The monetary mechanism of stateless Somalia

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Abstract:
A peculiar monetary institution emerged during the period of interregnum in Somalia from January 1991 to August 2012. Without a functioning government to restrict the supply of notes in circulation, Somalis found it profitable to contract with foreign printers and import forgeries. The exchange value of the largest denomination Somali shillings note fell from US $0.30 in 1991 to US $0.03 in 2008. However, the purchasing power eventually stabilized at the cost of producing additional notes.

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Following Kydland and Prescott (1977) and Barro and Gordon (1983), much work has focused on potential institutional arrangements to govern the supply of money. Some consider the importance of having a central bank independent of the fiscal authority.[1] Others discuss the merits of appointing a conservative central banker.[2] Still others entertain the idea of performance-based contracts for central bankers.[3] Despite varied proposals, all aim at reducing the scope of potentially disruptive monetary shocks.

A de facto institutional arrangement to govern the money supply emerged naturally in Somalia during the period of interregnum from January 1991 to August 2012. Without a functioning government to restrict the supply of notes in circulation, Somalis found it profitable to contract with foreign printers and import forgeries.[4] Suppliers of forgeries were constrained since Somali's market actorss would accept only the denominations issued prior to 1991; larger denomination notes could not be issued profitably. Although the exchange value of the largest denomination Somali shillings note fell from US $0.30 in 1991 to US $0.03 in 2008, purchasing power eventually stabilized at the cost of producing additional notes.

In Section 1, I provide a brief review of the historical episode. I make explicit the mechanism by which the supply of money was governed in Section 2 and consider its effectiveness with the actual experience of Somalia in Section 3. I conclude that, following the initial adjustment period, the stateless Somali monetary system performed reasonably well in terms of maintaining a stable purchasing power.

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[1] See, for example, Alesina and Summers (1993), McCallum (1995), and Fischer (1995).
[2] The idea is usually associated with Rogoff (1985) and has spurred much research. More recently, Guzzo and Velasco (1999) find cases wherein a populist central banker might be desirable. See also Jerger (2002).
[3] See Walsh (1995) and the large subsequent literature.
[4] I refrain from using the term "counterfeit," which denotes the *illegal* imitation of a currency. Lack of an obvious legal authority in Somalia over the period considered makes it unclear whether issuing forged notes is illegal.

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The experience of Somalia considered herein provides yet another example in the growing literature on the emergence and relative efficiency of self-governing institutions (e.g., Leeson 2007c, 2008; Powell and Stringham 2009; Stringham and Zywicki 2011; Stringham 2014, 2015). Thus far, contributions to the literature have focused primarily on legal institutions. Many studies, for example, have shown how groups operating outside of or otherwise unable to access formal state institutions might mitigate conflicts, enforce contracts, and secure social order (Anderson and Hill 2004; Benson 1990; Clay 1997; Kostelnik and Skarbek 2013; Koyama 2014; Leeson 2007a, 2009, 2013; Skarbek 2010, 2011, 2012). Indeed, those considering the experience of Somalia more generally have concluded that, on many margins, it has fared better without a state (Leeson 2007b; Powell et al. 2008). I contribute to this literature by extending the analysis to monetary institutions.[5] Consistent with the studies cited above, the monetary experience of Somalia affirms that the search for rules need not imply a search for rulers.

1. Private production of shillings in stateless Somalia

On January 26, 1991, the government of Somalia lost power and the country entered a period of statelessness.[6] Regional and transitional governments sprung up—with varying degrees of success—as more than 30 rival clans vied for power. No central authority ruled the national territory for more than two decades. Then, on August 1, 2012, a new constitution was adopted. The Federal Parliament of Somalia was inaugurated on August 20, 2012, marking the first permanent central government in Somalia since the

[5] Previous works have considered self-governing monetary institutions (e.g., Selgin 1988, 1994; White 1984). However, these works typically assume that a government exists to secure property rights and enforce contracts, thereby enabling the monetary institution to function tolerably well.
[6] Marshall and Jaggers (2010) classify Somalia as "interregnum" over the period.

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fall of the Barre regime in 1991. During this period—and even to this day—Somalis continued to accept the Somali shilling notes issued under the old regime. They also accepted unofficial duplicates, which were nearly identical to the original notes.

Mubarak (1997, 2003), Abdurahman (2005), Symes (2006), and Luther and White (2011) consider the continued acceptance of Somali shillings during the period of interregnum. Luther and White (2011) suggest that a long period of acceptance anchored beliefs such that, when sovereign support was removed, individuals could reasonably expect others to continue accepting the notes. In contrast, Mubarak (2003, p. 317) argues there was "a general public belief that […] banknotes must eventually be upheld and honoured when effective national government comes to power." Although some disagreement concerning the motivation for continued acceptance exists, there is no disputing that the Somali shilling continued to circulate at a positive value.[7]

Believing that Somali shillings would continue to circulate—and without a functioning government to stop them from doing so—some Somalis found it profitable to order and issue high-quality forgeries of the pre-1991 notes. Note that, as long as the purchasing power of a note exceeds its cost of production, forgers have an incentive to increase the supply of notes in circulation. One should therefore expect private production of paper notes to cease only after all the gains from seigniorage have been exploited. A 1000 Somali shillings note, which had exchanged for roughly US $0.30 in 1991, could be produced for US $0.028, or approximately three cents (Symes 2006, p.

[7] Both views are consistent with standard search-theoretic random matching models of money (e.g., Kiyotaki and Wright 1989, 1991, 1993; Li and Wright 1998; Aiyagari and Wallace 1997).

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28).[8] By 2008, the market was flooded with forgeries—and the exchange value of the 1000 shillings note had stabilized at approximately three US pennies.

It is widely believed that General Mohammed Farah Aideed was the first to contract successfully for forged notes to be produced and shipped to Somalia.[9] General Aideed played an instrumental role in the fall of the Barre regime and controlled a major faction in post-1991 Somalia. As numismatist Peter Symes (2006, p. 26) reports, Aideed arranged for a Malaysian businessman to broker a deal with the British American Bank Note Company in Ottawa, Canada in 1996. Aideed died in August of the same year and the first shipment of notes, totaling 35 billion shillings, was delivered to his son, Hussein Aideed. When Hussein Aideed was unable to cover the cost of printing the additional notes ordered, businessmen from the Aideed clan stepped in. Three subsequent shipments amounting to 125 billion shillings were delivered to the businessmen between 1996 and 2000 (Abdurahman 2005, p. 59).

A quick back-of-the-envelope calculation illustrates just how profitable forging pre-1991 notes might have been. Assuming that only 1000 denomination notes were printed and seigniorage per note was just US $0.01, the Aideed clan raked in roughly US $1.65 million from the transaction. Although he does not account for transportation or storage costs, Symes (2006, p. 28) claims that potential seigniorage per note fluctuated between US $0.0136 and US $0.1720 from 1991 to 2001. If, as Symes suggests, seigniorage per note had been significantly higher than assumed above, the total would need to be adjusted upward. On the other hand, the Aideed clan likely printed 500

[8] The 1000 shillings note was the largest denomination in circulation at the time the state collapsed. Other notes in circulation included those with nominal values of 5, 10, 20, 50, 100, and 500 Somali shillings.
[9] Ali Mahdi Muhammad issued 80 billion Somali shillings in 1991. Although one might argue that he did not have the legal authority to issue notes, the notes in question were not forged. They had been ordered by the Barre regime in December 1990.

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denomination notes as well, so the previous calculation may overestimate the amount of seigniorage earned.[10] In either case it seems fair to conclude that issuing forged currency was a very profitable venture.[11]

The Puntland Administration, a regional government of northwest Somalia established by the Somali Salvation Democratic Front in August 1998, also arranged for the printing of forged 1000 shillings notes. According to Abduraham (2005, p. 60), then-president Colonel Abdullah Yusuf and Ahmed Mohamed Goala, the former head of the Puntland Bank, contracted with the Indonesian printing company Peter Pura Baru Kudus in 1999. Ultimately, 86 billion Somali shillings were printed and imported by the Puntland Administration.

Hassan Mohamed Nur Shatigadud, former colonel in Siad Barre's National Security Service and leader of the Rahaweyn Resistance Army operating in the Bay and Bakool regions of southwest Somalia, is rumored to have visited Italy in 2000 with the goal of ordering 500 and 1000 denomination notes (Symes 2006, p. 27). Abduraham (2005, p. 60) reports that Colonel Shatigadud received 10 to 15 billion Somali shillings from the Puntland Administration in 2000. Whether he was able to contract successfully with an Italian printer and arrange for notes to be shipped to Somalia has not been confirmed.

Under the auspices of the Transitional National Government (TNG), businessmen including Mohamed Deylaf, Hussein Goley, and Khadija Ossoble Ali are believed to have imported some 90 billion Somali shillings between 2001 and 2002 (Abduraham

[10] See: Mubarak (2003, p. 318, fn. 11) and Symes (2006, p. 26).
[11] A settlement payment of 2.5 billion Somali shillings (US $250,000 in 1999) to Hussein Aideed on the condition that he not block efforts to import the remaining balance of forged pre-1991 notes provides additional evidence as to the profitability of the transaction (Abdurahman 2005, p. 59).

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2005, p. 60). Fearing that the businessmen would dump the money on the market all at once, the TNG purchased roughly two-thirds of the notes (Symes 2006, p. 27). Although the TNG condemned the importation of forged notes officially, it did little to thwart the efforts of importers and was widely believed to be a major beneficiary of the enterprise. Independent businessmen in Mogadishu imported another 60 billion Somali shillings in 2001 by (Abduraham 2005, p. 72).

The amount of forged pre-1991 notes issued between 1991 and 2001 are presented in Table 1. In total, an estimated 401 billion in unofficial Somali shilling notes have been printed.

Table 1. Amount of forged pre-1991 notes issued between 1991 and 2001, by issuer

Issuer	Year	Amount Issued (Billions Somali Shillings)	Denominations
Hussein Aideed	1996	35	500, 1000
Businessmen from Aideed Clan	1999, 2000	130	500, 1000
Puntland Administration	1999	86	1000
Businessmen with Transitional Government	2001, 2002	90	1000
Colonel Shatigadud	2000	Unknown	Unknown
Independent Businessmen	2001	60	1000

Although forged notes were similar enough to the official pre-1991 notes to gain circulation, subtle differences make identification possible. Of the five known variants of forged pre-1991 notes, four are dated 1996. They also include Central Bank of Somalia Governor Ali Abdi Amalow as signatory. Amalow, who was not appointed *Guddoomiyaha* until October 1990, never had the opportunity to sign official notes (Symes 2006, p. 26).

The fifth variant of forged notes is dated 1990 and includes Dr. Omar Ahmed Omar as signatory—both features consistent with official notes. However, these notes

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differ in another key respect. Official pre-1991 notes had been produced using an intaglio printing process. In contrast, the forged notes printed by Peter Pura Baru Kudus and issued by the Puntland Administration were produced using a lithographic printing process; and, perhaps as a result, some of the colors on the green, orange, and purple notes are reversed.[12] Distinguishing features for all five variants are presented in Table 2.

Table 2 Identifying features of forged pre-1991 notes

Notes	Issuer	Printer	Country	Distinguishing Features				
				Signatories	*Date*	*Serial Font*	*Series*	*Additional Details*
500	Aideed	British American Banknote Company	Canada	Ali Abdi Amalow; Hassan Elmi Barkhadle	1996	A	A	
1000a	Aideed	British American Banknote Company	Canada	Ali Abdi Amalow; Hassan Elmi Barkhadle	1996	A	D	
1000b	Puntland	Pt. Pura Baru Kudus	Indonesia	Dr. Omar Ahmed Omar; Hassan Elmi Barkhadle	1990	B	A	Lithograthic printing; 1000 printed in purple
1000c	Unknown	Unknown	Unknown	Ali Abdi Amalow; Hassan Elmi Barkhadle	1996	C	M	Serial number has six numerals
1000d	Unknown	Unknown	Unknown	Ali Abdi Amalow; Hassan Elmi Barkhadle	1996	C	F, G, N, M	Serial number has seven numerals

Before articulating the mechanism governing the supply of money in Section 2, three characteristics of the Somali system are worth noting. First, since no checkable deposits were available, the notes described above comprise the total stock of narrow money. As Abduraham (2005, p. 56) writes, the banking system (which was entirely state-run) ceased to exist in 1991:

> *[T]he banks were looted, their buildings vandalized, and their records destroyed. In particular, the doors of the Central Bank were blown apart, its safes were blasted, and all cash and other valuables were looted.*

Overnight, Mubarak (2003, p. 313) reports, nominal money balances shrunk by 54%. Following the monetary contraction, some Somalis, particularly in rural areas, were forced to resort to barter (ibid., p. 315).

[12] The difference is quite subtle. However, one can spot this variant by looking at the purple centered number 1000, which is green on original and all other known forged variants (Symes 2006, p. 27).

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Second, and consistent with both views of continued acceptance discussed above, Somalis typically would not accept denominations of forged shillings that had not been issued prior to 1991. Somalis presumably were aware of the note denominations circulating before the state collapsed. Historical acceptance, which Luther and White (2011) claim is the primary reason Somali shillings continued to circulate, provides no basis for Somalis to accept new denominations. Nor is there reason to accept new denominations if continued circulation depends on the expectation that a future sovereign power will honor the notes of the previous regime, as Mubarak (2003) suggests. As a result, forgers were limited in the notes they could profitably introduce.

An exception serves to prove the rule. In 1990, as the purchasing power of the Somali shilling plummeted, the Central Bank of Somalia ordered 20 and 50 denomination "New Somali shillings" and intended to introduce the notes at a fixed exchange of 1:100 with the older currency (Symes 2006, p. 25).[13] However, the new notes did not reach Somalia before the state collapsed. In November 1991, 24 billion New Somali shillings were delivered to Ali Mahdi Muhammad and soon found their way into the economy. In July 2001, Mogadishu businessmen imported 90 billion forged New Somali shillings notes from Malaysia (Abduraham 2005, p. 62). Although both official and unofficial New Somali shillings have gained acceptance, their circulation is limited to a small area in North Mogadishu: the area controlled by Ali Mahdi Muhammad. Furthermore, since New Somali shillings are distinguishable from Somali shillings, their exchange value floats against older shillings notes.[14] That these notes have failed to gain widespread

[13] Mubarak (2003) and Abduraham (2005) refer to these notes as Na' and N' shillings, respectively.
[14] Symes (2006, p. 25) discusses similar design elements found in the old and new shillings notes.

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acceptance throughout Somalia is consistent with the view that, in general, Somalis refuse to accept denominations of forged shillings that did not circulate prior to 1991.

Finally, to be clear, it should be mentioned that lower denomination Somali shillings notes no longer circulate. The four smallest denominations—5, 10, 20, and 50—were practically worthless when the state collapsed.[15] Indeed, after the Central Bank was looted in 1991, "lower denomination banknotes littered the streets outside the Central Bank for days" because they were not even worth picking up (Abduraham 2005, p. 56). Furthermore, forgers have little incentive to produce denominations less than 1000.[16] Aside from the few 100 and 500 notes that have not yet worn beyond use, only the 1000 Somali shillings note survives.

2. The monetary mechanism

The case of post-1991 Somalia is interesting in that no central authority existed to prevent entry into the production of paper money. Milton Friedman (1960, p. 7) was particularly prescient in considering how such a monetary system might work:

> *So long as the fiduciary currency has a value greater than its cost of production—which under conditions can be compressed close to the cost of the paper on which it is printed—any individual issuer has an incentive to issue additional amounts. A fiduciary currency would thus probably tend through increased issue to degenerate into a commodity currency—into a literal paper standard—there being no stable equilibrium price level short of that at which the money value of currency is no greater than that of the paper it contains.*

In other words, purchasing power falls until it equals the cost of producing an additional note, at which point the value of the notes in circulation stabilizes.

[15] At the end of 1990, 50 shillings exchanged for roughly US $0.01.
[16] Mubarak (2003, pp. 321-322) discusses the problem at length, including exchange difficulties arising from the one-note system. See also Luther (2012).

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At least two exceptional conditions could impede this result. First, if the stable equilibrium purchasing power is significantly lower than the historical purchasing power, agents may abandon the medium of exchange in favor of an alternative. Transacting with low-valued notes can be very cumbersome. It stands to reason that, at a sufficiently low purchasing power, agents might prefer forfeiting the value of the notes they hold to avoid incurring the costs of transacting with those notes. If no one wishes to hold the notes, purchasing power falls to zero.

Second, the stable equilibrium at a positive value might cease to exist if agents are willing to accept higher denomination notes. Unless (1) higher denomination notes are characterized by a proportionately higher cost of production or (2) the unit of account reflects the *number* of notes presented irrespective of the denomination printed on those notes, the acceptance of higher denomination notes allows note issuers to squeeze out additional seigniorage until the purchasing power is eroded completely. Indeed, citing the "negligible cost of adding zeros," Friedman (1960, p. 7) ultimately doubted the existence of a stable equilibrium at a positive value.

Post-1991 Somalia is perhaps unique in that neither of the aforementioned exceptions prevailed. Despite an initial fall in purchasing power, Somalis continued to accept Somali shillings in exchange. Furthermore, they generally refused to accept larger denomination notes. Hence, standard rational choice theory implies that forgers will produce only the highest denomination notes and will maintain a circulation of notes such that the exchange value of the marginal note equals its cost of production.

In order to more fully comprehend the properties of the system, consider the effects of various exogenous shocks on the purchasing power and supply of notes in

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circulation. An exogenous reduction in the stock of money, which causes purchasing power to rise, prompts forgers to produce additional notes until purchasing power is driven back down to the cost of production. An exogenous increase in the stock of money, on the other hand, causes the purchasing power to fall initially. Forgers, who produce cuuency at a rate sufficient to offset those worn beyond use, will produce fewer (and, potentially, zero) notes. As notes wearing beyond use are not replaced, the money supply will gradually fall until purchasing power returns to its pre-shock level. Hence, in the long run, an exogenous change in the stock of money has no effect on the purchasing power or number of notes produced each period.

Consider next exogenous changes in the demand for money. An increase in the demand for money at first pushes the purchasing power of notes up. Forgers respond by producing more notes, driving the purchasing power back down to its pre-shock level. A decrease in the demand for money, which reduces purchasing power initially, leads forgers to produce fewer (and, potentially, zero) notes. As in the case of an exogenous increase in supply, wear and tear eventually reduce the number of notes in circulation until the purchasing power is returned to the cost of production. Hence, in the case of exogenous changes in demand, the number of notes produced each period is altered in the long run but purchasing power is not.

It has been demonstrated that exogenous shocks to the stock of and demand for money do not alter long-run purchasing power in a monetary system where no central authority exists to prevent entry into the production of paper money and note holders refuse to accept larger denomination notes. Changes in the stock of notes are ultimately undone by offsetting shifts of supply; changes in demand are fully accommodated. In all

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of these cases, it is the decentralized, profit-maximizing behavior of individual note producers that leads to a stable long-run purchasing power.

The somewhat surprising result that competition produces stable purchasing power rests primarily on the assumption that the cost of production is constant. Given that seigniorage is equal to the exchange value less the cost of production for each note passed into circulation, note producers have an incentive to reduce the cost of production. Specifically, they might opt for lower quality paper, a cheaper printing process, or less costly methods of transporting new notes from foreign printing houses. Cutting costs by reducing the quality of notes is risky, though. If new, lower quality notes differ markedly from those issued traditionally, they may fail to gain acceptance. Nonetheless, one must consider the possibility that the cost of production undetectably is reduced.

An exogenous decline in the unit cost of production results in a permanent reduction in purchasing power. When the unit cost of production falls, producers profit by passing more forgeries into circulation. As the money supply rises, purchasing power falls. Only when purchasing power equals the new, lower cost of production will note production return to merely offsetting the reduction in notes worn beyond use. Hence, in the long run, a reduction in the cost of production leads to a permanent increase in the number of notes in circulation and a permanent reduction in purchasing power.

Similarly, an increase in the unit cost of production brings about a permanent increase in purchasing power. When the unit cost of production rises, producers reduce the number of forgeries passed into circulation. The money supply contracts until purchasing power is equal to the new, higher cost of production. Hence, in the long run,

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an increase in the cost of producing notes leads to a permanent decrease in the number of notes in circulation and a permanent increase in purchasing power.

The dynamics considered above suggests that the monetary system of stateless Somalia operates much like a commodity standard. It is similar to a gold standard with constant marginal costs (White 1999) and the clay-brick standard proposed originally by C. O. Hardy and revived by Buchanan (1962). Interestingly, the underlying commodity in Somalia is a particular combination of ink and paper. It seems to meet Selgin's (2012) definition of a synthetic commodity money: the notes serve no non-monetary purpose but, like traditional commodity standards, the money supply adjusts automatically to exogenous shocks. Absent changes in the unit cost of production, one should expect Somali shillings notes to maintain a relatively stable purchasing power in the long run. In the next section, I consider how well historical experience conforms the mechanism outlined above.

3. The experience of Somalia

The monetary mechanism outlined above suggests that, after an initial period of convergence, the Somali shilling will be characterized by a relatively stable purchasing power, provided that the cost of production does not vary significantly. Hence, the desirability of the system depends on the length of convergence, the responsiveness of the underlying mechanism, and the stability of production costs. How well did the system work in practice?

It is important to emphasize that note holders must deem forged notes acceptable. Although note issuers could produce significantly lower quality notes at a fraction of the

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cost, they would suffer losses if those notes were not similar enough to previously issued notes to warrant acceptance. The subtlety of the prediction—that costs will be reduced so long as it does not require noticeable physical alterations in the notes—makes it difficult to assess in practice. Further complicating matters is the dearth of evidence concerning production costs. The only documented cases of forgery occur between 1996 and 2002, a relatively short period for gauging how costs are changing over time. Moreover, available accounts are almost always secondhand; fearing public condemnation, both note issuers and the foreign printing houses with which contract attempt to remain anonymous.

The little evidence that does exist concerning production costs is in line with the view that producers aim to keep costs down. Drawing on newspaper accounts and information provided by the Quebecor printing house, Mubarak (2003, p. 320) estimates the cost of printing notes. Notes ordered in 1996 by General Aideed are suspected to have cost roughly US $0.02 per note. Just three years later, the Puntland Administration is believed to have had notes printed at roughly US $0.01 per note. Recall from Section 1 that the Puntland Administration opted for a lithographic printing process, rather than the intaglio process used to produce earlier notes.

Assuming that transportation costs are roughly US $0.02 per note, and using the estimates of printing costs discussed in the preceding paragraph, the cost of producing a 1000 shillings note totaled US $0.04 prior to 1999 and US $0.03 thereafter. Since the initial purchasing power of the 1000 Somali shillings note exceeded its cost of production, one should expect the purchasing power to fall initially and then stabilize once its value equals the unit cost of production. Exogenous shocks might drive the value

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of the 1000 shillings note away from its long run level temporarily, but the adjustment mechanism inherent in the system eventually should restore equilibrium.

The Food Security and Nutrition Analysis Unit—Somalia (FSNAU), a project funded by the European Commission and United States Agency for International Development and implemented by the Food and Agriculture Organization of the United Nations, provides monthly exchange rate data from January 1995 to January 2013.[17] FSNAU collects information in 40 markets spanning 16 regions throughout Somalia where the 1000 Somali shillings note trades regularly against US dollars.[18] These markets are listed by region in Table 3.

[17] The World Bank stopped collecting exchange rate data after the state collapsed in 1991. Other sources of exchange rate data include Abdurahman (2005), which produces end-year exchange rates from 1971 to 2001, and SAACID (2012), which produces monthly exchange rates from Mogadishu's Bakara market between 2007 and 2012. Both sources are consistent with the data presented herein and are available from the author upon request. The reader is cautioned to avoid Forex data. Although the ISO 4217 currency code SOS still refers to the Somali shilling, Forex uses SOS to refer to the Somaliland Shilling, which has not been issued a unique currency code.

[18] FSNAU (2012) also provides exchange rates with the Kenyan shilling.

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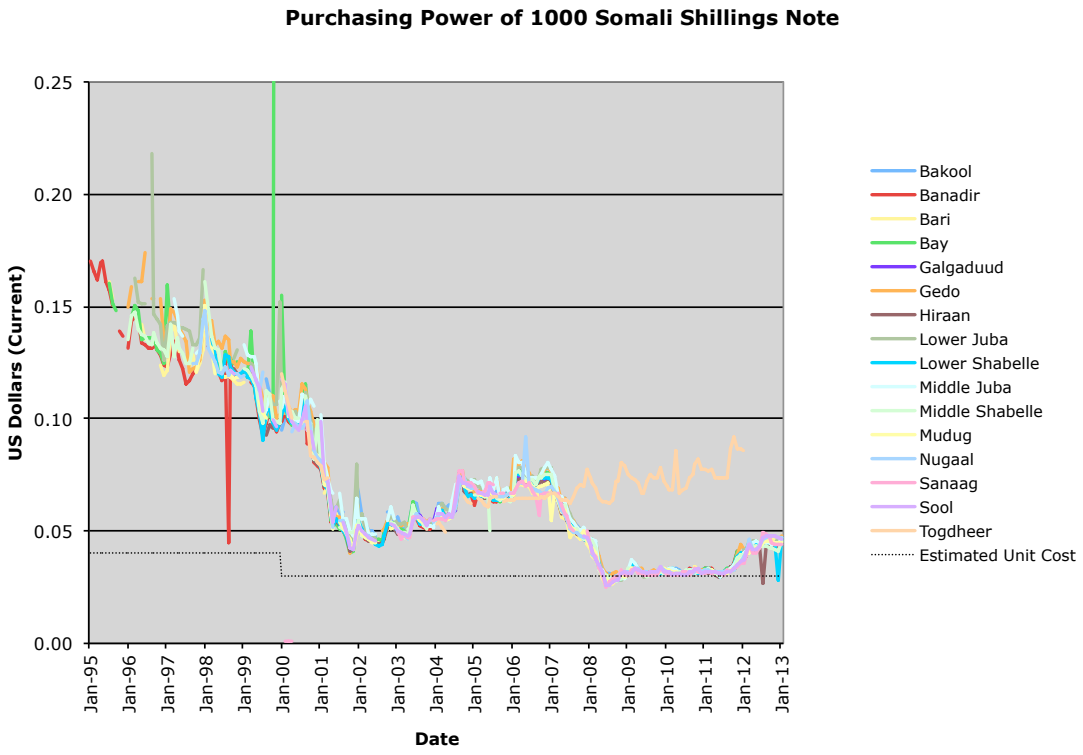
Table 3 List of markets where Somali shillings trade against US dollars, by region

Region	**Bakool**	**Banadir**	**Bari**	**Bay**
Markets	*El Barde*	*Huriwaa*	*Bosasso*	*Baidoa*
	Hudur	*Maanopoliyo*		*Dinsor*
		Mogadishu Bakara		*Qansah Dere*
		Suuq Bacaad		
		Suuq Boocle		
		Wadajir		
Region	**Galgaduud**	**Gedo**	**Hiraan**	**Lower Juba**
Markets	*Abudwak*	*Bardera*	*Beletwein*	*Afmadow*
	Dusamared	*Belet Hawa*		*Doblei*
	El Der	*Dolo*		*Hagar*
		Elwak		*Jamame*
		Lugh		*Kismayo*
Region	**Lower Shabelle**	**Middle Juba**	**Middle Shabelle**	**Mudug**
Markets	*Afgoi*	*Buale*	*Adanyabal*	*Galkayo*
	Merka	*Jilib*	*Jowhar*	*Hara Dhere*
	Qorioley			
	Wanle Weyne			
Region	**Nugaal**	**Sanaag**	**Sool**	**Togdheer**
Markets	*Garowe*	*Erigavo*	*Lasanod*	*Burao*

The purchasing power of the 1000 Somali shillings note from January 1995 to January 2013 is presented in Figure 1. Despite geographic distance, poor infrastructure, and factional fighting, monthly exchange rates do not vary significantly across the 16 regions. Arbitrage opportunities seem to be taken advantage of quickly. For example, the value of a 1000 Somali shillings note dropped to US $0.045 in the Banadir region in August 1998, while commanding an average price of US $0.115 in the other regions for which data are available. By September 1998, when the 1000 shillings note averaged US $0.123 in other regions, the exchange rate in Banadir had recovered to US $0.125. Similarly, exchange rates spiked to US $0.943 in the Bay region in November 1999—US

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$0.845 more than the non-Bay regional average. Rates were back in line by February 2000, when 1000 shillings exchanged for US $0.105 in Bay and US $0.108 elsewhere.[19]



Figures 1. Purchasing power of 1000 Somali shillings note

As expected, the purchasing power of Somali shillings is inversely related to the number of notes in circulation. The average exchange rate of the Somali shilling in terms of US dollars declined at an annualized rate of 3.96% between January 1996 and January 1999, from US $0.138 to US $0.122.[20] Then, as the quantity of forged notes introduced

[19] Exchange rates for Bay are unavailable in December 1999 and equaled $US 0.155 in January 2000. In calculating the non-Bay average for February 2000, the exchange rate for Sanaag is omitted; whereas 1000 shillings exchanged for US $0.0011 in Sanaag, it ranged from US $0.100 to US $0.116 in the other nine regions for which data is available.

[20] Average exchange rates for January 1996, 1999, and 2001 are calculated from Banadir, Bari, Gedo, Lower Jubba, and Middle Shabelle—the only regions for which data are available in all three months.

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rose, exchange rates plummeted. Purchasing power fell at an annualized rate of 26.36% from January 1999 to January 2002; at the end of the period, 1000 Somali shillings exchanged for US $0.055.

Although the purchasing power of a 1000 Somali shillings note approaches its estimated cost of production, complete convergence does not occur until June 2008. Several explanations for this result are possible. First, the assumed unit cost of production admittedly is a rough estimate. If estimated transportation costs are increased from US $0.02 to US $0.04 per note, convergence is obtained in mid 2001. Indeed, the exchange value is relatively stable from August 2001 to August 2003, averaging US $0.051 over the period and ranging from an average of US $0.044 to US $0.063. Reconciling a higher estimate of transportation costs with the lower value of the shilling after June 2008 would almost certainly require accepting that printing costs are significantly lower in the post-2008 period. Unfortunately, no direct evidence of printing costs in this period is available.

An alternative explanation for the observed lag in convergence is that individuals were initially hesitant to accept unofficial notes. Upon introduction, unofficial notes could be identified by their lack of wear and tear. For this reason, they were often passed into circulation at a discount, effectively increasing the marginal cost of production.[21] Full convergence would not materialize until market participants realized that unofficial and official notes would exchange at par. If market participants could not be convinced until the new notes showed sufficient wear and tear, a period of convergence lasting more than a decade no longer seems unreasonable.

[21] According to Mubarak (2003, p. 317), it was common to introduce notes at a five percent discount. It is not known how the standard discount varied over time, but notes ultimately were traded at face value.

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Other potential explanations for the observed lag relates to significant frictions in the market. Printing and importing notes is a complicated process, so a short lag between observing and exploiting a profit opportunity might be expected under relatively normal circumstances. The unique circumstances of Somalia prolong this lag. Many foreign printing houses refused to forge Somali notes for fear of international sanctions, public outrage, or personal harm.[22] Potential forgers struggle to finance note production operations, which require significant outlays upfront. Furthermore, some issuers drew out the process of introducing new notes in an effort to avoid dramatic reductions in purchasing power over a short period of time (Mubarak 2003, p. 317). If entry is constrained, note issuers face social constraints, or both the forces underlying the mechanism described in Section 2 are dampened.

Once convergence is obtained, the value of the Somali shilling remains relatively stable. Between June 2008 and October 2011, exchange rates averaged US $0.0341.[23] Monthly average exchange rates over the 16 regions range from a high of US $0.037 in October 2011, to a low of US $0.030 in July 2008.[24] Only Togdheer stands out as an obvious exception, where 1000 Somali shillings exchanged at an average rate of US $0.074 over the period. However, it is perhaps unsurprising that exchange rates in the Burao market (Togdheer) depart markedly from those prevailing throughout northeast

[22] The case of Munich-based Giesecke & Devrient, the printing house supplying blank sheets to Zimbabwe during its period of hyperinflation, illustrates the potential for public pressure. After being denounced by German foreign minister Frank-Walter Steinmeier in July 2008, the company agreed to stop deliveries. Concerning fear of personal harm, it is rumored that at least one ex-Malaysian military officer brokering a deal between Hussein Aideed and a foreign printing house was tortured and killed when negotiations went sour.

[23] If Togdheer is excluded, the average falls to US $0.0315.

[24] Monthly exchange rates are unavailable for Banadir in September 2008 and Hiraan in April 2009.

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and southern Somalia: it is the only market considered herein located clearly within the boundaries of the self-declared sovereign state of Somaliland.[25]

After jumping to US $0.0403 in September 2011, the purchasing power of the Somali shilling has risen steadily. Exchange rates averaged US $0.0434 over the period, from a low of US $0.0400 in February 2012 to a high of US $0.0460 in January 2013.[26] In August 2012, when the new constitution was adopted officially, the exchange rate averaged US $0.0455.

The observed increase in purchasing power at the end of the period likewise can be reconciled with the view presented in Section 2. Although August 2012 marks the official end of statelessness in Somalia, efforts to move beyond anarchy largely were successful in the year preceding the adoption of a new constitution. The National Defense Force of the Transitional Federal Government (TFG), with the help of African Union Mission in Somalia (AMISOM) peacekeepers, had secured more than half of Mogadishu by March 2011. By mid-August 2011, TFG and AMISOM had gained control of the remaining districts in the city. Control of Mogadishu is especially important in the current context, since forgeries often were introduced in the Bakara market. By increasing the expected punishment for producing a stock of forged notes, the return of a centralized authority in Somalia effectively has increased the cost of production.

[25] The Erigavo (Sanaag) and Lasanod (Sool) markets are located in the contested territory claimed by both Somaliland and the Puntland Administration. All other markets considered are set in northeast or southern Somalia.

[26] January 2012 is the last month in which Somali shillings to USD exchange rates were collected for Togdheer.

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4. Conclusion

Post-1991 Somalia provides a rare opportunity for observing the transition from fiat to commodity money. Without a functioning government to restrict the supply of notes in circulation, Somalis began importing large quantities of forged notes in 1996. Constrained to the set of denominations accepted prior to 1991, note issuers continued increasing the supply of notes in circulation until the purchasing power of the largest denomination note equaled its cost of production. The result: peculiar commodity money characterized by notes that literally were worth the ink and paper they are printed on.

After an initial period of convergence, Somalis enjoyed a currency having relatively stable purchasing power. The value of the 1000 Somali shillings note in circulation hovered around US $0.03, the cost of producing an additional note. At this price, forgers had no incentive to expand the money supply. The purchasing power remained relatively stable in consequence.

The particular monetary mechanism described herein is certainly not a first-best solution. Given the lengthy period of convergence, it is difficult to imagine anyone recommending the adoption of an ink and paper standard on traditional welfare grounds. Nonetheless, it serves as a reminder of the principal virtue of commodity monies more generally. As for Somalia, wherein the costs of transition already have been incurred and the set of feasible institutions is constrained tightly, the prevailing ink and paper standard might be the best option on the table. Provided that the costs of producing additional notes are unchanged, Somalis might continue to enjoy stable purchasing power by allowing competition in the production of paper money.

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