

# Back to the Future, Again?

ONE World Currency

One world currency and network for trade and payment  
Supercomputing, Agriculture, and Manufacturing

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## ABSTRACT

The authors today primarily present the *concepts* behind a custom designed currency for trade and payment, and the world infrastructures necessary to support it. Of utmost importance are the problems the new currency promises to solve. A currency requires stable institutions. Trans World Virginia (TWV) infrastructure embeds those institutions, which also include legal foundations, so TWV can operate inside many sovereign nations. The content of this presentation is an improved part of the TWV system we presented in 2021. We call the currency TWEX. On other related efforts, despite broader intent, only a part of western Europe cooperated for 50 years to create the European Union and the Euro. There also has been, for decades, an enthusiasm for a monetary union in Africa for sustained prosperity at stable prices. In the most recent months, there has been renewed interests from perhaps over 35 nations for another parallel global currency system. Nevertheless, the proponents of the best models have raised serious questions about the feasibility and desirability of a full monetary union, African Union is an example. Yet, the benefit to cost ratio of a single world currency for trade and payments perhaps cannot be denied. During the last several decades of his life, Robert Mundell spoke strongly in favor of single a global currency for trade. How to get there remains a real question, but some clues related to fault resiliency might have come from Ambedkar a century ago. We believe we have found a workable foundation for a single world currency for trade, which employs workaround for many previously known impediments. Those workarounds are among the intrinsic attributes of TWEX and the network TWEX/NET that hosts it. Perhaps the most remarkable progresses has been made on the Victoria ONE Platform Architecture, which hosts the TWEX/NET backbone and runs TWEX as an application. The authors' claim to a model for one world currency and network for trade and payment is likely the first ever. The ONE Architecture philosophy has created a global computing architecture, which may have far-reaching impacts beyond international trade and payment.

## RELATED WORKS

The fundamental ideas behind TWEX are derived from works of three independent groups of scholars, all working at different times and geography, and also at different generations. According to Mundell, a common currency can save on various types of transaction costs. But the cost savings come at a price. By moving to a common currency, a country abandons its own currency and gives up the ability to use its country specific monetary policy to respond to its own economic shocks. A country's central bank is often used to finance government spendings. Therefore, to make participating at a monetary union, the payoff must be greater than the cost. It is possible to develop detailed analytical models to guide a decision. Yet a country may eventually find that it is not in its best interest to join a currency union for trade [Mundell 1960, 1961].

Bhimrao Ramji Ambedkar a century ago saw a different set of problems. A country may have very little discipline in its fiscal policies. Beggar-thy-neighbor can be a widespread tendency. If a country's currency is ill managed and subject to continual depreciation, because of spillover shocks, affected parties must then establish countering instruments for its coexistence [Ambedkar 1923].

While a currency and the supporting institutions provide the necessary infrastructure, those are not adequate for generating full economic benefits. For tangible economic benefits, mobility of capital, labor, and factor are essential. Edmund Strother Phelps saw justice through the lens of economics, and gave a novel definition of justice. Phelps defined economic dynamism and social inclusion as movements of capital, labor, and factor. Entrepreneurship is a primary element of Phelps' vision of a just world. It is the entrepreneurs who actually makes things happen in the TWV system [Phelps 2006]. While Mundell, Ambedkar, and Phelps, are widely known for their works over many decades, our current works combine them together along with several other concepts to build a model for a single world currency for trade and payments.

A dream for a single world currency however is not new, and many authors have expressed skepticism that this can happen in the near term. Kenneth Rogoff explains the problems with the help of an old fable of nail soup [Rogoff 2012]. The Euro currency shows that EU cannot even have all of the western European nations in the pact. The eastern European nations pose even a bigger challenge. This takes us to the efforts made in Africa for a single African currency. Paul Masson and Catherine Pattillo don't think that this is going to happen anytime soon. Without better governance and fiscal discipline in member nations, a single African currency would not deliver low inflation, or stable exchange rates. In fact, the new African currency may be inferior to some existing currencies. Nevertheless, Masson & Pattillo give a model for a potential single African currency, and their single currency model is important. It helps to see the problems in action. It also highlights the frustrations on the ground for not having a way out to a quick solution [Masson & Pattillo 2004, Debrun 2002].

It should be clear by now that, having a single world currency is not an easy job. But the basics need not be difficult. Bela Balassa distinguished between the various forms

of integration, free trade area, customs union, common market, economics union, and total integration. He applied the theoretical principles to the European Common Market and Free Trade Area, and to Latin American integration projects [Balassa 1962]. However, Marta Bengoa seems to suggest that the job of creating a trade area doesn't become easier even for a smaller part of Latin America [Bengoa, Sanchez-Robles, & Shachmurove 2021].

During the last few years, substantial research has happened in the newly evolving fields of central bank digital currency [Allen 2020, Garratt 2021]. However, central bank digital currency initiatives by the government have seen somewhat perhaps catastrophic results already. Several major banks have failed in early 2023. Among many possible yet unproven causes, central bank digital currency experimentations may have played a role.

In addition to a central bank digital currency, the Fed is working on a scalable low-cost payment network called FedNow [Ackerman 2022]. It is good to see TWEX/NET and its global reach in contrast with the FedNow system. Manufacturing value-chain has received renewed interests during the recent years. Matthew Kidder thinks that long and parallel value-chains help to eliminate single-point supply disruptions [Kidder 2019]. This philosophy is intrinsic in the TWV design [Hossain 2021]. There is a mathematical dimension of the presented work. We will leave the readers with a book on statistical forecasting [Montgomery & Johnson 1976]. Because Computer Architecture is a different field and time is limited, we will leave that part away from today's presentation.

## INTRODUCTION

What to do with a problem that is important, yet that has seen decades of struggles with only a limited or partial solution? We take Masson and Pattillo model for an African Union currency to emphasize the question [Debrun 2002, Masson & Pattillo 2004]. With a comparison in hand, this is to say that, we will do an exposition of TWEX as a world currency for trade in the next several paragraphs.

We make an observation at this point. A one world currency for trade, and a world monetary union are not the same, and there is no need for them to be the same. However, if delivered superbly on the promises, a one world currency for trade and payments may naturally converge to *The ONE World Currency*.

Trans World Virginia or TWV is a brick and mortar world trade infrastructure. This is a large system, so we will attempt to describe it from multiple angles. We will begin with a simple metaphor. The *Metaverse* is a fictional sphere of the Internet as a single, universal, and immersive virtual world that is facilitated by the use of virtual reality and augmented reality. In contrast, TWV is a non-fictional, real 4D, and physically connected parallel universe. All concepts of TWV are real, and are superimposed on the real world. TWV is a connected *Paraverse*.

The WTO system is broken. Its power is compartmentalized by several nation oligarchs. Existing trade agreements are outdated and newer bilateral or multiparty agreements are compounding the global trading problems. The socialist republics are run by a handful of people who are in control of political might and vast financial assets. When it comes to political might, these countries exert the ruthless iron fist of a communist system, and when it comes to economy, the country exerts the frightening power of state financed capitalism. This practice chokes growth of individual talents at inception, and eliminates differentiated entrepreneurship. On another front, there also is a self pampering form of manufacturing and trading practice that rely on going-it-alone, regionality, and empowerment of manufacturing princedoms. That model too has crumbled in recent years. This practice closes the door for open market competition. When the regional fantasies crumble, they crumble fast and furiously while taking many partner nations with them.

Among the vices in the trade wilderness, there are illegal export subsidies, manipulated currencies, bottomless crypto-currencies, thefts of intellectual properties, environmental damages, unclean manufacturing processes, low wages, poor health benefits, and so on. The net result is a broken or manipulated supply value-chain, often empty store shelves, inflated prices, lack of sustainable employments, and concentration of wealth in the hands of a few. If the current trend continues, U.S. end position as a leader of global manufacturing will come under credible challenge, and as a result, US wages may eventually fall and living standard may deteriorate.

Many smaller nations see the problems as a global black-hole of manufacturing and trade, created by a small number of countries. Going with the flow is not a choice for them. Even if a smaller nation mimics the ersatz of nefarious state capitalism at its fullest, the size rule will still succumb it into servitude of nearby larger ones. Yet these words do not tell a whole story. Communities are left behind in the developed world, in the developing world, in far away island nations, in no particular patterns. As though they are forgotten by the rest of the world. The secondary effects are more frightening. Wars, unemployment, famine, and political tug-of-wars have dislocated millions of people around the globe. Economic disparity has created a global migration deluge. There are more than seventy-one million displaced people worldwide in desperate need of hope. During January and February of 2023 alone, 44,000 people entered Panama from several nearby and faraway countries, on their way to the U.S. The worst may yet to come.

Although there is an urgent need for bringing back order in global trade, there is no sign of major structural innovations in regional trade agreements. The US is promoting a model called 'near, re, or friend shoring' of manufacturing. This is in essence a single gravity model. For example, CPTPP and USMCA are focused primarily on near-shoring and addressing work-force shortages in and around the USA alone. These are partial solutions good only for a few countries. The key problem of near, re, or friend shoring of the USA leaves out vast part of the world from economic integration. Because of brain drain to the US, a significant part of those countries' GDP rely on crime

economy. The single gravity model creates massive immigration influx toward the USA, and as a result many people regularly lose their lives at the border.

There also has been a discussions on dual gravity model. In it, in addition to the USA, another country simultaneously become a dual gravity center. The dual gravity system too is a partial solution good only for a few countries. In this model too many countries are left out from economic integration. All known problems of the single gravity model are almost equally present in the dual gravity system, which includes the massive immigration influx toward the USA and leaving many countries to crime economy.

The European model of integration too is broken. Europe dive the nations in three buckets - old, new, and candidate. The old nations represent the old developed European economy. The new nations are just added to the core economic integration. The problem is understood in the candidate nations. These are European nations still lagging behind. There is a promise to integrate these nations, yet no timeline is stated. Many of these nations has substantial share of crime economy. All known problems of the gravity model are present in the European model of integration, which also include massive immigration influx. Hence, it is evident that a broader solution for all nations is needed. We think, TWV structure can benefit international trade systems, and that in turn can benefit the entire world.

TWV is an actor network system with real people, real identity, real places, real jobs, real money, and real lives. When the world is fragmented by social, economic, and political discords, TWV creates a utopian floating nation superimposed over an imperfect world. It creates a utopian political system with superior identity and economic stability. The pieces of the parallel world are connected by integrated logistics by land, sea, and air. TWV moves its own men, machines, and goods. The net result is a real deep, parallel, supply value chain for the real world [Kidder 2019]. TWV solves real world problems, and TWV wealths are real.

TWV sites work in connected unison, and integrates global manufacturing competency in a monolithic matrix. The TWEX/NET electronic exchange is for transnational trade settlement and intercontinental payments. TWV manages logistics, such as transportation, shipping, and payments at the central infrastructure level, this releases smaller entities from the burden of managing global logistics. Global trade, a dominion of large players, can become a playground for small entrepreneurs. Connecting global farms and farm revitalization is also a primary objective. A farm exchange is part of TWEX/NET.

TWV manufacturing zones, globally deep and parallel supply-chains, centralized logistics, combined with TWEX/NET is an operating system for global trade. Various enterprises of different sizes engaged in manufacturing and trade are the apps running on it. TWV employs hub-and-spoke model in zones and logistics and has fine grain supply value management which reduces manufacturing cost, fosters manufacturing creativity, and lowers operational risks.

In contrast, in the absence of TWV and in light of recent bilateral trade agreements, already signed or in discussion, such as the USA-Mexico-Canada Trade Agreement, UK-US Trade Agreement, UK-EU Trade Agreement, many problems for smaller nations are likely to remain unsolved and gradually become more and more complicated. The constraints may force smaller nations toward partnering with other competing nations unfriendly to the interests and values of each other.

In addition, at the present, there is no good way to protect long-term industrial capital investments in weaker nations, where cooperative presence of other nations are still essential. We expect TWV to provide a stable, predictable, fault tolerant platform for global manufacturing investments, for all friendly nations, even in places where doing business is currently unthinkable. TWV participation is voluntary, and the benefits are shared by all participating nations, islands, territories, realms, communities, and individuals. The smaller a participating entity is, the larger the benefit ratio it may see. TWV opens a whole world to a small nation's fingertip.

Free flow of goods between any two TWV sites may be assured even during dire national emergencies. It may not be apparent at first sight, but TWEX is *a model for a single world currency for trade*.

## RECENT DEVELOPMENTS

If a dot represents a TWV site, then the system is a network of dots, connected by land, sea, and air. The dots exist over real and mostly sovereign nations. Therefore legal-contractual foundation is necessary for the existence of the Paraverse. At present, existing global trade infrastructures, agreements, and institutions lack critical instrumentations to support TWV. Several critical augmentations in the future multilateral trade agreements are needed to accommodate and enable TWV. We have been proposing a format extension to the existing agreements. Taking UK-US Trade Agreement as an example, we are proposing several new sections to facilitate creation of the Trans World Virginia infrastructure. A flexible site disengagement procedure, that is a sunset clause, is part of the legal framework.

TWEX is a multiple-element currency based on ideas borrowed from *Bhimrao Ramji Ambedkar* and *Robert Alexander Mundell*. There are critical elements and attributes in TWEX that set it apart from others and make it a novel currency. No other currency we know come close to the completeness of TWEX or can provide the stability that TWEX can. The secret is a reserve algorithm that is discussed in the next section. Because the subject is technical and belongs to wider disciplines, our treatment is empirical, imprecise, and can be taken as a starting point.

TWEX/NET is a high-performance, resilient, secure infrastructure with support for users on massive scale. It has modular design for rigorous security analysis, and human-centric authentication. It is designed for scale. TWEX addresses tradeoffs between privacy and transparency, protecting user data from abuse while selectively permitting

data mining for financial services, policymakers, and law enforcements. Both TWEX and TWEX/NET are applications running on the Victoria ONE Platform Architecture. We are creating attributes of the Victoria ONE Platform Architecture that provide for the currency features, and more importantly, transactions per second performance requirements.

In our opinion, among the most important progresses made during the last two years are in the Victoria ONE Platform Architecture definition. We took a history approach to the Victoria ONE Platform Architecture definition. Diligently following the historical trails of computer architecture development, we have, in our own opinion, taken the most important and most potent elements of computer architectures to build the Victoria ONE Platform Architecture. We then added all required features of TWEX in the architecture itself. Victoria ONE Platform is a secure human centric computing platform as well. Victoria ONE is a definition, a concept, in a book form going through the process of implementation. TWEX may be the very first architecturally supported native active currency.

Finally, we have added new sites on our TWV target list. The list is not final until local authorities sign contracts. Nevertheless, a brief mentioning is needed to emphasize our strategies towards a successful implementation of TWV. We talk about TWV Dholera, which is inspired by an article published on the Wall Street Journal. We talk about TWV Northern Virginia based on our own observations in the region. We mention how the US sites fit within the interests of the country, and the interests of the world. We have been proposing Neom in the Kingdom of Saudi Arabia as the global headquarter of TWV.

## TWEX IS AN ACTIVE CANONICAL CURRENCY

We are excited to introduce TWEX as an active canonical currency. The concepts of canonical currency is novel. The concept of active currency is also evolutionary and novel. Both TWEX and TWEX/NET are realtime applications and hence the term active.

The canonical currency is a derived currency. It is based on a fuzzy algorithm, which manages the reserve stocks in real time [Mundell 1960-1961, Ambedkar 1923, Williamson 1985, McKinnon 1984, Montgomery & Johnson 1976]. The algorithm uses most if not all reasonable currencies, managed actively by the participating nations' central banks. The actual reserve stock, stable to a reference, is derived by the algorithm. The word canonical is here to mean that a best case algorithm may lead to a canonical reserve stock. The word canonical is used in an empirical sense.

## TWEX IS A SET OF REGIONAL CURRENCIES



There are some details we have avoided so far. TWEX is a set of regional currencies.

- **TWEX =  $\text{set}\{TWEX[1], TWEX[2], \dots TWEX[n]\}$** 
  - Fixed exchange rate between any two of  $TWEX[1]$  to  $TWEX[n]$
  - All different, i.e.  $TWEX[i] \neq TWEX[j]$  for any  $i \neq j$
- **Interest Rate =  $\text{set}\{Ir[1], Ir[2], \dots Ir[n]\}$** 
  - Policy driven and individually variable, each of  $Ir[1]$  to  $Ir[n]$
- **Exchange Rate =  $\text{set}\{Er[1], Er[2], \dots Er[n]\}$** 
  - Individually fixed or variable, each of  $Er[1]$  to  $Er[n]$
- **Central Bank =  $\text{set}\{CB[1], CB[2], \dots CB[n]\}$** 
  - Each of  $TWEX[1]$  to  $TWEX[n]$  gets a dedicated central bank
- **Reserve Stock =  $\text{set}\{Rs[1], Rs[2], \dots Rs[n]\}$** 
  - Each of  $CB[1]$  to  $CB[n]$  manages its own reserve  $Rs[1]$  to  $Rs[n]$

The sum of the set is referred to as TWEX as a whole. Each TWV site is treated as an individual region, and the site has a dedicated currency.

A site has a dedicated central bank, which sets the interest rates and exchange rates for the site. The local government currency sees the site TWEX as another foreign currency, and the interface surface is kept to a minimal initially for the effects to be minimal as well.

## TWEX/NET IS A PAYMENT NETWORK

A large number of people work outside their home countries living their families behind. Sending home payments at the minimal cost is an extremely important service for them. Although so far we have emphasized the trade settlement, and market exchange aspects of TWEX/NET, it is also a very large, scalable, minimal cost one world payment network. All necessary features, which include management of identity of large number people, managing their bank accounts, converting currencies, doing at an absolute minimal cost, are built in in the Victoria One Platform Architecture itself. Because of the system's one world presence, these international services give the appearances and was of domestic micro banking services.

## AN EAMPLE OF TWEX IN OPERATION

Bangladesh is a small nation in Southeast Asia with a population of about 160 million. The country has 64 administrative districts and a set of about 100 already established manufacturing zones. Although any one of these sites will work for illustrations, we use TWV Nachole for the purpose. Nachole is a sub-district with a well defined geographic boundary, with an area of ~284 square kilometer, and a population of ~147,000. Nachole is a prime farming region. Nachole is well connected to the rest of the world by a well designed, and one of the earliest rail network anywhere, since the mid nineteenth century. Historical census data, demography, land management, identity management are well defined in Nachole. A well defined postal service is also operational. Nachole administration is also well defined. Nachole sub-district as a

whole is used as the TWV site in this example. After the initial contracts are signed, no further boundary arrangement, zoning, site development is necessary. The in situ growth happens as a natural entrepreneurial and economic development within the TWV regime.

Looking into further details, TWEX is a basket of related currencies, one of which is dedicated to the site. Its reserve stock, interest rates, and exchange rate is managed by a dedicated site specific central bank function. TWEX-Nachole has a managed relationship to the rest of TWEX. TWV Nachole remains simultaneously under the regime of Bangladesh Taka (BDT). In essence, TWV Nachole has access to two currencies simultaneously. With a control over its reserve stock, exchange rate and interest rate, TWV Nachole can control international mobility of capital, labor, and factor.

For the local government, TWV Nachole only creates a small influence on BDT, which is contained within the site enclave. The effect on government policies and control over BDT is minimal or perhaps negligible. The Bangladesh Bank, the central bank of the country control BDT as usual, and treats TWEX-Nachole as another foreign currency. TWEX-Nachole however has a site specific central bank function, which controls its interactions with BDT, and other main parts of TWEX.

But why doing TWEX-Nachole in the first place, or doing it at all? It allows TWV to nurture a local pool of entrepreneurs to compete in a global arena. It creates bankability of all local stake holders, where individual credits and other forms of benefits can be target delivered directly in the account of an individual, connected particularly to that site. The job of in situ actual development is delegated to the local entrepreneurs.

Bankability of all stakeholders is a primary benefit of the site. All services are custom targeted for each site. Equally important is that large corporations too can function at these sites under the same TWV framework. A site is not limited to small business entities alone. Size is an orthogonal parameter for these services.

Banking inclusion is an age old problem. According one World Bank report, there are about 1.4 billion un-bankable adults in the world. These are hard-to-reach people, more commonly women, poor, less educated, and living in rural areas. Nachole is a recipient of foreign remittance often in very small sums that can be less than a dollar. TWEX/NET is our primary tool for banking inclusion of billions of otherwise non bankable people at minimal cost.

TWEX is a stable currency, which helps to attract and retain foreign direct investments at the site. The super identity system transcends over national boundaries, which also is a primary vehicle for accommodating large number of displaced people.

## AN EXAMPLE OF CRYSTALIZING TWEX IN AFRICA

A hope for integrating Africa through monetary union is alive. But the dreamers are aware of the hurdles more than any other continents. There has been a newly rejuvenated effort for a currency called Eco in Western Africa. But the original impediments still remains [Debrun 2002, Masson & Pattillo 2004]. In this section we use an example of TWV Yola in Nigeria to show how TWEX can be used in Africa for uniting the continent for currency. Yola has a population of 336,648, and an airport connecting it to the capital, and to other international destinations. The American University of Nigeria is located in the city. English is an official language.

The much of the working is similar to TWV Nachole, described in the previous section. Like Nachole, TWV Yola is an in situ growth system. Nigeria government maintains full control on the state currency Naira. Yet, the TWV site contract makes two currencies available on the site. Because of the small size of Yola site, influence of TWEX remains minimal on the Nigerian currency.

On the plus side, TWEX opens up TWV Yola to the world with all benefits of the entire TWV system. TWEX Yola is site specific and its central bank function is site specific as well. TWEX Yola will have fixed relation with the rest of TWEX. Nigeria will see TWEX [Yola] as any other foreign currency. We expect entrepreneurs in Yola to thrive and demonstrate better examples of fiscal management. A success story can pave the way for full deployment of the TWV system in other areas, and for natural convergence to a continental currency.

TWV Yola or TWEX [Yola] are used for examples only. The core concepts are equally applicable to other places. TWV Yola too can benefit from low-cost banking inclusion.

## CONCLUSIONS

At the heart of it all, TWV is a platform where global trade enterprises can be created easily. It nurtures an entrepreneurial society in world trade. TWV creates a utopian new society. TWV system nurtures in situ growth of local talents who can compete in the world arena on equal footings. We borrow much from Edmund Strother Phelps' works on dynamism and inclusion. TWV offerings can be coined as High Dynamism and Broad Inclusion. A creative business sector provides most people an opportunity to use their talents to pursue happiness. TWV takes this model to the entire world. Security, order, social harmony, economic well-being, and justice, for all peoples give legitimacy to a system.

In today's connected world, an individual or a nation alone cannot secure the underlying subjects on their own. A global team effort is needed. Leadership roles of US, UK, Japan, and Europe are essential for viable creation of a global infrastructure such as TWV.

Firmed up ideas on TWV, TWEX, TWEX/NET, and the Victoria ONE Platform Architecture are among the important and primary topics for discussions in the 2023

ITFA conference. TWV is an idea now, but together with you, our stake holders, we want to realize our ideas. We present a whole new system, a new paradigm for restructuring global trade for a better planet. TWEX is our model as the starting point of a single world currency for trade. if delivered superbly on the promises, TWEX as a one world currency for trade may naturally converge to *The ONE World Currency*. TWV is the Paraverse on the table, to discuss, to invest, to act upon, to benefit from, and to live in.

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