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Risks and benefits of modern financial technology; Lessons from a 17th century stablecoin

Speech by Klaas Knot at the RiskMinds International seminar – day I: The Risk Regulation Summit

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In Amsterdam, on the first day of the RiskMinds International seminar, the theme of the day was 'The Risk Regulation Summit'. Klaas Knot gave a speech on the risks and benefits of modern financial technology.

Whether you are here today as a chief risk officer, regulator, academic or, as in my case, central bank governor, we all seem to be facing the same challenge: how can we find the optimal balance between risk and benefit, in an environment riddled with uncertainty?

Today, I want to talk about the risks and benefits of financial technology, or FinTech.[1] And what better place to do this than here in Amsterdam? Silicon Valley on the southern shores of San Francisco Bay, the city of Shenzhen in the Chinese Pearl River Delta. They are well-known breeding grounds for the technology of tomorrow. But innovation is common to all ages. And right here in the city of Amsterdam, at the heart of the Amstelland river basin, important innovations occurred as early as in the 17th century.

Monetary history is rife with examples of innovations that challenged the status quo. The Bank of Amsterdam did exactly that in the early 17th century. In fact, a forthcoming research paper by the Bank of International Settlements and De Nederlandsche Bank considers the Bank of Amsterdam as an early instance of a stablecoin provider: an issuer of money backed by low-risk assets.[2]

Today, domestic payments are increasingly convenient, instantaneous and available twenty-four-seven. Cross-border payments, however, remain slow and costly, especially for retail payments such as remittances.[3] Recent stablecoin proposals aim to address such inefficiencies in an increasingly digital economy.

In a similar manner, the Bank of Amsterdam was founded in 1609 to overcome inefficiencies in payments. In the early 17th century, nearly 850 different gold and silver coins circulated in the economy.[4] Debasement, or the deliberate mixing of base metals into these coins, was prevalent.[5] This eroded trust in the use of coins as a means of payment. To the detriment of commerce and trade.

[1] The Financial Stability Board defines FinTech as technology-enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services. Notably, this can include innovation by new firms, existing technology firms, and incumbent financial institutions.
[2] See Frost J., Shin, H.S. and Wierts, P. (forthcoming), "An Early Stablecoin? The Bank of Amsterdam and the Governance of Money", BIS working paper.
[3] See G7 Working Group on Stablecoins (2019), "Investigating the impact of global stablecoins."
[4] See Van Nieuwkerk, M. van (2007), "Hollands Gouden Glorie, De Financiële Slagkracht van Nederland door de Eeuwen heen."
[5] See Kindleberger, C. and Aliber, R. (2005), 'Manias, Panics and Crashes: A History of Financial Crises'; Schnabel, I. and Shin, H.S. (2018), "Money and Trust: Lessons from the 1620s for Money in the Digital Age", BIS Working Paper No. 698.

To restore confidence, the Bank of Amsterdam started issuing money in the form of bank deposits – the bank guilder. On the liability side of the balance sheet, the bank held current account deposits, with balances rising from 4.9 million guilders in 1673 to 28.9 million in 1721. On the asset side, the bank's charter required that deposits were fully backed by precious metals. This boosted confidence, much like current stablecoin proposals aim to achieve price stability by being pegged to a basket of fiat currencies. In his seminal work, The Wealth of Nations, Adam Smith noted:

> *At Amsterdam, no point of faith is better established than that for every guilder, circulated as bank money, there is a correspondent guilder in gold or silver to be found in the treasure of the bank. The city is guarantee that it should be so.*

The Bank of Amsterdam supported payments and settlements across Europe for nearly two centuries. It relied on an 'ecosystem' of cashiers, provided standard contracts and managed operational risks, such as a fire in 1652 – cyber-attacks had yet to be invented. Similar to modern wholesale payment systems, the bank was able to bridge differences between outgoing and incoming payments. But in doing so, the bank's management also departed from the strict application of its charter, performing some of the liquidity provision functions that a modern central bank provides.

Its success may also have been the bank's undoing. In the late 1770s, the bank started granting larger and larger overdrafts to the Dutch East India Company, while never disclosing them. Over time, the bank had accumulated large credit exposures which soon became non-performing. The full extent of lending exposures remained hidden from public view for a further decade. However, the demise of the Amsterdam Bank came through a run on its gold and silver in 1795, following the invasion of the French Revolutionary Army.

What lessons can we draw from this chapter in monetary history?

For one, financial innovation is common to all ages. So, too, are financial risks. Adequate risk management, sound governance, financial regulation, supervision, deposit insurance, crisis management – they are all necessary to safeguard confidence in the financial system.

Second, this episode points to a fundamental dilemma that lies behind privately issued stablecoins. Having a full backing requirement creates trust, but also implies

limited settlement liquidity.[6] Credit is needed to 'oil the wheels', especially in wholesale payments. For the Netherlands, payment values are in excess of 100 times GDP. Issuers of stablecoins may therefore have an incentive to start lending. But doing so is at odds with their stated objective. Which is to stabilise the value of the coin through full backing. And lending exposes the issuer to credit risk and to potential runs when confidence falls away. Not to mention a whole range of relevant issues around legal certainty, financial integrity and data protection identified by the G7 and the Financial Stability Board. Careful consideration of regulatory and supervisory implications is therefore needed before any global stablecoin-type initiative can be launched successfully.[7]

With these lessons in mind, let's have a closer look at the risks and benefits of modern financial technology.

The past few years have seen the growing application of technology-driven innovation in financial services. This is the result of a combination of drivers.[8] Evolving technology related to big data, artificial intelligence, distributed ledgers and computing power has increased the rate of FinTech adoption exponentially. Customer preferences regarding convenience, speed and costs are becoming increasingly important. Especially among the younger demographic of digital natives. Business opportunities have emerged in areas that traditional financial institutions may have overlooked. Opening up the way for new entrants.

And there is no doubt that FinTech brings significant potential for societal good and welfare, especially in the developing world.[9] Around the world, 1.7 billon adults are unbanked or underserved with respect to financial services.[10] In many countries, FinTech is already helping the unbanked and small businesses to access finance. From rural households in China, who can invest in a money market fund on their smartphone, to retailers in India, who can accept new forms of payments from their customers.

In advanced economies, as well, consumers stand to benefit. New market entrants can offer innovative services efficiently thanks to fully digital business models and

[6] See Frost J., Shin, H.S. and Wierts, P. (forthcoming).
[7] See Financial Stability Board (2019), "Regulatory Issues of Stablecoins"; G7 Working Group on Stablecoins (2019).
[8] See Financial Stability Board (2017), "Financial Stability Implications from FinTech, Supervisory and Regulatory Issues that Merit Authorities' Attention."
[9] See Bank for International Settlements (2019), "Welfare implications of digital financial innovation."
[10] World Bank (2019).

the use of latest technologies. They also stimulate incumbent entities to invest in modernising their services.[11] Regulatory reforms are also contributing to this. In Europe, PSD2 enables third-parties to access payment-related data previously only available to banks. Consumer consent is of course required. In the Netherlands, new and innovative services are starting to emerge in areas such as payments and personal finance management. These are offered by new entrants, banks, or through partnerships.

Of course, customers have to trust these new services. The combination of payment data with large volumes of personal data in particular could lead to privacy concerns among the general public. A recent survey carried out by De Nederlandsche Bank shows that, on average, 11 percent of respondents are willing to give consent to various forms of data usage. Nearly 72 percent are not prepared to do so. And more than 59 percent of the respondents would be more inclined to allow a bank more active use of payment data than they would a tech company.[12] This makes public trust an asset of great value for the banking sector at this juncture. But it remains to be seen how these developments will impact the banking sector in the longer run.[13]

Let's look at the risk side of the equation.

Despite their innovative character, FinTech activities remain subject to traditional risks.[14] Activities that resemble deposit taking remain subject to liquidity mismatches and the potential for runs. New financial assets can still be subject to speculative bubbles. Early crypto-assets such as Bitcoin have exhibited extreme price-volatility, for example. If specific firms achieve a large enough scale, there is still potential for them to become systemically important. The data-driven business models of some large technology firms in particular can generate strong and self-reinforcing network effects.[15] New forms of interconnectedness could still transmit shocks across institutions and markets. Outsourcing, for example, increases the complexity of value chains and could give rise to new forms of concentration risks, as third parties take on roles that may be of systemic importance. And advanced

[11] See De Nederlandsche Bank (2018), "Supervision in an open banking sector."
[12] See De Nederlandsche Bank (2019), "Dutch consumers reluctant to share bank data", DNBulletin.
[13] See Basel Committee on Banking Supervision (2019), "Implications of FinTech Developments for Banks and Bank Supervisors."
[14] See Financial Stability Board (2019), "FinTech and Market Structure in Financial Services: Market Developments and Potential Financial Stability Implications."
[15] See Bank for International Settlements (2019), "Chapter III, Big tech in Finance: Opportunities and Risks", in BIS Annual Economic Report, 2018.

cyber-attacks on financial institutions and market infrastructures could destabilise the financial system.[16]

So what does the risk-benefit balance of FinTech look like today?

At least for now, technology by itself does not seem to pose a material risk to financial stability. Compared with an incumbent financial system with assets of 382 trillion USD globally, FinTech activity is still modest. The total amount of new credit provided by FinTech and BigTech companies is relatively small. At the end of 2017 it stood at 0.5 percent of total credit.[17] New FinTech business models rarely entail significant risk transformation.[18]And while the introduction of global stablecoins could pose a host of challenges, crypto-assets do not pose a threat to financial stability at this point, given their limited market capitalisation.[19]

Nevertheless, there are developments that warrant close attention going forward. I have already mentioned growing operational risks of outsourcing and cyber security that may have financial stability repercussions.

Furthermore, the entry of BigTech firms – large companies with established technology platforms – into financial services could drastically increase the scale and pace of innovation. BigTechs firms have the ability to scale up rapidly by leveraging several comparative advantages. These include their large established and global customer base, brand recognition, proprietary customer data and state-of-the-art technology.

In some emerging markets and developing economies, BigTechs have managed to reach large – and previously unbanked – sections of the population. For instance, BigTech mobile payments make up 16 percent of GDP in China.[20] From there, they have gradually expanded their foothold with range of services, such as lending, insurance and asset management.

In advanced economies, BigTech financial activities are generally narrower. This may be due to differences in financial development and existing market structures, such as a large banked population and pre-existing payment infrastructures.

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[16] See De Nederlandsche Bank (2019), "Financial Stability Report – Spring 2019."
[17] See Frost, J. (forthcoming), "The Economic Forces Driving FinTech Adoption across Countries, in King, M. and Nesbitt, R. (eds.), *The Technological Revolution in Banking*, Toronto University Press.
[18] See Restoy (2019), "Regulating FinTech: what is going on, and where are the challenges?"
[19] See Financial Stability Board (2019), "Chair's letter to G20 Finance Ministers and Central Bank Governors", 13 October 2019.
[20] See Bank for International Settlements (2019).

Nevertheless, BigTechs are becoming increasingly active in the European payments markets.[21] In the Netherlands, BigTech firms are now active in payments – although still through partnerships with banks. And BigTechs do not only serve retail customers, but also provide cloud services to financial institutions. Taken together, the entry of BigTechs at both ends of the financial services value chain may pose risks to financial stability that are more prominent than those from FinTech firms.

The increase in the scale and pace of innovation also demands innovation from regulators and supervisors. Most of all, it calls on us to broaden our perspectives. Supervisors need to coordinate their actions with those taken in other policy domains. Particularly, data protection and competition. In addition to this *horizontal* expansion of innovative cooperation, we also need to step up international, or *vertical* cooperation. This stems from the global scope of FinTech and the international business models of especially BigTechs. Recent discussion on global stablecoin arrangements such as Libra illustrate this point. Going forward, the Financial Stability Board and the international standard setting bodies have a crucial role to play here.

Let's jump back to 1609 for a final hypothetical thought: would the Bank of Amsterdam have survived if the full package of CRD, CRR, BRRD, AMLD, SSM and SRM had been in place? It is likely that the bank would have been in a better place. But can we be certain? No. Today there are still banks with shortcomings in their risk management, weak governance, stocks of non-performing loans – the same issues the Bank of Amsterdam was facing. That is why risk managers like you have a crucial role to play. To cover all possible angles and find the optimal balance between risks and benefits.

At least one thing is for sure: had De Nederlandsche Bank more smartly presented itself as the Bank of Amsterdam's successor in 1814, then, not the Swedish Riksbank, but DNB could lay claim to being the world's oldest central bank. But this is an issue I will probably have to take up with Stefan Ingves, who, apart from being well-known in our banking regulatory circles, can also lay claim to be the governor of the oldest central bank in the world.

[21] De Nederlandsche Bank (2019), BigTech Companies Increasingly Active in European Payment Markets", DNBulletin.

So let me conclude.

Whether we are dealing with deposits of bullion in the seventeenth century, or the rise of stablecoins in the twenty-first century, all forms of financial innovation pose risks and benefits. And while we can learn valuable lessons from history about where financial innovation went wrong, there is no guarantee that the approaches and mechanisms we put in place in the past can adequately address all conceivable risks in the future. So in a rapidly shifting landscape of risks and benefits, we need to refocus on where the risks lie, while not losing sight of the risks we have always faced. Expanding and strengthening cooperation is needed so we are not blindsided by these risks, and do not miss out on the benefits.

Thank you.