Electronic Delivery Methods of Social Cash Transfers
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Introduction
During the past two decades, many social cash transfer (SCT) programmes have emerged in developing countries as a promising means for delivering social protection. Since their introduction as pilots in Latin America in the early 1990s, the popularity and support of SCTs among national governments as well as the international development community have increased considerably. SCTs have, therefore, moved “from the margins of development policy towards the mainstream in a number of global regions” (Arnold, Conway & Greenslade, 2011, p. 7).

In general, the term ‘social cash transfer’ describes “regular non-contributory payments of money provided by government or non-governmental organisations to individuals and households” (Samson, 2009, p. 43). SCTs can be both conditional and unconditional and they are commonly targeted at households or persons fulfilling certain eligibility criteria such as income poverty or malnutrition. According to estimates, at the present day between 750 million and one billion people in the developing world benefit from SCTs (Arnold, Conway & Greenslade, 2011, p. 10). As the largest SCT programmes are carried out in middle-income countries such as Brazil, South Africa, or Mexico, only a minority of beneficiaries originate from states with a low average income. However, recently several SCT pilot programmes and nationwide initiatives have also been implemented in Sub-Saharan Africa and other low-income regions (Bankable Frontier Associates, 2008, p. 5; Barca et al., 2010, p. 1) demonstrating that SCTs are now too considered an adequate instrument of social protection for least developed countries.

The main rationale for the increasing support of SCTs is that, according to accumulating evidence, they are “effective in ameliorating vulnerability and chronic poverty […] and have wider positive impacts within recipient households and communities” (Devereux & Vincent, 2010, p. 368). These effects unfold through various pathways: First, SCTs eliminate the need to sell income-generating assets in the event of an economic shock and thus reduce or prevent shock-induced poverty. Second, by providing a guaranteed minimum income they enable unemployed or underemployed beneficiaries to bear the costs for a job search (e.g. time and travel costs) and to take risks with investments in new and more profitable enterprises. Third, the minimum income supports investments in human development such as children’s health, nutrition, and education, which may contribute to breaking the inter-generational poverty transmission within the household (Arnold, Conway & Greenslade, 2011, p. 5; Samson, 2009, pp. 44-46).

Triggered by the widespread implementation of SCT programmes throughout the developing world in the recent past, a broad range of scholarly literature has been published dealing with impacts and transmission channels of SCTs on the one hand, and various operational aspects on the other hand. However, whereas much of the literature deals with issues such as conditionality or targeting methods, payments systems have received far less attention (Barca et al., 2010, p. 1). Against this backdrop and taking into account recent technological innovations, this discussion paper aims to outline strengths and weaknesses of electronic delivery methods and to discuss different technological approaches. Moreover, it seeks to assess the introduction of these delivery methods from the perspective of three key stakeholder groups, namely governments, beneficiaries, and private enterprises.

The Case for Innovative Delivery of Cash
The main goal of a delivery mechanism (or payment system) within a SCT programme can be described as “successfully distribu[ing] the correct amount of benefits to the right people at the right time and frequency while minimizing costs to both the program and the beneficiary” (Grosh et al., 2007, p. 156). Commonly, delivery mechanisms absorb a
high proportion of the administrative costs, which is why they represent a key determinant of the cost-effectiveness and efficiency of any SCT initiative. Moreover, as regularly disbursing cash in inaccessible areas with lack of infrastructure is a challenging task and inadequate delivery mechanisms can cause a poor performance or even failure of the whole SCT, they are critical elements of these programmes and require careful planning (Devereux & Vincent, 2010, pp. 368-369).

The available delivery mechanisms can be broadly divided into ‘pull’ and ‘push’ methods. Traditionally, most SCT initiatives applied a manual ‘pull’ system, which requires beneficiaries to collect their regular cash transfer at a specified date and location. These paypoints are oftentimes local government offices, mobile offices administered by local authorities or NGOs, or post offices (Devereux & Vincent, 2010, p. 370). Disbursing cash with such a ‘pull’ system has the advantage that only limited infrastructure is needed and high visibility of the SCT initiative is guaranteed. Moreover, programme staff gets in contact with the beneficiaries at every disbursement and can assist when questions or problems arise (Statham, 2012, p. 2).

Notwithstanding these strengths, manual payment systems also observe several major weaknesses: First, transporting large amounts of cash to remote areas is not only expensive in terms of equipment and administrative staff time but also constitutes a security risk, especially if the delivery schedule is widely known. Therefore, additional security personnel are often required turning manual cash disbursement into a very staff-intensive and thereby costly delivery method. Second, since cash passes through many sets of hands before reaching the final beneficiary, corruption and fraud are likely to occur, which may pose a heavy strain on the programme budget. Third, travelling to a designated paypoint on a specific day and queuing for several hours incurs considerable opportunity costs for the recipients, as they cannot undertake other productive activities in the meantime. Fourth, apart of being costly, this method is also highly inconvenient for them. Especially elderly or sick people may not be able to collect their cash transfer on their own. Furthermore, the explicit identification of beneficiaries through queuing on payment days can have serious implications on their personal safety and lead to stigmatisation in the community. Fifth, as a consequence of the manual disbursement of cash, this delivery method can neither be easily scaled up nor does it provide the opportunity to promote financial inclusion1 of beneficiaries (Barca et al., 2010, p. 14; Emmett, 2012, pp. 5-6; Vincent & Cull, 2011, p. 40).

It is due to these substantial weaknesses that many development agencies have recently abandoned manual ‘pull’ methods and started using innovative ‘push’ systems, which ‘push down’ delivery to the individual beneficiaries (Vincent & Cull, 2011, p. 41). In this respect, particularly electronic delivery methods have gained currency, as they outperform manual methods in multiple aspects. In fact, almost 50 % of all SCT programmes implemented in the past decade use this type of delivery mechanism (Smith et al., 2011, p. 4).

Acknowledging their growing importance for SCT programmes throughout the developing world, this paper now discusses electronic delivery methods in detail.

Electronic Delivery Methods

Any electronic delivery method consists of two steps. First, governments or international donor organisations electronically transfer cash to a bank2, which deposits the benefits in personalised accounts that can be conventional bank accounts or limited-purpose instruments such as e-money accounts. The second step consists of beneficiaries withdrawing cash from these accounts at a network of paypoints. Several electronic delivery methods exist that differ with respect to the network of paypoints they use. Paypoints can be bank branches or post offices, Automated Teller Machines (ATM), contracted shopkeepers with Point of Sale (PoS) devices, or mobile money agents (Emmett, 2012, p. 2). Beneficiaries can access their accounts with smartcards, magnetic stripe cards, or mobile phones and identify themselves with biometric identifiers and/or Personal Identification Numbers (PIN). This practise of delivering financial services outside conventional bank branches by using agents and relying on technology to transmit transaction details is also known as ‘branchless banking’ (AFI, 2012, p. 3).

Electronic delivery methods are suited to cooperation with the private sector. Governments typically contract with banks, smartcard platforms, or mobile network operators (MNOs), as these provide the networks to electronically transfer cash to recipients (Vincent & Cull, 2011, p. 49). One major reason for private-sector involvement is that the most-advanced technological delivery methods are commonly proprietary systems owned by leading enterprises (Gelb & Decker, 2012, p. 107). Without their expertise and technological infrastructure, governments can hardly switch to electronically delivering cash transfers.

Without neglecting that costs and benefits vary with local conditions, the following sections point out general strengths and weaknesses that all electronic delivery methods have in common. Afterwards, different technological approaches are successively discussed.

Strengths

Electronic delivery methods substantially reduces transaction costs of a social cash transfer programme. In particular, it saves expenditures for transport, security, and insurance for the physical transport of cash to remote areas. With electronic delivery methods, governments do not need to employ staff for sorting cash and manually filling envelopes. Moreover, equipment and staff costs for transporting and handing out these envelopes do

1 The term ‘financial inclusion’ is further explained in the subsequent chapter.

2 Mobile money also involves banks, as these hold the deposits, which back the money stored in ‘mobile wallets’ (Davidson, 2011, p. 4).
not occur. Additionally, governments save security staff and reduce staff’s vulnerability to ambushes, as these are no longer required to travel with large amounts of cash (Devereux & Vincent, 2010, p. 371).

Apart from these transport-related savings, electronic delivery methods also reduce costs due to less exposure to corruption and fraud. Public spending is vulnerable to leakage, as money passes through many sets of hands before reaching the final recipient. For example, it is estimated that about 44% of the total funds spent on social welfare programmes in India are fraudulently diverted (Dutta et al., 2010, cited in Gelb & Decker, 2012, p. 95). Electronic delivery methods are less prone to leakage because electronic transfers create an auditable trail from the government to the final recipient (Gelb & Decker, 2012, p. 92). In particular, since the electronic transfer process involves banks, stringent banking regulations apply. These demand accurate documentation of all disbursements, which makes it significantly harder to illegally divert large sums of money (Devereux & Vincent, 2010, p. 374).

Recipients can only withdraw cash at paypoints upon successful authentication. Paypoints employ PINs and/or biometric indicators (e.g. fingerprints, optical recognition, or voiceprints on mobile phones) in order to uniquely identify recipients. Such unique identifiers considerably reduce the risk of delivering transfers to wrong recipients (Emmett, 2012, p. 5). Switching to an electronic payment system also provides a great opportunity to eliminate ‘ghost beneficiaries’ from registration lists. For instance, introducing biometric identification in Botswana, South Africa, and India reduced the number of beneficiaries by 12-25%, as non-existent beneficiaries were cleaned from data files (Gelb & Decker, 2012, pp. 95-96).

Electronic delivery methods also reduce the risk of corruption and distortion at the end of the delivery process where recipients cash out their transfers at paypoints. In contrast to manual delivery methods, recipients are free to choose at which paypoint they withdraw their transfers. This creates competition between different paypoints and reduces the potential for distortion and bribes (Emmett, 2012, p. 5; Gelb & Decker, 2012, p. 100). For example, one study from Argentina found that the introduction of an electronic payment system caused such a strong decline of bribes at paypoints that an additional US$ 10.7 million of transfers now also surmount the last mile and reach the hands of final beneficiaries (Pickens, Porteous & Rotman, 2009, p. 5).

Applying technology does not only decrease transaction costs for governments but also has the potential to reduce beneficiaries’ opportunity costs of collecting transfers. Since an electronic delivery method allows beneficiaries to cash out their transfers at a network of local paypoints, their travel time and travel costs can be reduced. Shortening the distance to cash-out points lowers the barrier to access especially for individuals unable to walk long distances or with busy work schedules (Gelb & Decker, 2012, p. 92).

Moreover, with electronic delivery methods it is possible to allow recipients to decide when they would like to cash out their transfers at a paypoint. Such flexibility increases convenience for recipients and avoids long waiting times at fixed paydays (Devereux & Vincent, 2010, p. 372). Evidence uniformly suggests significant reductions in travel and waiting times for beneficiaries (Bold, Porteous & Rotman, 2012, p. 13; CGAP, 2013, p. 2). For example, in Argentina the average time needed to collect a transfer dropped from over four hours to 40 minutes (Pickens, Porteous & Rotman, 2009, p. 10). Avoiding long queues also has been found to prevent stigmatisation since beneficiaries are no longer easily identified as programme recipients by other community members (Barca et al., 2010, p. 14).

Being able to choose when to cash out transfers and at which place is not only more convenient and less degrading but also more secure for beneficiaries. Since travel distances are shortened and recipients can discretely choose when to withdraw their transfers, they are less vulnerable to robbery on their way back home (Emmett, 2012, p. 5). Moreover, many systems allow recipients to keep money in their electronic wallet so that they do not need to walk home with large amounts of cash in their pockets (Barca et al., 2010, p. 10).

Finally, electronic delivery methods can help to bridge the digital divide and foster financial inclusion. The target group of social cash transfers typically consists of individuals who are unlikely to have a bank account or a landline. Switching to electronic delivery of cash provides beneficiaries a great opportunity to learn how to use modern information and communication technologies such as ATMs, electronic benefit cards, or mobile phones (Devereux & Vincent, 2010, p. 372).

The application of technology for transferring cash does not only offer a great learning opportunity for recipients but can also mainstream them into the financial sector over time. Financial inclusion refers to a “state in which all working age adults […] have effective access to […] financial services provided by formal institutions” (CGAP, 2011, p. 8), in particular, credit, savings, payments, and insurance. Consequently, financially inclusive SCT programmes require accounts that allow for safe storage of funds, financial transactions, and offer convenient access (Pickens, Porteous & Rotman, 2009, p. 5). Often, electronic delivery methods use limited-purpose accounts in which funds can only be stored for a certain period of time and no funds other than the social cash transfer can be deposited. Although these accounts cannot be considered as completely financially inclusive, they may serve as intermediary steps toward full integration into the financial sector if they are connectable to the mainstream banking system. Subsequently, additional features such as the possibility to indefinitely store funds and to make transfers to other accounts can be added over time (Bold, Porteous & Rotman, 2012, pp. 3-8).

However, it should be noted that recipients’ financial inclusion does not automatically happen with the provision of a
financially inclusive account. They often seem to be reluctant to use the offered financial services (Emmett, 2012, p. 6), are financially illiterate3 (World Bank, 2009, p. 3), or are unaware of the functionality of the account (CGAP, 2013, p. 2). For example, only 10% of cash transfer recipients in Kenya knew that they could save money on their smartcards (Barca et al., 2010, p. 11). If such barriers can be overcome with training as well as financial literacy and information campaigns, beneficiaries’ demand for financial services is likely to increase. This impulse may encourage financial institutions to expand their networks, thereby providing currently excluded individuals with access to financial services (Devereux & Vincent, 2010, p. 372).

Weaknesses

Although electronic delivery methods outperform manual methods in multiple aspects, technology does not constitute a silver bullet solving all challenges related to delivering social cash transfers. One important weakness is that, depending on existing infrastructure, high set-up costs can occur for building up a sufficiently dense network of paypoints. In particular, contracted shopkeepers need to be equipped with PoS devices and/or a sufficient amount of ATMs need to be installed. In addition, each beneficiary requires a smartcard, a magnetic stripe card, or a mobile phone in order to access her account (Emmett, 2012, p. 4). Such up-front costs are better justifiable if the payment system is used for multiple purposes (e.g. transfer of other social benefits, linkable to mainstream bank system) and for a large number of beneficiaries (Devereux & Vincent, 2010, p. 373). Apart from set-up costs, countries may need to implement a regulatory framework that legalises transfers between banks and contracted agents who are not physically located in bank branches or allow MNOs to offer such services. Notwithstanding the high efforts a legal reform requires, such a regulatory framework could stimulate development and yield long-term benefits (Emmett, 2012, p. 7).

Despite higher initial set-up costs for fraud-preventing technology, electronic delivery methods are not totally fool proof. Biometric technology can prevent that beneficiaries charge their PoS device (Barca et al., 2010, p. 11). If such barriers can be overcome with training as well as financial literacy and information campaigns, beneficiaries’ demand for financial services is likely to increase. This impulse may encourage financial institutions to expand their networks, thereby providing currently excluded individuals with access to financial services (Devereux & Vincent, 2010, p. 372).

3 Financial literacy is commonly defined as the “combination of consumers’/investors’ understanding of financial products and concepts and their ability and confidence to appreciate financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being” (World Bank, 2009, p. 2).

Since the usage of technology is the key feature of electronic delivery methods, it can be difficult to create a dense network of paypoints in remote areas for particularly two reasons: First, shopkeepers need to have access to at least a decentralised electricity source (e.g. solar panel) in order to charge their PoS device. Moreover, mobile phone-based solutions require mobile network coverage, which may not be given in remote areas. Second, local shopkeepers and mobile money agents pay beneficiaries from their revenues and their accounts are subsequently credited with the cashed-out sums. Therefore, it is not only necessary to have enough agents, but they also need sufficient cash flow in order to serve as paypoints (Emmett, 2012, p. 7; Vincent & Cull, 2011, p. 47). Another weakness originating from the use of agents is that governmental employees are no longer in direct contact with beneficiaries (Statham, 2012, p. 2). Therefore, cash-out meetings cannot be used anymore to resolve SCT-related questions or offer complementary services such as health check-ups or trainings.

Finally, as stated above, governments cooperate with private enterprises in order to gain access to the most-advanced technological solutions for electronically delivering cash to recipients. Due to a lack of international standards, some proprietary systems (e.g. specific types of biometric identification technology or smartcards) are not compatible with mainstream financial infrastructure or complementary technological solutions. Limited interoperability prevents governments from consolidating different social benefits and can hinder beneficiaries’ financial inclusion. Thus, there often exists a trade-off between quality and interoperability of technological systems (Emmett, 2012, p. 6; Gelb & Decker, 2012, p. 107).

Different Technological Approaches

Having outlined strengths and weaknesses that all electronic delivery methods have in common, the following section reviews different technological approaches in order to point out their specific advantages and disadvantages.

Smartcards are plastic cards with an embedded chip containing information on the beneficiary and transfer values. Recipients identify themselves at paypoints (e.g. ATMs, post offices, agents with PoS device) with a PIN and/or biometric identifiers and can then withdraw cash. Fingerprints and iris scans are most commonly used for identification purposes. Which biometrics are most suitable depends on beneficiaries’ occupation and age. Some jobs may cause damage to either hands or eyes and, in contrast to irises, fingerprints only stabilise around the age of fourteen. Moreover, cultural preferences should be considered. For instance in Muslim populations, iris scans might be more culturally acceptable since no physical contact is required (Gelb & Decker, 2012, p. 99). Smartcards have recently been introduced to large-scale SCT initiatives in several countries including South Africa’s ‘Child Care’ and ‘Old Age Pension’ programmes as well as Mexico’s ‘Oportuni-
Porteous & Rotman, 2009, p. 6). One of the three key advantages of a smartcard is that no constant network connectivity is required, which makes smartcards particularly useful in remote areas. Since transaction information is stored both on the PoS devices and the smartcard chip, it is sufficient for agents to connect to the device to the network at times in order to reconcile the accounts (Smith et al., 2011, p. 6). The second key advantage of smartcards is that information stored on the cards can be updated after the cards have been issued (Emmett, 2012, p. 2). This allows governments to eventually streamline a range of services to citizens. For example, governments can easily add another ‘wallet’ to the smartcard containing information on beneficiaries’ eligibility to access other social protection programmes, which deliver commodities (e.g. fertiliser) or services (e.g. subsidised education, health care). Thereby, convergence between different programmes targeted at similar population groups may be improved. Smartcards can also be used to store information on medical history or voting records (Devereux & Vincent, 2010, p. 373). Third, if smartcards rely on biometric identifiers, they are very easy to use even for illiterate individuals, as they do not require to memorise and enter a PIN or to handle a mobile phone (Barca et al., 2010, p. 7).

**Magnetic stripe cards** store data on magnetic stripes using iron-based magnetic particles on a band on the card. Beneficiaries identify themselves with a PIN or a signature, which makes magnetic stripe cards less secure and slightly more complicated to use than smartcards employing biometric identifiers. Beneficiaries can cash out their transfers at ATMs or contracted agents with PoS devices. Magnetic stripe cards are used in some of the world’s largest SCT programmes such as ‘Bolsa Família’, which delivers cash to more than 12 million Brazilian households on a regular basis (Bold, Porteous & Rotman, 2012, p. 6). In addition, they have occasionally been employed in emergency situations, for example in the aftermath of devastating floods occurring in Pakistan in 2010 (Smith et al., 2011, p. 5).

In contrast to smartcards, magnetic stripe cards need constant network connectivity, as transactions are performed in real time. Another weakness of magnetic stripe cards is that no new information can be added once the card has been programmed. While these features make magnetic stripe cards an inferior solution compared to smartcards, the latter cause considerably higher set-up costs (Sossouvi, 2013, p. 24). Smartcards are up to five times more expensive than magnetic stripe cards and chip-reading PoS devices cost twice as much as those for magnetic stripe cards. Given these high initial investments for smartcards, governments should carefully consider whether the additional costs compared to magnetic stripe technology are justified. In particular, the offline capability of smartcards might become less relevant with increasing mobile network coverage (Pickens, Porteous & Rotman, 2009, p. 14).

**Mobile money** constitutes an alternative electronic delivery method to smartcards or magnetic stripe cards. Governments set up mobile accounts for beneficiaries at MNOs. Accounts are linked to phone numbers and the government provides the MNO with a list of recipients including their PIN and phone number. A text message informs beneficiaries that a payment was transferred and funds are debited from government’s account. Beneficiaries can then cash out their transfers at mobile money agents by inserting their personal SIM card in any mobile phone and entering their PIN. Having received a confirming text message, the mobile money agent cashes out the desired amount. Mobile money agents are independent entrepreneurs charging beneficiaries a service fee for withdrawing money out of their mobile wallets. Beneficiaries cannot only cash out their benefits but also store and transfer money between different accounts (e.g. paying bills) or buy airtime and goods at participating vendors. Whereas some countries allow MNOs to store money on behalf of their customers, in other countries formal banks need to be involved (Smith et al., 2011, p. 6). Although mobile money has not yet been applied in large-scale SCTs, successful pilots exist. The ‘Post Election Violence Recovery’ programme in Kenya used M-PESA to deliver cash to 37,000 individuals (Barca et al., 2010, p. 4) and in Haiti several NGOs relied on mobile money tools for their emergency relief work in the aftermath of the earthquake in 2010 (Smith et al., 2011, p. 102).

As governments can leverage existing mobile money agent networks, initial set-up costs for electronic delivery solutions using mobile money tend to be lower than for smartcard-based systems. In particular, governments do not need to provide contracted agents with PoS devices or set up ATMs, yet they may need to provide beneficiaries access to a mobile phone if they do not posses one. In addition to financial transactions, mobile phones provide an opportunity for communication between government and beneficiaries. They allow beneficiaries to provide feedback by sending text messages and facilitate governments to respond to complaints or to inform about changing conditions of transfers. Such two-way communication is likely to reduce leakage and improve accountability. Governments may also use text messages to influence beneficiaries’ behaviour. For example, beneficiaries could be encouraged to use transfers for school fees or healthy nutrition (Smith et al., 2011, p. 25). One disadvantage of mobile money systems is that they require constant network coverage, which is likely to pose a barrier in remote areas. Moreover, unlike smartcards, which only require beneficiaries to provide a fingerprint, mobile money solutions demand them to operate a mobile phone. Unless training and guidance is provided, this might constitute a barrier to access especially for illiterate individuals (Sossouvi, 2013, p. 25).

Similar to mobile money, **mobile vouchers** also work with MNOs. Yet, mobile vouchers require less hardware than a mobile money solution since only contracted shopkeepers need to be equipped with a mobile phone. Beneficiaries receive a PIN and a voucher number on two separate...
scratch cards and approach a contracted shopkeeper to redeem their voucher. They do not need to redeem the full amount at once and can usually only receive in-kind benefits (Soussouvi, 2013, p. 18). In order to verify the transaction, shopkeepers enter the voucher ID and the redeemed value into their mobile phone and ask beneficiaries to enter their PIN. Upon successful verification, shopkeepers receive a text message and are then allowed to provide beneficiaries with goods and services. The redeemed value is credited to the shopkeeper’s account. Alternatively, with **electronic vouchers** shopkeepers verify transactions via the Internet. Therefore, they need to possess a smartphone or computer and access to data connection in order to process this type of voucher.

Mobile vouchers are easy to set up, which makes them a useful delivery method for emergency situations. For example, in response to humanitarian crisis in Syria, the World Food Programme has implemented an electronic voucher programme in 2013, which allows 800,000 refugees to buy food at local shops in Lebanon and Jordan (WFP, 2013, n.p.). Since vouchers usually only entitle beneficiaries to receive in-kind benefits, voucher redemption is not constrained by shopkeepers’ cash flow. In contrast to paper vouchers, with mobile or electronic vouchers shopkeepers can be reimbursed more quickly and governments receive more detailed data on beneficiaries’ voucher redemption patterns. One main downside of mobile or electronic vouchers is that shopkeepers need network connectivity in order to verify transactions (Soussouvi, 2013, pp. 18-22). Moreover, vouchers are more suitable for short-term cash transfer projects since periodically new vouchers need to be issued.

**A Stakeholder’s View**

The preceding chapter has outlined several strengths and a few weaknesses of electronic delivery methods in SCT programmes and further elaborated the pros and cons of different technological approaches. Thereby, various advantages of electronic payment systems over manual disbursement of cash could be demonstrated. Yet, in order to constitute a practically applicable solution for the transfer of cash in social programmes in the long term, electronic delivery methods need to be advantageous for all key stakeholders, namely governments, beneficiaries, and private enterprises. For this reason, the application of electronic delivery methods is now assessed from each of these stakeholders’ viewpoints.

**Governments**

One of the major concerns with regard to the application of electronic delivery methods in SCT programmes is that their introduction may be prohibitively expensive for governments (Pickens, Porteous & Rotman, 2009, p. 7). In fact, given constrained budgets for social protection efforts in developing countries, governments may be reluctant to implement an innovative yet expensive payment system even if it exhibited several advantages over manual disbursement of cash. Against this backdrop, in the following, it is assessed how implementing electronic delivery methods affects governments’ financial resources over time.

As it has been implicitly shown in the preceding sections, the total costs of a payment system can be divided into up-front costs and transaction costs. With regard to the former, electronic delivery methods commonly entail high initial investments to build up the required technological infrastructure (Emmett, 2012, p. 4; Devereux & Vincent, 2010, p. 371). Therefore, governments’ expenditures during the first few months or years will exceed those for manual disbursement of cash. This represents the main reason for the concerns about the economic feasibility of electronic delivery methods. However, since costs per transaction are considerably lower for electronic payments compared to traditional ‘pull’ approaches, governments generate savings after a certain period of time (Pickens, Porteous & Rotman, 2009, pp. 11-12). Moreover, electronic delivery methods are able to substantially reduce leakage due to corruption and fraud, which translates into further savings for governments.

Figure 1 provides a qualitative illustration of the savings that governments can expect from switching to electronic delivery methods. It displays the cumulative net difference between the costs of a hypothetical electronic payment system and manual cash disbursement over time. Two scenarios are shown: The first scenario takes into account the savings resulting from the difference in both the up-front costs and the transaction costs (net savings). As the up-front costs of electronic delivery methods are higher than of a ‘pull’ approach, governments accumulate losses until the installation of the technological infrastructure is completed. Subsequently, the lower transaction costs of electronic payments reduce the cumulative deficit until the break-even point is reached. From this moment onwards, electronic delivery methods effectively save money compared to manual systems and yield cumulative savings constantly growing over time.

The second scenario also considers the net savings of electronic payment systems vis-à-vis manual disbursement of cash, but it furthermore includes the reduction of leakage that can be achieved by electronic delivery methods. Accordingly, the adjusted transaction costs are lower, which means that the accumulated deficit at the end of the up-front investment phase is less pronounced, the break-even point is reached earlier, and subsequent cumulative savings grow faster over time. Thus, it can be concluded that in both scenarios electronic delivery methods eventually save money. This demonstrates that a clear economic rationale for governments in developing countries exists to implement electronic payment systems in their SCT programmes. However, in order to reap these monetary benefits, additional funds are needed to overcome the barrier of initial investments.
The exact costs of implementing and using a given payment mechanism depend on a range of factors such as the existence of technological infrastructure, the programme’s scope, or the costs for registration of beneficiaries (Gelb & Decker, 2012, p. 105). For this reason, it is not possible to determine generally applicable break-even points or amounts of savings after a certain period of time. However, it can be deducted from the two scenarios displayed above that savings are especially prevalent when a) payment systems at least partly make use of already existing infrastructure b) the SCT programme has a long-term temporal scope and c) the technological approach effectively reduces corruption and fraud.

Notwithstanding the lack of rigorous evaluations comparing long-term costs of alternative payment mechanisms in the same country context, the available evidence mostly supports these theoretical findings. Studies from four middle-income countries confirm that savings can be achieved, particularly if using existing financial infrastructure (Bold, Porteous & Rotman, 2012, p. 11). For instance, Brazil was able to cut the transaction costs of its ‘ Bolsa Família’ programme from 14.7 % to 2.6 % of the grant value (Lindert et al., 2007, p. 113) and in South Africa variable costs for SCTs more than halved after implementing electronic delivery methods (Pickens, Porteous & Rotman, 2009, p. 4). Similarly, programmes from low-income countries like Niger (Aker et al., 2011, p. 12) or Haiti (MacDonald & Gedeon, 2012, p. 12) exhibited considerable cost savings. Furthermore, it is estimated that the government of India could save up to 18.3 billion USD (28 % of the total costs) per year if all of its welfare schemes were disbursed electronically, mainly due to the reduction of corruption and fraud (Ehrbeck et al., 2010, p. 11).

**Beneficiaries**

Recipients from electronic delivery methods greatly benefit from lower opportunity costs, a more convenient and less stigmatising way of collecting the transferred money, as well as enhanced security. Given these important personal advantages, the main question regarding the beneficiaries’ opinion on the introduction of electronic payments is merely an empirical one: Is there evidence supporting the assumption that recipients of SCT programmes value electronic payment systems?

Several studies conducted in countries with both higher (e.g. Colombia, Argentina, South Africa) and lower levels of human development (e.g. Niger, Pakistan, Haiti) concur that the vast majority of beneficiaries from electronically disbursed SCT programmes prefer this delivery method to a manual scheme (Bold, Porteous & Rotman, 2012, p. 13; Pickens, Porteous & Rotman 2009, pp. 9-10; Smith et al., 2011, p. 14). Moreover, despite concerns that the use of technology would pose a barrier for beneficiaries with only basic education, most of the recipients do not face severe problems. In Brazil, for instance, one year after its implementation, 96 % of the interviewed beneficiaries found it easy or very easy to use an electronic benefit card (Pickens, Porteous & Rotman, 2009, p. 9). Similarly, despite certain issues with illiteracy and innumeracy, 60 % of the recipients from a SCT programme in Pakistan did not regard the use of such a card as difficult and more than 95 % preferred it to manual disbursement of cash (Smith et al., 2011, pp. 13-14). A recent study from India confirms these findings stating that “[t]echnology […] is rarely a barrier to use for recipients” (CGAP, 2013, p. 2), as the agents possessing PoS devices are able to facilitate assistance when problems arise.

Thus, given this evidence, it can be concluded that recipients throughout the developing world indeed mostly seem to value electronic payment systems and, therefore, approve their implementation.

**Private enterprises**

As stated above, governments are eager to cooperate with the private sector in order to gain access to the most advanced technological solutions. Yet, is there also an incentive for banks and other private enterprises to engage in such partnerships? The following section addresses this question by analysing the potential for a business case at five different levels.

Profits from beneficiaries’ accounts constitute the first and most challenging level of a business case. Since most beneficiaries use less than the free transaction bundle and hold too little sums in their accounts, transactional income and float interests are hardly sufficient to cover fixed costs of the accounts. If governments do not pay for the electronic transfer of payments to beneficiaries, it is very challenging for banks to break-even with revenues only stemming from beneficiaries’ accounts. Service fees generate a regular and predictable stream of revenues, but the amount needs to be sufficiently high for banks to generate a profit (Bold, Porteous & Rotman, 2012, pp. 16-17). Available evidence is scarce but seems to point at rather low levels of service fees, which weakens the business case at the first level. For example, the bank in charge of transferring payments from a cash-for-work programme (NREGA) into accounts of 10 million beneficiaries in India received a 2 % service fee for...
every transfer, but actual delivery costs varied between 2.65% and 2.93% (CGAP, 2013, p. 4).

In order to offset losses from the individual account level, banks can cross-sell additional products such as insurance or credit to beneficiaries (second level) (Bold, Porteous & Rotman, 2012, pp. 16-17). Although banks have only recently begun considering transfer recipients as potential clients, they express confidence in this business branch and have already gained first cross-selling experiences. In South Africa, banks marketed at least one additional product to one out of ten clients holding an entry-level account, many of whom are transfer recipients (Pickens, Porteous & Rotman, 2009, p. 16) and 15% of beneficiaries in Mexico bought another product from the bank (Bold, Porteous & Rotman, 2012, p. 19). Whereas these examples are promising, other evidence suggests that banks do not yet sell enough products to beneficiaries. For example, although ‘Caixa bank’ in Brazil customised insurance and microcredit products to ‘Bolsa Familia’, recipients’ take-up was low. Similarly, Columbian banks reported some cross-selling to transfer recipients, but early evidence does not point at a clear business case (Bold, Porteous & Rotman, 2012, pp. 19-20).

Although revenues from serving each individual beneficiary may not be profitable for a bank, a business case might nonetheless exist when looking at all beneficiaries as a large group (third level). For example, accumulated balances of many small savings accounts can reduce banks’ cost of funding by improving their liquidity profile. Since so far only few banks seem to have assessed whether serving the subgroup of transfer recipients can be a profitable business, evaluating the potential for a business case at this third level is currently not possible (Bold, Porteous & Rotman, 2012, pp. 16, 20).

Finally, cooperating with governments in SCT programmes may not be profitable for banks today but can improve their long-term business opportunities. By offering accounts to transfer recipients despite making a loss, banks demonstrate their social responsibility, which can improve their chances for winning other government tenders (fourth level) (Bold, Porteous & Rotman, 2012, p. 16). Whereas financial returns of such a strategic investment are still to some extent quantifiable, the business case at the fifth and last level is even blurrier. Banks might consider investments in SCT programmes as a means to influence banking regulations, which strongly affect their business opportunities. In particular, banks might be able to enter into an implicit social contract with governments that grants them more favourable regulations in return for their engagement in SCT programmes (Bold, Porteous & Rotman, 2012, pp. 16-17). How much weight banks attach to these strategic considerations remains unclear, but they increasingly become eager to bid on tenders for delivering payments to beneficiaries (Pickens, Porteous & Rotman, 2009, p. 12). Since evidence for a strong business case at lower levels can be considered mixed at best, banks’ interest might thus indeed be of a primarily strategic nature.

Without neglecting that evidence is still too weak to draw robust conclusions on the incentives for banks, the following three conditions doubtless strengthen their business case: First, large cash transfer programmes create economies of scale. If banks can only make a small profit with each beneficiary, they need scale for profitability (Pickens, Porteous & Rotman, 2009, p. 15). Second, branchless banking cuts costs and helps to boost revenues of private sector partners. Using a branchless banking network of contracted agents to transfer payments is estimated to be 50% cheaper compared to traditional infrastructure such as bank branches and/or ATMs. In Pakistan, Tameer bank reported that operating costs for an agent-based network were even 76 times lower than for a branch-based network (Pickens, Porteous & Rotman, 2009, pp. 12-13). In addition, branchless banking networks are more convenient for beneficiaries for two reasons: They are a lot denser than branch-based networks and thus reduce the distance to the closest cash-out points. Moreover, in contrast to ATMs, agent-based networks offer services beyond cashing-out transfers. By facilitating access to financial services, branchless banking is likely to trigger an increased use of services, which in turn translates into higher revenues and strengthens the business case (Bold, Porteous & Rotman, 2012, p. 18).

Third, in order to turn beneficiaries into profitable customers, private enterprises need to understand their needs and habits and remove barriers to using financial services. In particular, at first many beneficiaries do not feel comfortable storing money in bank accounts or limited-purpose instruments. In this regard, banks can build trust by allowing beneficiaries to check their account balances repeatedly free of charge (Pickens, Porteous & Rotman, 2009, p. 15). Similarly, carefully designed products incentivise beneficiaries to deposit more savings in their accounts, which increases banks’ revenues from float interest and keeps beneficiaries financially active. For example, a bank in the Philippines developed a commitment savings product, which locked away savings until a certain threshold was reached. This product made it easier for beneficiaries to save for larger investments such as school fees or a new roof and increased savings balances by 82% within one year (Ashraf, Karlan & Yin, 2006, p. 669).

Although the previous elaborations mainly focussed on banks, in principal, the facilitating conditions outlined above also apply for MNOs: As their profits are driven by volume, economies of scale are decisive for their business case (Mas & Radcliffe, 2011, pp. 6-8). Moreover, they need to rely on decentralised networks of paypoints to minimise costs and address beneficiaries’ needs to increase the use of complementary services. However, offering banking services beyond cashing-out transfers is oftentimes restricted by national financial regulations, which is why partnerships with banks may be required (Platt, 2011, p. 2). Thus, the business case for MNOs critically depends on the regulatory framework of the respective country.

Finally, acknowledging the importance of a dense network of agents for all electronic delivery methods, their business
case should not be neglected. Agents need a certain amount of transactions to make a profit from this side business, but their workload should not interfere with their core business (Bold, Porteous & Rotman, 2012, p. 21). Hence, governments must ensure sufficiently high service fees for agents when negotiating contracts with banks and/or MNOs. In India, for instance, recent analyses recommend to pass down at least 1% service commission to the agents at the front end (CGAP, 2013, p. 5; Chopra, 2013, p. 3). Although this percentage may vary from country to country, it can serve as a rough guideline for the business case of agents.

Conclusion
During the past two decades, SCT programmes have emerged as an increasingly popular means for delivering social protection in many countries throughout the developing world. Traditionally, these transfers were delivered by manually disbursing cash to the recipients at a given date and location. However, as this ‘pull’ method exhibits several downsides, recently innovative ‘push’ approaches such as electronic delivery methods have gained currency.

Compared to manual disbursement of cash, electronic payment systems are able to deliver transfers in a more cost-efficient and secure way. Moreover, they significantly reduce travel and waiting time of beneficiaries and largely prevent stigmatisation by other community members. In addition, electronic delivery methods may help bridging the digital divide and contribute to financial inclusion of recipients.

Despite these significant improvements, electronic payment systems should not be regarded as a silver bullet solving all challenges related to the delivery of SCTs. In particular, they entail high up-front investments, are not totally fool-proof, and their implementation in remote and sparsely populated areas may be difficult.

At the present day, several technological approaches for electronically delivering SCTs are available. The most popular and widespread among them are smartcards, magnetic stripe cards, mobile money, and mobile or electronic vouchers. Every technology possesses specific strengths and weaknesses, which is why trade-offs can never be fully prevented. Thus, the main challenge of any SCT initiative is to select the approach that best fits to the programme’s specifications, local circumstances, and recipients’ needs.

The implementation of electronic delivery methods offers clear advantages for two of the three key stakeholder groups, namely governments and beneficiaries. Governments are able to accumulate cost savings over time, particularly if already existing infrastructure can be used, the SCT programme has a long-term temporal scope, and the applied technology effectively reduces leakage. Evidence moreover demonstrates that the vast majority of beneficiaries greatly values the enhanced convenience of electronic payment systems and prefers it to manual disbursement of cash. In contrast, the analysis has shown that the available evidence for a business case of private enterprises is mixed at best. Notwithstanding, it can be stated that SCT programmes generally become more attractive for private enterprises if they can leverage economies of scale, rely on branchless banking, and successfully adapt financial products and processes to the low-income segment. However, further research and evidence through pilot testing of different payment mechanisms in different contexts is needed on this topic in order to draw more detailed and robust conclusions.

In summary, it can be concluded that electronic payment systems are very promising approaches to deliver SCTs in developing countries. Although not without any drawbacks, they are clearly superior to manual ‘pull’ approaches and yield significant benefits for both governments and beneficiaries. Moreover, the fact that many private enterprises are eager to bid on tenders for electronically delivering SCTs shows that there is a lot of potential for a business case. In this respect, one of the main challenges for the near future is to design SCT frameworks in such a way that this potential can be unlocked to a greater extent.