

Banking and data: Have you noticed the change?

Professor Peter Hahn examines how data has changed, and continues to change, the role of banking.



The historical economic logic for what we think of as modern banking, best known as intermediation, is rooted in connecting those with excess financial resources with those who want to use those resources. It has been around a long time, yet it is full of conflicts of interest. Savers fundamentally want their money back. To be able to repay savings, the bank must limit risk, but borrowers always want the bank to give them better terms, which means increasing risk. If half of society wants the bank to minimise risk and half of society wants the bank to take more risk, how can the whole of society be satisfied? Of course, the banking industry evolved to balance these conflicts - enabling our economy and society to function - principally, through the management of financial risks. Bankers know that a key measure of their success of this balancing act is 'net interest margin' (NIM) or the difference between what they pay savers and get from borrowers - and this is a data point that is under critical change.

Yet, that very act of the bank balancing means neither side can be the winner. And for banks this may be even more complicated because many, if not most, customers are both borrowers and savers - often simultaneously. Imagine driving home down the same crowded road each night. When we're on time we are happy with the safety provided by speed limits (savers), but when we're late we'd be happier with no speed limit (borrowers) and the bank is the traffic cop assuring the smooth flow of traffic. Assuming no traffic cop, I would guess an average speed could be found and that it might be consistent over time - that is except when more people are late, or weather creates a safety hazard. But what might happen if we were all in those dreamt-about self-driving cars? Aren't they supposed to take out the inefficiencies of slow and fast drivers and maximise our efficiencies? It may be a while for cars, but we're getting there in banking. The age

and image of banking as primarily an intermediary, largely dependent on NIM, is starting to fade.

Technological advancement long ago began nudging the economic centre of banking towards payments, the movement of money, and, importantly for banks, toward fees for services, as opposed to almost entirely depending on NIM. As this has happened, banks are moving from being primarily financial managers to data managers. It's a process, happening over time, and the now long-term low-interest rate of most developed countries may be even a larger driver than technological advancement. But it is a road on which banks must improve their driving skills, or let competitors pass them by. As banks continue down this road, many new types of services are possible and there are certainly going to be more conflicts to manage (eg speed vs safety); everyone leading a bank should start focusing on those new conflicts and risks now, before it's too late. I particularly note that banks have traditionally been experts in financial risks, and they need to evolve their skills in data risks and data management.

The data storm

Where did all the data come from?

Younger readers may not be familiar with the humble cheque, the mainstay for a century of banking payments. A business, or individual account holder, or writer, filled out a paper withdrawal notice that permitted another party to present at a bank branch, either in person or posted, for payment of funds. The bank wasn't involved in the exchange of value between the writer and recipient of the cheque and would have been unlikely to know much, if anything, about the purpose or purchase. Was the £100 cheque, payable to the bearer, for the payment of wages, a television, or winning a wager? For the bank, it was the same transaction as it would have been if the writer of the cheque had presented a withdrawal slip in person - save for the name of the 'payee' (if there was one).

Subsequently, the bank eventually photocopied and filed away its copy. It was a slow process of verifying signatures and balances. Banks earned account or per cheque fees, which were, largely, limited to substantial payments, as we used cash for most things.

Compare the old cheque with the electronic payment for my trip on public transport this morning. At least two banks have earned fees and a lot of data was created. Perhaps most valuable to my bank or someone else, they will know what time I left for work and how I travelled there, and perhaps they'll have an idea of how many calories I consumed during the day – if I purchased breakfast or lunch. Of course, the bank has always had, and not used very well, some key information in my account but it was mostly big items. At the end of the year, along with all that payment data, my bank should know (though most banks are not yet able to) a vast amount about my financial and personal life – from my gym membership to travel and entertainment, to how I budget or don't – and, of course, receive all those fees. For the bank, increasing electronic payments and being able to access all that data must be like the transition from never having driven through more than a drizzle, to learning how to drive in a tropical storm or perhaps a blizzard (of information).

Banks must hope that adding increased consumer payments to banks' institutional services businesses, like securities custody or payrolls, will continually increase their fee income and data collection – particularly as they reassess their roles in intermediation. Of course, regulators are active in the payment world too. My point here is that like those intermediation conflicts, banks' increasing exabytes (yes, there is such a word) of data will come with conflicts. Beyond 'who does the data belong to?', there is the important question of the increasing amount of trust extended to banks to protect that data, and how it's used – and some of the uses are beyond the banks' control. Have you noticed that we moved on from trusting the bank with our savings to trusting the bank with our data?

Data is also a two-way street and, while banks may have or must seize the opportunity of data, bank customers have no less an opportunity to use data to reduce bank opportunities. This is perhaps most evident today in the use of easily accessible comparison information available through the worldwide web or electronically savvy financial advisers. Rate and fee shopping among financial institutions is probably easier, and more cost-effective, than goods shopping. I find it particularly easy in the UK for common financial products such as mortgages or foreign exchange transfer fees.

Data travels

I opened my first bank account with pocket money and cash received from a job delivering newspapers on my bicycle. Apart from the money, to open the account I needed a government identification number – my tax identification. I was too young to ponder the bank's role back then in handing over personal financial information to the government. Of course, that simple 'reporting' information eventually led to the bank passing some of my interest to government. For me, this was about the same time that banks started offering credit cards and collecting information on my spending habits, but I doubt the banks ever conceived of any use for that data, beyond billing, way back then – or that the government thought of asking for it.

There are differences of degree by country, but developed-world banks permanently moved from only serving financial needs to becoming part of tax collection long ago. This was the beginning of banks collecting personal information on me and providing it to an external party – the government. As soon as I received my first credit card (and other personal loans), I could have pondered how much of the personal information I'd provided went to credit rating agencies – which, of course, offered it to other banks.

Today, banks not only report interest to the government but also a range of deposits and withdrawals – particularly to support anti-money-laundering (AML) measures and to counter the financing of terrorism (CFT). I have always been surprised by the limited public debate on how banks have been co-opted as an arm of law enforcement providing my private information without asking me. What if car makers were required to place speed monitoring devices or voice recorders in cars that would directly report bad behaviour to authorities? You could easily argue this would make our roads safer, perhaps until you received a speeding ticket while swerving to avoid an accident.

The data gathering and reporting requirements demanded of banks by governments are increasingly expansive and fraught with risk. The police are not expected to identify every criminal incident, but a bank is expected to flag up all potential criminal activities. This goes further than many people might suspect. In many cases, banks must continue checks down to the level of the customer's customer, and perhaps levels beyond that. The bank has become an intelligence network – forced to evaluate and deliver selected data for policing and political needs.

Mandated government data gathering can mean that customer service and banking services take a back seat or get thrown from the car. Banks massive hiring of increased AML compliance resources and the commensurate

costs have been paid for reducing other bank expenses, undoubtedly reducing some areas of customer service. On the wholesale side, a number of western banks have terminated long-standing correspondent banking relationships with developing markets in part because those counterparts cannot meet compliance data requirements. In the UK, banks have been required by government to report (data), and not offer services to, illegal aliens. Have you noticed the change? Government now uses bank data for a lot more than taxes, things such as crime, terrorism, immigration. This is not an argument for or against any of these data requirements on banks, but they exist, are unlikely to go away, and are costly efforts that are not about providing banking. With time, a digitised financial life integrated with a digitised currency will inevitably lead to government asking for a more data-oriented, and non-financial role for banks. Banks are gaining increasing responsibility and liability in the process, but much is unclear.

My bit of David and Goliath: when the data is reported wrongly

Some years ago, my principal bank misreported an income amount to tax authorities. Tax authorities aren't always on the same timeframe as taxpayers and I received a letter that I'd substantially underpaid my taxes three years prior, owed massive penalties, and some other scary notices about being a criminal. It was frightening. After a good deal of effort I reached a person at the tax authorities. I tried to make sense of what was happening and offered my paperwork. But the tax collector said, "Who do you expect us to believe? You or XX Bank?" I was given 60 days to get a letter from the bank stating they'd reported an error. Who? How? Where? Which department? I called and wrote over 20 letters and emails. There was no department for errors in data reported to tax authorities. I was shunted from one department to another – even to different countries. There was no regulator who dealt with misreported tax information. It got very frightening as one by one, the 60 days slipped by. Finally, I wrote to the chief executive and chief legal counsel and miraculously got the help I needed – when I threatened, as a last resort, to get some publicity. Along the way, I learned that, in a systems change, a few zeros may have been manually added to my data! I have found it relatively easy to correct errors and fraud on my payment cards, but the issue of banks potentially providing incorrect data is a large one.

Whenever I consider governments' demands for data from banks, I reflect on who pays for it financially. There's a lot that goes into information processing, software updates, compliance, and management time. This is big money. There's now an aspect of banking that is a form of indirect taxation. If government were to undertake these data tasks without banks, taxpayers would be funding it directly.

Modern banking is increasingly about how banks can utilise all the data they will be collecting to provide a viable commercial service to their customers, both retail and wholesale – perhaps before someone else figures out how to use that data for the better use of customers and themselves.

The data road

You might guess that I've always had a keen interest in automobiles and technology. Perhaps this is due to growing up in suburbia where my first real job, at age 16, required a car. That car was 14 years old, when cars were built to last only five to seven years. I often felt that I was working to keep the car working so that I could get to work following school. But the experience gave me a keen understanding of mechanics, systems, and problem solving, as I was the one who completed most of the repairs. I often hear flip comments on how 'cars have barely changed in a century and most of us continue to drive vehicles with the same combustion engines'. I can only smile. Cars today are so much more fuel efficient, reliable, safer, faster, climatized, comfortable, durable and, substantially cheaper in real terms. This is due to the automobile industry's adoption of technological improvements. Banking is similar. As with automobiles, where most of that technology is out of sight under shiny metal, in banks it is hidden in information technology (IT). Banks have a long history of leveraging technological developments for customer service and efficiency, and that should include the move to data.

Since the founding of The London Institute of Banking & Finance as the Institute of Bankers in 1879, data collection has been part of the role and training of bankers. A fundamental part of our earliest bankers' education was learning about the most important data to gather for risk decisions. The first commercial typewriter and Edison's patent for the electric light arrived on the scene within a year of our founding. It may seem humorous today, but the typewriter was a great leap forward in improving data recording and accuracy – no confusion on handwriting. Indeed, one of the earliest examples of banks collecting and using data, is likely to be the reference letters that early members of the Institute provided to the business customers. This was sharing data to support a customer's entry into a commercial transaction. That journey of data processing and use at banks has always been there.

The leap from typewriters to application programming interfaces (APIs) is great, but in concept APIs are the modern equivalent of the bank reference letter. Rather than ask the bank to produce your data in the form of a letter, an API gives approved third parties digital access to some of your data that is held at the bank, supposedly securely. In the UK, we refer to the process of offering bank data to third parties as 'open banking'.

Open banking came into law in 2018, so that in Europe banks are required to make customer data available to approved third-party firms on customer request. The intention of government was that third-party providers could build out more services using banks' data, increasing competition to incumbent banks. Banks cannot charge for providing this data. Open banking is revolutionary in terms of data transfer and access. In principle it affirmed that the customer owned their data and could use it. Banks effectively lost control of the data. It was no longer their choice what to provide, or to who.

We have had much discussion about who might be liable for misuse of data provided to third parties. Banks argued against third-party access on the grounds of safety and security, but banks were also seen as having an economic interest in restricting access. After the substantial initial investment, mostly on the part of banks facilitating access, open banking has advanced slower than anticipated. It applies to both small business accounts, small to medium enterprises (SMEs) and individuals. Some might argue that bank data is not worth as much as conceived; I would argue we're only at the beginning of the process of banks and others grasping what the data opportunity is.

Early discussions of open banking suggested that incumbent banks' legacy technology would disadvantage them in comparison to new entrants, with new technology making use of the banks' data. This may have been a gross misperception, as forcing the banks to create access to third parties has enabled banks to set up alternative new technologies which can now access the same data. It has forced banks to upgrade to a point of being able to use their own data. Banks with far greater resources than new entrants may now be able to make a giant data services leap. The advent of machine learning and artificial intelligence applications can only enhance the possibilities to utilise this customer data. But what about safety and security?

The data seatbelt

Mass automobile sales began with the Model T Ford in 1907 and US data indicates deaths per 100,000 increased consistently until the 1970s. Seatbelts were reportedly offered, as an option to US drivers in 1949, but it took near 20 years for them to first become mandatory - in Australia in 1964 (the US in 1966). I recall my father refusing to wear his seatbelt saying he didn't need it and it was uncomfortable. For children, rear seatbelts became compulsory in the UK in 1986. The evidence was overwhelmingly clear that seatbelts saved lives and prevented injury, but fragmented industry efforts and consumer interest weren't enough to make the change. It took a long time for consensus. How much has car safety advanced since those days?

I like to think of prudential regulation (ie the Basel Committee) as the seatbelt of banking. Prudential regulation, and government insurance schemes that protect our savings, offer peace of mind in dealing with the banking system. That safety is taken for granted. Almost all of us buckle up now without thinking about it. Increased conduct regulation on products and sales processes, added to prudential regulation, appears as the shoulder strap that was added to the simple seatbelt. However, there is no equivalent of regulation for protecting our financial data. Here, a hodgepodge of laws and regulators are still working it out. The equivalent car analogy is probably something akin to a combination of anti-lock brakes, automatic lights, airbags, and satellite navigation - perhaps tied in with a pre-agreed organ donor card if it doesn't work. Note, the simple seatbelt is about cloth, screws and springs and I attached one in my first car with a drill and screwdriver. You need a lot more technology to install an airbag safely. My car analogies all point to safety implementations that followed egregious failures - save the SatNav that gets us there faster - and that's probably the way data regulation in banking will continue to develop. It will play catch up as the data role of banks accelerates and more failures arise.

The data highway: which direction and who's responsible?

A US online brokerage, a subsidiary of a large North American bank, that offers among the lowest fees for stock purchases has recently become the subject of class action legal procedure (ie serious money) based on its business practice. Online brokerage, particularly agency, must seem like a relatively safe way to offer a service to bank retail and business clients, particularly if the bank's data shows the customer has substantial funds. It's been around in the US and Europe since the birth of the internet. However, it is a competitive business and customers are expected to search for low commissions or fees. Banks deliver through external execution (outsourcing).

Third-party executors - typically hedge funds - and high-volume, high-speed, trading firms are given aggregated customer orders by the online brokerage. What has long been controversial is whether the practice allows the executor to benefit from the information, and the fact that the executor makes payments to the brokerage firm providing the business. The US legal system restricted individual complaints and the practice continued for many years. However, in 2018 the US Treasury took an interest. "The US Treasury Department said it is concerned payments to brokerages 'may create misaligned incentives' for brokers and their customers. It urged the Securities and Exchange Commission to boost regulation

of such payments and require more disclosure.”¹

The class action process followed, and the magnitude of potential liability is referenced below. (Note revenues, not profits may be refundable.)

If the court ultimately does determine that the customer class has been harmed, TD Ameritrade (and maybe other brokers accepting payment for order flow) could have to disgorge years of revenues from the practice, and possibly, other penalties and charges.²

Banks have long acted as agents for insurance companies, with the incentive of receiving a commission. Assuming a bank got an upfront commission, was there any subsequent payment for amount of sales? Should that have been disclosed? Or rebated? Did the insurer reinsure and pass personal data on to a reinsurer? In a digital world, the speed and potential for higher volumes of such transactions multiplies.

Banks also source business through agents. The traditional model of seeking a mortgage from a local bank or clearing bank has changed in many countries and will likely further evolve in the world of digital banking. In the UK, a bank is more likely to originate a mortgage through a registered intermediary or broker. That agent will pass information to the bank. Where did it come from? How reliable is it?

The brokerage example may be a wake-up call for many banks. Most banks cross-sell products that they don't wholly control, sometimes disclosed and sometimes white-labelled. Data will be moving around, but responsibility won't. The legal and regulatory system may take a long time to catch up, but that could make the cost unmanageable.

The driverless car arrives, almost – but what might be its economics?

Software technology companies independently with banks, and banks on their own, are now able to offer business and individual bank customers opportunities to beneficially use their bank data. Apps that combine spending, borrowing and saving are becoming more available. I see an expanded range of uses all the time. One of my colleagues finds a bank's monthly budgeting tool indispensable. A friend with a very small business notes his bank's data tool has made his billing much easier. When I first started to see the templates for these data tools,

1 Podkul, C., (2018). Judge rules class-action lawsuit against TD Ameritrade can proceed. Wall Street Journal [online]. 21 September 2018. [Viewed 12 August 2019]. Available from: <https://www.wsj.com/articles/judge-oks-class-action-lawsuit-against-td-ameritrade-1537559644>

2 Dizard, J., (2018). Court ruling poses threat to retail brokerage industry. Financial Times [online]. 21 September 2018. [Viewed 12 August 2019]. Available from: <https://www.ft.com/content/96b92e56-2afd-3ca7-8206-fb858a6aa07a>

almost ten years ago, I had the same questions that I do now: will they be a required service? And do they offer economic opportunity to the bank? At each successive banking conference, I saw improved models presented and arrays of possibilities for commercialisation discussed. I sorted these into two broad models:

1. the bank that kept the data and used it to recommend external opportunities for fees or the 'platform bank', which seemed a lot like a modern version of the branch bank that had brochures for a range of agented third-party services collecting fees, and
2. the bank that could sell data to third parties.

But there are three models of the driverless car or automatic bank based on personal data. The third is that the bank just provides data tools without commercialisation, but this is unlikely to be developed due to financial pressures.

The platform bank concept isn't really just a concept anymore. Some online only banks are progressing with millions of customers in different markets. From the standpoint of data, the platform bank is a gatekeeper and appears to offer more control and, thereby, security. Yet, in an age of easy online comparisons of purchases, it defies some of the logic of direct sales and disaggregation. How difficult is it to find a cheaper deal than the platform offers versus the ease of buying through the platform? Will the financial and personal data be monetisable?

Car crash or on to the Autobahn?

Banks collect and are forced to supply data to government. There is little choice involved. Banks supply data to credit bureaux or reporting agencies, yet pay agencies to use that data. Now, we are at the crossroads of banks assessing the opportunity to cash in on increasing collection of data, as they improve their abilities to access it. Will that effort be a fatal collision? Or will it be the transformation into the high-speed data lane?

I think there are three options.

1. Of course, banks might do nothing and leave it to others to monetise my data.
2. Banks could choose to be all encompassing (or narrowly focused) 'advisers' based on my data – I highlight the word adviser to provoke thought about whether the banks' use of data will constitute advice or something else?
3. Or, banks could sell my data (assumingly with my permission) for fees.

I will assume the first option is a non-starter due to investment costs, the changing banking model of income, and the likelihood of losing a customer relationship, but the choice among the other two options will not be easy and I think one is a likely accident waiting to happen.

When I think about a bank using my data as an opportunity, I see potential benefits to improve my financial life and choices, but mostly I see liability. There's a lot of my financial life, or that of any business, that could be improved through data analysis, for sure. Yet, I am reminded of the conflicts for banks offering in-house asset management when I consider this option. Banks offering asset management are often perceived as offering advice. Of course, the bank would like me to take any data-driven offering or direction as a non-liable suggestion – perhaps like a comparison website – but certainly not as advice. However, I am certainly likely to think of the bank's use of my data and offer as constituting 'advice'. Recall, I trust my bank! It is using my data. Or does the bank awkwardly try and say 'oh trust us with your money, but don't trust us with our interpretation of your data'? Banks offering investment funds have often run into problems, if their funds aren't the best, with how to disclose it, and whether there were other revenue opportunities for the bank in the asset management business. The bank might notice that I fill my car at Shell, because it's near my home, and let me know that BP offers a lower price only a short distance away. What if BP is a customer of the bank? Perhaps even more important, what if Shell is a customer? Perhaps more than a crash, our car is now driving through a minefield!

The sale of financial and personal data by a bank today so far remains nothing more than a concept, but – perhaps counterintuitively – it is the best option for monetising a bank's investment in data. It may be fraught with liability, but it is a model based on successful social media and much of the current app 'freemium' business model. You get the service for free or very little, then there are offers for extras. The coffee shop I stopped into this morning offered free wifi – after I ticked the box that they could use my data. And it was quite a lot of data including birthdate, name, phone, address, email and some personal interests.

Banks will have to invest a great deal in useful financial services for me, perhaps budgeting, saving, investing and other financial tools – and that investment will provide a great deal of information on me or my business. Again, it's my data, but held by the bank. It isn't just the bank. How might I monetise it? I leave the question of should I monetise to the end.

Perhaps the answer lies in partnership with the bank? Think about 'sharing' – we can share our flats through Airbnb, a car through Zip, how fast or slow we run or bicycle on a variety of apps – a lot of valuable health data is wrapped up in that. If I am willing (or unwilling) to share my eating habits with a delivery company, my clothes preferences with Google or Amazon or eBay, my health data with a fitness app, why not share my financial data? Similar to social media or search engines, selling information to researchers, advertisers and marketers, the bank might offer it for sale – and share that fee with me. It

is an opportunity not to be taken lightly, but I would have to agree. How would I value the opportunity or invasion of privacy? I don't know. Personally, I find it frightening. What if it goes wrong? The opportunities for malfeasance are myriad. Those transportation fees every Monday at 8am and 6pm might suggest an empty house waiting for burglary as much as suggesting that I buy an annual pass with a short-term loan. Yet, coming back to the bank – gaining my permission to share my data for a fee seems likely to reduce a bank's liability. The bank will be my data partner, but not be providing me with any advice. It has many opportunities.

Inevitably, the more I have or earn is likely to correlate to the value of my data. Sadly, megabytes of data on someone barely getting by is not going to be worth as much as data on someone who can buy, invest or borrow. It's a simple concept but how to get it into dollars, pounds or euros? Way back when, we chose banks to hold our money and get interest. Will the bank of tomorrow – particularly, in a low-interest environment – pay us for our data instead of money on deposit?

Government and regulation should get out in front of this data wave as soon as possible. Yet, when I speak with young people, I often hear that I am overly concerned with privacy and that data privacy is an outdated concept. That may be. I am aware of the amount of personal data that one could collect from various sources on the web, but I know that takes a lot of data mining and accuracy is questionable. Banks are likely to have much of that data in hand, collated, and with a higher degree of accuracy. It should be worth something, but, as well as opportunities, it carries a new set of risks that banks need to learn and manage.

Please note, this paper is intended to stimulate a discussion on the strategic direction of banks created by changes in the delivery of banking. It purposely does not discuss legal and computer technicalities of data for banks that require the contributions of the legal and cyber professions.