DINAR/DIRHAM BACKED ELECTRONIC PAYMENT SYSTEM FOR MALAYSIAN MARKET

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ABSTRACT

In addition to highlighting repeated failures of previous fiat currency systems, this paper also takes a different approach of revealing the fine performance of gold i.e. as far as its purchasing power is concerned. This study calculates the price of a few inflationary items in terms of Ringgit Malaysia (RM), as well as their corresponding prices in terms of gold (or silver). Having convinced with a fine performance of gold in terms of its purchasing power, it is therefore the aim of this paper to solve the problem of "portability" inherited in gold. If gold were to be adopted successfully as a payment system, the issue of portability should be correctly addressed or else the masses would not be encouraged to use it. Specifically, this paper proposes the use of e-commerce technology in order solve the portability problem in gold (or silver). Other "physical constraints" associated with the two precious metals can also be solved through the proposed e-commerce system. Apart from that, empirical studies will also be done on currently operated electronic payment systems in order to study the willingness of Malaysian people to adopt a new payment system.

Keywords: *Dinar/Dirham, Islamic Monetary Economics, E-Commerce*

1. INTRODUCTION

Barisheff [1] has reported that the US dollar has lost 82% of its purchasing power as measured by the Consumer Price Index (CPI) since 1971. The scenario can be illustrated as follows -- if 100 widgets can be bought with $1 in 1971, only 18 of such widgets can be

bought for \$1 in 2006. Alternatively, the erosion of dollars' purchasing power can also be looked at this way; in 1971 the price of gold was \$35 per ounce[2], now in (April) 2008, we need to pay \$920[3] to buy exactly the same 1 ounce of gold. So a simple mathematics will reveal that from 1971 to 2008 (37 years), in terms of US dollars, the inflation has gone up by 2528.6% i.e. $((920-35)/35)\times100\%$. Or equivalently, for the duration of 37 years, the US dollar has lost 2528.6% of its purchasing power. What an astronomical number! To further illustrate the figure, the minus 2528.6% indicates that in 1971, \$35 could buy 1 ounce of gold whereas today that same \$35 can merely buy $(35/920)=0.0380$ ounce of gold, a tiny fraction of gold indeed.

We may thus wonder how come the United States can still survive with such an exorbitant inflation rate like that. If the same situation happens to other (e.g. developing) countries, it would have gone bankrupt long time ago. There is no question about that! The question also arises, why comparing the US dollar i.e. a fiat currency with the price of gold in order to calculate the purchasing power or inflation rate? The reason being, gold in the past and will always be in the future regarded as a barometer to measure the performance of fiat currencies. The gold price goes up in the event of dollar goes down and its (gold) price is lower when the dollar appreciates. The masses will be interested in gold every time there is a problem with the dollars or other fiat currencies. It will always be seen as a competitor to all fiat currencies; it is a safe-haven asset during an economic turbulence.

From this point onwards, it is to be noted that dinar and dirham are nothing but gold and silver respectively. So the terms dinar and gold (also dirham and silver) will be used interchangeably throughout this paper. The Muslim particularly, is more familiar with dinar and dirham instead of grams or ounces units; the former were mentioned repeatedly in the Quran, hadith, and other authentic books written by various Islamic scholars. It is by consensus that one dinar carries the weight of 4.25 gram of pure gold and one dirham is represented by 3 grams of pure silver. Gold and silver (dinar and dirham) possess very similar monetary properties. It is said that silver is a twin sister of gold. Gold is normally used for high-valued items whereas silver is used for low-valued items.

2. GOLD: HISTORY, STRENGTH AND LIMITATION

2.1 History [4]

It is not the intention of this paper to delve into details of historical facts in highlighting the importance of gold. It is hoped that those historical-fact approaches will be covered by some other publications. However, a few examples will be presented here in order to give a sense of believing with regards to the power of gold and that the fiat currency will fail one day. One can find in many books that historically, empires or nations of which its currency uses outright gold or is backed by gold -- their economy was prosperous, stable, and people had lived harmoniously during those particular times [2,4,5]. In contrast, history has proven that empires or nations with fiat currencies always followed the same path of repeated currency turmoil and disastrous economic failures.

Rome started their currency debasement (through various leaders) by making their coins smaller or chopped wedges or holes in them which effectively, lessen the actual amount of gold content in their coins. When their leader (Diocletian, 3rd Century A.D.) ran short of funds to defend their vast and sprawling empire, he simply minted huge quantities of copper coins to replace their gold and silver coins, and thus effectively debased them. These large quantities of copper had resulted in soaring prices but instead of realizing the effect of increasing (worthless) money supply, he blamed it to merchants for being greedy to raise price. For this reason, the death penalty would be imposed on anyone selling higher than the mandated (i.e. controlled) price. Having noticed the debasement process had taken place, the rich started to hoard their gold and silver coins and they became even richer. Whereas the poor did not understand they were being cheated, became poorer because they were stuck with almost worthless copper (called pecunia). Consequently, the poor became highly dependent on public assistance and this has put an even bigger strain on treasury -- of which the latter responded by minting more copper coins. In short, throughout the whole debasement process, in year 301 a pound of gold was worth 50,000 denarii (the empire's currency unit), by year 307 the same gold worth 100,000 denarii. By year 324 it worth 300,000 and by mid-century it was ballooning into 2 billion denarii. In year 410, a financially devastated Rome eventually fell to Visigoths.

Then came France, twice in a century had succumbed to currency failures due to their leaders' greed with fiat currency that they had created. In 1715, King Louis XV (raised to throne at age of five) inherited his predecessor's huge spending (of many wars) in order to keep their empire. Subsequently, this had lead to high taxes, soaring debt levels and disgruntling among its people. The desperate French king had given a Scotsman by the name of John Law to print easy paper money (called livre) to prove the latter's theory that the more government put money into circulation, the greater would be the country's prosperity. Again, French people who understood debasement process had taken place, started to hoard gold and silver coins and disposing paper money the soonest as they could. By January 1720, overall prices in paper livre were soaring at a rate of 23% monthly. This lesson had taught French people for many decades. However, it did not stop it from happening again. This is because later in 1792, the French was ruled by a new government called itself as States General. The new government never learned from the past mistakes, had taken the same path of increasing supply of paper money aggressively. As a result, by 1794 there were 7 billion paper livres existing in circulation. A year later it became 10 billion, and six months later there were 14 billion in circulation. Soon afterward, the total had eventually reached 40 billion and this had lead to a full-scale hyperinflation. The same pattern repeating here; the government then tried to force people to accept paper money against people's will and at its worst situation, even imposed a death penalty for those who were found to differentiate between paper livres and gold or silver in their prices. Just like the Roman in the 3rd century, French merchants had to close their shops due to this oppressing trade rules. The economy collapsed, rationing had to be introduced, and eventually the once mighty Republic crumbled in disgrace, paving a way for Napoleon's dictatorship to take over.

Next was Germany, an industrial powerhouse a decade up until the World War 1. During that decade of prosperous economy, they had a stable currency (the mark) which was backed by gold; their coal and steel were highly demanded by the rest of Europe. But during 1920s, the expensive war had succumbed Germany into massive wartime loans on its books. After the war, the German formed a new republic named as the Weimar Republic. Unwilling to burden their constituents to pay for their reparations to France and other victors, they had chosen to settle the reparation payments by printing their paper marks mercilessly. As a

result, the supply of paper marks increased and prices began to soar. It was recorded that in 1922, a loaf of bread cost 160 marks; just a year later the same bread cost 1,500,000 marks. Workers were paid hourly and they had to rush to dispose their paper marks before it soon became worthless. By the autumn of 1923, the Weimar Republic went into a complete hyperinflation scale when one dollar equal to one trillion (1,000,000,000,000) marks. As what happened to France government centuries earlier, monetary chaos had lead to downfall of Weimar Republic, of which this opportunity was fully exploited by a dictatorship of Adolf Hitler.

2.2 Strength

Having discussed the repeated failures of fiat currency systems, now this paper alternatively takes another approach to reveal the great performance of gold i.e. as far as its stability and purchasing power are concerned. This paper calculates the price of a few inflationary items in terms of ringgit Malaysia (RM) as well as their corresponding prices in terms of dinar (gold) or dirham (silver). In this case, the price performance (purchasing power) between these two competing currencies can be compared side by side. The readers can therefore make a straight-forward judgment on the performance of purchasing power between fiat currency and that of sound money (dinar and dirham).

Tables 1 to 3 below illustrate the performance of dinar or dirham as compared to the performance of fiat currency (i.e. RM) for various critical household items. Practically speaking, the dinar is be used for high-valued items whereas the dirham is more suitable for low-valued items.

Table 1: Petrol prices comparison:

	Ringgit Malaysia (RM)			Dirham*		
	2000	2006	% change	2000	2006	% change
Petrol (50 liter)	60.00	96.00	+ 60%	33.55	21.62	- 36%
Diesel (50 liter)	35.50	79.00	+ 123%	19.85	17.79	- 10%

-- price of silver in 2000 is RM 18.54 per ounce (based on London fix price)
-- price of silver in 2006 is RM 46.04 per ounce (based on London fix price)
-- prices of petrol and diesel are RM1.92 and RM1.58 respectively per liter in 2006
* dirham is used for low-valued items, whereas dinar is used for high-valued items

Table 2: Electricity prices comparison:

	Ringgit Malaysia (RM)			DINAR*		
	2000	**2006**	**% change**	**2000**	**2006**	**% change**
Electricity Domestic (300 kWh)	69.40	72.50	**+ 4%**	0.495	0.233	**- 53%**
Electricity Commercial (3000 kWh)	864.00	969.00	**+ 12%**	6.163	3.114	**- 49%**

-- price of silver in 2000 is RM 18.54 per ounce (based on London fix price)
-- price of silver in 2006 is RM 46.04 per ounce (based on London fix price)
* dinar is used for high-valued items whereas dirham is used for low-valued items

Table 3: Construction items prices comparison:

	Ringgit Malaysia (RM)			Dirham*		
	2005	**2007**	**% change**	**2005**	**2007**	**% change**
Cement (50 kg)	12.50	14.50	**+ 16%**	5.25	3.30	**- 37%**
Steel (1 ton)	1800.00	2100.00	**+ 17%**	755.59	478.54	**- 37%**
Tar/Bitumen (1 ton)	85.00	140.00	**+ 65%**	35.68	31.90	**- 11%**

-- price of silver in 2005 is RM 24.70 per ounce (based on London fix price)
-- price of silver in 2007 is RM 45.50 per ounce (based on London fix price)
* dirham is used for low-valued items, whereas dinar is used for high-valued items

It is to be noted that oil and electricity prices are two inflationary items whereby any price increase in these two items will subsequently give rise to prices of other daily food items. Similarly, construction items will give subsequent price rise to construction-related markets such as commercial (office) and residential (house) buildings. Take note also that if dinar were to be used in place of dirham, the performance would be very similar except in this case a gold price is used instead of a silver price.

It should be noticed from the tables above that the performance of dinar and dirham is much superior as compared to that of RM (or other fiat money). Apparently in all tables, what appears to be a "price increase" in terms of RM is actually (in reality) a "price decrease" in terms of dinar and dirham. No inflation! Is not that great? The more these tables are pondered, the more question will be asked, why are we so blind? Dinar (gold) and

dirham (silver) simply preserve "the value" that paper (fiat) money could not. As simple as that!

2.3 Limitation

But there is one obvious problem with dinar (or dirham) when compared to fiat currencies or paper money -- that is -- it is physically heavier and therefore makes it difficult to be carried-around for daily transactions. Apart for that, due to its softness (malleability) it will also be subjected to "wear and tear" if it were to be used repeatedly among the masses. The other challenging issue would be how to identify the purities of each dinar and dirham such that fraud and cheating cases would be minimized or if possible, totally prevented.

Having realized a fine performance of dinar and dirham in terms of its purchasing power, it is therefore the aim of this paper to solve problems inherited in dinar and dirham i.e. issues of portability, "wear and tear", and checking of purities. If dinar and dirham were to be adopted successfully as a payment system, those three issues should be correctly addressed or else the masses will not be encourage to use it. Specifically, this paper proposes the use of e-commerce technology in order solve portability problems associated with dinar and dirham based payment systems.   Several successful e-commerce models will be thoroughly investigated throughout this work and the most suitable model will be proposed for this dinar and dirham based payment system. It is to be noted that the criteria for suitability will be chosen based on the situation of Malaysian market.

So next topic will be focused on identifying suitable e-commerce systems that is believed would be able to address problems with portability, wear and tear, and purities verification.

3. OVERVIEW OF ELECTRONIC PAYMENT SYSTEMS

The idea here is to find ways, such that every transaction of dinar and dirham could be carried out effectively and highly secured, and yet those two precious metals do not move as often as they are being transacted. The authors strongly believe that those objectives can

be achieved via the use of e-commerce system, or to be specific an electronic payment system of the e-commerce systems. Therefore, the various types of electronic payment system[6] will be discussed next.

3.1 Smart Card System

The first of which is known as a smart card system. The smart card is generally defined as a portable data storage device with some intelligence (memory) and capable of providing identity and security. Table 4 below summarizes the basic characteristics of smart cards:

Table 4: Characteristics of Smart Card

Type of Card	Capacity	Security
Phone Card	10 bytes	None
Magnetic Stripe	100s of bytes	Limited – enciphering; Data protection achieved by external devices
Smart Cards	Several of kilobytes	Self-protected units controlled by microprocessor
Optical Cards (only available in Japan)	Several megabytes	Limited – enciphering; Data protection achieved by external devices

3.2 Stored-Valued Card System

The second system is known as a stored-value card. Among the common variations of stored-value cards are as follows:

i)   Closed versus open system

ii)   Single issuer versus multiple issuer system

iii)   Accountable versus unaccountable system

Closed System and Open System

A Closed System model is meant to be used only for specific purposes or specific environment. A university stored-value card for students is a good example of a closed system whereby in this case, students can use their pre-loaded cards to buy items or services offered on campus such as payable phone calls, buying books, making photocopies in at the library and so on. A prepaid phone card falls under this closed systems category. For an

Open System model, cards are treated very much similar to that of the existing currency and coin. In this case, the card should be able to be transacted worldwide.

Single Issuer and Multiple Issuers

In a Single Issuer model, there would be only one unique issuing agent that provides the electronic value. It is very much the same as current cash payment system whereby the issuing agent is known as the Central Bank. For Multiple Issuers model, the electronic value can be provided by multiple issuing agents, hence the name "multiple" is indicated.

Accounted and Unaccounted Models

The difference between accounted electronic payment models with that of unaccounted models is in terms of the auditing function that traces all the transactions involved. In the accounted models, traces of payment activities are possible whereas in the unaccounted models the transactions remain strictly anonymous, and thus are not meant to be traced.

3.3 Software-Based Electronic Payment System

The last type of electronic payment system is called a software-based system. This last system is primarily developed such that more secured transactions can be carried out over the Internet. There are two critical issues to be addressed with regards to the software-based payment systems. The first of which is on the use of Value-Added Networks (VAN) in order to properly handle confidential data over this type of payment system. The VAN can be implemented through the use of "firewalls" devices installed at both ends of the transaction channels. The second issue in this type of payment system is on the application of "encryption techniques" on each transaction. In this case, the information for each transaction is scrambled before it is sent over an open network. Relatively less costly compared to the value-added network mechanism, the encryption technology however requires both parties to have compatible software as well the keys to unscramble the encrypted information.

4. DIRECTION OF RESEARCH WORKS

It is therefore the aim of this paper to thoroughly investigate variants of electronic payment system mentioned in the previous section. A detailed analysis of each system ought to be carried out in order to find the most suitable model to be used for the proposed dinar and dirham based electronic payment system. Moreover a survey of successful implementation among existing electronic payment systems in Malaysia ought to be conducted so that the outcome of those surveys can be used to empirically support the final analysis of each model. It is to be noted here that very likely, instead of relying on just one model to achieve our objective; we might turn to a "hybrid" model for our solution. This is to take advantage of various strengths that exist in different models considered.

5. CONCLUSIONS

This paper started with a detailed discussion of gold-related matters i.e. pertaining to its stability as sound money, its strengths in terms of purchasing power, and its role in establishing a harmonious society. Having discussed that, the paper then turns its focus on reviewing various ICT technologies currently available in the electronic payment systems. It is hoped that, those technologies (e-commerce particularly) can be fully exploited in order to solve problems with physical limitations (heavier, wear and tear, fraud) associated with dinar (gold) and dirham (silver). Those physical limitations must be completely addressed before the proposed model can be put forward into a drawing board. The authors strongly believe that success or failure of this proposal will depend heavily on these e-commerce issues. Whether or not masses will participate in this dinar and dirham based payment system -- will be eventually determined by "how realistic and practical" this e-commerce system would be. This paper has shown that -- the strengths of gold and silver in terms of purchasing power, its stability as a currency, and as a source of harmony -- could not be questioned anymore.

This is especially true with the global financial crisis currently hitting all of us. We had seen it coming; and thus now, we should be fully convinced that fiat currency will always destine to fail. Would history be repeating itself here? There is one thing very similar in this situation; the art of printing excessive supply of paper money by the

government. The downfall of the Roman, French (twice), and German (Weimar Republic), was all started from the collapsing of their monetary systems due to excessive printing of money supply.

Tun Dr. Mahathir Mohamad, the once outspoken prime minister of Malaysia who is still a strong proponent of gold dinar currency system, recently wrote this in his blog (www.chedet.com) with regards to this excessive printing of US dollars, due to its latest financial turmoil: [7]

> 7. Yet today we see the US Government readying US700 billion to brazenly bail out banks, mortgage companies and insurance companies.
>
> 8. Where does the money come from? From thin air as no real money in cash or bullion or anything tangible are moved into the bankrupt banks. The money is just in the form of loan papers and entries in the books of the banks or companies.
>
> 9. The US 700 billion has no backing whatsoever. No gold reserves, no foreign currency reserves as required for other countries. Without such backing the US Dollar is actually useless. Only the military power of the US is forcing the world to give value to the US Dollar.
> .
> .
> .
> 12. The US now owes the world US 14 trillion. There is no way it can ever settle this debt. If other countries fail to repay or service their debts, the US would demand that they be made bankrupt. Now the US is literally bankrupt but it still insists that the pieces of paper, the famous or infamous greenbacks have some value. It actually has no value. Certainly it cannot be used to finance wars of aggression against Iraq and Afghanistan, to finance the CIA (Central Intelligence Agency) activities in undermining Governments and countries. But still the US' ability to threaten countries is undiminished.

On the final notes, this paper ends with an excerpt of an interview between National Public Radio (NPR) and Paul Krugman, the 2008 Nobel Prize winner for economics, on the current global financial crisis: [8]

> He (Paul Krugman) said that he should have anticipated the current financial turmoil.
>
> "I should have seen it coming…I berate myself for not understanding the extent to which we have these financial domino effects…I saw there would be a lot of pain, but I didn't realize how big the pain would be."

He has said that he is "extremely terrified" of the financial crisis, and told NPR on Monday that he wondered how economist and politicians "could have been so blind."

"We created a financial system that basically outgrew the defense we created back in 1930s to protect against crises. We should have understood that because the system had outgrown those defenses, there was a possibility of another one. But very few people saw it coming," he said.

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Nick Barisheff is the co-founder and President of Bullion Marketing Services Inc., which was established to create and manage The Millennium Bullion Fund. The fund is Canada's first and only RRSP eligible open-end Mutual Fund Trust that holds physical Gold, Silver and Platinum bullion.

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