

# **Privacy, Identity, and the Perils of the Cashless Society**

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## *Abstract:*

Cashless society, in which paper money and coins are replaced with virtual money, embodied in RFID, NFC and other electronic chips, or located in the ‘cloud’, is fiction no more; it is nearby, and in some countries on the verge of full manifestation. Cashless society is marketed and promoted intensely by the parties interested in its emergence, most often disregarding (deliberately, or inadvertently – whichever is the case) its negative effects on the society as a whole, and overstating the positives. This paper aims to examine the phenomenon of the ‘cashless society’ from the perspective of diminishing civil liberties, by means of identity exposure and evaporation of privacy in the electronic payment processes.

It is argued that anonymity in the ‘classic’ payment processes, carried through paper cash and metal coins, is vital to certain civil rights and liberties, and that the vast possibilities of tracking identity of the participants in the cashless society pose large risks. Additionally, cashless society would boost the risks of moral hazard, as banks (and other with them intertwined financial institutions) could be given superior and unparalleled position in the economy, with no fallback options.

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

## *Keywords:*

cashless society, cards, democracy, anonymity, risks

## *JEL Classification:*

E42, E44, E59, G21, G28, O33

## 1. Introduction

Cashless society is a term describing the economic eco-system in which palpable, physical money, namely paper banknotes and metal coins, are replaced with virtual, digital money, and where cash circulation is substituted with payments done by using numerous types of cards (credit, debit, pre-paid, contactless), mobile devices (cell phones<sup>1</sup>, tablets, and similar), and various other equipment connected to the internet (from desktop PCs to smart refrigerators).

Even though Hollow (2012) considers that cashless society is a concept dated to pre-1900s, utopian thinkers (e.g. Thomas More) envisaged a society without money altogether, whereas 'cashless society' describes a civilization holding money, but without its most distinctive material representation – cash. Having 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; et al.).

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

Examples of this shift can be found everywhere: the US state of Louisiana passed an Act in 2011 which completely outlaws the use of cash in transactions for secondhand goods<sup>2</sup>; 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.

Fees and provisions on ATMs are introduced in many countries (not only for non-members of the banks, but for all clients) to demotivate clients from using cash<sup>3</sup>. Plastic is taking over paper: payment cards in circulation worldwide reached 13.45 billion in 2011,

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<sup>1</sup> Not necessarily 'smart' phones.

<sup>2</sup> Act No. 389, Regular Session, 2011, House Bill No. 195  
([www.legis.state.la.us/billdata/streamdocument.asp?did=760886](http://www.legis.state.la.us/billdata/streamdocument.asp?did=760886) – accessed 23.01.2013.)

<sup>3</sup> "(...) 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 towards debit cards." Aleksandra Babić, head of marketing department for Central and Eastern Europe in Mastercard Europe, at a roundtable "Who still needs cash?" in Zagreb, October 2012. Available at <http://www.bank.hr/hrvatska/mobilna-placanja-cash-nece-jos-dugo-biti-najjeftiniji> – accessed 14.2.2013.

which is an increase of 51% over the previous five years (8.91 billion in 2006); for the next five years a further increase of 36% is projected<sup>4</sup>.

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

Rapid development of the technology pushes cash further away: contactless types of payment are now marketed as ‘the new cash’, and NFC chips are being installed into traditional cards, as well as into smart phones. Hence, electronic and mobile payments worldwide are rising sharply, with the pace of 20.0% per year in the period 2009-2013. It is forecasted that the number of payments using mobile devices (m-payments) could grow even faster, by annual rate of 53%<sup>6</sup>.

These phenomena are not exclusive to the highly-developed, western societies<sup>7</sup>; 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 as higher as in the developed world<sup>8</sup>. Remarkable story of M-Pesa in Kenya (a country which holds 130<sup>th</sup> position at the world scale of literacy<sup>9</sup>) is a good example: this SMS-based money transfer system that allows individuals to deposit, send, and withdraw funds using their cell phone has reached approx. 65 % of Kenyan households by the end of 2009 (Jack and Suri 2011:3). According to the Central Bank of Kenya, the number of cards in circulation has increased more than tenfold in the period 2005-2012; from 995 thousands to 9.9 million<sup>10</sup>.

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).

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<sup>4</sup> Source: The Nilson Report, Nov/2012

<sup>5</sup> Source: ECB, <http://www.ecb.europa.eu/press/pr/date/2007/html/pr071116.en.html>

<sup>6</sup> Source: Capgemini, RBS and EFMA (2012:5)

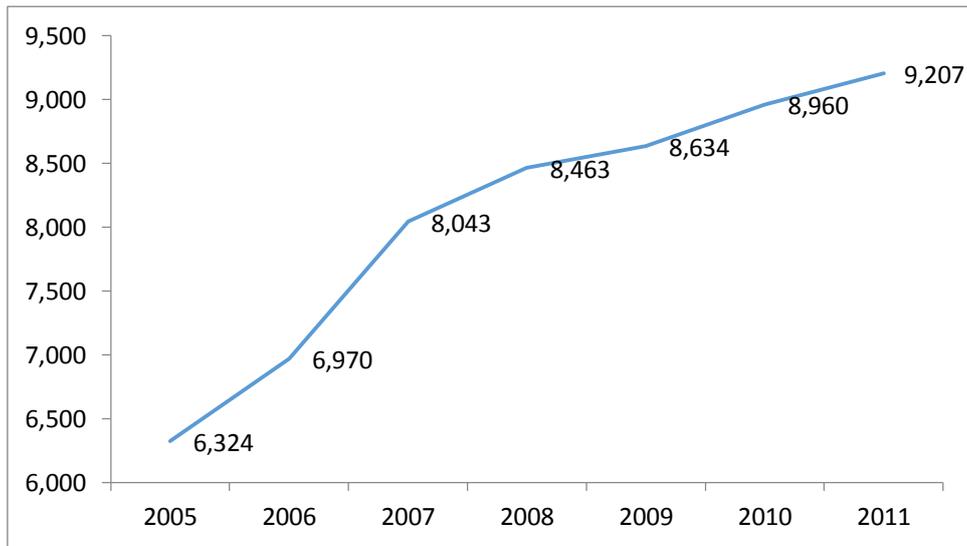
<sup>7</sup> For instance, machines for electronic payments (*kollektomats*) are installed in Swedish churches, as Swedes tend to use less and less coins and banknotes.

<sup>8</sup> Source: Capgemini, RBS and EFMA (2012:6)

<sup>9</sup> Source: CIA World Factbook, compiled by Index Mundi, <http://www.indexmundi.com/g/r.aspx?c=ke&v=39>, accessed 14.2.2013.

<sup>10</sup> Source: Central Bank of Kenya, Annual Report (2012:54)

Figure 1 Number of payment cards in Croatia in circulation, end of year, in 000



Source: Croatian National Bank, Annual reports

Table 1 Largest issuers of Maestro Cards in Croatia, 2011.

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

Source: The Nilson Report, Dec/2012

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”<sup>11</sup>, and that “electronic and mobile payments maintain their rapid growth trajectory”<sup>12</sup>, with the annual expected rate of growth of more than 50%.

All the above trends indicate that paper and metal money are slowly being pushed out from the economy, and that (if the trends persist) the cashless society is on its way. Therefore, it is essential to closely scrutinize possible risks that can incur if banknotes and coins were to

<sup>11</sup> Capgemini, RBS and EFMA (2012:5)

<sup>12</sup> Capgemini, RBS and EFMA (2012:5)

become a part of history. While there are some positive aspects to a cashless society, such as eradicating counterfeiters, suppressing illegal markets, and curbing tax evasion, its negative effects on the society as a whole are mostly disregarded (deliberately, or inadvertently – whichever is the case). This paper attempts to discuss some of the risks of the society without cash, a possibility which is not inevitable, but probable within near future.

## **2. Identity, trust and democracy in the cashless society**

Cashless payments can be traced, since all e- and m-payments leave digital trails. Therefore, it is argued that 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, possibly in some regions even eliminated. Identity of the transaction parties could be revealed, and with it anonymity and privacy of the participants would be lost, which would lead to more effective law enforcement.

On the other hand, the notion of constant supervision of all of the citizens' activities indicates vanishing of governments' trust in its own electorate, which is a process that destabilizes the very foundations of the modern society<sup>13</sup>. It seems that every single citizen has become a potential criminal and a terrorist, worthy of continuous and perpetual monitoring, a latent culprit whose guilt is implied, only yet to be recorded and proven. Constantly monitored cashless society, subsequently, could lead to a cycle of distrust between government and citizens, which could have vast consequences.

Anonymity reinforces pluralism of thoughts, opinions and behaviors in the society, as many people rely on it when they finance and contribute to unpopular and/or controversial projects, activities, and NGOs. Possibility of identity exposure would probably reduce funding for peculiar, provocative, contentious and disputatious ideas, persons and organizations<sup>14</sup>. Ultimately, this would lead to a weaker form of democracy, in which certain voices could not be heard and lobbied for.

De-anonymization of payments would construct voluminous records and catalogs of transactions, which would shift balance of power further towards large corporations, away

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<sup>13</sup> On the importance of trust in the society: Schneier (2012), Tullberg (2008), Kuzihiro (2007), et al.

<sup>14</sup> E.g. funding blockade of Wikileaks by Bank of America, VISA, MasterCard, PayPal and Western Union in Dec. 2010.

from citizens and SMEs. The latter could not afford acquiring the opulent ‘gold mines’ – databases which store history of all consumers’ payments – which could render the former possible of modeling products and services according to consumer behavior, habits, activities, and lifestyle. Subsequently, empowering multinationals and large corporations could extinguish smaller entrepreneurial activities, and could endow big businesses in a manner that it would be affordable and acceptable to ignore the demands of the minorities, which could in the long run subdue social diversity and heterogeneity in favor of economy of scale’s uniformity and standardization.

Voluntary tax payment is a specific declaration of trust towards policy makers. While every tax increase and new tax levying in the traditional society bares a large political burden, automation of tax collection in the cashless society could lead to a state where decisions could be made with less consideration of the voters’ opinion, and where feedback loop is cut off (at least in short and medium term). Introducing cashless society creates risks of losing accountability, responsibility and liability of policy makers towards voters and tax payers, as they would be equipped with previously unknown levers of macro-management – those of fully automated tax collection, and possibility of swift imposing of new duties. For instance, throughout crisis-struck peripheral Europe many citizens deliberately chose not to pay high taxes, as they lost confidence in government administration efficiency, and as 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 the 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, 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 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 with cash she needs no intermediary to fulfill her needs; she is directly in charge of her 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 interpolation of a third party which can impose various limitations on transactions. Cash means direct interchange, market without borders and autonomy of participants, while cashless transactions can arise only if prerequisites are taken into consideration. Transaction must be in the interest of the intermediary as well; otherwise he 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.

### **3. Position of the financial sector**

The fractional reserve system requires banks to constantly build, maintain, and improve their clients' trust – a strenuous effort – as not even the best of them can endure and withstand a bank run. With banks being operators of large quantities of cash they are particularly weary of systemic financial crises, whereby a domino effect can occur when clients take out their cash away from a bank they perceive as disturbed. In a cashless society clients would lose a very important consumer right: the right to disbelieve (temporarily or permanently) in the financial system<sup>15</sup>. They would simply be denied of that option. 'Trust' in the financial system would not be an effect of hard work in developing and upholding it, but fabricated by a decree.

With no (physical) money in the banks and no possibility of distrust by executing deposit withdrawal, 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.

Moral hazard is also found at the roots of the ongoing financial crisis which started in late 2000s (e.g. Swagel, 2009). This crisis has shown a need of providing possibilities to dismantle financial institutions deemed too big/important to fail; a strong need for 'mortal' financial companies which stems from enormous bailouts and collectivization of losses, while at the same time profits remain private. Therefore, what society needs are not even stronger, irreplaceable and immortal financial institutions, but quite the opposite, those that can be left to go bankrupt when they make bad business decisions and take on too much risks, and which

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<sup>15</sup> This right has become essential after the proposed general expropriation of deposits on Cyprus in March 2013.

can be wound up at lower costs to the tax payers. None of these claims could be fulfilled in a cashless society where the position of banks as the sole drivers of money is reinforced and strengthened, where they become not less, but more important, and whose viability would become an imperative regardless of costs.

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

Furthermore, cash exists in the real world, it is material and tangible. Digital money is virtual, it exists only in the 'cloud', and is therefore more demanding to manage. Paying only by cards would extend the usage of overdrafts<sup>16</sup>, which would further accentuate the complex issue of consumer over-indebtedness. Credit cards encourage spending: 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 above arguments indicate that the primary interest to disembark paper and metal is of the large financial institutions, which are lobbying intensively for digital money, denigrating cash, and promoting abandonment of material representation of currency.

#### **4. The security issues**

The argument often heard in promotion of the 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 paper money is recommended to be substituted with limited usability of digital money, which can be utilized only after successful completion of certain authorization processes.

There were only five bank robberies in Sweden in 2012<sup>17</sup>, which is a substantial decline in recent years (110 in 2008, 16 in 2011), a drop which is attributed to Sweden's shift

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<sup>16</sup> „A person who uses PayPass spends about 25 per cent more on their card on a monthly basis“, stated Scott Lapstra, vice-president of market development at MasterCard Canada, for CBC News (<http://www.cbc.ca/news/technology/story/2010/05/31/f-rfid-credit-cards-security-concerns.html> – accessed 18.2.2013.)

<sup>17</sup> <http://www.bloomberg.com/news/2013-04-10/era-of-paper-money-dies-out-in-sweden-as-virtual-cash-takes-over.html> – accessed 18.2.2013.

towards cashless society. However, computer frauds and frauds performed through the internet in Sweden are rising constantly (+12% and +43%, respectively, for 2012 compared to 2011<sup>18</sup>). This could signal that the criminal is merely migrating from real world into virtual sphere, and that the overall security of cash storage is roughly at the same level. When one deposits his paper money in the vault he is exposed to theft performed by the local and regional criminals; but when one stores his money in the ‘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 issue than just stealing money from a pocket.

Cash transactions do not require customer education, constant power supply, non-stop internet connection, 24/7 customer service, continuous updating of protection systems against all kinds of malware, alternate servers on backup locations (again with constant power supply and internet connection<sup>19</sup>), sophisticated surveillance and monitoring, legion of engineers on stand-by, etc. Providing security in a cash economy is relatively simple and inexpensive when compared with possible shortcomings of the above requirements.

In the context of security, it is often brought up that paper and metal money carry bacteria and viruses (“Cash is filthy.”<sup>20</sup>). At the same time many overlook the fact that palpable cash is undeniably and permanently immune to all 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 super-computers and optical-fibers is far more complex and costly.

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. Tabloid media and paparazzi, stalkers and blackmailers, intelligence and counter-intelligence agencies, and similar entities – all of them will be prepared to put extra effort to collect payment data<sup>21</sup>. Disappearance of cash and constant administration of payments would also enable permanent history of imperfect

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<sup>18</sup> The Swedish National Council for Crime Prevention, <http://www.bra.se/bra/bra-in-english/home/crime-and-statistics/crime-statistics/statistical-tables.html> – accessed 18.2.2013.

<sup>19</sup> 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).

<sup>20</sup> Wolman, David. 2012. *The End of Money: Counterfeiters, Preachers, Techies, Dreamers-and the Coming Cashless Society*, Da Capo Press, pp.34.

<sup>21</sup> How much would an information on, say a certain Muslim buying alcohol, or a Jew buying pork – be worth to an interested party? Probably enough to attempt a break into the payments database.

behavior. Youth misconduct could be brought up decades later; 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 “new cash”, financial institutions are not fully disclosing all the risks of the contactless payment processes. In an attempt to mimic the characteristics of metal coins and smaller amounts of paper money (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 at a cost: security levels are fairly low. Gutmann (2012:39) writes 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 the new criminal game which has already come into play, which leaves the cashless economy with very few advantages over the time-tested (certainly not perfect) mediums of storing wealth.

## 5. Conclusion

The aim of this paper is to exhibit some of the risks of the 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 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; not without methodical and detailed introspection of 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 from them as well. Both cash and non-cash payments have their advantages and disadvantages, neither extreme is good (*all things in moderation*). 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 vast array of new possibilities, never previously

experienced in modern society, which bear risks never experienced before, and in many ways resembles opening Pandora's box; so often in life we learn to cherish and value certain phenomena only after they are gone.

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