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Monetary System 2.0 : Hybrid credit notes, a novel inclusive digital monetary instrument for central banks, asset managers and emerging green value chains

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17 September 2017

Online at https://mpra.ub.uni-muenchen.de/100289/
MPRA Paper No. 100289, posted 12 May 2020 17:40 UTC

SUBMITTED ARTICLE

Working Paper 1-001
JEL: O3
Septembre 17, 2017

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HYBRID CREDIT NOTES: A NOVEL INCLUSIVE DIGITAL MONETARY INSTRUMENT FOR CENTRAL BANKS, ASSET MANAGERS AND EMERGING GREEN VALUE CHAINS

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A Perspective on Distributed Ledger Technology / Blockchain / Smart Contracts / IOUs / Letter of Credit / Peer-to-Peer Platforms / Digital Contractual Envelopes / Crypto Currencies / Bitcoin / Ethereum / Ripple / LIBRA / Digital Currencies / Smart Contract / Hybrid Reciprocity / Hybrid Credit Note / eco note™ / Meta-transactional Platform / Decentralized Holding Authority / Central Trusting Authority / Central Political Authority / Hybrid Reciprocity / Value Chain / Central Banks / Asset Managers / Emerging Economies / Frontier Economies / Impact

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Abstract

Description of a post-modern implied monetary system – or Monetary System 2.0 - enabled in one embodiment by a Central Bank's permissioned distributed ledger technology ("DLTs") architecture trading a novel digital hybrid credit note instrument or token. This novel monetary instrument could over time help rebalance some of our modern fiat currency system's resource allocation imbalances leading to material economic, environmental, and social benefits for the agents of the system.

SYNOPSIS

Our modern financial system is facing profound challenges and potential deep structural transformations. Challenges due to the consequences of the 2008 financial crisis and the Quantitative Easing programs ("QE") launched shortly after by the Fed and other Central Banks to avoid a 1930s like Great Depression, and structural transformations with the rapid digitalization of our economies and payment systems.

QE is a monetary liquidity event unprecedented in scale and duration and is itself leading to new challenges for our economic system: misallocation of capital and resources, financial asset inflation and the widening gap between capital owners and wage-earning citizens. These new dynamics are testing the trust socio-economic agents put in the modern financial system and post-World War II related Bretton Woods institutions to create a fair, just and sustainable economy for all. As a result, socio-economic agents are increasingly challenging Governments and their Central Banks to find new solutions to excess credit formation, which at 13x the size of global GDP [1], has become a key lever of instability, consumption excesses and natural resources depletion. Populism, climate change growing certainty and the loss of biodiversity and natural habitats are some of the "symptoms" of these profound modern resource allocation imbalances.

In parallel to these financial and economic challenges, we are witnessing the emergence of new payment systems based on the combination of cryptographic technologies and open geography digital financial solutions. The blockchain, smart contracts and cryptocurrencies are just a few examples of technologies fueling novel payment processes that, if increasingly used and accepted by socio-economic agents, could become viable alternatives to incumbent fiat currency payment systems and their related financial infrastructures. But Central Banks do not stay idle and are themselves considering the issuance of their very

[1] All types of credits, including derivative contracts notional values

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own Central Bank crypto currencies ("CBCCs") on so called "permissioned" decentralized or distributed ledger technology networks ("DLTs"), also called private blockchain platforms.

In this paper, I will attempt to define precisely some of our modern fiat monetary system imbalances[2] that, for example, green or inclusive financial solutions are aiming to address, before proposing the architecture of a new monetary instrument and its related permissioned transactional platform that could, together, enable the formation of new types of monetary and financial credit and/or payment processes. These new digital contractual envelopes could become the token of a new (novel neutral institution) or incumbent (Central Bank) permissioned DLT platform architecture, for example, which could enable the emergence of implied monetary asset currencies that will extract the benefits of both "metallist" and "non-metallist" traditional monetary systems,[3,4] as well as more ancient forms of reciprocity mechanisms.[5]

The wider use and acceptance of these new contractual envelope tokens - or Hybrid Credit Notes ("HCNs") - could in turn help limit excessive fiat currency credit formation and facilitate the anchoring of our economic system in a more grounded, balanced, inclusive, adaptable and thus environmentally sustainable economic growth model to the benefit of the system's agents and its conex social and Natural systems.

[2] Queisser de Stockalper, Derek (2016), *Reciprocity in the Third Millennium: Money or the Structure of Socio-economic Evolution – Book I and Book II*, Editions Slatkine, Geneva
[3] Plato (360 BC), *The Republic*, Books VII and VIII
[4] Aristotle (350 BC), *Politics*, Book I
[5] Sahlins, Marshall (1972), *Stone Age Economics*, Aldine Transaction

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INTRODUCTION

We live in very interesting times. Globalization, demographics and steadily increasing average wealth, which over the past two centuries has reached a level where in the developed world the middle class has a comparable lifestyle to the affluent class of a century ago. New technologies and telecommunication systems are cementing a truly global information exchange economy. But excesses are accompanying these successes. Our Market Economy or capitalist system is generating exponential economic growth[6] dynamics leading to important misallocation of resources within our economic system and impacting negatively our conex Natural and social systems.[7,8]

At the end of the 20th century and start of the 21st century some of the strategies identified to address these economic, social and environmental challenges are encapsulated in the concept of sustainable development.[9] In the past few years, a new and more specific approach has emerged with the concept of green, inclusive or blended finance. Although difficult to define precisely, as still in its early evolution phase, green, inclusive and blended finance mostly attempt to develop financial tools and processes to help mitigate environmental and social challenges such as the slowing of Natural ecosystem regenerative powers, increasing climate change certainty, the reduction of biodiversity and overall Natural habitats, and a growing wealth gap within both developed and emerging economies.

Central Banks provide the required regulatory rules and ensuing trust needed for our modern fiat currency system to grow sustainably. But the newly converging economic, social, and environmental excessive dynamics occurring since the 2008 financial crisis remain extremely difficult to apprehend, grasp and address with traditional financial and monetary conceptual tools and concepts in a rapidly changing world.

In this article, I will attempt to take a different, somewhat more fundamental, approach to understanding how monetary and financial tools - and their resulting Socio-economic structures and systems - evolved in the past and may develop in the future as a result of rapid systemic technological changes. For example, the shift from a closed to an open geography Socio-economic environment through the digitalization of our economy should

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[6] Stiglitz, Joseph (2011), *The Ideological Crisis of Western Capitalism*, Commentary, Project Syndicate
[7] US Global Change Research Program (2014), *Climate Change Impacts in the United States,* US National Climate Assessment
[8] The Risky Business Project (2014), *The Economic Risks of Climate Change in the United States*
[9] *https://www.iisd.org/sd/*

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have fundamental consequences on the behavior of our open economic system agents and on how our traditional financial mechanisms address market needs. This as a result should impact the way our overall Socio-economic system evolves, behaves and influences its agents and conex Natural and social systems.

I will thus not discuss current inclusive, blended and sustainable financial products such as SRI, ESG, Green and Social Bonds, Impact Investing or Microfinance solutions, nor focus on Governments' regulatory incentives such as eco taxes or carbon trading mechanisms. Instead, I will focus on a more fundamental relationship present since the oldest of times among agents of a given Socio-economic system to allocate scarce and non-scarce resources efficiently: namely their choice of a resource allocation mechanism based on one of the age-old family of "reciprocity mechanism". Today, our modern Market Economy uses mostly "national fiat currencies" to allocate resources among its agents, or the third family of reciprocity that anthropologists call a "negative reciprocity" mechanism.

I have always strongly believed that economic processes create natural incentives, positive or negative, which ultimately influence how a given Society structures itself and how its actors ultimately behave. Thus, if we take a fresh look at the history of humankind's resource allocation processes, and their underlying reciprocity mechanisms, we may eventually stumble upon important insights that should help us assess how our modern Societies and their agents' behavior could evolve in the coming years to achieve a more inclusive and sustainable Socio-economic system. These insights will in turn help us better understand the mechanisms of our present monetary / financial system and how it could evolve to drive a more secure future for us, our children and our surrounding Natural environmental systems.

1. Money or the Latest Embodiment of a Negative Reciprocity Mechanism

Our modern national fiat currency system is the latest embodiment of a highly efficient "negative reciprocity" mechanism that started with varied forms of intermediary monetary mediums such as rice, cowry shells or gold. [10] These basic commodity monetary credits were used for millennia's until Central Political Authorities, such as Kings and later elected Governments, privatized the minting process of gold coins initially, and then commodity-contract or fiat currencies, to control their jurisdiction's monetary issuance. The privatization of the minting process led to a dual power/responsibility system of which the key pillars are

[10] Sahlins, Marshall (1972), *Stone Age Economics*, Aldine Transaction

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the economic and the political Social Contracts.[11] The Central Political Authority provides a tool or mechanism (a nationally-issued monetary medium, for example) to allocate resources efficiently within its jurisdiction, or sometimes beyond. Such an economic Social Contract enables the Central Political Authority to raise taxes to finance its political Social Contract, or the provision of physical, legal, social and/or health security for the socio-economic agents (subjects, citizens) under the explicit or implicit geographical jurisdiction of a given Central Political Authority.

But today, although highly efficient at fuelling economic growth, in absolute terms, our modern fiat currency driven Market Economy system faces three major challenges. Firstly, socio-economic agents have lost trust in their Governments' ability to propose and manage a just and efficient resource allocation process due to excessive financial credit formation within our modern financial system. Secondly, excessive monetary credit formation since the 2008 crisis has knocked "off-balance" our modern Market Economy pricing discovery mechanisms leading to the inefficient allocation of financial capital (equity markets, real estate "bubbles", for example), leading to a profound misallocation of resources across our economies and its agents. Finally, the excessive economic growth conundrum of our economies in absolute terms, due to the limitless credit formation of our modern monetary and financial systems (or what I call the "double wheel of credit" formation)[12] is leading to the excessive usage of our Natural resources in order to sustain, or stabilize, our modern economic and political Social Contracts.

Let me explain. Historically, a Monetary asset or currency was limited in its use to a known amount (volume, weight, other) of an underlying secured asset or commodity. For example, in the case of rice, its volume or weight (whatever the unit of account) limited precisely our purchasing power of resources. Similarly, a gold-derived commodity-contract currency overall purchasing power of resources was limited by the amount of gold in the vault of the currency's issuing entity (the goldsmith or a Central Bank). Today, the purchasing power of fiat currencies is only limited by the trust citizens put in the fiat currency as a medium of exchange and in the issuing institutions (Central Banks, Central Political Authorities) guaranteeing that fiat currency as a holder of value over time. Thus, the de-coupling of the currency from a specific underlying asset has created the possibility that the only limiting factor for the currency's expansion are the very resources and competencies available within

[11] Hobbes, Thomas, *Leviathan*, Penguin Classics

[12] Queisser de Stockalper, Derek (2016), *Reciprocity in the Third Millennium: Money or the Structure of Socio-economic Evolution – Book I and Book II*, Editions Slatkine, Geneva

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the given fiat currency-defined Private Economy. Taken to its logical conclusion, fiat monetary driven negative reciprocity resource allocation mechanisms may deplete, over time, all scarce resources within a given Private Economy or its economic Social Contract's jurisdiction, if the Socio-economic agents continue to trust the currency issuer and inflation cost is kept reasonably in check.

To take an analogy from Nature, the aggregate behavior of social and economic agents within a modern fiat currency-based financial system subject to exponential growth dynamics in absolute terms, can be compared to a viral organism consuming the resources of its host over time, before moving on to a new host. In our case, in a globalized economy, our host is not a specific Nation-State's geographical perimeter anymore, but the combination of all Private Economies, of which the aggregated geographical perimeters amount to the Earth itself. So what will happen if our fiat currencies-based financial system remains unchecked? Will we move at some point to a new host, like some asteroid, planet, or other? If that is the case, and if we still use a similar Monetary system, it will only be a matter of time before we need to find a new host again. Or, shall we instead try to address the weaknesses of our current Monetary system to live again in a mutually beneficial or sustainable relationship with our host? Shouldn't we try to move from a pure consumption Socio-economic development model to a combination of consumption and utility Socio-economic development model in order to reduce some of our system's excesses and thus let our overall Socio-economic development find a more natural or symbiotic balance?

So, the question must now be asked whether our fiat currency-based financial system still plays its role as an efficient resource allocation mechanism to address the evolving needs of its social and economic agents? Does the mechanism create the right incentives for its agents to address their wants and needs while proposing at the same time a resource allocation process that fosters stability and sustainability over the longer term (more than one generation)? On a more technical level, does our fiat currency mechanism still meet its traditional holding of value principle, or is its planned obsolescence (through targeted inflation) pushing our Governments, and their citizens, on an endless race to chase GDP growth in order to sustain the value of both their Monetary and Financial credit instruments? Finally, do the political and economic Social Contracts proposed by our modern Governments still address their citizens' rapidly evolving needs for social and environmental security? The rise of automation, AI, or the growing number of extreme weather events seem to show that new types of security demands will need to be addressed by our Societies in the coming years.

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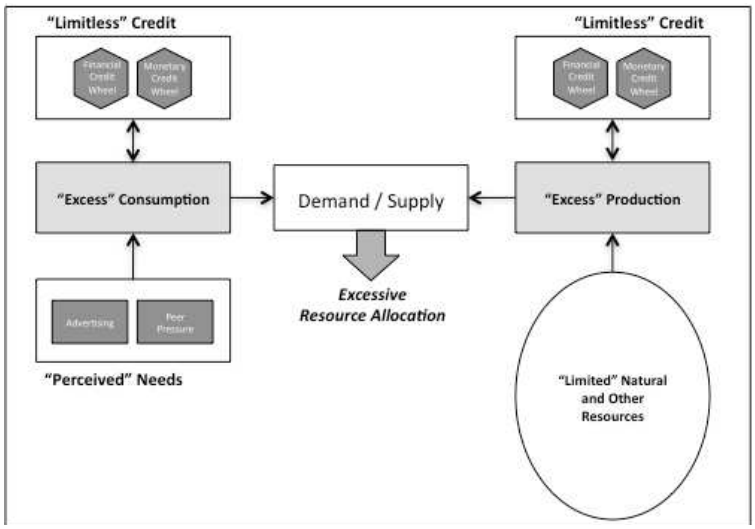
Fig. 1 – Mechanisms Underlying our Socio-economic System Excessive Dynamics



Advertising and peer pressure drive the agent's perceived social and economic needs; Demand or consumption is then enabled through the double wheel of credit. Supply is also enabled through the double wheel of credit, but dependent upon finite access to resources, except easily replicable resources (digital, other). The current process is purely linear starting with production, then consumption and finally waste. To be sustained over the longer term, the mechanism will need to provide some additional resource usages, or utility, efficiencies, either through lower production (to reduce Supply) or improved production usability (to address higher Demand with the same or lower Supply of resources).

Regulatory incentives or novel green financial products cannot address alone these deep financial, economic, social and environmental structural challenges. A new analytical perspective and ensuing potential solution(s) is required. The rapid digitalization of our economic and financial payment systems may be an opportunity to take such a new perspective.

2. The Retooling of our Resource Allocation Mechanism and Processes

While today most actors focus on e-commerce business models and payment systems' improved efficiencies, there may be the opportunity to facilitate the emergence of an entirely new, yet evolutive, reciprocity mechanism to help allocate resources more efficiently across the agents of a given socio-economic system and as a result develop a more balanced growth model in line with the longer term needs of our conex Natural and social systems.

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For millennia's, physical proximity, or the physical ownership of an asset, were key components of trust among individuals when entering a social or an economic agreement.[13] Family-ties, community belonging, common culture and shared values were all drivers of trust and community formation over the ages. But today, such physical proximity is complemented by so-called digital proximity and new forms of digital trust are starting to emerge to complement incumbent physical trust systems.

New digital trust technologies, such as cryptographic or blockchain platforms based on distributed ledger technologies ("DLTs"), but not limited to these, could play a major role in "retooling" some of our incumbent monetary resource allocation mechanisms and payment processes. Known and unknown socio-economic agents can now, for example, trade value items across wide geographical spaces without an intermediary agent or institution. Peer-to-peer cash-like systems such as the bitcoin token since 2009, have opened the way to more complex value tokens, such as smart contracts, asset tokens, utility tokens, various ICO tokens and even Central Banks' very own national crypto currencies - or CBCCs - based on "permissioned" blockchain networks or platforms.

Today, distributed ledger technologies ("DLTs") are facilitating the emergence of truly decentralised payment systems, new value chain dynamic formations through the use of smart contracts, and the formalisation of new asset instruments based on title of goods ownership (such as land registries) within some frontier and developed market jurisdictions, for example.

These novel payment systems aim to create a frictionless transactional environment where lower costs, improved speed of execution and a more transparent and traceable ledger solution will bring material resource allocation efficiencies and value to each agent of the system. These new ownership and transactional trust systems may also have a profound impact on our incumbent legal, financial and economic intermediary industries, as well as oblige incumbent institutional pillars such as Central Banks (economic Social Contract) and Governments (political Social Contract) to redefine some of their role(s) in a dual closed-open geography or physical-digital socio-economic environment.

[13] Barnes, Trevor, Peck, Jamie, Sheppard, Eric (2012), *The Wiley-Blackwell Companion to Economic Geography*, Blackwell Publishing Ltd

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3. Central Banks-issued Crypto Currencies

Distributed ledger technologies ("DLTs") combined to the issuance of crypto national currencies by Central Banks ("CBCCs") could indeed provide some kind of optimal post-modern frictionless monetary payment system. Countries such as Canada and China are already thinking about launching their very own Central Bank crypto currencies ("CBCCs") to test and harness these efficiencies in parallel to their incumbent national fiat currencies.

To extract these new efficiencies, Central Banks will first need to formalize their own blockchain or DLT architectures. Existing blockchain platforms underpinning "open" value transfer systems such as the bitcoin, are slow, energy intensive and cumbersome as each transaction needs to be vetted by the entire blockchain network, as the network's nodes are not known from the other agents of the system / network. An alternative approach is to "vet" each new agent to a blockchain network and thus introduce trust within the network. Improved trust would in turn lead to a more fluid and dynamic transactional network formation, as the nodes are known by the other agents of the "permissioned network".[14] In one embodiment, Central Banks could become the "moderators" of national or sovereign permissioned networks and thus decide, in a first phase, who is permitted as nodes (commercial banks, commercial entities, or even other Central Banks). In the latter example, the introduction of another Central Bank(s) within the network would de-facto lead to a supra-national, or supra-sovereign, "permissioned" network. Central Banks could then issue novel asset classes on these "permissioned" networks, assets such as national CBCCs, or other forms of digital contracts or monetary credits and tokens, for example.

Thus, in this embodiment, Central Banks could become key actors formalizing "permissioned" national network platforms to reduce the burden of proof needed for a DLT solution to provide substantially improved transactional costs and speed benefits to its network of agents.

Over time, permissioned sovereign or supra-sovereign network platforms trading CBCCs or other types of digital contractual instruments may complement traditional national fiat currencies payment systems and perform the role of a Real Time Gross Settlement System ("RTGS").[15] Such RTGS would increase transparency, reduce credit and settlement risk, increase stability of the booking system and promote inclusiveness through lower costs.

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[14] Ehsani, Farzam (2016), *The Advent of Crypto Banking*, The Foundery

[15] *www.investopedia.com*

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CBCCs solutions could indeed bring substantial transactional efficiencies to our fiat currency monetary payment systems. But these innovations will not address the deeper structural challenges driving our double wheel of credit formation (monetary and financial) fuelling the exponential economic growth conundrum and misallocation of resources of our modern Market Economies. Technological innovation and the rapidly changing needs of economic agents may have created the right environment for the emergence of a new monetary credit tool to help stabilize our credit formation process and provide new financial inclusiveness opportunities, to the benefit of our socio-economic system, its agents and its conex Natural and social systems.

4. Hybrid Credit Notes, or the Emergence of an Implied Monetary System

Instant communication networks and encryption technologies have indeed created the opportunity to develop a new monetary instrument. This novel credit or transactional instrument will monetize any type of unit-medium of value or unit-inventory of asset, for a finite period of time.

This new transactional instrument, some kind of “digital transactional envelope” token, or smart contract, traded on a “permissioned” decentralised ledger platform, for example, will enable a new family of reciprocity mechanism - hybrid reciprocity - to facilitate the clearing and settlement of trades, reduce the overall number of transactions required to allocate resources, as well as offer new sources of liquid capital (currency), credit (debt) or financial instrument (capital).

This new monetary instrument called a Hybrid Credit Note (“HCN”) will reduce the need for “absolute” intermediary monetary mediums, such as government issued fiat currencies or their digital counterpart CBCCs, to answer market participants’ needs and efficiently allocate resources within a given economic system. HCNs will allow participants to use their respective unit-inventories (physical, digital, or financial) as de-materialized currencies or financial instruments for a finite (or in exceptional cases infinite) period of time. In essence, unit-inventories will become temporary or “implied” monetary mediums. As a result, socio-economic agents will have a second or complementary monetary tool at their disposal to allocate resources and thus answer their respective needs within the marketplace. A new meta-market trading architecture based on HCNs will enable the trade of incumbent monetary and financial asset classes, as well as new types of “implied” economic, social or environmental monetary and financial credit instruments and transactions.

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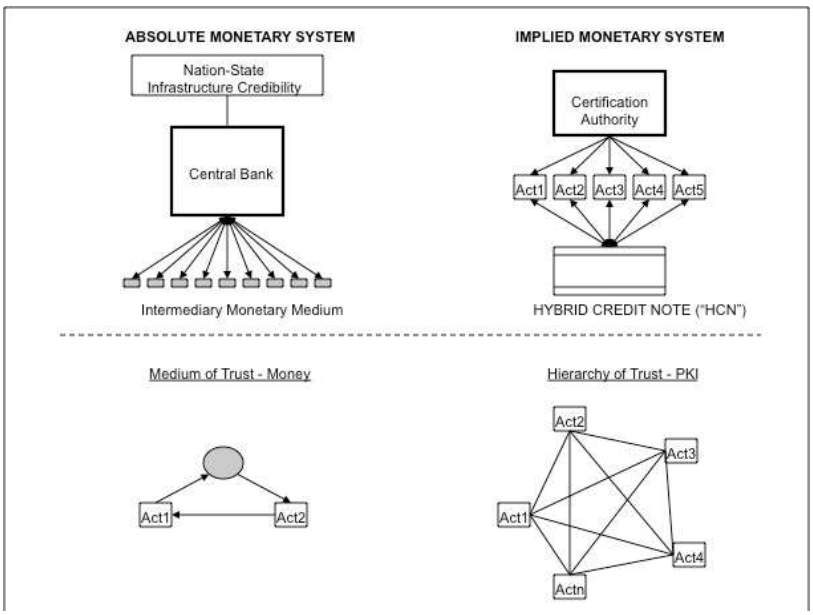
Fig. 2 – Absolute versus Implied Monetary Systems



On a more technical level, the medium of Trust or "absolute" Monetary credit provided by a Government's Central Bank will be complemented, or sometimes altogether replaced, by a Hierarchy of Trust provided by a Certification Authority's backed Public Key Infrastructure or digital signature-based system. Digital signatures will define the marketplace participant's "server" account(s). The Certification Authority role within an "implied" monetary system can be loosely compared to the role of a credit agency within an "absolute" monetary system. In practice, the same "server" account, or the same socio-economic agent as owner of the server account, may belong to more than one Hierarchy of Trust.

HCNs powered meta-platforms will provide one of the safest and efficient wealth transfer mechanism available to date. Settlement costs and value transfer processes complexity will be substantially reduced. Once contracts have been credited / debited from their respective "server" accounts, the initial HCN's issuer will be responsible for the ultimate physical transfer of the contract's underlying unit-inventory at the end of the trading period, if the underlying asset is in "physical" form. This will enable the formation of temporary secondary markets trading of the HCN's underlying asset(s), which may result in these assets behaving temporarily like a security or monetary instrument.

Hybrid meta-platforms will thus enable the trade of any type of unit-inventory, including modern Monetary and Financial credit instruments, as well as various types of digital currencies or other so-called digital social assets. These new platforms will also facilitate

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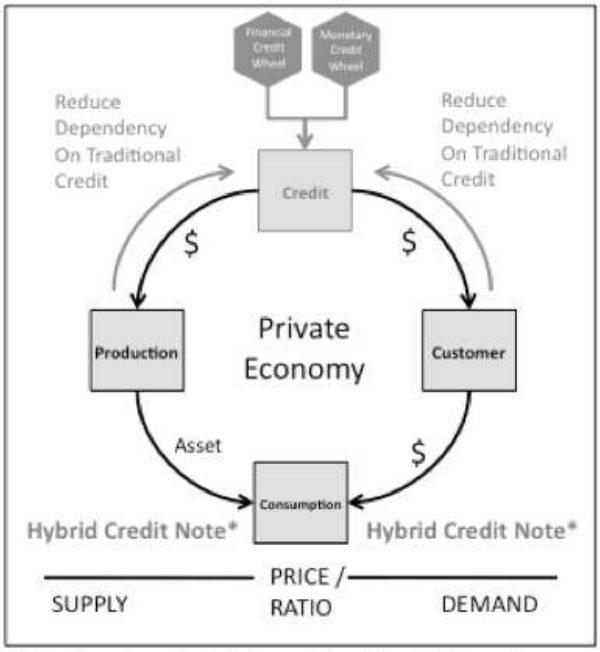
multiple transactional dynamic settings to align market Demand and Supply through, for example, monetary auctions, reversed Dutch-type auctions, trade-ins, countertrade auctions, crowdsourcing, as well as purely non-fiat currency matching auctions. This latter non-fiat monetary credit - or transaction-specific equilibrium - transactional format should help address periods of high monetary instability leading to wealth erosion through bursts of inflation or other types of market-driven valuation asymmetric or major imbalance risks. In these periods of stress, HCNs will provide a useful alternative Monetary and Financial credit mechanism to facilitate the allocation of resources, transfer wealth or simply invest in the development of local, regional or transnational economies.

Fig. 3 – Hybrid Credit Notes to Help Reducing Excess Credit Issuance



Note : *- complementary Monetary and Financial credit instrument

The ability to use real and digital unit-inventory, as both Monetary and Financial credit will help reduce our modern Market Economy reliance on excess fiat-currency fuelled Monetary and Financial credit to finance our modern economic and political Social Contracts. In a post-modern financial system any given unit of scarce or non-scarce asset inventory could be used as an alternative intermediary Monetary or Financial credit to improve resource allocation efficiencies (utility cycle) and "real" needs definition (social and self-realisation benefits) among the system's economic agents. [16]

[16] Queisser de Stockalper, Derek (2016), *Reciprocity in the Third Millennium: Money or the Structure of Socio-economic Evolution – Book I and Book II*, Editions Slatkine, Geneva

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In one "governance" embodiment of the solution, Central Banks could issue HCNs to trade fiat currencies, CBCCs or any other type of "verified" asset located within their jurisdiction. Thus, Central Banks could play in this example the dual role of issuing national currencies and sustaining their value (inflation targeting), as well as being the moderators of sovereign "permissioned" national networks and guaranteeing the existence of the real or digital assets located within their jurisdiction and traded through HCN instruments. These HCN contractual envelope tokens will be exchanged among vetted agents of the network, such as banks, commercial entities, private agents or other national Central Banks. These verified traded assets could include titles of ownership to land, commodities such as gold, hourly wages, CO2 regional volumes, USD, EUR, CHF, bitcoins, CBCCs, smart contracts, etc.

Such a sovereign (single Central Bank) or supra-sovereign (multiple Central Banks) HCN traded meta-market platform will achieve multiple benefits. For example**:**

1. Harness the transactional efficiency of distributed ledger systems ("DLTs") leading to a secure and frictionless transactional environment
2. Facilitate the formation of new types of "implied" credit based upon real or digital assets as an alternative to limitless fiat currency monetary and financial credit formation (double wheel of credit conundrum) and thus help address our Market Economy exponential growth rate conundrum while addressing the needs of the system's agents
3. Enable to access the positive combined outcomes of negative, balanced and generalized reciprocity mechanism [17,18] to improve aggregate social and economic resource allocation dynamics within our Socio-economic system. For example, HCN instruments could be matched directly across various types of assets (becoming asset currencies, once traded in their own secondary markets) and geographies (traded within supra-national "permissioned" networks)

In this embodiment, Central Banks would become the De-centralized Holding Authorities (similar to the 17th century London's goldsmiths) and Gatekeepers to the network, while a neutral organization or entity, located in a stable jurisdiction would manage the supra-sovereign network of agents (multi Central Banks, for example) to enable the emergence of a truly global meta-market decentralized ledger ("DLT") platform combining national or

[17] Sahlins, Marshall (1972), *Stone Age Economics*, Aldine Transaction

[18] Queisser de Stockalper, Derek (2016), *Reciprocity in the Third Millennium: Money or the Structure of Socio-economic Evolution – Book I and Book II*, Editions Slatkine, Geneva

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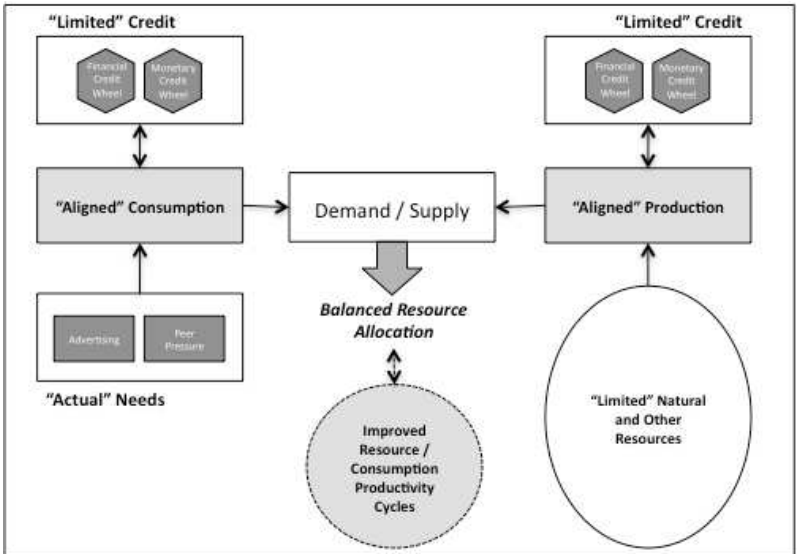
supra-national "permissioned" networks. HCN tokens or smart contracts traded across this new trusted transactional environment will enable the emergence of new types of credit and behavior among agents of the system, thus harnessing the benefits of the combination of the historical families of reciprocity mechanisms (negative, generalized and balanced).

Fig. 4 – Tomorrow's "Traditional Market Economy" Resource Allocation Process



Hybrid reciprocity or the combination of structured negative, gift and balanced reciprocity within one transactional setting or platform will help realign our overall resource allocation process by combining both Market Economy equilibriums (price) and transaction-specific equilibriums (asset ratios). The combination of distributive, integrative, linear and non-linear resource allocation dynamics and processes will also reduce some of our dependencies on GDP growth at all costs to sustain our modern Social Contracts and thus eventually help strengthen our Societies' agents' social bonds. The gradual "retooling" of our Socio-economic system should have longer-term benefits for the system's agents and also enable more sustainable relationships with conex Natural and social systems.

Such a supra-sovereign Trusting Authority could be located in a stable and neutral jurisdiction such as Switzerland and operate through a transparent and robust governance process, where each agent can contribute through a clearly defined de-centralised voting process, for example.

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5. An Example - Natural Capital Asset Currencies

A specific market opportunity for HCNs and their related meta-market platforms could be to help address growing environmental imbalances of our modern Market Economy. HCNs could enable the creation of CO_2 emission monetary assets. HCNs would represent the verified CO_2 emission levels of a given regional jurisdiction. As these HCNs can behave like a currency when traded within their own secondary market, a decrease in supply of CO_2 would lead mechanically to the increase of value of CO_2 HCN contracts / currencies, to the benefit of its owners.

Practically, regional political authorities will monitor precisely their physical territories' gas emissions and issue HCN instruments whose underlying inventory-units are scientifically verified volumes of gas over their territories at a given time. These CO_2 HCNs or CO_2 asset currencies could become an entirely new monetary or financial asset class for incumbent economic and financial agents – such as asset managers - to invest in as:

- CO_2 hybrid credit notes intrinsic value mechanically increases in price if the Supply of its underlying asset inventory (here CO_2 emission levels) decreases

Through the simple creation of CO_2 asset currencies (or CO_2 HCNs), we will have introduced strong incentives for economic actors to reduce aggregate CO_2 emissions to the benefit of conex Natural systems, thus helping the longer-term sustainability of our aggregate socio-economic system. The profit incentive will have driven social and economic agents towards self-regulating behaviours, thus creating a win-win situation where value is created for the economic stakeholders, as well as their conex Natural and social systems.

HCNs and their related meta-market trading platform architecture could thus over time facilitate the emergence of multiple asset currencies with micro and macro benefits to the system's agents and its conex systems. These new types of credit based on units of economic, social and/or natural value will in turn shift the behaviour of the system's agents to make our aggregate Socio-economic system more agile, adaptive and sustainable over the medium to long term.

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Conclusion

We have observed in this paper that a new "permissioned" network, or meta-transactional platform, coupled to a new transactional digital envelope token, or Hybrid Credit Note ("HCN") instrument, will create new forms and sources of Monetary and Financial credit. These new monetary instruments will not be based on government-issued fiat currencies alone but include multiple unit-inventories of scarce and non-scarce resources belonging to any given agent of the network. As a result, a new form of reciprocity mechanism will facilitate new forms of resource allocation dynamics and lead to the de-centralisation of credit formation through the issuance of private and public unit-inventory of credit. This new "hybrid reciprocity" mechanism has some similarities with the 16th and 17th century goldsmiths' issuance of paper currencies guaranteed by inventory-units of gold in their vaults. Here banks, informational actors and technological platforms, as well as real asset inventory locations guaranteed by public (Governments, Central Banks) or private institutions (SGS, Veritas), will replace the goldsmith's vaults to secure these assets. These actors will become the post-modern Decentralised Holding Authorities of a new family of temporary monetary instruments traded on permissioned sovereign and supra-sovereign decentralised ledger platforms ("DLTs") which may over time enable the emergence of a dual absolute / implied monetary Socio-economic ecosystem.

Such alternative credit formation and novel frictionless payment system environment should provide the right incentives for hybrid reciprocity mechanisms to emerge and complement incumbent actors' sustainable, blended and inclusive development instruments such as Microfinance, Impact Investing or Green Bonds, for example. In one embodiment, Central Banks and incumbent financial actors could play a key role to manage these new permissioned networks and verify the real and digital assets to be traded through HCNs or digital contractual envelope tokens on these novel meta-market platforms.

The ability to use physical, financial and digital unit-inventories, as both Monetary and Financial credit should help reduce our modern Market Economy over reliance on limitless fiat-currency Monetary and Financial credit formation to finance our modern economic and political Social Contracts. Instead "implicit" monetary assets profit incentives will drive the system's or value chain's agents to shift their behaviour for the longer-term benefit of our economic, social and natural systems. This will in turn lead to a more balanced and adaptive modern economic growth model, or Impact 2.0 dynamic and complementary investment models.

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Hybrid reciprocity and its novel HCN credit instrument, although quite simple in its processes, will over time impact positively our modern financial and economic systems, as well as its socio-economic agents on multiple social and economic dimensions.

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MONETARY SYSTEM 2.0

HYBRID CREDIT NOTES: A NOVEL INCLUSIVE DIGITAL MONETARY INSTRUMENT FOR CENTRAL BANKS, ASSET MANAGERS AND EMERGING GREEN VALUE CHAINS

Working Paper 1-001

JEL: O3

Derek Q. de Stockalper

Septembre 17, 2017

A Perspective on Distributed Ledger Technology / Blockchain / Smart Contracts / IOUs / Letter of Credit / Peer-to-Peer Platforms / Digital Contractual Envelopes / Crypto Currencies / Bitcoin / Ethereum / Ripple / LIBRA / Digital Currencies / Smart Contract / Hybrid Reciprocity / Hybrid Credit Note / eco note™ / Meta-transactional Platform / Decentralized Holding Authority / Central Trusting Authority / Central Political Authority / Hybrid Reciprocity / Value Chain / Central Banks / Asset Managers / Emerging Economies / Frontier Economies / Impact

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Working Paper Summary:

A Hybrid Credit Note-based trading platform is described to help facilitate the emergence of a new family of hybrid reciprocity mechanisms, which should over time bring substantial resource allocation efficiencies to our modern fiat monetary system. Novel types of economic, natural and social credit instruments will help generate a more inclusive and sustainable economic growth path, as well as help re-align our long-term economic development model with the needs of our conex Natural and social systems.

Derek Queisser de Stockalper is the founder of the think tank QANALYTICS, Sàrl based in Geneva Switzerland. He is also the author of the essay *"Reciprocity in the Third Millennium: Money or the Structure of Socio-economic Evolution – Book I"* published in 2016 by the Editions Slatkine. Book II, the sequel to Book I, will be published in 2019 and describes in more details some of the proposals presented in this paper. Derek has an MA in Logic & Metaphysics and International Relations from the University of St Andrews in Scotland and an MBA in Finance and Economics from Columbia Business School in New York. His e-mail address is ds@qanalytics.org.

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