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PRIVACY, IDENTITY, AND THE PERILS OF A CASHLESS SOCIETY

Pregledni rad

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A cashless society, wherein bills and coins are replaced by virtual money incorporated in Radio Frequency Identification (RFID), Near Field Communication (NFC), and other electronic chips or located in a "cloud," is fiction no more; it is nearby, and in some countries it is on the verge of full manifestation. A cashless society is marketed and intensely promoted by the parties interested in its emergence, most often disregarding its negative effects on a society as a whole and overstating the positive ones. The paper aims to examine a "cashless society" phenomenon from a perspective of diminishing civil liberties by means of identity exposure and evaporation of privacy in an electronic payment processes.

It is argued that anonymity in a "classic" payment processes, obtained through bills and coins, is vital to certain civil rights and liberties, and that the vast possibilities of tracking participants' identity in a cashless society pose large risks. Additionally, a cashless society would boost the risks of moral hazard, as banks (and other financial institutions intertwined therewith) could be provided with a superior and unparalleled position in the economy, without fallback options.

Croatia is by no means an exception to these processes, and large banks herein are already supplying their customers with contactless cards without explaining them all the caveats in detail. It is argued that by so doing the Croatian banks are harming their customers, as they are not fully disclosing the risks of contactless payment processes.

Keywords: cashless society, cards, democracy, anonymity, risks, JEL Classification: E42, E44, E59, G21, G28, O33

Introduction

"Cashless society" is a term that describes an economic ecosystem in which palpable, physical money, namely bills and coins, are replaced by virtual, digital money, and where cash circulation is substituted by payments effectuated by the usage of numerous types of cards (credit, debit, prepaid, contactless), mobile devices (cell phones,[1] tablets, and the like), and other versatile equipment connected to the Internet (from desktop PCs to smart refrigerators).

Although Hollow (2012) considers that a cashless society is a concept dated to the pre-1900s, Utopian thinkers (e.g., Thomas More) envisaged a society without money altogether, whereas a "cashless society" describes a civilization holding money but without its most distinctive material representation – the cash. Bearing in mind this particular distinction between money and cash, the term "cashless society" originated in the 1960s (Mitchell, 1966; Bergsten, 1967; Diebold, 1967; Lee, 1967; Reistad, 1967, etc.).

Whilst previously being just another futuristic vision, a cashless society is imagination no more: it is being gradually introduced throughout the world. Such a substantial shift could never be performed overnight; therefore, a cashless society can be foreseen as the final point of a steady sequence of small steps, whereof many have already been taken, as cash is gradually being expelled from the modern society.

Examples of this shift can be found everywhere: in 2011, the State of Louisiana passed an Act which completely outlawed the use of cash in transactions for the second-hand goods,[2] in December 2011 Italian citizens lost the right to conduct transactions of over € 1,000 in cash, while few months later (April 2012) cash payments were banned in Spain as well, albeit with somewhat higher cap: € 2,500.

The fees and provisions on ATMs are introduced in many countries (not only for the non-clients but for all the bank clients as well) to demotivate them from using cash.[3] Plastic is taking over paper: payment cards in circulation worldwide reached 13.45 billion in 2011, which is an increase of 51% over the previous five years (8.91 billion in 2006), and for the next five years, a further 36% increase is projected.[4]

From 2000 to 2006, the number of cashless payment transactions (by non-banks) in the EU averagely increased by 7% per year, while the value of such transactions rose by 5% per year.[5] The pace slowed down after the global financial crisis, as the average annual rise in the number of cashless payment transactions across the EU in the 2008 – 2011 period amounted to 4.9%.

A rapid development of technology pushes cash further away: contactless payment types are now marketed as the "new cash," and NFC chips are being installed in traditional cards as well as in smartphones. Hence, electronic and mobile payments are rising sharply worldwide, with the pace of 20.0% per year in the 2009 – 2013 period. It is forecasted that the number of payments using mobile devices (M-payments) could grow even faster, by an annual rate of 53%.[6]

[1] Not necessarily "smart" phones.

[2] Act No. 389, Regular Session, 2011, House Bill No. 195 www.legis.state.la.us/billdata/streamdocument.asp?did=760886 (accessed on Jan. 23, 2013).

[3] "(...) in Croatia, there are no ATM fees for bank members, therefore clients have simple and free access to cash. Hence, banks need a lot of cash for filling the ATMs, and the habits of clients do not shift quickly enough toward debit cards." Aleksandra Babić, Head of Marketing Department for Central and Eastern Europe in MasterCard Europe, at the roundtable *Who Still Needs Cash?* in Zagreb, October 2012. (Matija Kroflin, "Mobilna plaćanja: Cash neće još dugo biti najjeftiniji", http://www.banka.hr/hrvatska/mobilna-placanja-cash-nece-jos-dugo-biti-najjeftiniji (accessed on Feb. 14, 2013).

[4] "The Nilson Report: News and Statistics for Card and Mobile Payments, November and December 2012", http://www.nilsonreport.com/ (accessed Apr. 12, 2013).

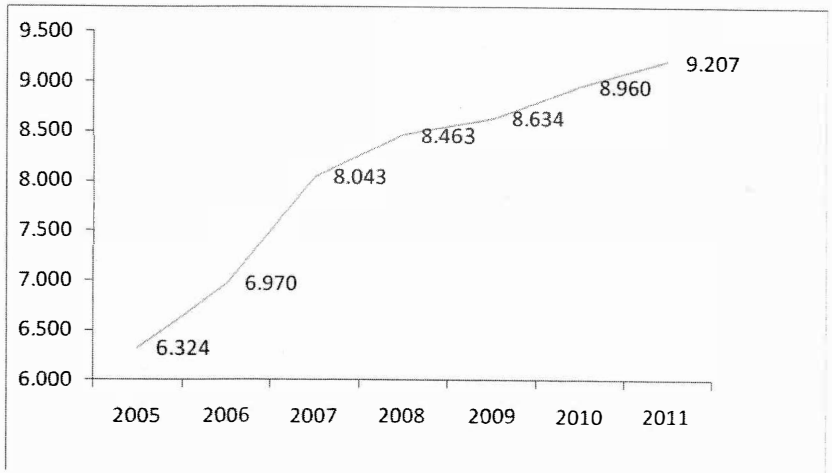
[5] European Central Bank, "Press Release", http://www.ecb.europa.eu/press/pr/date/2007/html/pr071116.en.html.

[6] Capgemini. Consulting. Technology. Outsourcing., "The 8th Annual World Payments Report 2012", http://www.capgemini.com/insights-and-resources/by-publication/the-8th-annual-world-payments-report-2012/, p. 5 (accessed Apr. 12, 2013).

These phenomena are not exclusive to the highly-developed, western societies[7]—quite the opposite, the cashless types of payments are rising much more rapidly in the developing markets, where the pace of growth is three times higher than in the developed world.[8] A remarkable story of M-Pesa in Kenya (a country which holds the 130th position on the world literacy scale)[9] is a good example: this SMS-based money transfer system that allows individuals to deposit, send, and withdraw funds using their cellphone has reached approximately 65% of Kenyan households by the end of 2009.[10] According to the Central Bank of Kenya, the number of cards in circulation has increased more than tenfold in the 2005 – 2012 period, from 995 thousand to 9.9 million.[11]

Croatia is by no means an exception: the number of payment cards in Croatia in circulation is on the rise (Figure 1), and the most used card is *Maestro* (Table 1).

Figure 1. Number of payment cards in circulation in Croatia, end of year, in thousands. Source: Croatian National Bank, Annual Reports



[7] For instance, electronic payment machines (*kollektomats*) are installed in the Swedish churches, as the Swedes tend to use coins and banknotes less.

[8] Capgemini. Consulting. Technology. Outsourcing., "The 8th Annual World Payments Report 2012", http://www.capgemini.com/insights-and-resources/by-publication/the-8th-annual-world-payments-report-2012/, p. 6 (accessed Apr. 12, 2013).

[9] Index Mundi, "CIA World Factbook", http://www.indexmundi.com/g/r.aspx?c=ke&v=39 (accessed on Feb. 14, 2013)

[10] William Jack and Tavneet Suri, "Mobile Money: The Economics of M-PESA", *NBER Working Paper No. 16721*, 2011, p. 3.

[11] Central Bank of Kenya, Annual Report, 2012, p. 54.

Table 1. Largest issuers of *Maestro* cards in Croatia, 2011[12]

	Volume of purchases (mil. US$)	Number of cards issued
Zagrebačka	919.5	1,384,000
Privredna	672,2	915,000
Erste&Steiermärkische	315,1	452,000
Total	1,906.8	2,751,000

The 2012 *Annual World Payments Report* from *Capgemini*, RBS, and EFMA finds that "the global volume of non-cash payments continues to show healthy growth, with the largest gain in volumes occurring in developing markets,"[13] and that "electronic and mobile payments maintain their rapid growth trajectory,"[14] with the annual expected growth rate being more than 50%.

All the abovementioned trends indicate that bills and coins are being slowly withdrawn from the economy, and that (if the trends persist) a cashless society is on its way. Therefore, it is essential to closely scrutinize the possible risks that can be imposed if banknotes and coins were to become a part of history. While there are some positive aspects of a cashless society, such as the eradication of counterfeiters, suppression of illegal markets, and curbing of tax evasion, its negative effects on a society as a whole are mostly (deliberately or inadvertently, whichever is the case) disregarded. This paper attempts to discuss some of the risks of a cashless society, a possibility which is not inevitable but probable within the near future.

Identity, Trust, and Democracy in a Cashless Society

Cashless payments can be traced, since all e- and M-payments leave digital trails. Therefore, it is argued that the underground economy (illegal trading of weapons and drugs, prostitution, tax evasion, and other black market activities), operations of diverse criminal groups, and terrorists could be restrained and possibly even eliminated in some regions. The transaction parties' identity could be revealed and thereby the participants' anonymity and privacy would be lost, which would lead to a more effective law enforcement.

On the other hand, the notion of constant supervision of all of the citizens' activities indicates the vanishing of governments' trust in its own electorates, which is a process that destabilizes the very foundations of a modern society.[15] It seems that every sin-

[12] "The Nilson Report: News and Statistics for Card and Mobile Payments, November and December 2012", http://www.nilsonreport.com/ (accessed Apr. 12, 2013).

[13] Capgemini. Consulting. Technology. Outsourcing., "The 8th Annual World Payments Report 2012", http://www.capgemini.com/insights-and-resources/by-publication/the-8th-annual-world-payments-report-2012/, p. 5 (accessed Apr. 12, 2013).

[14] Ibid.

[15] On the importance of trust in the society, cf. the following articles: Bruce Schneier, *Liars and Outliers: Enabling the Trust that Society Needs to Thrive*, Indianapolis: John Wiley & Sons, Inc., 2012; Jan Tullberg,

gle citizen has become a potential criminal and terrorist, worthy of a continuous and perpetual monitoring, a latent culprit whose guilt is implied only to be recorded and proven. A constantly monitored cashless society could subsequently lead to a cycle of distrust between the Government and citizens, which could have vast consequences.

Anonymity reinforces a pluralism of thoughts, opinions, and behaviors in a society, as many people rely on it when they finance and contribute to unpopular and/or controversial projects, activities, and NGOs. A possibility of identity exposure would probably reduce the funding of peculiar, provocative, contentious and disputatious ideas, persons, and organizations.[16] Ultimately, this would lead to a weaker form of democracy, in which certain voices could not be heard and be lobbied for.

De-anonymization of payments would construct voluminous records and catalogs of transactions, which would shift balance of power further toward large corporations, away from the citizens and SMEs. The latter could not afford the acquisition of the opulent "gold mines" – the databases storing a history of all consumers' payments – which could render the former possible while modeling products and services according to the consumer behaviors, habits, activities, and lifestyles. Subsequently, empowering multinationals and large corporations could extinguish smaller entrepreneurial activities and endow big businesses in a manner that it would be affordable and acceptable to ignore the demands of minorities, which could, in a long run, subdue social diversity and heterogeneity in favor of the economy of scale's uniformity and standardization.

A voluntary tax payment is a specific declaration of trust toward policy-makers. While every tax increase and new tax levying in a traditional society bears a large political burden, tax collection automation in a cashless society could lead to a State wherein decisions could be made with less consideration of voters' opinion and wherein a feedback loop is cut off (at least in a short and medium term). Introducing a cashless society creates risks of losing accountability, responsibility, and liability of policy-makers toward voters and tax payers, as they would be equipped with the previously-unknown levers of macromanagement—those of a fully automated tax collection and a possibility of swift imposition of new duties. For instance, throughout the crisis-struck peripheral Europe, many citizens deliberately chose not to pay high taxes as they lost confidence in the Government administration efficiency since they believe they are not provided with the level of quality of public sector services adequate to the level of taxation. In a cash-free economy, political elites could pursue their goals unrelatedly to potential outbursts of civil discontent, in spite of the requests of majority, as they could finance themselves by coercion.

Furthermore, in order to scrutinize other perils of a digital cash world, a very basic question should be posed: what could be feasible to perform in such a State? Certain institutions could obstruct, hinder, or completely block financing of persons, activities,

"Trust – The Importance of Trustfulness Versus Trustworthiness", *The Journal of Socio-Economics*, Vol. 37, Issue 5 (2008), p. 2059-2071; Arai Kazihiro, "Trust and Trustworthiness in the Economy: How They Function and How They Should Be Promoted", *Hitotsubashi Journal of Economics*, Vol. 48, Issue 2 (2007), p. 225-240; etc.

[16] e.g., a funding blockade of *Wikileaks* by the Bank of America, VISA, MasterCard, PayPal and Western Union in Dec. 2010.

unions, or organizations that oppose or challenge its positions. Advanced technology could disable funding of mass actions, extensive protests, and large-scale civil disobediences, all of which are the important traits of democratic processes. Even though these scenarios may seem far-fetched, here we are not examining the likelihood (probabilities) of these outcomes: we are merely declaring that these risks exist (whereas in a society relying on cash they do not), and that they should be faced as such from a risk management perspective.

When a person (or company) pays something in cash, the person needs no intermediary to fulfill its needs: it is directly in charge of its property and free to interact with other market participants; however, if payments can be done only and exclusively via some type of electronic system, then the market processes become obscured by an interpolation of the third party, which can impose various limitations on transactions. Cash means direct interchange, a market without borders, and autonomy of participants, while cashless transactions can arise only if the prerequisites are taken into consideration. A transaction must be in the interest of the intermediary as well; otherwise, he or she might not fulfill the necessary preconditions. Prohibiting cash transactions disallows the markets to operate to their full extension: reducing transaction costs generally increases economic activity, while increasing (introducing) them is usually perceived as a source of friction.

Financial Sector Position

A fractional reserve system requires banks to constantly build, maintain, and improve their clients' trust – which is a strenuous effort – as not even the best of them can endure and withstand a bank run. With the banks being the operators of the large quantities of cash, they are particularly weary of systemic financial crises, whereby a domino effect can occur when the clients withdraw their cash from a bank they perceive disturbed. In a cashless society, the clients would lose a very important consumer right: the right to (temporarily or permanently) disbelieve in a financial system.[17] They would simply be denied that option. A "trust" in a financial system would not be an effect of hard work while developing and upholding it but it would be fabricated by a decree.

With no (physical) money in the banks and no possibility of distrust by the execution of deposit withdrawals, a risk of moral hazard would inflate: knowing that there is no fallback option, some bankers would probably engage in risks they otherwise would not have taken.

A moral hazard is also found at the roots of the ongoing financial crisis, which started in the late 2000s.[18] This crisis has shown a need to provide possibilities to dismantle financial institutions deemed too big/important to fail, a strong need for the "mortal" financial companies that stems from the enormous bailouts and collectivization of losses while the profits remain private at the same time. Therefore, what society needs are not stronger, irreplaceable, and immortal financial institutions but quite the opposite, those

[17] This right has become essential after the proposed general expropriation of deposits on Cyprus in March of 2013.

[18] e.g. Phillip Swagel, "The Financial Crisis: An Inside View", *Brookings Papers on Economic Activity, Spring 2009: Conference draft*, p. 1-63.

that can be left to go bankrupt when they make bad business decisions and assume too much risk and can be wound up at lower costs to the tax payers. None of these claims could be fulfilled in a cashless society, wherein the position of banks as the sole drivers of money is reinforced, whereby they become more important and their viability becomes an imperative regardless of costs.

When market participants pay in cash, the banks gain nothing therefrom. In a cashless society, transaction fees would be imposed (maybe not at the first stage, to attract the volume), which would practically represent a tax on every single payment, whereby only the intermediaries benefit.

Furthermore, cash exists in the real world, it is material and tangible. Digital money is virtual, it only exists in a "cloud" and is therefore more demanding to manage. Paying only by cards would extend the usage of overdrafts,[19] which would further accentuate a complex issue of consumer excessive indebtedness. Credit cards encourage spending: a willingness to pay is significantly increased when customers are instructed to use a credit card rather than cash, which Prelec and Simester (2001) clearly noted.

The abovementioned arguments indicate that the primary interest to disembark paper and metal is that of the large financial institutions, which are intensively lobbying for digital money, denigrating cash and promoting abandonment of a material representation of currency.

Security Issues

An argument often heard in the promotion of a cashless society is increased security. When there is no money, there is no object of theft, which should lessen the level of criminal activity. Hence, the absolute transferability of ownership of bills is recommended to be substituted with a limited usability of digital money, which can be utilized only after a successful completion of certain authorization processes.

There were only five bank robberies in Sweden in 2012,[20] which is a substantial decline in recent years (110 in 2008, 16 in 2011), a drop which is attributed to Sweden's shift toward a cashless society; however, computer frauds and frauds performed on the Internet in Sweden are rising constantly (+12% and +43%, respectively, for 2012 compared to 2011[21]). This could signal that the criminal is merely migrating from the real world into the virtual sphere and that the overall security of cash storage is roughly at the same level. When one deposits his or her paper money in the vault, he or she is exposed to a theft performed by the local and regional criminals, but when one stores his or her money in a "cloud," every single malevolent hacker in the world becomes a potential burglar, which inflates the circle of possible intruders to the maximum: the Globe. Furthermore, identity theft, which comes hand in hand with robbing virtual money, is sometimes a far more complicated an issue than just stealing money from a pocket.

Cash transactions do not require customer education, constant power supply, a permanent Internet connection, a 24/7 customer service, a continuous updating of protection systems against all kinds of malware, alternate servers on backup locations (again, with a constant power supply and Internet connection),[22] sophisticated surveillance and monitoring, a legion of stand-by engineers, etc. Providing security in a cash economy is relatively simple and inexpensive when compared to the possible shortcomings of the abovementioned requirements.

In a context of security, it is often brought up that bills and coins carry bacteria and viruses. ("Cash is filthy.")[23] At the same time, many overlook the fact that palpable cash is undeniably and permanently immune to all the known and yet-to-be-designed digital viruses, spyware, worms, Trojans, and other malware. While germs can be easily washed away with soap, risk management in the domain of supercomputers and optical fibers is far more complex and costly.

The questions regarding databases and security issues also arise: when all of our payments are recorded and stored not only at one location but also at remote alternate backup servers, the risks of unauthorized breaches rise sharply. The tabloid media and paparazzi, stalkers and blackmailers, intelligence and counter-intelligence agencies, and similar entities – all of them will be prepared to invest an extra effort to collect payment data.[24] The disappearance of cash and constant administration of payments would also enable a permanent history of imperfect behavior. Youth misconduct could be brought up decades later, and the possibilities of oblivion, amnesty, and legal limitation – all of which people had enjoyed for thousands of years – could disappear.

While promoting contactless cards and similar e- and M-payment solutions as the "new coins" or the "new cash," financial institutions are not fully disclosing all the risks of contactless payment processes. In an attempt to mimic the characteristics of coins and smaller amounts of bills (in transactions when cards are rarely used), contactless cards were designed to be used with no immediate authorization: no PIN, no signature. This simplicity comes to a cost: security levels are fairly low. Gutmann[25] writes the following on paying with contactless cards: "Best analogy for security: You're handing your credit card to anyone in the vicinity to do with it whatever they want." E-pickpocketing is ta new criminal game which has already come into play, the one that leaves the cash-

[19] "A person who uses PayPass spends about 25 percent more on their card on a monthly basis", stated Scott Lapstra, Vice-President of Market Development at MasterCard Canada, for CBC News. (Zach Dubinsky, "New credit cards pose security problem: Hacker shows CBC how to crack 'contactless' MasterCard", http://www.cbc.ca/news/technology/story/2010/05/31/f-rfid-credit-cards-security-concerns.html (accessed on Feb. 18, 2013).

[20] Cf. Niklas Magnusson and Katarina Gustafsson, "Swedish Banks Make Money by Saying No to Cash", http://www.bloomberg.com/news/2013-04-10/era-of-paper-money-dies-out-in-sweden-as-virtual-cash-takes-over.html (accessed on Feb. 18, 2013).

[21] The Swedish National Council for Crime Prevention, "Statistical tables", http://www.bra.se/bra/bra-in-english/home/crime-and-statistics/crime-statistics/statistical-tables.html (accessed on Feb. 18, 2013).

[22] This also raises the question of ecological costs of digital money (the electricity needed to power all these systems, and all the extra costs of the infrastructure required for day-to-day operations).

[23] David Wolman, *The End of Money: Counterfeiters, Preachers, Techies, Dreamers – and the Coming Cashless Society*, Boston: Da Capo Press, 2012, p. 34.

[24] e.g., how much would an information on a certain Muslim buying alcohol or a Jew buying pork be worthy to an interested party? Probably enough to attempt a break into a payment database!

[25] Peter Guttman, "Contactless Payment Systems: Credit Cards and NFC Phones", www.cs.auckland.ac.nz/~pgut001/pubs/contactless_payment.pdf, p. 39 (accessed Apr. 12, 2013).

less economy with very few advantages over the time-tested (be it certainly not perfect) media of storing wealth.

Conclusion

The aim of this paper is to exhibit some of the risks of a cashless society, notwithstanding that some of the perils are less likely to occur but remembering the basic engineering principle, that of the Murphy's law: if it is possible, it will likely happen, sooner or later. Cash is a symbol of economic freedom. It has its weaknesses (best known to the counterfeiters), but it should be abandoned only if such a move would significantly improve the overall functions of money. If a technological leap *can* be done, that does not imply necessarily that it *should* be done, at least not without a methodical and detailed introspection of the possible consequences of such a move.

While it is impossible to grasp all the possible outcomes of a cashless society, it is easy to perceive that political dynamics of democracy could fundamentally be disrupted: taking money away from citizens (and companies) takes away their power as well. Both cash and non-cash payments have their advantages and disadvantages, none of the extremes is good (*all things in moderation*). A moral hazard, security breaches, and degradation of democracy are major sources of consideration in a cashless society; therefore, one can only hope that users will not voluntarily and easily abandon the essential symbol of their independence. Going cashless opens a vast array of new possibilities previously unexperienced in a modern society, which bear unexperienced risks, and in many ways resembles opening a Pandora's box; nonetheless, so often in life we learn to cherish and value certain phenomena only after they are gone.

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PRIVATNOST, IDENTITET I OPASNOSTI BEZGOTOVINSKOG DRUŠTVA

Sažetak

Bezgotovinsko društvo, u kojem novčanice i kovanice zamjenjuje prividni novac ugrađen u radiofrekventnu identifikaciju (*Radio Frequency Identification*, RFID), kratkodometnu komunikaciju (*Near Field Communication*, NFC) i druge elektroničke čipove ili smješten u "oblaku", više nije fikcija: ono je blisko, a u nekim je državama na rubu pune manifestacije. Bezgotovinsko društvo marketingiraju i intenzivno promiču stranke zainteresirane za njegovu pojavu, često zanemarujući njegove negativne učinke na društvo u cjelini te precjenjujući one pozitivne. Ovaj rad želi ispitati pojavu "bezgotovinskog društva" s motrišta smanjenja građanskih sloboda izlaganjem identiteta i nestankom privatnosti u postupcima elektroničkog plaćanja. Rad tvrdi da je anonimnost u "klasičnim" platnim postupcima, dobivena novčanicama i kovanicama, ključna za neka građanska prava i slobode, te da goleme mogućnosti praćenja identiteta sudionikâ u bezgotovinskom društvu predstavljaju velike rizike. Usto, bezgotovinsko društvo povisit će rizike moralne štete budući da će banke (i druge s njima isprepletene financijske ustanove) moći ostvariti vrhunski i neusporediv položaj u gospodarstvu, bez povratnih opcija. Hrvatska ni u kom slučaju nije iznimka glede tih procesa, a velike banke ovdje već opskrbljuju svoje klijente beskontaktnim karticama ne pojašnjujući im podrobno sve opasnosti. Rad tvrdi da takvim postupkom hrvatske banke oštećuju svoje klijente, budući da im ne otkrivaju rizike procesâ beskontaktnog plaćanja u cijelosti.

Ključne riječi: bezgotovinsko društvo, kartice, demokracija, anonimnost, rizici