

# Open banking: an early review

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73

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## Abstract

**Purpose** – This paper offers an overview of the burgeoning literature on open banking, focusing on its implications for the financial sector.

**Design/methodology/approach** – The paper reviews the recent developments in the nascent literature of open banking. In particular, it discusses the following issues. (1) the extent to which open banking fosters competition, drives innovation and enhances financial inclusion; (2) the impact of institutional arrangements on the outcomes of open banking initiatives and (3) the critical role of government in promoting open banking and regulating banking activities.

**Findings** – The paper concludes with a discussion on potential directions for future research. First, open banking introduces significant challenges to the traditional banking model. Furthermore, the interplay between open banking and financial risk presents an area ripe for exploration. Lastly, the importance of consumer education in the context of open banking cannot be overstated.

**Originality/value** – Open innovation enables financial institutions generate productive innovations as well as provide customers with significantly better services, by getting access to previously restricted customer data. However, currently non-bank and fintech lenders often face significant barriers in accessing comprehensive customer data, which restricts their capacity to support non-standard credit models. More emphasis is required to be assigned to research on the economic impact of open banking.

**Keywords** Open banking, Bank regulation, Regulatory arbitrage, Financial innovation

**Paper type** Literature review

## 1. Introduction

In this famous book, Chesbrough (2003) defines open innovation as follows,

Open Innovation means that valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well.

Contrary to the traditional model of closed innovation, which relies exclusively on internal research and development efforts for innovation, open innovation posits a paradigm shift. The underlying premise of open innovation is the recognition that valuable ideas and innovations often originate outside established organizations, particularly from startups. This necessitates the adoption of inbound open innovation strategies to assimilate external knowledge, and outbound open innovation strategies to leverage internally developed innovations that are not being utilized to their full potential. Since the publication of Chesbrough (2003), the concept of open innovation has gained significant attention across both academic research and practical business applications [1]. This paper aims to introduce and examine a specific transformation within the banking sector that embodies the principles of open innovation: open banking.

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Open banking refers to empowering bank customers to voluntarily share their financial data from their accounts in commercial banks with other entities via application programming interfaces, or APIs. It essentially provides the customers of a commercial bank with the option whether to share data with a third party, say, a fintech company. Quoted by [He et al. \(2023\)](#), what best illustrates the benefits of open banking is the example given by [Srinivas et al. \(2019\)](#):

Imagine you want to use a financial product offered by an organization other than your bank. This product could be anything you feel would help you, such as an app that gives you a full picture of your financial status, including expenses, savings, and investments or it could be a mortgage or line of credit. But for this product to be fully useful to you, it needs information from your bank, such as the amount of money you have coming in and going out of your accounts, how many accounts you have, how you spend your money, how much interest you have earned or paid, etc. You then instruct your bank to share this information with this other institution or app. Should you wish to stop using this product, you can instruct your bank to stop sharing your data at any given point in time, with no strings attached. This concept is called open banking.

From the perspective of open innovation, newcomers to the banking industry, such as fintech companies, are more likely to generate productive innovations compared to incumbent entities like traditional commercial banks, mainly because those companies have more advanced data processing technologies. However, as summarized by [Babina et al. \(2024a, b\)](#), non-bank and fintech lenders often face significant barriers in accessing comprehensive customer data. This limitation restricts their capacity to support non-standard credit models, leading them to frequently rely on standardized models for originating residential mortgages. In contrast, traditional banks can leverage their extensive customer data to employ more customized, non-standard credit models. Thus, should non-banks and fintech companies gain access to previously restricted customer data, they could provide customers with significantly better services.

In this paper, we will review the recent developments in the nascent literature of open banking. In particular, we will discuss the following issues.

In [Section 2](#), we ask whether customer data should be shared among financial intermediaries. An examination of whether customer data should be disseminated among financial intermediaries is imperative, necessitating a comprehensive analysis of the benefits and drawbacks associated with data sharing practices within financial institutions. Numerous instances exist where augmented access to data significantly enhances the services offered by fintech companies, provides a better chance of valuable information production, reduces forecast errors or potentially elevates the competitive dynamics within the banking sector. However, there are circumstances where confidentiality is preferable, as the generation of information might infringe upon the “no questions asked” state posited by [Holmstrom \(2015\)](#), thereby inducing unnecessary information asymmetry. This principle highlights the potential inefficiency when private data are unnecessarily disclosed, suggesting that carefully deciding when and what customer data to share (or not to share) among financial intermediaries is crucial. Moreover, open banking challenges traditional relationship banking by opening data access and diminishing banks’ competitive edge from exclusive customer information. Simultaneously, it could alter the reliance on collateral in financial transactions. These developments necessitate an in-depth examination of their impact on social welfare.

In [Section 3](#), we ask whether open banking is the optimal solution for data sharing. The open banking framework empowers customers by granting them the rights to their data, presenting a notable departure from traditional models. This approach directly addresses the question of data ownership, which is a thriving literature. In a frictionless environment, the Coase theorem posits that the specific allocation of data ownership is immaterial to achieving efficiency, as parties are theoretically able to negotiate the transfer of rights to those who can

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most effectively harness the data. This suggests that, in an ideal scenario, data would seamlessly flow towards those entities capable of deriving the greatest value from it. Nonetheless, in the practical context of real-world frictions, the ownership of data could be crucial. If banks are allowed to retain exclusive control over data, they may be motivated to hoard this valuable resource, thus avoiding competition and fostering a data monopoly. This consideration strongly supports the argument forgiving data ownership to consumers themselves. Yet, this approach is not without challenges, particularly when customer data are highly correlated, potentially leading to a coordination dilemma. Such a situation is fraught with the risk of individuals underselling their data due to concerns that others may do so first, precipitating a race to the bottom. This dilemma is characterized by the risk of individuals selling their data at suboptimal prices due to fears that others might preemptively do the same, leading to a race to the bottom. Thus, it requires comprehensive analysis in determining the optimal allocation of data ownership, especially in the context of advocating for open banking as a model for facilitating data sharing.

In [Section 4](#), we seek the role of government: can government policies enhance efficiency and mitigate the challenges associated with open banking? As previously discussed, financial intermediaries typically exhibit minimal motivation to share data with competing institutions, indicating a potential need for government intervention to promote an open banking ecosystem. Moreover, the prospect of open data access raises significant concerns regarding the current regulation practice, including excessive risk taking and regulatory arbitrage. Additionally, similar to the discussions on credit registries, the choice between utilizing private versus public agencies for data sharing can markedly affect the open banking framework's effectiveness and security. Therefore, government policies and regulatory measures are crucial not only in facilitating data sharing among financial entities but also in establishing the optimal infrastructure for such exchanges to safeguard consumer interests and ensure system-wide efficiency.

[Section 5](#) concludes the paper by summarizing key findings and proposing avenues for future research. As it continues to evolve, the burgeoning literature on open banking and its implications presents numerous opportunities for further investigation. There remains a lot of intriguing research questions to explore and theoretical predictions to empirically test. This section will outline potential directions for future research, highlighting areas where the current body of knowledge can be expanded to deepen our understanding of open banking's impact on the financial sector and beyond.

## **2. Open banking: is data sharing welfare improving?**

Open banking fundamentally empowers bank customers with the autonomy to choose whether their data is shared with alternative financial service providers. At its core, open banking is designed to facilitate data sharing, embodying a classic narrative in information economics. By granting lenders access to more comprehensive data about borrowers, including credit and payment histories, open banking enables a more accurate assessment of credit risk. This enhanced information access aims to mitigate the adverse selection problem, a challenge where lenders are unable to distinguish between high-risk and low-risk borrowers due to imperfect information. This theory, pioneered by [Jaffee and Russell \(1976\)](#) and [Stiglitz and Weiss \(1981\)](#), posits that such information asymmetries can lead to credit rationing, where potential borrowers are denied access to credit not because of their creditworthiness, but due to the lenders' inability to accurately assess risk. Open banking seeks to address these inefficiencies by improving information flow between parties, potentially reducing the incidence of credit rationing in the financial sector.

In particular, aligned with the principles of open innovation, empirical research has underscored the efficiency gains non-bank financial institutions and fintech companies bring

to the credit market. [Fuster et al. \(2019\)](#) demonstrate that fintech firms incur lower processing costs than traditional lenders, without incurring higher default rates. Similarly, [Tang \(2019\)](#) and [Gopal and Schnabl \(2022\)](#) provide evidence of the complementary role played by P2P lending platforms and fintech companies, particularly in the origination of small loans. Thus, granting non-bank and fintech entities access to traditional bank customer data – a core idea of open banking – is anticipated to further enhance financial service accessibility. Supporting this idea, [Babina et al. \(2024a, b\)](#) present empirical evidence from the UK, illustrating how open banking facilitates consumer access to a broader array of financial services, including financial advice and credit. Notably, their findings also suggest that open banking aids SMEs in forming new relationships with fintech lenders. Complementarily, [Nam \(2023\)](#) uses loan data from a leading German fintech lender to show that open banking and data sharing contribute to more efficient credit allocation and the mitigation of adverse selection.

Theoretically, aligning with empirical observations, [Babina et al. \(2024a, b\)](#) study the role of open banking as a catalyst for innovation, drawing on concepts from both industrial organization (IO) and finance literature. Using a calibrated model, their analysis reveals that open banking facilitates welfare improvements through the dual channels of market entry and product improvements when shared data is used for advice. Furthermore, when data sharing is used for credit, it fosters additional market entry and stimulates competition by mitigating adverse selection issues. However, this positive impact is somewhat moderated by increased costs borne by consumers who are either privacy-sensitive or inherently more expensive to serve, indicating a nuanced trade-off between the broad benefits of open banking and its implications for specific consumer segments.

Other theoretical works provide ambiguous predictions. [He et al. \(2023\)](#) and [Goldstein et al. \(2022\)](#) contribute to this discussion by building on the model proposed by [Broecker \(1990\)](#), which highlights how credit market lenders employ independent but imperfect screening tests to evaluate a borrower's repayment capability. A key aspect of Broecker's model is the "winner's curse" problem, suggesting that a lender acquiring a borrower may have missed negative signals detected by other lenders, with the curse being less severe for lenders possessing better screening abilities.

Expanding on this model, [He et al. \(2023\)](#) distinguish between banks and fintech companies based on their screening capabilities. They argue that in a traditional banking environment, banks enjoy a screening advantage due to their exclusive access to customer data, while fintech firms, despite their technological edge, are limited by the absence of such data. Open banking's data-sharing provisions could significantly enhance fintech companies' screening abilities, narrowing the competitive gap with banks. This narrowing fosters increased competition; however, an overcorrection could lead to dominance by fintech firms, creating a situation of reduced competition and potentially worse-off borrowers.

[Goldstein et al. \(2022\)](#) conducts similar analysis under the assumption that lenders possess identical data-analytic capabilities, arriving at similar conclusions as well. Yet, the distinction lies in the focus areas: [He et al. \(2023\)](#) underscore the significance of customer choice in data sharing, whereas [Goldstein et al. \(2022\)](#) delve into how open banking intersects with aspects of maturity transformation. This nuanced difference highlights the complicated impacts of open banking on the credit market, suggesting areas for further empirical investigation.

All these analyses presume that intensifying competition is good for the financial system. However, a large strand of literature focuses on the possibility that bank competition may result in financial instability (See, e.g. [Keeley, 1990](#)). This is because the increase in competition would cause bank charter values to decline, which in turn forces banks to increase asset risks and reduce bank capital. Right now, the literature on open banking is silent on this issue. However, it may produce novel insights if one can combine financial instability with the current open banking trend as policymakers would definitely be interested in it.

While existing analyses predominantly posit that heightened competition, as facilitated by open banking, benefits the financial system, a significant body of literature suggests that increased bank competition may lead to financial instability (e.g. Keeley, 1990). The rationale is that escalated competition diminishes bank charter values, compelling banks to adopt riskier asset strategies and reduce their bank capital. Currently, discussions on open banking largely overlooks this potential linkage to financial instability [2]. Bridging this gap by integrating concerns of financial stability with the emerging trends in open banking could yield critical insights. Such an investigation is not only academically valuable but also of interest to policymakers, who are tasked with balancing the dual objectives of fostering innovation and ensuring system-wide stability.

The seminal works of Diamond and Dybvig (1983) and Diamond (1984) have initiated extensive research into the unique functions of commercial banks relative to other financial intermediaries. This body of literature underscores the irreplaceable role that banks play in critical financial intermediation processes, such as underwriting, monitoring and balance sheet lending. Recent studies by Gopal and Schnabl (2022) and Buchak *et al.* (2018) reaffirm that, despite the rapid evolution of fin-tech companies and other non-banking entities, these institutions struggle to fully substitute for banks in these key areas.

Regarding this, Babina *et al.* (2024a, b) contend that the importance of data in relationship banking implies that removing banks' exclusive control over customer data could fundamentally alter the dynamics of relationship banking. Another aspect of particular interest is the potential tension between the concept of data sharing inherent in open banking and the traditional banking function of confidentiality. Kaplan (2006) and Dang *et al.* (2017) contribute to this discussion by suggesting that banks sometimes benefit from keeping detailed asset information confidential to avoid the creation of unnecessary asymmetric information, particularly when private information production is feasible. Thus, the emerging trend of open banking, with its emphasis on data sharing, might inadvertently conflict with the critical role of banks as guardians of sensitive information, raising questions about the balance between transparency and the efficient functioning of financial markets.

### 3. The institution of open banking

The open banking framework represents a significant shift from traditional banking models, primarily by empowering customers with control over their own data. This paradigm shift is at the forefront of ongoing discussions within the literature on data ownership. As highlighted by Jones and Tonetti (2020), data distinguishes itself from other assets due to its non-rivalrous nature; it can be utilized simultaneously by multiple parties without diminishing its value. This feature suggests that the potential benefits derived from data access could be substantial, underscoring the importance of who holds the control rights over data. In particular, they show that allocating data control rights to consumers is more efficient, as firms might otherwise hoard data to inhibit market entry. Thus, giving data property rights to consumers can take more advantages of non-rival data, which is consistent with the idea of open banking.

Farboodi and Veldkamp (2021) developed a theoretical model of a data economy where the use of customer-generated data plays a pivotal role in minimizing forecast errors. In such an economy, larger firms, capable of processing extensive transaction data, are positioned to benefit more from data utilization. This prediction is empirically supported by Babina *et al.* (2024a, b), who find that larger firms gain greater advantages from AI investments. Given that banks are substantial entities in the financial sector, these findings highlight a viable method to diminish the competitive disparities between traditional banks and fintech companies: by enabling customer data sharing with fintech firms. This strategy, central to

the open banking initiative, aims to level the playing field and ensure fair competition within the financial industry.

On the other hand, there are situations where it is not efficient to let customers control data. [Acemoglu \*et al.\* \(2022\)](#) consider a model where one customer's data reveals information about others. This creates an externality that the leakage of one user's data weakens other users' incentives to protect their data and privacies. This externality depresses the price of data and leads to excessive data sharing and lower welfare. [Parlour \*et al.\* \(2022\)](#) compare two different ways of payment data sharing: firms selling data to the lender or consumers owning the data and choosing whether to port their data to the lender. A similar data externality arises when consumers own the data, making everyone shares the data for free. Thus, policies that aim to give consumers more direct, and potentially stricter, control of their data may have the unintended, opposite effect.

On the contrary, there are circumstances where granting customers control over their data may not lead to optimal outcomes. [Acemoglu \*et al.\* \(2022\)](#) present a model illustrating how an individual customer's data can inadvertently reveal information about others, generating an externality. This leakage can diminish other users' incentives to safeguard their data and privacy, consequently depressing data prices and fostering excessive data sharing, ultimately resulting in reduced welfare. Similarly, [Parlour \*et al.\* \(2022\)](#) explore two mechanisms of payment data sharing: direct sales of data by firms to lenders versus consumer ownership of data with the option to port it to lenders. They find that consumer ownership introduces a negative externality, leading to widespread data sharing at zero price. Therefore, policies designed to enhance consumer control over data might result in unintended opposite effect by encouraging pervasive data sharing due to these externalities.

In the framework of open banking, the right to share or withhold data with other financial institutions rests with the customers, underscoring the significance of consumer choice. [Brunnermeier and Payne \(2022\)](#) demonstrate that when agents lacking collateral opt for information portability choices contrary to those preferred by lending platforms, the latter may cease offering uncollateralized lending. Contrary to prevalent beliefs, this mechanism suggests that open banking might actually restrict access to uncollateralized credit. Furthermore, [He \*et al.\* \(2023\)](#) make a distinction between sharing credit-quality data and customer preference data. In scenarios where fintech companies' access and utilize customer preference data, they gain insights into privacy-sensitive information, enabling them to engage in precision marketing. This capability allows fintech firms not only to tailor their offerings more effectively but also to exclude potentially risky borrowers. If significant, such a mechanism under open banking could enhance screening processes, thereby elevating overall welfare by mitigating risk and aligning products more closely with consumer preferences.

#### 4. The role of government

In this section, we review the existing research on the role of government in advancing open banking initiatives. The reluctance of financial intermediaries to voluntarily share data with competitors positions the government as a crucial force pushing for the open banking transformation. [Babina \*et al.\* \(2024a, b\)](#) note that open banking policies have been embraced by 49 countries, with numerous others taking preliminary steps toward implementation, underscoring the government's critical role in the open banking ecosystem. Leveraging an extensive dataset, their research investigates the political and economic factors driving open banking policies. They find significant diversity in policy approaches, suggesting that the formulation of optimal open banking regulations is influenced by a myriad of factors specific to each financial system. Particularly, they identify consumer trust in data sharing with fintech companies as the main driver of open banking policy adoption. The trust from

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consumer is indicative of people's readiness to engage in data sharing, a key element for the success of open banking system.

In addition, the transition to open banking introduces several regulatory challenges. First, as outlined in [Section 2](#), the advent of open banking generally increases competition within the banking sector, potentially leading to excessive risk-taking by banks. This may necessitate more stringent regulatory measures to curb such activities. Second, as documented by [Buchak \*et al.\* \(2018\)](#), regulatory disparities have contributed to the rise of shadow banking entities, including fintech companies. The open banking transformation, by enhancing the appeal of fintech firms, could further amplify this development. Third, the variance in open banking policies across countries provides opportunities for regulatory arbitrage, complicating efforts to maintain a consistent regulatory environment. Fourth, [Philippon \(2019\)](#) contends that the rise of fintech companies, which rely heavily on big data technologies, may undermine the effectiveness of existing regulations designed to protect minorities. Together, these factors underscore the need for a nuanced approach to regulatory adaptation in response to the evolving landscape of open banking.

Furthermore, in instances where the efficiency benefits of open banking are not guaranteed, it is crucial for the government to recognize such situations and, where feasible, rectify the inefficiencies. [Brunnermeier and Payne \(2022\)](#) suggest that the introduction of a fully interoperable public ledger by the government could serve as a remedy for inefficiencies arising from privately operated open banking systems. Conversely, in scenarios described by [He \*et al.\* \(2023\)](#) and [Parlour \*et al.\* \(2022\)](#), where the efficiency outcomes are contingent upon the magnitude of underlying economic forces, policymakers need to be careful to formulate policies.

Finally, open banking shares similarities with credit registries, making it insightful to draw lessons from the literature on credit registries. In terms of the role of government, a crucial question is whether data sharing should be facilitated through a centralized agency, such as a credit bureau, or via private credit score companies. [Djankov \*et al.\* \(2007\)](#) present evidence supporting the effectiveness of public credit registries in poor French legal origin countries. Conversely, as highlighted by [Babina \*et al.\* \(2024a, b\)](#) and [Nam \(2023\)](#), significant differences exist between credit registries and open banking: (1) open banking provides a broader spectrum of information; (2) it offers customers the autonomy to choose whether to share their data, along with easier access to their information and (3) it extends the utility of data beyond lending to encompass a wider range of applications. These distinctions amplify the privacy concerns associated with open banking (See, e.g. [Brunnermeier and Payne \(2022\)](#)), suggesting that privacy protection will pose a novel challenge for governments in the era of open banking (See, e.g. [Acquisti \*et al.\* \(2016\)](#), [Abowd and Schmutte \(2019\)](#), [Jones and Tonetti \(2020\)](#) and [Bian \*et al.\* \(2021\)](#) for general discussion on privacy).

## 5. Conclusion

As highlighted by [Vives \(2019\)](#), disruptive technologies such as big data and blockchain have profoundly altered the landscape of the financial system. Fintech companies and other non-bank entities, leveraging these innovative technologies, have not only emerged as formidable competitors but also as potential collaborators with traditional commercial banks. [Vives \(2019\)](#) emphasizes the challenge for regulators in ensuring a level playing field. This paper reviews the burgeoning literature on open banking, a concept aimed at maintaining equality between commercial banks and fintech companies in terms of data access, while also encouraging areas for potential collaboration. As an evolving area of study, open banking research has begun addressing a broad spectrum of foundational questions, including competition, data ownership and government regulation. However, the field continues to confront numerous unresolved challenges.

First, open banking introduces significant challenges to the traditional banking model, particularly in how banks have addressed the free-rider problem by keeping customer information confidential. This strategy has enabled banks to conduct thorough customer screening without sharing the fruits of their labor with competitors. However, the rise of open banking, advocating for more transparent data sharing, might compel banks to either scale back their screening efforts, considering the potential for competitors to benefit from their diligence, or to selectively share information, thus protecting their competitive advantage.

Furthermore, the interplay between open banking and financial risk presents an area ripe for exploration. The redistribution of access to sensitive financial information could have profound implications for risk assessment, fraud prevention and the overall stability of the financial system. Therefore, both theoretical frameworks that address these new dynamics and empirical research that provides evidence from the real-world implementation of open banking are essential for a comprehensive understanding of its impact. Second, while initial empirical studies by [Fang and Zhu \(2023\)](#), [Nam \(2023\)](#) and [Babina et al. \(2024a, b\)](#) have started to explore the implications of open banking, echoing the theoretical insights of [He et al. \(2023\)](#), [Brunnermeier and Payne \(2022\)](#), [Goldstein et al. \(2022\)](#) and [Parlour et al. \(2022\)](#), there is still much ground to cover in empirical research on open banking. Moving forward, a surge in empirical investigations is expected, focusing on the nuanced economic impacts of open banking, including its effect on market competition, innovation and financial inclusion. Additionally, cross country analyses and policy assessments will be pivotal in distilling best practices and tailoring open banking frameworks to meet diverse regulatory and market needs. This burgeoning area of research promises to shed light on the operational realities of open banking, offering valuable insights.

Lastly, the importance of consumer education in the context of open banking cannot be overstated. As financial ecosystems evolve to become more interconnected and data-driven, consumers stand at the crossroads of innovation and vulnerability. Thus, efforts to enhance consumer awareness and digital literacy will be key to helping individuals make informed decisions about their financial data, ensuring they can use open banking safely. This includes understanding the implications of data sharing, recognizing the potential for privacy breaches and knowing the rights and protections available to them.

## Notes

1. See [Chesbrough \(2003\)](#) for case studies about companies' transformation from closed innovation paradigm to open innovation paradigm such as IBM and Intel. See [Chesbrough \(2011, 2019\)](#) for examples such as smart cities and smart villages utilizing the idea of open innovation.
2. See [Cevik \(2024\)](#) for an empirical study on the relationship between fintech and financial stability.

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