



TRANSITION OF A COUNTRY TO THE CASHLESS ECONOMY

PRZECHUD KRAJU NA OBRÓT BEZGOTÓWKOWY

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Pikar Olha

Finance

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Introduction

This topic was chosen due to its individuality, as well as its newness in the field of economics and finance. Importance was in reviewing and analyzing the progress and decisions on the promotion in the direction of a cashless society. The aim of my work is to track and understand the transition to a cashless payment system, to trace the advantages and difficulties in the transition, as well as benefits for society and the general population, the economy and the central bank along with the state, and what both sides may lose during the transition. In this point, it is necessary to clarify that a non-cash form of payment in this work is considered a form of money turnover in which a small amount of coins remains for small transactions and small anonymous transactions, as well as in cases of a malfunctioning system. Next important part of my work: trace of real transition of the country to cashless payments, considering statistical data and steps that the central bank and the government are taking to reduce banknotes and coins, as well as the introduction of new systems and services.

The first chapter of this document discusses and explains the concept of money, their history, transformation and development up to the moment when digital ways of paying for services and products appear.

The second chapter clarifies the value of digital payment methods, their types and value for people. The chapter covers all the positive aspects of the country's transition to cashless payments, as well as all the disadvantages for both parties, the central bank and the government and, on the other hand, the citizens of the country.

The third section gives an example on Sweden, which is now switching to cashless payments and is the closest to getting rid of all the cash in the country's turnover. We consider the statistics of the country, indicators of transition and statistics on the reduction of banknotes and coins of the country's turnover. The stage of implementation of each of the four steps is described in the second part of the work. At the end of the section, the problems of the selected country and its promotion towards a non-cash society are considered.

Chapter 1. Money

1.1 Definition and features of money

Money in current period is a device or method to obtain certain products or services. Whole society takes it for granted and only a small part of it muse about the fact that this source of payment came through immense number of changes and modifications before developing into known way of exchange in our everyday life. *Per aspera ad astra* however those stars are much further than we think they are. The history of developing of the source of trade starts even BC years.

Money is a universal equivalent that serves us a measure of the value of any goods and services and is capable to be directly exchanged on them. In its form, money can be a special commodity, a security, a sign of value, various goods or valuables, or records of invoices. (Keynes, 1993)

Money – a common mean of commitment regulation. Speaking about money their history, as well as development, it is impossible not to list its features:

1. Common acceptability
2. Means of commitment regulation
3. Perfect divisibility
4. Physical stability
5. Easy in transport
6. Perfect liquidity

As well as all the functions of money, developing and subsequently adding development of money and their forms:

1. Mean of circulation (exchange)
2. Mean of payment
3. Mean of value storing
4. Mean of value measure
5. Mean of account unit

First of all explaining premier function it could be said that money is used as an intermediary in the circulation of goods. For this function, the ease and speed with which money can

be exchanged for any other commodity (liquidity ratio) is extremely important. When using money, a commodity producer gets the opportunity, for example, to sell his product today, and buy raw materials only in a day, week, month, etc. At the same time, he can sell his product in one place and buy the one he needs in a completely different one. That performs money as a medium of circulation overcomes temporal and spatial restrictions in exchange. Second function states that money is used in determination of debts and paying them. This function gets independent value for situations of unstable prices for goods. For example, the goods were bought into debt. The amount of debt is expressed in money, and not in the quantity of goods purchased. Subsequent changes in the price of the goods no longer affect the amount of debt that needs to be paid in cash. This function of money is also performed in monetary relations with financial organizations. Money plays a similar role when they express some economic indicators.

Third function tells that if in the conditions of natural money in order to maintain a balance between the money and commodity masses, it was necessary to reduce the amount of money in circulation, they began to be deposited in the form of treasures. Treasures differ from accumulation in that accumulation is a form of accumulation of funds for a particular purpose; upon reaching the required size or at the right time, they are spent. Treasures are made without a specific goal. The main reason for their formation is the impossibility (or unwillingness) of the effective use of the entire amount of cash. Treasures begin to spend when the economy's need for money increases. In modern conditions of symbolic money, the role of treasure in regulating the money supply is insignificant. (Krugman, 2006)

Next, fourth function could be explained as follows: heterogeneous goods are equated and exchanged among themselves based on price (exchange ratio, value of these goods, expressed in the amount of money). The price of the goods performs the same measuring function as in the geometry of the length of the segments, in physics the mass of the bodies. For measurements, it is not required to know thoroughly what space or mass is, it is enough to be able to compare the desired value with a standard. The currency unit is the benchmark for goods. In the context of non-monetary money, the question arises of using money as a measure of the value of money itself (selling money as a commodity, exchanging money for money). It also depends on the nature of money whether money is a sustainable measure of value. (Kamenetsky & Patrikeev, 2008)

The last one of these functions states that a unit of account in economics is a nominal monetary unit of measure or currency used to represent the real value (or cost) of any economic item; i.e. goods, services, assets, liabilities, income, expenses. It is one of three well-known functions of money. It lends meaning to profits, losses, liability, or assets. (Mankiw & Gregory, 2008)

It is highly probable that the middle of exchange will not retain in the up to date form notwithstanding the fact of long overdue in definite frameworks of its appearance and method of use. After all needs of society in wider range of functions as well as properties of money and currency grow. The superb example of such demands serves appearance and active exercise of different kinds of crypto currencies and new sources of payments. (Dwivedi, 2005)

However, it is important to start from the very beginning when money emerged as a source or middle of exchange of all goods and services. Existing of such a unique system of trade had to be reinforced by some features and functions of the units of trade. (Dwivedi, 2005) Regarding features of the middle of exchange the fact of significance of the first paragraph (common acceptability) can be easily observed. The aim of underlining this feature of money is to present the idea of the exercising of money nowadays, which lies in people beliefs of money worthiness since they do not reinforced to any kind of the valuable items such as precious metals and to show the power that was given to pieces of paper and coins by society to enable the system to work. (Dwivedi, 2005) (Abel & Bernanke, 2005)

In content of this system and exercising of money, should be proposed to consider the history of development of the form, function and features of money regarding the needs of society through different periods.

1.2 Historical development of money forms

Until money were introduced in our lives as they are, they came through the long process of reformation and transformation. The first period or the beginning of exchange experience was Barter.

People engaged in barter, the exchange of merchandise for merchandise, without value equivalence, which further influenced on their understanding of inconvenience of such a trade method. (Brasil, brak daty)

Two hypothesis of money appearance exists: the first is about presume appearance of money as the result of agreement between people, which were convinced in need of trade intermediaries for the price movements. Second hypothesis assumes that money was created due to the process, which despite the will of people result that defined object picked out from the whole variety and get the intermediary place. Considering rationalistic approach, money is artificial social convention, product made for the achievement of nomocracy.

In accordance with the approach, the essence of money is to regulate. (The emergence and evolution of money, б.д.) Perception of value equalization necessity for the exchanged goods forced them to move to another stage: Commodity Money. Some commodities, for their utility, came to be more sought than others are. Can be observed mentioning of such a money in completely different part of the world. (Brasil, brak daty)

Variety of cultures tried to produce or introduce its own money, great examples of the efforts become:

- small knives and spades made of bronze (in China)
- beaver pelts or dried corn (in America)
- stone money (Iceland)
- salt (Africa)
- wool elephant (Africa)
- ivory (Fiji)
- tobacco (Solomon Islands)
- tea briquettes (Siberia) (Гульназ, 2014)

As soon as man discovered metal, it was used to made utensils and weapon previously made of stones. For its advantages, as the possibility of treasuring, divisibility, easy of transportation and beauty, metal became the main standard of value, this was the beginning of the Metal stage. The new method of trade had more logics notwithstanding the coins made with the precious metal was becoming not equal through the time due to the ways of payments (dividing parts) or trade conditions. As an example, of exchanging one currency for another miner rubbed gold or silver coin on the fabric where it left gold or silver dust as well as small part of its weight. In the middle ages, the keeping of value with goldsmith's persons trading with gold and silver items was common. The goldsmith as a guaranty delivered a receipt. With

time, these receipts came to be used to make payments, circulating from hand to hand, giving origins to paper money and Paper money period. (Brasil, brak daty)

In the concept of money at the beginning of the XIX century. There are two main directions. The first, prevailing, argued that only gold can be valuable money, and paper money is gold substitutes. The suspension of the exchange of paper money for a noble metal, in the opinion of representatives of this trend, could only be temporary. Such views were shared by A. Smith, D. Ricardo, J. Mill, K. Marx.

This theory had many supporters in the twentieth century. For his representatives, the complete collapse of the gold circulation in England, France and Germany after World War I and the final abolition of the gold content of the dollar in 1971 were completely unexpected. It was caused by the lag in the extraction of precious metals from the needs of the growing trade in payment instruments led to the spread of paper money issued by government. However, another theoretical direction claimed that paper money could be in circulation without a gold base.

In 1923, in his work "A Treatise on Monetary Reform," J. Keynes wrote, "the gold standard is only a relic of the past." (Marx, Capital: A Critique of Political Economy, 1992) However, not only types of money were developing thought the time the monetary systems were estimated to control circulation and set rules of trade. Depending on the form of circulation of money, there are two types of monetary systems: the system of metal circulation and the system of circulation of credit money.

The system of metallic circulation consists of:

- Monometallism (is a monetary system in which one metal (gold or silver) served as the universal equivalent and the basis of monetary circulation.)
- Bimetallism (is a monetary system in which the role of the universal equivalent is assigned to two metals (gold and silver).)

Monometallism types:

- Gold coin standard - gold is made into coins weighing 3.4 g.;
- Gold bullion standard - banknotes (paper money) are exchanged for gold bars, but only upon presentation of a certain amount. Ingot weight 12.4 - 12.7 kg;

- Gold exchange standard - banknotes are exchanged for slogans, i.e. foreign currency.

Essence: each national currency has its own gold content (gold parity) and can be sold (bought) on the market at this parity.

Bimetallism provides free coinage of coins from both metals (unlimited circulation). At the same time, the state establishes the official ratio between gold and silver coins. Types:

- parallel currencies - the ratio between gold and silver coins is established naturally in the market;
- double currency - the ratio is set by the state;
- Lame currency - gold and silver coins serve as legal means of payment, but not on an equal base, since silver coins were minted in a closed order, unlike free coinage of gold coins. In this case, silver coins become a sign of gold.

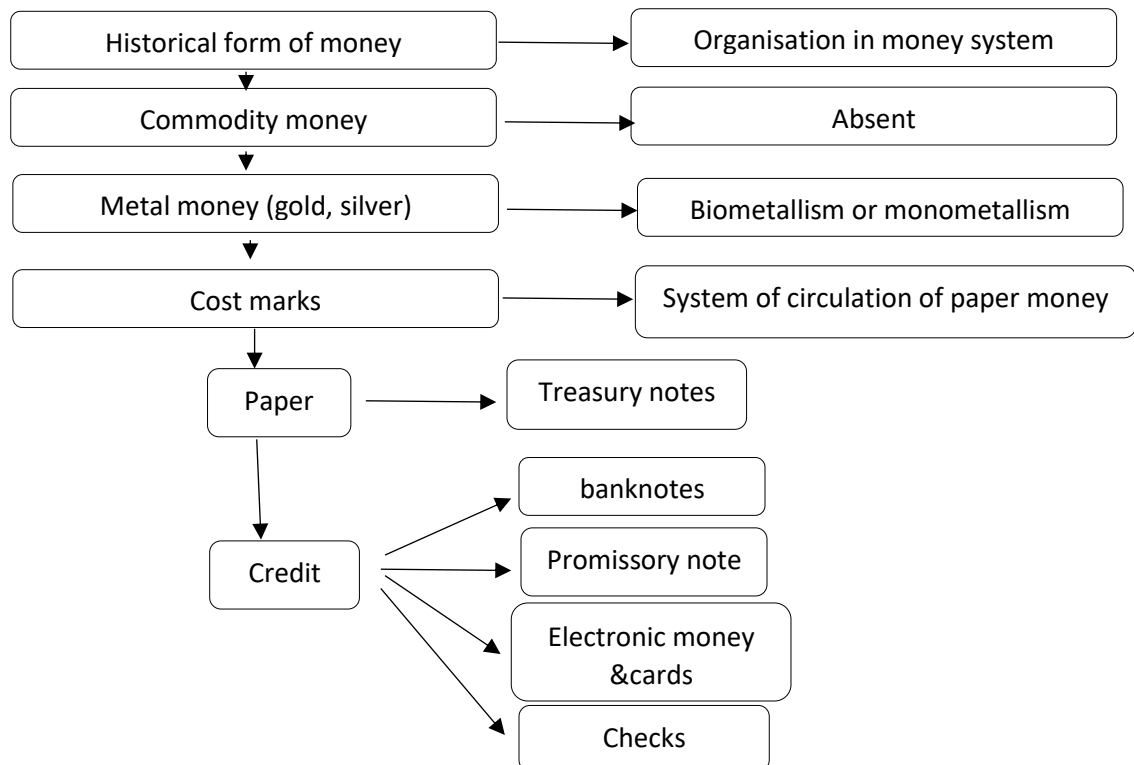


FIGURE 1 THE HISTORICAL EVOLUTION OF MONEY FOR

(Marx, Capital, Vol. 3: The Process of Capitalist Production as a Whole, 1992)

Credit money circulation system:

- the displacement of gold from the turnover of the accumulation function;
- issue of cash and non-cash signs based on credit operations;
- development of non-cash turnover and reduction of cash circulation.

(Marx, Capital: A Critique of Political Economy, 1992)

1.3 Difficulties in fiat money introduction

If anyone has a thought in mind that any kind of cards (debit, credit or electronic/mobile) can crowd out paper money, you should, probably, meet with reality that in valuable number of developed countries demand for the paper money only growing through its life time. Maybe it could be hard to realize and as well understand, however the statistics shows further numbers: 1.34 billion dollars were hold in hands of American society in the end of 2015 year. (Rogoff K. S., 2016)

At the same time in Sweden it was estimated value of banknotes circulating on the market, it reached 77 billion of SEK or 8.5 billion dollars. (Riksbank S. , 2018) By easy calculations, it is easy to come up with number of dollars hold by adult person or a child, which would be equal to 4200. Same results would be seen in any more or less developed country. (Rogoff K. S., 2016) So why it is so hard to get rid of already old source of payment, why did not they just play out over time?

Which role-plays such an outdated factor as paper money for the global economy increase when all financial assets have incommensurably higher value than value of cash? The answer is so simple that it can induce shock any incompetent person. Paper money can be observed as obligation with zero coupon rate. Those papers has no exact answer or any history behind them, there is no lowering of purchasing power as well. Such type of money leads to endless increase of quantity of it in the economy. The mostly painless way to control them is to introduce negative rates; however, no one will agree to accept such a rate for any kind of obligation until society has cash circulating on the market. If only the way of charging a fee on cash was invented, the expansion would force the recovery of global economy from depression.

Another huge problem is uneducated part of society which cannot use credit/debit card or any bank account. The large part of which are old people or immigrants who work illegally

and children. According to statistics, 29% of Americans or 92.394 people do not have any credit card at all.

TABLE 1 CARDS USAGE

	None	1-2	3-4	5-6
2014	29%	33%	18%	9%
2008	22%	35%	22%	11%

(Gonzalez-Garcia, 2018)

The following table shows that 22.33% of Americans do not have bank account. Even if somebody has account, it does not mean that they use it, which is shown in the next row, only 52.17% have debit card. Moreover having card does not mean they get benefits from it. Actual users of debit cards are just 44.90 % out of whole population of USA

TABLE 2 CARDS USAGE

	Number	Percent of sample
Total interviewed	1501	100.00
Checking account holders	1316	87.67
Debit card holders	783	52.17
Debit card users	674	44.90

(Borzekowski, Kiser, & Shaista , 2016)

Following case, in which people do not support cashless society system, is occurring when they think about security or possible cyber-attacks on the system or errors of it. Bjorn Erickson represents the prefabricated opinion of the opposition to the transition to cashless payments.

In this sense, Sweden is far from its famous concept of logo – “just the right amount” – but instead is “100% extreme”, Eriksson says, by investing so much faith in the banks. “This is a political question. We are leaving these decisions to four major banks who form a monopoly in Sweden.” (Crouch, 2018)

Chapter 2. Transition to cashless form of money

2.1 Cashless form of money

Non-cash payments are payments made between an individual and a legal entity without using cash, by transferring funds through the bank from the settlement (current) account of the payer to the account of their payee.

In any market economy, the banking system plays a leading role. There is a two-way connection between a well-functioning economy and the banking system. There are several forms in which non-cash payments are made:

- payment orders;
- payment by letter of credit settlement
- payment by collection orders or collection;
- payment through checkbooks;
- payment using plastic cards;
- payment in the form of electronic money transfer. (Audit it, 2016)

The bulk of cash payments (80-90%) are non-cash cash payments. They arise when cash payments are made without the direct use of cash, i.e. when transferring money in the accounts of credit institutions or offsetting mutual claims. Non-cash payments are used in such areas of economic relations as the sale of products, works and services; receiving and returning bank loans; payment and use of actual revenues. There is a close and interdependent relationship between cash and non-cash circulation: money constantly moves from one sphere of circulation to another, changing the form of cash to a deposit in a bank, and vice versa.

The organization of cash payments using non-cash money is much preferable to cash payments, since in the first case significant savings in distribution costs are achieved, the turnover of working capital is accelerated and control over the cash flow process is strengthened. (Kravtsova, 1997) (Universit, 2016)

History of crypto currencies.

1983 year became the starting point of history of digital money; research of Digital Cash written by David Chaum was introduced (David, 1982). In 1990, Digi Cash as an idea was commercialized in electronic company in Amsterdam by the researcher. (Ken, 2014) Unfortunately

company end up as a bankrupt in 1998 and Chaum left the company in 1999. (c|net, 2002) (forbes, n.d.)

In 1997, Coca-Cola took first steps in innovations connected to electronic payments by providing vending machines where mobile payments were enabled. (NFC, 2017) Other systems were forced by such an action to follow the tendencies, however the not only good innovation were faced. New currencies were used in illegal transactions, it lead to the closure of e-gold by U.S Department of Justice in 2005. (Stephen, 2018.) (settlement, 2015)

Law and regulations

First regulation according e-money were implemented in 2001 by the European Union in the "E-Money Directive", this directive informed about all supervision, regulations and institutions of electronic money. (Council, 2009) However the where no certain point of view according to such type of currency therefor Payment Services Directive were introduce in 2007 in EU for merging payment institutions and electronic money institutions. This merger is the best provment of similarity of nature of electronic money with bank money and scriptural money. (Corporation., 2009) For the situation in 2016, more than 24 countries are decided to put their investments into distributed ledger technologies (DLT), regarding the size of investments 1, 4 billiards of dollars. Moreover around 90 central banks are discussing DLT, aftermath about issuing of of digital currency were discussed as well. (EconoTimes.com., 2017)

Means of use:

Digital currency (virtual money, e-money or e-currency) is sort of middle exchange, which is available in digital configuration (this fact differentiate that type of currency from physical, coins or banknotes.). This particular intermediary performs properties that are similar to physical currencies; however, it can provide us with instant transactions and transition of property rights without any borders. All kinds of such type of currencies: cryptocurrencies, virtual money and money of central banks that are issued and counted in its database. (Wagner, 2014) Digital currency is money balance controlled by electronic records in the card with stored values or in other devices. Another form of electronic money/currencies is network money that gives possibility to transfer value to computer networks; mostly it is connected to internet. (Al-Laham, Al-Tarawneh, & Abdallat, 2009) Digital money has two possible systems

centralized, when central point of control exists and represents supply of the money, and decentralized, when supply of money is controlled by various sources. (Al-Laham, Al-Tarawneh, & Abdallat, 2009) (Rogoff B. K., 2016)

Cashless society (case of Sweden):

“cashless society,” we refer to a society where cash is not a generally accepted means of payment. There might still be bank notes and coins left, but you won’t be able to use them in the practical sense. (Hedman, 2018)

In modern monetary systems, electronic money is unchangeable money, has a credit base, serves as a means of payment, circulation, accumulation, and has a guarantee. The basis for issuing electronic money into circulation is cash and non-cash money. Electronic money acts as the issuer's monetary obligations when servicing non-cash turnover as requirements to it. They can be considered as an element of the monetary aggregate. Automatic management of bank accounts (crediting and debiting of funds, transfers from one account to another, interest accrual, control over the status of settlements) is carried out by electronic means (electronic transfers). Electronic access tools to accounts are constantly evolving; nevertheless, money is also presented in the form of records on accounts.

The properties of electronic money are based both on traditional monetary properties (liquidity, portability, universality, divisibility, convenience), and on relatively new (security, anonymity, durability). However, not all of them in the process of applying meet the requirements of high liquidity and stable purchasing power, and therefore the issue and use in circulation require a special order of regulation and control. Electronic access tools are payment cards, electronic checks, remote banking.

2.2 Advantages taken by a country and citizens

At the beginning, should mention two thoughts about advantages of electronic money and the process of crowding out cash on the market. The first one is about those who benefit from these advantages, which is both the government and the citizens and residents. Because the government and the citizens have different objectives and points of view, there are two sides to the consuming pros. This fact encourages me to look at the situation from different perspectives. As for my second thought, probably that it would be impossible to demonstrate only benefits, which would be taken by both sides, because differences in points of view are

so diverse that advantages for one side, would be disadvantages for another. Due to this fact, I list and analysis the advantages would be done separately.

Let me begin from the larger side – people who will use such system, and the advantages they will have from electronic money. Society benefits:

1. High speed of transaction
2. Easier transfer of money in distant payment
3. Decrease of thefts
4. Higher availability of cards and bank accounts, apps for phones.

As first benefit should be mentioned that electronic payments are easier in terms of use, speed, and transitioning money to another individual. Let us consider the case of payment in the shop with cash and with card or mobile application. Time needed to find, count a specific amount of money by the customer, and the shop worker is quite long compared to entering the right amount of money on the terminal and inserting your card or mobile phone in the machine. Moreover, it can be considered the human factor and imagine a situation when a mistake occurred and the amount of money in cash was counted wrongly, which results in an incorrect payment and lower profit for the shop. From this simple example, it can be seen that time we spend for purchasing goods can be decreased and the efficiency of payment can be increased.

Second case: represent is about money transferring between two persons or a person and a company. The situation is as follows, one person has to pay to an entrepreneur who is located in another city or country. It is obvious that e-transfer would be more efficient and fast.

The next, third point is about theft or robber token from statistics of 2017 SCS – Standard survey.

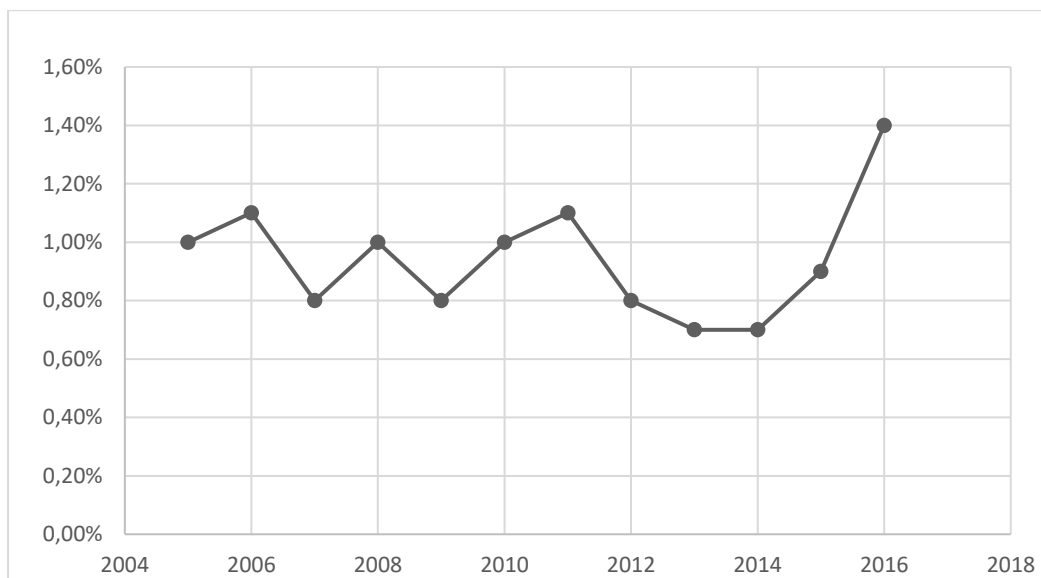


FIGURE 1 VICTIMS OF ROBBERY OF OFFENCES AGAINST AN INDIVIDUAL. PERCENTAGE OF THE POPULATION (AGES 16–79), 2005–2016

(Daniel, 2016)

According to shown statistics, 1.4% of people reported that they were victims of robbery in 2016. This number became the highest point on the graph. What was the reason of this rate's increase, increasing of robbery rate or growth of rate of reliability of society to national authorities?

Let us consider clearance rate for crimes in Sweden.

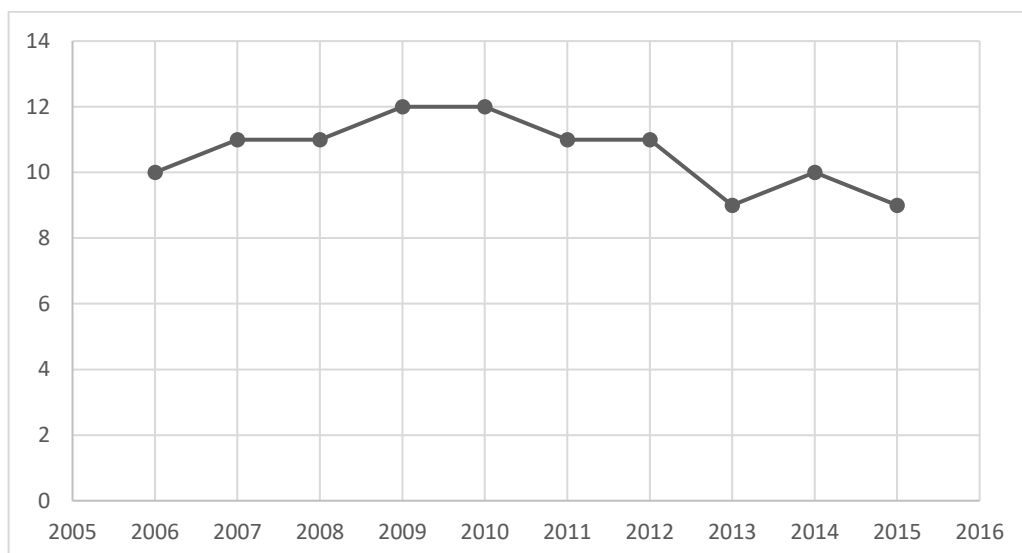


FIGURE 2 PERSON-BASED CLEARANCE RATE² FOR ROBBERY TOTAL ROBBERIES FOR ROBBERY OF PERSON (IN THOUSANDS) CLEARANCE RATE² FOR ROBBERY TOTAL ROBBER 1

(Daniel, 2016)

Situation in 2015: 8.370 robberies we registered and only 81% (6.820) of the total number of crimes, when 19% (which is 1.550) were left without any consideration. Information about limitation of investigation are only 16 cases, however those limitations took place after investigation began. Which showed that statistics of robberies is stable enough and increase of reportable offences do not refer to decrease of solved crimes

Numbers according the person-based clearance rate² composed 11% in considered year, which decreased for 1 percentage point or (0.0001%) from 2014 or comparing to ten year ago rate.

However main statistics which shows the relation between cash and robberies hidden in information about 2017-2016 years comparison. Increase in reporting of crimes slightly grown, muggings that compose more than 2/3 % of offences reported raised by 4%. 724 robberies connected to stores and shops were reported (2017), that shows us decrease of 12% from 2016. A total of bank robberies number compounded 11 cases. The relation between amount of cash person or entity had and frequency of offences growth together. Elementary conclusions from previous information could be made: the less cash country has, the fewer crimes occur.

1. According to cost that will occur with e-payments will increase, there only few problems awareness of society about usage of the card as well as providing all systems free.

In Sweden there are some good apps provided freely on the market for dialing with daily problems. These are:

- App called BankID which helps to verify all stages of payment and secure your transactions;
- App called Swish that is an agreement between banks which lets people transfer money or cover payments for costless;
- App called Tink, which covers basic statistics for consumer's expenses.

Speaking about bank accounts will show you that opening an account in any bank is almost as easy as purchasing a bread in the bakery. A person will be required to bring 4 documents with personal information and it is a done deal. (Daniel, 2016)

For the following advantage should like to present statistic according Swedish payments from 2018 and 2014 to compare payment methods and show attitude of people to transfer of main payment method to cashless (cards or apps).

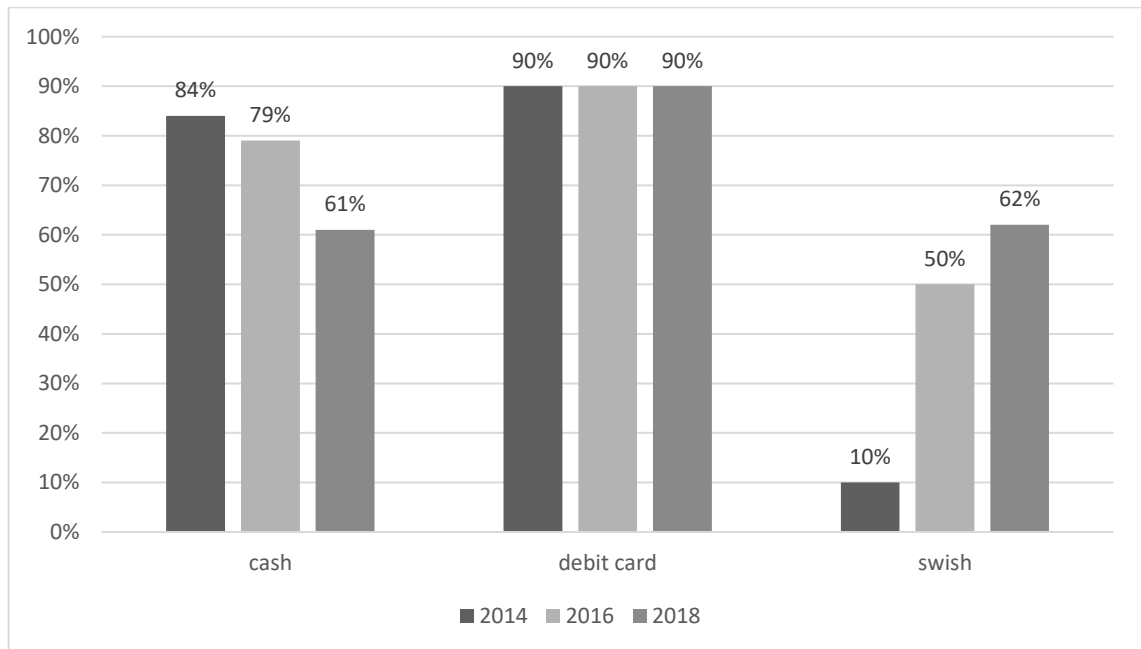


CHART 1 MEANS OF PAYMENTS USED BY PEOPLE IN 1 MONTH

(Riksbank, 2012)

Statistical data represents declining of cash usage in Sweden through 4 past years, however debit cards remains stable and keeps 90 percent for all 4 years. Swish statistics shows best results of Swedish politics and positive attitude of people towards crowding out cash as main method of payments as well as providing new payment methods and their availability to the society of Sweden. (Riksbank S. , 2018)

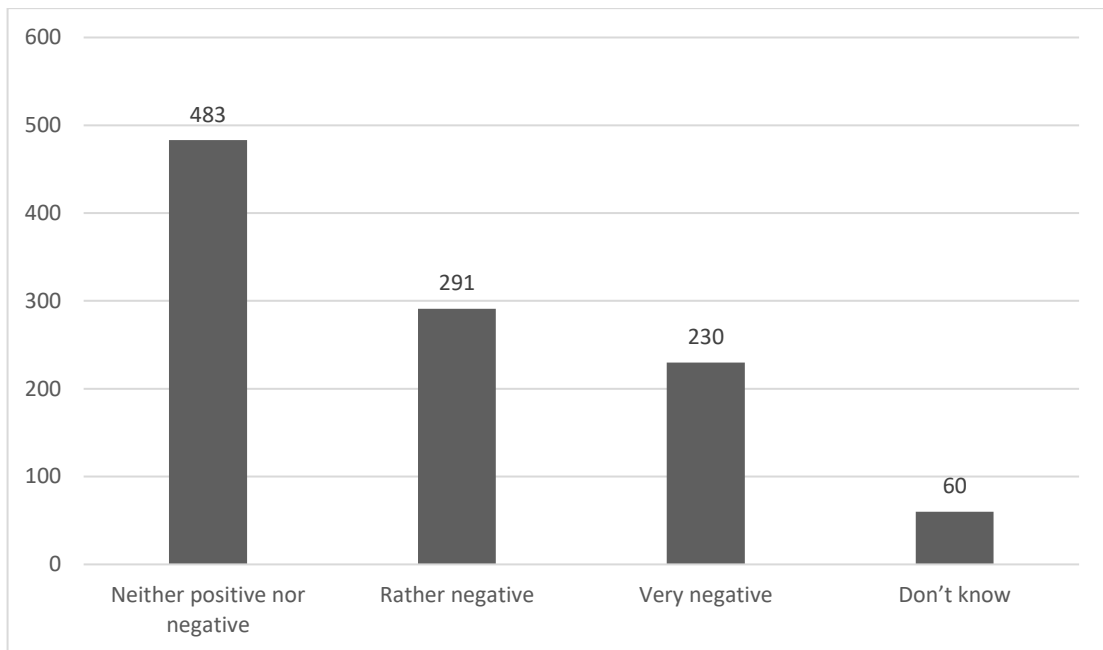


CHART 2 ATTITUDE OF PEOPLE TO DECLINING OF CASH USAGE

(Riksbank, 2012)

According to information almost half of interviewers shows relatively negative attitude to politics of the country. Very negative response was picked every fifth time and only 5.6% of respondent were not well informed about any steps of the government in mentioned dimension. (Riksbank S. , 2018)

There are also advantages for the second party, and more specifically the central bank, and thus for the country's economy:

1. Easier storage of money, Low cost of production
2. Higher money circulation in the economy
3. Higher control over transactions of money
4. Lower percent of unpaid taxes
5. Higher control and reaction about inflation rate
6. Problematic survival of Black/grey economy

Easier storage of money, Low cost of production can be explain as following: who can ever think about cost of production and storage of money or availability of them?

Huge advantage of cash is it low costs in everyday usage, when no brokers or intermediaries are included. Non-cash sellers are not charged, but interest rates are shifted to consumers. It

is very convenient, as it assumes anonymity and eliminates the cost. However, cash continues to lose to its competitors, such as credit and debit cards, mobile payments, and cryptocurrency. This can be explained by many factors. Such an example is the assumption that cash is the best way out for low-income and small businesses who earn on low margins. However, cash money also continues to incur expenses. Benjamin Mazzotta and Bhaskar Chakravorti studied the value of cash in a wide range of countries: USA, Mexico, Egypt and India. With the exception of the United States, the countries studied as well as a number of other countries represent an economy whose main components are cash. The USA is an interesting example of a country whose economy on 2/3 consists of non-cash transactions. Regressive tax for individuals for the use of cash has the greatest impact on non-banking operations. According to FDIC estimates, 8.2% of households in the United States do not have banking operations, and 20.1% of households in the United States have insufficient banking services. The first pay four times the commission for accessing their money than those who have bank accounts. In this case, they pay \$ 4 per month for accessing cash more, people receiving official financial services. Examples of such fees are: "buy here pay here" car loans and cashing checks, that is, which are charged for issuing a payday loan. According to the statistics of the risk payment for access to cash and EBT cards are five times higher for non-bank banks. Time is also a key factor, so poorer consumers spend much more time getting cash. Twenty-eight minutes a month is an average for an American to travel to get cash, but naturally, this time is unevenly distributed. People who do not use the bank in order to get to the place where they receive their money spend 5 minutes more, while the unemployed spend almost 9 more minutes. In the conduct of business money must work: they must be stored, protected and accounted for. You also need to take into account the difficulty of transportation and its insecurity. US enterprises lose an average of \$ 40 billion annually due to money theft. The same costs are also borne by moms and dads in smaller volumes, of course, many of whom work in poor neighborhoods and rural areas. However, the inability to provide security for small businesses, due to high costs, makes it impossible to prevent these costs. In the United States, the cost of lost taxes ranges from 400 to 600 billion dollars. 52% of this difference is due to the underreporting of data in reporting by taxpayers who work for themselves, according to estimates provided by the national taxpayer's lawyer. Even in the context of such reporting and money directly flowing into the US Treasury, it loses at least \$ 100 billion annually due to the use of cash.

According to 2012 data, 12% of the US federal budget went to programs for low-income families; they did not include health insurance or social security benefits. For 2010, such programs helped 25 million people stay above the poverty line. The fact of hiding incomes and the existence of a tax gap forces governments to force the government to cut social welfare programs, so this will be one of the first areas to be reduced. (Chakravorti, 2014)

To help backup its own currency and economy, Sweden holds \$34,501 million (US Dollar equivalent) in foreign exchange reserves. This is a collection of assets, gold and foreign currency that can be used to manipulate other exchange rates to stabilize its own. Sweden is 35th in the world in regards to the amount of reserves it holds. (CentralBanksGuide.com, 2015)

Let us just imagine how much these thirty-four and a half million will be in volume, which in itself will lead to forced spending on rent for additional premises. However, since this is money, they need real-time protection, i.e., security cameras, additional code locks, as well as a counting system and every minute security. Having calculated only the primitive needs of money for their storage, one can already understand that this is too much. However, with electronic money such problems do not arise, as they are, in their essence, only codes in the system. For them, there is no need for storage or production costs, for transportation or destruction; it is enough to rewrite the code. Of course, we will not cut costs at all, since non-cash money will require other kinds of costs: for equipment like computers, as well as staff training, and for improving the software system.

TABLE 3 COSTS OF CASH AND CARDS

	Norway (2007)	Denmark (2009)	Italy (2009)	Sweden (2009)
cash				
social cost for transaction (SEK)	8,6	10,5	3,5	8,3
card				
social cost for transaction (SEK)	7,2	5,9	12,6	5,6

(Riksbank S., 2018)

Higher money circulation in the economy as a second benefit. First of all, there are presented graphs for consideration, which have information collected on Sweden's GDP, as well as the

percentage of GDP growth and a reduction in the use of bankcards when paying for products and services.

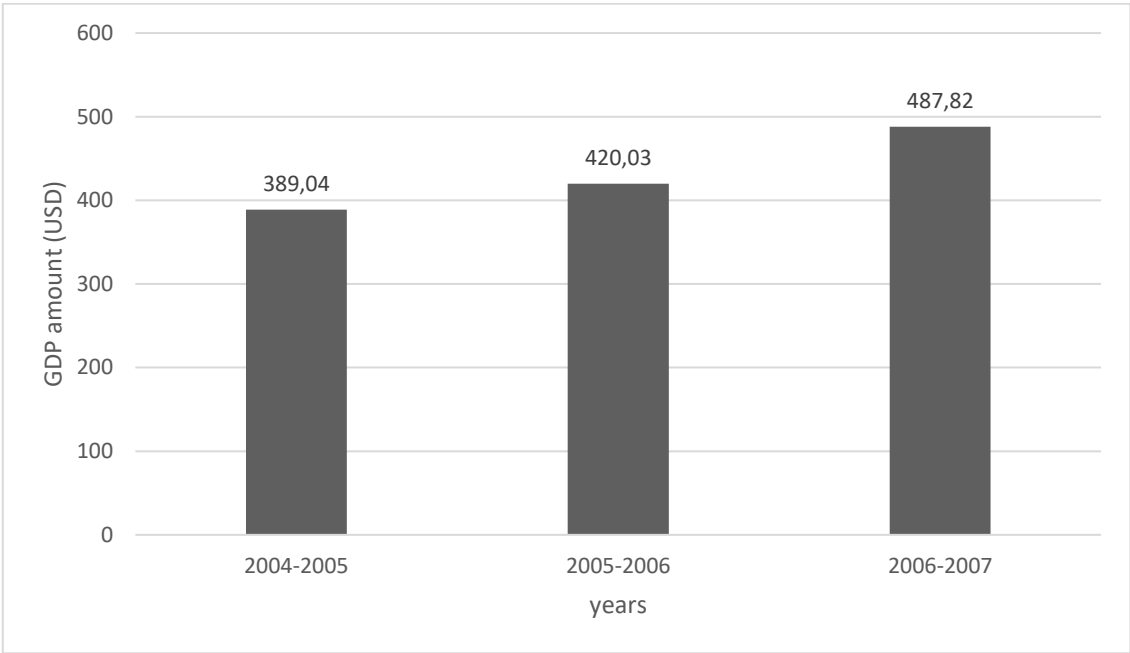


CHART 3 GDP GROWTH (BILLION USD)

(Riksbank, 2012)

The first diagram represents statistical data on the increase in GDP in Sweden, not only nominal, but also in percentages, with very low indifference indices for these periods. On increase in GDP by 7.9% and 16.1% in 2006 and 2007. Comparing these two tables, we can see a negative correlation in the decrease in the percentage of cash in the GDP turnover and the increase in the nominal GDP for 2005-2007. This can be perfectly explained by the theory of spending non-cash money, since non-cash transactions are easier perceived by a person and it is always easier for us to spend large amounts through electronic payments or applications than in cash.

TABLE 4 THE INCREASE IN GDP IN SWEDEN

	2000	2001	2002	2003	2004	2005	2006	2007
Banknotes and coins 31 Dec	89	97	96	98	98	100	101	100
GDP current prices	2217	2288	2459	2573	2573	2673	2826	2982
Banknotes and coins, annual average	83	86	91	91	92	94	94	95
Percentage of GDP	3,7	3,8	3,7	3,7	3,6	3,5	3,3	3,2

(Riksbank S. , 2018)

Higher control over transactions of money can be explained in: “Always Leave Home without It: A Further Investigation of the Credit-Card Effect on Willingness to Pay” study show results of using credit cards. It presents practical proof of willingness of purchasers to pay more with credit card than in cash. (PRELEC & SIMESTER, 2000) That gives as a clue about relation of cashless society and higher circulation of money in this country. As the result of higher money circulation rate of unemployment gets lower, profits of banks gets higher, economic activity of country gets higher which makes currency of the country stronger.

Lower percent of unpaid taxes: the problem of "horizontal equality" has been around for a long time and consists in the fact that non-payment of taxes by some part of the taxpayers, the second part of citizens pay higher taxes. It also happens with companies that use cash in order to circumvent the payment of taxes. They violate the nature of the market and inflict damage and “losses” on it to other law-abiding companies. According to 2006 data obtained by the IRS (internal revenue service), it was found that the difference between tax payment and tax evasion is 450 billion dollars in the United States. Only 14 percent of the state hoped to get into the budget, and even this part would be 2.7 percent of the country's GDP, in other words, almost 3 percent of the country's income would not be paid. according to the roughest and most inaccurate estimates, even 10 percent in reducing tax evasion would bring about 70 billion dollars to the budget. When switching to cashless payments, no individual or company will be able to hide their income from on-line services, which means a large proportion of the companies will come out of the shadow economy. (Rogoff K. S., 2016)

Higher control and reaction about inflation rate: first of all, it would interfere probability of regular anonymous transfers for the large amount of money, which would further lead to higher percentage of tax payments and so will lower the number of shaded companies and illegal activities. Not matter how large the effect would be, this measure would be justified in any case (10-15% would be enough to compensate losses related to money printing (information and numbers are presented only for USA)).

Secondly, by providing the activity of reducing paper money in the money circulation will be the most refined and easy way to provide unrestrained politics of controlled establishing of negative percentage rates, also if the case they meet zero interest rate limit. Nowadays people have too much freedom in their money management and saving, for now it is told about all the paper money hold on hands. That situation leads to impossibility of reaching negative percentage rates. (Rogoff K. S., 2016)

Unfortunately, to estimate the degree of tax evasion in Europe, we have only indirect methods of calculation and individual data, since for most countries there are no aggregate data similar to those obtained as a result of a detailed selective audit in the United States. According to the organization of economic cooperation and development, tax evasion on value added in Europe ranges from 4 to 17%. In Europe, the shadow economy occupies much greater sector compared to the US. By narrowing the understanding of the shadow economy to such aspects as: avoiding paying value-added taxes, not contributing to the social security fund, disregarding the labor code and its aspects, such as minimum wage or the established maximum of the working hours. It can be concluded that the shadow economy occupies a small sector of the United States and Switzerland and is estimated at 7.1% and 7.9% of the total volume of GDP, respectively. In countries with highly developed shadow economies, this percentage is 19.6% for Spain, 22.3% for Italy and 25% for Greece. Average figures fall on France, Germany and the United Kingdom, 12%, 13.4% and 10.6%, respectively. These data are average and show a downward trend in the share of the shadow economy for most countries. (Rogoff K. S., 2016)

Problematic survival of Black/grey economy: for this point should not double information under fifth advantage of the government, however my point would be mentioning illegal transition of money, corruption and slave trade and illegal immigrant labor.

Lets now pay attention to the consideration of the use of cash in criminal activities both within the country and abroad as financing of criminal activity can be used not only cash, but also many other means. According to the analysis of the practice and the use of accounts with understated and overpriced written Rogoff, we were able to detect methods of moving money around the world. An example could be the declaration of a legal transaction, the data on the volumes of which were indicated incorrectly, using this method, after Second World War capital, which was transported appeared to be greater by 10 %.

The most accepted among organized crime now is money laundering by passing out through a legitimate business. Income from illegal activities most often comes in the form of cash. Therefore, any criminal syndicate faces the problem of making money legal. The standard way to do this is to acquire a business through which illegal funds will pass, and then, through fabricated accounting reports, to pretend that all cash has been received in a legal way.

Without a doubt, the drug trade takes first place among illegal businesses using cash as the main unit of payment. According to RAND Corporation estimates, the total market volume for four major narcotic drugs in the United States in 2010 was more than \$ 100 billion. According to the statistics, part of cocaine was calculated at \$ 28 billion, heroin accounted for 27 billion, marijuana - 27 billion, and methamphetamine - 13, and this is data for the United States only. According to later reports submitted by the United Nations Office on Drugs and Puncture Dated 2003, the global drug market was estimated at \$ 22 billion. When calculating the increase in GDP of approximately two times, it can be assumed that the volume of the drug trade increased proportionally and in 2014 was a little over 600 billion dollars. In addition to the negative impact on the main countries, drug importers, drug cartels, deal a crushing blow to countries such as Mexico and Colombia, representing their governments and shaking government activities. Even if we get rid of cash, it is unlikely to help us get rid of cartels. Nevertheless, it will cause significant damage to all structures of their business. Around this kind of illegal businesses, a mass of violence and crime is created that even a small reduction in the volume of trade could have a positive effect.

The next area that will be difficult to survive without cash is the bribing of government officials and other dignitaries. It appears that the social costs of corruption are many times greater than the size of the bribes themselves. However, the estimate of the size of the bribes

is astounding. When calculating the World Bank in the early 2000s. According to the data of such a poll, it was found out that for 2001 and 2002 the amount for bribes was 1 trillion dollars. Hardly anyone will argue about the significance of the influence of corruption on the development of the economy. One such evidence is the work of Paolo Mauro, which describes the negative impact on economic growth. Although corruption flourishes fairly widely in economically developed countries, the situation is much worse in the developing world. One of the most popular anti-corruption programs in the world, organized by Chinese President Xi Jinping after he came to power in 2012, vividly demonstrated all the problems that arose in this area in the largest global economy. In November 2014, Chinese anti-corruption authorities arrested General Gu Yunshan, who was accused of accepting bribes for promotion for promotion in military service. The total amount was equivalent to several million US dollars. According to estimates by Transparency international, where the big problems of corruption in other developing countries, such as Nigeria, Indonesia or the Philippines, the presidents of these countries have given out 2-5, 15-35 and 5-10 billion dollars, respectively. One of the countermeasures is a ban on cash payments, such as in Hong Kong. (Henley, 2016) (As restaurants go cashless, a backlash is building, n.d.)

2.3 Disadvantages and difficulties possible to occur

Disclosing topic of disadvantages it would be more correct to look at the side of government due to influence of pressure from citizens and central bank problems regarding monetary policy. Disadvantages for transition to cashless economy:

1. Reduction in income from seigniorage;
2. Money replacement costs;
3. Costs of opening accounts for low-income citizens and their subsidies.

The government earns quite a lot on the monopoly of issuing paper money. it is the profit from seigniorage, which is the main income of central banks, which prevents them from proceeding with a gradual decrease in the amount of money in the economy. Quite a large number of people are well aware of the fact of the invisible "tax" that they pay for the depreciation of existing funds. This tax is not actually charged, however, when issuing new bills, the purchasing power of existing ones decreases, thereby reducing their value for owners. Despite this, the state can increase the demand for cash, thereby preventing inflation from rising. The demand for money can increase with a general decline in interest rates. Another factor not

reducing the demand for cash is the constant growth of the shadow economy. A better example is higher tax avoidance with higher tax rates. (Frisby, 2018)

Subject to the complete withdrawal of paper money from circulation, the state will have to abandon the income derived from monetary seigniorage, as well as opportunity costs. The state will refuse to receive the profit from the seignorage, but at the same time, it will be forced to issue bonds for the purpose of buying out paper money. Regarding example of the USA, it can be seen that the cash-to-GDP ratio equals to 7.4%, while trying to withdraw this money from the circulation, the ratio of bonds to GDP will increase by 7.4%. According to the calculations given in the Rogoff's book, the costs will be about \$ 28 billion, taking into account nowadays interest rates. Even complete withdrawal of paper money is the possibility of not completely disposing of cash. However, everything depends on the measures that the state will take for both ordinary users and people implicated in the illegal business. According to a survey from a federal deposit insurance corporation:

- 8% of US farms did not have bank accounts;
- 20% of households used the services of the bank in too small a volume;
- 25% of adult Americans do not have a credit card.

Such statistics show us the lack of interest of the above-mentioned persons in banking services or not being able to use them. This fact leads us to the next minus of the transition to a cashless society: the cost of transition.

For the complete transition of society, the state should make it possible for everyone to use deposit or credit cards, bank accounts and mobile applications. This gesture, in turn, implies subsidizing citizens who cannot afford it. Which in turn will lead to additional costs. (Ng, 2018)

2.4 Steps taken on the time of transition

In accordance with Theory of Rogoff.

1. GRADUAL AND SMOOTH REDUCTION OF PAPER MONEY from a higher nominal value, however, it is suggested to leave small denomination coins in circulation for a long period.

Process of reduction may take too many years or even decades to withdrawal of large bills from circulation, but there are also faster ways. Following may serve as an example, is the

presentation of the official expiration date of any bills. Therefore, in a short time, the state can withdraw a sufficiently large amount of money only in case that in federal structures it will be possible to exchange it free of charge up to a certain limit, above which a small payment will be charged. At the same time, banks will be assigned such a payment, regardless of the amount; it will be associated with covering the following costs: conservatory work, administration, as well as ensuring security and identifying counterfeit bills. An obligatory step is the presentation of the actions for foreigners in case of their willingness to exchange their cash. A lot of useful information and aspects can be gleaned from the experience of the EU countries in the process of withdrawing the national currency from circulation, as it was done in Germany with their marks or in France with the Franks. The following definitely positive aspect is the ability of the state to demand confirmation of the legality of the money provided, since the issue of paper money will be stopped and the state will not have to worry about reputation problems and maintain demand for cash in the future.

2. UNIVERSAL FINANCIAL INCLUSION OR STATE ASSISTANCE in opening current accounts and receiving cards, as well as linking them to smartphones, free of charge.

In fact, we may not even bother with the problems of inventing new payment methods, because even with what we have at this moment, cards, bank accounts, electronic banking systems and mobile applications. but there is still the problem of servicing this service for low-income citizens who do not have a bank account. There can be various reasons for not having a bank account, but, like many economists, equal opportunities in the use of cashless payments as a way out of this problem can be seen. Mobile banking is now developing at a tremendous rate and this becomes an additional incentive and help in switching to cashless payments. Moreover, the introduction of measures such as expanding the use of online banking and cards and cutting back on the possibility of having cash will greatly help in curbing illegal activities.

3. THE CONFIDENTIALITY or desire of the legal and legislative system to prevent the use of an alternative method of payment for large payments.

With a gradual reduction for cash, the main and most difficult question remains how to maintain a balance between the rights of citizens to respect privacy and the state's duty to legislate, collect taxes and fight terrorism. This is one of the most important obstacles that

arise after the withdrawal of cash from circulation. In the twenty-first century, the problem with the secret of private life is quite complicated, because now it is too easy to track the whereabouts or catch every click of yours from the network. The question remains stable: how and where to establish the boundary between the companies that store databases with information about their users and the state?

4. USE AND RECEIPT OF TRANSACTIONS DURING THE PRESENT TIME:

The development of technologies should be supported by the state, so payment systems will carry out transactions for any amounts in real time.

Chapter 3. Case study of Sweden

3.1 Sweden as a choice for case study

In this chapter, the aim is to review statistical data on the costs of citizens and enterprises in Sweden for their methods of payment by various means. How and why the government decided to switch to bank transfer and electronic money.

Before consideration of statistical data, explanations of the country's choice for this work and for this case is needed. Sweden is one of the Scandinavian countries, with a stable economy, and very rapidly developing. Sweden has become one of the few countries with willingness of total transition to a cashless economy. This country was one of the first to open the policy of transferring the economy to a cashless settlement, as well as provided statistics in this area. In addition to leadership in this direction, the country has overcome many steps and obstacles on the path to this goal, which makes its experience unique and significant for consideration as a practical part in this work.

Unequivocally, Swedes were helped by economic aspects, not too low inflation, but also not too high, the legislative side and competent political actions. This is a technology and development country, as mentioned earlier, so the government and the central bank welcomed the project with Swish's mobile app, which was not a banking sector development. Nevertheless, at the moment it is gaining popularity among the population and greatly affects the desired online transition.

One of the very important and smart initial aspects was the adoption of a law on the greater importance of the contract between the seller and the buyer than the national currency and the method of payment. This step allowed to avoid the illegality of the withdrawal or refusal to accept cash in any area of business. This step is very important for small and medium businesses, allowing them to reduce the costs associated with the use of cash. The steps taken by Sweden in the direction of transition will be able to clearly demonstrate all the pros and cons of becoming a non-cash society. Also a huge help for other countries will be a demonstration of the transition speed and errors during the transition.

3.2 Statistics of the payment methods

First of all, should like to consider the statistics of individual payments for their daily purchases, as they constitute the main consumer force in the country. Customers increasingly use

electronic means of payment, such as credit cards and Swish, while cash payments are declining. Leadership in payments still belongs to debit cards, but Swish is gaining popularity quite rapidly. The debit card was used in 80 percent of recent consumer purchases. According to statistics, in 2016 this indicator was 64 percent. Sixty percent said they used Swish, as well as an equivalent percentage of customers that they used cash in the last month. Despite the fact that cash use is declining every year, some consumers have difficulty refusing to accept cash payments in stores. In addition, payment methods differ depending on the population group, as the younger age group prefers electronic payments. The use of different methods of payment is also affected by the place of residence of the consumer: in rural areas, it is somewhat higher than in more urbanized places, and is approximately at the same level as in the 2016 survey. Most of all, the choice of the payment method is influenced by the age of customers, this category does not include debit cards, the most popular payment method. Younger people, teenagers, use less cash and prefer electronic payments and applications like Swish. While the older generation pays more in cash.

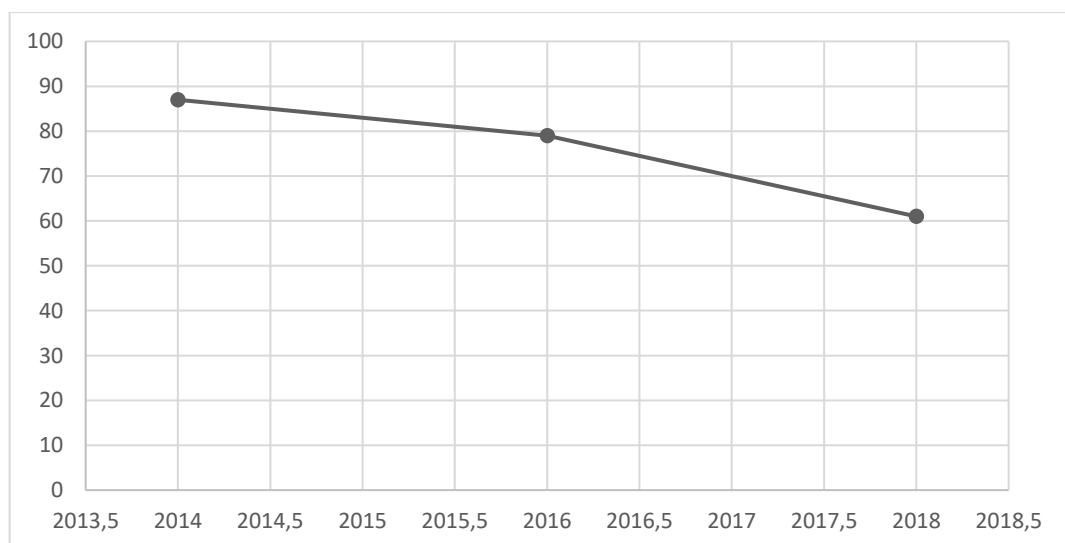


FIGURE 3 CASH IN CHOICE OF PAYMENT

(Riksbank S. , 2018)

From 18 to 24 years, about 45 percent paid in cash last month, and almost 80 used the Swish application, not including the oldest age group in the list; this payment system is gaining popularity more and more among consumers in many age groups.

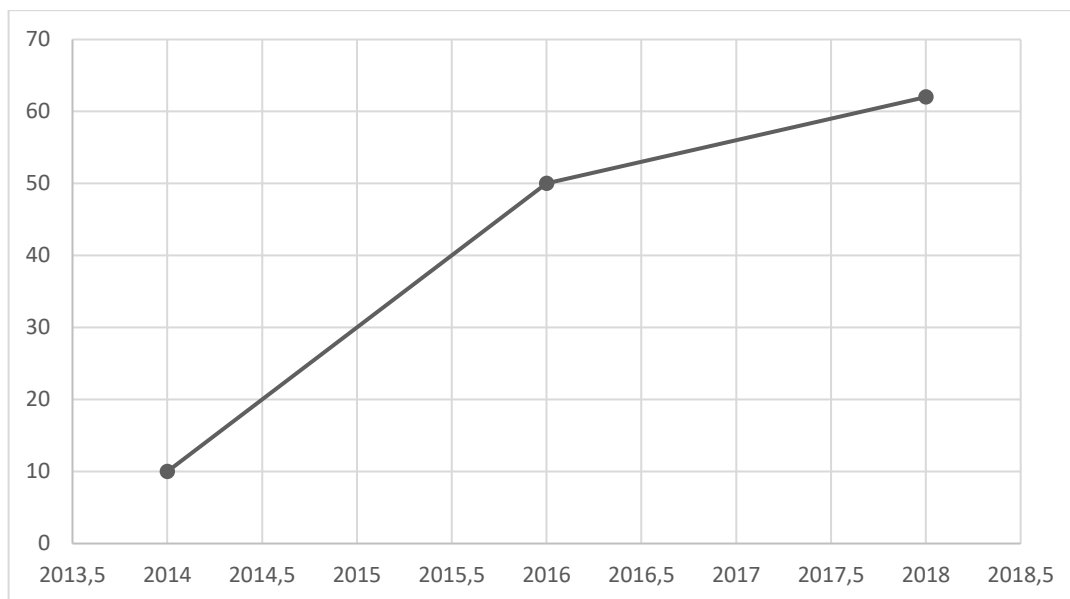


FIGURE 4 SWISH IN CHOICE OF PAYMENT

(Riksbank S. , 2018)

Consumers whose age reaches 45-64 years 64% used this application in the last month, and at the age of 25-44 and 18-24 use it in 80 percent of cases. However, all age groups claim that in 9 out of 10 cases they used debit cards during the past month.

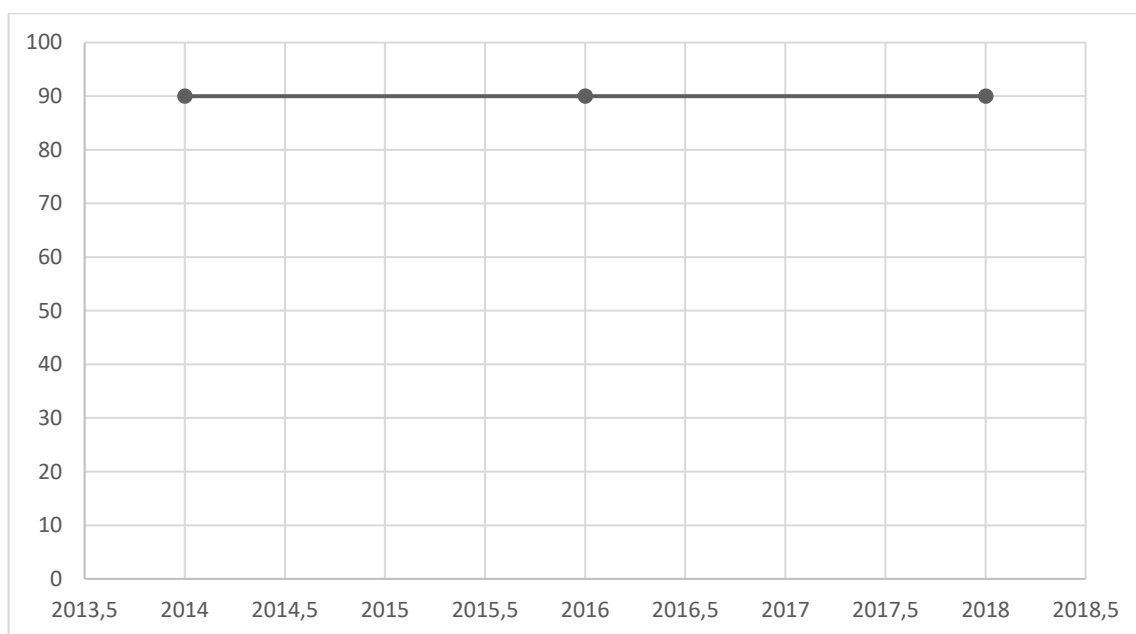


FIGURE 5 DEBIT CARD IN CHOICE OF PAYMENT

(Riksbank S. , 2018)

About 90 percent or more in all age groups said they used debit cards last month.

After eight years, the percentage of cash payments decreased from 40 percent to 13 percent. Answers on the use of cash for their last purchase in the midsummer fell by 15% per year from 2010 to 2016. About 30 percent accounted for the most active decline in 2012 and 2014.

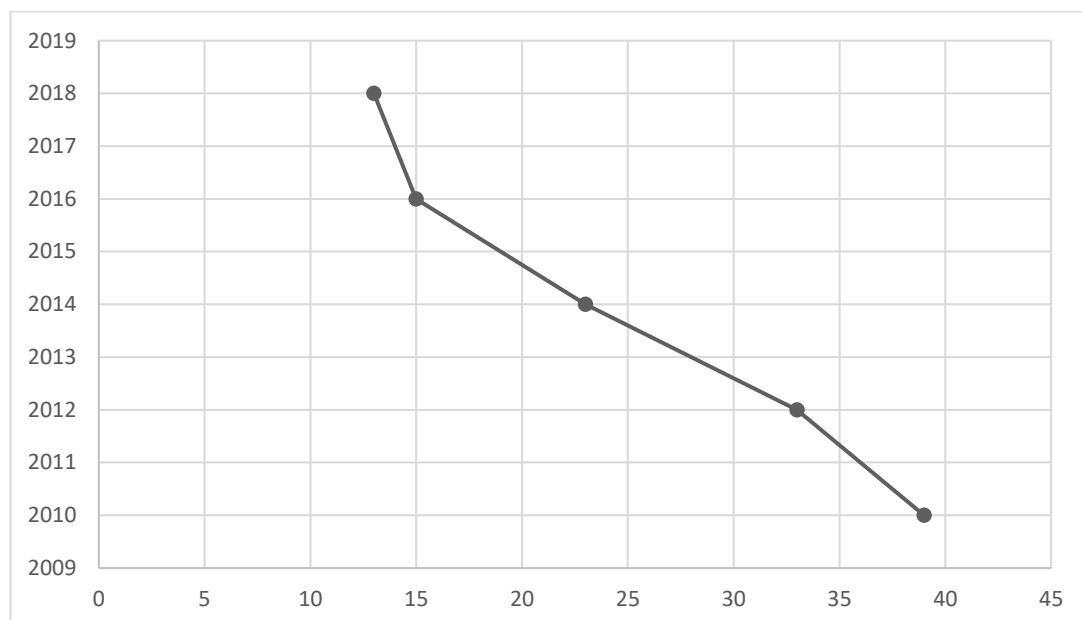


FIGURE 6 PERCENTAGE WHO RESPONDED THAT THEY PAID IN CASH FOR THEIR MOST RECENT PURCHAS
(Riksbank S. , 2018)

Twenty percent of consumers say that they never withdraw cash, 42 percent withdraw money less than once a month, 31 percent withdraw 1 to 3 times a month and 6 percent answer about regular withdrawals, from one to three times a week. In comparison with 2016, the percentage of consumers withdrawing tax fees regularly fell by 10 percent, while the percentage of cash withdrawals less proportionally than a month increased.

Based on the information on the two tables, it can be concluded that the less a consumer earns, and the farther from the city, he lives, the more money he will spend in the form of cash. This fact can be explained easily by the costs of operations in banks, as well as the convenience of getting money from it.

TABLE 5 THE FOLLOWING PAYMENT METHODS HAVE YOU USED (FOR PRIVATE USE) IN THE PAST MONTH

ANNUAL INCOME

ANNUAL INCOME	< SEK 240K		> SEK 240K < SEK 360K		> SEK 360K		> SEK 500K		Prefer not to say		Total	
	#	%	#	%	#	%	#	%	#	%	#	%
CASH	274	64	277	61	268	62	147	60	267	59	1233	61
DEBIT CARD	387	91	433	96	416	96	221	91	406	89	1863	93
CREDIT CARD	76	18	114	25	174	40	132	54	129	28	625	31
SWISH MOB APP	208	49	293	65	327	76	187	77	237	52	1252	62
IN SHOP MOB SERVICE	10	2	13	3	26	6	10	4	9	2	68	3
SMS PAYMENT	17	4	19	4	28	6	10	4	9	2	83	4
ONLINE BANK	222	52	304	67	306	71	172	70	224	49	1228	61
DIRECT DEBIT	241	56	297	66	309	71	168	69	229	50	1244	62
BANK ACCOUNT INVOICE	79	19	55	12	51	12	33	14	52	11	270	13
CASH AT BANK COUNTER	16	4	18	4	9	2	5	2	6	1	54	3
VIRTUAL CURRENCY	0	0	1		3	1	0	0	2		6	

(Riksbank S., 2018)

TABLE 6 LOCATION

WHERE DO YOU LIVE?	CITY URBAN (+40K)		/ SMALL AREA URBAN AREA (-40K)		RURAL AREA (-3K)		TOTAL	
	#	%	#	%	#	%	#	%
CASH	704	59	309	63	220	66	1233	61
DEBIT CARD	1103	93	454	93	306	91	1863	93
CREDIT CARD	374	32	152	31	99	30	625	31
SWISH MOB APP	777	65	291	60	184	55	1252	62
IN SHOP MOB SERVICE	47	4	16	3	5	1	68	3
SMS PAYMENT	55	5	15	3	13	4	83	4
ONLINE BANK	718	60	294	60	216	64	1228	61
DIRECT DEBIT	769	65	298	61	177	53	1244	62
BANK ACCOUNT INVOICE	165	14	66	13	39	12	270	13
CASH AT BANK COUNTER	33	3	14	3	7	2	54	3
VIRTUAL CURRENCY	2		2		2	1	6	
TOTAL	1187	100	489	100	335	100	2011	100

(Riksbank S. , 2018)

Thus, the more money, the lower the percentage of operational costs, as well as in cities, you can get money from the bank much faster than in rural areas, moreover, electronic transfer equipment and payment systems are more common in cities than in rural areas.

The attitude of Swedes to the transition to cashless payments turned out to be quite different, so according to the responses of 1000 people, the statistics of their opinions about a cashless society were derived. (Niklas Arvidsson, 2013) A sufficiently large number of respondents believed that Sweden would not be able to switch to a fully cashless settlement. Thirty nine percent of the surveyed group believe that the country will not be able to get rid of cash completely, which correlates with the opinion of a radical group that opposes the country's policy regarding the transition to an electronic payment system.

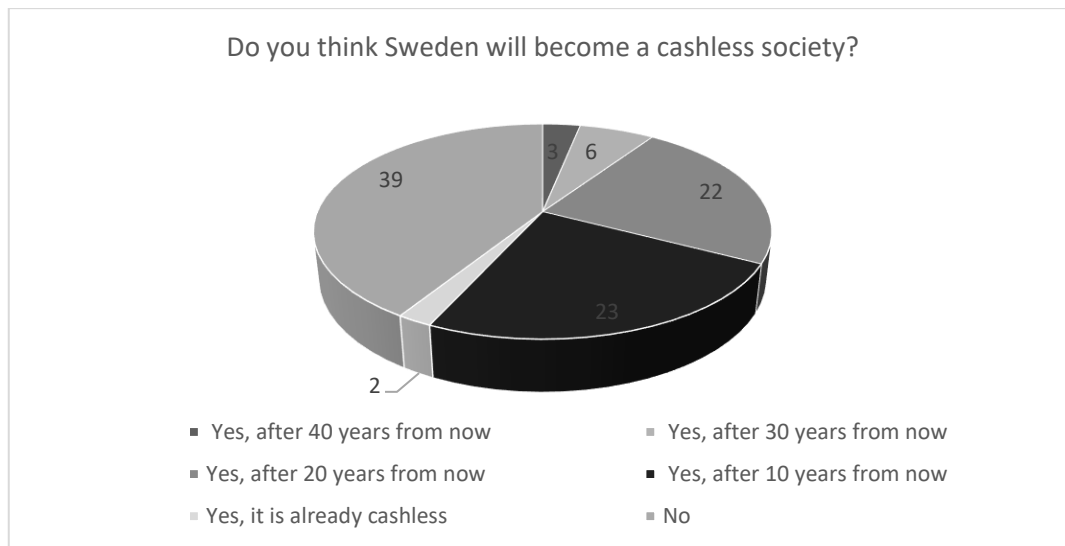


FIGURE 7 STUDY OF SWEDES OPINION OF CASHLESS SOCIETY TANSITION

(Riksbank S. , 2018)

However, in contrast to this opinion, 60 percent of the respondents say that the country is moving towards a full transition and this will happen; but there is a divergence between dates. Thus, more than half believe that the transition will occur from ten to twenty years, and the remaining 15 percent are inclined to believe that this will happen in the period from thirty to forty years.

3.3 History and steps of transition

In 1873, a monetary agreement was signed between Sweden, Norway and Denmark - the Scandinavian Monetary Fund. After this agreement, Sweden moved from its currency, the rixdaler, to the krona, which all three countries started using. It was after this union currency was issued on the basis of gold currency reserve. This alliance collapsed at the beginning of World War I, but it played an important role. The union showed that Sweden did not always oppose the traditional monetary system.

Currently, digital currency, which is used as the main payment method, is a certain monetary value, which is saved in electronic form. (IBNS, 2018)

The history of digital money begins in 1960, when all wages began to be combed into bank accounts instead of paying in cash. This was the impetus for the development of the banking system.

30 years later, in the 90s, new regulations were introduced, which led to the replacement of pay by check for a payment system through bank cards.

The year 2000 saw a series of robberies and criminality, after which the population's desire to switch to cashless payments increased and accelerated the transition to a system with bankcards. Also the banks expanded the offer of their services and began to offer companies and entrepreneurs new services related to the activities of their business.

2010 was the first year of active government activity aimed at improving attitudes towards non-cash payments and the development of electronic payments. It was precisely their popularity that was developed by such services as Apple, Google, which brought new opportunities for the public.

By 2012, development has reached a new stage, when the first application was launched which provides payment services. After several years of modernization, it has become very effective, as well as a convenient replacement for payments with cards or cash. After 2 years, banks reduce or even remove cash related services. Moreover, in 2015-2017, active political actions associated with the exclusion of cash from circulation in the country are manifested in the withdrawal of old money and its replacement with new ones. (KTH)

(Riksbank S. , 2018)

Considering these aspects represented in history, we can conclude that the market for services should form and develop itself, and be able to function in isolation, without interference from the state. The laws of supply and demand must regulate this market, like others. In addition, the central bank should only act as a supervisor in these surcharges, without affecting the aspects of the functioning of the market. (regeringen, 2015)

One of the laws of the central bank in Sweden provides for the availability of monetary units as legal tender between the remitter and the redeemer in this transaction.

Avtalsrätten or commercial law provides for a situation in which the party selling and consuming, as well as the bank and the consumer have the right to conclude an agreement, contract or transaction that is above the law of the central bank. According to the rules, such an agreement can be concluded in different forms: written, oral, etc. Riksbank is not entitled to make any decision on transactions between commercial banks and their customers, as well as

cash processing services. Thus, it is very easy for a store to get rid of cash payments, since, with a free choice, any consumer entering the store concludes a non-verbal agreement that payment will occur in a cashless form of payment.

However, the situation cited as an example was not previously considered for lower-level merchants, as well as for public services in the Supreme Court of Sweden. The fact is that such institutions as hospitals or medical service providers must accept any form of salary as payment. (Riksbank, 2012)

Considering the above steps (chapter two, section four) for the transition to cashless payments of the whole country, we can distinguish four main points:

1. GRADUAL AND SMOOTH REDUCTION OF PAPER MONEY

Riksbank pursue a policy of reducing cash in both quantity and nominal value. Thus, the nominal value of coins and bills in circulation fell by 11.7 percent, and banknotes by 12.5 percent. However, the nominal value of only coins has not changed. What refers to the statistics on the number of bills in circulation decreased by 5.4 percent, and coins by 1.1 percent. Such indicators for 2014 and 2015 marked the beginning of a policy to replace banknotes and coins and reduce the nominal value of cash in circulation throughout the country. As for the latest figures for 2018 and 2017, the indicators continue to fall apart from the average nominal value of banknotes in circulation, it increased from 53 billion seconds to 55 billion, by 3.6 percent over the last year. However, a huge promotion and a decrease in performance fell on the last position, the number of coins in circulation, it decreased by almost 3 times.

	2014	2015	2016	2017	2018
Average value of banknotes and coins in circulation (SEK billion)	80	77	65	57	58
Average value of notes in circulation (SEK billion)	75	71	60	53	55
Average value of coins in circulation (SEK billion)	5	5	5	4	3
Number of banknotes in circulation (million)	325	317	288	265	262
Number of coins in circulation (million)	1 918	1 917	1 823	1 433	552

IMAGE 1 CIRCULATION OF BILLS AND COINS IN SWEDEN

(Riksbank, 2012)

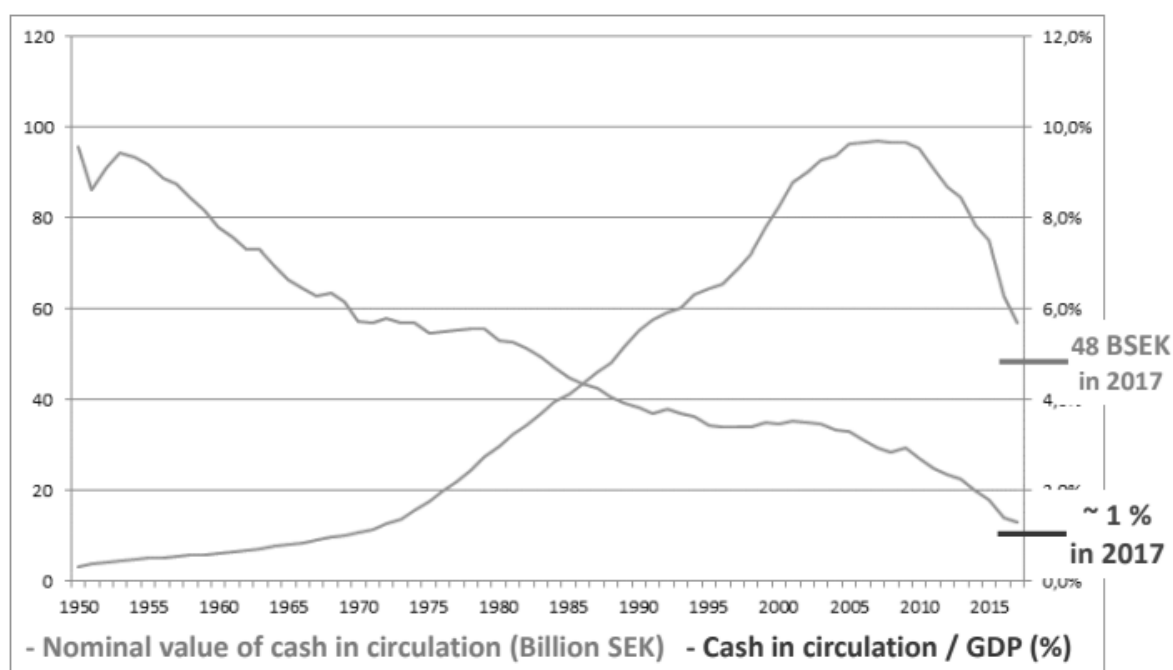


IMAGE 2 NOMINAL VALUE OF CASH IN CIRCULATION VC GDP RATE

(BIS, Payment, clearing and settlement systems in Sweden, 2011)

As mentioned earlier, it is not a specific date for the transition to cashless payments throughout the country, since it is quite difficult to completely exclude cash from all service

industries. However, there are some data on such a transition. Thus, the majority of the society (61%) believes that Sweden will be able to switch to a completely non-cash payment. However, there are some disagreements over the transition time; the majority (45%) believe that the transition will occur in the next 10 to 20 years.

2. UNIVERSAL FINANCIAL INCLUSION OR STATE ASSISTANCE

There can be various reasons for not having a bank account, but, like many economists, equal opportunities in the use of cashless payments as a way out of this problem can be seen. Mobile banking is now developing at a tremendous rate and this becomes an additional incentive and help in switching to cashless payments. Moreover, the introduction of measures such as expanding the use of online banking and cards and cutting back on the possibility of having cash will greatly help in curbing illegal activities.

3. THE CONFIDENTIALITY

The Banking Business Act (Bankrörelselagen, 1987:617). This act regulates the business of banks. It examines the prudential supervision of such enterprises, lists all the requirements for banks, after which they can get a license and, most importantly, the requirements for confidentiality, the audit of each such enterprise. (BIS, CPSS - Red Book , 2003)

4. USE AND RECEIPT OF TRANSACTIONS DURING THE PRESENT TIME

According to data for 2003, Internet banking is developing rapidly, and the number and quality of services related to transfers via the network have increased, access to account information, money manipulation and transfer to different accounts and payment accounts, and securities trade online. According to statistics from the Ricks Bank, between twenty and twenty-five percent of private clients have added online banking services into their regular use.

The largest share of online activity is still allocated to Payments by paperbased bills. The largest banks of the country (there were 4) included online invoicing in the list of their services. At that time, there were two systems, between which an agreement was reached on connecting the two schemes and ensuring their compatibility and operability. Mobile banking became the next stage in the development of online banking. Some banks already at that time intro-

duced mobile banking services and actively offered them to their customers. Projects are being developed for initiating and making payments by mobile phone both in the banking sector and beyond. Independent members are also starting activities in this area on the Swedish market.

The development trends of online banking are relevant to the future of the GIRO system in Sweden. There are opportunities to pay bills in electronic form for private clients, which later will lead to a sharp increase in the number of credit transfers initiated in electronic form. As well as the transfer, procedures made between accounts in different banks have become much easier as a result of online banking. (BIS, Payment systems in, 2003)

Internet services have become mandatory for all banks, these services allow users to access account information, make payments and transfers within same bank or in another bank, and also pay bills and trade securities online. For 2009, according to statistics from Riksbank, about 70% of citizens use online banking services on a regular basis. The largest share of online activity is still allocated to Payments by paperbased bills, however e-invoices getting more and more popularity. Increased share of Internet banking in remittance between accounts. Transfer procedures became much easier for clients that have accounts in different banks thanks to online banking.

Customer service via mobile devices has become the most significant innovation. Banks began to develop mobile phone applications, as well as develop projects for the implementation of the possibility of making a payment through a mobile phone.. (BIS, Payment, clearing and settlement systems in Sweden, 2011)

3.4 Severities meet on the time of transition and current situation.

Almost all people have access to banking services, as updated online banking services are used quite often. However, not everyone can consume services produced by banks.

- People with disabilities, such as People with cognitive and / or physical disabilities, the elderly, asylum seekers and new immigrants, small traders in rural areas, as well as businesses in areas where there is no access to such services.

- Geographical distance and position: the distance to banks or their branches, or the position of an individual or legal entity in which he cannot use the provided banks (poor coverage of mobile communications, remote areas or places in a military position).

In Sweden, only 0.5 percent of the country's area is not covered by cellular communication. However, this 0.5 percent cannot use online and mobile banking services. (Egor, 2017)

- Cost of services for an individual or a legal entity to access services.

Currently, the percentage of cash turnover in a country's GDP is less than 1 percent, and the nominal value of banknotes is 6 percent of the value of all money in circulation. Indicators of the number of coins and banknotes in circulation fall every year, while the nominal indicators do not decrease, the money turnover in the country increases, and the GDP continues to grow.

Regarding the availability of banking services, Sweden did the greatest work, as it combined the swish application with the services of banks, which made it easier for consumers to access online and mobile payment services.

Regarding the law and acts in Sweden, this country took a favourable position for the transition to cashless payments, when it formally entered into an agreement between the consumer and the supplier higher than the payment methods accepted in the country. Also in Sweden, understanding the problem with the opposition and preventing it, as well as observing the laws and privacy principles of personal information, there is an act that formulates all types of information that cannot be disclosed by the bank, as well as the principles for auditing (that was mentioned before in the third chapter, part two).

Conclusions

The purpose of this work was to demonstrate the theoretical and practical transition to a cashless economy. Thus, summing up, we can say that the theoretical part of this work was written that reveals all the steps taken by the country's transition, as well as the pros and cons of this transition, as well as possible difficulties. As for the practical part, the most appropriate was considered, as well as the furthest on the path to a non-cash economy. Sweden was selected for this section as the most suitable country to consider. Work was carried out on the collection and analysis of statistical data, as well as general data on the development of technologies in the country, political actions and actions of the central bank. The steps taken towards a non-cash economy were analyzed.

The development of technology at the moment is practically driven out of circulation in cash. Today, cash is still important for paying small bills. However, the value of cash in medium and large payments weakens; this confirms the reduction of large bills in circulation (100 or 500 euros). Currently, technology increasingly deprives banknotes of importance, so Sweden and Denmark have a policy of reducing the amount of cash. In a situation where the accumulation of banknotes by citizens continues, the central bank will be able to enter the maximum amount of a lump sum payment, thanks to such actions, banks will also be able to compensate for their losses. how to limit financial assistance to illegal enterprises. The plan of transition to a cashless society looks quite realistic, and with the support of a slow pace of transition, technical problems can be avoided, as well as problems with the opposition. As for Sweden, we can talk about a significant decrease in the amount of cash in the country's turnover, the latest data show that less than one percent of the country's GDP is in cash payments. In addition, technological progress, as well as the presentation of such an application as swish, shows the progress in technology, the development of the banking sector, which are necessary to reduce the need for reusable accounts, as well as simplify and speed up transactions between consumer and supplier, as well as P2P.

The public attitude to the transition is more positive, new technologies are well perceived, and the population is quickly trained in their use and use in everyday life, also the attitude towards the full transition to a cashless society is improved. That is why there is a possible positive result in the transition to cashless payments and the opportunity to show a non-cash way to other countries in the future.

References

- Abel, A., & Bernanke, B. (2005). *Macroeconomics (5th ed.* Pearson.
- Al-Laham, Al-Tarawneh, & Abdallat. (2009). *Development of Electronic Money and Its Impact on the Central Bank Role and Monetary Policy.*
- As restaurants go cashless, a backlash is building.* (n.d.). Retrieved from The Washington Post: https://www.washingtonpost.com/gdpr-consent/?destination=%2flocal%2fdc-politics%2fas-restaurants-go-cashless-a-backlash-is-building-will-dc-intervene%2f2018%2f07%2f07%2f89f3f1d8-8098-11e8-b0ef-fffcabeff946_story.html%3f&utm_term=.5f8309206603
- Audit it.* (2016). Получено из Безналичный перевод: https://www.audit-it.ru/terms/accounting/beznalichnyy_perevod.html
- BIS. (2003). *CPSS - Red Book* . Retrieved from www.bis.org: <https://www.bis.org/cpmi/paysys/swedencomp.pdf>
- BIS. (2003). *Payment systems in.* CPSS - Red Book.
- BIS. (2011). *Payment, clearing and settlement systems in Sweden.* CPSS – Red Book .
- Borzekowski, R., Kiser, E. K., & Shaista , A. (2016). *Consumers' Use of Debit Cards:Patterns, Preferences and Price Response.* Washington: Finance and Economics Discussion Series Divisions of Research & Statistics and Monetary Affairs Federal Reserve Board, Washington, D.C. .
- Brasil, B. C. (n.d.). *Banco Central de Brasil.* Retrieved from Origin and Evolution of Money: <https://www.bcb.gov.br/ingles/origevoli.asp>
- c|net. (2002, JANUARY 02). *Digicash files Chapter 11.* Retrieved from Electronic-cash pioneer seeks bankruptcy protection after shrinking its payroll to about six people.
- CentralBanksGuide.com. (2015). *Bank of Sweden.* Retrieved from [centralbanksguide.com](http://www.centralbanksguide.com/bank+of+sweden/): <http://www.centralbanksguide.com/bank+of+sweden/>
- Chakravorti, B. (2014, June 26). *The Hidden Costs of Cash.* Retrieved from Harward Business Review: <https://hbr.org/2014/06/the-hidden-costs-of-cash>
- Corporation., F. D. (2009, 10 27). *ELECTRONIC FUND TRANSFER ACT (REGULATION E).* Retrieved from <https://www.fdic.gov/news/news/financial/2009/fil09066.pdf>
- Council, E. o. (2009). *"Directive 2009/110/EC of the European Parliament and of the Council of 16 September 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions amending Directives .* Retrieved from <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32009L0110>
- Crouch, D. (2018, 04 03). 'Being cash-free puts us at risk of attack': Swedes turn against cashlessness. Gothenburg, Netherlands.

- Daniel, R. (2016). Banking in Sweden. *Everything Sweden*.
- David, C. (1982). *Blind signatures for untraceable payments*. California: Department of Computer Science, University of California.
- Dwivedi, D. (2005). *Macroeconomics: Theory and Policy*. Tata McGraw-Hill. Retrieved from moodle: <https://moodle.ue.poznan.pl/course/view.php?id=3836>
- EconoTimes.com. (2017). *BoE explores implications of blockchain and central bank-issued digital currency*". Retrieved from EconoTimes.com.: <http://www.econotimes.com/BoE-explores-implications-of-blockchain-and-central-bank-issued-digital-currency-277718>
- Egor. (2017). *mobiletrip*. Retrieved from <https://mobiletrip.net/internet/sweden/>
- forbes. (n.d.). *Requiem for a Bright Idea*. Retrieved from <https://www.forbes.com/consent/?toURL=https://www.forbes.com/forbes/1999/1101/6411390a.html>
- Frisby, D. (2018). *"Why we should fear a cashless world"*. The Guardian.
- Gonzalez-Garcia, J. (2018, april 26). *Credit card ownership statistics*. Retrieved from creditcard.com: <https://www.creditcards.com/credit-card-news/ownership-statistics.php>
- Hedman, J. (2018, 08 31). Going Cashless: What Can We Learn from Sweden's Experience? (Knowledge@Wharton, Interviewer)
- Henley, J. (2016). *Sweden leads the race to become cashless society*. Retrieved from The Guardian: <https://www.theguardian.com/business/2016/jun/04/sweden-cashless-society-cards-phone-apps-leading-europe>
- IBNS. (2018). *A History of Printed Money*. Retrieved from International bank note society: https://www.theibns.org/joomla/index.php?option=com_content&view=article&id=251&limitstart=3
- Kamenetsky, V. A., & Patrikeev, V. (2008). *Fundamentals of Social Economics Tutorial*. Moscow.
- Ken. (2014). *A Quick History of Cryptocurrencies BBTC — Before Bitcoin*. Griffith.
- Keynes, J. M. (1993). *Treatise on monetary reform*.
- Kravtsova, G. (1997). *Money, credit, banks*. Min .: LLC "Misanta". Retrieved from Money, credit, banks: <https://www.bestreferat.ru/referat-178406.html>
- Krugman, P. &. (2006). *Economics*. New York: Worth Publishers.
- KTH, N. A. (n.d.). *The route towards a cashless society – the case of Sweden*. Retrieved from nbtc.go.th: <https://nbt.go.th/getattachment/1ee4f982-a246-4baf-8960-e8bf58e4bfe8/27887.aspx>

- Mankiw, & Gregory, N. (2008). *Principles of Macroeconomics*.
- Marx, K. (1992). *Capital, Vol. 3: The Process of Capitalist Production as a Whole*. Penguin Classics.
- Marx, K. (1992). Capital: A Critique of Political Economy. In *The Process of Capitalist Production*. Penguin Classics. Retrieved from The emergence and evolution of money: <http://www.grandars.ru/student/finansy/vozniknovenie-deneg.html>
- Milnes, A. (1919). *The economic foundations of reconstruction*. Retrieved from moodle: <https://moodle.ue.poznan.pl/course/view.php?id=3836>
- NFC. (2017). *History of Mobile & Contactless Payment Systems*. Retrieved from <http://nearfieldcommunication.org/payment-systems.html>
- Ng, N. (2018). *"Going Cashless: Who's Left Behind"*. Retrieved from Dollars And Sense: <https://dollarsandsense.sg/going-cashless-whos-left-behind>
- Niklas Arvidsson, d. C. (2013). Det kontantlösa samhället . Sweden.
- PRELEC, D., & SIMESTER, D. (2000). *Always Leave Home Without It: A Further Investigation*. 2001 Kluwer Academic Publishers. Manufactured in The Netherlands.
- regeringen. (2015, 05 04). *regeringen*. Retrieved from <https://www.regeringen.se/artiklar/2015/05/en-fungerande-kontanthantering/>
- Riksbank. (2012, 07 01). *Lagen (1988:1385) om Sveriges riksbank i dess*. Retrieved from Riksbankslagen: <https://www.riksbank.se/sv/om-riksbanken/styrdokument/riksbankslagen/>
- Riksbank, S. (2018). *Statistics on notes and coins*. Sveriges riksbank.
- Rogoff, B. K. (2016). *The Wall street Journal*. Retrieved from The Sinister Side of Cash: <https://www.wsj.com/articles/the-sinister-side-of-cash-1472137692>
- Rogoff, K. S. (2016). *The Curse of Cash*. Princeton.
- settlement, B. o. (2015). *Digital Currencies*. Bank of international settlement.
- Stephen, F. (2018., May 11). *E-gold founder backs new Bitcoin rival*. Retrieved from Financial Times: <https://www.ft.com/content/f7488616-561a-11e3-96f5-00144feabdc0>
- The emergence and evolution of money*. (n.d.). Retrieved from www.Grandars.ru: <http://www.grandars.ru/student/finansy/vozniknovenie-deneg.html>
- Universit, T. F. (2016). *THE COST OF CASH IN THE UNITED STATES*. Retrieved from <https://fletcher.tufts.edu/CostofCash/~media/Fletcher/Microsites/Cost%20of%20Cash/CostofCashStudyFinal.pdf>
- Wagner, A. (2014). *Digital vs. Virtual Currencies*.

Гульназ, Г. (2014, 02). *Алые Паруса*. Retrieved from
<https://nsportal.ru/ap/library/drugoe/2014/02/07/issledovatelskaya-rabota-po-teme-istoriya-deneg>

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