Chapter 1

The Digital Economy in Sweden: A Lodestar or a Cautionary Tale?

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1. Introduction: Development of the Digital Economy in Sweden – The 'Cashless' Society

A 'cashless' society refers to a society where cash is replaced by digital transactions (Nayan, 2022). This concept dates back to Edward Bellamy's (1888) utopian novel *Looking Backward: 2000–1887* and was discussed as a future reality in the 1960s (Reistad, 1967). Sweden serves as a significant case study for this development.

Central to the cashless society is the 'War on Cash' (WOC), an idea introduced by economist Kenneth S. Rogoff (1998) to combat tax evasion and the uneven cash supply. Whilst not unique to Sweden, the country has rapidly progressed towards becoming a cashless economy. Sweden, long seen as a digital pioneer (Petersén, 2019), aims to fully digitise its economy (Eriksson and Sandhill, 2020). As of 2022, Sweden ranked fourth amongst the European Union (EU) countries on the Digital Economy and Society Index (DESI), trailing Finland, Denmark, and Norway, primarily due to its lower 5G connectivity score (18% vs. the EU average of 66%) (European Commission, 2022).

Many countries have adopted a 'cash-lite' strategy for a gradual transition to a cashless society, reducing cash use in local transactions (BFA Global, 2015). In contrast, Sweden is aggressively moving towards a cashless nation, using various digital payment methods. Experts predict Sweden could become completely cashless by 2030 (Arvidsson, 2018; Jalkebro and Vlcek, 2023). In 2022, Sweden was third amongst Scandinavian countries in approaching a cashless society, after Norway and Denmark (Table 1.1) (Wright, 2023):

Table 1.1. Top-5 European Countries Closest to a Cashless Society in 2022

Rank	Country	People with Internet Access	Credit Card Owners	No. of ATMs (per 100,000 adults)	Cash-based Payments	Unbanked Population
1	Norway	97%	71%	32	2%	0%
2	Finland	92%	63%	37	2%	0%
3	**Sweden**	**95%**	**45%**	**28**	**1%**	**0%**
4	Denmark	97%	45%	43	1%	0%
5	Switzerland	94%	66%	94	2%	2%

ATM = automated teller machine.

Source: Wright (2023).

However, Sweden's approach differs from other Scandinavian countries. Swedish retailers can refuse cash despite it being legal tender, unlike in Denmark, where retailers must accept cash. This is due to Sweden's contract laws taking precedence over banking and payment laws (Knowledge at Wharton Staff, 2018).

The cashless trend in Sweden is supported by major banks, citing cost savings, transparency, and crime prevention (Fabris, 2019; Gupta, 2020; Rayabharam, 2021). In 1990, 70% of Sweden's payments were made with cash (Guibourg and Segendorf, 2007b). By 2020, this had dropped to 8% (Raya and Vargas, 2022). Although cash remains legal tender, its use is expected to continue declining (Arvidsson, 2019). This shift, however, is controversial. Critics call the cashless society a 'creepy fantasy' (Ou, 2016). Additionally, a report by Sveriges Riksbank (2024) showed that opposition to abolishing cash rose from 36% in 2022 to 44% in 2023, likely due to an increased awareness of the role of cash as a backup during crises like the war in Ukraine.

Thus, the key question is what the impact is of moving towards a cashless economy and whether or not it is a desirable evolution. This chapter explores Sweden's digital economic revolution and draws lessons for the future development of its digital economy up to 2045 and beyond.

2. The Processes Involved in Building a Cashless Society

A cashless society means eliminating physical cash and using technological advancements to dematerialise money (Baubeau, 2016). This transformation involves four stages: 1) inception, 2) transitioning, 3) tipping point, and 4) advanced (Thomas, 2013).

Inception
Predominantly seen in developing economies where over 90% of transactions are cash-based due to limited financial infrastructure and social attributes. These countries might benefit from innovative shortcuts to progress towards cashlessness.

Transitioning
Present in both developing and developed economies, this stage features mixed paper and electronic payments. In developing economies, the emerging middle-class drives cashless transactions, whilst in developed economies, cultural factors are the main drivers.

Tipping Point
Occurs when 29%–45% of transactions are cashless, but cash still holds significant cultural/traditional value.

Advanced
Characterised by developed infrastructure and high financial inclusion, where citizens widely accept and use cashless payment methods.

The first shift from inception to transitioning happens when governments, large employers, and aid distributors start issuing large payments electronically, altering cash flow patterns and necessitating financial infrastructure development (BFA Global, 2015). Challenges at this stage include payment system infrastructure, regulatory frameworks, reliable digital payment experiences, and recipient education (Klapper and Singer, 2017; Raya and Vargas, 2022).

The second shift from transitioning to the tipping point is driven by increased opportunities for digital transfers and spending (BFA Global, 2015; Klapper and Singer, 2017). Regulatory issues, licensing requirements, infrastructure deficiencies, and underdeveloped distribution channels stymie the abandonment of cash (Raya and Vargas, 2022; World Economic Forum, 2018).

The third shift to the advanced stage sees most purchases made electronically, with accessible and cost-efficient alternative payment methods. Challenges include fraud and control over payments (Raya and Vargas, 2022).

The first two shifts can be considered as chiefly being driven by the need for secure and transparent payments. By the same token, the third and last shift can be considered as being generally driven by the community to enhance convenience and lower costs of transactions (Raya and Vargas, 2022).

The Swedish payment system began around AD 995 (or rather in what would much later be known as the 'Swedish state') (Edvinsson, Franzén, and Söderberg, 2010). It is difficult to give an exact point in time when the transition into the second stage, 'transitioning', occurred, but it likely occurred in the 1960s with automated processes in banks (Arvidsson, 2019). The third stage, tipping point, was reached in the 1980s and 1990s with the rise of card payments (Arvidsson, 2019). The advanced stage began in the mid-2000s, driven by increased robbery-related crime against cash-handling institutions. For instance, the number of reported robberies in Sweden jumped from 8,590 in 2004 to 9,398 in 2005, a 9% increase in 1 year (Arvidsson, 2019; Swedish National Council for Crime Prevention, 2023). This would become *casus belli*, i.e. the happenings used as justification for an extensive lobbying campaign against the use of cash. For instance, several interest groups would form, which, along with several labour unions, targeting the use of cash with demands that it be substituted for other means of payment, especially in places such as public transport, banking, and in the common retail industry etc. (Arvidsson, 2019; Peebles, 2021).

Various digital solutions have been introduced to help facilitate the transformation to a digital economy. BankID (2024b), an electronic identification system for Swedish citizens and permanent residents, was introduced in 2003. It is owned jointly by seven of the largest Swedish and Scandinavian banks (BankID, 2024b; Essén and Ekholm, 2020). Most services requiring online identification, such as government, municipality, bank, and retail actors support BankID.

This also encompasses signing transactions and documents. This can range from online and mobile banking to tax declaration and e-trading. In this way, BankID has a twofold purpose, one for identification and one for signing, since digital signatures made via BankID are legally binding (Zefferer and Teufl, 2015). In later years, BankID also implemented a quick response (QR) code, which has proven effective against the number of reported BankID fraud attempts (Dobos, 2019). As of 2023, BankID had 8.5 million users (from a population of roughly 10.6 million) and has been used no less than 7.1 billion times, with approximately 99.4% of the Swedish population between the ages of 18 to 67 possessing a BankID account (BankID, 2024a; Statistics Sweden, 2024).

Another important tool that helped facilitate the digitalisation of the Swedish economy was the introduction of Swish, a mobile payment system. Launched in 2012, it was the fruition of cooperation between six large Swedish banks, *Bankgirot* (a proprietary clearing system in Sweden owned by multiple Swedish banking conglomerates and used for transactions such as bill payments) and *Sveriges Riksbank* (the Central Bank of Sweden) (Erlandsson, et al., 2022; Omarini, 2018; *Sveriges Riksbank*, 2017). As of May 2022, Swish had 8.6 million users, of which 8.3 million were private accounts (International Monetary Fund, 2023). The aforementioned BankID is mandatory when using Swish since the former app is used to identify the user and thus sanction the use of the latter app's transfers.

Electronic identification systems like BankID are crucial for a cashless society, although alternatives such as biometric authentication, QR codes, near-field communication, and radio-frequency identification could be considered. However, a cashless transition without electronic identification systems would be challenging on a national scale.

Zettle (previously iZettle), a Swedish-founded financial technology (fintech) company, developed the first chip-card reader and app for smartphone-based mobile commerce, making it easier for small businesses to accept card payments (Ashta and Herrmann, 2021).

Crime prevention is another reason for transitioning to cashless. Gang violence and crimes involving cash transactions have increased in Sweden, prompting calls to reduce cash use (Brooke, 2023; Bryant, 2023). Government control and surveillance, tax evasion prevention, and enhanced monetary policy implementation are additional motivations (Duemmler and Kienle, 2012; Immordino and Russo, 2018). Banks and card companies support a cashless society for profitability reasons through account and processing fees (Clark, 2017; Garcia-Swartz, Hahn, and Layne-Farrar, 2006; Krueger and Seitz, 2017; Statham, 2020) . However, as long as cash remains an option, its complete elimination faces resistance (Dowd, 2019). In fact, in a 2016 interview in the New Yorker, Mats Torstendahl, the deputy president at *Skandinaviska Enskilda Banken* (SEB), one of Sweden's leading banks, admitted that 'We don't add any value by handing over cash over the counter' with Per Långsved, the then head of personal banking at SEB, adding that 'cash is actually one of the main carriers of diseases in the world' (Heller, 2016). Torstendahl referred to the conflict between banks wanting to eliminate cash and citizens not using cash but still opposing its removal as a '*cash* twenty-two situation' (Heller, 2016). Furthermore, in 2017, the then (2016–2023) Visa Inc. chief executive Alfred F. Kelly Jr. was quoted as saying that he wanted

to ‘put cash out of business’ (Baird, 2017). To this end, banks, credit institutes, card companies, and much of the retail industry have been lobbying for a cashless society for a long time since the handling of cash is considered costly (Arvidsson, Hedman, and Segendorf, 2017; Bergman, Guibourg, and Segendorf, 2008; Guibourg and Segendorf, 2007a).

Handling cash involves various costs: theft prevention, time-consuming transactions, counterfeit notes, cash counting, and banking (Sorensen, 2023; Sveriges Riksbank, 2019). Cash also carries the highest social unit cost compared to card payments and Swish (Sveriges Riksbank, 2023). This entails the sum of private costs (those pertaining to the direct costs of the good and/or service covered by the transaction) and external costs (those pertaining to additional costs associated with the production of the good and/or service that is not accounted for, or compensated, by the free market, such as the depositing of cash and card payment clearing and settlement and so forth, which all consume resources in the shape of labour and capital) (Schmidtchen et al., 2009; Sveriges Riksbank, 2023).

There is, however, a push-and-pull effect to the introduction of a cashless society. Whilst the use of electronic cashless options has been sophisticated and encouraged, there have been other WOC-measures introduced that have rendered the use of cash increasingly more difficult (Armelius, Claussen, and Reslow, 2022). The most ostensible example is the fact that many retailers have gone completely cash-free and will not accept payment in cash (Clark, 2017; Laurent, 2023). Another factor is that none of the large banks handle cash anymore, meaning that automated teller machines (ATMs) are the main mode of making cash deposits and withdrawals in Sweden (Bautista-González, 2023; Visit Sweden, 2023). Unlike in the United States (US), the banks in Sweden do not run proprietary ATMs, but instead, and much like the case with BankID, the five largest banks jointly own an ATM company named *Bankomat* (Heller, 2016). Also, ATMs have limits on deposits and withdrawals, further complicating cash use. In Sweden, this cap is, as of 2024, generally placed at SEK15,000 (USD$1,389) per month for deposits and SEK15,000 (USD1,389) for withdrawals per week, which may only be made by a maximum of SEK5,000 (USD463) on each withdrawal occasion (i.e. one would need to make at least three withdrawals at SEK5,000 (USD463) in 1 week to reach the cap) (Mizzell, 2021). Also, ATMs will only accept banknotes, and not coins, and much like the case of the €500 banknote, the largest Swedish banknote, the SEK1,000 bill, is becoming increasingly rare (Jalkebro and Vlcek, 2023; Johansson, 2016). Making cash payments and transfers even more difficult is the fact that banks in Sweden will no longer cash cheques (Malm, 2020; KTH Royal Institute of Technology, 2024). This is a trend that even other countries are starting to implement, such as Lithuania, which has discontinued the possibility of cashing cheques as of 2020 (Bank of Lithuania, 2020). In addition, there has also been a decline in the number of banks in Sweden in recent years, from 173 in 2010 to 157 in 2022 (Shirota, 2023).

3. The Price of Going Cashless – The Swedish Example

Will going completely cashless save Sweden? The short answer is no. There are many complications with going fully cashless, as noted by Sveriges Riksbank (2018), which advises banks and credit institutions to continue offering cash. The main challenge is gaining customers' trust in digital payments, a global issue with varying progress (Madden et al., 2017; Xin, Techatassanasoontorn, and Tan, 2015). Children, for instance, would struggle without cash unless parental apps or pre-paid cards are used, although these solutions come with their own limitations (Chandra and Chowdhary, 2020; Earl, 2018; Gupta, Kapoor, and Yadav, 2020; Talib and Salman, 2022).

A cashless society also discriminates against those lacking technological means or skills (Larsson and Hatzigeorgiou, 2023). This prompted the 'cash rebellion' to support the continued use of cash (Kontantupproret, 2015). The shift to digital payments could also concentrate power in the hands of global private actors rather than with the individual (Eriksson and Sandhill, 2020).

Using BankID, essential for many digital payments in Sweden, requires a Swedish personal identity number and membership with a major Swedish bank (BankID, 2024c). This raises social inclusion issues and complicates customer due diligence requirements, affecting expatriates (Hellberg, 2023). Alternatives like Freja+ and AB Svenska Pass are less widespread (Agency for Digital Government, 2023).

The inability to cash cheques has also been known to cause 'catch-22' situations. This was particularly experienced by expatriates from the US receiving COVID-19 stimulus checks (Malm, 2020; Nilsson, 2020). Swedish banks suggested using international transfers, but the US Internal Revenue Service does not make deposits to non-US bank accounts and only issues cheques to non-US residents without a US bank account (1040 Abroad, 2022; Internal Revenue Service, 2023). In these cases, these individuals were often at the mercy of the goodwill of friends or family members in the US who would cash the cheques on their behalf (Nilsson, 2020).

The introduction of new banknotes and coins from 2015 to 2017 led many machines to go cashless rather than shouldering the cost of replacing the coin slots, limiting cash use further (Kjellström, 2017; Wimmerberg, 2019). Many companies have opted for pay-by-phone parking, resulting not only in a confusing plethora of different parking apps but also rendering it impossible to purchase a ticket should a person's phone run out of battery, break, or be misplaced (Lindgren, 2019; Norberg, Thyrén, and Isaksson, 2019).

The aforementioned examples serve as a few illustrations to highlight the absurdity of an unmitigated digital transformation of the payment system and its effects on an individual level. Moreover, an unmitigated digital transformation exposes society to significant risks. The 2021 ransomware-as-a-service operation 'REvil' highlighted the vulnerability of digital payment systems, forcing many businesses to shut down for lack of cash alternatives (Backman, 2023; Szücs, Arányi, and Dávid, 2021). The Swedish Civil Contingencies Agency (2018) and a study by Van Laere et al. (2021) recommended keeping cash at home for crises, emphasising that non-digital technology is the most robust. In this way, the Swedish example should serve as a cautionary tale of what perils to expect should one allow an unmitigated and unchecked digital transformation towards a totally cashless society (Larsson and Hatzigeorgiou, 2023).

4. Conclusion: Policy Recommendations

This chapter explores the digital economic revolution in Sweden and what lessons can be learnt whilst bringing the Swedish digital economy up to 2045 and beyond. The answer to the question as to whether Sweden will be totally cashless by 2045 is that it very well could be, at least in principle. However, is this development one that should be welcomed?

The answer is no. Technological advancements and additional payment options represent progress, and digital money has many benefits. However, the WOC aims to eliminate cash, not just provide digital options. Cash offers several advantages that digital currency cannot match. The Swedish example, where powerful actors have pushed the country towards an exclusively digital economy, should be seen as a cautionary tale, not a lodestar. The WOC has several issues. It deprives citizens of the convenience of cash, making simple tasks like paying for parking or cashing cheques difficult. It also threatens privacy, as all transactions can be traced and logged, and exposes society to the risks of unreliable digital systems. Governments must require banks and credit institutions to maintain an adequate cash supply and enact laws ensuring certain essential services accept cash for those who prefer it or when digital payments are not possible.

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