

# **Kaldor's Commodity Reserve Currency**

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## **Abstract**

Nicholas Kaldor in 1964 suggested a bold new international monetary system to equilibrate growth between agriculture and industry, and remove bottlenecks to industrialization. Specifically he proposed the creation of a 'sound money' international reserve backed by a basket of stored commodities, tying reserve liquidity to international world trade and industrialization. His proposal was for a commodity reserve currency that would not only balance economic progress between regions but offer an alternative reserve to the US dollar, mitigating global imbalances and the unsustainable way in which US dollar reserves are recycled and absorbed. This ambitious global macro policy proposal is briefly described and illustrated here to offer an alternative view to current debates on global imbalances.

## **I. Introduction**

In March 2009 Zhou Xiaochuan, Governor of the People's Bank of China, called for "a creative reform of the existing [US dollar] international monetary system towards an international reserve currency with a stable value, rule-based issuance and manageable supply, so as to achieve the objective of safeguarding global economic and financial stability...and one that was disconnected from individual nations and able to remain stable in the long run, thus removing the inherent deficiencies caused by using credit-based national currencies."

Xiaochuan voiced regret that Keynes' *Bancor*, which he described as being "based on the value of 30 representative commodities" was never implemented. Like Keynes, Xiaochuan considered such a 'tabular index' to be a superior international reserve currency, but advocated instead for the more politically expedient solution - a basket of world currencies.

Just prior to this announcement in October 2008 Robert Zoelick, head of the World Bank, had suggested the new international finance system should have multiple reserve currencies, including those linked to “currency baskets or commodities,” to which countries could opt to float or peg their own national currencies (Zoelick 2008, p.8).

Despite these modern day statements by world leaders, most commentators cannot imagine a world currency backed by commodities - except perhaps gold which is often accused of being given a status far beyond its use value due to its past history. Nor can modern day academics imagine the stockpiling of commodities to stabilize prices against market forces - despite growing short term commodity price volatility with prices sometimes varying by as much as 50 per cent in a single year. In the past 30 years, there have been as many price shocks across a range of commodities as there were in the preceding 75 years. This subject remains taboo even when some countries are doing just this in terms of strategic reserves. For example China in 2010 was thought to be holding 200 million tons of wheat representing 6 months of their annual supply needs. A similar situation occurs for copper where China buys and stockpiles when copper prices are low and stops buying when copper prices are high (Jessop and Strachan 2011). While such large national strategic reserves could (and at times did) stabilize international prices this is not China’s primary goal, rather it is to secure supply and remove vulnerability to supply shocks. Since China does not sell copper when prices are rising, its stockpiling has been accused of being destabilizing, fueling price manipulation by speculators and excessive copper prices (Veneroso 2009).

Like any strategic reserve, commodity buffer stocks have been used for centuries and have a proven track record *when run well* to stabilize incomes and prices for producers

as well as give consumers price certainty (LeClair 2002). In 2007, total losses to all consumers from rising food prices were estimated at \$270 billion (World Bank 2009, p. 127). The World Bank (Ibid p.130) hypothesized that an international grain stockpile, 10% of global production, worth roughly \$66 billion, would have stabilized international grain prices at an annual maintenance cost of \$4–6 billion.<sup>1</sup> A tiny sum compared to the loss to consumers, and the countless number of lives put at risk and deaths due to malnutrition.

Nicholas Kaldor was one of the few economists who not only dared but was given a platform on which to voice visionary global solutions for the world's ills. While affiliated with the United Nations, Nicholas Kaldor was the primary draftsman of two bold international coordination policies. The first, in 1949, was the report for the UN Economic and Social Council, *National and International Measures for Full Employment* (NIFE) (see Turnell and Ussher 2009). The second, in 1964, was *The Case for an International Commodity Reserve Currency*, submitted at the first meeting of the United Nations Conference on Trade and Development (UNCTAD). Both proposals dealt with maximizing the productive use of each economy's resources, through effective demand and the balancing of international trade, to push out the theoretical production possibility frontier and advance economic progress world wide. While the first was criticized as a 'soft money' policy, the second should have been considered as 'sound money.' However both proposals were given short shrift and dropped from the debate.

This paper argues that Kaldor's proposal for an international commodity reserve currency (CRC) remains an interesting and relevant area of study for international monetary reform. It first considers Kaldor's goals for the CRC; a bare bones description of the CRC composition; some detailed examples of how it would operate compared to the gold

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<sup>1</sup> \$1.4 billion in storage costs and \$3–5 billion of spoilage costs based on losses in high-income countries.

standard, Keynes's Bancor, and the current US dollar standard; and a summary and extension of Kaldor's core and periphery dynamics under today's US dollar system and high commodity prices.

## **II. The Goals of a Commodity Reserve Currency**

In 'The Case for an International Commodity Reserve Currency' (Hart, Kaldor & Tinbergen, 1964)<sup>2</sup> Kaldor basically replicated what Benjamin Graham had proposed in 1937. However on a slightly different track from Graham, Kaldor wanted his international monetary reform to achieve three goals – counter cyclical international liquidity, industrialization of the developing world, and national autonomy such that full employment policies can be pursued.

In terms of the first goal, he wanted to resolve the international liquidity crisis of the 1960s where the limited growth in gold reserves had pushed the US dollar into the role of key currency reserve, where growth of US dollar reserves were dependent on unsustainable US balance of payments deficits, where reserves were absorbed and recycled in perverse ways, and where US deficits and debt led to the deindustrialization of its manufacturing export base and the financialization of its economy. Kaldor felt that the creation of a new reserve currency backed by real assets other than gold, 'but no less homogeneous,' was preferable over all other proposals at the time which were to either broaden the basket of key currencies or to adopt the "Triffin proposal" for a credit creating World Central Bank (Hart et al. 1964, p132 – 146). Some compromise of these two proposals was ultimately adopted in 1968 with the creation of the Special Drawing Rights (SDR) by the International

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<sup>2</sup> Kaldor drafted the text (Hart, 1991, p. 562) while Tinbergen was primarily a signatory (Toye & Toye 2004, p. 221), both Kaldor and Hart continued researching this topic for the next two decades.

Monetary Fund (IMF), but it failed in replacing gold or the dollar as the world's international reserve.

In terms of the second goal he wanted to promote industrialization of the world's poorest countries by stabilizing and improving the terms of trade for commodity producers. For industrial growth to proceed unimpeded in the South a matching expansion of production and trade in primary products was required. This could be met by an international commodity buffer stock which would make elastic the supply of raw materials (which are otherwise inelastic), stabilize their prices, and lower production risks thus promoting steady investment in these essential goods. Importantly, this stock pile would be financed through the issuance of the reserve currency in exchange for the commodities.

Thirdly, Kaldor wanted an international monetary system that would allow for domestic monetary and fiscal autonomy. He had promoted full employment policies in NIFE only to be criticized for ignoring the risks to inflation. The introduction of a world currency backed by commodities issued via the IMF, or the formation of a new International Commodity Corporation (ICC). This would offer an automatic stabilizer for world trade by an ICC injecting international reserves through the purchase of commodities when commodity prices and world effective demand was weak, and contract world reserves by selling commodities when effective demand was strong. In the process commodity prices would be stabilized thus moderating cost-push inflation – especially in economies where food prices are a large proportion of household expenditures. Governments would be free to float or peg their exchange rates to the CRC, and thus have some autonomy in their pursuit of fiscal and monetary policies.

### **III. Composition of Kaldor's Commodity Reserve Currency**

Drawing on Benjamin Graham's (1937; 1944) proposal for a world commodity currency, Kaldor's commodity unit, or *Bancor*, would be of standardized commodities, such as those quoted on commodity exchanges that have a low cost of storage. The composition of this basket would be determined by international agreement; ideally, the basket would be composed of a wide range of standardized and durable commodities which are universally used, and whose values therefore, taken individually, would not be greatly changed by their use as a reserve medium. The relative proportions of the commodities in the basket would be determined by their share of world trade (periodically re-evaluated).<sup>3</sup>

**Table 1. Standardized and storable commodities for possible inclusion in an international commodity reserve currency.**

<b>Agricultural Raw Materials</b>	<b>Edible Oils</b>	<b>Metals and Energy</b>
Cotton	Rapeseed	Copper
Wool	Canola	Zinc
Rubber	Palm Oil	Tin
Wood		Lead
Paper Pulp	<b>Food and Beverages</b>	Aluminum
	Sugar	
Wheat	Coffee	
Corn	Tea	Columbite-tantalite*
Rice	Cocoa	Natural Gas*
Soybeans	Pork bellies, frozen	Ethanol*
Oats	Orange Juice, frozen	Bio-diesel*
	Dried Milk	Carbon Permits*

\*Commodities not in previous the Kaldor plan. Many more can be added.<sup>4</sup>

Parity between Bancor and the current market price level of the commodities in the commodity bundle should in principle be assured by arbitrage operation of private traders who would buy commodities in the open market for the purpose of tendering to the ICC, or buy commodities from the ICC for the purpose of tendering in the open markets whenever there is a profit in doing so (Hart et al 1964, p.156).

<sup>3</sup> For a more detailed description and workings of the Kaldor commodity buffer stock and CRC see Ussher (2009).

<sup>4</sup> The suggestion of Carbon permits comes from Lietaer (2004).

Kaldor offered to stabilize Bancor in terms of any of the presiding international reserve currencies e.g. gold, USD, SDRs, as chosen by the IMF. The ICC would do this through open market operations in commodities. Most important was the stabilization of the basket of commodities rather than the picking of the target valuation. The index of primary commodities in the bundle should be stable in terms of the international reserve, irrespective of variations in the exchange rate of individual currencies. Any tendency for prices to fall and the ICC would absorb stocks of commodities, increasing Bancor income to primary producers and adding to world liquidity. The opposite when prices fall.

The target basket price will be based on some historical average, e.g. past 10 years, and re-evaluated to meet the goal of a long-run stable inventory, a percentage of world trade. Kaldor suggested that commodity-reserves should grow at 3 per cent per year. This could be different from the rate of growth of industry, but it would be a rate that brought these two sectors into balance and stabilized the terms of trade.

The common problem with issuing a new international currency is how to make it liquid enough to be used widely such that it becomes liquid. This is far less problematic for a 100 per cent commodity backed currency because it already has use value, and can be taken up by the private sector and redeemed into commodities.

#### **IV. Balance Sheet illustration of Four International Monetary Reserve Systems**

Much of the recent instability of commodity prices comes from the volatility of the international reserve or US dollar. One option is to stabilize the real value of an international reserve, another is to stabilize commodity prices in terms of that reserve, Keynes tried both.<sup>5</sup>

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<sup>5</sup> Jevon's monetary scheme (1876, ch.XXV) followed up by Keynes (1930) in the *Treatise* - both wanted to stabilize the value of gold. They proposed to anchor the value of gold, through open market operations, to a *tabular standard* or an index of 62 international commodity prices, similar arguments today exist for the stabilization of the SDR in terms of a world CPI (Coats 2010). In 1941 Keynes must have decided that it was

Ultimately, he settled on the stabilization of commodity prices in terms of an international reserve that did not belong to a sovereign nation. Thus his original 1941 proposal to Bretton Woods he included alongside his international clearing union (ICU) and its fiat issuance of Bancor, an ICC which would borrow Bancor from the ICU and finance the holding of individual commodity bufferstocks (see Moggeridge 1980 and Ussher 2011). Like Kaldor's ICC, Keynes's ICC would be the primary tool for counter cyclical demand policy.

In the following examples (see Appendix) there is an outline of how different international reserves compare in terms of a balance sheet circulation of funds. It offers a simple mechanical portrayal of the payment and settlement between nations under the Gold standard, a Bancor standard à la Keynes, a Bancor standard à la Kaldor (or Graham), and the current US dollar standard. In the case of CRC Bancor we presume that it can be used as payment by non central bank entities, unlike Keynes's Bancor. The purpose of this section of the paper is to remove the mystic of a commodity reserve currency and highlight the similarities and differences between what are in effect different accounting methods for exchanging and storing tangible and financial assets.

### ***Terminology***

Entity with red name is the initiator of a series of transactions. Transactions are put in an order of sequence, though in many cases this is purely subjective and can be rearranged. Red arrows are the direction of international reserves. Green arrows are the direction of domestic deposits or domestic bank central bank reserves. Choice of country names is fairly arbitrary.

#### ***1. Gold Standard, no international central bank***

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more important to stabilize the price of commodities in terms of the international currency, rather than require a stable international currency in terms of commodity prices.



Under the Gold standard gold could be held privately and issued privately. Capital flows in this example are controlled through central bank mediation.

#### *A. Creation of Gold Reserves*

Most gold creation was determined not so much as prices, but gold discoveries. If a gold miner were located in a LDC then he would sell his gold to his local bank, which would sell to its central bank in order to get pesos back to the gold miner. If gold is hoarded in the private system there may not be a sale to the central bank.

#### *B. Redistribution of Gold Reserves*

A LDC firm that wants to pay back a USD denominated loan from a US bank will first have to acquire USDs from its local bank. The local bank gets dollars from the central bank, which can acquire them by selling gold to the US central bank. It then effectively transfers these reserves to the US Bank. The red arrow is the movement of the international gold reserve.

#### *C. Redistribution of Gold Reserves*

A UK firm that imports manufactured goods from a US firm will first need to acquire USD deposits from its local bank. This will result in a contraction of Sterling reserves and the use of gold by the Bank of England to purchase USD reserves, which it offers as deposits to its local banks. It can transfer these deposits to its counter party in the US through the banking system. Gold is held on the books at the Federal Reserve and USD reserves are expanded.

### ***2. Bancor à la Keynes, International Clearing Union (ICU) and International Commodity Control or ICC***

Bancor was fixed in terms of gold, dollars and pounds but adjustable. Countries would

adopt a fixed rate but could apply to the ICU for modification. The quota limit for both deficit and surplus countries was  $(\text{total imports} + \text{total exports})/2$  for a year. (There was no limit on surplus countries in the 1942 proposal). Interest is charged at 1% on credit or debit Bancor balances in excess of 25% of quota on average. This increases to 2% when 50% of quota is reached. However any member state in deficit could borrow from a surplus state, and then both would avoid these expenses. A deficit country that is allowed to increase its quota by more than 50% may also have to devalue its currency. Greater than 75% and it will be declared in default and no longer have access to its account. Surplus countries in excess of 50% will have to either: expand domestic credit and demand, appreciate its currency in terms of bancor, increase money wages, reduce excess tariffs on imports, offer international loans to developing countries.

Countries can come to the ICU to borrow Bancor with no conditionality. Bancor reserves are only held on the books of central banks, which they can use to back the creation of their own domestic currency. Central banks enforce foreign currency capital controls.

#### *A. Creation of Bancor*

Keynes' model of Bancor was an overdraft system but new issues of Bancor could be produced by selling gold to the ICU. While gold could be redeemed for Bancor, Bancor could not be redeemed for gold.

#### *B. Creation of Bancor*

Bancor is also created by crediting Bancor reserve assets to the LDC central bank. If a farmer wishes to import manufactured goods from China then it must first acquire Yuan deposits. Since capital flows are controlled by central banks, the local bank must go to its central bank to get Yuan. The local bank buys Yuan from the Chinese central bank with

Bancor. This Bancor is lent to the LCD by the ICU. In the process of trade, Bancor is transferred from the importing country to the exporting country.

### *C. Creation of Bancor*

The ICC under Keynes can also readily borrow to stabilize individual commodity prices. The ICC will price commodities in Bancor. By buying commodities it will create Bancor, though payments must be held in local currencies by the farmers or commodity exchanges. Hence Bancor ends up in the accounts of the local central bank.

### *D. Redistribution of Bancor*

A Chinese firm that has a surplus of Bancor over 100% of its quota will have it confiscated. Hence the incentive is to use it either in buying imports or in FDI. In this case we show FDI by a Chinese investor into a LDC farmer. The Chinese investor will first need to acquire peso deposits by going to his bank, which goes to the central bank. The Chinese central bank will sell Bancor for Peso deposits from the LDC central bank. The Chinese investor will exchange his Peso deposits for equity in a LDC farm.

## ***3. Commodity Bancor à la Graham-Kaldor, and International Commodity Corporation (ICC\*).***

Under Kaldor's model Bancor could be held privately held and even issued privately. It is 100 percent backed by commodities, which we call Commod as with Keynes, but in this case each commod is a basket of 30-60 commodities in quantities that reflect their relative importance in world production and trade. They would be standardized commodities with appropriate inventory management to minimize spoilage. The commodity unit or index is stabilized in relation to market prices in terms of USD or whatever the denomination of the trading price.

#### *A. Creation of Bancor*

Bancor is created when commodities in the buffer stock increase, usually during a decline in commodity prices. The farmer will sell to the highest bidder, which may be the ICC. While the ICC only buys baskets of inventories, middlemen, futures exchanges, etc would be ready to bundle baskets for sale. The farmer (if receiving cash) would get the going price for his product. If he chose to receive Bancor by selling a basket then he would then want to exchange this Bancor for local currency at his national bank. To the extent that the Bank requires more reserves to complete this request the local central bank will buy Bancor.

#### *B. Destruction of Bancor*

A Chinese Firm that requires commodities could purchase them from the ICC if they are selling for Bancor. The Chinese firm would exchange its Yuan deposits for Bancor at its Bank. The Bank will go to the market for Bancor in exchange for Yuan. To the extent that the Chinese central Bank is pegging the exchange rate it may choose to sell Bancor for Yuan. The red arrows describe the movement of Bancor from the Chinese central bank to the ICC, resulting in a reduction of total Bancor outstanding.

#### *C. Redistribution of Bancor*

A Chinese investor may acquire Bancor from his local bank, who could acquire it from his central bank, to invest in a commodity producing LDC. The farm or firm in the LDC will want to exchange this Bancor into local currency with its bank, which can exchange it with its central bank. Thus foreign direct investment redistributes Bancor from one country to another.

### ***4. US Dollar Standard, no international central bank***

#### *A. Creation and Recycling of International Reserves – US Trade Deficit*

The creation of international USD reserves through a trade surplus in Germany begins with a US firm purchasing manufactured goods from a German firm with USD deposits. We assume that the German firm can have a USD denominated account with the foreign branch of a US bank. At this point there are no international reserves yet created, as the reserves are still on the books of the US parent bank. Once the German firm exchanges into Euro's instead of dollars, then the Foreign Branch will go into the market for Euros selling USD deposits and appreciating Euros/USD. If the central bank chooses to peg their exchange rate they will buy foreign exchange and sell Euro reserves. In the table the injection of Euros is not sterilized (bought back with government bonds). Even with flexible exchange rates the central bank usually leans against the wind and accumulates USD reserves over time. Now international reserves have been created, transferred from the US parent bank to the German central bank in Transaction 2. These USD reserves are usually held in the form of US Treasury Bills, providing short-term capital inflow back into the US replacing the initial loss of bank reserves. The sovereign flow back into the US can also occur through a German sovereign wealth fund into US private securities. The recycling of reserves can be unlimited (ignoring capital constraints), building up international reserves and US debt.

#### *B. Recycling of USD capital flows – US FDI*

In this scenario US bank borrowing comes through the discount window or open market operations of the US central bank, increasing overall domestic reserves. The bank finances the US firm's desire to invest in manufacturing overseas. Again the German firm has USD deposits in Germany with a US foreign branch of a US bank. These funds could ultimately be converted into Euros or be recycled back and forth between nations in the private sector capital markets. For example, the German firm could exchange its USD deposits for US

commercial paper, just as the US bank might do. By buying this (or any other corporate commercial paper) the US bank with the new cash funds (or new deposits) can pay back its short-term loan from the Federal Reserve. In this particular scenario there are no international reserves created, but since this is an unlimited loop (ignoring capital or reserve requirements) at steps during this process official foreign USD reserves will be created if Euro deposits are desired.

## **V. Core-Periphery Dynamics**

One of Kaldor's central themes in his theories on economic development (Kaldor 1967) was Myrdal's process of 'circular cumulative causation.'<sup>6</sup> He gave an exposition of a model of development and trade, dividing production into two regions: primary production (minerals, fiber and food) and secondary production (manufacturing and services). Robust and equitable growth for all regions requires these two sectors to support and propagate demand and investment in each other. He felt that his CRC would do this.

For Kaldor the dynamic engine of growth was the manufacturing arena with a focus on internal and external returns to scale - following on from Allyn Young (1928). The positive cumulative causation of growth and industrialization could also be summarized as Verdoorn's law, however growth would be constrained by manufacturing's ability to specialize. This was limited by the demand for its goods from outside the manufacturing sector and the size of this market. The external or complementary sector was either primary industry in a closed economy or the foreign sector in an open economy.<sup>7</sup> Expanding ones

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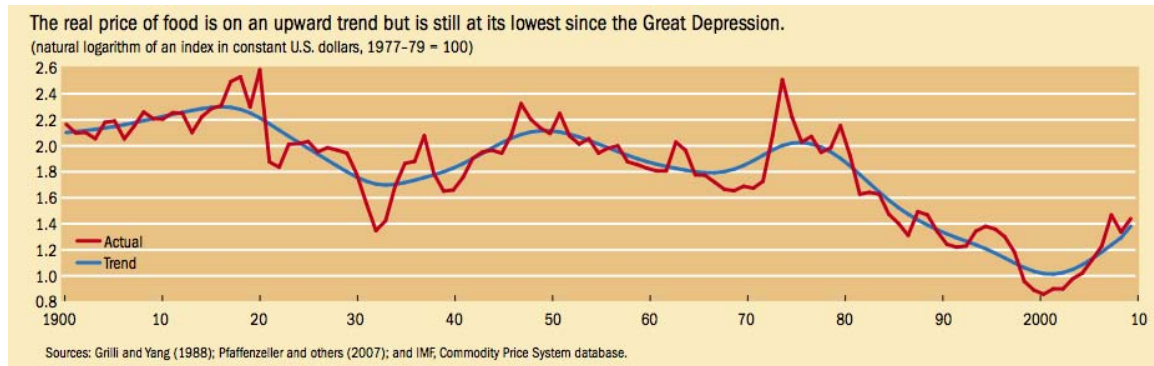
<sup>6</sup> Kaldor worked for Gunnar Myrdal at ECOSOC in the late 1940s. His earliest thinking on global financial architecture at this time can be found in Turnell and Ussher (2009).

<sup>7</sup> Services were seen as rather less important due to their lack of requisite inputs, such as raw materials or capital, and hence a minimal multiplier of demand in the supply chain. Sometimes services were compared to a sector with increasing returns, sometimes decreasing returns, but at all times of no major catastrophe if excluded from the model. A more modern analysis may reconsider this omission.

market to the export sector was key to maintaining progress in the manufacturing sector at the intermediate stage of growth. At the world level, which is the only truly closed economy, he again divided the world up into a primary producing sector – the South – and the manufacturing sector – the North. This followed similar lines to Prebisch and Singer's dependency theory, however, he was far more optimistic that a balance in growth through trade could lead to benefit both sectors if only the right monetary system was in place.

Kaldor believed that the balance of trade between manufacturing and primary production, whether at a national or international level, should be at the 'correct' terms-of-trade to offer intersectoral balance and maximize growth. He argued that in his life time a lower terms of trade for manufacturers relative to primary producers would be associated with faster industrialization and world growth, as long as investment without distorting speculation was in place. This could be achieved if prices were stabilized around 10 year trend. Higher but stable prices for primary commodities would result in greater equality and world growth because of increased purchasing power in the developing world for manufactured goods. This would lead to increasing returns to scale, both internal and external, for manufacturing as export-led countries industrialize, as opposed to the decreasing returns to scale for most commodity production (holding technology in both sectors constant). While a steady and high or 'fair' terms of trade for primary production was optimal, the market system would tend towards swings between very low and very high. Commodity price volatility would initially worsen the terms of trade for commodity producers (Kaldor 1975). This was because investment and productivity in raw materials would decline, industry would substitute to and from different suppliers, the industrialization of low income commodity producing countries would be hampered, and incomes for both primary and secondary sectors would contract. But as investment in commodities withered, the inelasticity

of supply would mean that in a boom prices would sky rocket. In the end we would incur short-run cobb -web dynamics (Kaldor 1932) and long cyclical trends, as can be garnered in the graph below on food price data.



Source: (Helbling and Roache 2011) <http://www.imf.org/external/pubs/ft/fandd/2011/03/pdf/Helbling.pdf>

A commodity reserve currency backed by a stabilized basket of commodities would offer an anchor to the price of individual commodities and promote speculation that is mean-reverting. Without this, the volatility of US dollar denominated commodity prices makes professional traders shy away from commodity stockpiling causing even more volatility. Speculators sell when prices are falling and buy when prices are rising due to changing norms. The large positive feedback that speculators can have on commodity prices can in turn change accepted norms among the mind-set of other herding speculators (Kaldor 1983 p.238 - 240).

Such price volatility is of great concern since commodities account for more than one fifth of global trade and 65 percent of all developing countries derive more than 50 percent of their export income from commodities (UNCTAD 2011). While rising commodity prices and thus incomes for commodity-dependent developing countries (CDDCs) has been a strong source of growth and demand in world trade since 2002, volatility in commodity prices continues to wreak havoc for both North and South, especially in a world of international commodity cobb-web cycles, domestic policies (fiscal and monetary) constrained by external balance concerns, global imbalances, widening inequality, growing monopolies in commodity production, global



warming and sustainability, food insecurity, and the unequal access to raw materials more generally.

While taking Kaldor's (1996) version of core-periphery dynamics which always used a dichotomy between the primary and manufacturing sectors, both at the domestic and the international level, we can expand on this a trichotomy that might be more relevant to today's global dynamics: CDDCs, manufacturing based export-led emerging market economies, and industrialized net importing countries. Below is a diagram that tries to capture the dynamics of today's flow of funds through current and capital accounts, in a US dollar regime, with high commodity prices, along these lines. The flow chart considers Brazil, China and the US as representing the three respective blocks.

Under the US dollar regime higher commodity prices have had pluses and minuses for CDDCs countries. Apart from growing sovereign funds and rising food prices, there is growing concern that such countries may be entering a commodity curse: directing investment away from manufacturing and appreciation of their currency against the US dollar, making manufactured exports less competitive on the world market. Higher commodity prices and the resulting deindustrialization of Brazil's manufacturing base would in theory be resolved in Kaldor's proposal which has all tradables priced in terms of the CRC, Brazil could devalue its currency without the externality of downward pressure on commodity prices, China would not have the same incentive to devalue its currency as this would raise the cost of its raw material inputs. Currently, commodity producing countries are also competing with China in exporting manufactured goods, hence when China devalues so too do their competitors which removes the tradeoff that China would otherwise have: rising price of raw materials that go into their manufactured goods when they devalue.

This simplistic flow chart can be used to illustrate the status of the US as the

world's bank and the recycling of short term flows into the US and long term funds out in the form of foreign direct investment; this recycling contributed to the growth in US dollar reserves and the 'exorbitant privilege' of the US that has led to its financialization and deindustrialization; Chinese domination of manufactured goods due to Verdoorn's law and currency manipulation; overconsumption and excess pressure on natural resources; resource curse dynamics due to commodity price volatility and currency appreciation due to capital inflows into CDDCs; currency wars between CDDCs and the US; emphasis on manufactures as fix-price and flex-quantity markets while commodities are flex-price and fix-quantity markets; growing relative inequality due to positive feedbacks and 'Cumulative Causation' under the dollar system; and monopoly controls over supply chains which can lead to international political tensions.

[Insert Diagram 1 here]

## **VI. Conclusion**

The commodity-reserve proposal in terms of international financial architecture was seen by Kaldor as a 'gadget'<sup>8</sup> that operated on both the monetary system and the system of primary-production to promote robust and sustainable economic growth across the developed and developing world. The scheme was envisioned as a comprehensive solution to "an international monetary 'system' [that] is a worn-out contraption held together by the baling-wire of shortsighted improvisations, rather than a coherent structure that can be a focus for the much-needed economic solidarity of the countries that make up the world economy" (Hart, 1976). Kaldor argued that a CRC would improve and stabilize the terms of trade for commodity producers relative to manufacturing, remove bottlenecks and alleviate

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<sup>8</sup> Kaldor used the term in a letter to Sidney Dell, 23 March 1963, cited in Toye & Toye (2004, p. 221)

supply constraints, reduce distortions from speculation, and promote balanced and robust economic growth. Further empirical and analytical research is required to test this hypothesis.

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[Insert Appendix 1 here]

Gold Standard, no international central bank

**A. Creation of Gold Reserves**  
**LDC sells gold to its Central Bank**

	LDC		LDC		LDC	
	<b>Gold Miner</b>		<b>Bank</b>		<b>LDC Central Bank</b>	
	A	L	A	L	A	L
transaction 1	- Gold		+Gold			
transaction 2	+Peso Deposits		+Peso Deposits		+Gold	+Peso Reserves
			- Gold			
			+Peso Reserves			

**B. Redistribution of Gold Reserves**  
**LDC firm pays loan back to US firm. LDC Central Bank sells gold to US Central Bank to pay off USD debt**

	LDC		LDC		LDC	
	<b>Firm</b>		<b>LDC Bank</b>		<b>LDC Central Bank</b>	
	A	L	A	L	A	L
transaction 1					-Gold	
transaction 2			+USD Deposit		+USD Reserves	+USD Deposit
transaction 3	-Peso Deposits		-Peso Reserves		-Peso Reserves	-Peso Reserves
transaction 4	+USD Deposits		-USD Deposit		-USD Reserves	-USD Deposit
	-USD Deposits			-Peso Deposits		
		-USD Loan				

	US		US		LDC	
	<b>Firm</b>		<b>US Bank</b>		<b>US Central Bank</b>	
	A	L	A	L	A	L
transaction 1					+Gold	+USD Reserves
transaction 2						
transaction 3						
transaction 4	+USD Deposits		+USD Reserves			
	-USD Loan		+USD Deposit			

**C. Redistribution of Gold Reserves**  
**UK Firm imports from US Firm**

	UK		UK		UK	
	<b>Central Bank</b>		<b>Bank</b>		<b>Firm</b>	
	A	L	A	L	A	L
transaction 1	-Gold					
transaction 2	+USD Reserves		+USD Deposits			
transaction 3	-USD Reserves		-Sterling Reserves		+USD Deposits	
transaction 4		+USD Deposits	-USD Deposits		-Sterling Deposits	+Mnfd Goods
		-Sterling Reserves		-Sterling Deposits		-USD Deposits

	US		US		US	
	<b>Central Bank</b>		<b>Bank</b>		<b>Firm</b>	
	A	L	A	L	A	L
transaction 1	+Gold	+USD Reserves				
transaction 2						
transaction 3			+USD Reserves			
transaction 4			+USD Deposits		-Mnfd Goods	+USD Deposits

**A. Creation of Bancor**

Central Bank sells Gold to ICU

ICU		China	
A	L	A	L
+Gold	+Bancor	+Bancor	-Gold

**B. Creation of Bancor**

ICU offers bank overdraft up to quota for LDC to net import goods from China

International		LDC		LDC		LDC	
ICU		Central Bank		Bank		Farmer	
A	L	A	L	A	L	A	L
+Bancor Deposits	+Bancor (LDC)	+Bancor	+Bancor Deposits				
	-Bancor (LDC)	-Bancor	+Yuan Reserves				
	+Bancor (China)	+Yuan Reserves	+Yuan Deposit	+Yuan Deposit			
		-Yuan Reserves	-Peso Reserves	-Pesos Reserves			
			-Yuan Deposits	-Yuan Deposits			

China		China		China	
Central Bank		Bank		Firm	
A	L	A	L	A	L
	+Bancor				
	+Yuan Reserves				
		+Yuan Reserves	+Yuan Deposits		
				-Mnfd Goods	
				+Deposits	

**C. Creation of Bancor**

ICC gets loan from ICU to buy commodities from LDC commodity exchange to stabilize Commodity prices

International		LDC		LDC		LDC	
ICC		Central Bank		Bank		Farmer	
A	L	A	L	A	L	A	L
+Bancor	+Bancor Deposits						
+Commod	-Bancor	+Bancor	+Peso Reserves	+Peso Reserves	+Peso Deposit	-Commod	+Peso Deposit

International		LDC	
ICU		Central Bank	
A	L	A	L
+Bancor Deposits	+Bancor (ICC)		
	-Bancor (ICC)		
	+Bancor (LDC)		

**C. Redistribution of Bancor**

FDI by China to LDC

International		China		China		China	
ICU		Central Bank		Bank		Investor	
A	L	A	L	A	L	A	L
		-Bancor	+Peso Reserves	+Peso Deposits			
		+Peso Reserves	+Peso Deposits	-Yuan Reserves			
			-Yuan Reserves	+Peso Deposits		+Peso Deposits	
		-Peso Reserves	-Peso Deposits	-Yuan Deposits		-Yuan Deposits	
						-Peso Deposits	
						+Farm Equity	

International		LDC		LDC		LDC	
ICC		Central Bank		Bank		Farmer	
A	L	A	L	A	L	A	L
		+Bancor	+Peso Reserves				
				+Peso Reserves	+Peso Deposits	+Peso Deposits	+Farm Equity

Commodity Bancor à la Graham and Kaldor, with the International Commodity Corporation (ICC). In this example Bancor is allowed to trade privately.

**A. Creation of Bancor**

LDC farmer sells Commod to ICF for Bancor which is sold to the Bank and then to Central Bank

	International ICC*		LDC Farmer		LDC Bank		LDC Central Bank	
	A	L	A	L	A	L	A	L
transaction 1	+Commod	+Bancor	-Commod					
transaction 2			+Bancor		+Bancor			
transaction 3			+Bancor Deposit -Bancor Deposit +Peso Deposit		+Bancor Deposit -Bancor Deposit +Peso Deposit		+Bancor	+Peso Reserves

**B. Destruction of Bancor**

Chinese Manufacturer buys Commod from ICF

	China Central Bank		China Bank		China Firm		International ICC	
	A	L	A	L	A	L	A	L
transaction 1	-Bancor		+Bancor					
transaction 2		-Yuan Reserves	-Yuan Reserves					
transaction 3			-Bancor		+Bancor -Yuan Deposits		-Commod	-Bancor

**C. Redistribution of Bancor**

US Importer buys manufactured goods from China using Bancor

	International ICC*		US Central Bank		US Bank		US Retailer	
	A	L	A	L	A	L	A	L
transaction 1			-Bancor		+Bancor			
transaction 2			-USD Reserves		-USD Reserves			
transaction 3					-Bancor		+Bancor -USD Deposits	
transaction 4						-USD Deposits	-Bancor +Mnfd Goods	

	China Central Bank		China Bank		China Firm	
	A	L	A	L	A	L
transaction 1					+Bancor	
transaction 2					-Mnfd Goods	
transaction 3					-Bancor	
transaction 4			+Bancor		+Bancor Deposits	
transaction 5	+Bancor		-Bancor	+Bancor Deposits	-Bancor Deposits	+Bancor Deposits
		+Yuan Reserves	+Yuan Reserves	+Yuan Deposits	+Yuan Deposits	+Yuan Deposits

**C. Redistribution of Bancor**

FDI by China to LDC

	International ICC*		China Central Bank		China Bank		China Investor	
	A	L	A	L	A	L	A	L
transaction 1			-Bancor		+Bancor			
transaction 2			-Yuan Reserves		-Yuan Reserves			
transaction 3					-Bancor		+Bancor -Yuan Deposits	
transaction 4						-Yuan Deposits	-Bancor +Farm Equity	

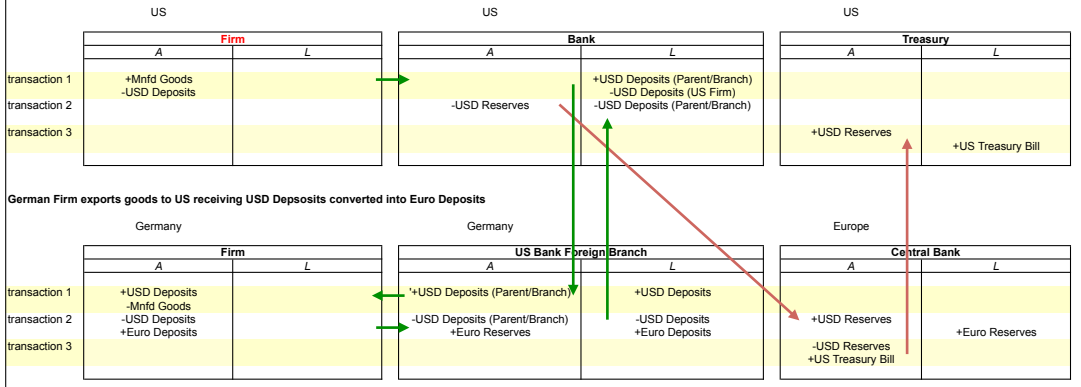
	LDC Central Bank		LDC Bank		LDC Farmer	
	A	L	A	L	A	L
transaction 1					+Bancor	
transaction 2						+Farm Equity
transaction 3					-Bancor	
transaction 4			+Bancor		+Bancor Deposits	
transaction 5	+Bancor		-Bancor	+Bancor Deposits	-Bancor Deposits	+Bancor Deposits
		+Peso Reserves	+Peso Reserves	+Peso Deposits	+Peso Deposits	+Peso Deposits



Dollar Standard, no international central bank

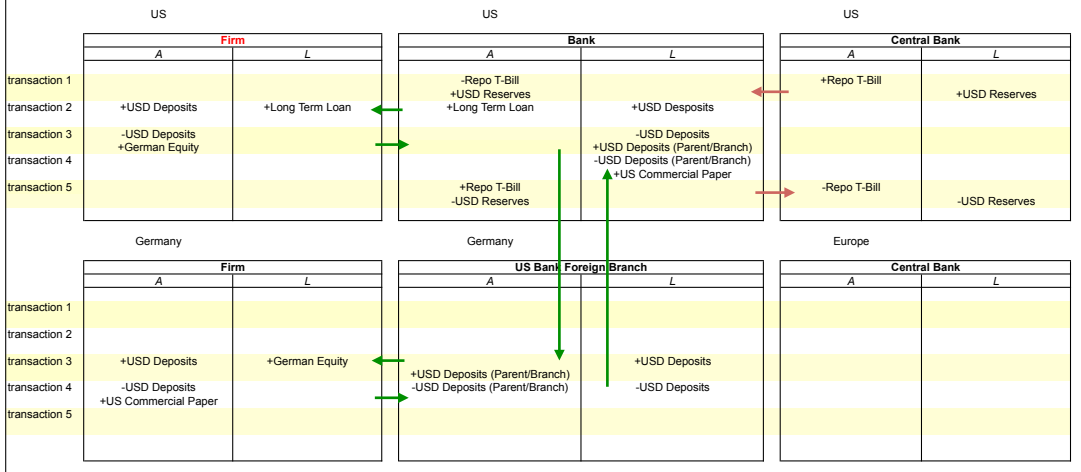
**A. Creation and Recycling of International USD Reserves - US Trade Deficit**

US Firm imports from German Firm manufactured goods. German Firm has USD and Euro deposits at US Foreign Branch



**B. Recycling USD capital flows - US FDI**

Recycling of US Firm FDI into German Firm and back to US



# Core - Periphery Dynamics: Current US dollar system with commodities priced in USD and international reserves in USD

