

model of a neutralised currency and exchange system for central banks

Part II – application

subtitel: model of a protected currency area for
developing countries

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Further presentations on request: part I – introduction part III – benefits

**Thanks for proofreading to
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Introduction

The global financial crisis gives the feeling to look onto the unbridled capitalism. It forces to spend time and to think more about the causal relationships of market failures. It leads inevitably to the global monetary system and let assume that this monetary system and therewith this kind of capitalism cannot be sustainable. The conclusion is that the world requires new and holistic ideas of improvement and changes. One utopian idea to improve and to change our monetary system is described in the essay

“Model of a neutralised currency and exchange system for central banks Part I - Introduction”¹⁾

This monetary model is abbreviating named ANNA. It is the consideration of monetary systems from a different point of view in approach to the parable of the workers in the vineyard²⁾. It is the concept of a global system and therewith addressed to the world society as a question of an ethical vision of economy. The vision is that economy has to act for the life as an absolute and unalterable value.

It is a challenge of the world society to enable an agreement by settling a monetary system which will be a statement for life and justice.

The first essay of ANNA explained the vision of ethical and philosophical aspects, as also the principle functionality of the monetary model. It is a rather general description and requires obviously more detailed explanations. This second essay wants to look more in detail to the functionality and application of ANNA.

The main property of ANNA is superneutrality which is the agreement of a never changing value which represents the unit of the world and the interdependence of economies.

The first chapter of this second essay describes properties which are arising from the superneutrality. The second chapter deals with the fact that such a system will only find limited acceptance. It describes the introduction of an incomplete currency area and gives a short preview of the effect of reconciliation.

We have to realize that the world economy is an extremely large and complex system with countless transactions and a huge number of participants. It is impossible to describe this system adequately and makes it difficult to predict how a new way of thinking influences the system. Therefore is this essay an invitation to take up the subject and to verify the statements.

1) ANNA – properties of superneutrality

ANNA is a currency exchange rate regime

ANNA is a mathematical description of the relationship between currencies and a simple ratio equation. The counter represents the value. The divider represents the amount of all money of all currencies, named as world money supply.

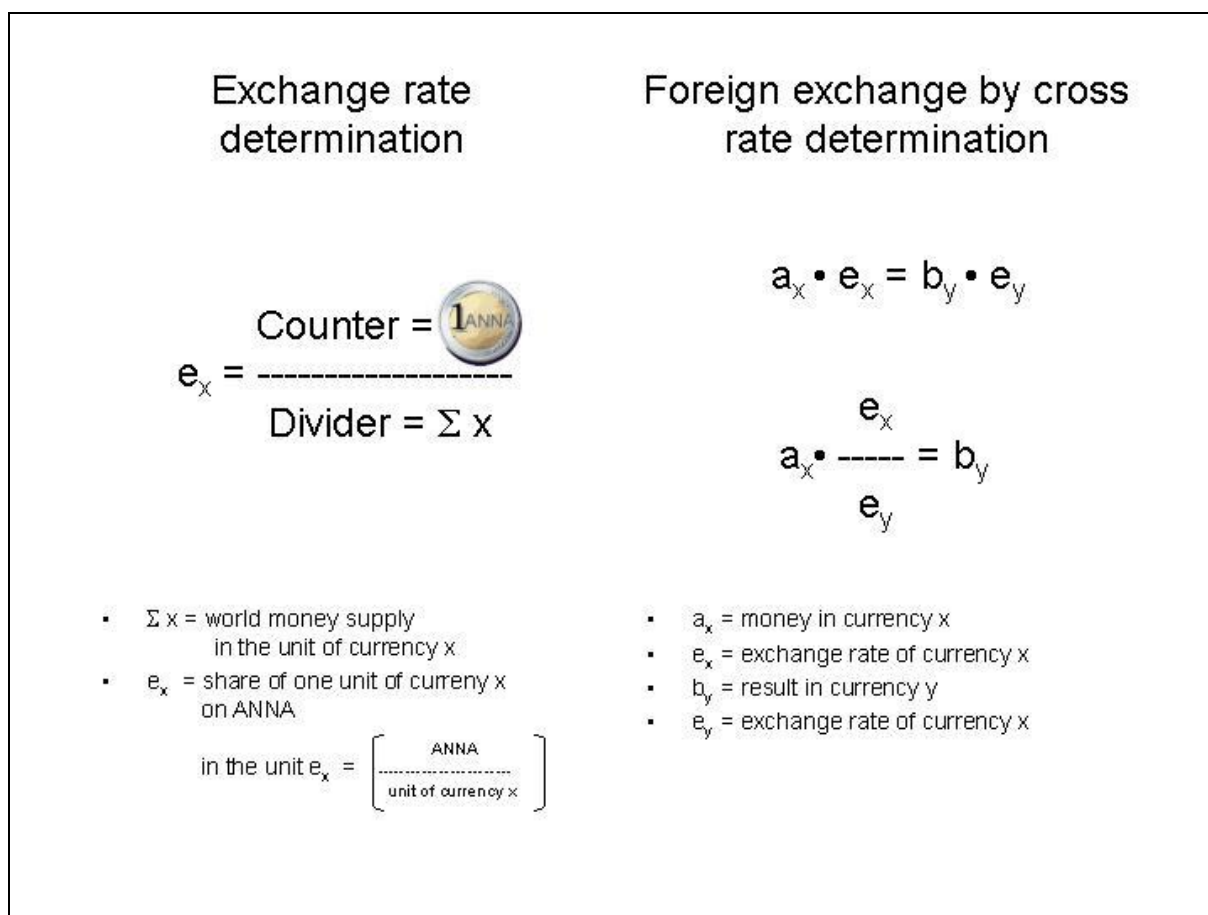


Figure 1) mathematical description of the world monetary system by ANNA

As this equation characterizes a relationship and not the currencies themselves, price formation is not effected and all exchange rates are shown as possible. It can be assumed that the equation is applicable.

The idea of ANNA connects all currencies in one equation together. This means that all exchange rates are determined mathematically and are consistent to each other. In that way the introduction of a fixed exchange rate regime will be allowed. By enshrining currencies to the never changing value of ANNA and the usage of money supply and exchange rates as variables, the exchange rate determination should be able to follow the market flexible and always conclusive.

If the idea of the monetary system will find support, the implementation of it will move between 3 phases of development, introduction and consolidation.

Phase of development:

It is a scan of the system for feasibility by observing the foreign exchange markets, where the monetary system of ANNA is not involved yet. At the same time it will be the preparation of the infrastructure for the associated countries and the responsible institutes. Responsiveness, flexibility and accuracy of exchange rates must be reviewed. Rounding errors require perhaps thoughts about a change in the counter to get a number $\geq \sum x$ world money supply. The introduction in the associated countries must be well prepared, too.

Phase of introduction:

It must be expected that only a small group of countries will participate in the system of ANNA, in a so called incomplete currency area. The exchange rates and the share onto ANNA should be settled for the associated currencies in a system of complementary currencies with different properties. The main task of the intermediary working complementary currencies is debt control. By that heavily indebted developing countries and their main creditors will probably pay attention first. The introduction of the incomplete currency area will be the subject of the second chapter.

Phase of consolidation:

It is not evident that the causes of the financial crisis can be resolved. We must therefore assume that the crisis will return. Each return will increase the costs and operative expenses. This is the previous experience we made with the existing system of unbridled capitalism. Even large economies could run into the problem not being able to grow out of their debts. If the incomplete currency area proves to be a stabilizing system, other economies will go into the system, even large economies in distress. The system in perfection will be achieved, if all currencies participate onto ANNA. A complete currency area allows the implementation of single global currency. But the phase of consolidation is not a subject of this essay.

ANNA is valuation of currencies

The already existing exchange rates are called conventional exchange rates. These are available for trading on the foreign exchange markets. The term exchange rate in this essay has a different meaning and is defined as the share of one unit of one currency onto ANNA.

The share onto ANNA can be considered as a kind of valuation of currencies.

In the phase of development the share will be reactive determined by conventional exchange rates and money supply of central banks. These numbers already exist.

In the phase of introduction and consolidation, the share of associated currencies onto ANNA must be fixed. At the time when the phase of introduction and consolidation start, the latest reactive determined values of the phase of development will be fixed. The adaptability of the individual currencies will remain due to the variables of monetary supply and exchange rates. Monetary policies of associated countries will be still possible by money supply. The fixation of the share

onto ANNA causes no disadvantages, but will be necessary to enable the effect of reconciliation. It is an effect of balancing which occurs on transaction between currencies.

The fixation of share requires the approval of the participating countries. It can be considered as an international agreement which declares individual economies as constants and it will be manifested by the equations of exchange rate determination changing from the equation in figure 1) to equation in figure 2).

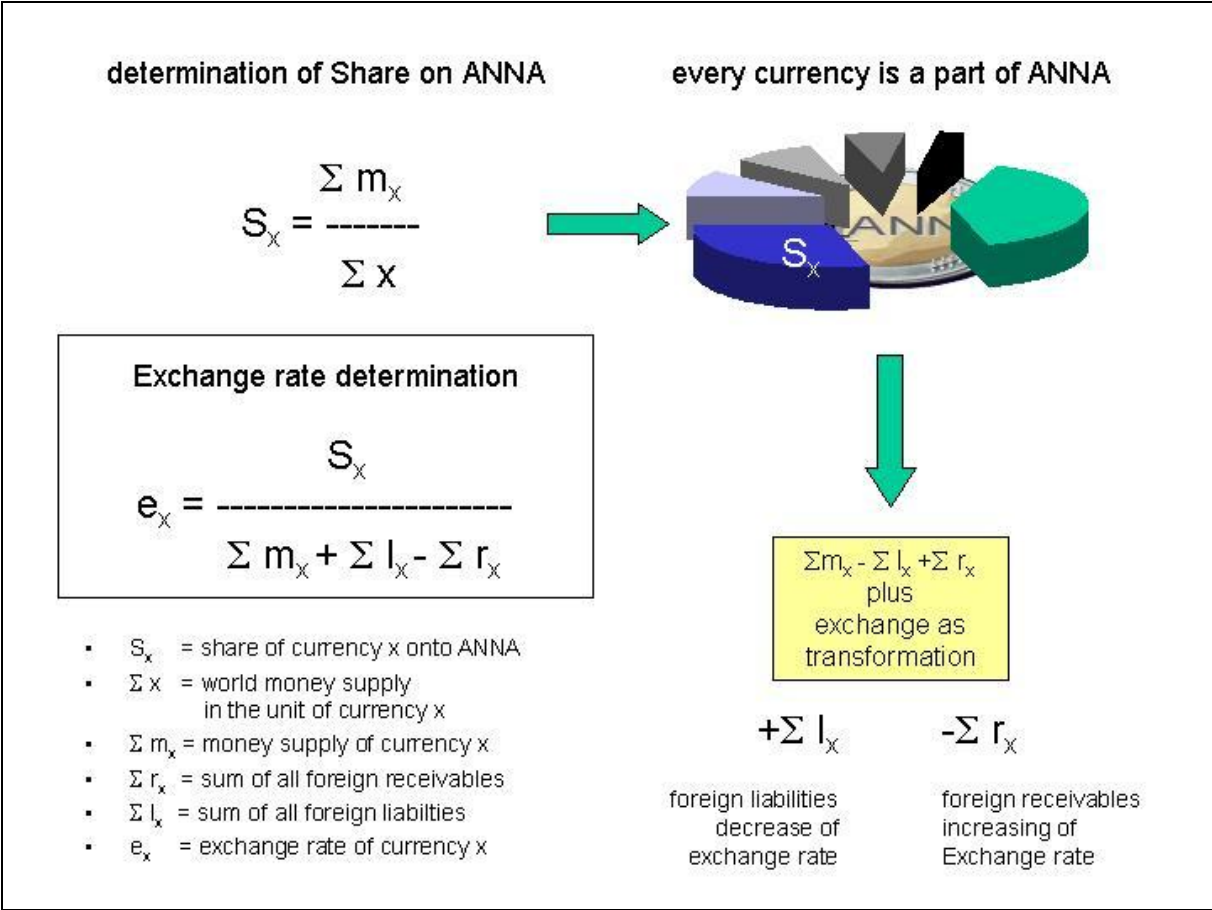


Figure 2) valuation of currencies

ANNA is money transformation

The conclusive exchange rates, the introduction of share onto ANNA and the introduction of liabilities $\sum l$ and receivables $\sum r$ in the equation of exchange rate determination in figure 2) allow money exchange by transformation from one currency into the other. This impedes the creation of foreign currency reserves and additional money supply resulting from the exchange.

ANNA is total interaction between currencies

Money supply Σx , foreign receivables Σr and foreign liabilities Σl are the variables which are influencing the exchange rates. Figure 3 shows how the variables influence the exchange rates. The increase of Σx and Σr leads to an increase of the exchange rates, while the increase of Σl leads to a decrease of exchange rates. The decrease of Σx and Σr leads to an decrease of the exchange rates, while the decrease of Σl leads to an increase of exchange rates

It is impossible to predict exactly the behaviour of the exchange rates, because markets continue with myriads of transactions and many of them are linked together in series of interactions. But it can be estimated, that the transactions and series of interactions constrain to some kind of balancing effects, named as effect of reconciliation. For example it must be assumed that deficit spending leads somewhere on debtors side to an increase of liabilities Σl or/and further money supply Σx and therewith to a decrease of the exchange rates. It is a task of the phase of development to get a better understanding of the interactions onto the exchange rates and their influences onto economies.

Influence of transactions onto exchange rates		
transaction	increase of Σr or Σl or Σm	decrease of Σr or Σl or Σm
Σr	↑	↓
Σl	↓	↑
Σm	↓	↑

Figure 3) influence of transactions onto exchange rates

ANNA is valorisation of interest free money

Money supply and credits are chained together by fractional reserve banking. The exponential growth of money supply is caused by the exponential growth of receivables and liabilities, considered as the accumulation of all credits in an economy. The exponential growth of debts on the other hand is caused by interest and interest compound.

Money supply influences the exchange rates in the monetary system of ANNA. The exponential growth of money supply for conventional interest based money leads to an inverse exponential decrease of the exchange rates, as shown in figure 4). But the relation between the applied currencies keeps the same, as long as the growth of money supply for all currencies keeps the same. Applied currencies are currencies which will be also used for visible trading.

Interest free money, as described by Silvio Gesell ²⁾, has no or low interest rates. The money supply won't increase exponential. In dependence of economically demands and due to the demurrage fee, money supply will only have small variations around a stable line, as shown in figure 7). If it will get possible to operate with an interest free currency independent and unlinked to conventional currency, the exchange rate of the interest free currency will keep also more or less stable, as shown in figure 4).

This could turn around the appreciation of the interest based and interest free currencies because in a long term consideration an interest based currency will lose and an interest free currency will keep its purchasing power. The spread in the exchange rate between interest based and interest free currencies is important for debt control.

The exponential growth of debts is also called the helix of debt or the trap of debts. Credits are important for money circulation and cannot be impeded. But it would be the simplest way to interrupt the helix of debt, if interest and interest compound will be avoided. An Interest free currency fulfils this requirement, especially if it will be traded in the environment of the monetary system of ANNA which ensures independent exchange rates. The spread of exchange rates, as shown in figure 4) is probably the most important effect of reconciliation. The whole world is involved in the game with receivables and liabilities. It can be named debt crises. Nobody knows where it leads to. It is perhaps helpful to take attention of this effect of reconciliation.

The inverse exponential decrease of the exchange rates for interest based money can be seen as a mathematical expression of inflation. But it must be assumed, too, that the real inflation is probably lower due to deflationary effects of capital concentration. Capital concentration is an effect of interest and interest compound which leads to increasing change of liquidity into speculative investments. These speculative investments can be seen as a special kind of hoarding money which will reduce demands in visible trading by decreasing purchasing power of people with low income which are the majority. This influences the price formation for daily life goods and leads therewith to the deviation between the calculated and real inflation rates.

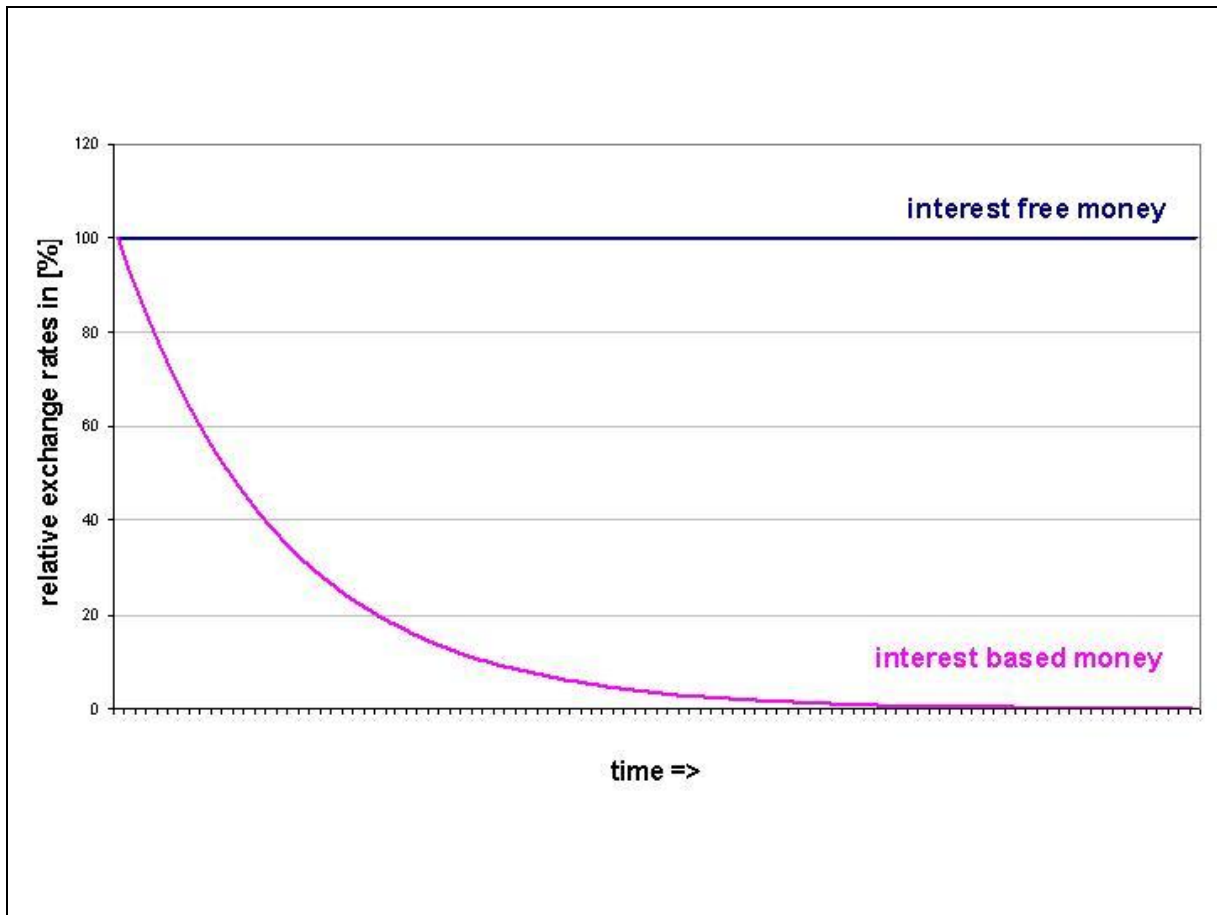


Figure 4) timeline of relative exchange rates for interest based and interest free currencies

Interest and interest compound can be seen as the most significant systemic cause for the unbridled capitalism. For all those who share this opinion is interest free money the most effective tool to domesticate capitalism. But interest free currencies will keep an appendix of the existing system, as long as their exchange rates belong to interest based currencies. It is a feature of the monetary system of ANNA which allows the independent development of interest free money in a global scale and demonstrates therewith new options to solve the problems of the debt crisis.

ANNA allows the creation of independent interest free currencies

2) Incomplete currency area

It cannot be expected that all currencies worldwide will join the currency and exchange system of ANNA. Nevertheless, to join ANNA is also possible for a small number of countries, even if they are not geographically connected. In this case is it an incomplete currency area and the mathematical description of ANNA has to be adapted. Counter and divider have to be variable for every imaginable situation where countries will join or leave the common currency area of ANNA. The change of mathematical description has to respect that superneutrality keeps conclusive.

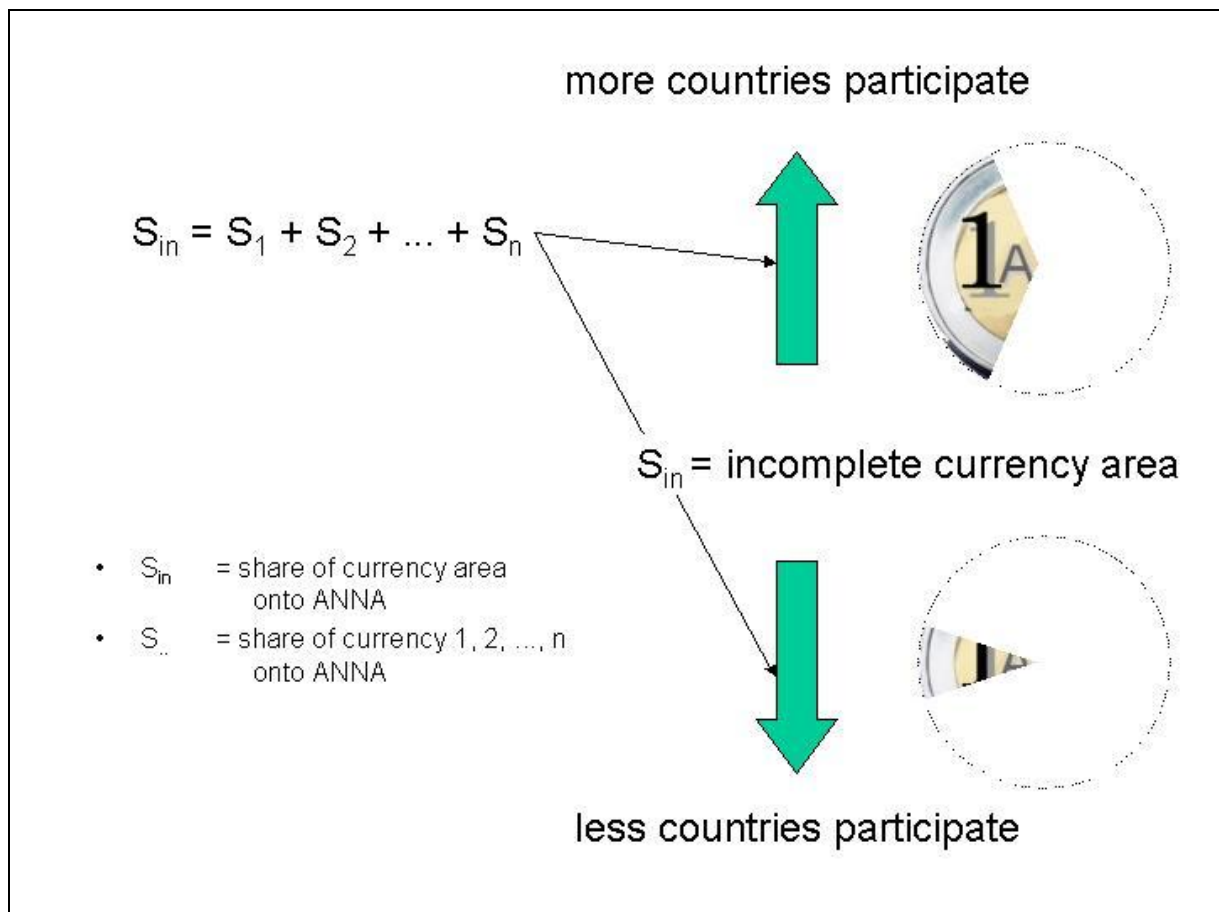


Figure 5) share of the incomplete currency area onto ANNA

The not changing value of the share onto ANNA and the fixed exchange rates are important properties to guarantee stability and independence also for an incomplete currency area. This can be used to develop economies more independent. More independence means more protection against speculative offenses of the financial markets and exploitation caused by the dictation of debts. It leads to more justice for debtors. The most affected debtors are heavily indebted poor countries. As already mentioned, in the earliest step ANNA could perhaps find attention in this developing countries.

Inside and outside trading

Inside trading means the trading between countries which are associated in the currency area. Outside trading means the trading between associated and non associated countries. ANNA allows the construction of a new monetary system, where inside currencies are forced to superneutrality and outside currencies are considered as one common currency and trading imbalances will be compensated by self-balancing of exchange rates. The process of development and equilibration will be improved by using complementary currencies⁴⁾.

The currency area of ANNA enables the complete transformation into an alternative monetary system with complementary currencies.

The main target of an alternative monetary system with complementary currencies and their interaction is sustainability in the best way of its meaning for economical, ecological and social common life. A system of complementary currencies will be preliminary characterized in the following:

ANNA⁵⁾ ensures superneutrality. It is the essential property for sustainability in the monetary system. Other functions are exchange rate determination and transformation of inside currencies.

LINA⁵⁾ is an applied currency. It is only inside valid. Its creation is based on credits. It should be used with circulation protection as low or free of interest inside national currencies and can lead in advance to a single global currency. LINA is an important tool for debt control and wants to be an alternative to already existing national currencies.

TINA⁵⁾ is time money for the store of values. It is only inside valid and its creation is based on work. It must be exchanged into LINA to be applied as currency. TINA's task is the initiation of income by (voluntary) work to support the transition phase. It is also a time account to support social systems in the field of culture, education, health and pension

FENA⁵⁾ is money for the foreign exchange market and only valid for outside trading. Its creation is based on exchange. It is interest based and requires the function of a central bank. FENA keeps the attributes of conventional money that foreign markets can maintain their behaviour. It ensures trading between inside and outside economies and enables the trading of foreign assets and foreign liabilities. It represents the foreign markets on the incomplete currency area and the incomplete currency area on the foreign exchange markets.

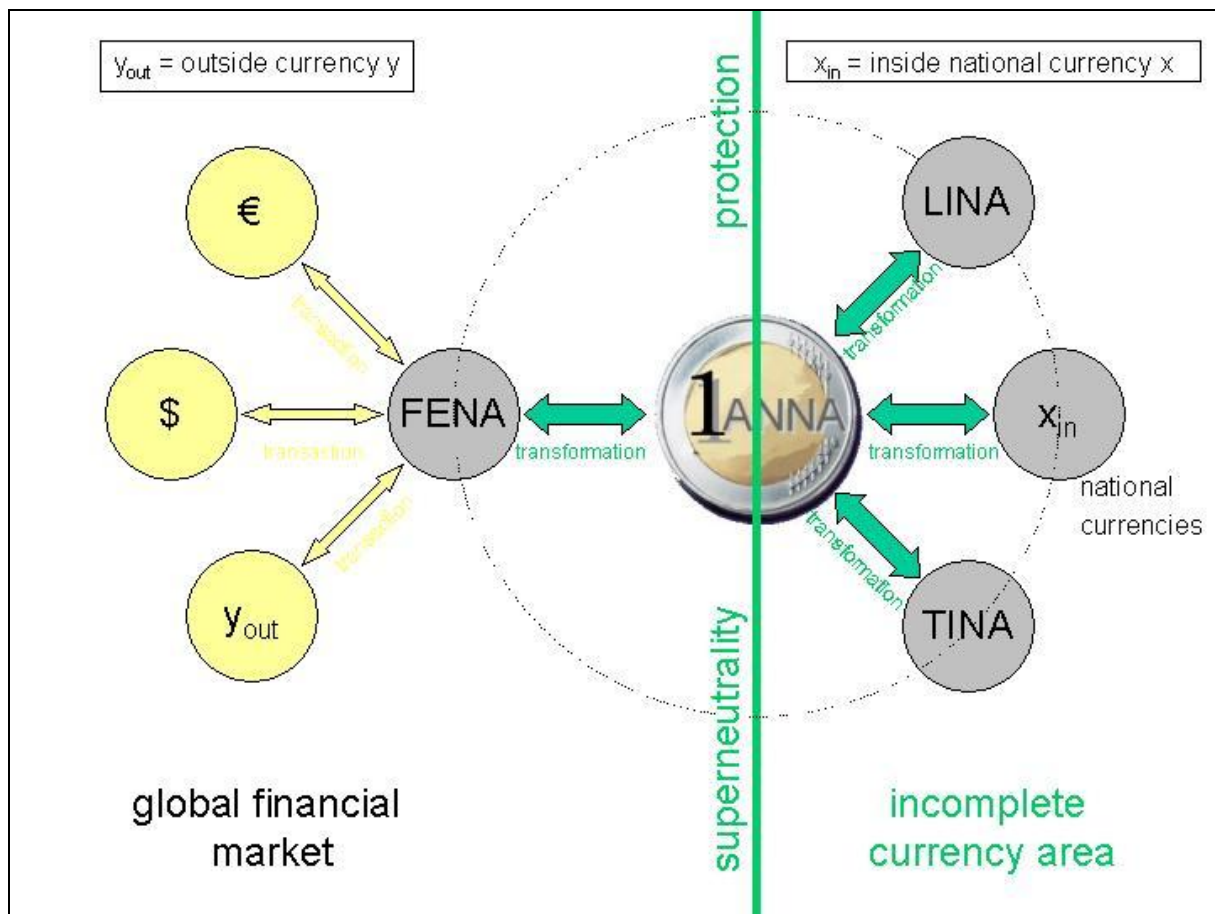


Figure 6) system of complementary currencies for an incomplete currency area

LINA => interest free money for the everyday business

Due to the behaviour of inversion⁶⁾, ANNA can only be used as a medium of currency exchange and monetary stabilization, but not as money for visible trading. The everyday use of money must be done by already existing national currencies or even better by a circumspect movement into better performing alternative currencies.

Especially free money³⁾ is a suitable instrument to empower exploited countries to self-determined and independent development. Interest free money must be used with a demurrage fee. The demurrage fee keeps money in circulation. The absence of interest and interest compound interrupts the exponential growth of money supply and therewith also interrupts the helix of debt increase. Money supply changes into a more or less horizontal line - as shown in figure 7). The absence of interest also prevent from the automatism of reallocation in direction to the concentrated capital.

A currency based on interest free money will be abbreviating named LINA which means the plural of national interest free inside currencies.

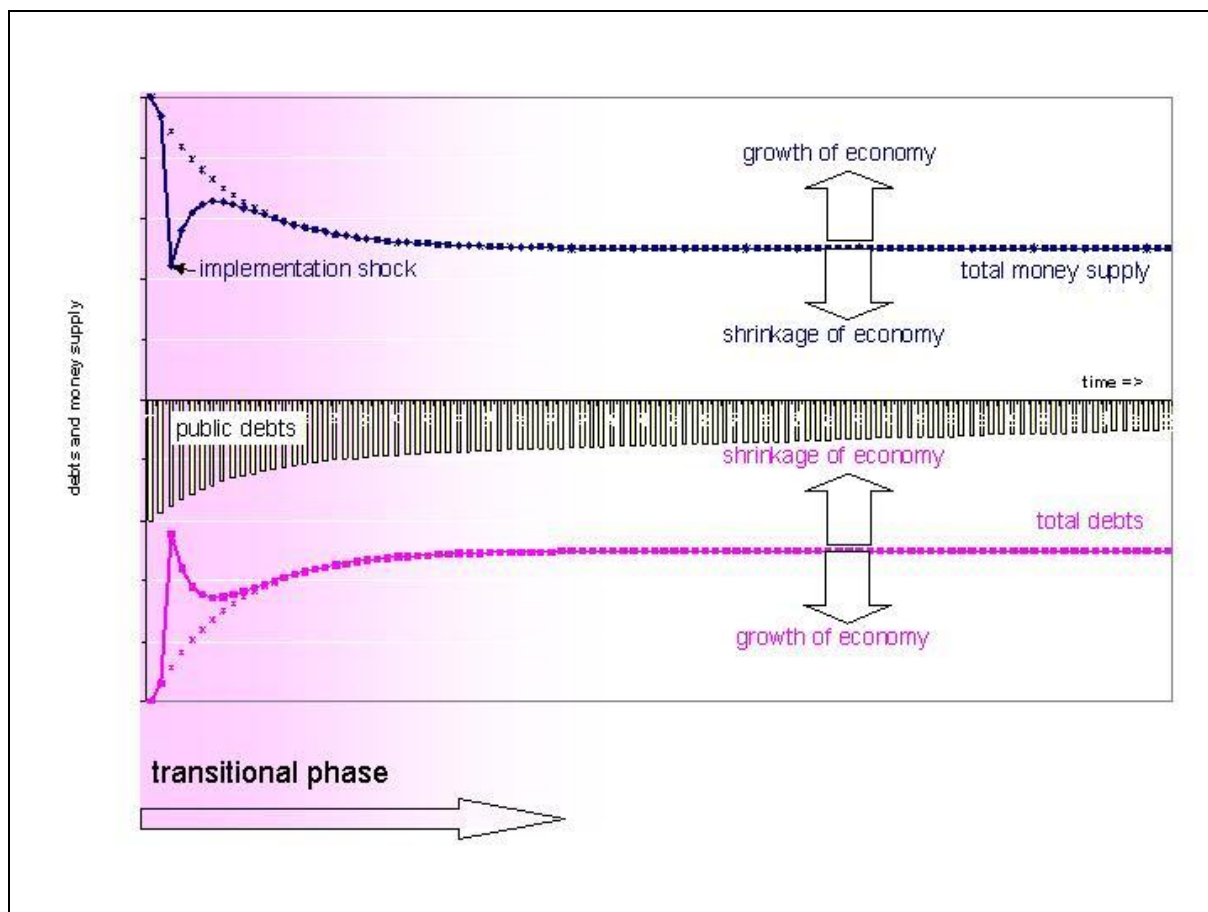


Figure 7) interest free money on the monetary time beam shows no exponential growth

Due to the demurrage fee, LINA loses the attribute to be a store of value. This leads to a different understanding of money. The appreciation of ground, goods and work increases, the appreciation of money on itself decreases. The saving of money loses on importance while the circulation speed of money increases. The focus of properties changes from virtual money to the reality. This could be seen as a paradigm shift in the utilization of economy.

The administration of money remains at the bank system. Money supply will be done by credits like now and price accruement behaves in the same way like now. These are all mechanisms like already existing for conventional currencies.

Implementation shock:

The transitional phase, as indicated in figure 7), is the change to alternative monetary systems. It will probably lead to reaction of rich money owners, indicated as implementation shock. To attenuate the shock need slow circumspect migration of LINA by microcredits and wages for public services. LINA should slowly dislodge conventional national currencies. To support the incomplete currency area in the phase of implementation shock it requires probably additional money supply based on work.

TINA => money for the store of values

Economy, all human assets and human civilisation are based on work. It is the important value for all societies. Work is based on force and time. Therefore force as indicator of human time consumption and the time itself can be taken as valuation for the effort of work and used as savings of this effort – it is the principle idea of time money. Spending (voluntary) time for cultural and social works can be waged by time savings. This time savings are receivables to the community to pay back the borrowed force and time in form of also cultural and social welfare. It is a kind of money and can be used as a basic account system to create or improve national pension fund, public health care systems or promotion of cultural life.

A currency based on time money will be abbreviating named TINA. TINA means the plural of national inside time currencies.

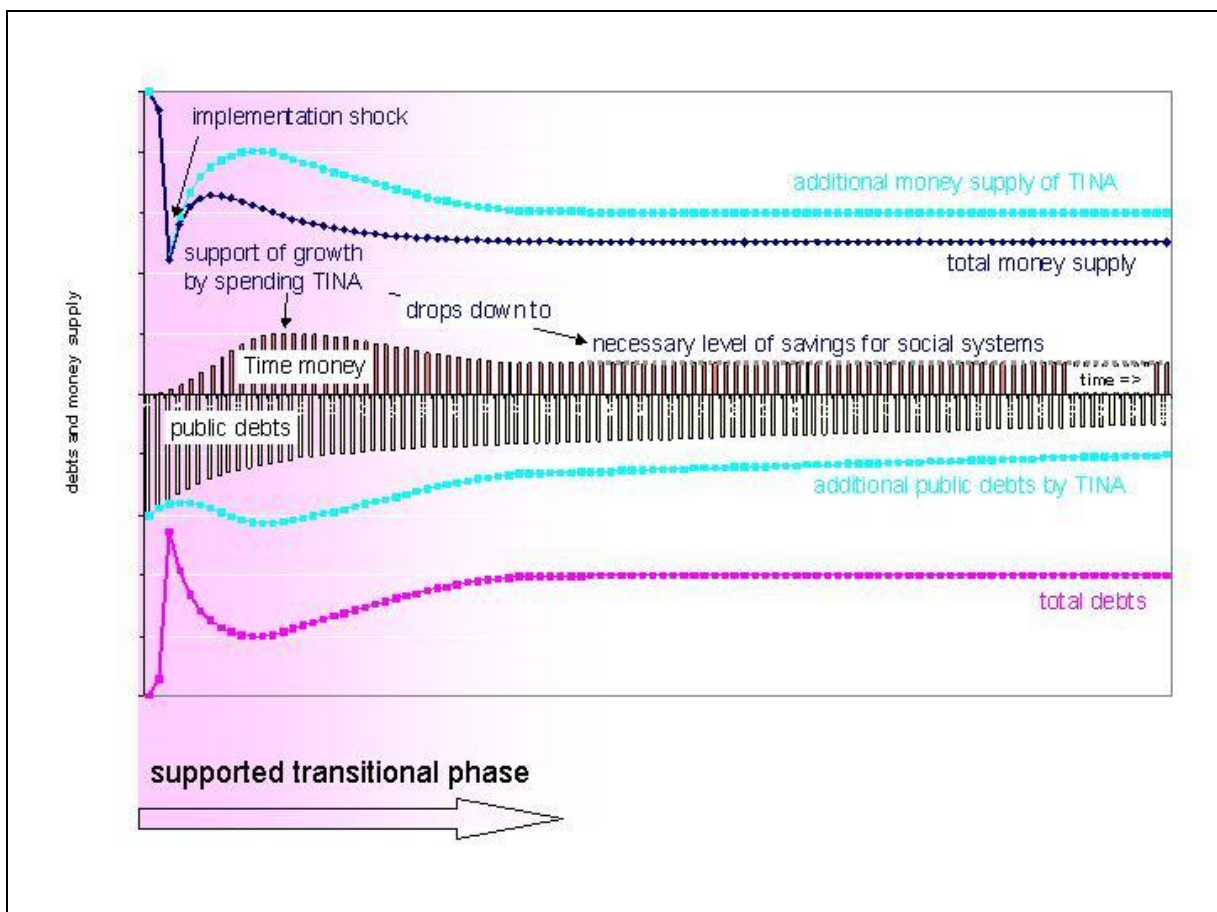


Figure 8) time money is support of transition

Money supply of TINA will be done by work. Especially heavily indebted developing countries which are not able to spend further credit based money for the growth of demand can use it to support national income. TINA should not be used as applied currencies. But it is necessary to permit the exchange into LINA to utilize TINA for deficit spending. This is important for the transitional phase to attenuate the implementation shock. TINA and the effect of reconciliation will help economies to recover from the implementation shock.

In a long term view is TINA an allocation of welfare, because it will change into an accounting system for cultural life, pensions and health insurance.

The share of TINA onto the whole system must be carefully influenced by wages, exchange rates and exchange fees between time money and LINA, restrictions in propagation, in ownership respectively transfer of ownership and limitation of savings in time money. If an approximately equalization of (voluntary) work valuation between inside economies is reached, national TINA's can be transformed into one global welfare currency.

FENA => money for foreign exchange markets

To keep the protection of superneutralisation effective, all inside currencies are only valid inside the currency area. This belongs to currencies like LINA and TINA, but also to remaining or slowly transforming standard national currencies. By this the trading from and into outside foreign markets and the access to the global financial markets must be done with a further complementary currency. This currency will be used for the money exchange between inside and foreign currencies and is abbreviating named FENA.

FENA represents inside currencies as one single global currency on the foreign exchange markets.

From the perspectives of the global financial markets, FENA represents the imperfect currency area. FENA is the valid currency for the global financial markets. They are not used to handle complementary currencies like LINA or TINA. FENA has to behave like each foreign standard currency with interest rates, monetary policy by a central bank and options for trading its own treasury bonds. The global financial markets can maintain their behaviour.

FENA represents the basket of outside currencies on the inside currency area.

FENA is not valid as inside used currency. From the perspectives of the inside currency area, FENA represents the share of the global financial markets onto ANNA, as long as the share S_{in} of the incomplete currency area onto ANNA keeps a minority of the world money supply.

currency	SOC	FENA	LINA
exchange rate determination	$e_{SOC} = \frac{1}{\sum x_{SOC}}$	$e_{FENA} = \frac{1 - S_{in}}{\sum u_{out}}$	$e_{LINA} = \frac{S_{LINA}}{\sum u_{LINA}}$
cross rate determination	<p> $b_{SOC} \implies a_{FENA} = b_{SOC} \cdot \frac{e_{SOC}}{e_{FENA}} \implies C_{LINA} = a_{FENA} \cdot \frac{e_{FENA}}{e_{LINA}}$ $b_{SOC} = a_{FENA} \cdot \frac{e_{FENA}}{e_{SOC}} \longleftarrow a_{FENA} = C_{LINA} \cdot \frac{e_{LINA}}{e_{FENA}} \longleftarrow C_{LINA}$ $\left[b_{SOC} = C_{LINA} \cdot \frac{e_{LINA}}{e_{SOC}} \right] \longleftrightarrow \left[C_{LINA} = b_{SOC} \cdot \frac{e_{SOC}}{e_{LINA}} \right]$ </p>		
	<ul style="list-style-type: none"> • a_{FENA} = amount of FENA for exchange • $b_{\\$}$ = amount of \$ for exchange • C_{LINA} = amount of LINA for exchange • out = basket of all outside currencies • SOC = single outside currency (like \$) 	<ul style="list-style-type: none"> • $e_{...}$ = exchange rate of \$; FENA; LINA • S_{in} = share of incomplete currency area onto ANNA; $S_{in} < 1$ • $\sum x_{\\$}$ = world money supply in [\$] • $\sum u_{...}$ = $(\sum m_{...} + \sum l_{...} - \sum r_{...})$ 	

Figure 9) exchange rate determination of FENA

FENA is a complementary currency with the task of exchanging and saving money. The responsible institutions of the world community must try to establish an exchange rate regime for FENA as described in figure 9).

The exchange rate of FENA will be determined as the share of basket of all outside currencies onto ANNA. Conventional exchange rates of outside currencies and FENA will be reactive determined by trading on the global financial markets. Therewith the exchange rates of the single outside currencies SOC keep being volatile.

FENA can only be created by money exchange into savings and loans from both sides. Inside currencies will be transformed into FENA, outside foreign currencies will be exchanged into FENA and hold as reserves at the central bank. Inside traded savings and loans have no influence onto the share onto money supply u_{out} . Outside traded savings $\sum r_{in}$ and loans $\sum l_{in}$ will influence the share onto money supply u_{out} , because foreign currency reserves are receivables which increase the share of the incomplete currency area on world money supply. Treasury bond issues are liabilities which decrease the share on world money supply.

Scale of debt control:

The more the share S_{in} increases the less are the global financial markets able to ignore the incomplete currency area. This enables associated heavily indebted poor countries to exchange their liabilities from foreign currencies into FENA. This will supports a better self-determined control of debts.

The share S_{inK} for the incomplete currency area onto ANNA could perhaps change to negative values, if only a few and very heavily indebted poor countries will participate to the incomplete currency area, because S_{inK} is influenced by the loans ΣI_{in} . The closer the share S_{inK} comes to zero the more intervention from the responsible institutes is necessary. It will start with import taxes and will lead to a debt moratorium with the abatement of debts.

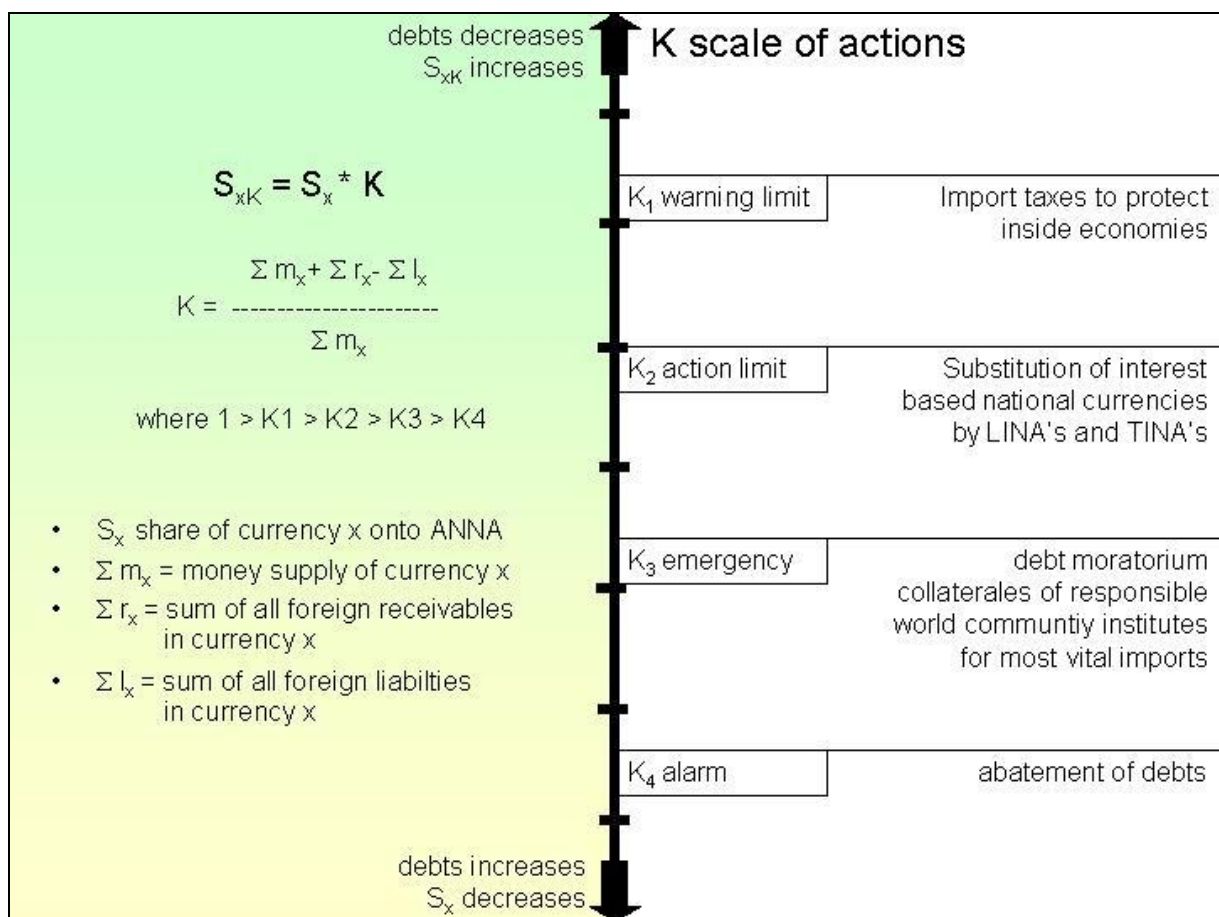


Figure 10) levels of intervention to control public debts

3) Effect of reconciliation

The incomplete currency area can work like a complete currency area, if FENA is implemented and used to represent the basket of all outside currencies. It embeds the foreign exchange markets in the incomplete currency area and allows the application of superneutrality. Therewith only money supply Σx , foreign receivables Σr and foreign liabilities Σl will influence the exchange rates, indicated in figure 3).

As already mentioned, it is impossible to predict exactly the behaviour of the exchange rates, because markets continue with myriads of transactions and many of them are linked together in series of interactions. But it can be assumed that the transactions and series of interactions constrain to some kind of balancing effects, named as effect of reconciliation. The following is a brief overview of the presumed effects.

Exchange rate fluctuations:

Foreign exchange markets are extremely volatile and conventional exchange rates swings sharp and frequently. The conventional exchange rates between FENA and the single outside currencies will keep volatile. But the exchange rate of the basket of all outside currencies to ANNA will slow down due to balancing effect of the basket and the inertia of money supply. The exchange rates of inside currencies will remain constant in dependence of money supply Σx , foreign receivables Σr and foreign liabilities Σl .

Trading imbalances:

It can be presumed, that the monetary system of ANNA behaves compensative. It means that trading deficits lead to decreasing exchange rates, while trading surplus lead to increasing exchange rates, because on one side of the trading will increase the foreign receivables Σr and on the other side the liabilities Σl .

Flight of capital:

Especially with the implementation of LINA must be expected that the flight of capital will dramatically increase. It can be presumed, that the system of ANNA will behave compensative, because the flight of capital leads to monetary restraint and influences money supply. It probably increases the exchange rates of the affected currencies.

Trap of debts:

Credits and fractional reserve banking are the tools for money supply. The helix of debts keeps uninfluenced as long as all currencies have comparable money supply due to interest rates. It can be assumed, that the helix of public debts will interrupt for countries which change from conventional currencies to LINA. The debts still have to be repaid, but rising costs of interest and interest compound will be eliminated by the spread of the exchange rates between LINA and conventional currencies – as indicated in figure 4).

summary

- ANNA allows to establish a share and exchange rate regime, also for an incomplete currency area

Exchange rate determination

$$e_x = \frac{S_x}{\sum m_x + \sum l_x - \sum r_x}$$

- with money exchange by transformation
- and a complementary currency system with FENA as a intermediary currency
- *for an protected currency area and monetary system of reconciliation*

Figure 11) – summary

Like every idea for the regulation of financial markets also ANNA will move parts of the profit expectations from individual money owners back to the society. This is contrary to the philosophy of financial markets. All current political efforts indicate that the markets are able to impede successfully any kind of regulation and loss of profit expectations. If still small and smallest changes are not accepted, a solution like ANNA must keep for sure a vision. Nevertheless the understanding and behaviour of the financial markets distribute the global income more and more to the rich, which leads unavoidable to injustice for the others. Parts of the world must suffer, especially poor developing countries. Also natural resources will be unreasonable exploited. In a long term view injustice and ecocide cannot be sustainable. It will cause reactions of suffering peoples, societies and environment. Violence is the usual answer, but not the solution. It requires more intelligent ideas. This essay wants to initiate a further position in the discussion of better solutions for a better world.

With kind regards

Peter Brass

Appendix

1. availability of the essay “model of a neutralised currency and exchange system for central banks - part I introduction “ at <http://www.tiesweb.eu/political.html> or <http://userpage.fu-berlin.de/~roehrigw/brass/GRC.pdf> or by request <mailto:PeterBrass@web.de>
2. Similarities to the parable “workers in the vineyard” new testament Mt 20, 1-16
3. Interest free money, also named free-money a theory of Silvio Gesell (*1862 +1930) introduction in English: Margrit Kennedy: Interest and Inflation Free Money (Published by Seva International; ISBN 0-9643025-0-0;) or <http://userpage.fu-berlin.de/~roehrigw/kennedy/english/chap1.htm>
4. complementary currency (CC) is a currency which is meant to be used as complement to a national currency... see http://en.wikipedia.org/wiki/Complementary_currency or http://en.wikipedia.org/wiki/Bernard_Lietaer
5. The names of the proposed complementary currencies are taken arbitrary..
NA = **N**ational **A**pportionment or **NA**tional currency
AN.. = **A**ll **N**ations
LI.. = **L**ow **I**nterest money
TI.. = **T**ime money
FE.. = money for **F**oreign **E**xchange
6. Quotation from the essay “model of a neutralised currency and exchange system for central banks - part 1 - introduction”:
“...Coming from the whole going to the particular needs division. Division is not practicable for normal use. Having a non changing value does not allow free pricing, because prices must be able to change. So ANNA cannot be used like normal money!...”