

***CORRUPTION, BANK ACCESS AND DISTRIBUTION OF SOCIAL BENEFITS:  
THE CASE FOR CENTRAL BANK DIGITAL CURRENCY  
AS AN ALTERNATIVE TO CASH IN INDONESIA***

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## I. INTRODUCTION

Two decades ago the South-East Asia economic crisis tremendously impacted the people of Indonesia and increased the percentage of the population in poverty from 34 million (17.47%) in 1996 to almost 50 million (24.24%) by 1998.<sup>1</sup> In response, the government introduced multiple social programs to bring its people out of poverty and made enormous gain to bring down the percentage to only 10.9% by 2016.<sup>2</sup>

Social programs to directly distribute goods, such as cooking oil and rice, is expensive due to Indonesia's unique archipelagic geography. Even as of June 2017, the exact number of islands which are stretched across its more than 5,000 kilometres of territory is unknown.<sup>3</sup> Current estimates to the United Nations marked 13,466 islands.<sup>4</sup> This creates a unique and challenging problem for aid distribution.

Providing cash, though more efficient, is not a wise option for a country ranked number 30 in the list of most corrupt countries in the world by the World Justice Project.<sup>5</sup> "The factor considers three forms of corruption: bribery, improper influence by public or private interests, and misappropriation of public funds or other resources. These three forms of corruption are

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<sup>1</sup> 'Program Penanggulangan Kemiskinan Di Indonesia' (*Tim Nasional Percepatan Penanggulangan Kemiskinan*) <<http://www.tnp2k.go.id/id/program/sekilas/>> accessed 8 August 2017.

<sup>2</sup> 'The World Bank in Indonesia' (*The World Bank*) <<http://www.worldbank.org/en/country/indonesia/overview>> accessed 8 August 2017.

<sup>3</sup> Erin Blakemore, 'Indonesia's Trying to Figure Out How Many Islands It Contains' (*The Smithsonian*, 2017) <<http://www.smithsonianmag.com/smart-news/indonesias-trying-figure-out-how-many-islands-it-contains-180963606/>> accessed 3 July 2017.

<sup>4</sup> Ben Bland, 'Indonesia Starts Count to Solve the Riddle of the Islands' (*The Financial Times*, 2017) <<https://www.ft.com/content/3acc43f0-45f5-11e7-8519-9f94ee97d996>> accessed 3 July 2017.

<sup>5</sup> Joel Martinez and others, 'Rule of Law Index 2016' (2016) 31.

examined with respect to government officers in the executive branch, the judiciary, the military and police, and the legislature, and encompass a wide range of possible situations in which corruption — from petty bribery to major kinds of fraud — can occur.”<sup>6</sup>

The large sum of funds involved in welfare programs are often an enticing target for potentially corrupt officials. The Indonesian State Audit Board found that an accumulated IDR765b (USD57m) of social aid funding was misused in 19 provinces of Indonesia within the first quarter of 2010.<sup>7</sup>

“In 2012, the Government allocated a budget of IDR15.7t [USD1.2t] to subsidize 3.41 million tonnes of rice to be distributed to 17.5 million households.”<sup>8</sup> A 2015 OECD survey however showed that only a third of the subsidized rice reached the intended beneficiary and even then, they often pay more and receive only a portion of their right.<sup>9</sup>

In a speech given in celebration of National Education Day, Head of the Indonesian Financial Transaction Reports and Analysis Centre, Agus Santoso, stated that between the period of 2004 to 2011, the nation’s known losses due to corruption amounted to IDR39.3t (USD3t), an

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<sup>6</sup> *ibid* 10.

<sup>7</sup> Emerson Yuntho, ‘Korupsi Dana Bansos’ (*Indonesia Corruption Watch*, 2011)  
<<http://www.antikorupsi.org/en/content/korupsi-dana-bansos>> accessed 9 August 2017.

<sup>8</sup> ‘Raskin - Rice Subsidy for the Poor’ (*International Labour Organization*)  
<[http://www.ilo.org/dyn/ilossi/ssimain.viewScheme?p\\_lang=en&p\\_geoid=360&p\\_scheme\\_id=3153](http://www.ilo.org/dyn/ilossi/ssimain.viewScheme?p_lang=en&p_geoid=360&p_scheme_id=3153)> accessed 11 August 2017.

<sup>9</sup> Petar Vujanovic and Patrice Ollivaud, *OECD Economic Surveys: Indonesia* (OECD 2016) 43  
<<https://www.oecd.org/eco/surveys/indonesia-2016-OECD-economic-survey-overview-english.pdf>> accessed 9 August 2017.

amount which could have been used to fund a full year of free education for 68 million primary school students.<sup>10</sup>

The Indonesia Corruption Watch observed that one of the methods of siphoning off the money is by vaguely describing who received funds. The regional government of Banten, a relatively small province of approximately 2.9 million<sup>11</sup> households,<sup>12</sup> in 2011 distributed aid funds to 160 recipients, 130 of which had no address or further details, just names that cannot be verified.<sup>13</sup> At least 10 receivers granted approximately IDR4.5b (USD336k) in total was found to be fictitious names, IDR28.9b (USD2.16m) was distributed to 12 receivers which had identical addresses, and IDR29.5b (USD2.2m) was sent to an institution headed by the region's Governor.<sup>14</sup>

Local unique identifications like ration cards are typically distributed to prove eligibility to utilize government assistance. Without digitization, this system is prone to duplication or counterfeiting. As the world's fourth most populous country with more than 260 million people,<sup>15</sup> it is not hard to embezzle funds, especially without proper documentation of whether or not money was received by the intended individuals.

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<sup>10</sup> NDR and FJP, 'Jika Tak Dikorupsi, Berapa APBN Yang Bisa Dipakai Untuk Perangi Kemiskinan?' (*Detik News*, 2014) <<http://news.detik.com/berita/2572115/jika-tak-dikorupsi-berapa-apbn-yang-bisa-dipakai-untuk-perangi-kemiskinan>> accessed 13 August 2017.

<sup>11</sup> 2015 data

<sup>12</sup> 'Jumlah Rumah Tangga Menurut Kabupaten/Kota Di Provinsi Banten 2005-2015' (*Badan Pusat Statistik Provinsi Banten*) <<http://banten.bps.go.id/linkTableDinamis/view/id/42>> accessed 10 August 2017.

<sup>13</sup> Yuntho.

<sup>14</sup> 'Dugaan Korupsi Dana Hibah Dan Bantuan Sosial Provinsi Banten Tahun 2011' *Indonesia Corruption Watch* (Banten, 17 August 2011) <<http://www.antikorupsi.org/en/content/dugaan-korupsi-dana-hibah-dan-bantuan-sosial-provinsi-banten-tahun-2011>> accessed 9 August 2017.

<sup>15</sup> 'UNdata Country Profile Indonesia' (*United Nations Statistic Division*) <<http://data.un.org/CountryProfile.aspx?crName=indonesia>> accessed 3 July 2017.

This paper seeks to address how a traceable payment method, provided by the distributed ledger technology currently used by digital currency, can be utilized to provide a solution to Indonesia's corruption problem that hinders the distribution of social welfare. As more technologically and economically advanced countries are researching the possibility of adopting their own digital currency, this paper will analyse how a developing economy like Indonesia, which tends to have high usage of cash, low access to banks and high penetration of mobile devices, can also greatly benefit.

A note crucial to this paper is the differentiation of what is known as electronic money and the proposed central bank digital currency. The 2014 Bank Indonesia Regulation on Electronic Money considered and acknowledged that electronic money can expand society's access to financial inclusion,<sup>16</sup> it defines the term electronic money as payment tools that meets the following characteristics:<sup>17</sup>

1. Issued based on the monetary value that has been stored to the bank/non-bank issuer;
2. Electronically stored monetary value in a server/chip medium;
3. Used as a payment tool for merchants that are neither the bank/non-bank issuer of the electronic money; and
4. The value of electronic money managed by the bank/non-bank issuer that is not qualified as a saving as referred to in the law regarding banking.

In summary, electronic money is an electronically stored value of fiat money held in an account. A digital currency on the other hand, to put simply, would be an electronic version of

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<sup>16</sup> Peraturan Bank Indonesia Nomor 16/8/PBI/2014 tentang Perubahan Atas Peraturan Bank Indonesia Nomor: 11/12/PBI/2009 tentang Uang Elektronik (Electronic Money) 2014 v. 1A and Elucidation s 1 para c.

<sup>17</sup> *ibid* 1 (3).

the fiat notes and coins in circulation issued by the government. A government backed electronic currency, which would allow society to access the most secure form of payment, central bank money.

Although the current method of using electronic money to facilitate government assistance has proven to increase the amount of the population with access to formal banking, electronic money cannot be traced and therefore would still leave room for corruption by misuse of funds and never reaching the intended accounts.

The remainder of the paper is organized as follow to make the case for a central bank digital currency in Indonesia. Chapter II seeks to explore how a central bank digital currency can streamline and allow for a more effective and transparent way to distribute government welfare funds across Indonesia. A direct transfer of traceable and transparent digital currency from the government should help combat corruption and cut the otherwise costly transportation of goods.

Chapter III will discuss how a traceable payment system can potentially combat the issue of corruption in Indonesia. Since cash transactions are anonymous and susceptible to illicit uses, the use of a central bank digital currency would provide ability to better track the flow of funds through the banking system. Furthermore, the chapter will also highlight two very important factors for a traceable digital currency to work; identification and access to a digital account. As digital currency requires a digital wallet, this chapter will also discuss how to ensure that it extends to those who are currently not part of the banking system.

Chapter IV shall explore how a central bank digital currency can be applied in Indonesia as well as some legal concerns that will require attention once a central bank digital currency becomes fiat currency. As a legal tender, digital currency must be issued by the central bank to ensure convenience and security, maintaining a balance between protecting privacy and maintaining social order, efficient operation and control over monetary sovereignty.<sup>18</sup> As digital currency is a relatively new concept that needs to be legally addressed, this paper will also analyse how law, regulation and strategic implementation can persuade both individuals and businesses to trust, accept and use a central bank digital currency.

Chapter V shall conclude. The law should provide facilitation to link a national identification mechanism, an account for each citizen to keep their central bank digital currency and a way to access their money wherever they may be.

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<sup>18</sup> Caixin Weekly, ‘Transcript of Governor Zhou Xiaochuan’s Exclusive Interview’ *People’s Bank of China* (14 February 2016) <<http://www.pbc.gov.cn/english/130721/3017134/index.html>> accessed 3 August 2017.



## II. AID DISTRIBUTION AND THE CORRUPTION PROBLEM

As part of the protection of human rights, the Second Amendment of the Indonesian Constitution ensures the fulfilment of basic needs<sup>19</sup>, social security<sup>20</sup>, health care<sup>21</sup> and education<sup>22</sup> of its people. Although it is in the constitution, its application has not proven effective and has shown difficult to implement equally throughout the country.

The nation is administratively divided into 74,954 small villages.<sup>23</sup> Although meant as a way promote equal growth, decentralization of funds to the villages creates decentralization of power and accountability. The central government does not have total control and large inter-regional disparities persist. There is little regulation concerning the management of social aid fund. This means that there are almost no legal guidelines for the various regional governments in allocating and preparing their budgets.

One of the few regulations regarding management of social aid fund is at the Ministry of Home Affairs level which allows each city's Governor, Regent and/or Mayor to deliberate and decide at which level of poor would their constituents be eligible for assistance.<sup>24</sup> The initial data is prepared nationally by the Statistics Central Bureau which created a single registry of

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<sup>19</sup> Perubahan Kedua Undang-Undang Dasar Negara Republik Indonesia Tahun 1945 v. 28C (1).

<sup>20</sup> *ibid* 28H (3).

<sup>21</sup> *ibid* 28H (1).

<sup>22</sup> *ibid* 28C (1).

<sup>23</sup> 'Rincian Dana Desa' (*Kementerian Keuangan Republik Indonesia*, 2016)

<[https://www.kemenkeu.go.id/sites/default/files/Rincian Dana Desa APBN 2017.pdf](https://www.kemenkeu.go.id/sites/default/files/Rincian%20Dana%20Desa%20APBN%202017.pdf)> accessed 24 July 2017.

<sup>24</sup> Instruksi Menteri Dalam Negeri No. 541/3150/SJ tentang Pelaksanaan Pembagian Kartu Perlindungan Sosial (KPS) dan Penanganan Pengaduan Masyarakat 2013.

vulnerable households.<sup>25</sup> The census ranks families by their level of social welfare and social economic status using 16 indicators, including welfare (individual and household), level of education, health (including disability, chronic illness, household access to toilet), labour (occupation, income), housing status (including roof and floor material), mode of waste disposal (sewage, septic tank or other), source of drinking water, primary source of lighting, and primary mode for cooking (firewood, gas or electric).<sup>26</sup> This list however, were criticized by village officials for not being accurate representations of the actual poor in the village, commonly stating that a family with a seemingly good house (consequently classified as not poor) may have few other assets and little in the way of income.<sup>27</sup> The village head therefore has the ultimate say as to who is deemed entitled.

## **II.A Distribution of Cash and Goods**

In response to the 1997 crisis the Indonesian government in cooperation with the World Bank instituted a food support program called *Operasi Pasar Khusus* (Special Market Operation) renamed Raskin<sup>28</sup> in 2001.<sup>29</sup> Though developed as a response to the crisis, Raskin has become a permanent program as well as Indonesia's largest targeted transfer program.<sup>30</sup> Rice is key in

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<sup>25</sup> 'Data Penerima Manfaat Simpanan Keluarga Sejahtera, Kartu Indonesia Pintar, Dan Kartu Indonesia Sehat' (*Tim Nasional Percepatan Penanggulangan Kemiskinan*) <<http://www.tnp2k.go.id/id/program/program-membangun-keluarga-produktif/data-penerima-manfaat/>> accessed 8 August 2017.

<sup>26</sup> Data Terpadu Program Penanganan Fakir Miskin, 'Jumlah Rumah Tangga Dan Individu, Menurut Kecamatan Dan Status Kesejahteraan Di Indonesia' (*Tim Nasional Percepatan Penanggulangan Kemiskinan*) <<http://bdt.tnp2k.go.id/index.php/data/sebaran-nasional>> accessed 11 August 2017.

<sup>27</sup> Benjamin A Olken and others, 'Sharing the Wealth: How Villages Decide to Distribute OPK Rice' (2001) iv <<http://www.smeru.or.id/sites/default/files/publication/sharewealth.pdf>>.

<sup>28</sup> An eponym. Translated in English would be Poverty Rice

<sup>29</sup> Peraturan Presiden Republik Indonesia Nomor 15 tahun 2010 tentang Percepatan Penanggulangan Kemiskinan 2010.

<sup>30</sup> Abhijit Banerjee and others, 'Tangible Information and Citizen Empowerment: Identification Cards and Food Subsidy Programs in Indonesia' (2016) 5

Indonesia, it is the principal staple that is consumed at every meal of the day. As a country, Indonesia is the third largest consumer and producer of rice in the world, only behind China and India in both categories.<sup>31</sup> However, the OECD reports that Indonesia has the highest wholesale rice price in emerging Asia.<sup>32</sup> This is a particular burden on low-income households. Raskin provides 15 kilograms of subsidized rice per family each month at one fifth of the market price to ensure food availability, especially to the poor at a reasonable price.<sup>33</sup>

Village governments were in charge of the distribution of the monthly allotment of rice.<sup>34</sup> Rice would be retrieved from the nearest government warehouse in bulk by village officials, usually the village head, or delivered to the village office by the government logistics agency. Village heads are then responsible to divide the rice to smaller individual sacks for purchase by households. “So long as the central government received the co-payment from the villages, there was virtually no monitoring by the central government of how the rice was distributed within the villages.”<sup>35</sup> With weak supervision, this method is prone to corruption.

In August 2001, residents of Margasana, a middle-income village on the western coast of Java, reported that the rice delivery had stopped and they had not received their allotment since at

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<[https://www.povertyactionlab.org/sites/default/files/publications/553\\_Tangible information and citizen Empowerment\\_Ben Olken\\_July2016.pdf](https://www.povertyactionlab.org/sites/default/files/publications/553_Tangible%20information%20and%20citizen%20Empowerment_Ben%20Olken_July2016.pdf)>.

<sup>31</sup> FAO, ‘Paddy Rice Production Worldwide in 2014, by Country (in Million Metric Tons)’ (*Statista*) <<https://www.statista.com/statistics/255937/leading-rice-producers-worldwide/>> accessed 11 August 2017.

<sup>32</sup> Vujanovic and Ollivaud 43.

<sup>33</sup> Instruksi Presiden Nomor 3 Tahun 2012 tentang Kebijakan Pengadaan Gabah/Beras dan Penyaluran Beras Oleh Pemerintah 2012.

<sup>34</sup> Peraturan Menteri Keuangan Nomor 237/PMK.02/2012 tentang Tatacara Penyediaan, Penghitungan, Pembayaran dan Pertanggungjawaban Subsidi Beras Bagi Masyarakat Berpendapatan Rendah 2012.

<sup>35</sup> Benjamin A Olken, ‘Corruption and the Costs of Redistribution: Micro Evidence from Indonesia’ (2006) 90 *Journal of Public Economics* 853.

least eight months prior.<sup>36</sup> Even though the central government reports that 1.6 tons of rice had been delivered to Margasana on time each month. The resulting investigation found that the heavily subsidized rice meant for the poor was being siphoned off and sold for significant profit on the open market.<sup>37</sup> In a research conducted by comparing government administrative records on the amount of subsidized rice allocated to particular villages and districts with the amount recorded from surveys that ask whether villagers actually receive the rice, nearly one-fifth of the rice disappeared between the time it left the government warehouse to the time it reached the households.<sup>38</sup> Findings also show that rice is more prevalent to be missing in sparsely populated areas where monitoring may be more difficult.

The program was cancelled by President Joko Widodo in early 2017 to be replaced by distribution of vouchers that can be used at participating stores on other food products to promote a more balanced diet and not limited to rice alone.<sup>39</sup> Due to this being a new program the extent of its impact has not been studied thoroughly, however, the continued use of a middlemen would still leave a window of opportunity for corruption. By implementing a central bank digital currency solution, which would effectively be a direct funds disbursement from the government into each recipient bank account, the government could more effectively get the benefits directly to those who rely on it. Without the use of middle men or the transportation of physical goods, theft and price gauging would effectively be eliminated from the distribution of welfare.

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<sup>36</sup> Olken and others 10.

<sup>37</sup> Olken.

<sup>38</sup> *ibid.*

<sup>39</sup> FID, DNA and ES, 'Awal 2017 Diterapkan, Program Raskin Akan Diganti Voucher Pangan' (*Sekretariat Kabinet Republik Indonesia*, 2016) <<http://setkab.go.id/awal-2017-diterapkan-program-raskin-akan-diganti-voucher-pangan/>> accessed 9 August 2017.

## II.B Current Method

The current five-year plan in Indonesia running from 2015 to 2020 prioritise among other things, social assistance programs related to education, healthcare<sup>40</sup> and to accelerate the eradication of poverty.<sup>41</sup>

Former Governor of the capital, Joko Widodo or more popularly known as Jokowi, rolled out a program named 3 *Kartu Sakti* (translated to the 3 Power Cards) to provide education, health care and welfare aid to the less fortunate residents of Jakarta. Due to its citywide success, the program was expanded nationally when Jokowi became President in 2014. The program provides poor citizens with three cards; the *Kartu Indonesia Pintar* (Education Card), *Kartu Indonesia Sehat* (Health Card), and *Kartu Keluarga Sejahtera* (Welfare Card).<sup>42</sup> As the Health Card function very similarly to an insurance card generally given by insurance companies, the program will not be further discussed in this paper. The Education and Welfare Cards however, is meant to introduce a non-cash/goods aid program. To minimize the opportunity for deliberately taking cash or goods from the poor, and as a joint effort to increase financial inclusion, the government distributes these cards to directly disburse money to its holders. The Education and Welfare Card is each attached to a bank account where it serves to function as ATM and debit cards.

An issue raised by Chairwoman of the Smart Indonesia Movement, Yanti Sriyulianti, regarding the bank-linked cards were the lack of details addressing the delivery of services in areas with

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<sup>40</sup> ‘The World Bank in Indonesia’.

<sup>41</sup> Peraturan Presiden Republik Indonesia Nomor 15 tahun 2010 tentang Percepatan Penanggulangan Kemiskinan.

<sup>42</sup> Instruksi Presiden Republik Indonesia Nomor 7 Tahun 2014 tentang Pelaksanaan Program Simpanan Keluarga Sejahtera, Program Indonesia Pintar, dan Program Indonesia Sehat untuk Membangun Keluarga Produktif 2014.

limited or non-existent banking services.<sup>43</sup> For those who do not live near the right bank, lose out either from ATM withdrawal charges or from the long travel to make a withdrawal. As discussed earlier, Indonesia's sprawl over 5,000 km of islands makes this a unique challenge. This discussion will be continued in **III.B.2 The Infrastructure Problem**.

Another issue is eligibility. To receive a card, one must provide their identification and a letter from the community/village head<sup>44</sup> which includes the individual's physical address and attestation that they meet the qualifications of a vulnerable household.<sup>45</sup> To receive such letter, one must show government identification. However, as we will discuss in **III.B.1 The Identity Problem**, not all have the privilege of attaining an identity card and thus will be excluded for this program. The Indonesian Minister of Domestic Affairs in 2016 announced that only 30% of Indonesians have birth certificates, a crucial document for which all other government issued documents including identification are based after.<sup>46</sup>

### **II.B.1 Kartu Indonesia Pintar**

The Constitution of the Republic of Indonesia obligates every citizen to complete primary education and mandate the government to fund it.<sup>47</sup> Previously, education assistance was distributed to schools directly under the BOS (*Bantuan Operasional Sekolah*/School Operation

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<sup>43</sup> Novy Lumanauw and Yustinus Paat, 'Jokowi Launches Indonesia Health Card and Smart Card' (*Jakarta Globe*, 2014) <<http://jakartaglobe.id/news/jokowi-launches-indonesia-health-card-smart-card/>> accessed 18 July 2017.

<sup>44</sup> In Indonesia known as Head of the "*Rukun Tetangga*" and "*Rukun Warga*"

<sup>45</sup> Rizqia Khoirunisa, 'Cara Membuat Kartu KIS Untuk Warga Miskin Dan Kurang Mampu' (*Badan Penyelenggara Jaminan Sosial*, 2017) <<http://www.pasienbpjs.com/2017/02/kis.html>> accessed 8 August 2017.

<sup>46</sup> Wisnu Prasetyo, 'Mendagri: 70 Persen Warga Indonesia Belum Punya Akta Kelahiran' (*Detik News*, 2016) <<http://news.detik.com/berita/3194289/mendagri-70-persen-warga-indonesia-belum-punya-akta-kelahiran>> accessed 31 July 2017.

<sup>47</sup> Perubahan Keempat Undang-Undang Dasar Negara Republik Indonesia Tahun 1945 v. 31 (2).

Assistance) program which is meant to lighten the financial burden for poor families by using the State Revenues and Expenditures Budget to pay these students' share of tuition.<sup>48</sup> The distribution is based on attendance. The school receives IDR19k or approximately USD1.47 monthly from the government for each enrolled student that meets the BOS criteria. *Badan Pengawasan Keuangan dan Pembangunan* (the Agency for Supervision of Finance and Development) reported that there was a suspiciously sharp inflation of students registered in 29 provinces after the program started, which was later discovered to be due to registration of fictitious students.<sup>49</sup>

The Education Card was introduced to disperse welfare directly to students as opposed to the school. Particularly to prevent the money from being embezzled by corrupt officials or misused/taken advantage of by the school via the BOS program mentioned above. The card allows for automatic monthly transfer to students from low income families, students with special needs and disabilities, and also orphans, a total target beneficiary of 17.9 million students.<sup>50</sup> Each semester students of primary school receive IDR225k (USD17), lower secondary school receive IDR375k (USD28), while higher secondary school receive IDR500k (USD37).<sup>51</sup> Significant increases from the previous BOS program. The card serves as a debit card that can be used to pay for the school monthly tuition and buy items for educational

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<sup>48</sup> Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional 2003; Peraturan Pemerintah Republik Indonesia Nomor 48 Tahun 2008 tentang Pendanaan Pendidikan 2008.

<sup>49</sup> Zahratun Na, 'Menggugat Korupsi Bantuan Sekolah' (*Indonesia Corruption Watch*) <<http://www.antikorupsi.org/id/content/menggugat-korupsi-bantuan-sekolah>> accessed 9 August 2017.

<sup>50</sup> Ihsanuddin, 'Jokowi: Manfaat Kartu Indonesia Pintar Terus Dirasakan Pelajar' (*Kompas*, 2017) <<http://nasional.kompas.com/read/2017/01/29/17194701/jokowi.manfaat.kartu.indonesia.pintar.terus.dirasakan.pelajar>> accessed 8 August 2017.

<sup>51</sup> 'Program Bantuan Siswa Miskin (BSM)' (*Tim Nasional Percepatan Penanggulangan Kemiskinan*) <<http://www.tnp2k.go.id/id/tanya-jawab/klaster-i/program-bantuan-siswa-miskin-bsm/>> accessed 13 August 2017.

purposes at various stalls and shops, especially for purchases of school uniforms, books and stationary.<sup>52</sup>

Although the direct transfer of cash has made it more difficult for officials and schools to get their hands on the money, this does not mean that the students receive all or any of the funds. An investigation by the team of current Jakarta Governor, Basuki Purnama, proves that some parents of students have been taking advantage of the funds for their own spending.<sup>53</sup> As the card can be easily taken (or “kept for safe keeping”) by a parent, the best mechanism to ensure that it is only used by the intended student is by making sure the payment validation and authorization is attached to the person as opposed to a pin or signature. Further on this will be discussed in **II.C Proposed Method**.

## **II.B.2 Kartu Keluarga Sejahtera**

In a push for financial inclusion, the previously mentioned Raskin and other welfares are now combined through direct government to person transfer into the Welfare Card. Data has shown that by shifting transfers and wages digitally into accounts as opposed to cash, governments can increase the number of adults with an account by up to 160 million.<sup>54</sup> The card provides a

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<sup>52</sup> Wahyudi Soeriaatmadja, ‘Fintech Firms See Huge Potential in E-Commerce in Indonesia’ (*The Straits Times*, 2017) <<http://www.straitstimes.com/asia/east-asia/fintech-firms-see-huge-potential-in-e-commerce-in-indonesia>> accessed 6 August 2017.

<sup>53</sup> Ayunda Windyastuti Savitri, ‘Ahok Pasang Mata-Mata: KJP Banyak Disalahgunakan Orangtua!’ (*Detik News*, 2015) <<http://news.detik.com/berita/2978731/ahok-pasang-mata-mata-kjp-banyak-disalahgunakan-orangtua>> accessed 10 August 2017.

<sup>54</sup> Asli Demirgüç-Kunt and others, ‘The Global Findex Database 2014: Measuring Financial Inclusion around the World’ (2015) 5 <[http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2015/04/15/090224b082dca3aa/1\\_0/Rendered/PDF/The0Global0Fin0ion0around0the0world.pdf#page=3%5Cnhttp://elibrary.worldbank.org/doi/book/10.1596/1813-9450-7255](http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2015/04/15/090224b082dca3aa/1_0/Rendered/PDF/The0Global0Fin0ion0around0the0world.pdf#page=3%5Cnhttp://elibrary.worldbank.org/doi/book/10.1596/1813-9450-7255)>.



financial and savings feature through the provision of an attached current account to each card. The current account can be accessed at the post office or an e-money account.<sup>55</sup> Nationally, the e-money account program is only conducted in 19 of the 99 cities in Indonesia and the majority is still held through a current account at the respective local post office.<sup>56</sup>

Each family will receive IDR200k (USD15) every month in welfare.<sup>57</sup> Showing the card to merchants proves that the holder is eligible for subsidized basic goods as a way to control that government subsidies are not used by parties that can afford to purchase full price.<sup>58</sup> Both methods provide access to withdraw cash at the ATM and to buy basic goods such as rice, sugar, gas and other food provision items with the debit card facility.

Merchants who provide the subsidized goods are generally small-scale storefronts or stalls which do not accept card payment due to lack of infrastructure, namely the Electronic Draft Capture (EDC) machines. As merchants are charged a fee between 2.5% to 3% from the EDC provider for each transaction, they surcharge the fee to customers instead as they are unwilling to handle the charge themselves.<sup>59</sup> Most customers are unwilling to pay this cost, rightly so,

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<sup>55</sup> "An e-money account that is primarily accessed using a mobile phone and that is held with the e-money issuer". (Mireya Almazan and Jennifer Frydrych, 'Mobile Financial Services in Latin America & the Caribbean: State of Play, Commercial Models, and Regulatory Approaches' (2015) <[https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/09/2015\\_GSMA\\_Mobile-financial-services-in-Latin-America-the-Caribbean.pdf](https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/09/2015_GSMA_Mobile-financial-services-in-Latin-America-the-Caribbean.pdf)>. 32)

<sup>56</sup> Data Terpadu Program Penanganan Fakir Miskin.

<sup>57</sup> 'Politik Kartu, Politik Kesejahteraan' (*Kantor Staf Presiden*, 2016) <<http://presidenri.go.id/berita-aktual/politik-kartu-politik-kesejahteraan.html>> accessed 11 August 2017.

<sup>58</sup> Ihsanuddin, 'Hanya Pemegang Kartu Keluarga Sejahtera Yang Dapat Subsidi Elpiji 3 Kg' (*Kompas*, 2017) <<http://nasional.kompas.com/read/2017/07/10/13141061/hanya.pemegang.kartu.keluarga.sejahtera.yang.dapat.subsidi.elpiji.3.kg>> accessed 8 August 2017.

<sup>59</sup> Eddy Mesakh, 'Biaya Tiga Persen Itu Sering Gagalkan Transaksi Non Tunai' *Kompasiana* (17 June 2015) <[http://www.kompasiana.com/eddymesakh/biaya-tiga-persen-itu-sering-gagalkan-transaksi-non-tunai\\_557289e22523bde53e12ae8e](http://www.kompasiana.com/eddymesakh/biaya-tiga-persen-itu-sering-gagalkan-transaksi-non-tunai_557289e22523bde53e12ae8e)>.

this charge from the bank is not a fee for their burden, it is for the merchant to bear. Even more so, it is illegal for merchants to charge these surcharge fees to their customers.<sup>60</sup> Consequently, as a result of no one wanting to pay the surcharge, the EDC machines are not used and most of the time removed. The low acceptance of cards by small scale merchants force families to go to their post office, bank, or ATM for cash to make purchases. These trips are not necessarily easily accessible, as will be discussed in **III.B.2 The Infrastructure Problem**.

The ineffectiveness can be resolved by ensuring that merchants should not be able to refuse the method in which payment is made. As the provision of debit cards are government services meant to ease the livelihood of the most unfortunate sector of the population, it is essential to ensure that the payment system would not be an obstruction. With a central bank digital currency, electronic and digital payment must be available for the currency to function. The fees that retailers must pay to companies such as MasterCard and Visa for payment services provided can be looked at as a premium for the merchant to attract customers through offering a more convenient mode of payment. These types of charges should not be applicable to a digital currency as it would be representing the Indonesian Rupiah, like notes and coins - it should be free to use. All fees and tariffs incurred upon the customers should be unilaterally set by the central bank. Merchants should not be legally allowed to refuse payments by digital currency, the manner to safeguard this will be further discussed in **IV.D Currency Reform**.

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<sup>60</sup> Peraturan Bank Indonesia Nomor 14/2/PBI/2012 tentang Perubahan Atas Peraturan Bank Indonesia Nomor 11/11/PBI/2009 tentang Penyelenggaraan Kegiatan Alat Pembayaran Dengan Menggunakan Kartu 2012 v. 8 (2) and (3).

## **II.C Proposed Method**

The government has provided tools for financial inclusion through going digital and giving the poor with access to formal banking services. However, ownership of an account is only half the equation. An account that is fundamentally dormant does not deliver the same benefits as an account used for the full portfolio of financial services. Providing the people with one account and one card that can be used in the market, in which merchants cannot refuse to accept will provide for financial services that is not merely symbolic of financial inclusion.

In the current scenario, residents enrolled in a number of benefit programs may have one card for each program that they are qualified for. This means that the average recipient would have multiple cards which also means multiple bank accounts. Banks typically require a minimum balance to withdraw funds. The minimal money that comes with each program split into different accounts may cause difficulty for beneficiaries to access their money when they need it. Transferring funds between bank accounts to meet the minimum balance for withdrawal is inconvenient and may come at a cost. As opposed to multiple cards for each aid program, each of which require substantial costs to produce and distribute on a massive scale - one card that can receive all benefits and can also identify which aid the holder is entitled to would be far more efficient.

Indonesia already has the tool to do just that. Originally intended to address the issue of duplicate and fake identification, particularly with concerns regarding elections, Indonesia introduced a chip included Indonesian Resident Identification Card known as *KTP-el*.<sup>61</sup> With push from the Ministry of Home Affairs, Indonesia amended the 2006 law on Administration

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<sup>61</sup> More on the *KTP-el* is further discussed in **III.B.3 Solving Indonesia's Identification and Infrastructure Problem**

of the Population with Law Number 24 of 2013 which paved the way for the KTP-el. As a way to curb multiple identification, the law required that each resident is given a unique identification number known domestically as NIK (*Nomor Induk Kependudukan*/Resident Registration Number).<sup>62</sup> Each KTP-el is attached to the NIK, biodata, signature, finger print, iris scan and picture of its holder; all data is collected at the district level and stored electronically at the national level.

In 2016, the Children Identity Card was established to identify residents' younger than 17 years of age.<sup>63</sup> Although not yet mandatory, new-borns are to be issued a card and a NIK along with their birth certificate. Those born before the enactment of the regulation can request for a Children Identity Card if they are not yet eligible for a KTP-el.

The demographic data included in the KTP-el can be expanded to include which government assistance they are entitled to. If, the nation is able to identify each citizen and link their information such as: census data, education, income, age, employment, healthcare data, birth and date records, land records, property registration, income tax, banking, security, intelligence and more – this centralized database if developed using the ledger technology can be used to ensure that welfare and aid is distributed to the right person. For example, instead of the Education Card, if a person meets the criteria of a school aged person, enrolled in a school, and whose family is within a certain income group, this person will directly receive their education aid into their identity card. Further, as the KTP-el is a photo-identification, merchants can easily identify and be required to refuse service if one person uses another's card.

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<sup>62</sup> Undang-Undang Republic Indonesia Nomor 24 Tahun 2013 tentang Perubahan atas Undang-Undang Nomor 23 tahun 2006 tentang Administrasi Kependudukan 2013 v. 101 (a).

<sup>63</sup> Peraturan Menteri Dalam Negeri Republik Indonesia Nomor 2 Tahun 2016 tentang Kartu Identitas Anak 2016.

In response to the many cases in which funds are sent not to the intended welfare recipient but rather those within a corrupt officials' circle, a traceable currency may provide a solution. In principle, the distributed ledger technology that was introduced with the creation of digital currency can also be used to deliver benefits using smart transfers that could target particular groups.<sup>64</sup> The distributed ledger allows for a complete life history of transactions from the birth of an asset along to all changes and movements of its legal rights and ownership. If this technology can be applied to money that circulates in Indonesia, particularly for money meant for a certain group of people, any money that travels elsewhere can be traced where from and to whom. The government, would be able to track the transactions and wealth of a corruption suspect. Money like this, a fiat digital currency, cannot be laundered the way cash can be placed, layered and integrated. More on the distributed ledger technology will be discussed in **III.A Distributed Ledger Technology.**

Today if a person has USD20 of electronic money in a debit card issued by a bank, that money can only be used where the card is accepted. But, if that same amount was held in a digital currency backed by the central bank, the owner should be able to spend it anywhere, as one would be able to do with cash. Article 23 of Indonesia's Currency Law states that no party is allowed to refuse the acceptance of Rupiah, the national currency, as payment within the territory of Indonesia.<sup>65</sup> It is essential to guarantee that a central bank digital currency has the same authority of issue and legal characteristics of fiat physical money to ensure that all

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<sup>64</sup> Bank of England Deputy Governor for Monetary Policy Ben Broadbent, 'Central Banks and Digital Currencies' *Bank of England* (Speech at the London School of Economics, London, 2 March 2016) 5 <<http://www.bankofengland.co.uk/publications/Documents/speeches/2016/speech886.pdf>> accessed 7 August 2017; David Mills and others, 'Distributed Ledger Technology in Payments, Clearing and Settlement' (2016) 2016-95 3 <<https://doi.org/10.17016/FEDS.2016.095>>.

<sup>65</sup> Undang-Undang Republik Indonesia Nomor 7 Tahun 2011 tentang Mata Uang 2011.

merchant cannot refuse payment, and also as a way to push merchants to provide the necessary tools required. The manner to ensure this will be discussed further in **IV.D Currency Reform**.

Although Indonesia has made great strides in blocking the ways for corruption, from scoring 2.65 in 1996 to 3.70 in the 2016 Corruption Perception Index,<sup>66</sup> three problems persist. 1) The underlying document required to be prove identification and economic eligibility is not immediately available to all citizens, this will be discussed in **III.B.1 The Identity Problem**; 2) Accessing banks to withdraw government assistance funds and finding merchants which accept the funds available in the government provided debit card is troublesome, this will be discussed in **III.B.2 The Infrastructure Problem**; 3) Misdirecting of funds is still possible as there is no way to trace that the welfare is distributed and used by the right person, this will be discussed in **III.A Distributed Ledger Technology**. All of these reasons provide the case for transition to a central bank digital currency as will be discussed in the next chapter.

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<sup>66</sup> In a maximum scale of 10 where a perfect 10 would be a totally corrupt free country. ('TI Corruption Perception Index 1996' (*Transparency International*)  
<[https://www.transparency.org/files/content/tool/1996\\_CPI\\_EN.pdf](https://www.transparency.org/files/content/tool/1996_CPI_EN.pdf)> accessed 11 August 2017; 'Corruption Perceptions Index 2016' (*Transparency International*, 2017)  
<[https://www.transparency.org/news/feature/corruption\\_perceptions\\_index\\_2016](https://www.transparency.org/news/feature/corruption_perceptions_index_2016)> accessed 11 August 2017.)

### III. TRACEABLE CURRENCY TO SOLVE THE CORRUPTION PROBLEM

In late 2008, the world was introduced to digital currency, also known as cryptocurrency, when “Bitcoin” first became a familiar term. Believed to have been developed as a response to the global financial crisis by Satoshi Takemoto, Bitcoin is a peer-to-peer electronic cash system that uses computing power and individuals known as “miners” to authenticate and protect transactions without the need for a centralized bank or government treasury.<sup>67</sup> The value of Bitcoin is not in its currency but rather its settlement technology – the distributed ledger which allows transfers to be verifiably recorded without the need for a trusted third party such as a bank or financial institution. With over 800 different digital currencies in use today, several governments have been exploring the idea of issuing their own digital currency.<sup>68</sup> Fan Yifei, Vice Governor of the People’s Bank of China and lead of the bank’s cryptocurrency research, has indicated a push of the monetary authority to develop its own digital money which will help build the financial infrastructure and improve the quality and efficiency of the economy.<sup>69</sup>

One factor that attracted the public to cryptocurrency is the belief that transacting in Bitcoin was completely anonymous. The term cryptocurrency literally means hidden or secret – derived from the word crypto. However, Bitcoin is not completely anonymous. While the identity of the address holder is not known, all transactions in the blockchain are tracked, and

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<sup>67</sup> ‘Timeline: An Abridged History of Bitcoin’ (*The New York Times*)

<<http://www.nytimes.com/interactive/technology/bitcoin-timeline.html>> accessed 25 July 2017.

<sup>68</sup> Moe Adham, ‘Digital Currency Indexes Are Coming’ (*Forbes*, 2017)

<<https://www.forbes.com/sites/forbesfinancecouncil/2017/06/26/digital-currency-indexes-are-coming/-3ba1cb9d48a3>> accessed 27 July 2017.

<sup>69</sup> Heng Xie and Yinan Zhao, ‘Central Banks Should Lead on Digital Currency, PBOC’s Fan Says’ (*Bloomberg*, 2016) <<https://www.bloomberg.com/news/articles/2016-09-02/central-banks-should-lead-on-digital-currency-pboc-s-fan-says>> accessed 12 July 2017.

all transactions are transparent in relation to the address. Although often treated as synonyms, the blockchain is a specific type of distributed ledger. This blockchain technology is the technology that protects the Bitcoin from being duplicated/counterfeited.

The 2013 arrest of Ross Ulbricht, the man believed to be behind the Silk Road marketplace, by United States Federal Bureau of Investigation has proven that Bitcoin was not anonymous. The Silk Road Marketplace was a website which facilitated the purchase of drugs and other illegal goods. It worked on a basic principle of anonymity; credit cards and PayPal were not accepted, even Bitcoin transactions which accounted for half of the marketplace's transactions, were scrambled.<sup>70</sup> A former federal agent of the United States however has showed in a courtroom that he was able to trace over 3,000 Bitcoin transactions to a specific laptop.<sup>71</sup> By using publically available information, a computer science researcher from Berkeley University, Nicholas Weaver, was able to follow over 29,000 Bitcoins.<sup>72</sup>

Paper money was not designed to be anonymous, it was only so because there was no technology to make it otherwise. Electronic money is not anonymous, but not everyone has it nor need it, as will be further examined in **III.B.1 The Identity Problem** and **III.B.2 The Infrastructure Problem**. Electronic money shows the credits and debits of an account, but it cannot follow the money the same way a traceable central bank digital currency can. The use of a distributed ledger technology opens the possibility to create a traceable central bank digital

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<sup>70</sup> Joseph Goldstein, 'Arrest in U.S. Shuts Down a Black Market for Narcotics' (*New York Times*, 2013) <<http://www.nytimes.com/2013/10/03/nyregion/operator-of-online-market-for-illegal-drugs-is-charged-fbi-says.html>> accessed 12 July 2017.

<sup>71</sup> Andy Greenberg, 'Prosecutors Trace \$13.4m In Bitcoins From The Silk Road To Ulbricht's Laptop' (*Wired*, 2015) <<https://www.wired.com/2015/01/prosecutors-trace-13-4-million-bitcoins-silk-road-ulbrichts-laptop/>> accessed 24 June 2017.

<sup>72</sup> *ibid.*



currency which will record each and every change of hand to each and every digital currency coin, a potential to service to the government's attempts to reduce corruption.

### **III.A Distributed Ledger Technology**

For the purposes of a central bank digital currency, the central bank may adopt a few of the distributed ledger components to provide the traceable currency system. Although the technology of a distributed ledger allows users to verify for themselves and others so that there is no need for a trusted centralised clearer, for the issues raised in this paper, it is not the technology we are seeking. In this ideal circumstance, transactions would be cleared still by the central bank or commercial bank as they do now.

Bank Indonesia, as the central bank of Indonesia is the only body with the authority to issue, distribute and/or repeal and withdraw the Rupiah, as such, the issuance and distribution of a digital currency shall also be carried out by Bank Indonesia.<sup>73</sup> The proposed central bank digital currency would need to be account based, in which the central bank could provide accounts to all residents, to allow authorities to trace the currency. However, in the same way that Bank Indonesia can appoint a third party to print the currency,<sup>74</sup> there is no reason that a digital currency cannot be managed by a separate or individual entity. By adopting the circulation model of current paper money, the central bank would not be required to provide maintenance, customer support and administrative services. The central bank can issue digital currency to a third party that would provide deposit and withdrawal services to the public, while the central bank work to ensure the normal functioning of issuance and circulation. It is acknowledged that the Central Bank of Indonesia can provide administrative services themselves but it would

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<sup>73</sup> Undang-Undang Republik Indonesia Nomor 7 Tahun 2011 tentang Mata Uang.

<sup>74</sup> *ibid* 14 (2).

not be within the scope of discussion of this paper, as the author is of the opinion that creating and maintaining an account for all 260 million citizens<sup>75</sup> would not be in line with Bank Indonesia's function, mission or vision. Further, allowing a third party would allow for innovation, efficiency and efficacy of management.

In a traceable currency, information regarding records of ownership and transaction history is the foundation of the technology.<sup>76</sup> For the protection of privacy, it is very important that the authorities distribute the appropriate level of information as to who should have the ability to decrypt and read the underlying ledger information, providing controls over important functions.<sup>77</sup>

There are two basic options for the system on which the currency can be issued, a permissioned or permission-less (like Bitcoin) blockchain. As the reason for the need of a central bank digital currency is a traceable payment system, the permissioned blockchain with its "closed networks with a limited number of known, authorized participants" such as the central bank and/or a third-party operator is ideal.<sup>78</sup> This network system allows for a quicker transaction clear and can handle a greater volume of payment which is crucial for a national currency. Furthermore, as the underlying issue is the distrust of the corrupt government, the authorized participants must be limited to be only those authorities that can be trusted. In the case of Indonesia this might include Bank Indonesia as the central bank and the Corruption Eradication Commission

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<sup>75</sup> 'UNdata Country Profile Indonesia'.

<sup>76</sup> Mills and others 13.

<sup>77</sup> *ibid* 12.

<sup>78</sup> Brian Patrick Eha, 'Cheat Sheet: Radical Visions of Central Bank-Issued Digital Currencies' (*American Banker*, 2017) <<https://www.americanbanker.com/news/cheat-sheet-radical-visions-of-central-bank-issued-digital-currencies>> accessed 13 August 2017.

(KPK),<sup>79</sup> Indonesia's most trusted independent public institution whose accountability is primarily to the public.<sup>80</sup>

The legislation which regulates KPK's power<sup>81</sup> allows them to investigate corruption cases which implicates public officials, creates social unrest, and/or cases involving greater than IDR1b (USD75k) and is allowed to takeover cases conducted by the police or public prosecutor's office.<sup>82</sup> Due to bank secrecy legislation, the KPK currently only has the authority to request statements/information from financial institutions on the financial condition of a suspect.<sup>83</sup> With a central bank digital currency, KPK can be given direct access<sup>84</sup> to the financial information in the ledger system with coordination of the central bank or the third-party operator of the currency.

Should a party be suspected of misusing public funds; the blockchain technology could assist authorities to follow the sources and transactions of the exchange. By seizing the suspect's KTP-el (which will serve as the wallet) and attaining the NIK (which will serve as the account

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<sup>79</sup> In Indonesia known as Komisi Pemberantasan Korupsi

<sup>80</sup> Novi Setuningsih, 'KPK, Jokowi Most Trusted Graft-Busters, Survey Shows' (*Jakarta Globe*, 2017) <<http://jakartaglobe.id/news/kpk-jokowi-trusted-graft-busters-survey-shows/>> accessed 15 August 2017.

<sup>81</sup> Undang-Undang Republik Indonesia Nomor 30 Tahun 2002 tentang Komisi Pemberantasan Tindak Pidana Korupsi 2002 v. 11.

<sup>82</sup> *ibid* 8.

<sup>83</sup> *ibid* 12 (1) (c).

<sup>84</sup> Only with order of the court after presenting sufficient evidence for such cause to ensure the public that their information is secure. Further, regulation requires that the Ministry of Communication and Information must be reported on all surveillance information, the authorities must have sufficient concern and evidence to access the ledger system. (Undang-Undang Republik Indonesia Nomor 15 Tahun 2003 tentang Penetapan Peraturan Pemerintah Pengganti Undang-Undang Nomor 1 Tahun 2002 Tentang Pemberantasan Tindak Pidana Terorisme Menjadi Undang-Undang 2003 v. 31.)

address) that the suspect used to transact, the authorities can identify all the money that is in or was in a suspect's account as well as information from where that money came from.

For a traceable central bank digital currency to work every person must have the same equal access that cash provides. For this, everyone must have an account to hold and store the digital currency. To ensure that the currency is traceable, every account holder must be identified and documented uniquely to ensure no duplicates can be made. A restriction of one central bank digital account on a single identity must be limited to ensure that the function of traceable payments and currency can be maximized. The rest of the chapter will address how identification and bankability is crucial in supporting and facilitating the traceable central bank digital currency. The chapter will also show that at the same time, a central bank digital currency will provide an opportunity for national financial inclusion. Indonesia can use law and regulation to ensure everyone will have access to the bank account required to utilize a central bank digital currency.

### **III.B The Unbanked**

Cash, is the oldest form of financial inclusion. Although most take it for granted, there are parts of the world where access to cash and banking services is difficult and limited. Financial inclusion is defined as “the access to and use of formal financial services”<sup>85</sup> and has been broadly recognized as critical in reducing poverty. Yet the World Bank's 2014 Global Findex shows some 2 billion adults worldwide,<sup>86</sup> across advanced and emerging economies, lack a bank account – Indonesia being home to 6% of the world's unbanked adults, accounting for 36

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<sup>85</sup> Ratna Sahay and others, ‘Financial Inclusion: Can It Meet Multiple Macroeconomic Goals?’ (2015) 8.

<sup>86</sup> Demirgüç-Kunt and others 2.

million adults.<sup>87</sup> A number which is greater than the population of Canada (35 million)<sup>88</sup> and Australia (23 million)<sup>89</sup>. Without access to bank accounts, people cannot store or handle digital currency.

There are many reasons for one to not have a bank account. One may not want or need a bank account, or perhaps do not trust banks and prefer to keep their cash under their proverbial mattress. Unfortunately, others are left unbanked not due to choice, but rather a factor outside of their control. Some of these factors include minimum balance requirements, lack of required identification or they live in a remote location which does not have any physical bank branches.

### **III.B.1 The Identity Problem**

Providing people with valid identification is essential to access financial services. Most countries require several identification documents to open a bank account. At a minimum, this often includes government issued passport or identification, and proof of residence, but can vary depending on the bank and type of product. A reason for document collection is because banks are required by law to validate customers and report any suspicious activities under the regulations generally referred to as the Anti-Money Laundering (AML) and Know Your Customer (KYC) rules. The AML regulation in Indonesia is governed by Bank Indonesia through its Regulation and Circular Letter which forbids banks to open accounts under an anonymous or fictitious name, this include names that are inconsistent to what is in a person's

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<sup>87</sup> *ibid* 59.

<sup>88</sup> 'The World Factbook' (*Central Intelligence Agency*, 2016) <<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2119rank.html>> accessed 19 July 2017.

<sup>89</sup> *ibid*.

identity document (ID).<sup>90</sup> To ensure this, identity must be proven with supporting documents sufficient for the bank to verify to be true. Although the regulation does not specify which ID is required, it does state that the ID need to be a document that includes a photograph of the holder issued by an authorized entity. Further, Bank Indonesia make it mandatory for the bank to request for more than one ID should a bank have doubts regarding its validity and authenticity.<sup>91</sup>

The ability to provide official government identification is not necessarily a given. People may not live near a government office where identifications are issued or documents may have been lost as well as a variety of other reasons. Even in the United States, a 2006 Brennan Institute study found that roughly 11% of Americans did not possess a government issued photo identification. Those disproportionately impacted were minorities, the elderly and the poor.<sup>92</sup> In 2016, the Indonesian Minister of Domestic affairs stated that 96 million Indonesian citizens do not have photo identification.<sup>93</sup> Hence, one of the ways to help solve the unbanked issue is to have a streamlined process to obtain identification allowing access for all citizens especially the most disadvantaged sections of society.

As the world's second most populous country,<sup>94</sup> India's recent advancement in population recording and identification can serve as a model reference for Indonesia. In 2009 India

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<sup>90</sup> Peraturan Bank Indonesia Nomor 14/27/PBI/2012 tentang Penerapan Program Anti Pencucian Uang dan Pencegahan Pendanaan Terorisme Bagi Bank Umum 2012 v. 12 (1) (d).

<sup>91</sup> *ibid* 22.

<sup>92</sup> Brennan Center for Justice at NYU School of Law, 'Citizens Without Proof: A Survey of Americans' Possession of Documentary Proof of Citizenship and Photo Identification' [2006] Voting Rights & Elections Series.

<sup>93</sup> Prasetyo.

<sup>94</sup> 'U.S. and World Population Clock' (*United States Census Bureau*) <<https://www.census.gov/popclock/world>> accessed 17 July 2017.

established a Unique Identification Authority of India, also known as Aadhaar, which is tasked to identify citizens and assign each person with a 12-digit number which can be authenticated and verified online. Within a year of the Aadhaar Act 1,160,796,204 Aadhaars were issued.<sup>95</sup> In six years, 93% of adults, 67% of children aged 5-18 and 20% of those aged between 0-5 have been registered.<sup>96</sup> A key feature of the Aadhaar project is the centralized database that stores every individual's personal information. Sceptics of the Aadhaar believe that it is not a reliable document as most fields are filled on a self-declaration.<sup>97</sup> The Aadhaar however is not only based upon basic demographic information but also fingerprints and iris recognition to identify the person and ensure uniqueness thus preventing the chances for duplication. India's Prime Minister Narendra Modi's plan is to make Aadhaar compulsory and function as a common index to facilitate correlation of data across government databases.<sup>98</sup>

Although the Aadhaar cannot be mandatory for social welfare schemes, it can still be used for non-benefit schemes.<sup>99</sup> The Supreme Court stated that the government cannot be stopped from inserting a provision to make it mandatory to state an Aadhaar number in other schemes like

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<sup>95</sup> 'Aadhaar Generation Progress in India' (*Unique Identification Authority of India*, 2017)

<<https://portal.uidai.gov.in/uidwebportal/dashboard.do>> accessed 13 July 2017.

<sup>96</sup> Chris Skinner, 'India's Billion Digital Identities' (*The Finanser*, 2016)

<<https://thefinanser.com/2016/09/indias-billion-people-digital-identities.html/>> accessed 13 July 2017.

<sup>97</sup> S Murlidharan, 'Aadhaar-PAN Linking: Govt Proposes Changes to Ease Process but Renders It Futile; Here's Why' (*First Post*, 2017) <<http://www.firstpost.com/business/aadhaar-pan-linking-govt-proposes-changes-to-ease-process-but-renders-it-futile-heres-why-3376432.html>> accessed 31 July 2017.

<sup>98</sup> Archana Chaudhary, 'A Billion Identities at Risk as India Goes Cashless' (*Bloomberg*, 2017)

<<https://www.bloomberg.com/news/articles/2017-02-26/a-billion-india-identities-at-risk-as-modi-widens-digital-reach>> accessed 13 July 2017.

<sup>99</sup> In 2013 the Supreme Court of India determined that the Aadhaar could not be mandatory on grounds of exclusion of people. (Japreet Grewal and others, 'Report on Understanding Aadhaar and Its New Challenges' (*The Centre for Internet & Society*, 2016) <<https://cis-india.org/internet-governance/blog/report-on-understanding-aadhaar-and-its-new-challenges>> accessed 22 July 2017.)

to authenticate in the opening of bank accounts.<sup>100</sup> In November 2016, when Modi demonetized what the authorities considered large denomination notes,<sup>101</sup> strict regulations were put in place to audit large deposits and limiting the number of notes exchanged at a time. Cash was rationed to a strict withdrawal limit of USD350 a week and only with production of identification. Anything above INR2k (USD31) cannot be changed to new notes but needed to be credited to a bank account.<sup>102</sup> Those who have not received their Aadhaar and without a bank account cannot prove that their hard-earned money is not illegal.<sup>103</sup>

The small traders, vegetable vendors, kiosk owners and street vendors were hit hardest by the demonetization.<sup>104</sup> With the assistance of the National Association of Street Vendors of India and volunteers, vendors in marketplaces are being educated to understand cashless payment, opening and operating of electronic wallets. Post demonetization, a surge of account opening

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<sup>100</sup> ‘Supreme Court to Government: Aadhaar Card Can’t Be Made Mandatory for Welfare Schemes’ (*Business Today India*, 2017) <<http://www.businesstoday.in/current/economy-politics/supreme-court-to-government-aadhar-card-can-t-be-made-necessary-for-welfare-schemes/story/248756.html>> accessed 4 August 2017.

<sup>101</sup> The 500 and 1,000 rupee notes which were demonetized accounted for 86% of the currency in circulation (Anupam Varshney, ‘Why Bitcoin Could Thrive in a Country like India’ (*Business Insider*, 2017) <<http://uk.businessinsider.com/why-bitcoin-could-thrive-in-a-country-like-india-2017-6?r=US&IR=T>> accessed 14 July 2017.)

<sup>102</sup> ‘India’s Cash Crisis Explained’ (*BBC*, 2016) <<http://www.bbc.com/news/world-asia-india-37983834>> accessed 22 July 2017.

<sup>103</sup> Vikas Pandey and Aakriti Thapar, “‘No Customers’: Indians React to Currency Ban’ (*BBC*, 2016) <<http://www.bbc.com/news/world-asia-india-37921672>> accessed 22 July 2017.

<sup>104</sup> In India, 85% of the workers were paid in cash and 90% of merchants did not have the facility to accept non-cash transactions. (Saritha Rai, ‘India’s Cash Ban Is the Best Thing to Happen to Digital Payments’ (*Bloomberg*, 2016) <<https://www.bloomberg.com/news/articles/2016-11-23/cash-ban-the-best-thing-to-happen-to-indian-digital-payments>> accessed 25 July 2017; Wade Shepard, ‘After Day 50: The Results From India’s Demonetization Campaign Are In’ (*Forbes*, 2017) <<https://www.forbes.com/sites/wadeshepard/2017/01/03/after-day-50-the-results-from-indias-demonetization-campaign-are-in/> - 4c2436be50d1> accessed 14 July 2017.)



from offline merchants including street vendors, grocers and tea sellers were reported.<sup>105</sup> Now, even small vendors including hawkers and rickshaw drivers are offering ways to pay via electronic means.<sup>106</sup> It is now compulsory to add the Aadhaar details to bank accounts by December of 31 of 2017, failing which the banks will invalidate them.<sup>107</sup> Those opening a bank account after the above date will also need to have an Aadhaar card.

In a move to combat corruption, India simultaneously reduced the people's reliance on cash and created the need to be identified. By linking the dependency of access to money with having a bank account and therefore identification, each citizen should eventually be incentivized to proactively register themselves for a government ID.

### **III.B.2 The Infrastructure Problem**

Identification is one issue which causes a large part of the unbanked population – another issue is the lack of physical banking locations. Travel can be long, in Gambung Pangkalan, a remote hilltop village only 30 kilometres away from Indonesia's second largest metropolitan city – Bandung,<sup>108</sup> the travel to a bank branch can exceed 2.5 hours.<sup>109</sup> Where formal banking is sparse many are forced to use informal banking, which can be criminal enterprises and is expensive. In research conducted in Indonesia by Tufts University's the Fletcher School's

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<sup>105</sup> Vatsala Shrangi, 'Vendors Get Street Smart, Go Digital' (*Daily News & Analysis*, 2016)

<<http://www.dnaindia.com/india/report-vendors-get-street-smart-go-digital-2274852>> accessed 23 July 2017.

<sup>106</sup> Rai.

<sup>107</sup> Jayesh Shinde, 'How Does Aadhaar Compare with Other ID Systems & How to Secure Its Leaky Database' (*India Times*, 2017) <<http://www.indiatimes.com/technology/news/how-does-aadhaar-compare-with-other-id-systems-in-the-world-how-to-secure-its-leaky-database-276972.html>> accessed 4 August 2017.

<sup>108</sup> Kimutai Gilbert, 'Biggest Cities in Indonesia' (2017) <<http://www.worldatlas.com/articles/biggest-cities-in-indonesia.html>> accessed 4 August 2017.

<sup>109</sup> Michael Mori and Trevor Zimmer, *Mobilizing Banking for Indonesia's Poor* (Jamilah Welch ed, The Fletcher School of Law and Diplomacy, Tufts University 2014) 14.

Institute for Business in the Global Context, 25% of participants use a roving bank/bookie (*bank keliling* or *bandar*), both of which are loan sharks.<sup>110</sup> As banks and cooperatives are often unwilling to provide small immediate loans, the participants did not see the rigid repayment schedule and high interest rates as predatory. Participants understood the costs and risks of the services as they had no other choice.

The cost of a physical location for a bank is an expensive proposition requiring leasing or purchasing the building, security, employee costs and physical cash handling costs. According to Ed O'Brien, an analyst at Mercator Advisory Group, the traditional branch in the United States can cost USD200k to USD400k per year to operate.<sup>111</sup> American banks expect to take USD85 to USD115 of annual fees for each account, making banks too expensive for some people to use.<sup>112</sup> Indonesian banks charge an average of only USD9 annually,<sup>113</sup> but in a country where 21 million people live on less than USD1.90 a day,<sup>114</sup> that money can be more usefully spent on food and placed into long-term savings. Banks may not provide services in smaller markets because they are not economically viable.

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<sup>110</sup> *ibid* 18.

<sup>111</sup> Dan Freed, 'U.S. Banks Want to Cut Branches, but Customers Keep Coming' (*Reuters*, 2016) <<http://www.reuters.com/article/us-usa-banks-branches-idUSKCN10X0D6>> accessed 21 July 2017.

<sup>112</sup> Lisa J Servon, 'The High Cost, For the Poor, of Using a Bank' (*The New Yorker*, 2013) <<http://www.newyorker.com/business/currency/the-high-cost-for-the-poor-of-using-a-bank>> accessed 21 July 2017.

<sup>113</sup> The average charge is IDR10,000.00 per month ('Daftar Biaya Administrasi Bank Di Indonesia' (*Uang Teman*) <<https://uangteman.com/blog/berita-bank/daftar-biaya-administrasi-bank-di-indonesia/>> accessed 25 July 2017.)

<sup>114</sup> 'Poverty & Equity' (*The World Bank*) <<http://povertydata.worldbank.org/poverty/country/IDN>> accessed 25 July 2017.

The traditional branch based banking model is expensive, especially compared to online or mobile banking. Many banks globally have reduced their physical footprint in favour of online banking services accessed via computer or mobile application. In the United Kingdom, a number of tech start-ups like Starling Bank, Atom and Tandem have even received approval from the Bank of England to be online only banks.<sup>115</sup> Mobile-only banks which service entirely over a mobile application, without a physical location can pass on their savings from infrastructure to the customer, providing a more competitive interest rate and fee structure.<sup>116</sup> Mobile-only banking is a viable solution to service the community in rural areas that cannot easily access physical bank locations.

In Kenya, only 2.5 million of its roughly 39 million people have bank accounts.<sup>117</sup> M-Pesa, short for mobile money,<sup>118</sup> allows its users to make transfers, or payments, using a menu on the phone and a simple method of texting small payments that allows for mobile phone based money transfer. Although many have attempted to penetrate the mobile money system globally, Kenya has been most successful with its M-Pesa due to a couple of factors. The first is the regulators decision to allow the scheme to proceed, initially on an experimental basis without

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<sup>115</sup> Tim Wallace, 'Mobile-Only Bank Starling Wins Its Licence' (*The Telegraph*, 2016)

<<http://www.telegraph.co.uk/business/2016/07/14/mobile-only-bank-starling-wins-its-licence/>> accessed 25 July 2017; Tim Wallace, 'Second Digital-Only Bank Is Handed a UK Licence' (*The Telegraph*, 2015) <<http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/12025851/Second-digital-only-bank-is-handed-a-UK-licence.html>> accessed 25 July 2017.

<sup>116</sup> Nielsen, 'Mobile Money: From Shopping to Banking to Payments, How Mobile Is Transforming Commerce around the World' (2016) 14.

<sup>117</sup> Robert Cull, 'M-PESA: Mobile Payments, Improved Lives for Kenyans' (*The World Bank*, 2010)

<<http://econ.worldbank.org/external/default/main?theSitePK=469382&contentMDK=22594763&menuPK=574960&pagePK=64165401&piPK=64165026>> accessed 25 July 2017.

<sup>118</sup> Pesa is Swahili for money

formal approval.<sup>119</sup> The M-Pesa was conceived by the United Kingdom's Department for International Development and Vodafone at the 2003 World Summit for Sustainable Development.<sup>120</sup> The Central Bank of Kenya committed to exploring "all reasonable options for correcting the [financial] access imbalance" by working closely with Vodafone under the M-Pesa program and imposed no regulatory safeguards on its pilot program.<sup>121</sup> Secondly, other methods of sending money in Kenya are exceptionally expensive. Ninety percent of all mobile money transactions and 70% of all non-cash financial transaction in Kenya are conducted over M-Pesa every day.<sup>122</sup>

Although not a standard bank, M-Pesa customers and agents are still subject to KYC and Customer Due Diligence (CDD) controls. The Kenyan government also developed sector specific guidelines for mobile money and electronic payments in 2011.<sup>123</sup> These procedures include automated watch list screening for Politically Exposed Persons and international sanction lists as well as requiring agents to "validate a customer's identity during each transaction using [a] national ID card presented by the customer".<sup>124</sup>

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<sup>119</sup> Tom Standage, 'Why Does Kenya Lead the World in Mobile Money?' (*The Economist*, 2013) <<https://www.economist.com/blogs/economist-explains/2013/05/economist-explains-18>> accessed 23 July 2017.

<sup>120</sup> Mercy W Buku and Michael W Meredith, 'Safaricom and M-Pesa In Kenya: Financial Inclusion and Financial Integrity' (2013) 8 *Washington Journal of Law, Technology & Arts* 375, 385.

<sup>121</sup> *ibid* 386.

<sup>122</sup> *ibid* 390–391.

<sup>123</sup> *ibid* 395.

<sup>124</sup> *ibid* 397.

New technologies such as biometrics are already being used to validate customer identities.<sup>125</sup> Utilizing such technologies would allow the cost of complying to KYC and AML requirements to decrease and supervision would become more effective. Standard Chartered Bank, has an iPad based technology to enable its bank staff to open an account in any location, as well as make loan approvals and credit card issuance paperless.<sup>126</sup> It allows staff to offer customer services in areas where there are no branches without the need to return to a branch for manual processing of paperwork. Sales officers of the bank are now able to bring the bank to clients in Malaysia, India, the United Arab Emirates, Bangladesh, Nigeria and Kenya.

### **III.B.3 Solving Indonesia's Identification and Infrastructure Problem**

To ensure that all Indonesian residents can utilize a central bank digital currency, each resident must have a bank account that is attached to their NIK in order to accurately trace each transaction to a specific unique person/identity. The first step therefore, is ensuring that all Indonesians have a KTP-el.

By law, the KTP-el is mandatory<sup>127</sup> and is required for all government issued documents as well as official institutions.<sup>128</sup> This includes the requirement of a KTP-el for an Indonesian

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<sup>125</sup> Governor of the Bank of England and Chair of the Financial Stability Board Mark Carney, 'The Promise of FinTech – Something New Under the Sun?' *Bank of England* (Speech at Deutsche Bundesbank G20 Conference, Wiesbaden, 25 January 2017) <<http://www.bankofengland.co.uk/publications/Documents/speeches/2017/speech956.pdf>> accessed 23 February 2017.

<sup>126</sup> 'We've Launched "bank on an iPad" Sales-and-Service Tool in Asia, Africa and the Middle East' (*Standard Chartered Bank*, 2016) <<https://www.sc.com/en/news-and-media/news/global/2016-03-08-standard-chartered-launches-retail-workbench-bank-on-an-ipad-service-tool.html>> accessed 24 July 2017.

<sup>127</sup> Undang-Undang Republic Indonesia Nomor 24 Tahun 2013 tentang Perubahan atas Undang-Undang Nomor 23 tahun 2006 tentang Administrasi Kependudukan.

<sup>128</sup> *ibid* 101 (b).

resident to open a bank account as announced by the Financial Services Authority<sup>129</sup> (*OJK*) and the Ministry of Home Affairs.<sup>130</sup> The KTP-el has showed positive correlation to the number of bank accounts. Since the KTP-el program started in 2013 the amount of bank accounts in Indonesia has gone from 120,846,777<sup>131</sup> to 199,301,502<sup>132</sup> by the end of December 2016.

Even so, by the end of 2016 there are still some 22 million people who do not have the required identification.<sup>133</sup> One hundred percent identification in all likelihood would not be achieved due to the unique fragmented geography of Indonesia and lack of need for the rural poor that have managed fine without a card, hence digital currency if implemented will be a supplement to cash and not a replacement.

Once a central bank digital currency account is opened, it becomes a matter of how everyone, including those in rural and remote areas, can access and utilize their accounts and currency. Indonesia can utilize the growing internet savvy<sup>134</sup> and mobile phone users across the country

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<sup>129</sup> Domestically known as Otoritas Jasa Keuangan

<sup>130</sup> Dian Ihsan Siregar, 'Pembuatan Rekening Baru Perbankan Harus Pakai E-KTP' (*Metro TV News*, 2015) <<http://ekonomi.metrotvnews.com/read/2015/02/23/361914/pembuatan-rekening-baru-perbankan-harus-pakai-e-ktp>> accessed 14 August 2017.

<sup>131</sup> 'Distribusi Simpanan Bank Umum' (*Lembaga Penjamin Simpanan*, 2016) <<http://www.lps.go.id/documents/830952/0/Statistik+%28Website%29-Februari+2016.pdf/192fd8ee-f019-48cc-8643-a6428f04af88>> accessed 23 July 2017.

<sup>132</sup> Samsu Adi Nugroho, 'Pertumbuhan Simpanan & Jumlah Rekening Yang Dijamin Pada Bank Umum Bulan Desember 2016' *Lembaga Penjamin Simpanan* (Jakarta, 8 February 2017) <[http://lps.go.id/siaran-pers/-/asset\\_publisher/1T0a/content/siaran-pers-pertumbuhan-simpanan-jumlah-rekening-yang-dijamin-pada-bank-umum-bulan-desember-2016](http://lps.go.id/siaran-pers/-/asset_publisher/1T0a/content/siaran-pers-pertumbuhan-simpanan-jumlah-rekening-yang-dijamin-pada-bank-umum-bulan-desember-2016)> accessed 23 July 2017.

<sup>133</sup> Medha Basu, 'Indonesia Misses National Smart ID Cards Deadline' (*Gov Insider Asia*, 2016) <<https://govinsider.asia/digital-gov/indonesia-misses-national-smart-id-cards-deadline/>> accessed 23 July 2017.

<sup>134</sup> Victor Lipman, 'The World's Most Active Twitter City? You Won't Guess It' (*Forbes*, 2012) <<https://www.forbes.com/sites/victorlipman/2012/12/30/the-worlds-most-active-twitter-city-you-wont-guess-it/#38ee8bf655c6>> accessed 10 August 2017; Elise Taylor, 'The Most Geo-Tagged City on Instagram Stories

to implement a mobile method without needing a physical location. Fifty-one percent of Indonesian respondents of a Nielsen conducted research on Mobile shopping, banking and payment are already transferring money directly to another person using mobile peer-to-peer money transfers.<sup>135</sup> Mobile data in Indonesia is somewhat affordable, in return however, the average connection speed and internet bandwidth is very low.<sup>136</sup> Although with accessible mobile internet and cheaper phones Indonesia's internet population is expected to grow by 50 million between 2015 to 2020, a penetration rate of 53%,<sup>137</sup> a larger percentage of the population would still not have adequate services to rely entirely on the smartphone internet banking platform. This means that the system must also be available for access via non-internet reliant technology, such as text messaging or telecom based banking.

Growth in the mobile phone market has been much more inclusive. As of 2016, there were over 385.5 million mobile telephone subscriptions.<sup>138</sup> Telkomsel, the largest cellular operator in Indonesia has 170 million customers.<sup>139</sup> A subsidiary of Telkom Indonesia, this majority state-owned telecommunication provider have already provided text based banking that allows customers of the mobile provider to conduct banking transactions of 20 banks via their cell phone simply by typing in plain text messaging, similar to the M-Pesa.<sup>140</sup> These banks include large multinational banks such as Citibank, Standard Chartered Bank, ANZ as well as national

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May Surprise You' (*Vogue*, 2017) <<http://www.vogue.com/article/jakarta-indonesia-instagram-stories>> accessed 10 August 2017.

<sup>135</sup> Nielsen 17.

<sup>136</sup> Kaushik Das and others, 'Unlocking Indonesia's Digital Opportunity' (2016) 5.

<sup>137</sup> *ibid* 7.

<sup>138</sup> 'Country ICT Mobile-Cellular Subscription Data' (*International Telecommunication Union*) <<http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>> accessed 6 August 2017.

<sup>139</sup> 'History & Milestones' (*Telkomsel*) <<http://www.telkomsel.com/history--milestones>> accessed 22 July 2017.

<sup>140</sup> 'SMS Banking' (*Telkomsel*) <<http://www.telkomsel.com/services/banking/417-SMS-Banking.html>> accessed 22 July 2017.

banking giants - Bank Mandiri and Bank Central Asia with 18.45 million<sup>141</sup> and 14.8 million<sup>142</sup> accounts respectively.

Indonesia can diminish its geographical difficulties and make it easier for its people to access banking services anywhere a cell phone and internet signal exists. With a sizeable unbanked population, mobile payments can fill the sizeable unbanked population gap in Indonesia. A smartphone mobile application, internet banking and text based banking services will require setting up to ensure a smooth and stable central bank digital currency payment system. More on this to follow in **IV.A Payment System**.

Although mobile, text and internet banking has been available in Indonesia for quite some time now, and have been very well received, they were merely an alternative channel which only served those that were already banked. In 2014, the supervisory authority over branchless banking shifted from Bank Indonesia to the OJK who has since regulated branchless banking under the spirit of increasing financial inclusivity. This branchless banking regulation allows banks to provide financial services through cooperation with agents to supply simple financial products such as a basic savings account, credit or financing to micro customers.<sup>143</sup> These agents, like the M-Pesa, are existing retailers and merchants in the community, consisting of corner shops that sells mobile airtime, teachers, retirees, mini markets, post offices,

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<sup>141</sup> Giras Pasopati, 'Nilai Aset Bank Mandiri Tembus Rp1.000 Triliun' (CNN, 2017)

<<https://www.cnnindonesia.com/ekonomi/20170126103343-78-189144/nilai-aset-bank-mandiri-tembus-rp1000-triliun/>> accessed 22 July 2017.

<sup>142</sup> *PT Bank Central Asia Tbk. Hasil Kinerja Semester I 2016: Mempertahankan Soliditas* (Bank Central Asia 2016) <<https://www.bca.co.id/id/Tentang-BCA/Korporasi/Siaran-Pers/2016/07/21/04/17/hasil-kinerja-semester-1-2016->>.

<sup>143</sup> Peraturan Otoritas Jasa Keuangan Nomor 19/POJK.03/2014 tentang Layanan Keuangan Tanpa Kantor dalam Rangka Keuangan Inklusif 2014 v. 4.



cooperatives and other community based personnel equipped with either a cellular phone, EDC card reader, tablet or laptop. These agents can provide real time online transactions.

As of March 2017, 19 conventional banks and 2 sharia banks have taken part in providing branchless banking to all 34 provinces of Indonesia assisted by 328,466 agents.<sup>144</sup> This would in theory decrease the unbanked population in Indonesia – and allow even the most rural customers to have access to currency without the need of a physical banking location. Since June 2015, branchless banking customers have grown from 35,984 customers to now 5,119,595.<sup>145</sup>

Although the agents of branchless banking have significantly made banking easier, more affordable and accessible to all, the safety of agents should be a concern. These agents are required to hold cash deposited and to be withdrawn by their customers, making them susceptible to robberies. Although the OJK implemented a number of transaction controls such as limiting the maximum amount of daily transactions for each customer to IDR5m (USD375) to protect the agents, they are not protected with the level of security that ATM machines or bank branches are equipped with.<sup>146</sup> Trying to hold less cash on their person can cause liquidity shortages which would make them less popular than other agents. Customer deposits are protected by the Deposit Guarantee Scheme in the same way regular banking customers are, but agents' physical protection is not. With a central bank digital currency, there would be no need for security concerns as all the deposit and withdrawal will be conducted digitally. Money

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<sup>144</sup> Otoritas Jasa Keuangan, 'Data Perkembangan Program Laku Pandai Posisi Maret 2017' (*Otoritas Jasa Keuangan*, 2017) <<http://www.ojk.go.id/id/Pages/Laku-Pandai.aspx>> accessed 25 July 2017.

<sup>145</sup> *ibid.*

<sup>146</sup> Peraturan Otoritas Jasa Keuangan Nomor 19/POJK.03/2014 tentang Layanan Keuangan Tanpa Kantor dalam Rangka Keuangan Inklusif.

will be delivered electronically instead of physically and stored in a cloud computation space instead of vaults.

It is clear then that Indonesia has all the necessary infrastructure in place to provide each of its citizen with an account to store and use its central bank digital currency. It is a matter of joining up current initiatives by maximizing and attaching the KTP-el and text/mobile/internet based banking together. The law which regulates the KTP-el and the NIK has allowed collected data to be used for public services, development plans, budget allocation, as well as enforcing the law and criminal prevention, a wide enough net to cast over the central bank digital currency proposal.<sup>147</sup> Once identified, each NIK can be registered as a digital account to transact in central bank digital currency which shall also register to the phone number of the NIK owner, allowing each user with immediate access to text based banking.<sup>148</sup>

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<sup>147</sup> Undang-Undang Republic Indonesia Nomor 24 Tahun 2013 tentang Perubahan atas Undang-Undang Nomor 23 tahun 2006 tentang Administrasi Kependudukan.

<sup>148</sup> A NIK must be registered when purchasing new mobile phone numbers. Mobile phone numbers however, is not requested when updating KTP-el information. Peraturan Menteri Komunikasi dan Informatika Republik Indonesia Nomor 12 tahun 2016 tentang Registrasi Pelanggan Jasa Telekomunikasi 2016 v. 2.

## IV. PILLARS REQUIRED FOR SUCCESSFUL IMPLEMENTATION OF CENTRAL BANK DIGITAL CURRENCY

Physical bank notes and coins are not a ‘barbarous relic’ in the same way that John Maynard Keynes once referred to gold.<sup>149</sup> Because of the historical use and impact of fiat currency, embracing digital currency could pose a challenge to the people who actually use the currency. Many may object to the digital footprints and others may not be comfortable with the idea of invisible, digital savings. Implementing a digital currency while reducing the usage of physical cash may also have disruptive impacts on certain groups such as those in rural areas, small business owners and retirees. An advantage to have central bank digital currency co-exist with the current banking model would serve as a backup means of payment when electronic payment systems suffer due to technological failures.<sup>150</sup> Further, tourists and business travellers who would not have a digital currency account would require access to alternative payment methods, most simply, cash.

### IV.A Payment System

As the Bank of England once explained, “a bank note is essentially an [I Owe You] from the central bank with a clear unit of account which enables the bearer to hold it as a store of value and use it as a medium of exchange” and “banknotes provide full and final instantaneous settlement in central bank money”.<sup>151</sup> Digital, state-issued money is not new, bank deposits at

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<sup>149</sup> Lionel Barber, ‘The Case for Retiring Another “barbarous Relic”’ (*The Financial Times*, 2015) <<https://www.ft.com/content/159b17ca-47f3-11e5-b3b2-1672f710807b?mhq5j=e1>> accessed 25 June 2017.

<sup>150</sup> Ben Dyson and Graham Hodgson, ‘Digital Cash: Why Central Banks Should Start Issuing Electronic Money’ 7 <[http://positivemoney.org/wp-content/uploads/2016/01/Digital\\_Cash\\_WebPrintReady\\_20160113.pdf](http://positivemoney.org/wp-content/uploads/2016/01/Digital_Cash_WebPrintReady_20160113.pdf)>.

<sup>151</sup> Bank of England Chief Cashier Victoria Cleland, ‘Fintech: Opportunities for All?’ *Bank of England* (Speech at the 2nd International Workshop P2P Financial Systems 2016, London, 8 September 2016)

the central bank are precisely that. But with the adoption of a national central bank digital currency, any person can hold balances and pay each other in real time with full and final settlement in electronic format without the need for a commercial bank to make the electronic payment.

Some concerns one may raise is what would happen to commercial banks or other financial institutions if there was the threat that everyone can have an account at the central bank. Possibly concerns of depositors pulling their money out of retail banks and opt to rely entirely for central banks accounts, eliminating other banks.

People would probably still want to keep most of their money in commercial banks if a central bank digital currency serve only as a substitute to cash, no interest and without the extra services that commercial banks provide. An e-cash. The same would be said to people who have more than one bank account, the free market will work as customers are allowed to choose where they store their money. This would not create the risk of a bank run, except possibly in the event of a systemic banking crisis perhaps. Dr Jens Weidmann, President of the Deutsche Bundesbank, has shown apprehension that “[in] times of crisis – when there will be a strong incentive for money holders to switch bank deposits into the official digital currency simply at the push of a button. But what might be a boon for savers in search of safety might be a bane for banks, as this makes a bank run potentially even easier”.<sup>152</sup> In normal circumstances

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<<http://www.bankofengland.co.uk/publications/Documents/speeches/2016/speech919.pdf>> accessed 7 August 2017.

<sup>152</sup> Will Martin, ‘One of the World’s Top Central Bankers Warns Digital Currencies like Bitcoin Could Worsen Future Financial Crises’ (*Business Insider*, 2017) <<http://uk.businessinsider.com/jens-weidmann-warns-on-risks-of-bitcoin-2017-6?r=US&IR=T>> accessed 13 August 2017.

however, as long as the central bank digital currency mainly serve to replace cash, negative side effects might be unlikely.

The implanted chip of the KTP-el can be enhanced to include a chip and pin banking facility for banking purposes, maximizing the already available technology of the payment system in Indonesia. This is needed because the KTP-el and NIK numbers are not cryptographically secured and are in fact publicly available. Access to the account should use a more secure identification, such as a QR code scan or chip and pin technology. A cryptographic signature in the card should be a legal equivalent to a manual signature. A dependable digital signature mechanism and secure digital wallet would be required to ensure ease of use for the least advanced user and merchant.

Existing mobile banking, text based banking and agents of branchless banking should be embraced. The central bank should only need to conduct a one-time swap of mobile and electronic money for digital currency to insert the legal currency into the electronic and mobile money system. The central bank could open an account for each resident and digital currency can be “bought” and stored into the KTP-el account at a rate of one to one.

Once multiple or all countries are able to secure their own digital currency, the cross-border transaction would work the same way as they do today through the banking and foreign exchange system.

## IV.B Money Laundering

The 2011 Currency Law of Indonesia acknowledges the link of counterfeiting to other crimes such as terrorism, political crimes, money laundering, illegal logging and human trafficking.<sup>153</sup> Although electronic money has provided avenues for money laundering and illegal activity, rightly regulated, it also offers benefits for the financial system. Crime is one of the most important considerations in the global transition to cashless. As a public safety campaign under the banner of crime prevention the Swedish government encouraged its people to purchase with cards instead of cash.<sup>154</sup> Digital wallets and electronic money are faster, usually cheaper and help authorities track transactions – which supports the fight against corruption and money laundering. Done correctly, digital currency would make it all the more difficult to conduct informal transactions and evade taxes.

A central bank digital currency needs to ensure that they are adhering to requirements of laws aimed at deterring money laundering, combating the financing of terrorism and all that protects the integrity of the financial system. The ability to bind each account to each resident's identity is an important and powerful aspect of a central bank digital currency which would fulfil one of the primary requirement of the anti-money laundering regulation, in which each customer has undergone proper KYC and CDD compliance.

In the spirit of global financial inclusion, Bank Indonesia allows for bank account opening on government welfare and poverty reduction programs and accounts with a maximum balance of approximately IDR5m (USD375), at any one time, to be opened under the standards of a

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<sup>153</sup> Undang-Undang Republik Indonesia Nomor 7 Tahun 2011 tentang Mata Uang.

<sup>154</sup> Mallory Pickett, 'One Swede Will Kill Cash Forever—Unless His Foe Saves It From Extinction' (*Wired*, 2016) <<https://www.wired.com/2016/05/sweden-cashless-economy/>> accessed 12 July 2017.

simplified CDD.<sup>155</sup> The branchless banking regulation was enacted under the same spirit and therefore allowed for a simplified CDD, requiring only the customers full name, address according to ID, residential address, place and date of birth and employment to open a basic savings account.<sup>156</sup> Granted, this information must be supported with an ID and a specimen signature. Bank Indonesia allows banks to outsource to agents the process of conducting face to face customer due diligence, request for information and supporting documents as well as verifying the documents.<sup>157</sup> With the KTP-el, there should be no issue in proving this information.

By conducting a simplified CDD when creating a KTP-el, each KTP-el can be attached to a standard savings account, providing every resident with a digital basic savings account. Account opening can be done simultaneously with requesting a KTP-el, as each citizen must come to have their biometrics taken; this in-person attendance can be considered a face-to-face CDD. The documents and information required to make a KTP-el is the same as the requirements of a simplified CDD.

It is critical for regulators to adopt KYC requirements proportional to risks, such as a tiered KYC regime. Upon meeting the threshold to upgrade to a standard or enhanced CDD, the customer can request for an increase and then provide additional requirements.

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<sup>155</sup> Peraturan Bank Indonesia Nomor 14/27/PBI/2012 tentang Penerapan Program Anti Pencucian Uang dan Pencegahan Pendanaan Terorisme Bagi Bank Umum.

<sup>156</sup> Peraturan Otoritas Jasa Keuangan Nomor 19/POJK.03/2014 tentang Layanan Keuangan Tanpa Kantor dalam Rangka Keuangan Inklusif.

<sup>157</sup> Peraturan Bank Indonesia Nomor 14/27/PBI/2012 tentang Penerapan Program Anti Pencucian Uang dan Pencegahan Pendanaan Terorisme Bagi Bank Umum.

Thomas Curry, former Comptroller for the Office of the United States Comptroller of the Currency, has highlighted the cost efficiency that digital currency offers, settling of transaction would be cheaper so long as they are ensured to conform to money laundering laws.<sup>158</sup>

#### **IV.C Privacy**

While services such as mobile money and electronic money can expand financial access, it is critical to establish a secure and reliable platform to protect data, privacy and funds. A survey conducted by the Nielsen Company with participants from 63 countries, show that 53% of the global respondents' primary concern to mobile banking is its security.<sup>159</sup> In the United States, electronic payments still remain around only 50% of all transactions. Cash remains king because of fears of identity theft.<sup>160</sup> Spending cash does not share personal information with credit card companies, software creators or banks while digital payments enable an audit trail.

Digital currency must be designed in a way that can best protect people's privacy while still paying attention to social security and order. Other than in special cases of authorized investigations, authentication without identification should never be possible. Personal information, obligation for prior consent, a limitation to the purpose for which data is collected, to whom data could be transferred restrictions and for how long it needed to be retained are all important factors to consider in creating legal and policy frameworks to ensure data privacy and security. There needs to be punishments and penalties for misuse of information or impersonation.

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<sup>158</sup> Xie and Zhao.

<sup>159</sup> Nielsen 10.

<sup>160</sup> Pickett.



With the amount and type of information a NIK shall be attached to, restrictions on sharing of information is crucial. Storing of biometrics and demographic data within a central repository requires the upmost technological and legal protection. For the purposes of this paper, security and/or technological failures and/or breach is outside the scope of the author and would therefore not be discussed.

The author acknowledges that different risks stem both physical and digital forms of money, but risk is unavoidable. It is possible to lift people's fingerprints from objects that they have touched. It is believed that high resolution cameras can be used to retrieve iris data. Virtual currency can be just as vulnerable as the paper kind. It is improbable for regulators to keep up with the boundless creativity of the criminal mind. Researchers from the Singapore Management University posited that "the risk of 'theft' through hacking is likely to [be] treated similarly to hacks of bank accounts".<sup>161</sup> The security for digital currency has to work. If it does not work, the principles cannot be held together to make it legal tender.

#### **IV.D Currency Reform**

A fundamental defect to the central bank digital currency would be if the currency lacks wide acceptance. In order to ensure that no party can refuse to accept a central bank digital currency, it is essential to introduce the currency through legislation. Inadequate legislation is an inherent issue that leads to legal uncertainty.

Cash is the most secure piece of paper in the world. The central bank governs this security with a simple regulation; only the central bank can create, destroy and title it a legal tender. The

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<sup>161</sup> Kelvin FK Low and Ernie Teo, 'Legal Risks of Owning Cryptocurrencies' in David LEE Kuo Chuen and Robert Deng (eds), *Handbook of Blockchain, Digital Finance, and Inclusion* (1st edn, 2017).

existence of a currency is only enabled by a law of the sovereign stating that the central bank is the sole issuer of money. This trust in the central bank is what makes it possible for the entire population to handle money, make transactions and trust in the paper.

Ideally, as Bank Indonesia has the authority to enact rules and regulations within its capacity as the central bank to be binding of the general public,<sup>162</sup> an enactment of a Bank Indonesia Regulation to introduce a central bank digital currency would be sufficient in the same sense should Bank Indonesia decide to introduce a IDR25k note or a IDR3k coin as legal tender. However, the Constitution of the Republic of Indonesia has referred to currency in its Article 23B stipulating that an act is to be enacted to further detail currency types and price.<sup>163</sup> The Currency Law of Indonesia was very specific and limiting in their definition of Rupiah, defining and therefore only acknowledging Rupiah in the form of paper and coins.<sup>164</sup> The authorization of a central bank digital currency in Indonesia would require an amendment of the existing currency law.

For a draft legislation or an amendment to an existing legislation to be enacted requires the joint approval of the House of Representative and the President.<sup>165</sup> The drafting and amendment of law in Indonesia is a highly political and lengthy process, as well as infamously prone to corruption from members of the House of Representatives. By law there is no regulated time frame within which an amendment or draft legislation must be approved and

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<sup>162</sup> Undang-Undang Republik Indonesia Nomor 6 Tahun 2009 Tentang Penetapan Peraturan Pemerintah Pengganti Undang-Undang Nomor 2 Tahun 2008 Tentang Perubahan Kedua Atas Undang-Undang Nomor 23 Tahun 1999 Tentang Bank Indonesia Menjadi Undang-Undang 2009 v. 1 (8).

<sup>163</sup> Perubahan Keempat Undang-Undang Dasar Negara Republik Indonesia Tahun 1945.

<sup>164</sup> Undang-Undang Republik Indonesia Nomor 7 Tahun 2011 tentang Mata Uang.

<sup>165</sup> Perubahan Pertama Undang-Undang Dasar Negara Republik Indonesia Tahun 1945 v. 20 (2); Perubahan Ketiga Undang-Undang Dasar Negara Republik Indonesia Tahun 1945 v. 11 (2).

enacted, it is partly due to this that many of Indonesia's statutes are no longer relevant. Indonesia has again and again been criticized to only draft or amend a statute due to its level of urgency. Without political pressures of the media and/or publicly known landmark decisions, the judicial process moves almost stagnant.

Joko Widodo is the nation's first President to come from outside the military and political elite. In choosing his cabinet of ministers, he has been very careful to heavily involve the KPK and the Financial Transaction Reports and Analysis Center (the country's anti money laundering agency) in his appointment process.<sup>166</sup> To by-pass the infamous issues of the House of Representatives, the President and Ministries of the active government turn to enacting Presidential Decrees and/or Ministerial Decrees to attend to matters considered urgent. This ensures up to date regulation that allows for development without political obstruction.

Although the required involvement of the House of Representative seems discouraging, the ministries and departments to which the Currency Law is attached are very influential. The push for a central bank digital currency would require the joint work and support of Bank Indonesia as the Central Bank, the Ministry of Finance, the Ministry of Communication and Information, and the Ministry of National Development. As the policy maker, think tank, coordinator and administrator of national development - the involvement of the Indonesian Ministry of National Development is critical. With enough publicity from such respected bodies plus the KPK, public support for a central bank digital currency to eradicate corruption and support the marginalized should be abundant.

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<sup>166</sup> Yenni Kwok, 'Indonesia's New President Appoints a Cabinet of Compromise' (*Time*, 2014) <<http://time.com/3540622/jokowi-cabinet-compromise-joko-widodo/>> accessed 10 July 2017.

Further amendments to the Currency Law that are essential includes changes to paragraph three which describes the marks of authentic paper and coin currencies to include the hallmarks and security of authentic digital currency. By applying the legal doctrine that is legal tender and currency, the central bank can solve the operability problem of a central bank digital currency. A digital message, wrapped in forms of security; a digital watermark on the digital instrument, a digital signature, a digital serial number – with the imprint of the central bank and the country, the central bank can deem a digital currency legal tender under the same governing principles as they do with paper and coin currency. Just as society knows how to distinguish counterfeited/fake money from real ones but only authorities hold the secret to really distinguish real and fakes, the same should be implemented for digital currency. The currency law should include the name of the digital currency as it will be referred to, basics of its ledger system and other technical characteristics. This amendment of law is also crucial to acknowledge the date of effectiveness of when central bank digital currency can be legally used to settle obligations and financial transaction.

## V. CONCLUSION

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*“In too many countries, people are deprived of their most basic needs and go to bed hungry every night because of corruption, while the powerful and corrupt enjoy lavish lifestyles with impunity.”<sup>167</sup>*

*– José Ugaz, Chair of Transparency International*

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In this paper, the author examined how the use of a central bank digital currency can combat corruption especially in the sector of social assistance programs for the poor. Indonesia has made great strides in improving its economic and social outcomes. Welfare is being addressed by expanding various social and financial programs. The government has introduced a range of reforms to improve the efficiency and effectiveness of its interventions for reducing poverty and improving inequality.

Distributing physical goods is very expensive. In 2013, the cost for Raskin is around USD2.15b, accounting for 0.25% of the GDP, consuming around 53% of the social assistance budget.<sup>168</sup> The Minister of Agriculture, Amran Sulaiman, has stated that going from distribution of goods to cash distribution can save the government IDR3.9b in 6 months’ worth

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<sup>167</sup> ‘Corruption Perceptions Index 2016’.

<sup>168</sup> Mabel Josune Gabriel Fernández, ‘Improving Food Access for Poor Households in Indonesia: Cash Transfers and the Raskin Program Reform’ (John F Kennedy School of Government, Harvard University 2015) 23 <[https://ash.harvard.edu/files/ash/files/mabel\\_gabriel\\_sypa\\_mar\\_15\\_2015\\_final.pdf](https://ash.harvard.edu/files/ash/files/mabel_gabriel_sypa_mar_15_2015_final.pdf)>.

of operational costs.<sup>169</sup> A cash transfer does not require costs of procurement, storing and physical distribution. It does however, open opportunities for corruption. Given the persistent and recurring problem of corruption and misuse of government assistance funds, it is appropriate to consider the costs and benefit to a more proactive strategy for phasing out the use of paper currency.

While advanced economies are looking to a central bank digital currency to crack down on tax avoidance, fight financial crime and slash operating costs, Indonesia would greatly benefit from the technology in its continuous fight against corruption – a key government priority.

In support of the President's directive for direct government to people benefits, the proposed concept for distribution government assistance via central bank digital currency can be conducted simply by the joining and enhancement of current initiatives. The existing national identification, KTP-el can be developed to also serve as a bank card which shall be attached to an account at the central bank which shall serve as an e-wallet to access a central bank digital currency.

Taking cash into the digital realm will work over any digital platform. The public have accepted mobile money; sending money for remittances, paying through PayPal and ApplePay. Electronic money is being transacted already, there should not be a difference in operating from the users and merchant point of view.

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<sup>169</sup> Danang Sugianto, 'Rastra Diganti Bantuan Pangan Non Tunai, Hemat Rp 3,9 T' (*Detik News*, 2017) <<https://finance.detik.com/berita-ekonomi-bisnis/3523625/rastra-diganti-bantuan-pangan-non-tunai-hemat-rp-39-t>> accessed 11 August 2017.

Comparable emerging markets such as India and Kenya has proven that agent network and technology platform have contributed to the significant expansion of the digital financial services to reach out to the unbanked.<sup>170</sup> As a recent article in the *European Financial Review* summed up, “Customers also need mobile phones with affordable data plans. Governments must also ensure that networks linking banks and telecommunications companies are interoperable; otherwise, widespread use of mobile phones for financial services and payments would be impossible. Universally accepted forms of identity are needed as well, so that service providers can control fraud and meet KYC regulations.”<sup>171</sup>

Mobile culture is rooted in the country. The top three provinces with the highest gross domestic regional product per capita in Indonesia have all reached 100% mobile penetration by 2013.<sup>172</sup> The top three provinces with the greatest population, West Java, East Java and Central Java has reached 98%, 91% and 91% mobile penetration respectively.<sup>173</sup> Law and regulation however must be in place to ensure the confidence of the market and society as well as to ensure an effective, efficient and secure payment system of the central bank digital currency.

This paper has examined that the underpinning of currency is trust. A fiat currency in a digital form will only work securely and stable if the people trust it. This kind of trust can only be provided by the central bank’s constitutional right to issue and destroy money. Inclusion of the central bank digital currency into the Currency Law is essential to ensure legal certainty.

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<sup>170</sup> ‘The Future Is Now Digital Financial Services in Indonesia’ (*Deloitte*, 2015) 9

<<https://www2.deloitte.com/content/dam/Deloitte/sg/Documents/financial-services/sea-fsi-digital-financial-services-in-Indonesia-noexp.pdf>> accessed 13 August 2017.

<sup>171</sup> Laura Tyson and Susan Lund, ‘The Promise of Digital Finance’ (*European Financial Review*, 2017)

<<http://www.europeanfinancialreview.com/?p=16598>> accessed 13 August 2017.

<sup>172</sup> ‘The Future Is Now Digital Financial Services in Indonesia’ 7.

<sup>173</sup> *ibid* 8.

Although a lengthy and heavily political process, it is a necessary evil as it is not possible to introduce the digital currency without amending the Currency Law.

In June of 2016 Mark Carney, Governor of the Bank of England and Chair of the Financial Stability Board and Monetary Policy Committee, announced that he believes the prospect of a central bank digital currency is still some way off, and that although cash may no longer be the king as it once was, will still endure for some time.<sup>174</sup> In Indonesia, the author does not expect to see a cashless society in their lifetime, and does not expect day to day routine transactions fully settled in digital currency. However digital currency may be a significant step to getting those less fortunate the full benefits they are entitled to, and politicians to think twice about using taxpayer funds for their own gain.

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<sup>174</sup> Mark Carney,.



## **BIBLIOGRAPHY**

### **Primary Sources**

#### **Primary Legislation**

Perubahan Kedua Undang-Undang Dasar Negara Republik Indonesia Tahun 1945  
Perubahan Keempat Undang-Undang Dasar Negara Republik Indonesia Tahun 1945  
Perubahan Ketiga Undang-Undang Dasar Negara Republik Indonesia Tahun 1945  
Perubahan Pertama Undang-Undang Dasar Negara Republik Indonesia Tahun 1945  
Undang-Undang Republic Indonesia Nomor 24 Tahun 2013 tentang Perubahan atas Undang-Undang Nomor 23 tahun 2006 tentang Administrasi Kependudukan 2013  
Undang-Undang Republik Indonesia Nomor 15 Tahun 2003 tentang Penetapan Peraturan Pemerintah Pengganti Undang-Undang Nomor 1 Tahun 2002 Tentang Pemberantasan Tindak Pidana Terorisme Menjadi Undang-Undang 2003  
Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional 2003  
Undang-Undang Republik Indonesia Nomor 30 Tahun 2002 tentang Komisi Pemberantasan Tindak Pidana Korupsi 2002  
Undang-Undang Republik Indonesia Nomor 6 Tahun 2009 Tentang Penetapan Peraturan Pemerintah Pengganti Undang-Undang Nomor 2 Tahun 2008 Tentang Perubahan Kedua Atas Undang-Undang Nomor 23 Tahun 1999 Tentang Bank Indonesia Menjadi Undang-Undang 2009  
Undang-Undang Republik Indonesia Nomor 7 Tahun 2011 tentang Mata Uang 2011

#### **Secondary Legislation**

Instruksi Menteri Dalam Negeri No. 541/3150/SJ tentang Pelaksanaan Pembagian Kartu Perlindungan Sosial (KPS) dan Penanganan Pengaduan Masyarakat 2013  
Instruksi Presiden Nomor 3 Tahun 2012 tentang Kebijakan Pengadaan Gabah/Beras dan Penyaluran Beras Oleh Pemerintah 2012  
Instruksi Presiden Republik Indonesia Nomor 7 Tahun 2014 tentang Pelaksanaan Program Simpanan Keluarga Sejahtera, Program Indonesia Pintar, dan Program Indonesia Sehat untuk Membangun Keluarga Produktif 2014  
Peraturan Bank Indonesia Nomor 14/2/PBI/2012 tentang Perubahan Atas Peraturan Bank

Indonesia Nomor 11/11/PBI/2009 tentang Penyelenggaraan Kegiatan Alat Pembayaran Dengan Menggunakan Kartu 2012

Peraturan Bank Indonesia Nomor 14/27/PBI/2012 tentang Penerapan Program Anti Pencucian Uang dan Pencegahan Pendanaan Terorisme Bagi Bank Umum 2012

Peraturan Bank Indonesia Nomor 16/8/PBI/2014 tentang Perubahan Atas Peraturan Bank Indonesia Nomor: 11/12/PBI/2009 tentang Uang Elektronik (Electronic Money) 2014

Peraturan Menteri Dalam Negeri Republik Indonesia Nomor 2 Tahun 2016 tentang Kartu Identitas Anak 2016

Peraturan Menteri Keuangan Nomor 237/PMK.02/2012 tentang Tatacara Penyediaan, Penghitungan, Pembayaran dan Pertanggungjawaban Subsidi Beras Bagi Masyarakat Berpendapatan Rendah 2012

Peraturan Menteri Komunikasi dan Informatika Republik Indonesia Nomor 12 tahun 2016 tentang Registrasi Pelanggan Jasa Telekomunikasi 2016

Peraturan Otoritas Jasa Keuangan Nomor 19/POJK.03/2014 tentang Layanan Keuangan Tanpa Kantor dalam Rangka Keuangan Inklusif 2014

Peraturan Pemerintah Republik Indonesia Nomor 48 Tahun 2008 tentang Pendanaan Pendidikan 2008

Peraturan Presiden Republik Indonesia Nomor 15 tahun 2010 tentang Percepatan Penanggulangan Kemiskinan 2010

### **Secondary Sources**

‘Aadhaar Generation Progress in India’ (*Unique Identification Authority of India*, 2017)  
 <<https://portal.uidai.gov.in/uidwebportal/dashboard.do>> accessed 13 July 2017

Adham M, ‘Digital Currency Indexes Are Coming’ (*Forbes*, 2017)  
 <<https://www.forbes.com/sites/forbesfinancecouncil/2017/06/26/digital-currency-indexes-are-coming/-3ba1cb9d48a3>> accessed 27 July 2017

Almazan M and Frydrych J, ‘Mobile Financial Services in Latin America & the Caribbean: State of Play, Commercial Models, and Regulatory Approaches’ (2015)  
 <[https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/09/2015\\_GSMA\\_Mobile-financial-services-in-Latin-America-the-Caribbean.pdf](https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/09/2015_GSMA_Mobile-financial-services-in-Latin-America-the-Caribbean.pdf)>

- Banerjee A and others, 'Tangible Information and Citizen Empowerment: Identification Cards and Food Subsidy Programs in Indonesia' (2016)  
<[https://www.povertyactionlab.org/sites/default/files/publications/553\\_Tangible information and citizen Empowerment\\_Ben Olken\\_July2016.pdf](https://www.povertyactionlab.org/sites/default/files/publications/553_Tangible%20information%20and%20citizen%20Empowerment_Ben%20Olken_July2016.pdf)>
- Barber L, 'The Case for Retiring Another "barbarous Relic"' (*The Financial Times*, 2015)  
<<https://www.ft.com/content/159b17ca-47f3-11e5-b3b2-1672f710807b?mhq5j=e1>>  
accessed 25 June 2017
- Basu M, 'Indonesia Misses National Smart ID Cards Deadline' (*Gov Insider Asia*, 2016)  
<<https://govinsider.asia/digital-gov/indonesia-misses-national-smart-id-cards-deadline/>> accessed 23 July 2017
- Blakemore E, 'Indonesia's Trying to Figure Out How Many Islands It Contains' (*The Smithsonian*, 2017) <<http://www.smithsonianmag.com/smart-news/indonesias-trying-figure-out-how-many-islands-it-contains-180963606/>> accessed 3 July 2017
- Bland B, 'Indonesia Starts Count to Solve the Riddle of the Islands' (*The Financial Times*, 2017) <<https://www.ft.com/content/3acc43f0-45f5-11e7-8519-9f94ee97d996>>  
accessed 3 July 2017
- Brennan Center for Justice at NYU School of Law, 'Citizens Without Proof: A Survey of Americans' Possession of Documentary Proof of Citizenship and Photo Identification' [2006] Voting Rights & Elections Series
- Broadbent B, Bank of England Deputy Governor for Monetary Policy, 'Central Banks and Digital Currencies' *Bank of England* (Speech at the London School of Economics, London, 2 March 2016)  
<<http://www.bankofengland.co.uk/publications/Documents/speeches/2016/speech886.pdf>> accessed 7 August 2017
- Buku MW and Meredith MW, 'Safaricom and M-Pesa In Kenya: Financial Inclusion and Financial Integrity' (2013) 8 Washington Journal of Law, Technology & Arts 375
- Caixin Weekly, 'Transcript of Governor Zhou Xiaochuan's Exclusive Interview' *People's Bank of China* (14 February 2016)  
<<http://www.pbc.gov.cn/english/130721/3017134/index.html>> accessed 3 August 2017
- Carney M, Governor of the Bank of England and Chair of the Financial Stability Board, 'The Promise of FinTech – Something New Under the Sun?' *Bank of England* (Speech at Deutsche Bundesbank G20 Conference, Wiesbaden, 25 January 2017)  
<<http://www.bankofengland.co.uk/publications/Documents/speeches/2017/speech95>>

- 6.pdf> accessed 23 February 2017
- Chaudhary A, 'A Billion Identities at Risk as India Goes Cashless' (*Bloomberg*, 2017)  
<<https://www.bloomberg.com/news/articles/2017-02-26/a-billion-india-identities-at-risk-as-modi-widens-digital-reach>> accessed 13 July 2017
- Cleland V, Bank of England Chief Cashier, 'Fintech: Opportunities for All?' *Bank of England* (Speech at the 2nd International Workshop P2P Financial Systems 2016, London, 8 September 2016)  
<<http://www.bankofengland.co.uk/publications/Documents/speeches/2016/speech919.pdf>> accessed 7 August 2017
- 'Corruption Perceptions Index 2016' (*Transparency International*, 2017)  
<[https://www.transparency.org/news/feature/corruption\\_perceptions\\_index\\_2016](https://www.transparency.org/news/feature/corruption_perceptions_index_2016)> accessed 11 August 2017
- 'Country ICT Mobile-Cellular Subscription Data' (*International Telecommunication Union*)  
<<http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>> accessed 6 August 2017
- Cull R, 'M-PESA: Mobile Payments, Improved Lives for Kenyans' (*The World Bank*, 2010)  
<<http://econ.worldbank.org/external/default/main?theSitePK=469382&contentMDK=22594763&menuPK=574960&pagePK=64165401&piPK=64165026>> accessed 25 July 2017
- 'Daftar Biaya Administrasi Bank Di Indonesia' (*Uang Teman*)  
<<https://uangteman.com/blog/berita-bank/daftar-biaya-administrasi-bank-di-indonesia/>> accessed 25 July 2017
- Das K and others, 'Unlocking Indonesia's Digital Opportunity' (2016)
- 'Data Penerima Manfaat Simpanan Keluarga Sejahtera, Kartu Indonesia Pintar, Dan Kartu Indonesia Sehat' (*Tim Nasional Percepatan Penanggulangan Kemiskinan*)  
<<http://www.tnp2k.go.id/id/program/program-membangun-keluarga-produktif/data-penerima-manfaat/>> accessed 8 August 2017
- Data Terpadu Program Penanganan Fakir Miskin, 'Jumlah Rumah Tangga Dan Individu, Menurut Kecamatan Dan Status Kesejahteraan Di Indonesia' (*Tim Nasional Percepatan Penanggulangan Kemiskinan*)  
<<http://bdt.tnp2k.go.id/index.php/data/sebaran-nasional>> accessed 11 August 2017
- Demirgüç-Kunt A and others, 'The Global Findex Database 2014: Measuring Financial Inclusion around the World' (2015) <<http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2015/04/15/0902>

- 24b082dca3aa/1\_0/Rendered/PDF/The0Global0Fin0ion0around0the0world.pdf#page=3%5Cnhttp://elibrary.worldbank.org/doi/book/10.1596/1813-9450-7255>
- ‘Distribusi Simpanan Bank Umum’ (*Lembaga Penjamin Simpanan*, 2016)  
<<http://www.lps.go.id/documents/830952/0/Statistik+%28Website%29-Februari+2016.pdf/192fd8ee-f019-48cc-8643-a6428f04af88>> accessed 23 July 2017
- ‘Dugaan Korupsi Dana Hibah Dan Bantuan Sosial Provinsi Banten Tahun 2011’ *Indonesia Corruption Watch* (Banten, 17 August 2011)  
<<http://www.antikorupsi.org/en/content/dugaan-korupsi-dana-hibah-dan-bantuan-sosial-provinsi-banten-tahun-2011>> accessed 9 August 2017
- Dyson B and Hodgson G, ‘Digital Cash: Why Central Banks Should Start Issuing Electronic Money’ <[http://positivemoney.org/wp-content/uploads/2016/01/Digital\\_Cash\\_WebPrintReady\\_20160113.pdf](http://positivemoney.org/wp-content/uploads/2016/01/Digital_Cash_WebPrintReady_20160113.pdf)>
- Eha BP, ‘Cheat Sheet: Radical Visions of Central Bank-Issued Digital Currencies’ (*American Banker*, 2017) <<https://www.americanbanker.com/news/cheat-sheet-radical-visions-of-central-bank-issued-digital-currencies>> accessed 13 August 2017
- FAO, ‘Paddy Rice Production Worldwide in 2014, by Country (in Million Metric Tons)’ (*Statista*) <<https://www.statista.com/statistics/255937/leading-rice-producers-worldwide/>> accessed 11 August 2017
- Fernández MJG, ‘Improving Food Access for Poor Households in Indonesia: Cash Transfers and the Raskin Program Reform’ (John F Kennedy School of Government, Harvard University 2015)  
<[https://ash.harvard.edu/files/ash/files/mabel\\_gabriel\\_sypa\\_mar\\_15\\_2015\\_final.pdf](https://ash.harvard.edu/files/ash/files/mabel_gabriel_sypa_mar_15_2015_final.pdf)>
- FID, DNA and ES, ‘Awal 2017 Diterapkan, Program Raskin Akan Diganti Voucher Pangan’ (*Sekretariat Kabinet Republik Indonesia*, 2016) <<http://setkab.go.id/awal-2017-diterapkan-program-raskin-akan-diganti-voucher-pangan/>> accessed 9 August 2017
- Freed D, ‘U.S. Banks Want to Cut Branches, but Customers Keep Coming’ (*Reuters*, 2016)  
<<http://www.reuters.com/article/us-usa-banks-branches-idUSKCN10X0D6>> accessed 21 July 2017
- Gilbert K, ‘Biggest Cities in Indonesia’ (2017) <<http://www.worldatlas.com/articles/biggest-cities-in-indonesia.html>> accessed 4 August 2017
- Goldstein J, ‘Arrest in U.S. Shuts Down a Black Market for Narcotics’ (*New York Times*, 2013) <<http://www.nytimes.com/2013/10/03/nyregion/operator-of-online-market-for-illegal-drugs-is-charged-fbi-says.html>> accessed 12 July 2017

- Greenberg A, 'Prosecutors Trace \$13.4m In Bitcoins From The Silk Road To Ulbricht's Laptop' (*Wired*, 2015) <<https://www.wired.com/2015/01/prosecutors-trace-13-4-million-bitcoins-silk-road-ulbrichts-laptop/>> accessed 24 June 2017
- Grewal J and others, 'Report on Understanding Aadhaar and Its New Challenges' (*The Centre for Internet & Society*, 2016) <<https://cis-india.org/internet-governance/blog/report-on-understanding-aadhaar-and-its-new-challenges>> accessed 22 July 2017
- 'History & Milestones' (*Telkomsel*) <<http://www.telkomsel.com/history--milestones>> accessed 22 July 2017
- Ihsanuddin, 'Hanya Pemegang Kartu Keluarga Sejahtera Yang Dapat Subsidi Elpiji 3 Kg' (*Kompas*, 2017) <<http://nasional.kompas.com/read/2017/07/10/13141061/hanya.pemegang.kartu.keluarga.sejahtera.yang.dapat.subsidi.elpiji.3.kg>> accessed 8 August 2017
- , 'Jokowi: Manfaat Kartu Indonesia Pintar Terus Dirasakan Pelajar' (*Kompas*, 2017) <<http://nasional.kompas.com/read/2017/01/29/17194701/jokowi.manfaat.kartu.indonesia.pintar.terus.dirasakan.pelajar>> accessed 8 August 2017
- 'India's Cash Crisis Explained' (*BBC*, 2016) <<http://www.bbc.com/news/world-asia-india-37983834>> accessed 22 July 2017
- 'Jumlah Rumah Tangga Menurut Kabupaten/Kota Di Provinsi Banten 2005-2015' (*Badan Pusat Statistik Provinsi Banten*) <<http://banten.bps.go.id/linkTableDinamis/view/id/42>> accessed 10 August 2017
- Khoirunisa R, 'Cara Membuat Kartu KIS Untuk Warga Miskin Dan Kurang Mampu' (*Badan Penyelenggara Jaminan Sosial*, 2017) <<http://www.pasienbpjs.com/2017/02/kis.html>> accessed 8 August 2017
- Kwok Y, 'Indonesia's New President Appoints a Cabinet of Compromise' (*Time*, 2014) <<http://time.com/3540622/jokowi-cabinet-compromise-joko-widodo/>> accessed 10 July 2017
- Lipman V, 'The World's Most Active Twitter City? You Won't Guess It' (*Forbes*, 2012) <<https://www.forbes.com/sites/victorlipman/2012/12/30/the-worlds-most-active-twitter-city-you-wont-guess-it/#38ee8bf655c6>> accessed 10 August 2017
- Low KF and Teo E, 'Legal Risks of Owning Cryptocurrencies' in David LEE Kuo Chuen and Robert Deng (eds), *Handbook of Blockchain, Digital Finance, and Inclusion* (1st edn, 2017)
- Lumanauw N and Paat Y, 'Jokowi Launches Indonesia Health Card and Smart Card'

- (*Jakarta Globe*, 2014) <<http://jakartaglobe.id/news/jokowi-launches-indonesia-health-card-smart-card/>> accessed 18 July 2017
- Martin W, 'One of the World's Top Central Bankers Warns Digital Currencies like Bitcoin Could Worsen Future Financial Crises' (*Business Insider*, 2017) <<http://uk.businessinsider.com/jens-weidmann-warns-on-risks-of-bitcoin-2017-6?r=US&IR=T>> accessed 13 August 2017
- Martinez J and others, 'Rule of Law Index 2016' (2016)
- Mesakh E, 'Biaya Tiga Persen Itu Sering Gagalkan Transaksi Non Tunai' *Kompasiana* (17 June 2015) <[http://www.kompasiana.com/eddymesakh/biaya-tiga-persen-itu-sering-gagalkan-transaksi-non-tunai\\_557289e22523bde53e12ae8e](http://www.kompasiana.com/eddymesakh/biaya-tiga-persen-itu-sering-gagalkan-transaksi-non-tunai_557289e22523bde53e12ae8e)>
- Mills D and others, 'Distributed Ledger Technology in Payments, Clearing and Settlement' (2016) 2016–95 <<https://doi.org/10.17016/FEDS.2016.095>>
- Mori M and Zimmer T, *Mobilizing Banking for Indonesia's Poor* (Jamilah Welch ed, The Fletcher School of Law and Diplomacy, Tufts University 2014)
- Murlidharan S, 'Aadhaar-PAN Linking: Govt Proposes Changes to Ease Process but Renders It Futile; Here's Why' (*First Post*, 2017) <<http://www.firstpost.com/business/aadhaar-pan-linking-govt-proposes-changes-to-ease-process-but-renders-it-futile-heres-why-3376432.html>> accessed 31 July 2017
- Na Z, 'Menggugat Korupsi Bantuan Sekolah' (*Indonesia Corruption Watch*) <<http://www.antikorupsi.org/id/content/menggugat-korupsi-bantuan-sekolah>> accessed 9 August 2017
- NDR and FJP, 'Jika Tak Dikorupsi, Berapa APBN Yang Bisa Dipakai Untuk Perangi Kemiskinan?' (*Detik News*, 2014) <<http://news.detik.com/berita/2572115/jika-tak-dikorupsi-berapa-apbn-yang-bisa-dipakai-untuk-perangi-kemiskinan>> accessed 13 August 2017
- Nielsen, 'Mobile Money: From Shopping to Banking to Payments, How Mobile Is Transforming Commerce around the World' (2016)
- Nugroho SA, 'Pertumbuhan Simpanan & Jumlah Rekening Yang Dijamin Pada Bank Umum Bulan Desember 2016' *Lembaga Penjamin Simpanan* (Jakarta, 8 February 2017) <[http://lps.go.id/siaran-pers/-/asset\\_publisher/1T0a/content/siaran-pers-pertumbuhan-simpanan-jumlah-rekening-yang-dijamin-pada-bank-umum-bulan-desember-2016](http://lps.go.id/siaran-pers/-/asset_publisher/1T0a/content/siaran-pers-pertumbuhan-simpanan-jumlah-rekening-yang-dijamin-pada-bank-umum-bulan-desember-2016)> accessed 23 July 2017
- Olken BA, 'Corruption and the Costs of Redistribution: Micro Evidence from Indonesia' (2006) 90 *Journal of Public Economics* 853

- Olken BA and others, 'Sharing the Wealth: How Villages Decide to Distribute OPK Rice' (2001) <<http://www.smeru.or.id/sites/default/files/publication/sharewealth.pdf>>
- Otoritas Jasa Keuangan, 'Data Perkembangan Program Laku Pandai Posisi Maret 2017' (*Otoritas Jasa Keuangan*, 2017) <<http://www.ojk.go.id/id/Pages/Laku-Pandai.aspx>> accessed 25 July 2017
- Pandey V and Thapar A, "'No Customers": Indians React to Currency Ban' (*BBC*, 2016) <<http://www.bbc.com/news/world-asia-india-37921672>> accessed 22 July 2017
- Pasopati G, 'Nilai Aset Bank Mandiri Tembus Rp1.000 Triliun' (*CNN*, 2017) <<https://www.cnnindonesia.com/ekonomi/20170126103343-78-189144/nilai-aset-bank-mandiri-tembus-rp1000-triliun/>> accessed 22 July 2017
- Pickett M, 'One Swede Will Kill Cash Forever—Unless His Foe Saves It From Extinction' (*Wired*, 2016) <<https://www.wired.com/2016/05/sweden-cashless-economy/>> accessed 12 July 2017
- 'Politik Kartu, Politik Kesejahteraan' (*Kantor Staf Presiden*, 2016) <<http://presidenri.go.id/berita-aktual/politik-kartu-politik-kesejahteraan.html>> accessed 11 August 2017
- 'Poverty & Equity' (*The World Bank*) <<http://povertydata.worldbank.org/poverty/country/IDN>> accessed 25 July 2017
- Prasetyo W, 'Mendagri: 70 Persen Warga Indonesia Belum Punya Akta Kelahiran' (*Detik News*, 2016) <<http://news.detik.com/berita/3194289/mendagri-70-persen-warga-indonesia-belum-punya-akta-kelahiran>> accessed 31 July 2017
- 'Program Bantuan Siswa Miskin (BSM)' (*Tim Nasional Percepatan Penanggulangan Kemiskinan*) <<http://www.tnp2k.go.id/id/tanya-jawab/klaster-i/program-bantuan-siswa-miskin-bsm/>> accessed 13 August 2017
- 'Program Penanggulangan Kemiskinan Di Indonesia' (*Tim Nasional Percepatan Penanggulangan Kemiskinan*) <<http://www.tnp2k.go.id/id/program/sekilas/>> accessed 8 August 2017
- PT Bank Central Asia Tbk. Hasil Kinerja Semester I 2016: Mempertahankan Soliditas* (Bank Central Asia 2016) <<https://www.bca.co.id/id/Tentang-BCA/Korporasi/Siaran-Pers/2016/07/21/04/17/hasil-kinerja-semester-1-2016->>>
- Rai S, 'India's Cash Ban Is the Best Thing to Happen to Digital Payments' (*Bloomberg*, 2016) <<https://www.bloomberg.com/news/articles/2016-11-23/cash-ban-the-best-thing-to-happen-to-indian-digital-payments>> accessed 25 July 2017
- 'Raskin - Rice Subsidy for the Poor' (*International Labour Organization*)



- <[http://www.ilo.org/dyn/ilossi/ssimain.viewScheme?p\\_lang=en&p\\_geoaid=360&p\\_scheme\\_id=3153](http://www.ilo.org/dyn/ilossi/ssimain.viewScheme?p_lang=en&p_geoaid=360&p_scheme_id=3153)> accessed 11 August 2017
- ‘Rincian Dana Desa’ (*Kementerian Keuangan Republik Indonesia*, 2016)  
<[https://www.kemenkeu.go.id/sites/default/files/Rincian Dana Desa APBN 2017.pdf](https://www.kemenkeu.go.id/sites/default/files/Rincian%20Dana%20Desa%20APBN%202017.pdf)> accessed 24 July 2017
- Sahay R and others, ‘Financial Inclusion: Can It Meet Multiple Macroeconomic Goals?’ (2015)
- Savitri AW, ‘Ahok Pasang Mata-Mata: KJP Banyak Disalahgunakan Orangtua!’ (*Detik News*, 2015) <<http://news.detik.com/berita/2978731/ahok-pasang-mata-mata-kjp-banyak-disalahgunakan-orangtua>> accessed 10 August 2017
- Servon LJ, ‘The High Cost, For the Poor, of Using a Bank’ (*The New Yorker*, 2013)  
<<http://www.newyorker.com/business/currency/the-high-cost-for-the-poor-of-using-a-bank>> accessed 21 July 2017
- Setuningsih N, ‘KPK, Jokowi Most Trusted Graft-Busters, Survey Shows’ (*Jakarta Globe*, 2017) <<http://jakartaglobe.id/news/kpk-jokowi-trusted-graft-busters-survey-shows/>> accessed 15 August 2017
- Shepard W, ‘After Day 50: The Results From India’s Demonetization Campaign Are In’ (*Forbes*, 2017) <<https://www.forbes.com/sites/wadeshepard/2017/01/03/after-day-50-the-results-from-indias-demonetization-campaign-are-in/> - 4c2436be50d1> accessed 14 July 2017
- Shinde J, ‘How Does Aadhaar Compare with Other ID Systems & How to Secure Its Leaky Database’ (*India Times*, 2017) <<http://www.indiatimes.com/technology/news/how-does-aadhaar-compare-with-other-id-systems-in-the-world-how-to-secure-its-leaky-database-276972.html>> accessed 4 August 2017
- Shrangi V, ‘Vendors Get Street Smart, Go Digital’ (*Daily News & Analysis*, 2016)  
<<http://www.dnaindia.com/india/report-vendors-get-street-smart-go-digital-2274852>> accessed 23 July 2017
- Siregar DI, ‘Pembuatan Rekening Baru Perbankan Harus Pakai E-KTP’ (*Metro TV News*, 2015) <<http://ekonomi.metrotvnews.com/read/2015/02/23/361914/pembuatan-rekening-baru-perbankan-harus-pakai-e-ktp>> accessed 14 August 2017
- Skinner C, ‘India’s Billion Digital Identities’ (*The Finanser*, 2016)  
<<https://thefinanser.com/2016/09/indias-billion-people-digital-identities.html/>> accessed 13 July 2017
- ‘SMS Banking’ (*Telkomsel*) <<http://www.telkomsel.com/services/banking/417-SMS->

- Banking.html> accessed 22 July 2017
- Soeriaatmadja W, 'Fintech Firms See Huge Potential in E-Commerce in Indonesia' (*The Straits Times*, 2017) <<http://www.straitstimes.com/asia/east-asia/fintech-firms-see-huge-potential-in-e-commerce-in-indonesia>> accessed 6 August 2017
- Standage T, 'Why Does Kenya Lead the World in Mobile Money?' (*The Economist*, 2013) <<https://www.economist.com/blogs/economist-explains/2013/05/economist-explains-18>> accessed 23 July 2017
- Sugianto D, 'Rastra Diganti Bantuan Pangan Non Tunai, Hemat Rp 3,9 T' (*Detik News*, 2017) <<https://finance.detik.com/berita-ekonomi-bisnis/3523625/rastra-diganti-bantuan-pangan-non-tunai-hemat-rp-39-t>> accessed 11 August 2017
- 'Supreme Court to Government: Aadhaar Card Can't Be Made Mandatory for Welfare Schemes' (*Business Today India*, 2017) <<http://www.businesstoday.in/current/economy-politics/supreme-court-to-government-aadhaar-card-can-t-be-made-necessary-for-welfare-schemes/story/248756.html>> accessed 4 August 2017
- Taylor E, 'The Most Geo-Tagged City on Instagram Stories May Surprise You' (*Vogue*, 2017) <<http://www.vogue.com/article/jakarta-indonesia-instagram-stories>> accessed 10 August 2017
- 'The Future Is Now Digital Financial Services in Indonesia' (*Deloitte*, 2015) <<https://www2.deloitte.com/content/dam/Deloitte/sg/Documents/financial-services/sea-fsi-digital-financial-services-in-Indonesia-noexp.pdf>> accessed 13 August 2017
- 'The World Bank in Indonesia' (*The World Bank*) <<http://www.worldbank.org/en/country/indonesia/overview>> accessed 8 August 2017
- 'The World Factbook' (*Central Intelligence Agency*, 2016) <<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2119rank.html>> accessed 19 July 2017
- 'TI Corruption Perception Index 1996' (*Transparency International*) <[https://www.transparency.org/files/content/tool/1996\\_CPI\\_EN.pdf](https://www.transparency.org/files/content/tool/1996_CPI_EN.pdf)> accessed 11 August 2017
- 'Timeline: An Abridged History of Bitcoin' (*The New York Times*) <<http://www.nytimes.com/interactive/technology/bitcoin-timeline.html>> accessed 25 July 2017

- Tyson L and Lund S, 'The Promise of Digital Finance' (*European Financial Review*, 2017)  
<<http://www.europeanfinancialreview.com/?p=16598>> accessed 13 August 2017
- 'U.S. and World Population Clock' (*United States Census Bureau*)  
<<https://www.census.gov/popclock/world>> accessed 17 July 2017
- 'UNdata Country Profile Indonesia' (*United Nations Statistic Division*)  
<<http://data.un.org/CountryProfile.aspx?crName=indonesia>> accessed 3 July 2017
- Varshney A, 'Why Bitcoin Could Thrive in a Country like India' (*Business Insider*, 2017)  
<<http://uk.businessinsider.com/why-bitcoin-could-thrive-in-a-country-like-india-2017-6?r=US&IR=T>> accessed 14 July 2017
- Vujanovic P and Ollivaud P, *OECD Economic Surveys: Indonesia* (OECD 2016)  
<<https://www.oecd.org/eco/surveys/indonesia-2016-OECD-economic-survey-overview-english.pdf>> accessed 9 August 2017
- Wallace T, 'Second Digital-Only Bank Is Handed a UK Licence' (*The Telegraph*, 2015)  
<<http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/12025851/Second-digital-only-bank-is-handed-a-UK-licence.html>> accessed 25 July 2017
- , 'Mobile-Only Bank Starling Wins Its Licence' (*The Telegraph*, 2016)  
<<http://www.telegraph.co.uk/business/2016/07/14/mobile-only-bank-starling-wins-its-licence/>> accessed 25 July 2017
- 'We've Launched "bank on an iPad" Sales-and-Service Tool in Asia, Africa and the Middle East' (*Standard Chartered Bank*, 2016) <<https://www.sc.com/en/news-and-media/news/global/2016-03-08-standard-chartered-launches-retail-workbench-bank-on-an-ipad-service-tool.html>> accessed 24 July 2017
- Xie H and Zhao Y, 'Central Banks Should Lead on Digital Currency, PBOC's Fan Says' (*Bloomberg*, 2016) <<https://www.bloomberg.com/news/articles/2016-09-02/central-banks-should-lead-on-digital-currency-pboc-s-fan-says>> accessed 12 July 2017
- Yuntho E, 'Korupsi Dana Bansos' (*Indonesia Corruption Watch*, 2011)  
<<http://www.antikorupsi.org/en/content/korupsi-dana-bansos>> accessed 9 August 2017