



Policy Opinion

Why Application Platforms Use Revenue Sharing Policies

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Summary

Digital platforms that host apps typically have revenue sharing arrangements with their developers that earn revenue from selling digital goods and services. This paper provides an overview of the app market ecosystem in India with regards to the size of the developers who are charged, differentiation in billing policies, purported market power, and the choice of revenue sharing as the billing policy.

We observe a few key features of the ecosystem – 1) only a minority of developers with large enough revenues are subject to revenue sharing by Play Store. 2) this share is also higher for developers in a higher revenue bracket. 3) Only developers selling digital (not physical) goods and services are charged. 4) Platforms inadvertently favour their own applications by only charging competing applications. 5) The payment is a share of the revenue of the developer, and not a one-time fee.

Evaluating market power of digital platforms is complicated. Despite having large market shares, incumbent digital platforms may keep prices at competitive levels to deter entrants, if entry barriers are low. Evaluating market power using markups is also not straightforward because the traditional markup does not account for external benefits accruing to the platform from an additional user.

The paper asserts that a revenue sharing arrangement between app developers and the digital platform is optimal given the risky nature of the app development business, and is to be preferred to a one-time fee arrangement. If the app developer is risk averse and dislikes volatility, a revenue sharing arrangement ensures that their return from the venture is less volatile across the good and bad states of the world. Secondly, if instead of revenue sharing we have a one-time fee paid upfront that generates an equivalent amount of revenue, it would be onerous for the vast majority of developers who earn less than \$1m and have low levels of liquidity. This would lower participation in the app market, thereby diminish consumer welfare and be a negative for society. Lastly, the revenue sharing arrangement is also efficient relative to a one-time fee in the sense that it diverts some risk away from the more risk averse app developers (many of whom are small and more vulnerable) towards the larger, more secure risk neutral platform.

Overview

In 2022, a group of prominent app developers brought before CCI a petition against Google, alleging that Google had abused its position of dominance in the market for application platforms and leveraged the pervasive nature of the Android ecosystem to

charge large developers to share revenues to the tune of between 15% - 30% whilst simultaneously forcing these developers to use Google Pay for transactions, without allowing the use of alternative payment gateways. The CCI ruled against Google, penalized Google INR 936cr and required Play Store to allow third-party billing services. Then in March of 2024, a selection of developers again met with senior government officials alleging that Google continued to abuse its market position by charging between 11% - 30% of their revenues, an amount they deemed was excessive, and CCI noted that the payment appeared to be disproportionate to the services rendered by Play Store.¹

Google Play Store offers a digital platform for application developers to provide mobile and web based applications and is estimated to have around 3.95 million applications.² In the Indian market in 2022, approximately \$650m of in-app revenues were generated by all available apps (whether Indian or otherwise) in 2021 (of which Play Store accounted for \$466.7m and Apple's App Store accounted for \$184.1m), and Indian apps accounted for about 10% of this amount.³ The total value of in-app revenues is expected to grow as the economy expands. Of the approximately 200,000 Indian app developers on the Store, only 3% of app developers (equal to about 6000 developers) sell digital goods and services and are required to make payments to the Play Store.⁴ Of these, 99% who earn less than \$1m and use the Google Pay Billing System have to share 15% (11% if they use another billing system instead of Google Pay) of their revenue, and the top 1% earning in excess of that amount (about 60 developers) have to pay a share of the revenue to the tune of

¹Gupta, Aryaman. "Google's billing policy dispute: Startups want apps restored on Play Store" Business Standard, March 04 2024; https://www.business-standard.com/companies/start-ups/startups-urge-restoration-of-apps-on-play-store-to-pre-delisting-state-124030401067_1.html

"CCI orders probe in to Google's Play Store billing policies" The Economic Times, March 15 2024; <https://economictimes.indiatimes.com/tech/startups/competition-watchdog-orders-probe-into-googles-play-store-billing-policies/articleshow/108528079.cms?from=mdr>

² Turner, Ash. "How Many Apps In Google Play Store? (2024)" Bankmycell, April 08, 2024; <https://www.bankmycell.com/blog/number-of-google-play-store-apps/>

³ SN, Vikas. "A look at India's top Android and iOS app downloads in 2022" Moneycontrol, December 26, 2022; <https://www.moneycontrol.com/news/business/a-look-at-indias-top-android-and-ios-app-downloads-in-2022-9765161.html>

"Why can't we make revenue generating apps? India contributes less than 1% of global in-app revenues" Medianama, March 24, 2022; <https://www.medianama.com/2022/03/223-revenue-generating-apps-india-views/>

⁴ Agrawal, Aditi. "Google removes Indian apps for not complying with its payment policy" Hindustan Times, March 02, 2024; <https://www.hindustantimes.com/india-news/google-removes-indian-apps-for-not-complying-with-payments-policy-101709321903125.html>

30% if they use Google Pay (26% if they use other billing systems instead of Google Pay).⁵ Regardless of revenue, all developers would only have to share 15% (11%) after the first year for automatically renewed subscriptions.⁶ Developers selling physical goods and services are exempt.

We see a few key features that are worth noting. Firstly, only some developers with revenues large enough are subject to revenue sharing by Play Store. Secondly, this share is also higher for developers in a higher revenue bracket, i.e. a higher share is demanded of larger developers. This is akin to a form of progressive taxation, where entities in higher income brackets are subject to higher taxes. Thirdly, not all large developers are subjected to a payment. Developers selling physical goods and services such as Uber are exempt from payments. Some large companies, such as Netflix and Spotify are exempt, even though they offer digital goods and services, in part because they have engineered their services such that users do not make any payments via the app, and must visit their respective websites to pay subscription fees. Google has said that in such cases, the companies have been allowed to have a custom billing policy because they have ‘a broader partnership that includes substantial financial investments and product integrations across different form factors.’⁷ Fourthly, since Google does not charge the applications it owns, such as YouTube, it indirectly favors its own products over any competing applications. Lastly, the payment is a share of the revenue of the developer, and not a one-time fee.

Google Play Store’s billing policy has invited criticism from industry members for what they have said are exceptionally high revenue shares demanded by Play Store.⁸ It should be noted that the existing payment arrangement disproportionately affects large players,

⁵ IANS, “Google implements new Play Store policies in India; to remove non-compliant apps” The Economic Times, March 04, 2024; <https://government.economictimes.indiatimes.com/news/policy/google-implements-new-play-store-policies-in-india-to-remove-non-compliant-apps/108196687#:~:text=The%20company%20said%20it%20has,billing%20policy%20as%20%E2%80%9Cexploitative%E2%80%9D>.

⁶ Mathi, Sarvesh. “Infographic: Understanding Google Play Billing in India” Medianama, March 06, 2024; <https://www.medianama.com/2024/03/223-infographic-understanding-google-play-billing-india/>

⁷ “Google’s secret deal allowed Spotify to bypass Play Store fees. Details here” Livemint, November 21, 2023; <https://www.theverge.com/23954852/google-netflix-app-store-deal-play-10-percent-revshare> <https://www.livemint.com/technology/tech-news/googles-secret-deal-allowed-spotify-to-bypass-play-store-fees-details-here-11700550084145.html>

⁸ See Footnote 1.

since only the largest players are expected to share their revenues. Moreover, even amongst those being charged, the share of revenue is not uniform, with larger developers being forced to fork over a larger share of their revenues.

Some developers whose apps sell physical goods and services are not charged at all. In the case of ridesharing or food delivery apps, a revenue sharing arrangement with Play Store would ultimately result in higher prices for customers of these apps, since the developers would attempt to transfer some of these costs onto their customers. This would effectively be an additional tax on the end user of the app, and any benefits the end user enjoys through booking a ride or a meal on the app would be obviated by higher prices. The customer would default to booking these services the traditional way, resulting in a smaller mass of application users. A smaller mass of end users could potentially lead to loss of advertising revenue and user data for Google in the long run. This may offer a clue as to why Play Store doesn't charge apps selling physical goods and services, because the end customer always retains the option to reach out to traditional means for obtaining said services. This is not the case for digital goods and services, which can be accessed only via Play Store or Apple's App Store.

Other large developers such as Netflix and Spotify are excused from having to make any payments to Play Store at all, and Google's own apps such as YouTube are not charged either. It is possible that Play Store does not charge companies such as Netflix and Spotify since these developers are large enough with significant name recognition. If forced to share revenues, they retain the ability to exit the platform and move entirely to the online web, and take their customers with them when they leave. This could again result in a loss of advertising revenue and valuable user data for Google.

This may be inferred as an instance of price discrimination against app developers by Google Play Store. Price discrimination occurs when different customers are charged different prices depending on their willingness to pay and their ease in obtaining the product elsewhere. By having billing policies tailored to specific customers, it could be said that the Play Store is engaging in price discrimination. But, it is also reasonable to point out that higher shares are strategically required only of developers with the deepest pockets. Charging the same 30% (26%) share of developers with lower revenues (99% of paying developers earn less than \$1m) could potentially be too onerous and actually deter entry of new developers on the platform, given that they already pay 11-15% of their revenue to Google.

Market Power of Digital Platforms.

A common way of inferring whether a firm acts as a monopolist or has market power is to calculate the markup, which requires us to calculate the degree by which the price of the product exceeds the cost of providing the product. A platform that is perfectly competitive would supply a service to a user at a price that is equal to its cost of providing the service to the additional user. But if the price greatly exceeds the cost, it may indicate that the firm has market power and is not hindered by any competition or threat of incipient competition. Without further information on Play Store's cost structure it would not be possible to surmise whether Play Store acts as a monopolist. This is also difficult to do if reported revenues for the firm are aggregated across platforms, and the average cost of the bundle is different from the marginal cost of an additional user. As noted by Franck & Peitz (2019,2022), calculating markups is also complicated by the fact that on two-sided digital platforms, the opportunity cost of serving an additional user includes the marginal cost of serving the user and the external benefit accruing to the other side from adding a user (In other words, the platform's real cost has to account for not only the cost of providing the service to the user, but also the network benefit to a seller on the other side of the platform from this additional user).

Another way to discern market power is the use of market shares, whether user or revenue. A firm with greater market share could act as a monopolist or be in a position to abuse their power. Clearly, Google accounts for a large share of the market for applications, with 95% of Indian smartphones running on Android. In response to accusations of abuse, Google can respond that developers who do not wish to pay the fees are free to access a rival Store like Apple's. But given Google's dominance in the smartphone landscape in India, this carries the implicit threat that developers would then have to move to platforms with a much lower degree of reach than what they would find on Google's platform. One may point to Google's market dominance as evidence of market power and their billing policies as evidence of consequent abuse. However, recent work has shown such an approach is not definitive, and firms in the digital sphere may sustain large market shares without making supernormal profits, since the threat of competition from newer entrants is ever present (Franck & Peitz 2022). A digital platform may service a large part of the market but not be able to raise prices because entry is easy for competitors who wait in the wings to snatch up customers eager to shift to platforms with lower prices. Several incidents point to the fact that incumbent digital platforms may enjoy large shares for a while before rapidly losing market share to an entrant (for

example – Skype losing market share to Zoom, Google Meet and others, Facebook replacing existing social media network StudiVZ in Germany).⁹

There are other ways in which a platform can have market power and use it to abuse the market. The firm may use its market position to access data that offers it an undue advantage over the competition, or alter the experience on one side of the platform to be sub-optimal for the user. It is important in this context to note that an industry being served by a single firm need not entail abuse if it cannot be reliably demonstrated that the firm is using its profits to erect barriers to entry and/or stifling competition. Therefore, to establish that any platform is abusing its dominance in the market would require more research.

Revenue Sharing vs. One-Time Fee

We therefore limit our focus to the last observation – the choice of Play Store to implement a revenue sharing payment arrangement. Generally, when a venture is not subject to uncertainty and there is full information, revenue sharing is a less efficient arrangement than a one-time fee because by making payment contingent on the level of revenue generated, it blunts the incentives of the agent to make the most efficient use of resources, since after making payments to Google, they will receive only a share of any additional revenue that they manage to generate. Consequently, it is generally better from an efficiency perspective to charge the agent a one-time fee that does not alter their incentive, and the agent still wants to make the most of their remaining resources. However, under conditions of uncertainty and limited liquidity, a revenue sharing system could be optimal. We assert that this is one of those instances, which explains why it may be optimal for Play Store to make a revenue sharing arrangement instead of a one-time fee.

Why then would an app store choose a revenue sharing arrangement over a one-time fee regime? A one-time fee may be optimal with perfect information on the part of both the Store and the Developers. But, it is natural to assume that the revenue from an app is uncertain --- very simply, people may, or may not, take to the app.

⁹ Muller, Martin U. “Facebook LOL as Germany’s StudiVZ Loses Ground” Spiegel International, May 20, 2010; <https://www.pcmag.com/news/zooms-success-during-the-pandemic-came-at-skypes-expense> <https://www.spiegel.de/international/business/status-update-facebook-lol-as-germany-s-studivz-loses-ground-a-695700.html>

A simple way to see this is to assume that there is a probability p that the app generates a revenue $R(c)$ with cost c , while with probability $(1 - p)$, the app fails to attract any buyers. The revenue to the developer is now uncertain and is an expectation that averages over the revenue earned in both states of the world.¹⁰ Regardless of whether we deal with a certain revenue stream or the expected value of revenue, it can be shown that the implications of revenue sharing on efficiency and the way they alter incentives work out the same way.

However, the presence of uncertainty not only changes a certain revenue to one with an expected value, it also introduces risk. Risk averse individuals dislike risk and therefore the volatility to their returns that uncertainty brings. A risk averse individual would be willing to give up some of their return when they are successful in the ‘good’ state of the world in exchange for a higher return in the unsuccessful ‘bad’ state. Moreover, the risk preferences of the developers and the store are expected to be very different. This is largely because the revenue from the app store to the app store owner is small compared to its revenue from many other activities and, because it diversifies the risk by having many developers in its portfolio. The store can therefore minimize risk by diversifying its revenue stream among multiple developers. At its extreme, it is risk neutral, i.e., considers only the expected value of its portfolio and nothing else. The developer, on the other hand, is putting in all their time and effort in developing the app or is putting all their eggs in one basket. They will, therefore, be risk averse or, prefer less risk to more risk and not be indifferent to varying levels of risk. In other words, they will prefer less volatility in their revenue stream between different states of the world.

But being risk averse, they will not maximize expected profit but expected utility, which is the expected profit discounted by their idiosyncratic preference to risk. Observe that the store also bears a part of the risk for its return is also uncertain --- it receives a share of any revenue generated with probability p and 0 with probability $(1 - p)$. So, in a revenue sharing arrangement both the store and the developer bear the risk.

This is to be differentiated from the one-time fee arrangement where the store bears no part of the risk. Why? This is because the developer must pay the fee to be on the app

¹⁰ In a revenue sharing regime where the Store takes share α of the generated revenue, the relevant profit of the developer with cost c is

$$ER(c) - c \equiv (1 - \alpha)[pR(c) + (1 - p) * 0] - c = (1 - \alpha)pR(c) - c$$

store before they receive any money. The store gets the amount T regardless of the realization of the revenue. So, no part of the risk is borne by the store and the entire risk is borne by the developer.

There are three reasons why the presence of uncertain revenues drastically changes what we can infer when the world is not uncertain. First, even when the expected revenues to the developer are the same in the two regimes¹¹, the utility of the developer is different in the two instances. This is because the volatility (i.e. variance) of the uncertain return under a revenue sharing regime is less than the volatility of the return under a one-time fee regime.¹² Since under a one-time fee regime the utility of a risk averse agent suffers from a greater variation in returns between the successful and unsuccessful states, the agent will prefer to have a revenue sharing arrangement with lesser variation in returns across states, and therefore less risk. Hence, the utility of the developer is less under the one-time fee regime compared to the revenue sharing regime. And so, the number of app developers entering the market will be less in the one-time fee regime.

Second, the one-time fee regime requires the developers to pay the fee upfront. At present the Google Play Store only requires a \$25 charge to register an app on the Store. But if the one-time fee were to become their primary source of revenue, it may necessitate a steep hike to this fee to cover the costs of operation. In 2021, application platforms generated \$60m in revenue in the Indian market from about 6000 Indian developers that actually sold digital products and services. To generate the same revenue using a flat fee would require these stores to lay a charge of approximately \$10,000 on every qualifying Indian developer. It has already been noted that about 99% of these developers (about 5940 developers) make less than \$1m in revenue. A flat upfront fee of \$10,000 would likely force a large number of developers off the platform, shrink the market and mass of end users, and lower advertising revenue for Google. From the developer's perspective, this would require most of them to have enough liquidity. Their ability to raise money to pay the fee adds another level of risk. This too reduces the number of developer entrants.

A lower number of participating developers would lower the variety in the app marketplace and hinder innovation, resulting in a net loss for society and consumer welfare. These issues appear to have been on Google's mind. Google reportedly abandoned

¹¹ i.e., $p(1 - \alpha)R(c) = pR(c) - T$

¹² This is because the value of the uncertain return could swing from $(1 - \alpha)R(c)$ to 0 in the bad state of the world under a revenue sharing regime, and the associated variance is equal to $p(1 - p)(1 - \alpha)^2 R(c)^2$. This is less than the variance of $R(c)$ and $-T$, which equals $p(1 - p)R(c)^2$.

a plan to charge a set fee per app because the move could potentially cost billions of dollars in lost revenue.¹³

Third, it is easy to show that when two economic entities enter a transaction, a contract that transfers risk from the more risk averse to the less risk averse is more efficient. In the one-time fee regime, no risk is transferred from the more risk averse to the less risk averse (store is risk neutral) whereas in the revenue sharing regime, some of the risk faced by the more risk averse entity (the developer) is transferred to the store (risk neutral). The revenue sharing arrangement is thus, efficient in this additional sense.

Conclusion

The paper provides an overview of the digital platform ecosystem, and outlines some of the issues that arise in evaluating whether market dominance has resulted in abuse. Without cost structure information, it is difficult to demonstrate that a digital platform with a large market share has undue market power without showing that they have used their position in the market to erect entry barriers. Platforms may face significant threat of competition even if they have large market shares, and may charge competitive prices to deter entry. With no uncertainty in returns, revenue sharing would not have been as efficient a form of billing policy as a one-time fee since it would distort the incentives of app developers to invest in their product. However, in reality, since the return to a venture is risky and uncertain, a revenue sharing arrangement is optimal for three reasons.

Revenue sharing ensures returns are less volatile than a one-time fee arrangement, and is therefore preferred by risk averse developers. It sidesteps the issue of low liquidity, since no payments have to be made up-front. Therefore, it lowers entry costs and increases participation by developers in the market, increasing variety, fostering innovation and increasing social welfare. Revenue sharing also ensures risk is shared efficiently, by transferring some of the risk away from risk averse developers to risk neutral platforms.

¹³ Bloomberg, "Google Rejected Play Store Fee Changes Due to Impact on Revenue, Epic Lawsuit Shows" Hindustan Times Tech, December 23, 2023; <https://tech.hindustantimes.com/tech/news/google-rejected-play-store-fee-changes-due-to-impact-on-revenue-epic-lawsuit-shows-71703304568308.html>
Mitra, Anwesa. "'If Google is not there...': Shaadi.com founder Anupam Mittal weighs in on Play Store billing row" Livemint, January 03, 2024; <https://www.livemint.com/companies/news/if-google-is-not-there-shaadi-com-founder-anupam-mittal-weighs-in-on-play-store-billing-row-11704271585183.html>

In future research, we propose to endogenize the mass of varieties available to consumers by accounting for costs that limit the entry of firms (and therefore varieties) into the market. Since applications of higher quality typically require greater investment from their developers and therefore are costlier to produce, this would be a natural extension to the model. The choice of the optimal share of the revenue would then have an important role in the number of varieties available on the platform.