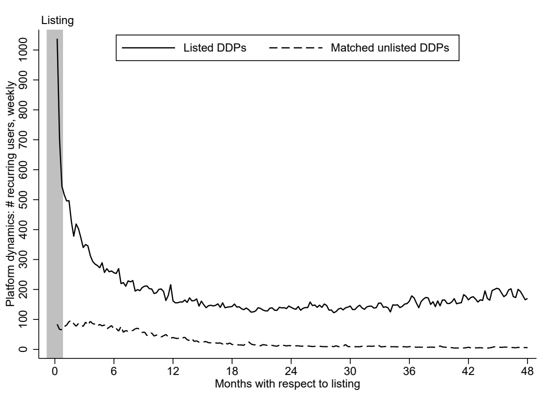
(b) DDP turnover: $\frac{\text{tokens traded}}{\text{token supply}}$, in %



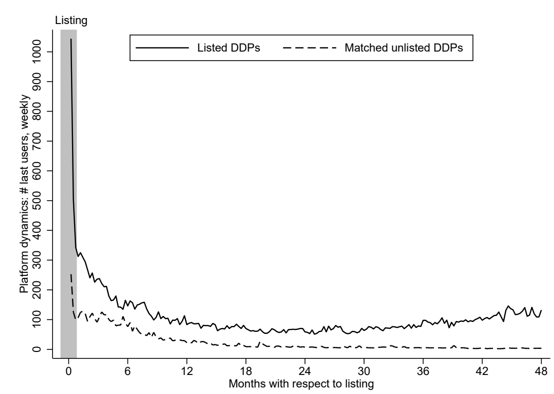
(c) DDP adoption: # users



(d) DDP dynamics: # new users



(e) DDP dynamics: # recurring users



(f) DDP dynamics: # last users

Table 4: **Exchange listing *success* and DDP growth: success begets success?**

Dependent variable:	DDP activity: # tx			DDP turnover: $\frac{\text{tokens traded}}{\text{token supply}}$, in %			DDP adoption: # users		
Time period:	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
$\mathbb{1}$[Listing]	197.7^{***}	144.0^{***}	218.2^{***}	2.3^{***}	2.2^{***}	2.7^{***}	147.3^{***}	78.9^{***}	113.4^{***}
	(11.6)	(9.4)	(13.0)	(0.1)	(0.1)	(0.1)	(7.9)	(4.8)	(6.5)
× Listing success	314.7^{***}	198.5^{***}	100.4^{***}	-0.4	-0.3	-1.0^{***}	207.3^{***}	156.4^{***}	99.1^{***}
	(32.8)	(27.1)	(25.6)	(0.3)	(0.3)	(0.3)	(20.9)	(16.5)	(15.5)
× Listing sentiment	12.6^{***}	10.9^{***}	0.0	-0.1^{**}	-0.1^{**}	-0.1^{***}	8.0^{***}	1.4	-3.2^{*}
	(2.8)	(2.8)	(2.7)	(0.0)	(0.0)	(0.0)	(1.9)	(1.7)	(1.7)
Listing success	7.1	19.1	17.9	0.2	0.3	0.3	2.3	4.7	5.9
	(15.5)	(15.5)	(15.5)	(0.2)	(0.2)	(0.2)	(10.4)	(10.4)	(10.5)
Listing sentiment	5.8^{***}	6.9^{***}	6.9^{***}	0.0	0.0	0.0	4.4^{***}	5.2^{***}	5.2^{***}
	(1.8)	(1.8)	(1.8)	(0.0)	(0.0)	(0.0)	(1.4)	(1.4)	(1.4)
DDP controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Post-listing week FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Obs.	272,397	271,486	269,520	270,841	269,927	267,943	272,389	271,491	269,513
R^2	0.061	0.040	0.040	0.263	0.253	0.254	0.074	0.046	0.046
Dependent variable:	DDP dynamics: # new users			DDP dynamics: # recurring users			DDP dynamics: # last users		
Time period:	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
$\mathbb{1}$[Listing]	42.2^{***}	25.4^{***}	29.8^{***}	106.5^{***}	57.1^{***}	85.6^{***}	50.1^{***}	26.4^{***}	31.1^{***}
	(3.9)	(2.4)	(2.4)	(4.4)	(2.6)	(4.3)	(3.7)	(2.3)	(2.3)
× Listing success	83.6^{***}	49.2^{***}	42.2^{***}	139.8^{***}	98.4^{***}	64.3^{***}	72.0^{***}	56.3^{***}	43.9^{***}
	(9.6)	(6.6)	(6.7)	(10.9)	(7.6)	(7.7)	(8.4)	(6.3)	(5.9)
× Listing sentiment	3.7^{***}	-1.3	-1.5^{*}	6.6^{***}	3.9^{***}	0.1	4.3^{***}	0.0	-0.1
	(1.0)	(0.8)	(0.8)	(0.8)	(0.7)	(0.7)	(0.8)	(0.7)	(0.7)
Listing success	-2.1	-0.9	-0.3	-5.0	-2.4	-2.3	-8.3^{**}	-8.8^{**}	-8.3^{**}
	(4.5)	(4.6)	(4.6)	(3.3)	(3.2)	(3.2)	(4.0)	(4.0)	(4.0)
Listing sentiment	2.2^{***}	2.6^{***}	2.6^{***}	0.3	0.8^{**}	0.8^{**}	1.1^{*}	1.4^{**}	1.4^{**}
	(0.7)	(0.7)	(0.7)	(0.4)	(0.4)	(0.4)	(0.6)	(0.6)	(0.6)
DDP controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Post-listing week FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Obs.	272,291	271,411	269,433	272,460	271,523	269,554	272,306	271,423	269,444
R^2	0.062	0.042	0.043	0.095	0.058	0.055	0.055	0.034	0.034

Note: These are regression results for the moderating effect of initial listing success and listing sentiment on the impact of exchange listing on DDP growth. Initial listing success is defined as a dummy variable that takes a value of one if the DDP token outperforms *Bitcoin* during its first week post-listing, and zero otherwise. Listing sentiment measures the cryptocurrency market sentiment at the time of listing. The dependent variables are DDP activity, proxied with the number of transactions, DDP turnover, proxied with the percentage of tokens traded in total token supply, DDP adoption, measured as the number of users, new users, recurring users, and last users. For each dependent variable, we estimate average treatment effects of (i) exchange listing, (ii) listing success, (iii) listing sentiment, and the interaction terms of (i) with (ii) and (i) with (iii) in a basic staggered difference-in-differences model. Regression results for each dependent variable are presented for years 1, 2, and 3 after the exchange listing. The estimated coefficients of the DDP control variables are suppressed for brevity and all models control for calendar week and post-listing week fixed-effects. Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 5: **Spillover effects of speculation on DDP growth**

Dependent variables:	DDP activity: # tx	DDP turnover: $\frac{\text{tokens traded}}{\text{token supply}}$, in %	DDP adoption: # users	DDP dynamics: # new users	DDP dynamics: # recurring users	DDP dynamics: # last users
Panel A: Total growth (speculative and non-speculative, fundamental growth) in week t						
Speculative activity (week t−1)	2.6***	2.2***	3.4***	3.2***	3.4***	3.3***
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Undervaluation	31.9***	0.1	19.2***	8.7***	11.8***	8.8***
	(8.0)	(0.1)	(4.5)	(2.0)	(2.8)	(2.1)
Token controls	✓	✓	✓	✓	✓	✓
DDP controls	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓
Post-listing week FEs	✓	✓	✓	✓	✓	✓
Obs.	132,077	131,888	132,092	132,095	132,079	132,090
R^2	0.371	0.158	0.389	0.285	0.442	0.271
Panel B: Total growth (speculative and non-speculative, fundamental growth) in week t						
Speculative activity (week t−1)	2.5***	2.2***	3.3***	3.1***	3.3***	3.2***
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
× Undervaluation	0.9***	0.3	0.9***	1.7***	0.7***	1.0***
	(0.2)	(0.3)	(0.2)	(0.3)	(0.2)	(0.2)
Undervaluation	−19.6**	−0.0	−9.7*	−4.1*	−4.1	−1.0
	(8.9)	(0.1)	(5.7)	(2.3)	(3.2)	(2.2)
Token controls	✓	✓	✓	✓	✓	✓
DDP controls	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓
Post-listing week FEs	✓	✓	✓	✓	✓	✓
Obs.	132,077	131,888	132,092	132,095	132,079	132,090
R^2	0.374	0.158	0.391	0.289	0.443	0.273
Panel C: Non-speculative, fundamental growth in week t						
Speculative activity (week t−1)	1.7***	1.4***	2.8***	2.9***	2.6***	2.9***
	(0.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Undervaluation	32.2***	0.1	19.6***	8.9***	12.6***	8.8***
	(7.6)	(0.1)	(4.5)	(2.0)	(2.8)	(2.1)
Token controls	✓	✓	✓	✓	✓	✓
DDP controls	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓
Post-listing week FEs	✓	✓	✓	✓	✓	✓
Obs.	132,066	131,875	132,091	132,094	132,074	132,090
R^2	0.262	0.093	0.312	0.251	0.339	0.233
Panel D: Non-speculative, fundamental growth in week t						
Speculative activity (week t−1)	1.7***	1.3***	2.7***	2.8***	2.5***	2.8***
	(0.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
× Undervaluation	1.0***	0.5	1.0***	1.8***	0.8***	1.1***
	(0.2)	(0.3)	(0.2)	(0.4)	(0.2)	(0.2)
Undervaluation	−21.9**	−0.1	−10.7*	−4.6**	−5.2	−1.5
	(8.7)	(0.1)	(5.8)	(2.3)	(3.2)	(2.2)
Token controls	✓	✓	✓	✓	✓	✓
DDP controls	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓
Post-listing week FEs	✓	✓	✓	✓	✓	✓
Obs.	132,066	131,875	132,091	132,094	132,074	132,090
R^2	0.271	0.098	0.319	0.260	0.345	0.240

Note: These are regression results for the impact of speculative activity and token undervaluation on DDP growth. The financial speculation (week $t-1$) variable in each regression corresponds to the type of DDP growth defined as the dependent variable in the model but is restricted to growth related to exchange-based activities. For example, in the second column of Panel A, we assess the impact of speculative transactions on the total number of transactions in the following week. Undervaluation is defined as a dummy variable, set to one if the DDP token underperformed *Bitcoin* over four consecutive weeks, and zero otherwise. The dependent variables are DDP activity, proxied with the number of transactions, DDP turnover, proxied with the percentage of tokens traded in total token supply, DDP adoption, measured as the number of users, new users, recurring users, last users. In Panels A and B, the dependent variables capture the total DDP growth (including both speculative and non-speculative, fundamental blockchain protocol growth). Panels C and D focus exclusively on non-speculative, fundamental growth. Panels B and D also feature an additional interaction term between the speculation variable and the undervaluation variable. The estimated coefficients of the DDP control variables are suppressed for brevity and all models control for calendar week and post-listing week fixed-effects. Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure 3: **Average token ownership distribution before and after exchange listings**

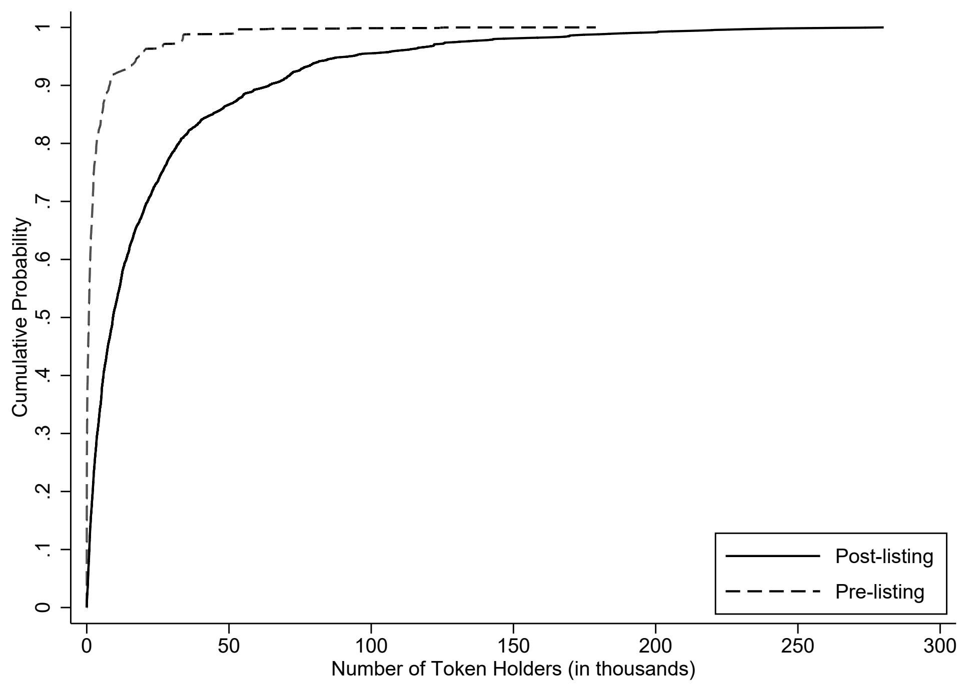
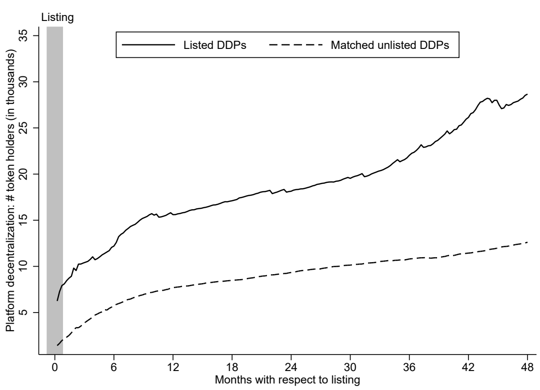


Table 6: **Staggered difference-in-differences analysis of exchange listing and DDP decentralization**

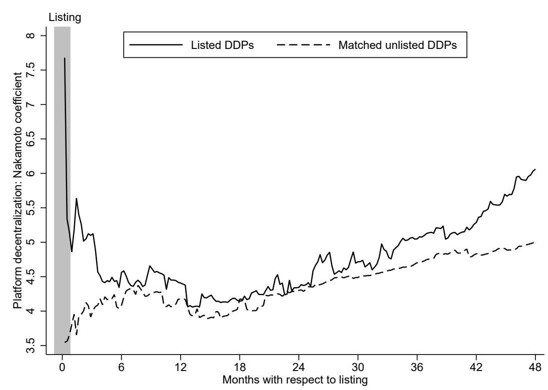
Dependent variables:	DDP decentralization:		# token holders by share:			
	# token holders	Nakamoto coefficient	<1%	1−5%	5−20%	>20%
		Panel A: Analogous to Table 3				
$\mathbb{1}$[Listing]	2515.5***	1.0***	2,590.6***	1.2***	0.4***	−0.0
	(848.8)	(0.4)	(848.8)	(0.3)	(0.1)	(0.0)
DDP FEs	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓
Post-listing week FEs	✓	✓	✓	✓	✓	✓
Obs.	429,237	432,980	429,409	433,471	435,053	436,558
R^2	0.129	0.005	0.130	0.059	0.033	0.006
		Panel B: Analogous to Table 4 (for Year 1)				
$\mathbb{1}$[Listing]	2,641.8***	-0.6***	2,631.7***	0.7***	0.6***	−0.1***
	(185.0)	(0.1)	(184.9)	(0.0)	(0.0)	(0.0)
× Listing success	5,041.1***	1.4***	5,042.9***	0.4***	−0.1**	0.0*
	(377.0)	(0.2)	(377.1)	(0.1)	(0.0)	(0.0)
× Listing sentiment	347.9***	0.1***	350.7***	0.0	−0.0***	0.0***
	(31.0)	(0.0)	(31.0)	(0.0)	(0.0)	(0.0)
Listing success	−1,224.5***	−0.4***	−1,228.5***	0.3***	0.1**	−0.0
	(141.2)	(0.1)	(141.4)	(0.1)	(0.0)	(0.0)
Listing sentiment	67.4***	-0.1***	65.0***	−0.0**	0.0***	−0.0***
	(15.4)	(0.0)	(15.3)	(0.0)	(0.0)	(0.0)
DDP controls	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓
Post-listing week FEs	✓	✓	✓	✓	✓	✓
Obs.	243,394	244,111	243,480	244,102	245,510	245,878
R^2	0.087	0.042	0.087	0.069	0.033	0.040
		Panel C: Analogous to Table 5				
Speculative activity (week t−1)	27.0***	0.0***	27.0***	0.0***	0.0***	−0.0***
	(0.7)	(0.0)	(0.7)	(0.0)	(0.0)	(0.0)
× Undervaluation	25.6***	0.0***	25.6***	0.0***	−0.0	−0.0**
	(3.6)	(0.0)	(3.6)	(0.0)	(0.0)	(0.0)
Undervaluation	−1,126.8***	−0.6***	−1,126.6***	−0.1***	−0.0	0.0
	(282.1)	(0.1)	(282.1)	(0.0)	(0.0)	(0.0)
Token controls	✓	✓	✓	✓	✓	✓
DDP controls	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓
Post-listing week FEs	✓	✓	✓	✓	✓	✓
Obs.	107,403	107,983	107,403	108,055	107,779	108,722
R^2	0.188	0.040	0.188	0.057	0.028	0.043

Note: This table presents regression analyses of our listing-related variables on DDP decentralization. Model specifications in Panel A correspond to those in Table 3, in Panel B to Table 4 (for Year 1), and in Panel C to Table 5. The dependent variables include: (i) the total number of token holders, (ii) the Nakamoto coefficient, which measures the minimum number of the largest wallet addresses required to control >50% of the circulating token supply in a given week, and the number of token holders with (iii) less than 1%, (iv) 1-5%, (v) 5-20%, and (vi) more than 20% of token ownership. DDP controls are suppressed for brevity. All models control for calendar week and post-listing week FEs. Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

Figure 4: **Long-term impact of token exchange listing on DDP decentralization**

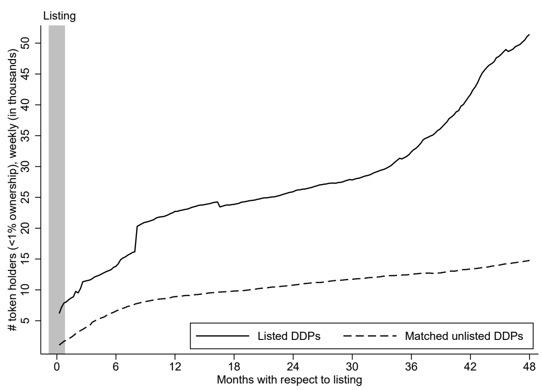


(a) # tokenholders

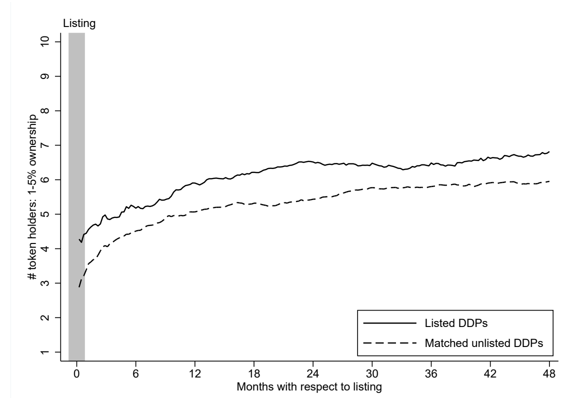


(b) Nakamoto coefficient

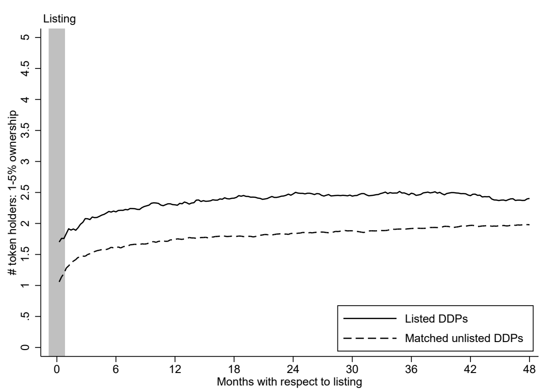
Figure 5: **Long-term impact of token exchange listing on DDP token ownership**



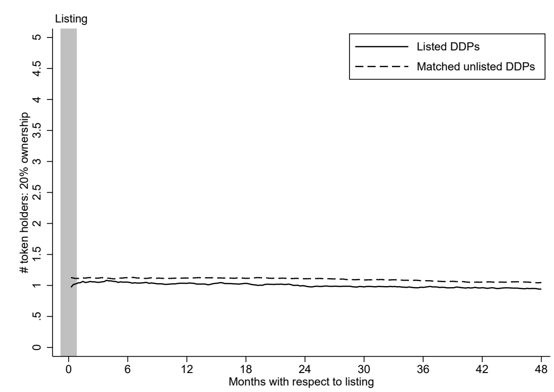
(a) # tokenholders (<1% ownership)



(b) # tokenholders (1-5% ownership)



(c) # tokenholders (5-20% ownership)



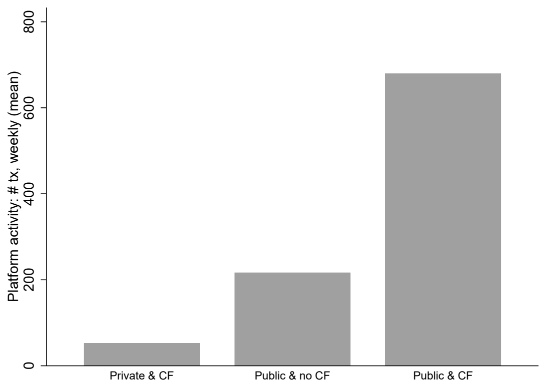
(d) # tokenholders (>20% ownership)

Table 7: **A survival analysis of exchange listing and DDPs**

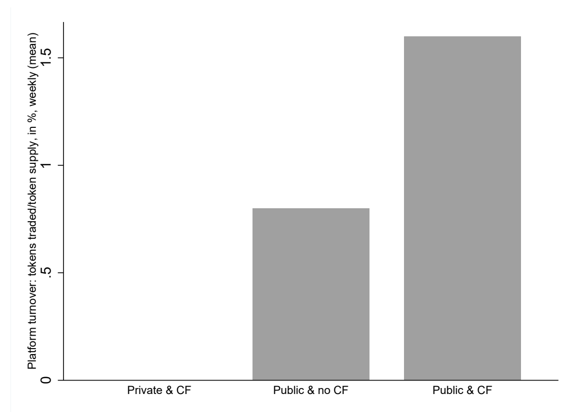
	Dependent variable: Time until DDP failure					
$\mathbb{1}$[Listing]	1.679***	1.573***	1.902***	1.614***		
	(0.038)	(0.032)	(0.060)	(0.045)		
× Listing success			0.011	0.001		
			(79.084)	(564.483)		
× Listing sentiment			0.941**	0.964*		
			(0.025)	(0.021)		
Listing success			96.255	835.475		
			(79.084)	(564.483)		
Listing sentiment			1.067***	1.037*		
			(0.024)	(0.020)		
Financial speculation (in week t−1)					1.017***	
					(0.003)	
× Undervaluation					1.016	
					(0.022)	
Undervaluation					1.586***	0.905**
					(0.102)	(0.041)
Model	log-logistics	log-logistics	log-normal	log-normal	log-logistics	log-logistics
Frailty	✗	✓	✗	✓	✗	✓
Grouping variable	./.	launch year	./.	launch year	./.	listing year
DDP controls	✓	✓	✓	✓	✓	✓
Obs.	379,790	379,790	379,790	379,790	132,758	132,758
Log-likelihood	−1953.4	−1755.93	−2025.8	−1824.8	−1945.4	−258.21

Note: This table presents the results from DDP survival analyses as functions of the token exchange listing and other key variables. Coefficients are expressed as exponentiated values (hazard ratios), such that a coefficient greater than one indicates a longer survival time, whereas one less than one suggests a shorter survival time. The models employ log-logistic or log-normal distributions, as detailed at the bottom of the table. Columns (II) and (IV) feature shared frailty models based on launch year, while column (VI) uses a shared frailty model based on listing year. All other columns report results from a Cox proportional hazards model for comparison. The estimated coefficients of the DDP controls are suppressed for brevity. Standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

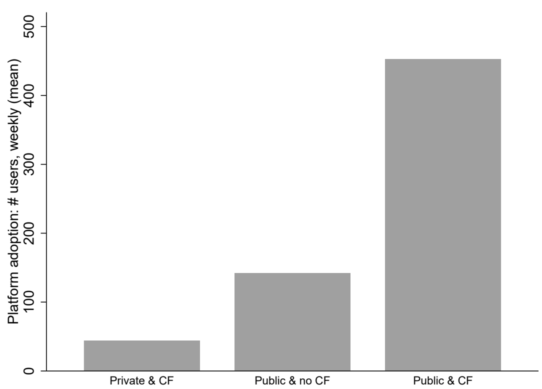
Figure 6: **A comparison of DDP growth betweenr going-public and remaining-private decisions**



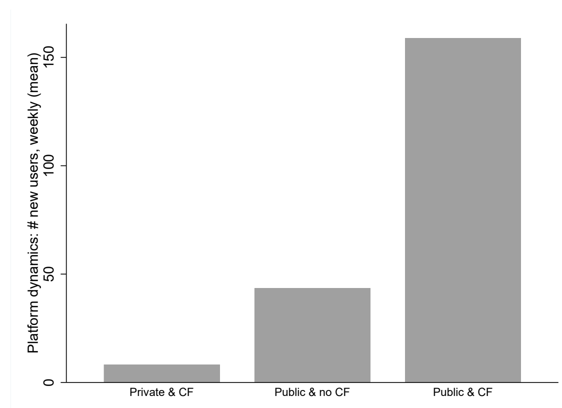
(a) DDP activity: # tx



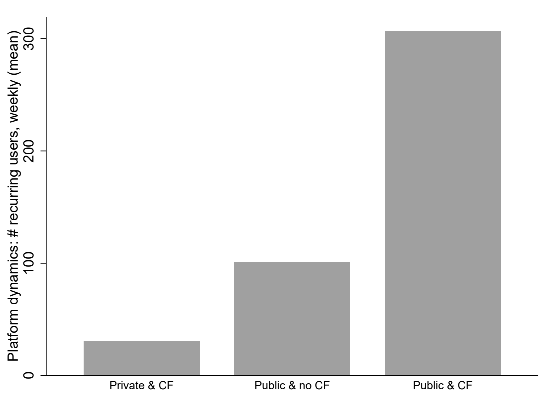
(b) DDP turnover: $\frac{\text{tokens traded}}{\text{token supply}}$, in %



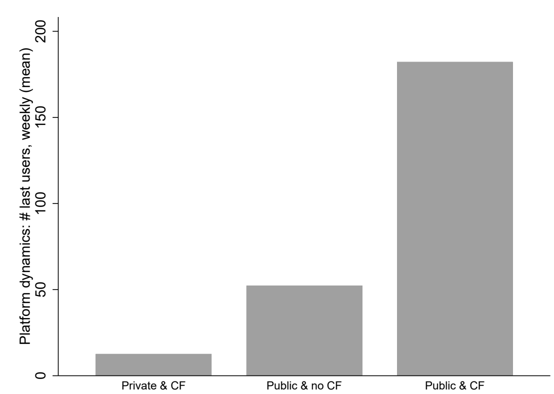
(c) DDP adoption: # users



(d) DDP dynamics: # new users



(e) DDP dynamics: # recurring users



(f) DDP dynamics: # last users

Table 8: **The relation between exchange listing, crypto fund backing, and DDP growth**

Dependent variables:	DDP activity: # tx	DDP turnover: $\frac{\text{tokens traded}}{\text{token supply}}$, in %	DDP adoption: # users	DDP dynamics: # new users	DDP dynamics: # recurring users	DDP dynamics: # last users
Panel A: Replication of Table 3 with CF backing						
$\mathbb{1}$[Listing]	216.9***	0.8***	142.1***	43.4***	101.0***	52.3***
	(35.1)	(0.3)	(24.2)	(9.8)	(14.4)	(9.1)
× Crypto fund backed	418.1***	0.8	310.4***	115.5***	205.8***	130.0***
	(149.9)	(0.6)	(101.6)	(37.1)	(64.6)	(39.2)
Crypto fund backed	52.5	0.0	44.2	8.3	30.7	12.7
	(117.4)	(0.5)	(80.1)	(28.4)	(51.5)	(30.8)
DDP controls	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓
Post-listing week FEs	✓	✓	✓	✓	✓	✓
Obs.	520,995	519,443	520,995	520,995	520,995	520,995
R^2	0.030	0.215	0.045	0.046	0.042	0.034
Panel B: Replication of Table 4 with CF backing (for Year 1)						
$\mathbb{1}$[Listing]	163.6***	2.3***	127.2***	33.2***	93.8***	38.9***
	(11.6)	(0.1)	(7.8)	(3.7)	(4.4)	(3.5)
× Listing success	249.6***	−0.4	165.9***	68.1***	113.6***	61.9***
	(28.5)	(0.3)	(18.4)	(8.5)	(9.5)	(7.5)
× Listing sentiment	7.2***	−0.1***	4.6**	2.4**	4.7***	3.2***
	(2.7)	(0.0)	(1.8)	(0.9)	(0.8)	(0.8)
× Crypto fund backed	473.4***	0.1	287.0***	119.1***	177.9***	124.0***
	(37.7)	(0.3)	(24.2)	(11.3)	(12.8)	(11.5)
Listing success	−18.3	0.2	−13.7	−8.2*	−15.1***	−12.5***
	(16.0)	(0.2)	(10.8)	(4.7)	(3.5)	(4.1)
× Crypto fund backed	680.4***	0.4	429.6***	166.0***	273.0***	115.6***
	(124.0)	(0.6)	(73.9)	(33.3)	(41.2)	(29.4)
Listing sentiment	2.4	0.0	2.3	1.4*	−0.9**	0.4
	(1.9)	(0.0)	(1.4)	(0.7)	(0.4)	(0.6)
× Crypto fund backed	42.9***	0.1***	26.6***	10.0***	14.9***	9.1***
	(6.5)	(0.0)	(4.3)	(2.0)	(2.1)	(1.8)
Crypto fund backed	36.3***	0.2*	31.9***	5.1	14.5***	12.4***
	(11.6)	(0.1)	(8.1)	(3.3)	(3.8)	(3.6)
DDP controls	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓
Post-listing week FEs	✓	✓	✓	✓	✓	✓
Obs.	272,397	270,841	272,389	272,291	272,460	272,306
R^2	0.071	0.263	0.082	0.067	0.109	0.059
Panel C: Replication of Table 5 with CF backing						
Speculative activity (in week t−1)	2.1***	1.9***	2.6***	2.5***	2.7***	2.5***
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
× Crypto fund backed	1.0***	1.3***	2.0***	1.9***	1.8***	2.1***
	(0.1)	(0.2)	(0.1)	(0.2)	(0.1)	(0.2)
Undervaluation	0.4	0.1	−3.5	0.3	−3.1	0.4
	(5.7)	(0.1)	(3.7)	(1.7)	(2.2)	(1.8)
× Crypto fund backed	161.1***	−0.2	117.3***	43.8***	77.8***	44.4***
	(38.0)	(0.2)	(18.2)	(7.9)	(11.7)	(8.1)
Crypto fund backed	257.3***	2.0***	85.5***	36.0***	52.2***	41.5***
	(15.5)	(0.1)	(8.1)	(3.1)	(4.4)	(3.1)
Token controls	✓	✓	✓	✓	✓	✓
DDP controls	✓	✓	✓	✓	✓	✓
Calendar week FEs	✓	✓	✓	✓	✓	✓
Post-listing week FEs	✓	✓	✓	✓	✓	✓
Obs.	132,077	131,888	132,092	132,095	132,079	132,090
R^2	0.382	0.165	0.413	0.303	0.466	0.290

Note: These are regression results for the moderating effect of crypto fund (CF) backing on the impact of token exchange listing and other listing-related variables on DDP growth. Panel A replicates the analysis from Table 3, Panel B replicates the Year 1 analysis from Table 4, and Panel C replicates the analysis from Table 5, each incorporating CF backing as an additional variable. The dependent variables are DDP activity, proxied with the number of transactions, DDP turnover, proxied with the percentage of tokens traded in total token supply, DDP adoption, measured as the number of users, new users, recurring users, and last users. DDP and token control variables are suppressed for brevity. All models control for calendar week and post-listing week FEs. Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix

Table A.1: **Variable definitions**

Variable	*Definition*	*Data source*
	Listing-related variables	
$\mathbb{1}$[Listing]	Dummy variable equal to 1 if the platform token was listed on a public exchange on the day of the observation, and 0 otherwise.	CoinMarketCap
Listing success	Dummy variable equal to 1 if the platform token has a higher price return than BTC in the week of listing, and 0 otherwise.	CoinMarketCap
Listing sentiment	Crypto market sentiment score calculated over the 30 days preceding the token listing. It measures market sentiment by subtracting the sum of days with negative BTC returns from the sum of days with positive BTC returns.	CoinMarketCap
Undervaluation	Dummy variable equal to 1 if the platform token return was below BTC return in four consecutive weeks, and 0 otherwise.	CoinMarketCap
	Platform growth variables	
Total DDP activity: # tx	Total number of weekly transactions conducted using the platform token.	Ethereum blockchain[6]
Fundamental DDP activity: # tx	Number of weekly transactions involving the platform token that exclude interactions with wallet addresses identified as exchanges.	Ethereum blockchain, Etherscan
Speculative DDP activity: # tx	Number of weekly transactions involving the platform token that include at least one wallet address identified as an exchange.	Ethereum blockchain, Etherscan
Total DDP turnover: $\frac{\text{tokens traded}}{\text{token supply}}$	Weekly token transaction volume as a proportion of the total token supply.	Ethereum blockchain
Fundamental DDP turnover: $\frac{\text{tokens traded}}{\text{token supply}}$	Weekly token transaction volume as a proportion of the total token supply, excluding transactions involving wallet addresses identified as exchanges.	Ethereum blockchain, Etherscan
Speculative DDP turnover: $\frac{\text{tokens traded}}{\text{token supply}}$	Weekly token transaction volume as a proportion of the total token supply, including only transactions involving wallet addresses identified as exchanges.	Ethereum blockchain, Etherscan
Total DDP adoption: # users	Weekly count of unique wallet addresses involved in transactions with the platform token.	Ethereum blockchain
Fundamental DDP adoption: # users	Weekly count of unique wallet addresses involved in transactions with the platform token, excluding transactions involving exchange wallet addresses.	Ethereum blockchain, Etherscan
Speculative DDP adoption: # users	Weekly count of unique wallet addresses involved in transactions with the platform token, including only transactions where at least one participating address is identified as an exchange.	Ethereum blockchain, Etherscan
Total: # new users	Weekly count of unique wallet addresses that transacted with the token for the first time.	Ethereum blockchain
Fundamental: # new users	Weekly count of unique wallet addresses that transacted with the token for the first time, excluding transactions involving exchange wallet addresses.	Ethereum blockchain, Etherscan
Speculative: # new users	Weekly count of unique wallet addresses that transacted with the token for the first time, including only transactions where at least one participating address is identified as an exchange.	Ethereum blockchain, Etherscan
Total: # recurring users	Weekly count of unique wallet addresses involved in transactions with the platform token, excluding first-time transactions.	Ethereum blockchain
Fundamental: # recurring users	Weekly count of unique wallet addresses involved in transactions with the platform token, excluding both first-time transactions and those involving exchange wallet addresses.	Ethereum blockchain, Etherscan
Speculative: # recurring users	Weekly count of unique wallet addresses involved in transactions with the platform token that include at least one exchange wallet address, excluding first-time transactions.	Ethereum blockchain, Etherscan
Total: # last users	Weekly count of unique wallet addresses that conducted transactions with the platform token for the last time.	Ethereum blockchain

[6] All Ethereum blockchain data retrieved via *Google BigQuery* on 29 November 2024.

Fundamental: # last users	Weekly count of unique wallet addresses that conducted transactions with the platform token for the last time, excluding transactions involving wallet addresses identified as exchange.	Ethereum blockchain, Etherscan
Speculative: # last users	Weekly count of unique wallet addresses that conducted transactions with the platform token for the last time, including only transactions where at least one wallet address is identified as an exchange.	Ethereum blockchain, Etherscan
DDP decentralization: # tokenholders	Number of unique wallet addresses holding the platform token.	Ethereum blockchain
# tokenholders (<1% ownership)	Number of unique wallet addresses holding less than 1% of the token supply.	Ethereum blockchain
# tokenholders (1-5% ownership)	Number of unique wallet addresses holding between 1% and 5% of the token supply, including addresses with exactly 5%.	Ethereum blockchain
# tokenholders (5-20% ownership)	Number of unique wallet addresses holding between 5% and 20% of the token supply.	Ethereum blockchain
# tokenholders (>20% ownership)	Number of unique wallet addresses holding more than 20% of the token supply.	Ethereum blockchain
DDP decentralization: Nakamoto coefficient	The minimum number of largest wallet addresses needed to exceed 50% of circulating token supply in a given week.	Ethereum blockchain
	Control variables	
Crypto fund backed	Dummy variable equal to 1 if the platform secured crypto fund backing before or on the day of the observation, and 0 otherwise.	Messari, Crypto Fund Research, CryptoRank
Minimum viable product	Dummy variable equal to 1 if the platform has a minimum viable product available, and 0 otherwise.	ICOmarks, ICObench
Pre-sale	Dummy variable equal to 1 if the platform conducted a pre-sale before its public offering (e.g., ICO), and 0 otherwise.	ICOmarks, ICObench
Whitelist	Dummy variable equal to 1 if the platform implemented a whitelist during its initial offering, and 0 otherwise.	ICOmarks, ICObench
KYC	Dummy variable equal to 1 if the platform restricts certain investors via a know-your-customer (KYC) process, and 0 otherwise.	ICOmarks, ICObench
Bonus	Dummy variable equal to 1 if the platform offers a bonus structure, which typically involves discounted or free tokens if individual wallet addresses invest above and beyond a certain pre-determined investment amount, and 0 otherwise.	ICOmarks, ICObench
Bounty	Dummy variable equal to 1 if the platform offers a bounty program, which rewards individuals (mostly in the form of free tokens) for marketing or other activities, and 0 otherwise.	ICOmarks, ICObench
Open source	Dummy variable equal to 1 if the platform makes its source code available on GitHub, and 0 otherwise.	GitHub
Team size	The total number of full-time members of the platform.	LinkedIn, ICOmarks, ICObench
Expert rating	Average rating based on the consensus of industry experts, higher scoring indicates a higher overall platform quality.	ICOmarks, ICObench
Token volatility	weekly standard deviation of daily returns of the listed platform token, z-standardized.	CoinMarketCap
Token liquidity	weekly USD trading volume of the listed platform token, as % of the tokens' USD market cap.	CoinMarketCap
Overvaluation	Dummy variable equal to 1 if the platform token outperformed BTC in four consecutive weeks, and 0 otherwise.	CoinMarketCap

Table A.2: **First-stage selection model of DDP token exchange listings**

Dependent variable:	Exchange listing
Minimum Viable Product	0.1*
	(0.1)
Pre-sale	−0.1
	(0.1)
Whitelist	−0.1
	(0.1)
KYC	0.1
	(0.1)
Bonus	0.2**
	(0.1)
Bounty	−0.2***
	(0.1)
Open source	−0.1
	(0.1)
Team size	0.0
	(0.0)
Expert rating	0.2***
	(0.0)
ERC-20	−0.1**
	(0.1)
Soft cap	−0.4***
	(0.1)
Hard cap	0.1
	(0.1)
BTC price	0.0***
	(0.0)
Interest rate	−0.1***
	(0.0)
Crypto market cap	0.0
	(0.0)
Obs.	4,497
R^2	0.093

Note: This table reports the regression results for the first-stage probit selection model used in the IV and PSM second-stage regressions detailed in Table 3. The dependent variable is a dummy variable that equals one if the DDP was listed on an exchange at any point during its lifetime, and zero otherwise. Robust standard errors are indicated in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.