Cash is [no longer] king: is an e-krona the answer?
– a de lege ferenda investigation of the Swedish Riksbank’s issuing mandate and other legal challenges in relation to economic effects on the payment market

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Summary
For the past decades, the Swedish public’s payment habits have changed, where the majority of the public has abandoned the old way of making payments, using cash, and instead opted for more modern payment solutions, digital money. The difference between cash and digital money is that cash is physical and only issued by the Riksbank, whereas digital money is created by and stored on accounts at commercial banks.

The question of what role the state should have on the payment market is an important point of discussion. But it is not categorically a new question; the Swedish government is tackling essentially the same problem today as it has been doing many times before. Today’s problem is to some extent however manifested in a different way. During the 20th century, discussions were held whether or not the Riksbank should have the exclusive right to issue banknotes. It was considered unnecessary, inappropriate and dangerous. The idea that the Riksbank could cover the entire economy’s need for banknotes was, according to the commercial banks, unreasonable. Nonetheless, in 1904 the exclusive right became fait accompli; the government intervened and gave the Riksbank the banknote monopoly. We are now finding ourselves facing a similar situation, where there is a difference of opinion regarding the Riksbank’s role on the payment market. It is therefore nothing new, but rather an expected task for the government, and thus the central bank, to analyze major changes and draw conclusions from them.

The problem is essentially about cash being phased out by digital means of payment. In order to therefore solve the problem, the Riksbank has started a project to investigate whether or not the Riksbank should issue digital cash to the Swedish public, what the Riksbank calls an e-krona. To introduce an e-krona would be a major step, but for the public to not have access to a government alternative, seeing as cash usage is declining, is also a major step. No decision has been made yet regarding whether the e-krona will be introduced on the market or not. A decision that however has been made, is that the Riksbank is now working on building an e-krona to develop and assess the technique. Nonetheless, an introduction would undoubtedly have consequences for both the Riksbank and the commercial banks, which ultimately means it would have effects on the economy as a whole. What about regulatory aspects; is the Riksbank even allowed to issue an e-krona under current legislation? The answer is affirmative, to a certain extent. There are furthermore many other uncertainties regarding how an e-krona would affect the economy; the Riksbank does not fully answer many of the system issues in its project reports. The question of whether or not it even is up to the Riksbank to make a decision on the matter of an introduction is also questioned by the author in the thesis.
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1 Introduction

1.1 Background

Today, there are two forms of money circulating in the Swedish economy: physical money in the form of banknotes and coins issued by the Riksbank, as well as digital money held in accounts in commercial banks. The fact that cash\(^1\) is only issued by the central bank is however not self-evident. Historically, when commercial banks first emerged in Sweden, they had the mandate to issue their own banknotes between 1831 and 1904.\(^2\) Allowing the commercial banks to issue banknotes was however not desired, seeing as it hindered the Riksbank from providing stable procedures in order to manage financial crises. To refine the roles, a political decision was taken in 1897\(^3\), granting the Riksbank monopoly on issuing banknotes.\(^4\) The decision hindered competition regarding the issuance of banknotes between the Riksbank and the commercial banks, who instead were assigned the responsibility for commercial lending.\(^5\) With the technological developments that arrived on the payment market, the commercial banks were nonetheless later instead able to issue digital money to the public in the form of bank account deposits. With this development, the Swedish publics’ payment habits changed and now cash has almost completely been replaced with digital money.\(^6\) The question of what happens when society no longer pays with tangibles therefore becomes relevant and opens up the discussion of who should have the mandate to issue money and have the responsibility for the publics’ means of payment. Over a century after it was first introduced, the question of the banknote monopoly has therefore yet again become relevant.

The reason why the general Swedish public so quickly and willingly abandoned physical money, is a matter of speculation. A contributing factor could be that the Riksbank, toward the end of the 1990s, put in extra effort in making cash handling more proficient, because in inquiries held during this time, observations were made which alluded to the fact that the cash handling model used at the time was very costly and ought to have contributed to the preservation of an obsolescent structure. The objective behind abandoning the old structure was therefore to make the cost of cash handling more perceptible and instead ensure that commercial banks and other participants bear the costs, who would thereby be motivated to streamline their operations. As a result, the Riksbank, under the current cash handling model, only answers for the start and end of the cash life cycle by issuing cash. The act of supplying

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\(^1\) Hereafter, when referring to money issued by the Riksbank, the terms “banknotes and coins”, “physical money”, “cash”, “currency” and “tangibles” will be used interchangeably. Even though they are all synonyms, the author has carefully considered where to apply a specific term. In some instances the author has no other choice than to use one specific term in order to convey a message of understanding to the reader.


\(^3\) The decision entered into force in 1904.

\(^4\) Wetterberg, p. 233 ff.

\(^5\) Wetterberg, p. 238.

society with cash is handled by the commercial banks’ depot owners and cash-in-transit companies. Another reason cash usage has decreased, may be due to new trade patterns and demographics; studies have shown that cash is used in a lesser extent by younger consumers compared with the older generation, which can be seen as an indicator of where society is heading – cash usage will most likely continue to decrease with the younger public as they are the next generation of consumers. Furthermore, the technical development and technical solutions, like Swish, have also been a contributing factor. Reduced cash usage by households and higher cost of cash handling, have in turn contributed to business operators becoming less encouraged to accept cash due to cost-effectiveness. Consequently, this leads to a deeper decline in regards to the usage and acceptance of cash.

In response the above mentioned changes, the Riksbank has started an investigation which may end up being the start to a new era in the Swedish economy; the Riksbank is taking steps to look at the possibilities of issuing central bank digital currency (CBDC), an e-krona. However, since a majority of payments in Sweden are already made electronically, it may not appear comprehensible why Sweden might be in need of cash in digital form. In order to understand the reasoning, it ought to be necessary to give some prerequisites of both the nature of money and how the banking sector works. Banknotes and coins are claims in physical form issued by the Riksbank, while the money people have on bank accounts are digital claims instead created by commercial banks. The intention behind the Riksbank’s e-krona project is to investigate if the Swedish public should be offered claims in digital form issued by the Riksbank.

An important issue which has been raised by this development, is how the Riksbank’s room for maneuvering will be affected. The objective of the Riksbank’s activities is to maintain price stability and promote a safe and efficient payments system. The current development has shown that a large and still growing proportion of the population chooses to not use banknotes and coins issued by the Riksbank. At the same time however, providing banknotes and coins still remains as part of the Riksbank’s assignment. A launch of a digital alternative to banknotes and coins could be seen as a modernization of this, by the Riksbank, issued means of payment. Providing a digital currency can even be regarded as an obligation for the Riksbank, depending on how one interprets the law. The Riksbank released its second

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8 For exempl eCommerce
9 A mobile application for money transfers, launched in 2012 by the six larger commercial banks in Sweden.
10 Report 1, p. 11.
11 Report 1, p. 5 f.
12 Report 1, p. 19 ff.
14 Chap. 5, art. 3 The Swedish Riksbank Act.
15 Rapport 1, p. 35.
16 See further discussion in chapter 4.
interim report in late October 2018 where it stated that it now has three\(^{17}\) tasks to deal with, one of which includes a review of the legislative changes that might have to be implemented “to provide the Riksbank with a clear mandate in the issue”\(^{18}\). It is therefore not clear whether or not applicable law allows for the Riksbank to issue an e-krona. The Riksbank’s e-krona project thus raises a number of interesting legal questions.

1.2 Aim
The e-krona project is still at an early stage; in the second interim report the Riksbank concluded that the project will take further steps to its completion, by starting to develop an e-krona in order to gain more knowledge and test which solutions would be practical\(^{19}\). If introduced, the need for jurisprudential explanatory models in regards to the e-krona will increase over time. Without any established practice or legislation, the legal argumentation will need support elsewhere. It ought to be highly relevant in this context to contribute with a qualitative legal discourse. The aim of the thesis is therefore to outline relevant legal aspects and consequences, as well as economic effects, an introduction of the e-krona may have on the monetary policy and financial stability in the Swedish economy. To do so, the aim is further to investigate and clarify a new phenomenon on the payment market in order to contribute to jurisprudence\(^{20}\).

1.3 Research question
What legal challenges are associated with a launch of an e-krona on the Swedish payment market and what effects will it have on the Swedish economy? In order to answer this research question, following subqueries need to be answered: How is money created in the Swedish banking system? What is legally required for the Riksbank to have mandate to issue an e-krona? What legal statues does cash have today and would there need to be changes made if the Riksbank introduces an e-krona into the Swedish monetary system? To tie it all together, the question of whether or not the e-krona should be introduced in the Swedish economy will also be discussed and answered from a legal as well as economic perspective.

1.4 Method and material
1.4.1 Legal judicial method
It is initially relevant to point out that both jurisprudence as well as the application of law, strive to create rational solution models. Due to the fact that the concept of an e-krona is relatively new, the legal scope of application can therefore be considered somewhat unclear. This thesis is a jurisprudential study, primarily aiming to create a basis for legal assessments

\[^{17}\] Begin designing a technical solution for an e-krona, (2) draft legislative proposals needed to clarify the Riksbank’s mandate and legal statues of an e-krona, (3) continue to investigate the economic aspects of an e-krona. See The Swedish Riksbank, The Riksbank’s e-krona project: Report 2, October 2018, (Report 2), section 2-4.

\[^{18}\] Report 2, p. 45.


from a *de lege ferenda* perspective in regards to the e-krona. To meet the objective of the thesis, it is therefore necessary to examine the legal regulations that are of importance to the question at hand within the framework of laws currently in force. The application and analysis of the theme from a *de lege lata* perspective is thus what legitimates the possibility of taking a stand in a certain question in the thesis and in turn allows for a *de lege ferenda* reasoning.

The legal-judicial method will be used in the thesis, because within the context of the legal-judicial method, the author seeks to interpret and systematize applicable law, *de lege lata.*\(^{21}\) In the thesis, the author will give an account of the legal rules regarding the Riksbank’s activities and mandate. The legal-judicial method can be regarded as a jurisprudential reconstruction of the legal system,\(^{22}\) since the method is used with the intention to describe the structure of jurisprudence and the legal rules within it, in order to organize the legal system into a coherent network of key rules and exceptions.\(^{23}\) As described above, the author intends to develop the law *de lege ferenda.* Beyond describing the sources of law, the legal-judicial method also seeks to develop normative statements that justifies and criticizes different parts of the law, *de lege ferenda.*\(^{24}\) Thus, it is a methodical approach to a normative system, which means that in some sense it is understood that there is some subjectivity that comes with interpreting the law. Since the legal-judicial method therefore also includes value-based statements, the method is both descriptive and normative.\(^{25}\) However, criticism has been raised towards the method due to its normative nature; it is considered to be irrational and does therefore not fit within the context of jurisprudence.\(^{26}\) Nonetheless, the method has been given a renaissance among modern theoreticians of law. They reject the criticism on the basis that values constitute a necessary element in light of the fact that the method is intended to justify and criticize applicable law, which in turn justifies proposed changes.\(^{27}\)

A fundamental part of the legal-judicial method is the hierarchical classification of sources of law,\(^{28}\) where statutory law is the basis and since it is legally binding, it *shall* be referred to in legal argumentation in order for the conclusion to be regarded as judicial. In addition, preparatory works, judicial precedent and legal principles *ought to* be used to solve legal problems.\(^{29}\) What is meant by statutory law and legal precedent within the legal-judicial method, should be interpreted in the broadest sense, which means European law is also

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\(^{22}\) Jareborg, N., *Rättsdogmatik som vetenskap,* SvJT 2004, p. 4; Sandgren, p. 49.

\(^{23}\) Peczenik, (2005), s. 249.

\(^{24}\) Peczenik (2005), p. 249; Lehrberg, p. 207. Peczenik does not use the word ”*de lege ferenda*”, however by stating that the legal-judicial method is normative, it ought to be implied that it is a matter of a *de lege ferenda* approach.

\(^{25}\) Peczenik (2005), s. 250.


\(^{27}\) Kleineinan, p. 24.

\(^{28}\) Swedish translation: rättskällläran.

Lastly, legal doctrine and government issued reports may be used to investigate remaining uncertainties. The sources that may be used can demonstrate the meaning of ethical principles or historical knowledge, which are relevant for understanding the origin of the law. The material can also highlight arguments which have been overlooked within the legislation. Since the scope of the thesis is to investigate legal issues related to the introduction of the e-krona, a new means of payment on the Swedish payment market, it is necessary to first explain the concept of money from a historical perspective in order to create an understanding as to what ought to constitute money in accordance to laws, currently in force, related to the issuance of money. Since legislation and legislative history give an insufficient description as regards to what money per say is, legal doctrine is thus used to put forward theories related to the concept of money in order to substantiate and support the legal argumentation. Understanding the concept of money is therefore crucial in order to (1) recognize what according to law amounts to money and (2) how it all relates to the question of how money is created in the Swedish banking system.

The legal-judicial method is a matter of analyzing the material that is presented in the thesis in order to put forward arguments in support of the conclusion of the thesis. In the context of legal argumentation, interpreting the sources of law is of importance; the author provides a quality and relevance assessment of legal argumentation based on a common understanding of the different sources’ authority in relation to each other and also how these sources are reasonably interpreted. Decisive for the “correctness” of the interpretation is the strength behind the argumentation, which is based on what sources are used and how they are used. There are different ways to interpret sources of law. In the thesis, logical, literal as well as e contrario interpretations are used when analyzing the applied legal rules from a de lege lata perspective. Furthermore, an author can take a purposive approach to statutory and constitutional interpretation, meaning the author seeks to look for and interpret statute within the context of its purpose. To understand the meaning of words in statutory law, one has to

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31 Peczenik (1995), p. 213 ff.; Lehrberg includes customary law as part of sources of law, see Lehrberg, p. 221 ff. Sandgren on the other hand is of the opposite opinion, see Sandgren, p. 45 f (read e contrario).  
35 Kleineman, p. 23; Peczenik (2005), p. 230. The legal-judicial method is perceived differently; advocates behind the method provide different perspectives. Sandgren is of the opinion that a legal analytics method is independent from the legal-judicial method, see Sandgren, p. 50 ff. A contributing factor may be related to the changing perceptive that there no longer is only one legal method, see Svensson, Eva-Maria, De lege interpretata – om behovet av metodologisk reflektion, JP 2014, p. 212.  
36 Sandgren, p. 46.  
38 Ramberg, Jan & Ramberg, Christina (2016). Allmän avtalsrätt. 10., omarb. och utök. uppl. Stockholm: Wolters Kluwer, p. 169. (Swedish translation: ändamålstolkning or teleologisk lagtolkning) Ekelöf is of the opinion that this way of interpreting the law is a methodology in itself. For more discussion see Ekelöf, Per Olof (2016). Rättegång H. 1. 9., [omarb. och rev]. uppl. Stockholm: Wolters Kluwer. Purposive approach is a term used within contract law when interpreting contracts. Although this term is used in this specific area, the term is however strongly used when interpreting statutory text in general in English law, see Rosengren, Jonas, “Engelsk avtalstolkning i ett svenskt perspektiv”, Svensk Juristtidsning, 2010, p. 12.  
39 Lehrberg, p. 103.
understand the intent behind the statute. A purposive approach ought to therefore give the author greater scope to advance the law in line with what the author understands to be the legislators’ intention. The legislation used in the thesis in some cases does not explain the purpose of the legal text, why the argumentation within the thesis will, when a literal or a logical interpretation is not possible to do in order to solve the problem at hand, take a purposive approach in order to interpret the law and determine the purpose by analyzing what effects the application of the statute has. Preparatory work will thus in these cases be used to get a better understanding of the legislature’s intentions with the statute.

Since the concept of an e-krona is relatively new, it is an unexplored area. Extensive and profound literature has thus simply not yet been published, since the subject has not been a topic of discussion in legal doctrine. As a result of this, it has been problematic to find relevant, traditional sources of law when describing the e-krona. The Riksbank’s reports on the matter have been the main sources used. However, it should be added that these reports are merely indicative official statements from a government agency, and are not considered to be legally binding sources of law. Considering the lack of legal material, there may be reason to criticize the thesis, because it is not based on material with sufficiently high hierarchical legal source value. But to criticize the thesis based on the fact that traditional sources of law with high hierarchical value have not yet been published, is not a strong enough argument to prevent a theme, with a jurisprudential basis, from being under examination in the thesis in the effort to find judicial solution models to a new phenomenon. In addition, authoritative and traditional sources of law such as statutory law and preparatory work are used in the thesis when conducting a de lege lata approach of the legal areas covered in the thesis wherein, with regards to banking law, EU directives and regulations have been taken into account due to their importance for Swedish legislation. These sources should be considered as justified as they are relevant and reliable in accordance with the above presented hierarchy of sources that shall, ought to and may be used within legal argumentation.

1.4.2 Economic analysis of law
When examined from an external perspective, one gets an in-depth understanding of law as a social phenomenon. By using methods that are not strictly judicial, an author does on the one hand reasonably get answers to non-judicial questions, but which on the other hand still need to be answered within jurisprudence in order to add the answers as basis to the conclusion. Different macroeconomic theories are presented in the thesis. These theories are used to answer questions that are strictly related to the performance, behavior and structure of the economy, as well as decision-making within the economy. However, these perspectives are needed in order to support the legal argumentation.

40 Lehrberg, p. 253.
Understanding the different roles banks play in the financial system is considered to be one of the fundamental subject matters in theoretical economics and finance. Furthermore, in order to be able to connect economic theories with regulatory issues, it ought to be of importance, even to legal practitioners, to understand the roles banks have in the economy; the financial functions are intricately linked to the regulation and they both mutually influence each other. It is essentially the financial functions that guide the regulatory solutions. Banks are in existence, not because legislators have created them, but rather because they fill a function in the financial system. In law and economics, legal issues are analyzed through economic methods, in order to investigate and explain the economic consequences associated with the rule of law. On the basis of conclusions, it is then possible to argue how legal rules should be formulated and interpreted to achieve a high degree of economic efficiency. Since the thesis partly aims to explain the effects an introduction of the e-krona may have on the monetary policy and banking in Sweden, economic analysis of law will be applied as complement to the legal-judicial method. The thesis is conducted through application of the macroeconomic theories: fractional reserve banking, bank runs and zero lower bound.

In economics and law, the legal rules are examined from an economics perspective. In practice this means that one strives to interpret society’s actions in economic terms, where the ultimate goal in all situations is to increase the prosperity of society. To be able to analyze society from an economic perspective, a number of assumptions are made in order to simplify the view of society. This is normally done by using different types of models in order to construct reality in a way that it becomes transparent and adaptable. The author has throughout the course of the thesis made the assumption that people are rational. The economic analysis of law as a method, suffers from the fact that none of the assumptions made within the method are unproblematic. Each of the analyses that have been conducted in the thesis can be criticized on the basis of the assumptions made; it is always possible to prove that one or several of the assumptions are not entirely correct in the applied situation and for that reason, the conclusion can be questioned. The author has therefore had a reasonable and nuanced approach towards economics and law.

1.5 Delimitation
The Riksbank’s assignments are set by the Swedish Riksbank Act. The presentation made in the thesis regarding the Riksbank’s assignments and mandate on issuing money is thus based on the prerequisite that the Riksbank may only conduct, or participate, in such activities for

42 Sjöberg, p. 18.
43 Cooter, Ulen, p. 4.
44 Lehrberg, p. 249.
45 See section 3.2.2 and 3.2.3.
46 Dahlman, Glader, Reidhay, p. 9.
47 Dahlman, Glader, Reidhay, p. 205 ff.
48 Dahlman, Glader, Reidhay, p. 212.
49 Dahlman, Glader, Redihav, p. 212 f.
which the Riksbank by law has been authorized.\footnote{Chapter 1, art.1 The Swedish Riksbank Act.} A discussion of the complexities of how an adjustment of the Riksbank’s possible e-krona activities should be designed in order to be coherent with anti-money laundering regulations and legislation aiming towards consumers protection, will not be covered in the thesis.

The question regarding a CBDC has also been a topic of discussion in Denmark, where the Danish central bank released a report explaining why the bank has decided to not go forward with a CBDC.\footnote{Danmarks Nationalbank, \emph{Central bank digital currency in Denmark?}, Analysis, 15 December 2017 – No. 28.} Prior to writing the thesis, the Danish report had not been read by the author in order to not influence the authors own opinions and considerations regarding the matter. The author has furthermore not chosen a comparative method in order to answer the research questions presented. For these reasons, the Danish report will not be discusses in the thesis.

\subsection*{1.6 Disposition}
Chapter 2 initially gives a description of the concept of money. In order to enable a qualitative legal discourse with focus on the e-krona, basic understanding of the nature and origin of money is required, why it ought to be necessary to look at the concept of money from a historical perspective. Following the description of the concept of money, it is essential to look at the different categories of moneys: cash, CBDC and commercial bank money. Also included is a presentation of the e-krona project.

In order to create an understanding of the e-krona’s place in the financial system, chapter 3 focuses on the Swedish banking system. Since both the Riksbank and the commercial banks will be affected if an e-krona is introduced on the payment market, it is important to understand, on the one hand the central banks’ role in the banking system, which requires a full description of its monetary policy assignment and assignment to promote a safe and efficient payment system, and on the other hand the commercial banks’ operations.

In chapter 4 the research presented in the above chapters are reflected upon; an analysis of the legal conditions of an introduction of the e-krona is conducted and thereby an analysis of what changes in regards to the regulation that would potentially be required and desired for the Riksbanks’s project to be realized. Application of the macroeconomic theory models introduced in chapter 3 are discussed and applied by analyzing what effects the e-krona will have on the monetary policy and the financial stability. In addition, chapter 4 to some extent also contains new information which, beforehand, has not been presented in the thesis. The new information is presented in order to contribute with an element of in-depth descriptions as support for the main analysis.
2 The concept of money
2.1 Money from a historical perspective
2.1.1 From commodity money to fiat money

"History is bunk," was once said by Henry Ford. It is rather ironic that Ford’s statement is now part of history records. He was nevertheless far from believing that money was bunk. In order to understand the concept of money, history is consequently of importance; it ought to be difficult to carry out an experiment of how the regular business of economic life works, wherein money is at the center, and as a result history serves as a “proxy laboratory, a guidebook of more or less relevant alternatives.” It could be argued that history is the discovery of proof, much like a legal case and can thus be equated with archeology; to discover facts, one needs to dig.

Nowadays when speaking of money, what is usually thought of is the physical aspect of money: banknotes and coins or in other words currency. However, the concept of money is more complex than said description. There are still debates among academics regarding the question what money essentially is. Historically, different goods or assets were used as a means of payment. Goods were used because they had value due to the fact that they satisfied people’s needs and wants. Assets, such as machines, in contrast had value because they were used to produce other goods. How does one distinguish which goods or assets were reputable as money? Even though there still is no clear answer as to what money is, there is however consensus about what money does. The answer to the question is therefore that money is generally defined in terms of the functions it provides: money serves as a unit of account, store of value and medium of exchange. The fact that money functions as a unit of account, means that it is used as a common standard for measuring the value of goods and services. Since money acts as a store of value, it does not have to be used immediately; by saving money, it can be exchanged at a later time and money therefore retains its value and serves as a measure of wealth. However, for money to be effective, it must maintain its value over time. The value of money changes when currency experiences inflation and money thus

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52 This statement became controversial. What he actually meant by this prominent quote is still to this day a point of discussion. However, the authors understanding regarding the statement is that he did not place any value on historical studies, he saw it as nonsense.
60 Swedish translation: värdemätare (räkneenhet), värdebevarare och bytesmedel.
becomes an ineffective store of value. Money should also meet the criteria of being a medium of exchange in society, which means that money is to be accepted as a replacement for goods and services.\textsuperscript{61}

Currency has had a gradual development throughout history. The very first generation of currency – commodity money – can be said to have had intrinsic value, meaning that its value comes from a commodity of which it is made of. The commodity has value in itself in addition to serving as a means of payment. Primitive coins were for example made and sought out precious metals\textsuperscript{62} that could be melted down and used for something else if not used for trading. Different varieties of cowrie shells were for instance a primitive currency\textsuperscript{63}, which early on was spread across a large geographic area and was current for a far greater length of time than any other currency throughout history. These shells were well suited as currency, because they were durable, easy to keep clean, difficult to counterfeit and also appeared in a number of varieties and sizes and therefore served as unit of account. A less convenient currency used over a long period of time, on the island of Yap in the Pacific Ocean, was peculiar stones. Early history thus shows that currency simply is \textit{something} that is determined between people.\textsuperscript{64}

The next generation of currency consisted of representative money; any type of medium of exchange representing something of value, for example a claim on a commodity. Gold and silver certificates were usually used as representative money; these certificates were so called certificates of ownership, meaning they served as formal proof of ownership in gold or silver.\textsuperscript{65} The third generation of currency, the banknotes and coins used today, are so called sovereign fiat\textsuperscript{66} money; a currency lacking intrinsic value. Coins are for example not made of precious metals and cannot be converted into real assets.\textsuperscript{67} Instead of having intrinsic value, fiat money is reputable as a form of money by government regulation; fiat money does not have use value\textsuperscript{68}, instead cash has a special status in light of the fact that it is legal tender, which means that tendering banknotes and coins by law discharges financial responsibilities.\textsuperscript{69} Cash consequently only has value, because it is issued by a state authority, as a general rule by a states’ central bank, and therefore the government preserves its value.\textsuperscript{70} A total lack of real value means that the system of fiat money is entirely depended on society’s trust in the

\textsuperscript{62} For example gold, silver, copper.
\textsuperscript{63} Generic term used to describe an item used as medium of exchange to facilitate commerce. These items were used in the same way we use banknotes and coins today, however primitive moneys were not issued by an authority. Furthermore, they were culture-specific, the only thing of importance was thus that the culture that used them, accepted them for what they were.
\textsuperscript{64} Glyn, p. 34 ff.
\textsuperscript{65} European Central Bank, “\textit{What is money?}”, updated 20 June 2017.
\textsuperscript{66} The word \textit{fiat} is Latin and means “let it be done”.
\textsuperscript{67} McLeay, Radia & Thomas, p. 8 f.
\textsuperscript{68} Swedish translation: bruksvärde. An economic concept referring to the usefulness of a commodity, or in other words an items practical use in pleasing the needs and wants founded on its material properties.
\textsuperscript{69} Camera, p. 128.
\textsuperscript{70} This interpretation is however not without exceptions, see footnote 100.
system; it is the universal belief and trust that currency has value, which in fact gives currency value. In order to maintain this belief, it is therefore of the utmost importance that a central bank succeeds in keeping the value of its currency stable over time. The monetary system accordingly greatly relies on households’ and companies’ confidence in the Swedish currency in order for it to be approved as a means of payment. If this confidence were to fade – as it can do when the economy is experiencing extremely high inflation – society moves from a monetary economy to a barter economy. Money can thus be seen as a social construction and the only real requirement is that the item used has a generally accepted value.

Introducing money in the form of banknotes and coins in society was by no means peculiar given all the benefits associated with it. In a barter economy, every sale made is simultaneously a purchase, which means that there are more costs associated with it in comparison to a monetary economy. First, the exchange process is more complicated and therefore costly. There has to be a double coincidence of wants for the exchange to occur, which causes problems due to there being great improbability of wants, needs and occasions causing or motivating a transaction from taking place at the same time and place. Double coincidences therefore rarely happen. The high costs associated with trading in a barter economy make people unapt of producing commodities for trade. Each individual will focus on self-sufficiency and the specialization of production will therefore be limited. Nevertheless, as the economy develops, the supply of goods and services increase, which in turn leads to a more extensive division of labor and a specialization of production. In a monetary economy, all goods are exchanged for a common means of payment; specialized products easily find buyers and buyers in turn easily find producers. A farmer, who wishes to acquire a new axe and is willing to dispense of a few chickens, may in a barter economy need to find a buyer who is interested in both acquiring chickens and at the same time is willing to dispense of an axe. The introduction of money in the form of currency fundamentally increases the potential of the farmer’s possibilities, since he can first exchange the chickens and then look for someone else who would like to sell an axe. Due to moneys function as a store of value, he can get paid for the chickens without being forced to spend the value directly.

2.1.2 The government playing an active role on the payment market
The first issuance of coins in Sweden occurred in the 990s. At the time however, there was no uniform payment standard in society, but rather a number of payment standards existing in

71 Camera, p. 137.
72 An economy where goods and services are exchanged for money.
73 An economy where goods are traded directly instead of using the medium of money.
74 Fregert & Jonung, p. 100.
75 A mutual agreement between two parties; both have to agree to sell and buy each other’s commodities.
77 Fregert & Jonung, p. 100 f.
parallel. It was not until 1873, when the Scandinavian monetary union was established, that a shared and uniform coin standard, the Scandinavian krona, was first introduced. This coin had a gold content of 1/2480 kilos of pure gold, one krona in other words corresponded to 0.44803 grams of gold. The foundation of the union was therefore the gold standard. A joint currency for the Scandinavian countries in turn solved several problems and made matters such as trade simpler. The Scandinavian monetary union made the decision to make coins into legal tenders in all three Scandinavian countries, but without setting any restrictions regarding how many coins the governments could put into circulation in their respective economies, which one might think would have hurt the financial stability in the union. However, it was the outbreak of the First World War in 1914 that served as the catalyst for the fall of the union. During the war, Scandinavian banknotes were declared no longer redeemable for gold, a decision made by the central banks in all three countries. In turn, over a period of time the value of banknotes started to deviate from the exchange rate the three countries had previously agreed upon and as a result the monetary union was officially dissolved in 1924.

Joining the Scandinavian monetary union, which then led Sweden to finally procuring a uniform payment standard, and then leaving the union once things started to fall apart, sheds light on how the government, even early on in history, had to step in to make decisions in matters regarding the payment market. Another example of how the government has had an active role on the payment market for the purpose of creating uniform standards, was when the government stepped in and granted the Riksbank monopoly on issuing cash.

With the fall of the union, the Postgiro was created in 1925 by the Swedish postal service, Posten. The Postgiro was set up to establish “[...] a state standard for credit transfers”, with the objective to make the payment process more secure and cost-effective in order to moderate transaction costs. The system aimed to reduce the state’s cash handling and increase the government’s revenues after the war. The idea was successful; the Postgiro became very popular when it was suddenly possible to make payments without using cash. The Postgiro served as a good example for cooperation between commercial banks to establish the Bankgiro system, which served as a private alternative to the Postgiro.

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78 Report 1, p. 17.
79 Swedish translation: guldmyntfoten.
81 See section 1.1.
82 Report 1, p. 17.
83 Report 1, p. 17.
84 SEB, Swedbank, Nordea, Handelsbanken, Danske Bank, Skandiabanken and Länsförsäkringar.
85 In 1994 the Postgiro was reformed into Postgiro Bank AB and was a wholly-owned subsidiary of Posten. A few years later, in 1999, Posten decided to dismantle all banking operations; the postal market was subject to a deregulation which urged a sale of all the shares in Postgiro Bank, which resulted in Nordea Bank AB buying Postgiro Bank and in 2002 the two companies merged. The Postgiro went from being state owned to private owned. In 2005 the Postgiro was renamed to Plusgiro.
2.2 The definition of money in economic terms in relation to the three legal theories of money

2.2.1 The standardization of a method of payment

The legal system is centered on the standardization of human relations. The term standardization in this context refers to the description of repetitive human behavior. The concept of contracts can be used as an example. Contracts are concluded by one party making an offer and the other party accepting it; one party has a claim against the other, which consequently means the other party has a liability. This mechanism can be found in all legal systems, implementing the principle of freedom of contract. The term monetization refers to the legal rule of claims for payment; to legalize something as money. The standardizing of commercial contracts was the major incentive for allowing a standardization of a method of payment, in light of the fact that payments are based on contractual relationships; a common expression used in legal terms is that the debtor shall pay/the creditor shall receive the agreed upon means of payment. This expression suggests that one party has a monetary claim against the other party, which consequently means said counterpart has a monetary liability, an IOU. By introducing a single currency, similar effects to the standardization of contracts can thus be seen; the use of a single currency not only facilitates economic exchange, but also legal exchange. Nonetheless, it ought to be noted that most legal systems do not convey an absolute definition of money. One may not, at first glance, think too much about the intricacy of the above mentioned expression. What is meant by means of payment ought to justifiably refer to the physical form of money, banknotes and coins. This simple answer does not say what money is, but merely gives an example of what could be considered as money. The concept of money is more complex than simply being just money. The question that thus arises is: what is in fact meant by means of payment.

2.2.2 Economic definition of money

As mentioned in the introduction to the thesis, the legal system in regard to the banking sector, is intricately linked to theoretical economics. The term money has many different meanings in general terminology; most people probably do not think or even realize that there is a difference between money and money. The concept of what amounts to money has been significantly greater in economics than in law. The economic definition of money is unambiguous: money is an item used as a generally accepted means of payment for goods and

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86 See chap 1 art. 1 Swedish Contracts Act [Lag (1915:218) om avtal och andra rättshandlingar på förmögenhetsrättens område].
87 Hagen, Jürgen von & Welker, Michael (red.) (2014). Money as God?: the monetization of the market and the impact on religion, politics, law, and ethics. Cambridge: Cambridge University Press, p. 82.
88 Hagen & Welker, p. 86 f.
91 Hagen & Welker, p. 86.
92 Wallin-Norman, p. 230.
93 See section 1.4.2.
services and also serves as a replacement of debt.\textsuperscript{94} Money is furthermore defined in terms of the three functions it provides.\textsuperscript{95} Form an economic perspective, the money supply is a measure of the total value of monetary assets available in the economy. There is however no single accepted economic measure of which assets are contained within the broad concept of money. For the purpose of managing the monetary policy, the money supply is thus broken down into several measures ranging between narrow and broad defined monetary aggregates.\textsuperscript{96}

2.2.3 Three legal theories of money and their relevance in today’s economy

2.2.3.1 The State theory of money

Defining money by the functions it serves has, as evident by history, been a standard used for a long time.\textsuperscript{97} Through standardization of contracts, this definition was then, as mentioned, followed by the legalization of a method of payment.\textsuperscript{98} However, in contrast to the economic definition, the law tends to reflect a more restrictive view of money.

According to the State theory of money, developed by Frederick Alexander Mann (1907-1991), only that which is accepted as money in accordance with the law of the issuing authority, has the legal status of money. Mann in turn seems to have been inspired by George Friedrich Knapp (1842-1926), who was of the opinion that “[…] only chattels issued by the legal authority of the state could acquire the character of ‘money’, and that the value to be attributed to them is fixed by law, rather than by reference to the materials employed in the process of production”.\textsuperscript{99} From a legal perspective, money is therefore defined as currency issued by a central bank and has a special protection and status\textsuperscript{100} as means of payment by being legal tender.\textsuperscript{101} Friedrich Carl von Savigny (1779-1861) believed that money represents an abstract purchasing power. He described money as an instrument for measuring the value of individual parts of wealth.\textsuperscript{102} He did not explain in detail how exactly he categorized money, he more so used the term money very loosely. However, his concept ought to be accepted by the legal system since money by law, as mentioned, is defined as legal tender, therefore giving money a certain power. The role of banknotes and coins is accordingly merely to represent the abstract purchasing power.\textsuperscript{103} As a result, Savigny’s description seems

\textsuperscript{94} Fregert & Jonung, p. 100.
\textsuperscript{95} See section 2.1.1.
\textsuperscript{96} See Annex 1; Fregert & Jonung, p. 102 f.
\textsuperscript{97} See section 2.1.1.
\textsuperscript{98} See section 2.2.1.
\textsuperscript{100} The term “power” can also be used in order to emphasize the weight that currency has.
\textsuperscript{101} Chap. 5 art. 1 The Swedish Riksbank Act. In practice however, this protections has little bearing, because the law is optional, which means that sellers can go around the law by simply declaring that they do not accept cash. See further discussion in section 4.1.2.
\textsuperscript{103} Olivecrona, p. 397.
to embody parts of the State theory, but also resembles the economic definition of money in regards to the functions money serves.  

2.2.3.2 The Societary theory of money

Arthur Nussbaum (1877-1964) was critical against the dematerialization of the monetary claim that Savigny presented; the abstract purchasing power is simply an expression of the economic opportunities that the possession of money embodies, but is not a concept within jurisprudence. The content of an IOU is therefore material, because “[...] the obligation of the debtor is the delivery of tangibles, i.e. of coins and paper money”. Nussbaum’s critique towards Savigny’s description of money was based on the fact that Savigny spoke of money as being something immaterial. Savigny’s description, as mentioned, corresponds with the State theory, which presents money in the form of currency; it is the state’s monopoly on issuing banknotes and coins that the theory is built upon. Nussbaum was of the opinion that money is more than just currency, that it is a wider concept; money is not only what the law constitutes money to be, hence the reason Nussbaum was critical.

Money and currency are two concepts that are often in context used as synonyms, which consequently make them two in general misunderstood terms. The concept of money is more comprehensive than the concept of currency; the state may have the monopoly on and can control the issuance of currency, however the creation of money is nonetheless not exclusively under the monopoly of the state. In fact, scriptural money is the dominantly used means of payment currently and according to the State theory, it does not constitute money, since it is not recognized as money under the law. Under the State theory, only a small percentage of the money supply in the modern economy thus qualifies as money from a strictly legal sense. According to the State theory, scriptural money instead amounts to merely credit, not actual money. In order to reduce the broadening gap that exists between the economic reality of modern society and the legal concept of money, Nussbaum was an advocate of the Societary theory of money during the mid-twentieth century. He was of the belief that it is not the state’s decisions on the matter, but rather society’s attitude, which is important in deciding what ought to be counted as money. Nussbaum argued that “[a]s a matter of legal theory [...] the Societary process which gives life to money is not exactly a process of ‘customary law’. It does not engender new canons of law”, but rather with the emergence of new types of negotiable instruments the process instead “[...] widens the range of things to which a pre-existing body of rules – in this case of rules of monetary conduct –

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104 Olivecrona, p. 397.
105 Nussbaum, Arthur (1950), Money in the law: national and international; a comparative study in the borderline of law and economics; y Arthur Nussbaum. Brooklyn: The Foundation Press, Section 19 I and II. See also Olivecrona, p. 397. Important to emphasize in the cited text is the word “delivery”. What Nussbaum meant is that delivering banknotes and coins is a physical action, which therefore indicates that the content of the IOU is material.
106 Zimmermann, p. 13.
107 Zimmermann, p. 13; see further discussion 4.3.1.1.
108 Swedish translation: banktillgodohavanden. See section 2.3.3.
110 Zimmermann, p. 13.
may be applied”. He further states that the Societary theory of money by no means denies the fact that the state has full power over the currency. He is however of the opinion that legal theory nevertheless also has to take into account “[...] abnormal and controversial situations. This test the State theory of money cannot stand”. Even though currency cannot be immaterial, Nussbaum certainly believed money on the other hand has an immaterial aspect.

Similar thoughts to the Societary theory have been brought forward in Swedish law. Karl Olivecrona (1897-1980) stated that, in regards to an IOU, there is a distinction between the fulfillment of the obligation through the use of legal tender and other means of payment. One ought to thus in other words distinguish between cash payments and cash-free payments. Further evidence in support of the Societary theory of money can be found in more current legal literature. The obvious answer to the question of what amounts to money, is based on the physical aspect of money, currency. Nevertheless, as mentioned, this simple answer does not say what money is, but merely gives an example of what could be considered as money. The question of what constitutes money currently, is therefore not a question of what money per se really is, but rather a question of what constitutes medium of payment in more general terms. This in turn allows for the interpretation that money essentially is something used as means of payment. With this interpretation it becomes apparent that physical means of payment only constitute a small part of what is meant by the more general term money, in light of the fact that the bulk of the money supply consists of scriptural money.

Nussbaum’s critique towards Savigny: invalid?

In contrast to Savigny, Nussbaum was of the belief that currency is not immaterial and he presents logical reasons in support of his argument. However, there has been a development regarding the concept of currency since Nussbaum’s time.

Money is an intangible (immaterial) asset and as mentioned, functions as a unit of account, medium of exchange and store of value. Currency is a form of money. More recent literature explains that, because currency is an aspect of money, it thus means that there is an underlying national division of money: money has the property of nationality in the form of currency, a clear immaterial property, which can rather be described as a social or cultural conditioned quality. Currency is on the one hand, a tangible concept in light of the fact that banknotes and coins are physical assets. However, said banknotes and coins represent an underlying value, based on the fact that money has an intangibility aspect, which thus on the other hand makes currency immaterial. Simply put, the fact that currency represents a nationality therefore makes it partly immaterial. As evident by history, in order for trading to

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111 Zimmermann, p. 13.
112 Zimmermann, p. 13.
113 Olivecrona, p. 400.
114 Wallin-Norman, p. 230
115 Under this section, the author analyzes and draws conclusions from the information presented in section 2.2.3.1 – 2.2.3.2.
116 Wallin-Norman, p. 231.
occur, the only prerequisite is that the asset used as a means of payment has some kind of value for the acquirer.\textsuperscript{117} For a means of payment to be accepted as currency however, it is according to common belief required that legislation, in addition to a general acceptance, also specifically acknowledges that the means of payment used has some kind of value for the acquirer,\textsuperscript{118} which the law does by stating that banknotes and coins are legal tender. In light of Savigny’s description, an IOU is an obligation to transfer a certain amount abstract purchasing power or value; to transfer something \textit{inmaterial}. His description of money ought to, as mentioned, be recognized by law, which reflects a notion of money in the form of currency. There has been a development regarding the concept of money since his time. Savigny seems to have been a man before his time, as he could not have predicted how the concept of money would evolve. While he does not specify any further what he meant by money,\textsuperscript{119} with the interpretation that his view is in accordance with the law and in view of said description of currency in more recent literature (i.e. that currency is partially immaterial and the asset has to be recognized by law to have the status of currency), his understanding of money as being something immaterial can thus be seen in a different light; his view fits well into today’s view of the \textit{currency} concept, which indeed describes currency as immaterial to a certain extent. Nussbaum’s critique against Savigny seemingly therefore does not carry any weight today.

\subsection*{2.2.3.3 The Institutional theory of money}

In a strictly legal perspective, the State theory of money certainly offers for a seamlessly rational definition of what constitutes money. However, its inability to rightfully recognize the bulk of the monetary aggregate\textsuperscript{120} from the money supply, as money, indicates that the State theory significantly has become obsolete.\textsuperscript{121} The Societary theory instead serves as a good replacement, because in contrast to the State theory, it recognizes the bulk of the money supply – scriptural money – as a means of payment and not merely credit. In the context, it seems fitting to lastly say a few words in regards to the third theory of money – the Institutional theory of money – which is based on the belief that the concept of legal tender as the foundation to the State theory, has become outdated as a result of the increased use of scriptural money in today’s society. The theory was founded by Antonio Sáinz de Vicuña (1948-present) and he further describes the theory in view of the fact that the concept of money, in circumstances where global markets and modern communication technologies, are now entwined with the institutional system “\textit{[...] of the central banks [...] and from the normative framework under which the central banks, credit institutions, financial infrastructures [...] and markets operate [...]}”.\textsuperscript{122} In view of said description of the

\begin{itemize}
\item \textsuperscript{117} See section 2.1.1.
\item \textsuperscript{118} Elgebrant, p. 40.
\item \textsuperscript{119} As mentioned in section 2.2.3.1.
\item \textsuperscript{120} M\textsubscript{0}-M\textsubscript{ZM}, see Annex 1.
\item \textsuperscript{121} Zimmermann, p. 14.
\item \textsuperscript{122} Zimmermann, p. 16.
\end{itemize}
Institutional theory, one will notice that there does not seem to be considerable differences from the Societary theory and for that reason it ought to not be seen as an independent third theory of money. Yet, authors have argued that there is a difference, in light of the fact that the Societary theory only takes a purely functional approach.\textsuperscript{123} However, as noted earlier, the Societary theory does recognize that the definition of the monetary system, i.e. currency, continues to be fall under the monopoly of the state, which thus means the theory does not merely take a functional approach.\textsuperscript{124} Furthermore, there seems to be lack of legal literature that has continued to further elaborate the theory, in contrast to the Societary theory where there is evidence in modern literature in support of the said theory,\textsuperscript{125} which thus seems to be additional support in view of that the Institutional theory ought to not be considered as an independent third theory of money.

2.3 Different categories of money

2.3.1 Cash

2.3.1.1 The status of cash as legal tender

The Swedish currency’s status as legal tender is laid down in law.\textsuperscript{126} As can be noted from the preparatory works to the Riksbank Act, it means that everyone is obligated to accept banknotes and coins as means of payment.\textsuperscript{127} The status of legal tender in the text of the Riksbank Act only stipulates the method of payment, i.e. that banknotes and coins are used as a way to make a payment.\textsuperscript{128} The use of the term legal tender can be traced in Swedish legislation as far back as over hundred years ago.\textsuperscript{129} The reason as to why tangibles were given the status of legal tender, may be related to the fact that there historically had been a need to somehow clearly distinguish “[...] the means of payment issued by the Government or the Riksbank from competing means of payment issued by other governments and banks at the time”.\textsuperscript{130} By giving a means of payment a special status, can furthermore be a way to introduce a new means of payment on the market to make certain that it gains acceptance.\textsuperscript{131} The Euro is an example; when it was established on the market, it replaced national banknotes and coins in member states who adopted the Euro. The value of the Euro, for which the European Central Bank is responsible for, is thus also statutory.\textsuperscript{132}

2.3.1.2 Anonymity

Banknotes and coins have a number of properties which makes them unique in relation to other forms of money. The most apparent difference between cash and other categories of

\textsuperscript{123} Zimmermann, p. 16.
\textsuperscript{124} Zimmermann, p. 16.
\textsuperscript{125} See section 2.2.3.2.
\textsuperscript{126} Chap. 5, art. 1 The Riksbank Act. See chapter 2.
\textsuperscript{127} Prop. 1986/87:143, p. 64.
\textsuperscript{128} Segendorf, Björn & Wilbe, Anna, Does cash have any future as legal tender?, The Swedish Riksbank, Economic Commentaries, No. 9, 2014, p. 2.
\textsuperscript{129} See section 2.1.2.
\textsuperscript{130} Segendorf & Wilbe, p. 2.
\textsuperscript{131} Segendorf & Wilbe, p. 2.
\textsuperscript{132} Art. 128 (1) Consolidated version of the Treaty on European Union on the Functioning of the European Union 2012/C 326/01 (TFEU) determines the status of the euro banknote as legal tender and art. 11 Council Regulation (EC) No 974/98 of 3 May 1998 on the introduction of the euro, stipulates the same in regards to the euro coins.
money is that they are physical, which means that the payment system is largely analogue and hence not as vulnerable as its digital equivalent.\textsuperscript{133} A property that is of particular interest, is the anonymity aspect, because transactions made with cash do not leave any traces behind and cash can as a result be said to serve as a form of protection of privacy; safeguarding the publics’ integrity.\textsuperscript{134} At the same time however, the anonymity aspect is interesting from a legal perspective, because anonymity ought to be seen as a problem if the payment is illegal or linked to criminal activities.\textsuperscript{135}

### 2.3.2 Central bank digital currency

The concept of money, as mentioned, defined in many different ways. Base money\textsuperscript{136} is another way of defining money, and the term is used to describe IOUs from a central bank. In addition to an IOU to consumers (banknotes and coins/currency),\textsuperscript{137} the Riksbank also supplies CBDC or central bank reserves. The Riksbank does therefore already issue digital money, why is then an e-krona needed? The e-krona would fall under the category of a CBDC,\textsuperscript{138} however the existing CBDC discussed in this section is an IOU from the Riksbank to commercial banks,\textsuperscript{139} it can therefore only be used by financial institutions who are participants in the Riksbank’s central bank settlement system, called RIX.\textsuperscript{140} CBDC is consequently not available to the public, which the e-krona would be.\textsuperscript{141} The Riksbank’s system for transferring book-entry money accounts can be said to be the focal point of the Swedish payment system, since transactions between banks, clearing institutions and the Swedish national debt office\textsuperscript{142} eventually are channeled through RIX.\textsuperscript{143} The Riksbank therefore serves as a bank to the banks when large-value payments are made between banks.\textsuperscript{144} CBDC is similar to cash in that it is directly transferable and lacks credit risk.\textsuperscript{145}

### 2.3.3 Scriptural money - commercial bank money

Just like CBDC, scriptural money is digital, but similar to cash it is available to natural and legal persons. The bulk of the money supply consists of bank deposits containing ones and zeros stored on computers. When making a payment through a bank account, the payment is made with digital money.\textsuperscript{146} It is important to understand that this money – money on ones’ bank account – is not central bank money, but rather money created by the commercial banks

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\textsuperscript{134} Arvidsson, Niklas, Det kontantlösa samhället – En rapport från ett forskningsprojekt, Centrum för Bank och Finans på KTH, 2013, p. 41.

\textsuperscript{135} Some of the legal issues raised in connected with the anonymous nature of cash is further discussed in section 4.1.3.

\textsuperscript{136} Or central bank money: banknotes and coins.

\textsuperscript{137} See chapter 2.2.

\textsuperscript{138} See section 1.1.

\textsuperscript{139} Raport 1, p. 7.

\textsuperscript{140} McLeay, Radia & Thomas, p. 7; Raport 1, p. 4; Fregert & Jonung, p. 402.

\textsuperscript{141} See section 1.1 and 2.4.

\textsuperscript{142} Swedish translation: Riksgälden.

\textsuperscript{143} McLeay, Radia & Thomas, p. 7.

\textsuperscript{144} Prop. 1997/87:143, p. 44.


\textsuperscript{146} Fregert & Jonung, p. 100.
through fractional reserve banking\textsuperscript{147}. The numbers shown on the bank account are in fact just numbers showing how much money the bank owes the account holder in central bank money.\textsuperscript{148} If one therefore has 100 SEK on a bank account at Nordea, the bank is then in debt with said amount in central bank money and the account holder consequently has a claim against the bank. This Nordea money can be converted into central bank money by making a financial transaction – a cash withdrawal. Society trusts that when asked, the bank will provide central bank money.\textsuperscript{149} Cash is denominated by the Riksbank as risk-free, because it is the “last outpost”, which in turn means it is not a claim in something else in case the Riksbank does not keep its promise to provide society with cash.\textsuperscript{150}

2.4 The e-krona project

2.4.1 The intention behind the project

The purpose of the Riksbank’s e-krona project is to investigate if digital cash issued by the Riksbank, would function as a suitable complement to banknotes and coins in order to respond to the digital developments on the payment market. The project can also be seen as a reaction from the Riksbank on society’s behavior; the projects’ intention is further to neutralize potential problems due to the fact that the usage of tangibles is decreasing, which may lead to Sweden becoming a society in which banknotes and coins are no longer a generally accepted means of payment.\textsuperscript{151} Even though the current development has shown that a large and still growing proportion of the population chooses to not use banknotes and coins issued by the Riksbank, providing banknotes and coins still nonetheless remains a part of the Riksbank’s assignment.\textsuperscript{152} A launch of a digital alternative to tangibles could be seen as a modernization of this, to the public, issued means of payment.\textsuperscript{153} Providing a digital currency can even be regarded as an obligation for the Riksbank, depending on how the law is interpreted.\textsuperscript{154}

In a survey\textsuperscript{155} presented by the Riksbank, over the course of an eight year period (between 2010-2018), cash usage has decreased by 26 percentage points. The statistics presented in the survey indicate toward a continued decrease.\textsuperscript{156} The decreased usage of tangibles and in particular the reduced cash handling,\textsuperscript{157} may shortly lead Sweden into becoming a society where tangibles in practice, as mentioned, are no longer generally viable even though the law says otherwise. The Riksbank has in addition to the decreasing usage of tangibles further
observed that the payment market is moving towards being increasingly consolidated to a small number of commercial participants, payment services and infrastructures. Since Sweden is moving towards a cashless society, households will have little to no opportunity to make savings and payments with risk-free central bank money. This development may in turn affect the payment systems’ resilience. The public’s access to central bank money is especially important in times of financial turmoil. If the e-krona was to be introduced, it could therefore function as a calming force on the market by ensuring the public availability to a state-guaranteed means of payment; the Riksbank is of the opinion that an e-krona could maintain the state’s ability to offer the public a means of payment on the payment market. If the Riksbank does not act in the face of said developments, a number of effects, which the Riksbank highlights in its project report, are likely to occur on the payment market which the state nonetheless will have to handle somehow:

- all Swedes need to have an account with a private actor,
- monopoly situations may easily arise on the payment market,
- individuals who find it difficult to gain access to payment accounts will be excluded,
- the payment market will be controlled by commercial actors, and
- the trust in the Swedish monetary policy system is likely to decrease.

2.4.2 Potential systems: Value-based e-krona and Account-based e-krona
In the first interim report, the Riksbank presented two possible systems for setting up the e-krona. The e-krona project is still at an early stage; in the second interim report the Riksbank concluded that “the next step in the Riksbank's work on the e-krona should be to build an e-krona to learn more and test which solutions are viable and possible to realise.” With this statement the Riksbank made it clear that the project will take further steps to its completion, but at the same time, it is pointed out that building an e-krona to test the technical possibilities, is not the same as making a final decision on the matter.

A value-based e-krona is a prepaid value stored locally on a payment device, for example a card or phone app, used to make payments with a card reader. An account-based e-krona in contrast can be described as a balance recorded in a central register retained by the Riksbank, similarly to how regular bank accounts are registered in commercial banks. In order to make sure the payment solution is as effective as possible, both natural and legal persons would be allowed to open an account at the Riksbank. In light of the fact that all e-

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158 Report 1, p. 7.
159 Report 1, p. 4.
160 See section 3.2.2.
161 Report 2, p. 11.
162 Report 1, p. 5.
163 The Swedish Riksbank (2018b).
165 Report 2, p. 15.
166 Report 2, p. 15.
krona accounts would be registered under the same central register at the Riksbank, transfers can thus be made in real time without the involvement of external parties. The scope of the Riksbank’s task consists of: (1) holding of the e-krona accounts, (2) manage internal transfers, i.e. payments between e-krona accounts within the Riksbank’s central system, and (3) transferring of money between external agents’ accounts outside the Riksbank’s system and e-krona accounts. It is important that an account-based system is designed to facilitate easy communication with other systems; the system must be able to easily communicate with commercial banks’ systems in order for transfers between bank accounts and e-krona accounts can occur.

Regarding both systems, the Riksbank states in its report that the e-krona will be: a direct claim on the Riksbank, available 24/7 and the value of the e-krona will be stated as SEK. The two e-krona systems are furthermore similar in that they both have an underlying central register, where the holder as well as the number of e-kronas will be registered; however, the way in which they will be registered will differ. Questions have been raised whether or not the e-krona should be interest-bearing. From a legal perspective, the two options fall under different legislations. The account-based e-krona is, as mentioned above, similar to money stored on accounts held in commercial banks, consequently seen as a bank deposit. A value-based e-krona is in legal terms classified as e-money. Regarding e-money, there is a prohibition against granting interest, as a general rule. However, regarding an account-based e-krona, there is a possibility to grant interest in light of the fact that there ought to not be the same legal restrictions for bank deposits as for e-money. One of the most significant properties in regards to banknotes and coins is that transactions can be made anonymously. If the Riksbank chooses to launch an e-krona, it is possible to completely deprive this digital alternative the anonymous nature that physical cash possesses, depending on its design. There are still too many uncertainties, partly form a technical standpoint and partly from a legal perspective, to start developing an account-based e-krona; further examination is still needed. The Riksbank instead concluded that the next step is to develop a value-based e-krona.

167 Report 1, p. 19.
168 Report 1, p. 20.
173 Art. 12 E-money directive.
174 See section 4.2.2.
175 See section 2.3.1.2.
176 Report 1, p. 19; Report 2, p. 15.
177 Report 2, p. 41.
3 The Swedish banking system

3.1 The Swedish Riksbank

The Riksbank was founded in 1668, making it the world’s oldest central bank. In 1999, the Riksbank was given an independent role, meaning that no public authority may control how an administrative authority is to make decisions in certain cases concerning the exercise of public authority in regards to “a private subject or a local authority, or the application of law”. The Riksbank’s activities are led by an Executive Board, appointed by the General Council, which in turn is elected by the Swedish Parliament. The Riksbank is thus an authority under the Swedish Parliament and serves as Sweden’s central bank, meaning it is responsible for the Swedish monetary policy and no other authority is allowed to decide how the Riksbank ought to make decisions on matters relating to it. The purpose of the independence is to see to that the Riksbank’s activities not be governed by short-term goals or political aspirations.

The Riksbank may only conduct, or participate, in such activities for which the Riksbank by law has been authorized. Form a legal perspective, the Riksbank has three main tasks which to some extent overlap each other. These consist of (1) conducting the monetary policy and (2) foreign exchange policy, as well as (3) promoting a safe and efficient payment system. The Riksbank’s primary assignment lies in the monetary policy assignment where the objective is to maintain price stability. The activity to promote a safe and efficient payment system is included as an essential part of its business operations. The Riksbank was given a statutory objective for its business when it formally became independent. It was considered important, by the government, to give the Riksbank a democratically established objective for its business in order to enable a delegation of the monetary policy to the Riksbank. It was also considered important to avoid the monetary policy from becoming discretionary designed. In order to increase the credibility of the monetary policy, the objective would as a result be regulated by law.

The Riksbank accordingly has the mandate to conduct activities and take action as long as the purpose of the activity or measure is in line with, and contributes to, the pursuit of the Riksbank’s achievement and fulfilment of its core assignments. In view of said mandate, the Riksbank’s declared purpose of issuing an e-krona becomes relevant from a legal perspective. The current Riksbank Act is moving towards being obsolete, because it is not up to date with

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178 The Riksbank, (2017a), Riksbankens roll i samhällesekonomin, 2017, p. 6
180 Chap. 9 art. 13 paragraph 1 The Instrument of Government (Kungörelse (1974:152) om beslutad ny regeringsform);
181 Swedish translation: Riksdagen
182 Chap. 9 art. 13 paragraph 2 The Instruments of Government.
183 The Riksbank (2017a), p. 8 f.
184 Chap. 1 art. 1 The Swedish Riksbank Act.
185 The first and last mentioned tasks are referred to when looking at it from an economic perspective.
the digitalized payment market that has developed since the law was last updated. Depending on how the law is interpreted, the act may nevertheless, under certain circumstances, allow for the issuances of e-kronor.\footnote{Fregert & Jonung, p. 398 f.}

3.1.1 The Riksbank’s monetary policy assignment

Economic policy is usually divided into two main categories: fiscal policy and monetary policy. The monetary policy deals with the question of how much money should be in circulation in the economy and how high the interest rate on money should be, while fiscal policy instead involves making decisions on how the money supply should be used.\footnote{Fregert & Jonung, p. 398 f.}

The Riksbank conducts the monetary policy in order to achieve its objective of maintaining price stability.\footnote{Fregert & Jonung, p. 398 f.} In order to maintain price stability, it entails holding the inflation at a low and stable level. The Riksbank has an inflation target set at two percent as a formal target variable in order to hold the inflation in accordance with the consumer price index with a fixed interest rate. The Riksbank influences the inflation development through its prime rate\footnote{Swedish translation: styrränta}. The prime rate indicates the level at which the Riksbank wants the money market’s shortest interest rate, the overnight rate\footnote{Swedish translation: dagslåneräntan.}, to be. The overnight rate in turn affects market interest rates\footnote{Swedish translation: marknadsräntor.} with longer maturities and in the long run the activity and price development in the economy. This process is part of what is commonly referred to as the transmission mechanism.\footnote{The Riksbank, Riksbankens räntestyrning – penningpolitik i praktiken, 2005, p. 7.}

3.1.2 The Riksbank’s assignment to promote a safe and efficient payment system

An essential part of the Riksbank’s assignment to promote a safe and efficient payment system, is to provide the system with banknotes and coins, but it also entails an overall responsibility for the Riksbank to make sure the payment system is stable.\footnote{The Swedish Riksbank (2018d), Financial Stability Report, 2018:2, p. 2.} The basic function of the financial system is to transfer payments, convert savings into investments and manage risks that may arise on the market. The financial system consists of: financial participants, such as banks and insurance companies, financial marketplaces, such as the Stockholm Stock Exchange, financial infrastructure similar to the Bankgiro and lastly, a financial framework, consisting of legislation, rules and norms governing the financial sector.\footnote{The Riksbank (2017a), p. 38.} The financial system is sensitive, because these various components have many points of contact; if a crisis occurs within one part of the system, it may easily cause a domino...
effect. The assignment to promote a safe and efficient payment system thus also includes taking steps to prevent financial crises from arising, but also be prepared and have the tools available to manage crises if they nonetheless were to occur.\textsuperscript{197} An example of such a tool is that the Riksbank can act as \textit{lender of last resort},\textsuperscript{198} meaning that the Riksbank may in exceptional circumstances and with the aim of supporting liquidity, grant credits or provide guarantees to banking institutions subjects to the supervision of the Financial Supervisory Authority.\textsuperscript{199} The Riksbank accordingly monitors and analyzes the ongoing stability of the financial system for early detection of changes and potential vulnerability that could lead to disturbances for the financial stability.\textsuperscript{200}

The Riksbank’s assignment to promote a safe and efficient payment system is considered, as mentioned earlier, a \textit{constitutive task} and not an actual objective for the Riksbank’s operations. The objective is rather to maintain price stability.\textsuperscript{201} Monetary policy instruments, such as the repo rate, should therefore according to the preparatory works of the Riksbank Act, only be used to maintain price stability. However, if a crisis arises in the payment system and is on the level of seriousness that it threatens to risk the objective of maintaining price stability, the Riksbank may use monetary policy instrument in order to avert a crisis in the financial system.\textsuperscript{202}

A stable financial system is thus considered to be a fundamental requirement for the Riksbank to be able to pursue an effective monetary policy. The pursuit of financial stability must therefore always be in line with the Riksbank’s superior objective of maintaining price stability.\textsuperscript{203} The Riksbank may therefore be considered to have the mandate to issue an e-krona if this is done with the aim of ensuring a safe and efficient payment system. One of the Riksbank’s proclaimed objectives with investigating if an e-krona should be introduced as a complement on the payment market, consists in counteracting potential future risks on the payment market.\textsuperscript{204} In light of said reasoning, it seems to be possible to derive an issuance mandate through the Riksbank’s assignment to promote a safe and efficient payment system.\textsuperscript{205}

\textbf{3.2 Commercial banks}

\textbf{3.2.1 Opening annotations regarding the commercial banks business operations}

In contrast to the Riksbank, which is a government agency, the remaining part of the Swedish banking system is run by the private sector. A commercial bank’s purpose is primarily to

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\textsuperscript{197} The Riksbank (2017a), p. 40 f.
\textsuperscript{198} Fregert & Jonung, p. 108.
\textsuperscript{199} Chap. 6 art. 8 The Riksbank Act.
\textsuperscript{200} The Riksbank (2017a), p. 41.
\textsuperscript{201} See section 3.1 and 3.1.1.
\textsuperscript{202} Prop. 1997/98:40, p. 54.
\textsuperscript{203} Prop. 1997/98:40, p. 54.
\textsuperscript{204} See section 2.4.1.
\textsuperscript{205} See section 4.1.1.
\end{flushright}
generate profit, just like with any other commercial participant in general. In banking, a bank acts as an intermediary in obtaining funds and is also responsible as a risk taker when giving credit. The bank makes a profit by charging for its services through various interest rates, but primarily the banks operations generates profit through positive net interest income (NII). A NII consists of the difference between a bank’s interest payments on assets and interest payments on liabilities. A positive NII arises when the interest received by customers is higher than interest paid by the banks.

3.2.2 The commercial bank’s creation of money: fractional reserve banking in relation to a bank run

3.2.2.1 Fractional reserve banking

Macroeconomists have traditionally thought about banks as intermediaries. However, a bank does not exclusively supply society with existing money, i.e. banknotes and coins, but can also create new money through fractional reserve banking (FRB). When a commercial bank approves a new loan, it creates new money. In this context it is important to once more emphasize that the money the commercial bank creates, is not central bank money, but rather funds in commercial bank accounts. To understand how a bank creates money, it not only requires an understanding of the mechanics surrounding the consequences of FRB, but also an understanding of how a bank’s balance sheet works.

FRB is a common practice involving banks accepting consumer deposits, and making loans while retaining reserves at least equivalent to a fraction of the bank’s deposit liabilities. The amount of money a bank can lend out is therefore limited by the proportion of the reserves the bank has to hold. In Sweden, the banks’ lending is limited to the capital requirements set by the Basel III regulatory framework. The capital requirements determine the minimum amount of capital banks are obligated to hold. As far as Sweden is concerned, Basel III has been implemented into the Capital Requirements Directive Package. In addition, the central bank may decide to impose minimum reserve requirements on financial institutions as another means for limiting the banks’ lending. This means banks are forced to have parts of their capital deposited in a Riksbank account. Reserve requirements are in general a standard monetary policy tool in central banking, however the Riksbank reduced the reserve

206 Compare Chap. 3 art. 2 Companies Act [Aktiebolagslag (2005:551)].
207 Fregert & Jonung, p. 98.
208 See section 2.3.3.
209 Fregert & Jonung, p. 103.
210 Fregert & Jonung, p. 103; Aldén, p. 392.
212 Annex 1Basel III; art. 129-140 CRV IV.
214 Chap. 6 art. 6 The Riksbank Act.
requirement to 0 % in 1994 and the reserve requirement has not been used as a monetary policy tool ever since.\textsuperscript{215}

The mechanism for reserve requirements and capital requirements is essentially the same, but the system becomes somewhat more easily explained in terms of reserve requirements.\textsuperscript{216} If a bank has a ten percent reserve requirement, it means that when a bank receives a deposit of 100 central bank money, it may lend out 90 to another customer. Should said customer then place these 90 as a deposit in the bank again, the bank can this time use 81 for lending as 9 has to be retained as reserve. A deposit of 81 means the bank may only lend 72,9 since the bank has to hold 8,1 as reserve. This way, the banks’ lending aggregate gradually decreases until the bank has nothing left to lend out. In the bank’s balance sheet, this mechanism will cause a bank to, by receiving a deposit of 100 and in several successions lending it out, acquire significantly larger assets in the form of borrowers’ debts to the bank than the asset of 100 central bank money the initial deposit generated. Each lending becomes an asset in the bank’s balance sheet as the bank receives a claim on the borrower who, by taking on a loan, thus owes the bank money. The bank customer, who initially deposited the 100 central bank money, still has a claim on the bank, which is noted as a liability in the bank’s balance sheet.\textsuperscript{217}

Nowadays, lending takes place digitally. If a customer thus makes a request to borrow 100 by the bank, the bank will not grant the loan by giving the customer a bag of money in the form of banknotes and coins. Instead, the bank will increase the amount of money already existing on the customer’s bank account by 100. As the customer obtains a debt to the bank, while at the same time the customer’s bank account is credited with 100, the bank will simultaneously with the crediting, debit an asset of 100 as a claim on the customer in its own balance sheet. The transaction therefore does not mean that the bank lends out somebody else’s central bank money, but the bank rather lends money by changing the numbers on the customer’s bank account. These new numbers mean that the bank has created new money, electronic money; banks thus bring new money into the economy as they make up loans.\textsuperscript{218}

\textit{3.2.2.2 Bank runs}

The fact that there are different categories of money in circulation has already been noted,\textsuperscript{219} however it ought to be important to emphasize. When a customer makes a cash deposit on a bank account, the customer exchanges central bank money for funds in commercial bank accounts and implicitly gives the commercial bank permission to lend out those deposited central bank money to someone else. The customer thus has a claim on the bank. While central bank money is risk free, commercial bank money always involves credit risk, because

\textsuperscript{215} Fregert & Jonung, p. 102 f.  
\textsuperscript{216} Aldén, p. 392.  
\textsuperscript{217} Fregert & Jonung, p. 103 f.  
\textsuperscript{218} Fregert & Jonung, p. 103 ff.  
\textsuperscript{219} See section 2.3.
its value is linked to a bank’s performance. As long as everything is running along smoothly for the bank and society has confidence that the bank has enough liquid assets in order to pay off all their debts, the system is stable. However, in times of financial turmoil, society’s trust in a bank may begin to falter, which in turn may cause a so-called bank run.\(^{220}\)

A bank run can occur for example if rumors are spread that a bank is expected to sustain major losses and depositors thus lose confidence in the bank and demand their deposits in fear of the bank becoming insolvent. In other words, they demand the bank to exchange their commercial bank money for risk-free central bank money. If a large proportion of the bank’s customers wish to withdraw their deposits at the same time, it will be problematic for the commercial banks, because a large part of the lending is locked long-term, which means commercial banks are unable to make large payments at the same time. Due to an imbalance in the asset and debt structure of a bank’s balance sheet, a bank run may cause a bank to go bankrupt. The imbalance is due to the fact that, the amount of a bank’s assets that is tied to lending, is greater than the amount that a bank has directly in the form of cash deposits, as a result of FRB.\(^{221}\)

Bank runs can thus lead to financial crises in cases where commercial banks fail to pay back the deposited central bank money, which is something that a central bank wants to prevent. The central bank can therefore lend reserves to individual commercial banks, therefore serving as a kind of guarantee, in the form of lender of last resort.\(^{222}\) Since it is in the government’s interest to keep the financial system stable, the European Union (EU) and thus Sweden, has chosen to introduce a state provided guarantee of deposits.\(^{223}\) It guarantees that all deposits up to 100 000 Euro are protected through a national deposit guarantee scheme (DGS) in every member state.\(^{224}\) In Sweden, the deposit insurance replaces capital and accrued interest up to 950 000 SEK per depositor.\(^{225}\) The guarantee stabilizes the system and reduces the risk of a serious disturbance in the financial system by providing security for savers and reduces the risk of a bank run in times of financial concern.\(^{226}\)

### 3.2.3 The zero lower bound problem

Just a few years ago, a nominal interest rate stuck at zero was something assumed to not exist, neither in the real economy nor in textbooks.\(^{227}\) It has now proved to be a tool several central

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\(^{220}\) Fregert & Jonung, p. 106.

\(^{221}\) Fregert & Jonung, p. 106

\(^{222}\) See section 3.1.2.


\(^{224}\) Art. 6 DGSD.

\(^{225}\) 4 § Deposit Insurance Act.

banks have had to apply in order to stimulate the economy in an attempt to raise inflation.\textsuperscript{228} In general, central banks use a short-term nominal interest rate as a primary monetary policy tool in order to stimulate the economy. In Sweden specifically, the Riksbank as mentioned uses the repo rate as a tool to influence the overnight rate, which thus affects other interest rates and economic activities.\textsuperscript{229}

Interest rate is the cost of credit or the return on savings (deposits). If a consumer borrows money from a bank, the interest rate is what said person will pay for the loan. When making a deposit in a bank, the interest rate is the return said person instead receives on the deposit. However, in economics there is a difference between nominal interest rate and real interest rate. The nominal interest rate is the agreed upon and paid interest rate. For example it is the interest rate a house owner pays on the house loan or the return a saver receives on deposits. Borrowers pay the nominal interest rate, and savers receive it.\textsuperscript{230} The \textit{zero lower bound problem} is a circumstance that occurs when the central bank wants to lower the short-term nominal interest rates\textsuperscript{231} in order to stimulate the economy, but is prevented to do so when the interest rate reaches or nears zero. The central bank wants to lower the interest rate, but cannot do so, because the interest rate cannot get lower than zero and thus become negative due to the fact that it would prompt account-holders to withdraw their money from commercial banks and instead hold it in cash. Individuals would hold their money in cash, because if the account-holders do not withdraw their money, they will have a negative interest rate on their deposit and the negative interest rate in turn deducts funds from the account instead of adding to it, which would be the case if the nominal interest rate was positive. Since cash pays zero interest, they benefit more by holding physical money, hence the reason customers therefore make withdrawals.\textsuperscript{232} The root to the zero lower bound problem is thus the central banks’ issuance of banknotes and coins, because it guarantees a zero nominal interest rate.\textsuperscript{233} The zero rate thus serves as an interest rate floor and as a result makes consumers reluctant to accept a below-zero nominal return when they instead can get more by holding base money. Zero as an interest rate floor has hence “proved to be a serious obstacle for monetary policy, as shown by the recent efforts of central banks to stimulate economic growth in the wake of the Global Financial Crisis”.\textsuperscript{234} As long as physical money is in circulation, households will not meet a negative nominal interest rate, because consumers in cases where they face negative deposit rates, will as mentioned choose to keep cash instead of placing the money on a bank account.

\textsuperscript{228} Ercolani, Valerio & Valle e Azevedo, João, “How can the government spending multiplier be small at the zero lower bound”, Macroeconomic Dynamics, 2018, p.1 ff.
\textsuperscript{229} See section 3.1.1.
\textsuperscript{230} Fréchet & Jonung, p. 125 f.
\textsuperscript{231} Overnight rate and other short-term nominal interest rates at commercial banks.
\textsuperscript{233} Söderström & Westmark, p. 5 f; Rogoff, p. 1.
\textsuperscript{234} Agarwal, Ruchir & Kimball, Miles, “Breaking Through the Zero Lower Bound”, 2015, International Monetary Fund; Working Paper 15-224, p. 3.
However, it is not the nominal interest rate that affects the economy, but rather the real interest rate. While the nominal interest rate measures the return on a deposit in terms of money, it does not take inflation into account. The real interest rate is used to measure how much goods, services and other things can be bought with the invested money; “how much extra consumption the household will have from holding the asset.” Economists call this purchasing power. Normally, the purchasing power decreases over time when prices increase due to inflation. By deducting this loss in purchasing power from the nominal interest rate, borrowers and savers can calculate the real interest rate on their loans and savings. For example, a customer makes a deposit of 100 SEK over a one year period and receives a nominal interest rate of 2.5 percent and thus has 102.5 SEK after that year. If the prices on the market however increase by 3 percent, said customer will be in need of 103 SEK in order to buy the same goods and services that a year earlier would have cost 100 SEK. This means that the real return is minus 0.5 percent. This is the real interest rate and is calculated by subtracting inflation (3 percent) from the nominal interest rate (2.5 percent). The inflation is currently at 1.9 percent, which means, with a nominal interest rate at zero, the real interest rate is minus 1.9 percent.

While households currently are not faced with negative nominal rate on their deposits, since banks have refrained from introducing a negative deposit rate for households, commercial bank and some bigger companies nonetheless do meet negative rates. This is due to the expansive monetary policy that the Riksbank has adopted, for which they have used a negative prime rate (the repo rate) on the interbank market in order to stimulate the economy. The negative repo rate affects the commercial banks as they currently have a liquidity surplus. The surplus in the banking system has to be placed with the central bank, because the money supply is a closed system; the money cannot go anywhere. The Riksbank therefore issues Riksbank Certificates at the same rate as the repo rate. In doing so, the Riksbank withdraws liquidity from the banking system. In light of the fact that the repo rate is currently at minus 0.25 percent, it thus brings about costs for the bank, since when the deposit rate is negative, banks have to pay for the deposit; they cannot use the option to hold the money in accounts, because as mentioned the surplus has to be deposited.

235 Söderström & Westermark, p. 7.
236 The Swedish Riksbank (2018e), “Current inflation rate”, updated 2019/03/12. In December 2018 the inflation was at 2.2 percent. Now it is lower, which means the Swedish krona is weaker. In the long run, a weak inflation makes it more difficult to raise the repo rate.
239 In pursuance of its monetary policy the Riksbank may issue its own instrument of debt, chap. 6 art. 5 The Swedish Riksbank Act.
240 In October 2014, the repo rate was cut to 0 percent, hitting the zero lower bound. The aim was to increase the demand in the economy and bring the inflation up. After the zero rate was introduced, the uncertainty in the world economy continued to increase and the inflationary pressure continued to be far too low. The Riksbank therefore took the drastic step of introducing a negative repo rate at minus 0.10. It was the first time in Sweden’s history a negative rate had been introduced. The repo rate had passed its zero lower bound. The increasingly lower inflation rate led to a series of cuts in the repo rate, in 2016 reaching
4 Analysis

4.1 Legal issues related to the e-krona

4.1.1 Are there legal obstacles associated with introducing an e-krona?

There seems to be a hypothetical possibility for the Riksbank to launch an e-krona under the current Riksbank Act, in light of the arguments put forwards in the thesis indicating that the Riksbank currently has a mandate to issue an e-krona through its assignment to promote a safe and efficient payment system. There is furthermore nothing that indicates that a launch of an e-krona may compromise the Riksbank’s primary goal; to maintain price stability.

There are nevertheless two other potential legal hinders for introducing an e-krona that can be brought forward. The first is whether or not there is a prohibition for the Riksbank to receive deposits from the public. The e-krona would be a direct claim on the Riksbank. The Riksbank may grant credit against adequate collateral and receive deposits. Whether the Riksbank is authorized to receive deposits from the public for a monetary policy purpose, is however doubtful. A literal interpretation of the law indicates that there neither is an explicit statutory prohibition against receiving deposits from the public, nor an explicit permission for the Riksbank to receive deposits from the public; the law merely states that the Riksbank may “receive deposits”, without any mention with regard to from whom. This fact is closely related to the second legal obstacle of introducing an e-krona that should be noted, namely that the Riksbank may only conduct, or participate, in such activities for which the Riksbank by law has been authorized. The conjunction of these two arguments ought form a sound basis to claim that the absence of explicit permission to receive deposits from the public should be interpreted e contrario and thus impose a prohibition. Such an interpretation is supported by the fact that the legislator in earlier preliminary work, emphasized the importance of giving the Riksbank a democratically established statutory objective in order to avoid a discretionary designed monetary policy. What it means is that the Riksbank is not allowed to receive deposits from the public and the e-krona can thus not be issued under the current Riksbank Act.

Further support regarding the fact that the Riksbank is prohibited against receiving deposits from the public, can be concluded if one takes a purposive approach in order to interpret the law. Who the Riksbank may receive deposits from and give credit to, is listed in the preliminary work to the Riksbank Act and includes banking institutions and other companies minus 0.50 and it has ever since been at that level. However, in writing of the thesis, the Riksbank has decided to raise the repo rate for the first time in seven years; the repo rate has been cut ever since November 2011 when it was at 2.0 percent. The repo rate has now been raised to minus 0.25 percent and the decision will apply from January 9th 2019. The repo rate has been cut ever since November 2011 when it was at 2.0 percent. The Riksbank states in the press release that “the forecast for the repo rate indicates that the next rise will probably occur during the second half of 2019”.

241 See The Swedish Riksbank, (2018g), Repo rate raised to -0.25 per cent, Press release 20/12/2018.
242 See section 3.1.2.
243 See section 2.4.2.
244 Chap. 6 art. 5 paragraph 1 The Riksbank Act. For pedagogical reason, the author will refer to this legal rule as “the deposit rule”.
245 See section 3.1.
under the supervision of the Swedish Financial Supervisory Authority. The public is *not* included in the enumeration.\footnote{Prop. 1997/98:164, p. 24 f.} The reason as to why the Riksbank is allowed to receive deposits and grant credit to commercial banks, is clarified to be because the Riksbank should function as a bank to the banks.\footnote{Prop. 1997/87:143, p. 44. See also section 2.3.2.} The deposit rule can thus only be applied in situations where the question is about receiving deposits between the Riksbank and commercial banks. In the situation of an e-krona, it would not be a question of receiving deposits between banks, but the Riksbank would rather serves as a bank to the public, which means the deposit rule cannot be applied, seeing as the preliminary work sets limitations regarding when the rule can be applied. The law must be changed in order for the Riksbank to be allowed to receive deposits from the public.

Foregoing reasoning regarding whether a prohibition against bank deposit exists or not is as mentioned based on partly an *e contrario* interpretation and partly a purposive interpretation. An explicit legally binding prohibition against receiving or permission to receive bank deposits from the public nevertheless does *not* exist. If one can argue that the Riksbank indeed does have an issuing mandate through its assignment of promoting a safe and efficient payment system, as discussed, it would mean that the issuance of e-kronor would constitute as such activity for which the Riksbank by law already has been assigned with. Therefore it does not really matter whether or not there is a statutory rule permitting the Riksbank to receive deposits from the public. The permission can instead be said to indirectly be included in the assignment of promoting a safe and efficient payment system. Based on this, it ought to be concluded that a launch of an e-krona would be possible without legislative changes. However, it ought to not be desirable from the perspective of legal certainty, since the Riksbank is undoubtedly a very influential authority under the government with extensive mandate and the legislator has, as mentioned, expressed the importance of avoiding a discretionary design of the Riksbank’s activities.

### 4.1.2 The e-krona’s legal status
The status of legal tender in the text of the Riksbank Act only stipulates the method of payment, but does not present any arguments as regards to why banknotes and coins have the status of legal tender.\footnote{See section 2.3.1.1.} The preparatory works to the act do not give any indications as to why either. However, since it is a central banks’ task to answer for the value of its fiat currency, there ought to be a need to clearly distinguish its’ status from other means of payment. Still though, neither source of law specifies how far the obligation, to accept cash as a means of payment, goes. Even though the starting point is that everyone is obligated to accept banknotes and coins as legal tender, one needs to see to the purpose of the regulation.
While there are uncertainties regarding how far the obligation extends, what is clear nonetheless is that there is nothing that indicates other means of payment are to be considered unlawful. In turn this ought to imply that the rule is not absolute; the rule does not consequently indicate that there is an obligation to always pay with tangibles. Freedom of contract, *pacta sunt servanda*, stipulates the contractual parties to provide for the terms and conditions that will govern their contractual relationship. The parties can thus agree on how the payment of a specific product or service should be made. Freedom of contract is not statutory in Sweden, but merely a contractual principle. However, the principle has always been respected by the law. Consequently it ought to not have been the legislators’ intention to have the obligation to accept cash as payment be primary in relation to the civil-law statute of contract law. The answer to the question whether or not it is legal for a store, restaurant or other commercial participants to deny cash payments, even though the Riksbank Act clearly states that banknotes and coins issued by the Riksbank are legal tender, is therefore yes; the obligation to accept cash can be excluded through an agreement. Stores and other commercial participants on the market can say no to cash payments, because they can enter into whatever agreements they want with their customers. In theory, putting up a sign at the entrance stating that they do not accept cash is enough. Customers who then walk in to the store have implicitly accepted that not paying with cash is permitted. Another exemption to the obligation to accept cash, can furthermore be found in tax legislation. The law states that tax payments shall be paid to the Swedish Tax Agency’s special account for tax payments, which *e contrario* means one cannot pay taxes with banknotes and coins.

As a result of the principle of freedom of contract, the status of cash as legal tender only has significance in cases where the parties do not have an agreement or contract in place regarding the method of payment. In such cases the recipient cannot claim that the payer, who offers cash, has not fulfilled his part of the agreement. Despite objections from the recipient against cash as a method of payment, the debt shall nevertheless be deemed serviced.

If an e-krona was to have the status of legal tender, it must be stipulated by law. The law specifically only refers to banknotes and coins. The only money in circulation currently, considered as money from a strictly legal sense, is therefore banknotes and coins and nowhere in the preparatory works to the Riksbank Act, can be deduced that the status of legal tender ought to be applied to other means of payment. The e-krona, if introduced, would therefore not constitute money from a legal perspective, simply because the law does not recognize it as legal tender. The question is whether the law should be changed regarding this matter or not. In light of the civil-law statute freedom of contract, the status of cash as legal tender today has, as discussed above, no practical significance in society. Seeing as how the status of legal

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250 Chap. 62 art. 2 Tax Procedures Act [Skatteförfarandeg (2011:1244)].
tender therefore is merely a status in theory, to give the e-krona the status of legal tender would in practice thus likewise to cash, not be of any great significance; the contractual parties have the right to agree that a means of payment other than e-kronor should be used as payment as a result of the principle of freedom of contract.

Then again, whether or not an e-krona can be classified as money is largely dependent on if the e-krona can be seen as a generally accepted means of payment. As mentioned previously, to grant a means of payment the status of legal tender can be seen as a course of action taken in order to introduce a new means of payment on the market, in order to make sure that it gains acceptance by society. It would gain acceptance because the status of legal tender, as stated in the preparatory works, means that everyone is obligated to accept the item that has been given such a status, as a means of payment. To make sure the e-krona gains acceptance as a means of payment, it might be necessary to give it the status of legal tender, more so for the recognition and status, rather than the practical use of it later on since after all, as stated above, freedom of contract can limit the use of the e-krona.

Besides recognition as a generally accepted means of payment, in order for an item to be considered as money, the three functions associated with money have to be fulfilled. Would the e-krona fulfill these three functions? Since the e-krona would be expressed in SEK, one can conclude that, if introduced, it would fulfill the function of a unit of account. Also plausible is the fact that it would function as a store of value, because it would be tied to the Swedish currency and would therefore keep its value in accordance with the fixed exchange-rate system. In light of the fact that the e-krona would be issued and controlled by the Riksbank, this ought to create trust in the public and the e-krona can thus serve as a valid medium of exchange for purchases of goods and services. The e-krona would be a direct claim on the Riksbank and would be available 24/7, which as a result also is in line with the criteria of store of value and medium of exchange. Based on all these facts it ought to be noted that the e-krona would be defined as money based on its functions.

As mentioned, giving the e-krona the status of legal tender would merely be done to make sure it gains acceptance. But considering the fact that, as has now been established, the e-krona would fulfill the three functions, giving the e-krona the status of legal tender might not be necessary, since the fulfillment of the three functions is enough for the e-krona to be defined as money. Perhaps not in legal terms, but at least in some aspect of the broad concept of money. However, it still does not solve the problem regarding the practical use of the e-krona.

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251 See section 2.3.1.1.  
252 See section 2.1.1.  
253 See section 2.4.2.  
254 See chapter 2.
One of the intentions behind introducing the e-krona, can be attributed to the declining use of tangibles. The Riksbank therefore sees this as an obligation for them to act. The Riksbank has for decades provided society with banknotes and coins, but looking ahead, the technical development and digitalization on the payment market brings the question of the Riksbank’s role to a head. If the usage of cash continues to decline, an introduction of an e-krona could ensure that society still has access to a state-guaranteed means of payment in this digitalized payment market. The alternative would be not to act in the face of said developments, and thus leave the payment market to the private sector. This course of action would leave society completely dependent on payment solutions from private agents, which would ultimately hinder the Riksbank to fulfill its core assignment of promoting a safe and efficient payment system. For this reason, the Riksbank has decided to move on to a more operative phase in its e-krona project and started developing a value-based e-krona. Therefore, it seems as though the hope is that, by introducing an e-krona on the market, it will prompt people to use e-kronor in a higher quantity than cash. In light of the above discussed problem regarding freedom of contract limiting the use of the e-krona, in order to therefore make sure the e-krona has a more practical use, something needs to be done. One can argue that the state would have to adopt new legislation enforcing payment recipients to accept e-kronas in cases of counter sale. In doing so, shops and other participants on the commercial market would have a statutory obligation and may not consequently refuse to accept e-kronas, in contrast to the current situation with cash. Enforcing this new legislation, let us call it the e-krona rule, would thus restrict freedom of contract. The question that arises with regards to this is how legitimate enforcing such a rule is. There are laws in force currently, adopted by the state, limiting the parties’ right to freedom of contract. Although these laws have different purposes, they all nevertheless have in common the fact that they, at least to some extent, restrict the freedom of contract. In light of said argument, it would be possible to adopt said e-krona rule.

However, when the state uses its power to enforce new regulations, society might regard it as punishment. Currently, there is no regulatory pressure on market participants to accept cash payments. Regulation can only do so much to change behavior. While regulations certainly are an option in order to achieve control, as mentioned above, it may however not be the best option. Laws have varying levels of effectiveness as a tool, used to change behavior. At its best, it rightfully impacts how market participants act by providing an incentive to accept e-kronor. However, at its worst, legislation merely becomes another hoop for market participants to jump through. It would nonetheless be an option for a solution in order to go

255 See section 2.4.1.
256 See section 3.1.2.
257 See section 2.4.2.
around the principle of freedom of contracts to solve the issue of the practical use of the e-krona.

4.1.3 Integrity perspective
Transactions with banknotes and coins can be made anonymously. The anonymity aspect is one of the most significant properties in regards to banknotes and coins. If the Riksbank introduced the e-krona, it is possible to completely deprive this digital alternative the anonymous nature that cash possesses, depending on its design.\textsuperscript{259} Since it is possible to either preserve or eliminate the anonymity aspect, it is a decision that should be carefully considered from a \textit{de lege ferenda} perspective.

Since cash possesses the property of anonymity, it offers both freedom and responsibility for the individual. In light of the fact that digital transactions are traceable, cash has thus always been the preferred means of payment used for illegal transactions.\textsuperscript{260} How much of the supply of cash in Sweden is used for illegal transactions, is difficult to estimate.\textsuperscript{261} Because of the integrity-protective nature that cash possess, it is possible in this context to end up in a cognitive trap. Cash helps to preserve and enhances the individual’s privacy by creating anonymity and thus one could argue that cash then must principally be used to hide misconduct and for that reason cash should be eliminated. However, this argument suffers from a basic misleading notion; not everyone who values their privacy and anonymity consequently commit crimes and has deceitful morals.\textsuperscript{262} The right to privacy is a basic human right.\textsuperscript{263} There is therefore no doubt about the fact that privacy is an interest worthy of protection. Whether or not the possibility to conduct anonymous transactions should be regarded as part of the individual’s right of respect to privacy, is therefore a relevant legal issue. In this context it is important to point out that the Riksbank is investigating the e-krona as a possible complement on the payment market, not a substitute for cash.\textsuperscript{264} The word \textit{complement} is important to emphasize. The Riksbank does not explain why e-kronor can only be introduced as a complement, but it ought to be argued that it must be due to the fact that, if the Riksbank was to issue e-kronor without updating the Riksbank Act, the basic premise is that the introduction of an e-krona in no way may violate or counteract any of the Riksbank’s current statutory objectives, assignments or tasks.\textsuperscript{265} As the only participant on the payment market entitled to issue banknotes and coins, if the Riksbank was to issue an e-krona, it would still be required to continue issuing banknotes and coins; as long as this assignment remains, the Riksbank has no legal basis to cease the issuing of banknotes and coins. E-kronor can therefore, under the current legislation, only be issued as a complement on the payment

\textsuperscript{259} See section 2.4.2.
\textsuperscript{260} Report 1, p. 21; report 2, p. 35.
\textsuperscript{261} The Swedish Riksbank, Kontantanvändningen i Sverige: delprojekt 1 i översyn av sedel- och myntserien, 2008, p. 12.
\textsuperscript{262} Camera, p. 143.
\textsuperscript{263} Art. 12 Universal Declaration of Human Rights (UDHR); art. 8 (1) European Convention on Human Rights as amended by Protocols Nos. 11 and 14, supplemented by Protocols Nos. 1, 4, 6, 7, 12, 13 and 16 (ECHR).
\textsuperscript{264} See section 2.4.1.
\textsuperscript{265} See chapter 3.
market. As long as the Riksbank’s assignment of supplying cash remains, cash will be part of the payment market.\textsuperscript{266} Introducing an e-krona would thus not mean that cash would completely disappear.

Since anonymous cash will still be in circulation, the question of preserving the public’s right to integrity may therefore not be relevant regarding the e-krona. However, since the trend on the payment market indicates towards cash gradually being phased out, the question of integrity nonetheless certainly \textit{is} relevant; the development on the payment market is rapidly moving towards a society where cash usage in practice may become so marginalized that cash will no longer generally be viable.\textsuperscript{267} In such a situation, the question whether the e-krona will be a bearer of the anonymous property that cash possesses or not, will ultimately be what determines if the government in general will allow for anonymous transactions to take place. For the safeguarding of the public’s freedom, access and ability to carry out anonymous transaction could be considered a significant factor. The question the legislator must ask is if the individual’s freedom should be valued higher than the potential benefits society and the economy could obtain by making all transaction of Swedish kronor traceable.

An individual’s right to private life should undoubtedly be respected by the state since, as mentioned, this right is established as a basic human right. Regardless whether or not the possibility of conducting anonymous transactions is considered as a protection under the European Convention on Human Rights (ECHR), public authorities nonetheless do have the possibility to restrict the right to privacy. Restrictions are allowed if conducted \textit{“[…] in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others”}.\textsuperscript{268} What this all means is that an individual’s right to private life is therefore not an absolute right, but can rather be valued and weighted against the potential social benefits of the right being compromised. Restrictions are possible if it is considered necessary for the country’s economic prosperity. Should the anonymity aspect be preserved? It ought to be argued that the \textit{same} anonymity cash possesses is difficult to recreate in digital form. Furthermore, since there are legal requirements that must be fulfilled regarding the tractability of transactions,\textsuperscript{269} from a legal perspective it seems legitimate to deprive e-kronor of the anonymity aspect.

\textsuperscript{266} Chapter 9 art. 14 The Instrument of Government.
\textsuperscript{267} See section 2.4.1.
\textsuperscript{268} Art. 8 (2) ECHR.
\textsuperscript{269} See Anti-money Laundering Act [lag (2017:630) om åtgärder mot penningtvätt och finansiering av terrorism].
4.2 Effects of an e-krona on the financial stability

4.2.1 Will the e-krona be a contributing factor towards a safe and efficient payment system?

The Riksbank’s objective for its monetary policy assignment is to maintain price stability and promote a safe and efficient payment system.\(^{270}\) An underlying reason as to why the Riksbank is considering introducing the e-krona, is because it believes the e-krona would serve as a safe and effective alternative to commercial bank money (scriptural money),\(^{271}\) which one could argue seems to be a solid foresight, due to the fact that there is a need for an alternative means of payment in light of the fact that Sweden is moving towards being an almost cashless society. If the e-krona can be seen as a safer and more efficient means of payment is therefore important to analyze, as it may possibly have major effects in regards to the extent both households and companies choose to keep e-kronor.

The Riksbank is of the belief, according to its reports, that e-kronor could contribute to a more secure payment system depending on its structure. The report states that if an e-krona can be issued through “an alternative platform or infrastructure that can function independently of the commercial, bank-owned infrastructure, it can contribute to the payment systems being better able to withstand technological disruptions and situations of financial unease”\(^ {272}\). The fact that e-kronor should be separate from the commercial banks, ought to be wise, not only due to the fact that the Riksbank should be able to have more direct opportunities to influence the monetary policy, but rather more so because the e-krona ought to serve as a “security back-up”, in light of the fact that it would be issued by the Riksbank and therefore serve as a state guaranteed means of payment.\(^ {273}\) Since the Riksbank therefore is the issuance authority, in theory it therefore means the e-krona would function as a safer alternative than commercial bank money during financially unstable times. However, the deposit guarantee has to also be taken into account in this evaluation. It is therefore possible to argue the opposite, i.e. that the e-krona might not be considered a more secure alternative for the majority of households, in view of the fact that the deposit guarantee helps to make sure that a large portion of commercial bank deposits are safe even if a bank was to fail. It thus preserves society’s trust in the banking system and serves as a form of dissuasion for people to all withdrawal their deposit savings at once in times of financial stress. This argument however suffers from a basic misleading notion; keep in mind the fact that only a certain amount of deposited money is guaranteed,\(^ {274}\) which consequently means that it can be argued that, with an e-krona, the situation may be different in financially troubled times, because an e-krona could be a risk-free alternative for companies or individuals whom have large amounts of bank deposits on their accounts.

\(^{270}\) See chapter 3.
\(^{271}\) See section 2.4.1.
\(^{272}\) Report 1, p. 39.
\(^{273}\) See section 2.4.1 and 4.1.2.
\(^{274}\) See section 3.2.2.
Furthermore, with an e-krona the Riksbank could easier fulfill its objectives, because otherwise there will only be private actors offering the public electronic money, which as mentioned above, can only partly be controlled in a crisis situation. An e-krona thus promotes security in the payment system, which can serve as a reason regarding why the public can be expected to see the e-krona as a secure asset. In conclusion, there thus seems to be reason to believe the e-krona would be classified as a secure means of payment, since it is guaranteed by the Riksbank. However, there are ambiguous results about whether or not the e-krona will serve as a *more* secure payment option than today’s commercial bank money. There is mainly support for the e-krona becoming a safer alternative: in times of financial stress for those who are *not* covered by the deposit guarantee.

Another important aspect to bring up is whether the e-krona will be an *effective* means of payment or not. In the report, the Riksbank states, in relation to the decreasing cash usage, there very well “[…] *could be longer-term problems involving inadequate efficiency and resilience in the payment system […]*” due to the fact that there are only a few actors dominating the payment market. The e-krona would be issued by the Riksbank, a fact indicating it would function as an effective means of payment. However, the question is not really about whether or not the e-krona per se would be effective. The current digital system offered by commercial banks is already in itself effective, so the more important aspect of the question is if it will be a *more* effective means of payment than those means of payments already in existence currently. There is nothing that indicates there is an affirmative answer to the question. However, there is at the same time nothing indicating the opposite either. The answer is thus that the question of effectiveness is still very much something one can only speculate about at this time.

4.2.2 The zero lower bound problem in relation to the e-krona

In the report, the Riksbank does not make it clear how the terms and conditions of the e-krona should be designed. However, by interpreting the report one can conclude that the supply of the e-krona should be unlimited in quantity and accessible to everyone. It shall be account-based, but also value-based. Both forms require a central register where the holders are registered and all transactions are stored. The fact that the value-based e-krona will have a central register in practice makes the difference to an account-based e-krona small.

How the e-krona may affect the monetary policy depends, according to the Riksbank’s report, on whether or not the e-krona will be interest bearing. The value-based would as a general rule not be interest-bearing and the account-based would be. How the interest rate is to be

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275 Report 1, p. 13.
276 This circumstance opens up the discussion of what happens to the commercial banks if the Riksbank was to compete with private interests; does competing with commercial banks not lead to the risk of counteracting the system from being stable? This question is further discussed in section 4.3.2.2.
277 See section 2.4.2.
278 See section 2.4.2.
determined, given that it may deviate from zero percent, is not clear; should the interest rate be negative and how should it be set in relation to the repo rate, are for example two important issues not discussed in the report. Without answers, it is difficult to consider the consequences an e-krona could have on the monetary policy.

An explanation as to why the effect on the monetary policy is dependent on whether or not the e-krona will be interest bearing, is thus not given. The reason as regards to why the effect on the monetary policy is dependent on the question of interest, can however be argued must be due the fact that, if the e-krona was to be interest-bearing, it would enable the Riksbank to set a negative interest on the e-krona. Introducing an interest bearing e-krona ought to therefore make the monetary policy more potent. Zero as an interest rate floor has, since it was first introduced, hampered the monetary policy and as long as there are banknotes and coins in circulation, a nominal interest rate level stuck at zero is a guarantee. The introduction of an e-krona could theoretically solve the zero lower bound problem. Suppose a scenario where banknotes and coins have disappeared from the Swedish economy, which the current development is indicating towards. If by chance physical money was to be eliminated from the economy, it would allow for the Riksbank to set a negative interest rate, since consumers would not have the alternative of making cash withdrawals. They would therefore not be able to avoid the negative interest rates. This would mean that both households and companies would be met by a negative interest rate, which would be a contrast from todays’ situation where only commercial banks and some larger companies are met by a negative interest rate.

The above scenario is only realistic if cash was to disappear. However, from a legal perspective, the Riksbank has an obligation to keep issuing cash (unless the law was to be changed), even though the use of them is decreasing. The Riksbank states in its report that it is not likely that commercial banks, companies and households will make large payments with cash in the near future, due to the fact that holding cash brings about costs and it is also difficult to make large payments and store large amounts of banknotes and coins safely. These factors could all be seen as an indicator that, even though cash would to still be in circulation in the economy, the Riksbank could, with an introduction of an interest bearing e-krona, still set a negative rate and thus may affect households. The Riksbank wants commercial banks to put a negative deposit rate towards their customers. However, the commercial banks are not following the Riksbank’s recommendations. With an introduction of an interest-bearing e-krona, issued by the Riksbank, the Riksbank can therefore get increased opportunities to influence the market interest rate more directly. This would potentially give the Riksbank an extra instrument in order to stimulate the economy. If the Riksbank however chooses to

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279 See section 3.2.3.
280 See section 3.2.3.
281 See section 4.1.2.
282 See section 3.2.3.
introduce an e-krona without interest, this may prevent them from setting a negative repo rate. This is due to the fact that if an e-krona is implemented with a zero percentage interest rate, it creates incentives for those who are faced with a negative interest rate on their commercial bank money to convert said money into e-kronor. This would in turn set a lower limit for the monetary policy, which could make it more difficult for the Riksbank to set the prime rate below zero.

4.3 What is the right course of action?
4.3.1 Arguments for an introduction
4.3.1.1 Who should have the privilege to create money?
Over 350 years ago, the Riksbank was the first central bank in the world to introduce banknotes, paper money. Today, the same bank is working with this e-krona project and can become the first bank in the world to introduce its own digital currency. Parallels can thus be drawn to history; money and technology have always been intertwined, because technology is needed to manufacture and distribute money. The metal coin evolved in steps with the increasingly advanced metal handling and banknotes with the printing press. Now, society has evolved and we have switched to a digital age and it therefore seems to be logical to at least investigate if a digital state issued means of payment is the right course of action. A question that may arise in the context is why Sweden is unique when it comes to abolishing the use of physical money. As has previously been discussed in the thesis, there does not seem to be a simple and clear explanation, and it is something that would have to further be investigated. One could however argue that the answer to the question depends on two things. The first is that the public has a great deal of trust in the state, spilling over into a trust in society. Secondly, Sweden has a rather concentrated banking sector with few large actors, which therefore makes it easier to develop and coordinate a common infrastructure and services such as the Bankgiro and Swish.

Other central banks are following the Riksbank’s work with great interest. However, the project has barely attracted any attention from the public. With the declining use of physical money, one can assume that people ought to find avoiding paying with cash more convenient and instead therefore use cards, Swish or other digital solutions. The reason as to why the project thus seemingly has not attracted any attention from the public, is probably because most people are thinking “do we need the e-krona? What difference does it make; we already use digital money when we pay with cards or use Swish”. Factual, however it is the commercial banks who create said digital money, therefore the question of who ought to create the money in society is an important political issues.

283 Swedish translation: styrränta = reporäntan.
284 See section 2.1 – 2.2.
285 See section 1.1.
286 See section 2.1.1.
287 See section 3.1.2.
Since only banknotes and coins are considered legal tender, other means of payment are in contrast therefore not recognized as money from a legal aspect. Does that consequently mean the creation of money through FRB ought to be unlawful? There are voices advocating for that to be the case.

Critics argue that the core of the problem lies within the concept of legal tender. The idea behind granting banknotes and coins the status of legal tender, was to make certain that not just anyone could create or counterfeit money. The state has rightfully taken the privilege of creating legal tender and as the term indicates, it can only be done if there is a statute backing up the privilege. The conclusion critics thus have drawn is that legal tender is money the state creates through its central bank. However, in practice we know that commercial banks also create money. Where is this regulated? Nowhere, commercial banks create money through lending (FRB), but the state has nonetheless not given them the right to do so through legislation. Therefore it has been argued that the practice of FRB is a form of fraud and thus a form of theft against legitimate deposit holders. However, it ought to be argued that there is a misperception regarding the definition of legal tender. The Institution of Government states that the Riksbank has the sole right to issue banknotes and coins. Regulations on the monetary policy and the payment system are otherwise communicated by law. Such a law is the Riksbank’s Act and accordingly banknotes and coins, which the Riksbank has the exclusive right to issue in accordance with the Institution of Government, has been given the status of legal tender. The critique against FRB rests on the idea that only the Riksbank has the right to create money, which is correct, however only to some extent and that is where the misperception lies. What should be noted is that both laws state that the sole right to create money is specifically in regards to banknotes and coins. As has been noted previously in the thesis, the concept of money is greater than just the physical aspect of money – banknotes and coins. Commercial banks do not create banknotes and coins, but through FRB they create scriptural money. As has been noted, they are not legal tender, however are still accepted as a means of payment, because there is nothing, in accordance to the preparatory works to the Riksbank Act, indicating other means of payment in contrast to banknotes and coins are to be considered unlawful. As a result the critique against FRB has no bearing.

The critique nonetheless raises an interesting point of discussion, namely if the rules concerning the creation of money ought to be reformed. When faced with the question, understanding the phenomenon of money is fundamental. The concept of money is a social construction, which means that money is not only created by man, but can also be transformed

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288 See section 4.1.2.
291 See chapter 2.
292 See section 4.1.2.
and improved by man. The creation of money through FRB may not be unlawful, but it does nonetheless have weaknesses.

There are a number of differences between central bank money and commercial bank money. The major difference is the fact that banknotes and coins are physical objects encumbered with value, used to settle a debt.293 Commercial bank money is instead a transferable debt; it is created through a bank’s lending process, meaning that the existence of newly created commercial bank money is linked to the debt which forms the basis for the creation of said money.294 This is the fundamental difference between these two types of money. Commercial bank money in contrast to central bank money in fact has a limited lifespan, meaning that when a borrower pays off his debt to the bank, the equivalent sum of commercial bank money ceases to exist in the financial system. The consequence of this is that it becomes difficult to specify how much money is available and, above all, will remain in the Swedish economy. The Riksbank certainly does indirectly control the commercial bank’s lending through open market operations by, among other things, selling government bonds in order to take surplus liquidity from commercial banks,295 which means that the Riksbank has the opportunity to influence how much monetary base should be in circulation. However, the problem with FRB is that, since the money created is not monetary base, commercial banks thus create more money than what is available in the economy. The financial system is sensitive in nature, because the systems’ components have many points of contact; if a crisis occurs within one part of the system, it may easily cause a domino effect.296 Uncertainty regarding how much money that in actuality exists within the system, contributes to the system’s sensitivity. Commercial banks right to create money therefore seems to indicate that an instability has been built into the system.

The intention behind the introduction of money in society was to facilitate trade and thereby contribute to economic development and growth. Money has, as evident by history, been a resourceful invention that works because of society’s trust in it; people believe they in the future will be able to exchange their money for goods and services.297 The technological developments on the payment market and the Swedish publics’ changed payment habits, where cash has almost completely been replaced with digital money, ought to have in practice given the commercial banks monopoly on the creation of money; since the use of cash, which the Riksbank in theory and practice has the monopoly on issuing, is limited and since the money commercial banks create is in digital form, they therefore create the money that is actually used in practice, hence the ‘monopoly’. The question of who should have the

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293 See section 2.3.1.
294 See section 2.3.3 and 3.2.2.1.
295 See section 3.2.3.
296 See section 3.1.2.
297 See section 2.1 – 2.2.
mandate to issue money and have the responsibility for the publics’ means of payment thus becomes relevant.

It has never been considered reasonable to allow commercial participants on the payment market, who are driven by profit, to freely designate the amount of money they contribute to the economy. The state therefore tries to limit and regulate the production through instruments such as capital and reserve requirements. However, attempts at regulating the commercial bank’s production of money ought to not principally be desirable, since the reserve requirement that is already in place for the Riksbank to use as a monetary tool, is not used, which therefore indicates that there in practice does not seem to be much need for regulations. The question that arises in this context is if the state should take it one step further and entirely deprive the commercial banks of the right to create money and instead have the privilege of creating money be transferred entirely to the politically independent Riksbank. Through legislative changes give the Riksbank monopoly on all money production, instead of only monopoly on banknotes and coins, would justifiably require extensive legal investigation and in-depth social discourse. Regardless, the introduction of the e-krona would be a first step in this direction. With an e-krona, the public would be offered digital central bank money without a limited lifespan. The commercial bank’s monopoly on digital means of payment would thereby be limited, which in the long run would contribute to a more stable financial system. It would furthermore also solve the issue of whether or not the e-kronas would have practical use, since by limiting the commercial banks production of money, society would thus only have one option left regarding the use and availability of digital money, which as mentioned, currently is the preferred means of payment used by society.

4.3.2 Arguments against an introduction

4.3.2.1 The E-krona – a solution in search of a problem?

The above mentioned arguments all suggest that the e-krona would bring positive changes to the economy. But the idea of the e-krona can also be met by great skepticism. By reading the project reports, it can be interpreted that the main reason as to why the Riksbank is considering introducing an e-krona is due to the declining usage of cash. The Riksbank defines an e-krona as a deposit of Swedish kronor on an account in the Riksbank (account-based) or alternatively that they are stored digitally on a physical medium such as a prepaid card (value-based). The e-krona is a direct claim against the Riksbank and thus it is assumed that they can be equated with banknotes and coins. It is therefore not a question of a new currency as the name may indicate, but rather ordinary Swedish kronor, but with the

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298 See section 3.2.1.
299 See section 3.2.2.1.
300 Because the law is simply just not mandatory. See section 3.2.2.1.
301 See section 4.1.2.
302 See section 4.3.2.2 for counterargument.
303 See section 2.4.1.
304 See section 2.4.2.
difference that they are placed on an account at the Riksbank. Although the declining usage of cash seemingly is the major reason as to why the Riksbank is investigating an introduction of the e-krona, there are nonetheless other issues that will be significantly affected if an e-krona is introduced; issues that are not linked to the fact that banknotes and coins are becoming obsolete.

Previously in the thesis, a number of effects, highlighted by the Riksbank in its report, have been brought forward showing what might happen on the payment market if the Riksbank does not act to the current developments. All these risks are relevant. However, there ought to be reason to critique the Riksbank, since it does not clearly report how the introduction of an e-krona would reduce the identified risks or if there are other alternatives that can be used to manage the risks rather than introducing an e-krona.

Two of the presented issues concern individuals who do not want or cannot gain access to a bank account. The idea that the e-krona would serve as a replacement for cash for those who do not embrace the digital solutions available today, seems farfetched – because why would the e-krona’s design make it any easier? The reason as to why these individuals still want to use cash, ought to reasonably be because of the physical aspect. It is difficult to see how these individuals would be better situated with an account in the Riksbank or with value-based e-kronor stored digitally locally by the holder. To the extent to which technology is an obstacle, these people will probably not be any more attracted by the Riksbank’s technical solution than those offered by other actors. It is fundamental that one would need to have access to a smartphone or other technical aids, which should be an equally difficult obstacle for the Riksbank to navigate as it is for private actors. The Riksbank’s other concern is that if it does not act, the payment market suffers the risk of only being controlled by private actors and that a monopoly situation may arise. This reasoning is based on the fact that, even though the use of them is decreasing, the public nonetheless still has access to cash. It ought to not be possible to exclude, but the idea that cash is the reason as to why competition is maintained currently on the payment market, is questionable. Although some cash payments are free to carry out, using cash in today’s digital society is tedious and associated with costs.

Furthermore, the Riksbank put emphasis on that society is in need of and wants access to a state guaranteed – more secure – means of payment, however, this argument is questionable, since is that really the reason as to why people are using cash today, because they want state guaranteed money? It seems as though the answer to the question is: no, it ought to not be the reason. Cash used to be the normal and only way to make payments. But

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305 See section 2.4.1.
306 See section 4.3.2.2 for further discussion regarding alternative solutions.
307 However, as has previously been argued in the thesis, the commercial banks seemingly already in practice have the monopoly on digital money. See section 4.3.1.1.
308 Report 2, p. 32 f.
309 See section 2.4.1, 4.1.2 and 4.2.1.
with the evolvement of society, due to the digital era we now find ourselves living in, whether the money used is state issued or not, does not seem to matter. This because, if that was to be the point of contention, society would not be using scriptural money to the extend it is currently used, but society would rather keep using cash, since after all it is backed up by the state and thus may appear as a safer option.\footnote{Whether or not it is, has been discussed in section, 4.2.1 and further discussed in section 4.3.2.3.} If the e-krona was to be issued and it ended up being a success, there is still that risk lingering in the background that it would go beyond the Riksbank’s main assignment, which is to ensure that society is stable, handle disruptions that may occur on the payment market and also handle the inflation target.\footnote{See chapter 3.}

The e-krona project can in many ways be seen as a solution in search of a problem, not the other way around. The core problem is that cash usage has decreased dramatically and it is natural that the Riksbank as the issuer is asking itself what it should do in order to adapt to the current situation. Cash is however, as has been noted many times before, only a small part of the money supply – the big payments are made through bank transfers. Individuals are, as mentioned above, content with the way things are. In the report, the Riksbank does not specify which services it intends to compete with on the payment market, but rather chooses to keep the door open. What therefore still needs to be done is that the state has to carefully consider its role and how one might compete with private actors and more importantly – why, because it is difficult to see how the competition on the payment market today is working poorly. If the e-krona nonetheless was to be introduced and with that should thus the competition on the market change in the future, the state has the opportunity to take action through its regulatory authorities and legislation. An option in such a case could be to enforce the e-krona rule,\footnote{See section 4.1.2.} because it could limit the commercial banks production of money.\footnote{There is a downside to this argument, see section 4.3.2.2.}

4.3.2.2 Will an introduction of the e-krona put commercial banks out of business?

Previously in the thesis it has been argued that giving the commercial banks monopoly on the creation of money, ought to not be desired and with an introduction of the e-krona, the commercial banks’ production of money could be limited.\footnote{See section 4.3.1.1.} However, limiting the commercial banks right to create money would also mean that part of the banks’ operational business and profit would disappear, which after all is one of the commercial banks raisons d’être. What would the banks do if not serve as a bank to the public; receiving deposits and giving out loans? If the Riksbank was to compete with private actors, it ought to be possible to argue that the Riksbank runs the risk of counteracting its assignment to promote a safe and efficient payment system, because by competing with the banks, the Riksbank in turn counteracts the system from being stable, since the commercial banks are supposed to constitute the system; the commercial banks role in the system is after all to serve as
intermediaries.\textsuperscript{315} Introducing an e-krona would undeniably change the current financial system:

(1) \textbf{it would create a new payment system}: the general public would be able to access digital central bank money

(2) \textbf{commercial banks’ lending would be in question}: since an introduction would limit commercial lending, it would mean that commercial bank’s lending would have to be more dependent on central bank funding and collateral policy

(3) \textbf{commercial banks’ funding would change}: in order to maintain their funding stability, one could argue that they would have to fund themselves with more long-term market funding and less with retail deposits, as with the current situation.

The question is whether or not these changes are desirable? That is a question the state has to ask itself. What about alternative solutions? As mentioned, the Riksbank does not discuss if there are other alternatives that can be used to manage the risks rather than introducing an e-krona.\textsuperscript{316} The problem currently is that the use of cash is decreasing and with this development, banks have opted to not accept cash.\textsuperscript{317} Despite great progress with electronic payments, a significant part of the population is still dependent on cash in their everyday life, especially the elderly, immigrants and people who are disabled. Cash also has an important role to play in the event of an extensive crisis when digital means of payments do not work. Since the Riksbank has an obligation to keep issuing cash,\textsuperscript{318} cash should therefore continue to be a guaranteed and secure payment method, until society is ready to make a democratic decision to move on to new solutions.\textsuperscript{319} A possible solution: the Committee of Inquire on the Riksbank have in an official report of the Swedish government proposed new regulatory changes where commercial banks, who offer payment accounts to their customers and receive deposits up to a certain amount, should be obligated to accept cash and through ATMs, enable customers to perform financial transactions.\textsuperscript{320}

\textbf{4.3.2.3 Trust in the monetary system: comments on the financial stability}

Perhaps the most central issue raised by the Riksbank, is fundamental trust in the Swedish monetary system.\textsuperscript{321} The entire monetary system in Sweden is, as has been noted, based on society’s trust in it. There is currently no underlying value in the money or anything backing up its value.\textsuperscript{322} The Riksbank notes that the difference between money in commercial bank accounts and accounts with the Riksbank is that central bank money would have a lower

\begin{footnotesize}
\begin{enumerate}
\item See section 1.1.
\item See section 4.3.2.1.
\item See section 1.1, 3.2 and 4.1.2.
\item See section 4.1.3.
\item See further discussion in section 4.3.3.
\item See SOU 2018:42.
\item A deeper discussion in regards to alternative solution will not be conducted, since it falls outside the scope of the thesis’ aim and research questions. The question of an alternative solution is only brought up here as support for the argumentation; to specifically support the argumentation as far as showing why introducing the e-krona may not be the right course of action.
\item See section 2.4.1.
\item See section 2.1.1 and 2.3.3.
\end{enumerate}
\end{footnotesize}
credit and liquidity risk. Anyone who would have money in an account with the Riksbank would have a claim on the state, in other words, the money would be state-guaranteed. As for commercial bank money, the money is also guaranteed through the deposit guarantee, which the Riksbank does mention, but puts emphasis on the fact that it only covers deposits up to 950 000 SEK, which can thus be interpreted that the Riksbank is of the belief that the e-krona would be a more secure alternative, since there is no limit as to how much deposits would be safe. One could however argue that the current deposit guarantee would indeed serves as a good measure as to protect depositors in Swedish banks; the Riksbank fails to argue that there are few depositors who have more money than the maximum amount. Those who do have larger amounts, are mainly companies. To pick up on what has already been argued in the thesis, namely that the e-krona would be a safer option only “in times of financial stress for those who are not covered by the deposit guarantee”, an introduction of the e-krona would therefore not add much in terms of reduced credit risk for the general public. Practically speaking, bank deposits up to 950 000 SEK per account are in terms of credit risk as safe as e-kronor would be.

The Riksbank states that “in times of financial unease, the knowledge that money in bank accounts can always be converted to risk-free state money in the form of cash comprises a linchpin [...].” What the Riksbank is implying is that all depositors in all Swedish banks at any time should be able to convert their entire saving capital into state money through deposits with the Riksbank. Theoretically, the public already today has that possibility, because the availability of banknotes and coins is unlimited. In practice however, the demand for cash is low, as the Riksbank itself many times puts emphasis on. Having large quantities of cash is associated with costs. The cost of keeping large amounts of e-kronor, on the other hand, would be very low. The threshold for moving money is thus considerably lower. This fact changes the rules on the financial market, which in terms of financial turmoil can create serious risks and adversely affect the financial stability.

4.3.2.4 Bank runs with an e-krona
For the financial stability, the most important standpoint is that the supply of the e-krona is unlimited. Demands in normal economic times ought to not be so great, given that the interest rate-setting with regards to an e-krona is not designed in a way where the e-krona becomes a more attractive alternative compared to other investment alternatives. In times of financial concern however, society will be in demand of risk-free investments, which the e-krona offers. It is difficult to estimate probabilities and different scenario outcomes for future financial stress, but it is not impossible that the demand for the e-krona may be very large.

323 Report 2, p. 11 f.
326 See section 4.2.1.
327 Report 2, p. 11.
328 See section 4.3.2.4.
With an introduction of an e-krona, there are arguments that can be brought forward indicating that a bank run is something that is not an unlikely possibility. In a situation where there is concern about whether or not a bank can fulfill its financial obligations, the e-krona will become an attractive investment alternative – causing a bank run. A bank run occurs, as mentioned, when bank customers’ withdrawal all their deposits out of fear for the bank’s solvency, however in the case of e-kronor, instead of making a withdrawal, individuals in “panic” instead would want to move their commercial bank money to e-krona accounts. This mainly if the e-krona is seen as a more secure payment option; there have been arguments put forward in the thesis pointing towards the fact that it is possible to assume that an e-krona, especially in financially unstable times, may be seen as a more secure payment alternative to commercial bank money. Such a move ought to mainly be an attractive course of action for companies or individuals with large amounts on their commercial bank accounts, and such a move would then in turn affect the commercial banks’ liquidity negatively.329 A bank run could also occur if speculations are spread that commercial banks’ financial prosperity can be adversely affected by the e-krona being introduced on the market. That is, if deposit holders at commercial banks believe that the e-krona will lead to a bank run and the commercial banks’ liquidity thus is adversely affected. This could lead to a “self-fulfilling prophecy”,330 that is if society loses confidence that commercial banks are solid, and they then in “panic” want to withdraw their deposits.

The Riksbank states in its report that a bank run can occur even without the e-krona,331 and there is no reason not to agree. The underlying cause for an individual bank run is related to the bank taking too high risks in its operations or just the suspicion that this is the case. In other words, the cause is not related to the e-krona. However, with the e-krona it would be considerably easier to move money to a safe state alternative; the e-krona can thus facilitate and speed up a bank run. It is difficult for individuals and companies to assess the risks associated with a bank’s business. If there is the slightest suspicion that their money is not secure, it creates strong incentives to move them elsewhere, especially if it is easy. The public could perceive the e-krona as a safer option than the state deposit guarantee, even though they are equivalent regarding the credit risk.332 If so, it jeopardizes the legitimacy of the deposit guarantee. One of the main objectives with the deposit guarantee, in addition to serving as consumer protection, is to safeguard the financial stability by, among other things, preventing the emergence of a bank run. The e-krona could counteract this purpose and instead facilitate the outflow of bank deposits from commercial banks to e-kronor, causing a destabilized situation and the purpose of the deposit guarantee would be counteracted.

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329 See section 4.2.1.
330 Causing something to occur by simply believing it will come to fruition.
331 Report 2, p. 31.
332 See section 4.3.2.3.
The risk of a bank run to happen from commercial bank money to CBDC is thus a major potential problem with an introduction. However, it can be avoided; it can be argued that if commercial banks were to increase their liquidity reserves to a sufficiently high degree, it ought to create stability in the system and create trust in society. This argument may be solid in theory, however whether or not it would function from a practical standpoint, is a completely different matter, but it is the practical aspect which in fact is the most important one that needs to be taken into account. Questions that arise in this context are if there are sufficient funds in the State Treasury\footnote{Swedish translation: statskassan} and whether the state is prepared to take such a step, is it important enough?

4.3.3 Should the question regarding the introduction of a new means of payment be decided by an authority under the state or is it a political issue?

In the project report it is stated that "the Riksbank has not decided whether to issue an e-krona or not".\footnote{Report 2, p. 38. See also p. 1, 4, 9 and 21.} This statement is interesting. At first glance one might not find anything wrong with this statement. However, by thoroughly analyzing what in actuality is said, which could be argued is that it is up to the Riksbank to decide if an e-krona should be introduced and it has not made that decision as of now, an interesting question thus arises. Observe the emphasis on ‘it’. Is it really the Riksbank who should be making a decision on the matter? It can be argued that a question of such magnitude as an introduction of a new means of payment into the economy, ought to demand that an official report of the Swedish government be commissioned with the task to broadly and unconditionally analyze the role of the state on the payment market and also take into account issues outside the Riksbank’s areas of responsibility. One could however also argue the opposite, namely that the decision regarding an issuance of the e-krona ought to already fall under the Riksbank’s statutory assignment. As has been argued previously, from a legal perspective the Riksbank seems to have the right to issue an e-krona.\footnote{See section 4.1.1.} But, should really a question of this magnitude fall under the responsibility of the Riksbank’s statutory assignment? The Riksbank may be an authority under the state, but this issue is not one that an authority should decide on. Given that the e-krona, as has been presented in the thesis, would potentially have major effects on, among other things, the financial stability, a decision on whether or not it should be issued ought to fall under the Swedish parliament’s mandate.

4.4 Conclusion

As evident by the thesis, something needs to be done on the payment market in order to respond to the changes that have been taking place for the past decade and the changes that will continue to have effect. Over the course of the thesis, phrases such as “if introduced”, “with an introduction” and such, have been used when discussing what may happen if an e-krona was to serve as an alternative payment option to commercial bank money and physical
money. Now however, what needs to be discussed is the question whether or not the e-krona should be introduced on the payment market.

From a legal perspective, it has been argued that the Riksbank ought to have mandate to issue an e-krona under the current Riksbank Act. However, it is wise that the Riksbank Act be clarified, because the arguments put forward in the thesis in support of the fact that the Riksbank ought to have the right to issue e-kronor, are based on interpretations of the law: (1) the Riksbank Act does not clearly state that the Riksbank may issue e-kronor, it has rather been argued that the Riksbank may issue e-kronor through its assignment of promoting a safe and efficient payment system, (2) there is furthermore no clear permission or prohibition to receive deposits from the public, it has rather been interpreted, through a purposive approach and e contrario interpretation, that the Riksbank is prohibited to do so, or may to do so indirectly through its assignment to promote a safe and efficient payment system. No explicit mandate or prohibition is thus available. Also discussed from a legal standpoint, is the question of legal tender. The e-krona would not have the status of legal tender under the current Riksbank Act. In other words, by not having the status of legal tender, the e-krona would not constitute currency. The only reason to change the law, in order for the status of legal tender to also included e-kronor, would be if one finds it important enough that e-kronor are seen as money from a legal sense. Otherwise, since it in practice ought to be enough that a means of payment fulfills the three function of money, no changes to the legislation have to be made.

The fact that banknotes and coins are being pushed aside, is more a social problem for those who cannot or do not want to adapt to digital payments. The e-krona seems more like a risky social experiment where it, beforehand, is difficult to assess the effects on the financial structure and stability an introduction would have. The pilot project hardly answers any of the important system issues. As of right now, with the insufficient information available, an introduction of the e-krona does not seem to be the right course of action. It is unnecessary to build a system that increases the risks of financial instability. The probabilities of both individual bank runs and system crisis to occur are likely to be small. Observe the choice of word: possibly. It may very well be a certainty; one always has to see to the worst case scenarios and in this case, even though the probabilities of them occurring may be small, the worst case outcomes are nonetheless very serious and if they were to occur, it would hurt the Swedish economy significantly. A decision to change a system, and one that has effects on among other things the deposit guarantee, cannot be taken lightly and it is therefore necessary that the consequences for the financial stability be examined very carefully. There are too many missing pieces and uncertainties. A proposal with such great effects must be tested politically and investigated at state level in an official report of the Swedish government.

336 See section 2.1 – 2.2; section 4.1.2.
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**Regulation**

*Swedish regulation*

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Jordbruksförvärvslag (1979:230) [Land Acquisition Act].

Konkurrenslag (2008:579) [Competition Act].


Lag (1915:218) om avtal och andra rättshandlingar på förmögenhetsrättens område [Contracts Act].

Lag (1936:81) om skuldebrev [Bill of Exchange Act].
Lag (1970:1028) om rikets mynt [Swedish Coin Act].


Lag (2017:630) om åtgärder mot penningtvätt och finsansiering av terrorism [Anti-money Laundering Act].

Skatteförfarandelag (2011:1244) [Tax Procedures Act].

Prop. 1986/87:143.

Prop. 1995/95:60.


SOU 2018:42.

*International regulation*


Consolidated version of the Treaty on European Union on the Functioning of the European Union 2012/C 326/01 (TFEU).

European Convention on Human Rights as amended by Protocols Nos. 11 and 14, supplemented by Protocols Nos. 1, 4, 6, 7, 12, 13 and 16 (ECHR).


Universal Declaration of Human Rights (UDHR).
### Annex 1

<table>
<thead>
<tr>
<th>Type of money</th>
<th>M0</th>
<th>MB</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>MZM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notes and coins in circulation (currency)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Notes and coins in vaults (vault cash)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Required reserves[^1] and excess reserves not physical present in banks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Traveler’s checks[^2] of non-bank issuers</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand deposits (also known as scriptural money or commercial bank money)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other checkable deposits (OCDs), which consists primary of negotiable order of withdrawal (NOW) accounts at depository institutions and credit union share draft accounts</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saving deposits</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time deposits[^3] less than a certain amount</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large time deposits, some money market funds[^4], some short-term repurchase[^5] and other larger liquid assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All money market funds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

\[^1\]kassareserver \[^2\]resecheck, \[^3\]depositkontrakt, \[^4\]penningmarknadsfond, \[^5\]visa korta värdepapper

- **M0:** *Currency in circulation*. The narrowest definition of money, limited to banknotes and coins in public circulation, referred to as narrow money.
- **MB:** *Money base* or *Total currency*. All physical banknotes and coins held by both the public and by the banks as cash reserves. This is the base from which other forms of money are created and is traditionally the most liquid measure of the money supply.
- **M1:** *Money*. Defined as M0 + Demand deposits.
- **M2:** *Money and close substitutes*, meaning M2 represents M1 and close substitutes for M1. M2 is a broader classification of money than M1 and is a key economic indicator used to forecast inflation.
- **M3:** *Broad Money*. Defined as M2 plus large and long-term deposits.
- **MZM:** *Money Zero Maturity*. A recent monetary aggregate meant to measure all liquid forms of money within an economy. MZM represents all money in M2 less time deposits, plus all money market funds.