Cash – an inefficient and outdated means of payment

 Witnesses for the Prosecution

20 May 2019
Cash is outdated, inefficient and bad for your health

What needs to be done to encourage, optimize and replace?
Cash is outdated: As countries discover alternatives, decrease in cash usage accelerates

Payments markets fall into five clusters based on their cash usage:

- **Emerging markets**: Cash accounts for >80% of transactions; annual rate of decline is <1%. Growth in volume and value linked to growth in branch and ATM networks.
- **Initial transformation markets**: Annual rate of decline is <3%, but trends in digitisation suggest these countries may join mature markets in a few years’ time.
- **Mature, cash-intensive markets**: Cash transaction volumes are resilient, despite growth in electronic payments; highly developed branch and ATM networks suggest importance of cash to local banks.
- **Mature markets**: Cash is 40-60% of total transaction volumes; value of cash in circulation is growing; over-abundance of ATMs lowers efficiency.
- **Markets at the vanguard**: Technological innovation and industry action have driven cash usage below 40%; cash is a commodity and banks face challenge to reduce fixed costs of banks and ATMs.

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1. As a share of all transactions

SOURCE: BIS, central banks; ECB; Euromonitor: RBR; McKinsey Payments Practice
Cash is outdated: People across the globe complete fewer and fewer cash payments each year

Number of retail cash payment transactions per capita,\(^1\) 2006-2017

- **Bank of Korea** announces plan to move to cashless society by 2020, including removing all coins from circulation

**Comments**

- Clear “inflection points” in other countries have resulted from a regulatory intervention, e.g.:
  - Bank of Korea removing coins from circulation
  - Swedish banks launching Swish in collaboration with Riksbank

- The UK has not demonstrated a clear inflection point, and cash is declining at similar rates to Nordic countries known for cash-light economies

- Further acceleration is unlikely without active intervention

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1 Number of retail transactions made in cash per person per year. Retail transactions include consumer-to-consumer and consumer-to-business transactions.

Source: Global Payments Map

McKinsey & Company
**Cash is outdated:** Cash use has declined from 51% of transactions in the UK in 2012 to 30% in 2017, and is forecast to fall to 11% by 2022.

**Payment transactions in UK by instrument, million transactions**

<table>
<thead>
<tr>
<th>Year</th>
<th>Cheque</th>
<th>Credit card</th>
<th>Debit card</th>
<th>Transfers</th>
<th>Cash</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>18</td>
<td>22</td>
<td>39</td>
<td>8</td>
<td>51</td>
</tr>
<tr>
<td>2017</td>
<td>23</td>
<td>30</td>
<td>54</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>2022F</td>
<td>25</td>
<td>54</td>
<td>56</td>
<td>10</td>
<td>11</td>
</tr>
</tbody>
</table>

100% = 37,796

100% = 38,670

100% = 39,850

“Two-thirds of people are using more digital payment methods than they did five years ago, and **debit card payments are forecasted to overtake cash** as the most frequently used method of payment by 2018.”

- The UK Treasury (2017)

**NOTE:** Data for non-cash transactions represents all domestic transactions (consumer, business, and government), triangulated from a number of sources incl. Bank of International Settlement, Central Banks, and Retail Banking Research reports; cash estimates are calculated as a remainder from non-cash payments and average number of transactions per capita.

1 ACH and RTGS 2 Includes traditional, charge card and prepaid card
### Cash is outdated: Significant differences in cashless maturity between European top economies

#### Share of cash transactions

- Norway: 15%
- UK: 37%
- Italy: 39%

#### Usage of cards¹ – transactions per capita, 2017

<table>
<thead>
<tr>
<th>Country</th>
<th>Debit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norway</td>
<td>399</td>
<td>348</td>
</tr>
<tr>
<td>Denmark</td>
<td>313</td>
<td>303</td>
</tr>
<tr>
<td>Sweden</td>
<td>244</td>
<td>213</td>
</tr>
<tr>
<td>Finland</td>
<td>185</td>
<td>178</td>
</tr>
<tr>
<td>UK</td>
<td>148</td>
<td>139</td>
</tr>
<tr>
<td>Netherlands</td>
<td>135</td>
<td>115</td>
</tr>
<tr>
<td>Luxembourg²</td>
<td>98</td>
<td>95</td>
</tr>
<tr>
<td>Ireland</td>
<td>83</td>
<td>76</td>
</tr>
<tr>
<td>France</td>
<td>115</td>
<td>75</td>
</tr>
<tr>
<td>Belgium</td>
<td>95</td>
<td>75</td>
</tr>
<tr>
<td>Switzerland</td>
<td>98</td>
<td>75</td>
</tr>
<tr>
<td>Portugal</td>
<td>83</td>
<td>68</td>
</tr>
<tr>
<td>Russia</td>
<td>68</td>
<td>65</td>
</tr>
<tr>
<td>Slovenia</td>
<td>65</td>
<td>49</td>
</tr>
<tr>
<td>Poland</td>
<td>49</td>
<td>22</td>
</tr>
<tr>
<td>Spain</td>
<td>22</td>
<td>14</td>
</tr>
<tr>
<td>Austria</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

¹ Includes charge cards
² Data as of 2016

SOURCE: McKinsey Global Payments Map
**Cash is expensive:** Cash handling and inventory management is an operational challenge and estimated annual cost of 5-10% of operational costs

<table>
<thead>
<tr>
<th>Major cash cost components, USD bn</th>
<th>Typical challenges</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unearned interest 7-10 (50%)</td>
<td>Less relevant in low interest situation</td>
<td>Cash handling and inventory management constitutes 5-10% of a bank’s operational cost base</td>
</tr>
</tbody>
</table>
| Cash in transit (CIT) 4-7 (30%)  | ▪ Cash overstocking or cash out due to gut-based, decentralized decision making  
▪ Lack of visibility of end-to-end cash levels and misaligned KPIs in managing cash inventory  
▪ High cash transportation cost due to lack of optimization balancing costs  
▪ Sub-optimally priced CIT vendor contracts without assessing cash needs and economics | |
| Insurance 2-4 (15%)              | ▪ High insurance costs due to static limits set at individual ATM/branch level based on historical cash demand | |
| Sorting and handling 1-2 (5%)    | ▪ FTE costs due to inefficient work flow, overstaffing in branches, cash vaults | |
| Total 7-10                      | 7-13               | |

Equivalent to 5-10% bank operational costs

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1 Includes bank transfers and direct debits  
2 Estimated based on available benchmarks of bank size of 1,000 branches and 1,000 ATMs

**Challenges:**

- **Ownership**  Costs are typically fragmented across the organization with no clear owner
- **Optimisation**  30-50% of banks globally, do not use any tool to manage inventory instead relying on experience
- **Execution**  Inefficient work flow and coordination between relevant stakeholders e.g. branches, cash vaults

Cash is bad for your health!

Research findings: Diseases spread through money

- A research study on 5,000 banknotes in London in 2000 proved that 99% of the tested currency notes had traces of cocaine on them.
- It was estimated that 200,000 hepatitis C cases record every year in the UK among that at least 5000 hepatitis C cases were caused because of currency notes.
- A research study on USA Currency notes by Forensic Science International reported that 92% of the notes have traces of cocaine which are the source of hepatitis C.
- The below is the research findings from International Journal of dental clinic on currency notes.

Are Currency Notes Really Full of Germs?


Beware! The rupee notes in your wallet are carrying disease-causing microbes, warns study


Government study says currency notes carry disease-causing micro-organisms


Hitachi’s ATM that Sterilizes and Irons Bills


Microbial contamination of Indian currency notes in circulation


Scientists say that currency notes carry micro-organisms that spread diseases

Cash is outdated, inefficient and bad for your health

What needs to be done to encourage, optimize and replace?
**Encourage:** Well executed digital solutions are enthusiastically accepted by the public

<table>
<thead>
<tr>
<th>Leading Solution</th>
<th>Founding year</th>
<th>Number of solution users&lt;sup&gt;2&lt;/sup&gt; 2017, millions</th>
<th>Number of mobile users, 2017, millions</th>
<th>E-wallet penetration in mobile users, %</th>
<th>Successfully established</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="#">Swish</a></td>
<td>2012</td>
<td>5.5</td>
<td>7.0</td>
<td>78.6</td>
<td>✓</td>
</tr>
<tr>
<td><a href="#">Vipp</a></td>
<td>2015</td>
<td>2.6</td>
<td>4.1</td>
<td>63.0</td>
<td>✓</td>
</tr>
<tr>
<td><a href="#">MobilePay</a></td>
<td>2013</td>
<td>3.4</td>
<td>5.6</td>
<td>60.7</td>
<td>✓</td>
</tr>
<tr>
<td><a href="#">TWEET</a></td>
<td>2014</td>
<td>0.5</td>
<td>7.3</td>
<td>6.8</td>
<td></td>
</tr>
<tr>
<td><a href="#">Paytm</a></td>
<td>2014</td>
<td>3.3</td>
<td></td>
<td>5.4</td>
<td></td>
</tr>
<tr>
<td><a href="#">Pingit</a></td>
<td>2012</td>
<td>3.0</td>
<td></td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td><a href="#">MBWAY</a></td>
<td>2015</td>
<td>0.3</td>
<td>6.9</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td><a href="#">Express</a></td>
<td>2015</td>
<td>1.5</td>
<td>45.4</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td><a href="#">Paydirekt</a></td>
<td>2014</td>
<td>1.9</td>
<td>71.9</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td><a href="#">Lydia</a></td>
<td>2011</td>
<td>1.4</td>
<td>50.6</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td><a href="#">Paylib</a></td>
<td>2013</td>
<td>1.3</td>
<td>50.6</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td><a href="#">lyf pay</a></td>
<td>2017</td>
<td>1.0</td>
<td>50.6</td>
<td>2.0</td>
<td></td>
</tr>
</tbody>
</table>

1 2016 figures
2 Based on number stated by players/number of downloads

SOURCE: “European B2C e-commerce Report 2016” – e-commerce Foundation; company websites; press search; World Bank
Optimize: Further steps will be required to create sustainable situation
Example: The Netherlands

Current situation is not sustainable …

- Number of cash withdrawals decreases at \(~10\% \text{ per year}\)
- Additional investments required in safety
- Longer term, keeping cash widely available and accessible while affordable not feasible anymore for individual banks
- Only two relevant players (G4S and SecurCash) remain in cash distribution market

… though pooling temporarily solves the main issues

- Accessible: coverage will stay at more than 99 percent, with equal or reduced queue lengths
- Available: customers from all participating banks will be able to withdraw and deposit at all ATMs
- Affordable: cost per transaction reduced to level of other European countries
- Secure: geo-optimization allows removal of ATMs at least secure locations and migration to a single system creates a tighter security loop
**Optimize:** By consolidating resources, banks can save up to 35 percent in ATM costs

### Cost reduction opportunity resulting from creation of a combined network

Indexed, cost before ATM pooling = 100

<table>
<thead>
<tr>
<th>Example measures</th>
<th>Geographical optimization</th>
<th>Combining bank activities</th>
<th>Standardization</th>
<th>Cost after nation-wide optimization</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Remove ATMs with low traffic in areas adequately covered by other ATMs</td>
<td>5-10%</td>
<td>5-10%</td>
<td>10-15%</td>
<td>65-80%</td>
</tr>
<tr>
<td>▪ Consolidate IT development, fraud handling, etc.</td>
<td></td>
<td></td>
<td></td>
<td>-20-35%</td>
</tr>
<tr>
<td>▪ Increase standardization of hardware, software, security infrastructure, etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Not including the cost savings from pooling cash counting facilities
Replace: Why Central Bank issued Crypto Currencies could be a game changer

Central Bank Crypto Currency (CBCC)

For consumers
- Direct access to (safe) central bank money
- Protection of privacy

...but what about resulting intransparency?

For Financial Services industry
- Ultimate “stablecoin”
- A clear standard
- Partially existing infrastructure
- Great opportunity to replace aging technology

...but what about unfair competition?

As a policy tool
- Additional tool for monetary policy
- Disciplining effect on banks

...but what about additional volatility

SOURCE: McKinsey