

A Possibly Sharī‘ah-Compatible Global Currency to Stabilize the Monetary System

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Abstract. The international monetary system is structurally instable. Furthermore, all official currencies in the world today are created through bank debt, and therefore automatically involve interest. A systemic way to improve stability would be to diversify the types of currencies and the agents who create them. The proposed ‘Trade Reference Currency’ would be a global, purely digital currency, fully backed by a standardized basket of the major commodities in world trade such as oil, copper, gold, silver, coffee and cocoa. The storage costs of that basket would be covered by a demurrage fee paid by the bearer of the currency. Because it fits the existing legislations on countertrade (international barter), it would not require any new international agreements to start it. In addition to more stability for the whole system, this currency would also operate counter cyclically to the business cycle, realign financial interest with long-term thinking, and possibly be Sharī‘ah-compatible.

Keywords: Commodity-backed Innovation, Monetary Stability, *Ribā*.

KAUJIE Classification: Q26 ; Q27 ; Q33.

1. Introduction

Our global monetary arrangements are notoriously unstable. According to IMF data, between 1970 and 2010 no less than 145 countries have lived through a major banking crisis, 208 through monetary crashes, and another 72 have experienced a sovereign-debt crisis (Caprio & Klingebiel, 1996; Frankel & Rose, 1996; Kaminsky & Reinhart, 1999; Laevan & Valencia, 2010, p. 4). This represents a total of 425 systemic crises, an average of more than 10 countries getting in trouble each year! These crises have hit more than three-quarters of the 180 IMF member countries, many of whom have, therefore, experienced them several times. The most notorious case was the 2007-2008 banking crash in 23 countries simultaneously, including the US, the UK and Germany. It affected approximately half of the world's demand and output, and its effects still linger on a decade later.

Within current legal frameworks, a monetary monopoly is the rule in each economic unit – typically the nation state – be it in a capitalist or a Marxist-Leninist context. The most significant difference is that in the communist case, banks are permanently state-owned; while in capitalist economies they are publicly owned only during transitional periods in the wake of spectacular serial private banking failures. But the system is fundamentally the same worldwide: a monopoly of a single currency in each country, created by debts with the banking system⁽¹⁾, and therefore subject to interest (*ribā*).

Recent research puts in question this way of seeing things (Goerner, Lietaer, & Ulanowicz, 2009; Lietaer, Ulanowicz, Goerner, & McLaren, 2010). It is now possible to measure in quantitative terms the viability of any complex flow network, be it a natural ecosystem or an economic and financial system (Ulanowicz, Goerner, Lietaer, & Gomez, 2009). Indeed, in *any* complex flow network system, far from being a disruptive element, a minimum of diversity is a necessary (though insufficient) condition for guaranteeing *structural stability*. This confirms that a monoculture is universally harmful. Just as a plant-based monoculture

upsets the balance of naturally resilient environments, so a monetary monoculture destabilizes our economies. This means in the case of an economy – i.e. a complex flow network in which money circulates – structural stability requires a diversification of the types of currency in circulation and the types of agents that issue them. A structural solution would therefore be to diversify available exchange media and the agents that create them.

An example of a supra-national complementary currency that would provide such a diversification is the topic of this paper.

2. A Trade Reference Currency

A new global currency may seem an unconventional idea, but some of the most respected icons of finance and banking have publicly stated there is a need for such kind of monetary innovation.

- Alan Greenspan, the former Chairman of the Federal Reserve Board, stated that he foresees “new private currency markets” in the 21st century (Greenspan, 1997, p. 50).

- Paul Volcker, former Chairman of the Federal Reserve Board, stated: “The ultimate logic of economic globalization is a stable and common unit of account and an internationally accepted means of payment – in other words, a common world currency.” (Volcker, 2000, p. 6).

- Nobel Laureate, Robert Mundell at his acceptance speech in December, 1999, said: “The main thing we miss today is universal money, a standard of value, a link between the past and the future, and the cement linking remote parts of the human race to one another.” (*Wall Street Journal*, Op-Ed page, December 10, 1999).

- Mervyn King, the former Governor of the Bank of England, said in a speech delivered in New York: “Of all the many ways of organizing banking, the worst is the one we have today....Change is, I believe, inevitable. The question is only whether we can think our way through to a better outcome before the next generation is damaged by a future and bigger crisis.” (King, 2010, pp. 18-19).

(1) As officially confirmed by Bank of England, *Quarterly Bulletin*, 2014, Q1.

A Trade Reference Currency (hereafter referred to in shorthand as TRC) is a proposal for a supra-national complementary currency, intended to work in parallel with the current international monetary system to provide an effective mechanism by which to redress five problems generated by today's system. Specifically: monetary instability, the pro-cyclical money creation process, the endemic short-termism of financial decision making, and the issue of interest ("ribā") embedded in the very creation of conventional money, which makes it deeply incompatible with Shari'ah.

The TRC would be a purely digital currency, and does not need to take at any point a physical form. Ideally, it should be managed as a commons of its users, as described in Elinor Ostrom's work (1991). From an information technology viewpoint, it could take the form of a classical centralized database of the TRC Alliance; or it could even take a distributed form as an application of blockchain and smart contract technology. In this paper, we will focus on its various other features.

The TRC is designed to provide a stable international currency that can be used as a reference for planning, global contracting and even payment purposes worldwide. This would be the first time since the gold-standard days that a robust, inflation-resistant standard of value would become available globally, and that could also be compatible with the Shari'ah.

3. The TRC Mechanism

The TRC would be legally structured as standardized international barter, technically called countertrade, which is already used today for more than 15% of global trade. It has, therefore, already demonstrated operation in parallel with the current international monetary system.

Such a currency would provide a stable international reference currency useable for international planning, global contracting and even for payment purposes. It is designed to counteract the booms and busts of the business cycle and thereby, stabilize the global economy. It would structurally resolve the conflict between short-term financial interests and long-term sustainability, and does not require any new legislation or international agreements to become operational.

In short, the TRC is a *complementary* currency, *backed* by an inflation-resistant, standardized basket of commodities and services. It would be a privately issued, *demurrage-charged* currency.

Complementary Currency. The TRC is designed as a complementary currency operating in parallel with existing national currencies. Everything that exists today as monetary and financial products or practices could, therefore, continue to exist.

Backed Currency. The TRC is backed by a standardized basket of the most important commodities as well as some standardizable services traded in the global market. Though conceptually similar to a fully backed gold standard, the TRC backing would consist of a dozen of the main international commodities, such as oil, coffee, wheat, silver, and gold. Since it is fully backed by a physical inventory of these commodities, it would be a secure, very robust, and stable mechanism for international contractual and payment purposes.

Demurrage-Charged. The TRC is a demurrage-charged currency, which means that it incurs a cost over time to its holder. This demurrage fee is similar to a parking fee; the charge increasing the longer the parking space is held onto. This cost for holding onto the TRC currency is estimated at 3.5%-4% per annum and corresponds to the costs incurred for storing the physical commodities included in the TRC basket⁽²⁾. This demurrage charge insures the currency's use mainly as a planning, contractual, and trading device: rather than being hoarded it would tend to remain in circulation. In short, the TRC is designed to serve only as a unit of account and medium of exchange, and not as a store of value.

Inflation-Resistant. The TRC is designed as an inflation-resistant currency by selecting the appropriate ingredients to be placed in the basket.

4. Practical Operations of the TRC

The following diagram walks through the key elements that are involved in the TRC mechanism, from the creation of TRCs to their final cash-in. The numbers listed below correspond to the steps illustrated in Figure 1.

(2) The UNCTAD estimated in the 1970s at 3-3.5% the storage costs of "buffer stocks" of physical inventories of commodities that would stabilize the income of producing countries.

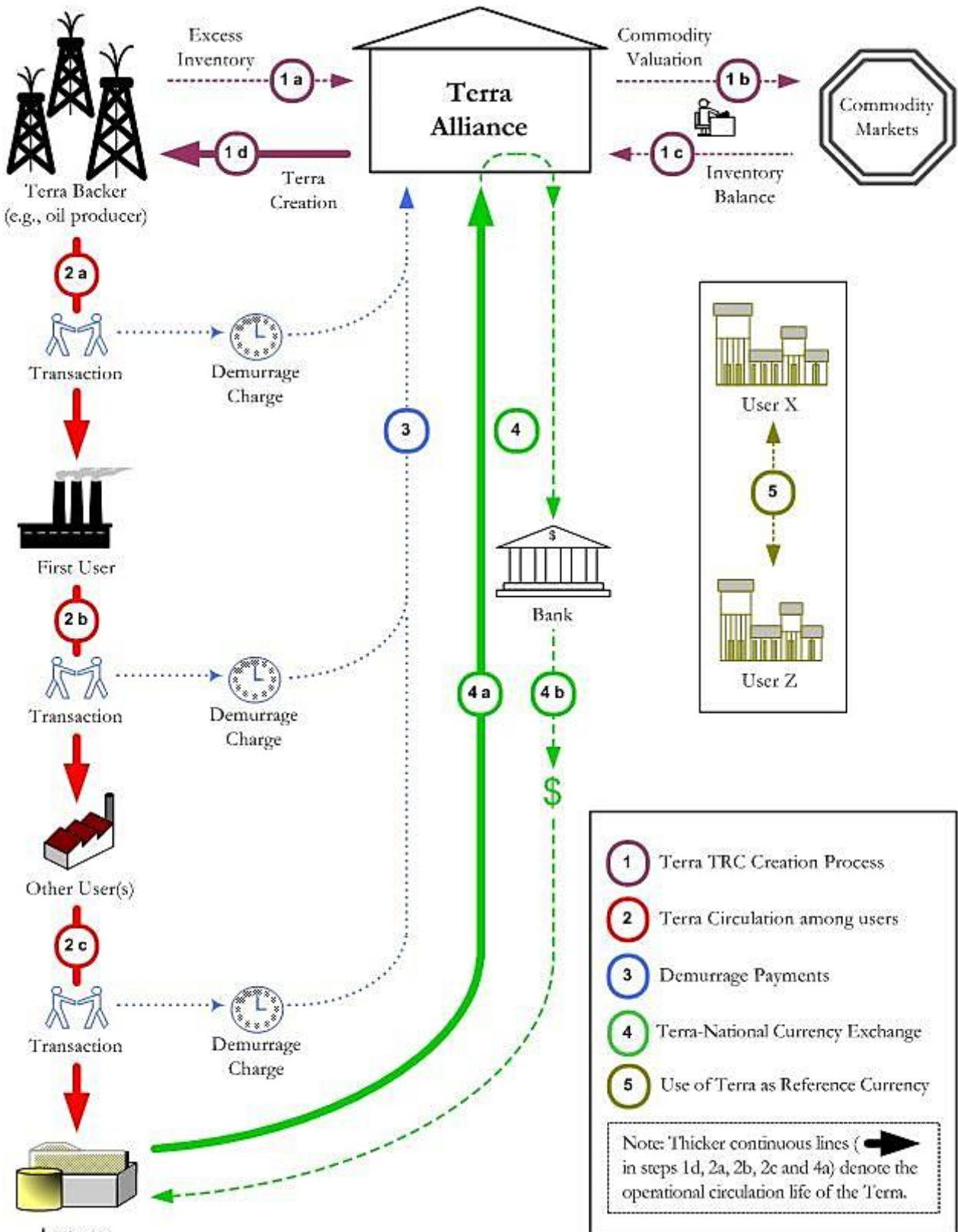


Figure (1) TRC Trade Reference system

(1) The TRC Creation Process

(1a) Excess Inventory Sale. The process whereby the TRC is created begins with the sale of excess commodity inventory to the TRC Alliance (also called Terra Alliance in the graph) by one of its backer/members (e.g., 1 million barrels of crude oil by an oil producer).

(1b) Commodity Valuation in TRCs. The value of this sale of oil to the TRC Alliance (i.e., how many TRCs one million barrels of oil is worth) is calculated at market prices. This is accomplished by determining the commodity prices at the time of the sale for both the inventory (in this case oil), and the sum of each of the commodities in the TRC basket using a pre-agreed-upon procedure.

The formula used to calculate the commodity valuation in TRCs is:

$$\frac{(\text{Commodity value per unit}) \times (\text{Number of units})}{\text{TRC Unit Value}} = \text{TRCs}$$

Let us assume that in our example that the commodity price for a barrel of oil at the time of the sale is \$50. The commodity prices for each of the items in the TRC Basket at the time of the sale (i.e., copper, grains, lead, one unit of Carbon emissions rights, including oil, etc.) totals \$200. Let us further assume that one million barrels of oil are sold. Therefore, 250,000 TRCs are created.

$$\frac{\$50(\text{price per barrel}) \times 1,000,000(\text{no. of barrels})}{\$200(\text{TRC unit value})} = 250,000 \text{ TRCs}$$

(1c) Inventory Balance. The TRC Alliance rebalances its commodity portfolio to take into account the inclusion of the 1 million barrels of oil.

(1d) TRC Creation. The TRC Alliance credits the oil producers' account with 250,000 TRCs (note that all TRC currency movements in the diagram are denoted by the thicker continuous arrowed lines).

(2) TRC Circulation among Users

Once the TRC is created, it enters into, and may remain, in circulation for a period determined entirely by users. For example:

(2a) First User. The oil producer may decide to pay one of its suppliers (e.g., a German engineering company for the construction of an off-shore rig). It may pay partially or completely in TRCs for this project.

(2b) Other User(s). The German engineering firm in turn decides to purchase specialty steels from a Korean steel mill, and may decide to pay partially or completely in TRCs. The Korean steel mill in turn uses the TRCs to pay a mining company in Australia, etc.

(2c) Last User. Each TRC remains in circulation for as little or as long as its various users continue to use this currency without any particular date of expiration. The process comes to an end only when a particular user determines to cash in the TRC(s), in effect, becoming the Last User.

(3) Demurrage

Throughout the circulation life of each TRC, from its creation to its final cash-in, a demurrage fee of 3.5-4% per year is in effect. Demurrage is a time-related charge on money.

The demurrage charge serves two key functions: it serves as a circulation incentive; and covers TRC operational costs.

- *TRC Circulation Incentive.* The demurrage charge is an incentive to keep the TRCs circulating from one user to another. The demurrage charge increases the longer a TRC unit is held onto, as calculated below.

- *TRC Operational Cost Coverage.* The demurrage charge is calculated to cover the costs of the entire operation of the TRC mechanism (e.g., storage costs of the basket, administrative overhead, etc.).

The demurrage fees for a particular TRC transaction may be calculated by the following formula:

$$(\text{TRC Operation Costs}/\text{time unit}) \times (\text{TRC holding period}) \times (\text{TRCs on account}) = \text{Demurrage Charge}$$

Let us assume that the TRC operations and storage costs are evaluated at 3.65% per year, or 0.01% per day. Let us further assume that the German engineering firm (First User in our diagram) received 250,000 TRCs from the oil producer and has kept these on account for a period of 10 days (prior to paying the Korean steel mill in transaction 2b). Thus, the demurrage charge would be calculated as follows:

$$(0.01\%/\text{per day}) \times (10 \text{ days}) \times (250,000 \text{ TRCs}) = 250 \text{ TRCs}$$

(4) TRC Cash-In

The circulation (and existence) of a particular TRC unit comes to an end when the Last User decides to cash in part or all of its TRCs in conventional money (for example, to pay its taxes and/or payroll and requiring national currency to do so).

A transaction fee (proposed at 2% of the amount of TRCs cashed in) is charged. This transaction fee is designed as an incentive to keep the TRCs in circulation. In effect, the 2% transaction fee requires any entity in possession of TRCs to make the following consideration: “Cashing in the TRCs now will cost me the same as paying the demurrage fee for more than six months (assuming a demurrage of 3.65% per year). It is likely that I will be able to pay someone at least partially in TRCs over the next six months. After all, most suppliers would rather be paid earlier than later....”

When the Last User decides to cash in its TRCs, the TRC Alliance sells the necessary volume of commodities from its basket to the commodity markets in order to obtain the necessary funds in conventional currency.

The TRCs are thus handed into the TRC Alliance (4a) and converted to either national currency or a volume of TRC commodities (as determined by the Last User) to the amount equal to the value of the TRCs minus the transaction fee (e.g., 2%). The cash-in may take place directly between the TRC Alliance and the conventional commodity markets or by means of an intermediary bank, for example, as any foreign exchange transaction today (4b).

Reference Currency

Once the TRC mechanism is operational and the advantages of using an inflation-resistant international standard spreads, there is nothing to impede two entities (User X and User Z in the diagram) that may have no direct involvement in the TRC mechanism, to denominate contracts in TRCs, even if the final settlement may happen in the corresponding value in a conventional currency. The TRC, in this instance, functions purely as a Trade Reference Currency, i.e. a reliable standard of value. This is similar to the gold standard days when two parties agreed on contracts denominated in gold. The only significant difference with the TRC is that, again, it is backed not by one

single commodity (i.e., gold) but by a dozen or so commodities (i.e., the TRC basket).

5. Benefits of the TRC

The TRC Initiative addresses several economic and financial concerns in the world today, and offers both general benefits and specific benefits to particular interest groups.

5.1 General Economic Benefits

The TRC mechanism provides three general economic advantages:

- It provides a robust international standard of value.
- It counteracts the boom/bust fluctuations of the business cycle, thereby improving the overall stability and predictability of the world’s economic system.
- It realigns financial interests with long-term concerns.

5.1.1 Robust International Standard of Value

The TRC would provide a robust international standard of value, something that has been missing for decades. Since it is fully backed by a physical inventory of not one, but a dozen or so of the world’s most important commodities, the TRC would be a very robust payment unit, more stable than any conventional national money today. The volatility of a basket of only 6 to 8 commodities is less than a quarter of what is experienced between major national currencies.

5.1.2 Cycle-stabilization

The TRC automatically counteracts fluctuations of the business cycle, thereby improving the overall stability and predictability of the world’s economic system. When the business cycle is weakening, corporations customarily have an excess of inventory and a need for credit. The excess inventories of the goods that are components of the TRC basket could be sold to the TRC Alliance (that would place these inventories into storage). The TRC Alliance would pay for these inventories in TRCs, thus providing corporations with an additional means of payment (typically, less readily available in this part of a

business cycle). These corporations would tend to immediately spend the TRC's to pay their suppliers, for example, so as to avoid the demurrage charges. Suppliers, in turn, would have a similar incentive to pass on the TRCs as a medium of payment. The spread of this currency would automatically activate the economy at this weak point in the business cycle.

In contrast, when the business cycle is in a boom period, demand for goods and services go up and both suppliers and corporations have an increased need for inventory. The TRCs would now be cashed in with the TRC Alliance for a 2% transaction fee, and the now needed inventories would be taken out of storage and delivered to the respective commodity markets to obtain the conventional currency required. This would also reduce the amount of TRCs in circulation when the business cycle is at its maximum, counteracting an inflationary boom phase.

5.1.3 Realignment of Financial Interests with Long-term Concerns

The demurrage feature of the TRC would provide a systematic financial motivation that realigns financial interests with long-term concerns, including long-term ecological concerns. This is in direct contrast with what happens with conventional national currencies. The discounted cash flow of conventional national currencies with positive interest rates emphasizes the immediate future at the expense of the long-term. The same discounted cash flow with a demurrage charged currency produces the exact opposite effect: income and costs expressed in TRC units become more valuable the more they take place in the future. This would reduce the conflict that currently prevails between the stockholder's financial priorities and the long-term priorities of society at large. Realigning financial interests with long-term thinking is a necessary condition for sustainable development to have a realistic chance at the scale and speed that is now required.

5.2 Specific Benefits

5.2.1 For Humanity as a Whole

- As long as most major businesses are focused only on short-term horizons, chances are minimal that long-term sustainability could emerge. Inevitably, it will be humanity as a whole that will end up paying for a failure in sustainable development. In contrast, the introduction of the TRC with its

demurrage functionality makes long-term thinking profitable, and therefore, long-term sustainability much more likely.

- The typical booms/bust of the business cycle will automatically decrease, creating a more dependable economic environment, which will translate into less job instability.

- If the TRC were implemented on a sufficient scale, it would help re-launch the world economy by injecting additional international liquidity with a higher circulation speed.

5.2.2 For Multinational Corporations

- It makes it possible to convert inventories of specific illiquid assets, such as major raw materials, into liquid ones. This is a significant advantage, given that inventories are otherwise a cost item to businesses.

- It makes available to businesses a robust international standard of value, with a consistent value in real terms for international contracts. This would also reduce the need for expensive currency hedging counter-measures.

5.2.3 For the Banking Sector

- The TRC introduces standardization in countertrade, thus making the countertrade mechanism bankable. Currently, the banking system has no role at all in the fast-growing countertrade field. They can provide their customers services such as TRC account management, as they do today with any foreign exchange.

5.2.4 For Commodity Producing Countries

- Those countries that produce commodities that are part of the TRC basket (i.e., commodities such as oil, silver, etc.) would find themselves in a position similar to gold-producing countries during the gold standard days.

5.2.5 For Muslims

- For the first time in Modern times, those countries, businesses and individuals who prefer to use a currency that is possibly Shari'ah compatible, would have such a choice with the TRC, a currency that is also internationally convertible within the existing institutional framework.

6. Differences with Earlier Proposals

For more than a century, there have been several proposals for commodity-basket currencies by a series of well-known economists. The following list provides a chronological overview of some of the best known examples of them.

1. William Stanley Jevons, *Money and the Mechanism of Exchange*, 1875.
2. Jan Goudriaan, *How to Stop Deflation*, 1932.
3. Benjamin Graham, *Storage and Stability*, 1937; and *World Commodities and World Currency*, 1944.
4. Albert Gailord Hart of Columbia University, *Money, Debt and Economic Activity*, 1948.
5. Elmer Harmon, *Commodity Reserve Currency*, 1959.
6. Albert Gailord Hart, Nicholas Kaldor and Jan Tinbergen, *The Case for an International Reserve Currency*, 1964.
7. Nicholas Kaldor of Cambridge University, *The New Monetarism*, 1970.
8. St. Clare Grondona, *Economic Stability is Attainable*, 1975.

The reason none of these proposals have been implemented is not due to a technical fault of the concept, but because they were aiming at replacing the conventional money system; and even more importantly, didn't have the solution to the critical question: *who will pay for it all?* The TRC, being a

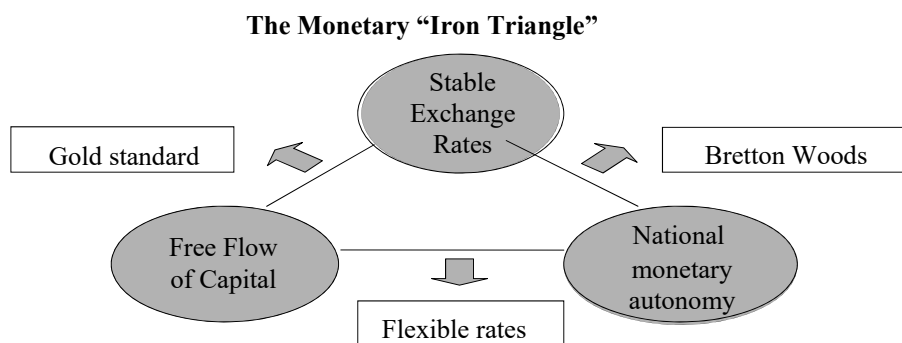
complementary currency, doesn't aim at replacing conventional money. And the storage costs of the basket would be covered by a demurrage fee, paid by the bearers of the TRC, which resolves that problem.

Finally, the political context for an international monetary treaty has not been available. The TRC avoids this pitfall by relying on existing legislation on countertrade. From a legal or tax standpoint, it would indeed fit within the existing official framework of counter-trade which is already in place and operational in over 150 countries. It therefore, does not require any new formal governmental agreements to make it operational.

There is a final systemic policy benefit from the existence of the TRC, one that would be appreciated by monetary economists: it could provide a solution for what has been called the "monetary iron triangle".

7. The Monetary Iron Triangle

The Nobel laureate of Economics, Robert Mundell, theorized as far back as the early 1960s that conventional national money could not have simultaneously: an independent monetary policy (autonomous choice of interest rate and money supply), stable exchange rates, and free international flows of capital. If any two of these three objectives were pursued, automatically the third would be lost over time. The following diagram illustrates these impossibilities (Figure 2).



(Mundell, Fleming, 1962; Frenkel, Menkhoff, 2000)

Figure (2) The Monetary "Iron Triangle": within the constraints of the conventional monetary environment, only two of any of the three objectives can be successfully pursued

For example, if a country chooses to have a stable exchange rate and free flow of capital, it wouldn't be able to have an autonomous monetary policy (as was actually the case during the gold standard days). On the other hand, if one chooses to have fixed exchange rates and an autonomous monetary policy, it would require regulations impeding the free flow of capital (as was the case during the Bretton Woods period from 1945 to 1971). Finally, if one chooses to have free flow of capital and national monetary autonomy, one will lose control over the exchange rates (as is the case in today's floating exchange environment).

The existence of the TRC wouldn't eliminate the iron triangle, but it would provide additional options to deal with its constraints. Indeed, the TRC would act similarly as the gold standard system for those actors who choose to use it (allowing free flow of capital, and stable exchange rates). But it wouldn't have to sacrifice its national monetary autonomy on its own national currency which can continue to exist in parallel. As illustrated in Figure 3, the TRC changes the iron triangle into a three-dimensional tetrahedron, transcending the blockages of the conventional monetary framework. In short, the TRC enables the transcendence and inclusion of Mundell's framework.

Transcending the Monetary "Iron Triangle"?

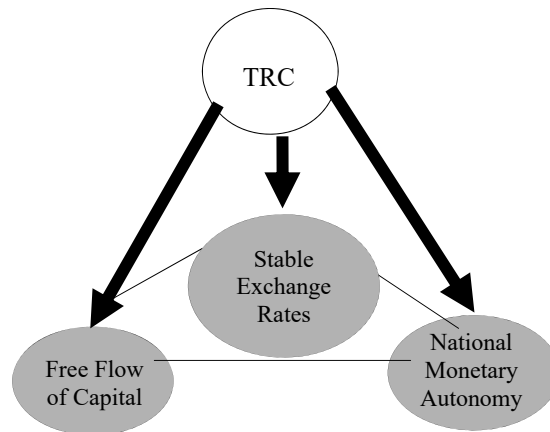


Figure (3) The TRC, provides new options to address the monetary iron triangle, and resolves Mundell's "iron triangle"

8. Conclusions on the TRC Proposal

The TRC initiative addresses four problems prevailing in today's monetary environment, namely:

- (a) It would provide a robust international standard of value, which makes it possible to insulate international trade from the uncertainties of conventional national money fluctuations.
- (b) What triggers the creation of TRC units is excess inventory among producers or users of key commodities, and excess inventory is a key indicator of an incipient recession in the business cycle. Its emission therefore spontaneously counteracts the boom/bust fluctuations of the business cycle, thereby improving the overall stability and predictability of the world's economic system.

(c) For those businesses that use the TRC as a planning tool, it would realign financial interests with long-term concerns.

(d) Given that this currency is created without debt and without interest, the main feature that makes existing money non-Shari'ah compatible is removed.

Finally, this approach can be implemented within the existing legal and tax framework of counter-trade, without requiring new international negotiations or agreements. In other words, any group, business or country that desires to put it into practice could start a TRC system even as an economically self-sustaining financial service.

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عملة عالمية متوافقة مع الشريعة الإسلامية لتحقيق استقرار النظام النقدي

برنارد ليتاير

أستاذ، ومستشار للحكومات في العديد من البلدان

المستخلص. النظام النقدي الدولي غير مستقر هيكلياً إضافة إلى ذلك، جميع العملات الرسمية في العالم اليوم إنما يتم إنشائها من خلال الديون المصرفية، وبالتالي تنطوي تلقائياً على الفائدة (الربا). وتتمثل الطريقة المنهجية لتحسين الاستقرار في تنوع أنواع العملات والوكلاء الذين ينشئونها. و"العملة المرجعية للتجارة" المقترحة ستكون عملة عالمية ورقمية محضّة، مدعومة بالكامل بسلة موحدة للسلع الرئيسية في التجارة العالمية مثل النفط والنحاس والذهب والفضة والبن والكافو. وستغطى تكاليف تخزين تلك السلة برسوم التأخير التي يدفعها حامل العملة. وبما أنها تتناسب مع القوانين والتشريعات القائمة بشأن التجارة الدولية المتبادلة (المقايضة الدولية)، فإنها لن تتطلب أية اتفاقات دولية جديدة لبدءها. بالإضافة إلى المزيد من الاستقرار للنظام ككل، فإن هذه العملة ستعمل أيضاً بشكل دوري عكسي مع دورة الأعمال التجارية. كما ستؤدي أيضاً إلى إعادة تنسيق المصالح المالية مع تفكير طويل الأجل، ويمكنها أن تكون متوافقة مع أحكام الشريعة الإسلامية.

الكلمات الرئيسية: الابتكار المدعوم بالسلع، الاستقرار النقدي، الربا.