

THE TERRA TRC™ WHITE PAPER

*“Many have a wait and see attitude to innovative proposals of this nature,
but they shouldn’t with the Terra.*

*The TRC reduces risk, stabilizes the world economy
and is a more cost effective approach for international business.”*

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Chairman, The Future 500

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OVERVIEW

Our world today is faced with global systemic issues such as the lack of an international standard of value, currency instability and the uncertainties of the business cycle. While such concerns may at first seem like boring economic or financial problems of little concern to the average person, they are in fact key issues. Their continued lack of resolution impacts significantly upon our world: a simultaneous recession in the three major world economies, lack of investments in developing nations, the ongoing conflict between the short-term financial demands of shareholders and long term sustainability, the many currency crises and associated suffering that has affected no less than 87 nations over the course of these last twenty five years... all these concerns are related to the unresolved systemic issues cited above. Yet, there has been a lack of initiatives by financial and monetary institutions.

These key global issues require a response of sufficient scope and magnitude if they are to be redressed in an effective manner. Furthermore, such a response, if it is to succeed, must acknowledge the requirements and concerns of the most influential decision makers of our world today—the multi-nationals—and take carefully into consideration, as well, the realities of our present-day geopolitical climate and monetary system.

This paper will examine The Terra Trade Reference Currency (Terra TRC, hereafter referred to in shorthand as Terra)—a supra-national complementary currency initiative, intended to work in parallel with the current international monetary system to provide an effective mechanism by which to redress important such global issues.

The Terra is poised to create more stability and predictability in the financial and business sectors by providing a stable international currency for planning, global contracting and payment purposes worldwide. This will be the first time since the gold-standard days that a robust, inflation-resistant standard of value will be available globally. It is designed to counteract the booms and busts of the business cycle and stabilize the global economy. Most importantly, it will 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.

It should be understood that the Terra Initiative is presented here not merely as a hypothetical presentation, but as a viable monetary initiative for immediate application in international trade. Its design and potential have been carefully scrutinized by some of the most respected authorities in the world today. Gernot Nerb, a recognized international expert on the business cycle, head of the Research

department of the IFO Institute in Germany, and creator of the “business sentiment index” (which enables forecasting of business cycles), offers this opinion: “The Terra mechanism would provide an automatic counter-cyclical stimulus to the world economy, thereby dampening the depth of recessions as well as reduce the risk of inflationary booms. Such a tool could be particularly useful in a period of a simultaneous recession of the three major world economies as we are currently engaged in.”

While a privately issued, complementary trade reference currency may perhaps seem an unconventional methodology, such an approach is now considered inevitable by some of the most respected icons of finance and banking, including both the current and a former Chairmen of the Federal Reserve Board. Alan Greenspan, for example, has stated: “I foresee new private currency markets in the 21st century.” Paul Volcker went on record in 2000, to say: “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.”

This new Trade Reference Currency (TRC)-- the unit of account being the Terra--would provide a safety net in support of the conventional money system and aims at mobilizing the vast energies of global corporations towards a sustainable future for all. This is most effectively accomplished not by regulation/legislative imperatives or moral indignation, but rather by providing a strong financial incentive in the right direction.

This paper will briefly review some of the more important monetary-related issues facing the world today (*Systemic Monetary Issues*). We will then examine the features of a complementary currency proposal, The Terra Trade Reference Currency Initiative (*the Terra Mechanism*), specifically designed to address the systemic monetary issues cited. The general and specific benefits and advantages of the Terra will be covered last (*Benefits of the Terra*).

SYSTEMIC MONETARY ISSUES

The world today is facing some key economic and financial concerns, which persist despite the efforts aimed at ameliorating them. These concerns are:

- Growing unemployment pressures worldwide;
- A possible world recession, which now threatens simultaneously the world’s three major world economies;
- A lack of hard currencies and decreasing investments in Less Developed Countries (LDCs);
- Conflict between short-term financial interests and long-term sustainability.

These economic and financial concerns are directly related to, and are being amplified by the monetary system.

Monetary Instability

Over \$1.3 trillion is traded per day in foreign exchange markets, a figure that is 100-fold the trading volume of all of the world’s stock exchanges combined.

. Nearly 96% of these transactions are purely speculative; they do not relate to the “real” economy; they do not reflect global movements or exchanges of actual goods and services.¹ Functioning mostly as a speculative market, current national currencies can be undermined not only by tangible economic news, but also by mere rumor or changes in perception as well. This unstable monetary situation has resulted in the many foreign exchange crises that have affected no less than 87 different countries over the past 25 years, such as Mexico, South-East Asia, Russia and Argentina.

1. These statistics are derived from the total daily foreign exchange transactions as reported every three years by the BIS, and compared to Global Annual Trade divided by the number of days.

This growing instability of our current monetary system has been brought about by changes to our monetary system that have cumulated over the past three decades.

Monetary Changes

The instability of our international monetary system over the course of the last several decades has been fueled principally by three major changes to our money and banking systems:

1. Structural Shift. On August 15, 1971, President Nixon unilaterally disconnected the dollar from gold, inaugurating an era without an international standard of value; currency values would now be determined predominantly by market forces. Thus began floating exchanges—a monetary arrangement in which currency values could fluctuate significantly at any point in time. Since this decision, the world’s monetary system has not had any reliable international standard of value or a unit of measure (e.g., like the yard for distance, degrees Fahrenheit for temperature or Watt for electricity).

2. Financial Deregulation. In the 1980s, the Thatcher and Reagan administrations embarked simultaneously on a massive financial deregulation program. This was followed by the “Baker Plan,” which imposed similar deregulations in 16 key developing countries. This reform package enabled many more new players to participate in currency trading.

3. Technological Shift. The computerization of foreign exchange trading created the first ever 24-hour, fully integrated, global market. (This shift to electronic money has been described as one of only two exceptional innovations over the 5,000-year course of money’s history, the other occurring when the printing of paper began to supplement the minting of coins).ⁱⁱ

With floating exchanges, financial deregulation and a 24/7 global financial market, it is now possible for a currency to lose much or even most of its value in a matter of hours. As John Maynard Keynes noted: “Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation. When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done.”ⁱⁱⁱ

Economic & Financial Consequences

The shifts mentioned above have resulted in the following consequences to both national and global economies.

Lack of an International Value Standard

The current volatility of our money system has resulted in significantly increased commercial risks with regard to the use of foreign currencies. Currency risks are now typically larger than political risks (e.g., the possibility that a foreign government nationalizes the investment), or even market risks (e.g., the possibility that clients do not want the product). In a U.S. Fortune 500 survey, all corporate participants reported foreign exchange risks as one of.^{iv}

The three principal measures used to counteract such currency risks—derivatives, lost opportunities and countertrade—each present significant shortcomings, as described below.

2. Glynn Davies, *A History of Money from Ancient Times to the Present Day* (Cardiff: University of Wales Press, 1994) 646.

3. John Maynard Keynes, *The General Theory of Employment, Interest and Money* (London: Macmillan, 1936) 159.

4. W. Dolde, “The Use of Foreign Exchange and Interest Rate Risk Management in Large Firms,” University of Connecticut School of Business Administration Working Paper 93-042 (Storrs, Conn.: 1993) 18-19. There was also consensus that interest rate risks were less important than foreign exchange risks.

- **Derivatives.** In a survey of U.S. Fortune 500 corporations, 85% reported the need to use derivative hedging strategies to try to control foreign exchange risks. Aside from associated risks, derivatives are expensive. It should be noted that those firms most engaged in such hedging were also the largest and most sophisticated.^v
- **Lost Opportunities.** Another countermeasure currently employed is abstention. Many foreign investments end up not being made at all, because the currency risk cannot be covered, or its coverage is too expensive. These lost opportunity costs are detrimental not only to the corporations involved but to society at large, especially to those Less Developed Countries (LDCs) where investments have dropped over the past decades.
- **Countertrade.** Countertrade--International corporate barter--is in operation in an estimated 200 countries worldwide, with a volume that now ranges from \$800 billion to \$1.2 trillion per year.^{vi} This represents 10% to 15% of all international trade. Fortune (U.S.) reports that two out of three major global corporations now perform such transactions routinely, with specialized departments dedicated to the execution of these deals. Though expensive, countertrade does make it safer to get paid in something that has a known worth and use, rather than accept a currency that may have dropped significantly in value from the time a deal was made. Some barter deals also occur because the countries involved simply don't have access to hard currency financing (e.g., Pepsi Cola, dealing with Russia by payments in Stolichnaya Vodka).

The Terra initiative will introduce a reference currency that is fully backed by a dozen or so of the most important commodities and services in the global market, thereby providing, for the first time since the gold-standard days, an international standard of value that is inflation-resistant.

Boom & Bust Amplification

The money-creation process by the banking system tends to amplify the fluctuations of the business cycle. The banking system simultaneously tends to either making credit available or restricting it. Specifically, when business is good in a particular market, banks tend to be more generous in terms of credit availability, thereby pushing the "good times" into a potentially inflationary boom period. Conversely, as soon as the business horizon looks less promising, banks logically tend to reduce credit availability, thereby contributing to the deterioration of a minor business dip into a full-blown recession.

Notwithstanding the attempts by Central Banks to reduce such fluctuations by giving interest rate signals, the current process of creating money through bank-debt remains, in practice, a significant boom/bust-amplification mechanism. Net result: the collective actions of the banking system tend to exacerbate the business cycle in both boom and bust directions.

The Terra, in contrast, is specifically designed to act as an automatic cycle-stabilization mechanism.

Institutional Deadlock

A master of understatement such as Paul Volcker has gone on record to express his concern about the growth of "a constituency in favor of instability." What he is referring to is an influential group of special interests who are opposed to reforming the global monetary system (i.e., taking steps to make the system more stable), because the current instability is a source of substantial profits for this group.

5. W. Dolde, "The Use of Foreign Exchange and Interest Rate Risk Management in Large Firms," University of Connecticut School of Business Administration Working Paper 93-042 (Storrs, Conn: 1993). The 85 % of the firms that routinely hedge have a capital averaging at \$8 billion, compared to \$2.5 billion for the 15 %, which have never hedged (See exhibit 1) 23-24.

6. Estimates, as reported by the U.S. Department of Commerce, the World Trade Organization (WTO) and The Economist (U.K.).

Indeed, a whole industry has evolved around creating, selling and trading a full range of sophisticated “hedging” instruments that provide protection against currency fluctuations. In some cases, the trading of such instruments has become the most important profit center, not just for major banks, but also for the treasury departments of major corporations.

Political Inaction

Finally, it would be unprecedented that national governments engage preventively in significant currency reforms. While the reasons for such prevailing postures are varied and often complex, the end result is nevertheless the same, a customary lack of initiatives until a major crisis or a world war forces change.

Added to this is today’s geopolitical environment in which the United States has emerged as the world’s sole superpower, and the U.S. dollar as the world’s pre-eminent currency. This reality confers upon this nation a commanding voice in international monetary policymaking but reduces the likelihood of any significant governmental monetary initiative being taken. As John B. Connally, U.S. Secretary of the Treasury under Nixon, remarked: “The dollar may be our currency, but it is your problem.” This “benign neglect” approach makes a cooperative governmental initiative by the United States unlikely. And any attempt at reform without the United States would be futile.

Therefore, any monetary initiatives that are to be taken preventatively must be initiated by the private sector.

The Terra initiative takes vested interests and geo-political reality into account.

THE TERRA MECHANISM

The Terra is a complementary, privately issued, demurrage-charged, Trade Reference Currency, that is backed by an inflation-resistant, standardized basket of the dozen most important commodities and services in the global market.

The Terra Characteristics

Complementary Currency. The Terra is designed as a complementary currency operating in parallel with national currencies. Therefore, everything that exists today as monetary and financial products or practices continues to exist. The Terra mechanism is only one additional option available for those international economic actors who voluntarily choose to use it.

Private Issue. The Terra will be issued as an inventory receipt by the Terra Alliance, a private, non-governmental initiative with an organizational structure that is open to all newcomers meeting certain pre-established criteria (organizationally similar to that of the Visa credit card system). Such inventory receipts are issued for the value of the commodities sold to the Terra Alliance by producers of those commodities that are components of the Terra Basket. As a private initiative this does not require governmental negotiations or international agreements. From a legal and taxation viewpoint the Terra is simply a standardization of countertrade. And legislation for countertrade exists already in practically all nations around the world.

Trade Reference Currency. The Terra 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 Terra backing would consist not of one single commodity, but a dozen of the main international commodities, including gold. Since it is fully backed by a physical inventory of commodities, it would be a secure, very robust, and stable mechanism for international contractual and payment purposes.

Demurrage-Charged. The Terra is a demurrage-charged currency. A demurrage charge acts like a parking fee, incurring a cost over time to its holder. The cost for holding onto the Terra currency is estimated at 3.5%-4% per annum and corresponds to the costs incurred for storing the physical commodities included in the Terra basket. This demurrage charge insures the currency's use mainly as a planning, contractual and trading device: it would not be hoarded but always tend to remain in circulation. It would thereby strongly activate commercial exchanges and investments wherever it circulates. In short, the Terra purposely fulfills only two of the three traditional monetary functions. It is designed to serve only as unit of account and medium of exchange, and not as a store of value.

Inflation-Resistant. The Terra is designed as an inflation-resistant currency by its very composition. Inflation is always defined as “the changes in value of a standardized basket of goods and services.” By selecting the appropriate ingredients to be placed in the basket, the Terra can be protected against inflation. For example, the composition of 100 Terras could include 1 barrel of oil, 5 bushels of wheat, 10 pounds of copper, 3 pounds of tin plus...1/10th ounce of gold, 1 Carbon Emissions Right, etc.

Practical Operations of the Terra

The following scenario and accompanying diagram walks through the key elements that are involved in the Terra mechanism--from the creation of Terras to their final cash-in. The numbers listed in parenthesis in the description below corresponds to the steps illustrated in the accompanying diagram (on next page).

(1). The Terra Creation Process.

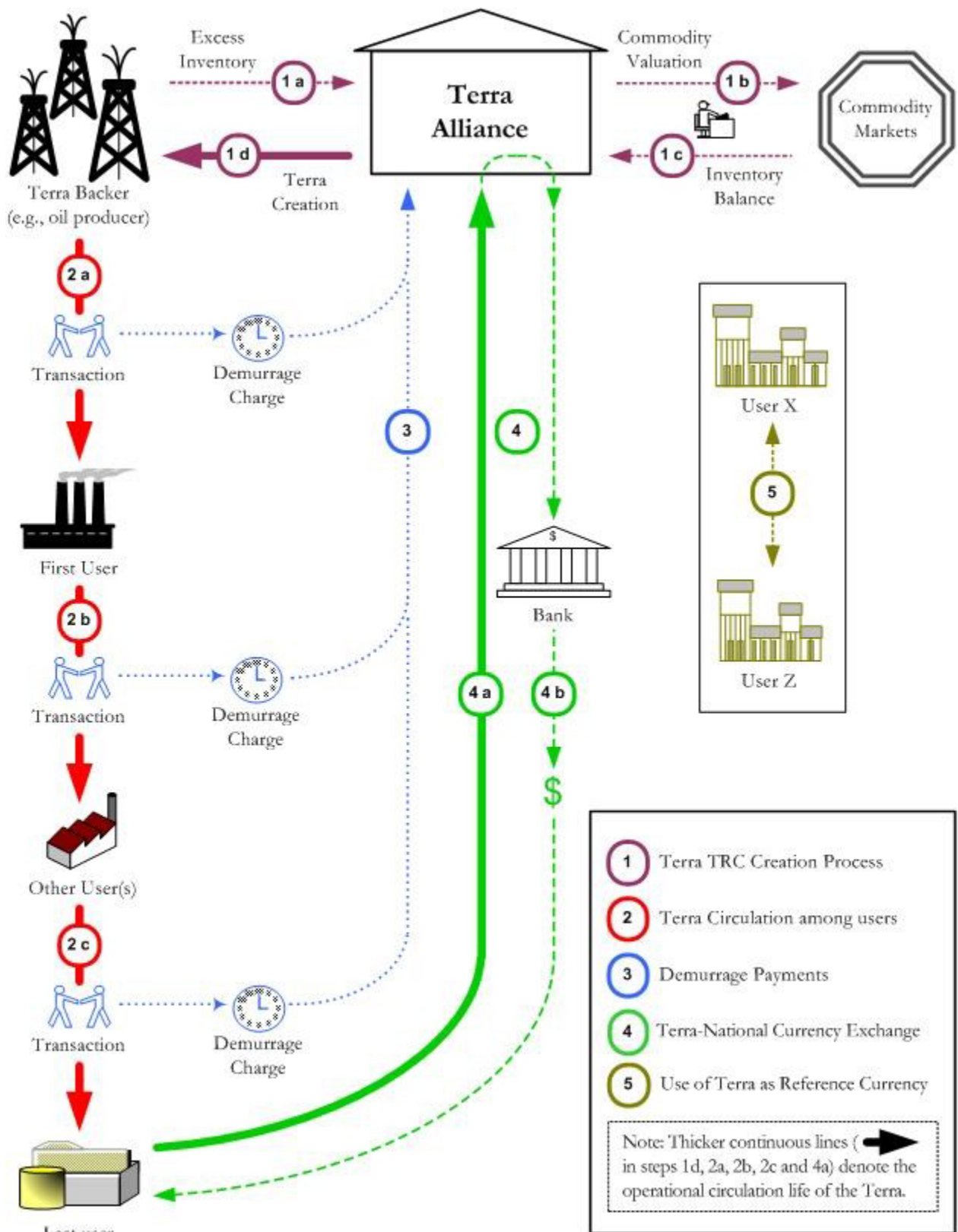
(1a.) Excess Inventory Sale. The process whereby the Terra Trade Reference Currency is created begins with the sale of some excess commodity inventory to the Terra Alliance by one of its backer/members (e.g., 1 million barrels of crude oil by an oil producer).^{vii}

(1b). Commodity Valuation in Terras. The value of this sale of oil to the Terra Alliance (i.e., how many Terras the one million barrels of oil will be 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 question (in this case oil) and the sum of each of the commodities in the Terra basket using a pre-agreed-upon procedure.^{viii}

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

$$\frac{\text{Commodity value per unit} \times \text{number of units}}{\text{Terra Unit Value}} = \text{Terras}$$

^{vii} Note that the commodity itself that is being sold (in this case, oil) may or may not have to move physically during the process. What matters it that the Terra Alliance becomes now the beneficial owner of the commodity. The legal framework for such transfers is already routinely used today. For instance, the commodity trading departments of an oil company can have a shipment of oil mining in a tanker change owner several times before it arrives at its destination.



Terra Trade Reference Currency Mechanism

Let us assume that in our example that the commodity price for a barrel of oil at the time of the sale is \$20. The commodity prices for each of the items in the Terra Basket at the time of the sale (i.e., copper, grains, lead, one unit of Carbon emissions rights, etc, including oil,) totals \$200. Let us further assume that one million barrels of oil are sold. Therefore, 100,000 Terras are created

$$\frac{\$20 \text{ per barrel of crude oil} \times \text{one million barrels}}{(\$200)} = 100,000 \text{ Terras}$$

(1c). Inventory Balance. The Terra Alliance rebalances its portfolio to take into account the inclusion of the 1 million barrels of oil. This may be accomplished through future market transactions or through spot transactions.^{ix}

(1d). Terra Creation. The Terra Alliance credits the oil producers' account with 100,000 Terras. (note that all Terra currency movements in the diagram are denoted by the thicker continuous arrowed lines).

(2). Terra Circulation among Users.

Once the Terra is created, it enters into and may remain in circulation for a period determined entirely by users.^x 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 Terras for this project.^{xi}

(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 Terras. The Korean steel mill in turn uses the Terras to pay a mining company in Australia, etc.

(2c). Last User—Each Terra remains in circulation for as little or as long as its various Users continue to use this currency (from one to an infinite number of transactions and without any particular date of expiration). The process comes to an end only when a particular User determines to cash in the Terra(s), in effect, becoming the Last User.

(3). Demurrage

Throughout the circulation life of each Terra(s), 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. This demurrage fee acts in a similar manner to a rental fee, the charge increasing the longer the rental is held onto.

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

- **Terra Circulation Incentive.** The demurrage charge is designed as an incentive to keep the Terras circulating in a timely fashion from one user to another. As the Terra demurrage charge increases the longer it is held onto as calculated below. Thus, the demurrage charge insures the Terras' usage as a mechanism of exchange and not as a mechanism of storage

^{ix} A futures market transaction is the purchase or sale today at a given price for delivery at some future date. A spot transaction is the direct purchase or sale of a commodity at the price of today, with delivery today.

^x Note that all exchanges in Terras would occur through high-level secure electronic exchanges, as these transactions would tend to be of high value.

^{xi} The payment conditions would normally have been already determined when the oil rig was put up for bidding.

- Terra Operational Cost Coverage-The Terra demurrage charge(s) is calculated to cover the costs of the entire operation of the Terra mechanism (e.g., storage costs of the basket, administrative overhead, transaction costs in the futures markets).

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

$$(Terra\ Operation\ Costs/time\ unit) \times (Terra\ holding\ period) \times (Terras\ on\ account) = Demurrage\ Charge$$

Let us assume that the Terra operation 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 all 100,000 Terras from the oil producer and has kept these on account for a period of 10 days (prior to paying the Korean steel meal in transaction 2b in our diagram). Thus, the demurrage charge (represented by the dotted blue line) in Transaction 2b would be calculated as follows:

$$0.01\%/per\ day \times 10\ days \times 100,000\ Terras = 100\ Terras$$

4. Terra Cash-In

The circulation (and existence) of a particular Terra comes to an end when one entity (designated the Last User in our diagram) decides to cash in part or all of its Terras (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 Terras cashed in) is charged. This transaction fee serves two purposes:

- Terra Circulation Incentive The transaction fee is designed as an incentive to keep the Terras in circulation and to not cash in its Terras too readily, thus continuing the beneficial effects of the circulating Terras. In effect, the 2% transaction fee requires any entity in possession of Terras to make the following consideration: “Cashing in the Terras 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 Terras over the next six months. After all, most suppliers would rather be paid earlier than later...”
- Cash-In Operational Costs. When the Last User decides to cash in its Terras, the Terra 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 Terras are thus handed into the Terra Alliance (4a) and converted to either national currency^{xii} or a volume of Terra commodities (as determined by the Last User) to the amount equal to the value of the Terras cashed in minus the transaction fee (e.g., 2 %). The cash-in may take place directly with the Terra Alliance itself or by means of an intermediary bank for example as any foreign exchange transaction today. (4b)

5. Reference Currency

Once the Terra mechanism is operational and the advantages of using an inflation-resistant international standard is known, there is nothing to impede two entities (User X and User Z in the diagram) that may have no direct involvement in the Terra mechanism to denominate contracts in Terras, even if the final settlement may happen in the corresponding value in conventional currency. The Terra, in this instance, functions purely as a Trade Reference Currency, a reliable standard of value. This is

^{xii} In order to produce the corresponding cash for the Terras that are handed in, the Terra Alliance sells an appropriate volume of commodities of the Terra basket in the commodity markets.

similar to the gold standard days when two parties agreed on contracts denominated in gold, even if neither party owned gold or had any involvement in gold mining or processing. The only significant difference with the Terra is that, again, it is backed not by one commodity (i.e., gold) but by a dozen or so commodities and services (i.e., the Terra basket) making it more stable a reference than the gold standard.

BENEFITS OF THE TERRA

The Terra Initiative addresses each of the major economic and financial concerns mentioned earlier, and offers both general benefits and specific benefits to particular interest groups. General and specific benefits will be examined next, followed by an analysis differentiating the Terra from all other proposals and initiatives aimed at redressing present monetary concerns.

General Benefits of the Terra

The Terra mechanism, by virtue of its demurrage charge and being inflationary-resistant, endows this trading instrument with three unique economic advantages. These are:

- 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.

Robust International Standard of Value

The Terra 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, including gold, the Terra would be a very robust and credible payment unit that offsets volatility and currency risks.

This robust standard of value benefits commerce as follows:

- Lowers costs by reducing the need for expensive hedging countermeasures;
- Enables greater opportunities (including investments in developing countries) by providing stable alternative mechanisms by which to conduct commerce;
- Offers a dependable, cost-effective reference mechanism for global trade.

Cycle-stabilization

The Terra automatically tends to counteract the 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 can now be sold to the TRC Alliance (who would place these inventories into storage). The TRC Alliance would pay for these inventories in Terras, thus providing corporations with a means of payment (typically, less readily available in this part of a business cycle). These corporations would immediately spend the Terra's, to pay their suppliers, for example, so as to avoid the demurrage charges (whose holding costs accumulate over time). Suppliers, in turn, would have a similar incentive to pass on the demurrage-charged Terras as a medium of payment. The spread of this currency (with its built-in incentive to trade) would automatically activate the economy at this point in the cycle.

On the contrary, when the business cycle is in a boom period, demand for goods and services goes up and both suppliers and corporations have an increased need for inventory. The Terras 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 Terras in circulation when the business cycle is at its maximum, counteracting an inflationary boom phase.

None of this is theory. There is now quantitative proof that the availability of a complementary currency designed for business use spontaneously tends to stabilize the business cycle and the overall economy. Detailed analysis on the WIR system, a complementary currency program in use for more than 50 years in Switzerland, provides the relevant evidence (see insert).

Complementary Currencies, the WIR & Economic Stabilization

The impact of commercial exchanges facilitated by computer networks without the use of conventional money is a hotly debated topic of late. A few prominent economists have speculated that computer-networked barter might eventually replace our money—as well as its centralized protector—central banking. Such questions have recently been asked by leading macroeconomists like Mervyn King, Deputy Governor of the Bank of England,^{xiii} and Benjamin Friedman of Harvard.^{xiv}

“Friedman's view that central banking may be seriously challenged was a lead topic at a recent World Bank conference on the ‘Future of Monetary Policy and Banking’ (World Bank, 2000).^{xv} His warnings have even sparked a pair of skeptical reviews in the Economist Magazine of London.^{xvi} But no one, until now, has looked at the direct evidence on this issue—the large-scale barter networks, in existence for decades.”^{xvii}

A quantitative study on the “direct evidence on this issue” was conducted by Dr. James P. Stodder, Professor at the well-respected Lally School of Management & Technology at Rensselaer University. It is based on the high quality data from the Swiss WIR system. His conclusion: “The WIR system is counter-cyclical, rising and falling against, rather than with, the business cycle... because... credit advanced by the WIR is highly counter-cyclical, correlated against GDP.”^{xviii} This contributes measurably to the stability of the Swiss economy, because WIR credits automatically expand when the economy turns down, i.e., when credit in conventional Swiss Francs dries up.^{xix} Furthermore, the WIR system also stabilizes employment. “Growth in the number of WIR participants has tracked Swiss Unemployment very closely, consistently maintaining a rate of about one-tenth the increase in the number of unemployed.” This means that when the conventional Swiss Franc economy slows, job losses are partly avoided by having more people getting involved in the WIR economy.

Professor Tobias Studer from the Center of Economic Studies of Basel University, Switzerland, considers the Stodder study a breakthrough because: “For the first time, an independent American researcher has arrived at a surprising conclusion: far from representing a factor of disturbance for national monetary policy, the credits created by WIR constitute a support of the National Bank (Swiss Central Bank) in pursuit of its monetary policy objectives.”^{xx}

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7. Mervyn King, "Challenges for Monetary Policy: New and Old." Paper prepared for the Symposium on "New Challenges for Monetary Policy" (Jackson Hole, Wyoming: 27 August 1999). Sponsored by the Federal Reserve Bank of Kansas City.
 8. Benjamin Friedman, "The Future of Monetary Policy," International Finance (December, 1999).
 9. "Future of Monetary Policy and Banking Conference: A Conference Looking Ahead to the Next Twenty-Five Years" World Bank (Washington, D.C., July 11, 2000).
 10. "Economics Focus: E-Money Revisited," Economist Magazine (July 22, 2000).
 11. James Stodder, "Reciprocal Exchange Networks: Implications for Macroeconomic Stability." (Albuquerque, New Mexico: Paper presented at the International Electronic and Electrical Engineering (IEEE) Engineering Management Society (EMS) August 2000) 1.
 12. James Stodder, Ibid. 2.
 13. James Stodder, Ibid. 3.
 14. T. Studer, "Le Système WIR dans l'optique d'un chercheur Américain" WirPlus (October 2000). Online at: <http://www.wir.ch>.

In case one might think that such effects are valid only for Switzerland, Prof. Stodder also evaluated the effects of commercial barter by members of the International Reciprocal Trade Association (IRTA) upon the U.S. economy.^{xxi} Though the data here covers only 21 years (instead of WIR's 50 plus), exactly the same type of impact occurs. But with IRTA exchanges proportionally smaller in the U.S. economy than the WIR for the Swiss economy, the overall effect is also proportionally less powerful.

In summary, the Terra-denominated exchanges would stabilize the business cycle by providing additional monetary liquidity that counterbalances the pattern observed in the money-creation process of conventional national currencies.

Realignment of Financial Interests with Long-term Concerns

The demurrage feature of the Terra would provide a systematic financial motivation that realigns financial interests with long-term concerns. This is in direct contrast with what happens today with conventional national currencies. The discounted cash flow of conventional national currencies with positive interest rates systematically 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 effects. The use of the Terra for planning and contractual purposes will therefore reduce the conflict that currently prevails between the stockholder's financial priorities and the long-term priorities of humanity as a whole.

Specific Group Benefits

Virtually everyone stands to benefit from the Terra. A partial list of the specific advantages applying to humanity at-large, multinational corporations, the banking sector and financial services, Less Developed Countries and developed nations are offered in following.

Humanity as a Whole

- As long as business is focused on short-term profits, chances are minimal that any long-term sustainability is possible. Inevitably, it will be the humanity as a whole that will end up paying for a failure in sustainable development. In contrast, the introduction of the Terra 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 more reliable job employment opportunities and less job instability.
- Initiating the Terra mechanism now, when the world's major economies are in a downturn is the best timing for its introduction, since the additional economic stimulus would be beneficial to all.

Multinational Corporations

The Terra offers corporations the following advantages:

- Makes it possible to convert inventories of 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. Over time, such storage costs can become substantial.
- Provides working capital at a lower cost than with conventional national currencies, as the Terra demurrage fees only kick in for a particular user if the Terras are not spent.

15. James Stodder, (1998) "Corporate Barter and Macroeconomic Stabilization," International Journal of Community Currency Research, Vol.2, no.2. Online at: <http://www.geog.le.ac.uk/ijccr/volume2/2js.htm>.

- Makes available to businesses a robust international standard of value, with a consistent value in real terms for international contracts. No party would lose out because of monetary instability or currency fluctuations.
- Lowers the cost of doing business, by reducing the need for expensive currency hedging countermeasures and providing a dependable, low-cost insurance against uncertainties deriving from international currency markets.
- Offers a dependable, more cost-effective reference mechanism than conventional corporate barter.
- Develops new markets and enables greater opportunities by which to conduct global commerce, including investing in developing countries, by providing a stable international currency. This situation has limited the creation of new markets, because entire continents remain too poor to participate in the global marketplace.
- Saves money and vital resources. Corporations, as a result of the boom and bust business cycle phenomenon, are often under-equipped and looking for qualified staff, or over-equipped and over-staffed. The costs of training people, for example, are considerable (only to then fire them afterwards). Expenses incurred in plant and equipment over-investments or under-investments are also considerable.
- And, it is well known that political instabilities often occur during, and result from, economic downturns. Such instability is not contributing to a healthy climate for businesses either. The Terra counteracts such downturns.

Benefits to Financial Services and the Banking Sector

There are three main advantages of the Terra mechanism for the banking system:

- It 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 (countertrade grows at a rate of 15% per year, three times faster than trade facilitated in conventional currencies). Banks will be able to provide traditional foreign exchange services utilizing the Terras, which can then be converted into any and all other national currencies. They can, as well, provide their customers services such as Terra account management, as they do today with any foreign exchange.
- The counter-cyclical impact of the Terra mechanism will stabilize the value of banking loan portfolios. There have been numerous major banking-related crises around the world over the past two decades, in which borrowers can't repay their loans, while the collateral upon which the loans were based depreciates. These conditions are aggravated by the boom/bust cycle and currency fluctuations. Therefore, as the Terra mechanism helps to stabilize economic cycles, the number and severity of crises in bank portfolios would also be reduced.
- Finally, the task of central banks would also be made a bit easier with the Terra mechanism in play. Not only would there be fewer banking crises to manage, but also their routine job of trying to counteract the business cycle would be eased as already demonstrated in practice by the WIR.

Less Developed Countries (LDCs)

Currently, as a direct result of currency instability, LDCs suffer from a lack of investments. Furthermore, the degradation of terms of trade with developed nations, and the scarcity of hard currencies create debt traps resulting in the inability to repay foreign loans.

This is illustrated by the comment on his country's debt made after the G8 summit in Okinawa in 2000 by President Obasanjo of Nigeria: "All that we had borrowed up to 1985 or 1986 was around \$5 billion. So far we have paid back about \$16 billion. Yet we are being told that we still owe about \$28 billion. That \$28 billion came about because of the foreign creditors' interest rates. If you ask me what is the worst thing in the world, I will say it is compound interest." When President Obasanjo spoke out, the developing world was spending \$13 on debt repayment for every one dollar it received in foreign aid and grants.

The Terra mechanism helps to address these problems and offers two distinct and important benefits to LDCs.

- A stable international currency enables greater opportunities by which to conduct commerce and make investments in developing countries. As noted earlier, because of the instability created by floating exchanges, there has been approximately a 33% decrease in investments to Less Developed Countries.
- LDCs that produce commodities (i.e., raw materials such as copper that are components in the basket of the Terra) would be in a similar position as any producer member of the TRC Alliance. By virtue of the fact that the Terra is a commodity-backed currency, LDCs would find themselves in a position similar to gold-producing countries during the gold standard days: What they extracted - gold - was in fact directly an internationally convertible currency.

Developed Countries

- As stated earlier, the developed world is facing its first simultaneous economic downturn since the 1930s. (At that time, only a World War got us out that economic stranglehold. A better way is available). If the Terra were implemented now on a sufficient scale, it would help re-launch the world economy by injecting international liquidity that would reactivate the global economy.
- By helping LDCs, new markets are created.
- By stabilizing the business cycle, greater job stability and opportunities would become available as well.

Differences with Earlier Proposals

The Terra is a commodity-basket currency. For more than a century, there have been several proposals for commodity-basket currencies by a series of well-known economists.^{xxii} The main reason why they have not been implemented is not due to a technical fault of the concept, but rather because they were aiming at replacing the conventional money system. Such replacement would have put in jeopardy powerful vested interests. This is not the case with the Terra proposal.

On the contrary, the win-win strategy underlying the Terra mechanism includes the financial sector as well. Anything that exists under the current monetary modus operandi would remain in operation after the introduction of the Terra, as it is a complementary currency designed to operate in parallel with the existing system.

16. See for example in chronological order: W.S. Jevons, *Money and the Mechanism of Exchange* (1875); Ian Gondriaan, *How to Stop Deflation* (London, 1932); Benjamin Graham, *Storage and Stability* (New York: McGraw Hill, 1937) and *World Commodities and World Currency*(1944); Harmon, Elmer, *Commodity Reserve Currency* (New York: Columbia University Press, 1959); Albert Hart of Columbia University, Nicholas Kaldor of Cambridge University and Jan Tinbergen: "The Case for an International Reserve Currency," Document UNCTAD 64-03482 (Geneva: presented on 2/17/1964); Grondona St. Clare *Economic Stability is Attainable* (London: Hutchison Benham Ltd, 1975).

Finally, as stated earlier, the political context for an international monetary treaty has not been available. The Terra avoids this pitfall by relying on private initiative. From a legal or tax standpoint, it would fit within the existing official framework of countertrade, and not require any formal governmental agreements to make it operational.

The other conceptual difference and perhaps the most important one between the Terra proposal and all previous proposals is the introduction of the demurrage concept. The fact that the storage costs of the basket would be covered by the bearer of the Terra, resolves the inherent problem that previous commodity proposals were facing, namely: Who will pay for it all?

The Terra mechanism is a win-win approach for all participants in the global game, and that is why it can succeed where other proposals for monetary innovations have failed in the past.

For those interested in keeping informed on the developments of the Terra Initiative, please consult www.terratrc.org.

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GLOSSARY OF TERMS

Baker Plan. A plan by former U.S. Treasury Secretary James Baker under which 16 principal middle-income debtor countries would undertake growth-oriented structural reforms, to be supported by increased financing from the World Bank and continued lending from commercial banks.

Barter. The direct exchange of goods or services un-mediated by any type of currency.

Booms and Busts. A recurrent cycle of growth, bust, recession, and recovery in the economic activity of a capitalist country. There have been 47 major asset boom/bust cycles since 1637, the last two being the Japanese real-estate bubble, and the U.S. high-tech stock market bubble that crashed respectively in 1990 and 2000. For an explanation of the mechanism behind boom/bust cycles and their relationship to money systems, see B. Lietaer, *Mysterium Geld* (Munich: Riemann Verlag, 2000), Chapter 5.

Bretton Woods Agreement. The major world powers met in 1944 in Bretton Woods, New Hampshire, to organize an international monetary system that would alleviate foreign-exchange problems created by WW II. The result was the Bretton Woods Agreement, the first global monetary constitution. The World Bank and International Monetary Fund (IMF) were established there. The participating nations, agreed to tie the values of their currencies to the value of the U.S. dollar.

Business Cycle. A term used in economics to designate cyclical changes in the economy. Ever since the Industrial Revolution, the level of business activity in industrialized countries has veered from high to low and back up again. The timing of a cycle is not predictable, but its phases seem to be. Many economists cite four phases: prosperity, liquidation, recession or depression, and recovery; using the terms originally developed by the American economist Wesley Mitchell.

Capital. In its narrow financial sense, capital is a sum of money from which an income can be derived. The two most traditional means for such income is interest (in the case of loans) and dividends (in the case of stocks). In broader terms, capital is a resource that enhances life, of which several types can be distinguished: financial capital, physical capital (e.g., plants, equipment), intellectual capital (e.g., patents, copyrights), social capital (e.g., relationships) and natural capital (Mother Nature).

Central Bank. A financial institution whose function is to regulate a state's monetary activities. It is responsible for the issue of bills and for controlling the flow of currency. In the US, the Federal Reserve plays that role.

Clearing House. A central collection place where institutions and individuals exchange checks, drafts and currencies. Participants maintain an account with the Clearing House against which credits or debits are posted.

Commodity-Backed Currency. A currency whose value is guaranteed by the physical availability of the commodity that backs the currency. The owner of a backed currency can normally ask for delivery of the physical good or service in exchange for the currency. Backed currency is typically issued by whoever owns the product or service accepted as backing (e.g., the 19th century gold standard backed by gold).

Complementary Currency. An agreement within a community to create its own currency to link unmet needs with unused resources. These currencies do not replace but rather supplement (i.e., complement) the national monetary system and provide greater functionality to money.

Countertrade. Barter at the corporate, multinational level.

Currency. Synonymous with money, but emphasizing the medium of exchange function of money.

Currency Crisis. A dramatic and sudden change of value of a country's currency relative to other currencies, typically accompanied by a swift increase of the flow of capital in or out of the country.

Demurrage Charge. A time-related charge on money. It acts in a manner similar to a rental fee, which increases the longer it is held onto. For example, a 5% annual demurrage charge on \$100 incurs a \$5 fee, leaving a remainder of \$95. The demurrage feature yields two profound effects, namely: It promotes a currency's circulation as a trading device; and it encourages long-term thinking.

Deregulation. Dismantling of legal and governmental restrictions on the operation of certain businesses. When governments want to encourage competition and make economies more productive, they often deregulate, removing restrictions on companies' behavior. After deregulation, companies (e.g., airlines, telephone service providers) may make their own decisions on prices and markets, regardless of the effect on consumers.

Derivatives. A financial instrument that enables the segmentation of different types of risk. The main derivatives types are futures (contracted in a regulated exchange), forwards (contracted in the unregulated "over the counter" market) and options. Exotic derivatives are complex combinations of simpler derivatives (e.g., forwards and options).

Development Banks. Multilateral banks that lend money toward or invest in the economic development of countries. The World Bank (officially called the International Bank for Reconstruction and Development) and regional banks such as the European Bank for Reconstruction and Development (EBRD), and the Asian Development Bank (ADB) are such institutions.

Discounted Cash Flow. Calculates the value of a future cash flow in terms of an equivalent value today. For instance, \$100 a year from now is equivalent to \$90.91 today if one uses a discount rate of 10% (conversely, a one-year, risk-free investment of \$90.91 at a rate of 10% will yield \$100). The three factors that make up the discount rate are: the interest rate of the currency used, the cost of capital, and an adjustment for the risk of the investment.

Dollar-Gold Equivalence Standard. A guarantee of the convertibility of U.S. dollars into gold on demand. This was established at the fixed rate of \$35 per ounce by the Bretton Woods Agreement (1944), but abandoned by the Nixon administration (1971).

Economic Development. The promotion of more intensive and more advanced economic activity through education, improved tools and techniques, increased financing, better transportation facilities, and creation of new businesses.

Emerging Markets. Nations whose economies are transitioning or have recently transitioned from heavy state control to economic policies that are more market-oriented.

Euro. The European supra-national monetary unit, implemented on Jan 1, 2002. It officially replaced the national currencies of twelve member states of the European Union, namely: Belgium, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, The Netherlands, Austria, Portugal and Finland.

Exchange Rates. The value of currencies worldwide is provided by exchange rates that determine what each currency is worth in terms of other currencies. Just like any other commodity, a currency is now worth whatever people will pay for it. A Norwegian krone, for example, is worth a given amount of euros, dollars or yen.

Fiat Money. Money that is created by the power of an authority. *Fiat Lux* ("Let light be") were the first words that God pronounced, according to Genesis. Fiat money is money created out of nothing ("*ex nihilo*") by the power of the word of an authority and is not backed by goods or services. All national currencies today are fiat currencies.

Financial Deregulation. The reduction of government's role in controlling financial markets; relying on market forces to function without governmental intervention.

Fixed Exchange Rate. Rate fixed by an authority at which one currency can be exchanged against another.

Floating Exchanges. The flexible exchange rate system in which the exchange rate is determined by the market forces of supply and demand without governmental intervention.

Globalization. Integration of the world's culture, economy, and infrastructure, driven by the lowering of political barriers to transnational trade and investment, and by the rapid proliferation of communication and information technologies. The term is often used in reference to the substantial impact of free-market forces on local, regional and national economies.

Gold Standard. In economics, the monetary system wherein all forms of legal tender may be converted on demand into fixed quantities of fine gold, as defined by law; having three principal aims: to facilitate the settlement of international commercial and financial transactions; to establish stability in foreign exchange rates; to maintain domestic monetary stability.

Gross Domestic Product (GDP). The total value of all goods and services produced within a country in a year, minus the net income from investments in other countries.

Gross National Product (GNP). The total annual flow of goods and services in monetary value in the economy of a nation. The GNP is normally measured by totaling all personal spending, government spending, and investment spending by a nation's industry. GNP can also be figured by the earnings and cost approach of accounting, in which all forms of wages and income (e.g., corporate profits, net interest returns, rent, indirect business taxes, unincorporated income) are added together.

Hedge Funds. Only remotely related to the practice of hedging, hedge funds borrow money to make speculative investments, usually in areas from which more conservative investors shy away.

Human Wealth. The assets and capital inherent in the spirit, creative genius and unbounded potential of the ever-evolving human species.

Inflation. Depreciation over time of the value of a currency in terms of a reference basket of goods and services. An excess of fiat money supply will tend to create inflation.

Interest. Time-related income for the owner of a currency, or time-related cost for the borrower of a currency. Interest is one of the ingredients in the Discounted Cash Flow calculations.

International Monetary Fund (IMF). International organization, established at the Bretton Woods Conference in 1944, which aims to promote international monetary cooperation, currency stabilization and expansion of international trade. Based in Washington, D.C., with 183 member nations, the United States is the only country with veto power. Web site: www.imf.org

Legal Tender. A currency that is recognized as acceptable payment for all debts, public and private. A debt can be declared void if repayment in legal tender is refused.

Money. Synonymous with currency or means of payment. Our working definition is "an agreement within a community to use something as a medium of exchange."

Multinational Corporation. A large company that operates or has investments in several different countries.

Payment system. Procedure and infrastructure by which the transfer of a currency is executed from one entity (or person) to another.

Scarce. In insufficient quantity. For all national currencies, bank-debt money keeps value only by its scarcity compared to its usefulness. The polarity of scarcity is not over-abundance, but sufficiency. For instance, in a mutual credit system there is always sufficiency of money as participants create it among themselves as a debit and credit at the moment of a transaction.

Stock. A fraction of ownership in a business. Stock markets are the regulated exchanges for stocks of companies listed in a particular exchange.

Terra Trade Reference Currency™ (Terra TRC™). A new, privately issued, complementary currency designed to systematically stabilize the effects on the business cycle and re-align financial interests with long-term sustainability. This internet-based trade reference currency will be fully backed by a dozen or so of the most important commodities and services in international trade, thereby providing, for the first time since the gold-standard days, an international standard of value that is inflation-resistant. Its unit of account is the Terra. It has a built-in circulation incentive via its demurrage feature. As a complementary currency, it will work in parallel with national currencies. Web site: www.terratrc.org.

World Bank (WB). A specialized United Nations agency, established at the Bretton Woods Conference in 1944. The chief objectives of the bank, as stated in its articles of agreement, are "to assist in the reconstruction and development of territories of members by facilitating the investment of capital for

productive purposes [and] to promote private foreign investment by means of guarantees or participation in loans [and] to supplement private investment by providing, on suitable conditions, finance for productive purposes out of its own capital.” Web site: www.worldbank.org

World Trade Organization (WTO). An international body that promotes and enforces the provisions of trade laws and regulations; established in 1994 to replace the General Agreement on Tariffs and Trade (GATT). Web site: www.wto.org