FOREIGN CURRENCY

FINANCIAL REPORTING FROM EURO TO YEN TO YUAN

A Guide to Fundamental Concepts and Practical Applications

ROBERT ROWAN

Contents

CHAPTER 1

Isn't Currency Conversion Just Multiplication?

Each new step we take in thought reconciles twenty seemingly discordant facts, as expressions of one law.[1]

—Ralph Waldo Emerson, "Circles"

Whether one lives close to the border of another country, travels internationally, pays attention in school, or most unfortunately lives in a poverty-stricken country, the fact that the world uses many different currencies is common knowledge. Newspapers, magazines, web sites, and computer applications provide exchange rates and tools to convert from one currency to another. A traveler who goes abroad and exchanges currency will note that the conversion rates available in the newspaper, at the airport currency exchange booth, and at the bank in the destination city all differ. Clearly the people who run the airport booth charge a different and more expensive rate for the

convenience of the service provided. That's how they make money. They can take the money to the same bank in the city, with the difference in rates being their profit. How do these different sources get their rates, and how does one convert currencies?

CONVERSION

How to convert a sum of money from one currency to another appears to be self-evident—axiomatic. The technical skills required are learned in a grade-school mathematics curriculum. All that is needed is an exchange rate and the ability to multiply. Right?

The concept and process differ little from that of converting units from the English measurement system to the metric system. At least, that is how it appears on the surface. For example, one inch equals 2.54 centimeters. One kilometer equals 0.6213712 miles.

The steps are simple:

1. Start with 100 euro (€).
2. Obtain the exchange rate from euro to dollars ($). Rates are available readily on the Internet. One popular site is OANDA (www.oanda.com). Rates also can be found in print publications and at banks.
3. Multiply the euro by the exchange rate.

Multiplying €100 by the rate of 1.2717 dollars per 1 euro provides the answer.

Writing the formula in an equation format helps to show that the units of currency in the numerator and denominator cancel. This practice is a good check to be certain that the rate used is the proper rate for converting *from euro* to dollars, and not the rate for converting *from dollars* to euro. As shown here, the euro in the numerator and denominator cancel each other, leaving only dollars in the numerator:

$$100 \text{ euro} \times (1.2717 \text{ dollars} / 1 \text{ euro}) = 127.17 \text{ dollars}$$

Answer: $127.17.

Why even go through the hassle of performing the calculation? Myriad web sites and apps (mini applications) allow one to enter a

value, select the "from" and "to" currencies, and see the answer with minimal effort.

THE FIRST COMPLICATION: IT'S NOT JUST MULTIPLICATION

The English measurement system's relationship to the metric system is reassuring. It is fixed. It does not change over time. One kilometer today will equal 0.6213712 miles tomorrow and the next day.

However, exchange rates change constantly. This variability is just one of several complications to be layered onto the previous simple example. Like stocks, bonds, and commodities, currencies trade on a daily basis throughout the world. While Europe sleeps, the markets in Asia start trading the euro, affecting the market exchange rate. The European markets then join. The Asian markets close and the markets in the Americas open. Trading continues around the globe, with new information impacting the markets, and hence the values of the currencies, constantly. Currency trading doesn't sleep.

The rate of 1.2717 used in the previous example becomes outdated quickly. Depending on a number of factors, the €100 now could be worth $128.00 or $126.00 at the end of the day, a 0.7 percent gain or a 0.9 percent loss, respectively.

Although no single official exchange rate source exists globally, the exchange rates quoted from source to source do not vary greatly. Any large imperfection in market exchange rates quickly becomes an opportunity for arbitrage. An arbitrageur purchases a currency in the lower-price market and simultaneously sells it in the higher-price market. The rate difference between the two markets is the arbitrageur's profit, and thus a disincentive for the market to vary widely.

WHERE DO EXCHANGE RATES COME FROM?

So where do exchange rates come from? A single global official source of exchange rates does not exist. The exchange rate market is not centralized. There are many players actively trading different types of foreign currency instruments. The Bank for International Settlements

(BIS), the central banks' bank, groups the players into three categories:

1. *Reporting dealers.* These large entities include financial institutions such as commercial banks, investment banks, and securities firms. They engage in transactions with large corporate firms, governments, and other financial institutions. They also could conduct business in the interdealer market. These dealers buy and sell currency and over-the-counter (OTC) derivatives for their customers and for their proprietary accounts. These dealers generally use electronic trading platforms.[2]
2. *Other financial institutions.* This category is defined by what it is not. In other words, it contains the financial institutions that are not reporting dealers. Because the definition still refers to financial institutions specifically, corporations and governments do not fall into this category. Any other financial institution one can think of falls within this category. Examples include the smaller versions of those entities defined as reporting dealers (i.e., the smaller banks, investment banks, and securities firms). The category also includes insurance companies; financial arms of corporations; and the various investment funds such as pension, money market, currency, and hedge funds. Most interestingly, this group also includes central banks. Central banks often act in a coordinated effort, but they sometimes act unilaterally to intervene in the currency markets to achieve desired values for a particular currency.[3]
3. *Nonfinancial customers.* This group again is defined by what it is not. It contains the entities that are not financial institutions. Governments and corporations that engage in the currency market fall into this category.[4]

Euromoney magazine conducts an annual survey of the global foreign exchange industry. In 2010, the top three banks in the survey constituted over 40 percent of the total market.[5] The survey also noted that electronic trading accounts for more than half of all trading. The top-ten list from the survey includes:[6]

(BIS), the central banks' bank, groups the players into three categories:

1. *Reporting dealers.* These large entities include financial institutions such as commercial banks, investment banks, and securities firms. They engage in transactions with large corporate firms, governments, and other financial institutions. They also could conduct business in the interdealer market. These dealers buy and sell currency and over-the-counter (OTC) derivatives for their customers and for their proprietary accounts. These dealers generally use electronic trading platforms.[2]
2. *Other financial institutions.* This category is defined by what it is not. In other words, it contains the financial institutions that are not reporting dealers. Because the definition still refers to financial institutions specifically, corporations and governments do not fall into this category. Any other financial institution one can think of falls within this category. Examples include the smaller versions of those entities defined as reporting dealers (i.e., the smaller banks, investment banks, and securities firms). The category also includes insurance companies; financial arms of corporations; and the various investment funds such as pension, money market, currency, and hedge funds. Most interestingly, this group also includes central banks. Central banks often act in a coordinated effort, but they sometimes act unilaterally to intervene in the currency markets to achieve desired values for a particular currency.[3]
3. *Nonfinancial customers.* This group again is defined by what it is not. It contains the entities that are not financial institutions. Governments and corporations that engage in the currency market fall into this category.[4]

Euromoney magazine conducts an annual survey of the global foreign exchange industry. In 2010, the top three banks in the survey constituted over 40 percent of the total market.[5] The survey also noted that electronic trading accounts for more than half of all trading. The top-ten list from the survey includes:[6]

1. Deutsche Bank
2. UBS
3. Barclays Capital
4. Citi
5. RBS
6. JPMorgan
7. HSBC
8. Credit Suisse
9. Goldman Sachs
10. Morgan Stanley

All of the transactions generated by those players and others generate market rates at a moment in time, much like the stock market. Those rates are the market exchange rates.

The entities involved in the trading provide exchange rate data to customers in real time, after a delay, or at the end of the trading day, based on need. Companies such as Interactive Data offer services to provide exchange rate data, with Interactive Data providing as many as 500,000 updates per day.[7]

THE MARKET

The Bank for International Settlements conducts a "Triennial Central Bank Survey." The survey provides perspective on the size of the foreign exchange market. It also provides data regarding which currencies are traded and in what pairs. The latest report noted that "Global foreign exchange market turnover was 20 percent higher in April 2010 than in April 2007, with average daily turnover of $4.0 trillion compared to $3.3 trillion."[8] That's $4.0 trillion dollars per day. According to the report, banks in the United Kingdom account for 37 percent of the activity, with the next largest trading center being the United States at 18 percent.[9]

Table 1.1 comes directly from the BIS report. It shows the total dollar amount of currency transactions and the percentage of the total of each currency transaction. The table shows these amounts by currency pair. A currency pair represents the two currencies involved in

Table 1.1 Global Foreign Exchange Market Turnover by Currency Pair

Daily averages in April, in billions of U.S. dollars and percentages								
Currency pair	2001		2004		2007		2010	
	Amount	%	Amount	%	Amount	%	Amount	%
USD/EUR	372	30	541	28	892	27	1,101	28
USD/JPY	250	20	328	17	438	13	568	14
USD/Other	152	12	251	13	498	15	445	11
USD/GBP	129	10	259	13	384	12	360	9
USD/AUD	51	4	107	6	185	6	249	6
USD/CAD	54	4	77	4	126	4	182	5
USD/CHF	59	5	83	4	151	5	168	4
EUR/JPY	36	3	61	3	86	3	111	3
EUR/GBP	27	2	47	2	69	2	109	3

Currency pair	2001		2004		2007		2010	
	Amount	%	Amount	%	Amount	%	Amount	%
EUR/Other	17	1	35	2	83	2	102	3
USD/HKD*	19	2	19	1	51	2	85	2
EUR/CHF	13	1	30	2	62	2	72	2
USD/KRW*	8	1	16	1	25	1	58	1
JPY/Other	4	0	11	1	43	1	49	1
USD/SEK†	6	0	7	0	57	2	45	1
USD/INR*	3	0	5	0	17	1	36	1
EUR/SEK†	3	0	3	0	24	1	35	1
USD/CNY*	.	.	1	0	9	0	31	1

(*continued*)

Table 1.1 *(continued)*

Daily averages in April, in billions of U.S. dollars and percentages								
Currency pair	2001		2004		2007		2010	
	Amount	%	Amount	%	Amount	%	Amount	%
USD/BRL*	5	0	3	0	5	0	26	1
USD/ZAR*	7	1	6	0	7	0	24	1
JPY/AUD*	1	0	3	0	6	0	24	1
EUR/CAD	1	0	2	0	7	0	14	0
EUR/AUD	1	0	4	0	9	0	12	0
JPY/NZD*	0	0	0	0	0	0	4	0
Other pairs	23	2	36	2	90	3	72	2
All currency pairs	1,239	100	1,934	100	3,324	100	3,981	100

Note: The table was modified to remove the year 1998, the period prior to Euro introduction, and is adjusted for local and cross-border interdealer double-counting (i.e., "net-net" basis).
* Included as main currency pair from 2010. For more details on the set of currency pairs covered by the 2010 survey, see the statistical notes in Section IV.
† Included as main currency pair from 2007.

the exchange transaction. For example, if dollars were traded for euro, the pair would be dollars and euro.

USD is the code for U.S. dollars, and EUR is the code for euro. The most common currency pair traded, the USD/EUR pair, accounted for 28 percent of the daily average and 1.1 trillion dollars per day in 2010.

Note that the table uses three-letter currency codes for each currency. The International Organization for Standardization (ISO) maintains these three-letter codes for over 200 currencies around the world. ISO also provides a numeric code for each currency, along with the names of the major and minor units. The ISO standard for currencies is called ISO-4217. In its latest revision it is referred to as ISO-4217:2008, "Codes for the Representation of Currencies and Funds."[10]

For example, the U.S. dollar has a code of USD, a numeric code of 840, a major unit of "dollar," and a minor unit of "cent." The euro has a code of EUR, numeric code of 978, major unit of "euro," and minor unit of "cent." A list of the currencies with the alphabetic and numeric codes can be found in Appendix A.[11]

The ISO also provides the customary number of decimal places displayed for each currency and the standard display format. For example, the U.S. dollar uses two decimal places, and the customary display is #,###.##. The Bahraini dinar (BHD) uses three decimal places, and the customary display is #,###.###. The major unit for BHD is called the dinar, and the minor unit is called the fils.[12] This additional information can be found at the web site of Financials.com at no charge.

A SECOND COMPLICATION: TRIANGULATION

Recall the example of converting kilometers (km) to miles. The conversion involves a fixed relationship between the two measures of distance, unlike the constantly changing relationship between currencies. Recall also that currencies trade in pairs. So what happens if a third measure of distance is added?

Given that hundreds of currencies exist, let's expand the distance example to include a third measure, the nautical mile. It's the equivalent of having three currencies.

One kilometer equals 0.6213712 miles. Given that there are 0.8689762 *nautical* miles per mile, two distance "rates" now exist, analogous to two currency pairs:

Distance Pairs

miles/km = 0.6213712

nautical miles/mile = 0.8689762

Note that both rates have the mile in either the numerator or the denominator. Given that fact, the mile serves as the base from which a third rate can be calculated very simply. Just multiply the two rates, and then take the inverse (divide the result into the value of 1):

$$\frac{1}{\left(\frac{0.6213712 \text{ miles}}{\text{km}} \times \frac{0.8689762 \text{ nautical miles}}{\text{mile}}\right)}$$

$$= 1.852000066 \text{ km} / \text{nautical mile}$$

Now a third rate exists: 1.852000066 kilometers per nautical mile. Further, that relationship always will be true. To prove the fact, convert *one* kilometer to miles, convert miles to nautical miles, and then convert nautical miles to kilometers. When we finish we should have the same one kilometer with which we started.

$$1 \text{ km} \times (0.6213712 \text{ miles} / \text{km}) \times (0.8689762 \text{ nautical miles} / \text{mile}) \times (1.852000066 \text{ km} / \text{nautical mile}) = 1 \text{ km}$$

The third measure of distance does not impact the relationships between the distances.

Recall however that the exchange rate for each currency pair changes constantly. Now that we have two currency pairs and both are changing, how can there be any relationship among the three currencies that make up the two trading pairs? This is the point at which two important concepts reveal themselves. The first concept is that of a base currency; the second is triangulation.

A base currency is a currency in which all other currencies can be expressed. In the example of the distance pairs, note that the mile exists in each rate. It links the two distance pairs together. Viewed in tabular format, the distances with the mile as the base are shown in Table 1.2.

Table 1.2 Distance Pairs (Base = Miles)

Other Unit of Measure	Miles/Unit
Kilometers	0.6213712
Nautical miles*	1.1507795

* Inverse of 0.8689762.

When calculating the third rate, kilometers per nautical mile, we unwittingly used triangulation. Triangulation uses the base unit (miles in this example) as the common unit between the other two units. Any of the units of measure that is listed in the table can be expressed in terms of another unit of measure in the same column, using the base unit as the means of triangulation. We discuss triangulation in more detail in Chapters 2 and 5. It plays a key role when countries adopt the euro. Right now we will use triangulation to explore currency cross rates.

TRIANGULATION WITH CROSS RATES

To begin exploring triangulation and cross rates, use your knowledge of ISO-4217 currency codes to build a currency table. The information in Table 1.1 shows the six currencies with the highest market turnover by pair, so those currencies can form the basis of our new currency-pairs table. The six currencies are as follows:

ISO Code	Currency Name
USD	U.S. dollar
EUR	Euro
JPY	Japanese yen
GBP	Pound sterling
AUD	Australian dollar
CAD	Canadian dollar

The new table, Table 1.3, is similar to Table 1.2, but it now uses currency pairs instead of distance measurement pairs. Table 1.3 uses the USD as the base currency, with real exchange rates. It also includes

Table 1.3 Currency Pairs (Base = USD)

Other Unit of Measure	USD/Unit	Units/USD
EUR	1.27095	0.78681
JPY	0.01191	83.97
GBP	1.53690	0.65066
AUD	0.89005	1.12353
CAD	0.93778	1.06635

Rates as of August 31, 2010.

one new column that simply shows the reciprocal value. In other words, using the first column of values from Table 1.3, there are 1.27095 USD per 1 EUR. Using the second column of values, there are 0.78681 EUR per 1 USD.

Table 1.3 provides the ability to convert EUR to JPY, GBP to AUD, CAD to JPY, and so on, all using the USD to triangulate. It's the same triangulation method used previously to determine kilometers per nautical mile. Rates for currency pairs not listed in the table can be calculated.

To find the JPY/EUR cross rate, the following calculation is performed:

$$(83.97 \text{ JPY} / \text{USD}) \times (1.27095 \text{ USD} / \text{EUR}) = 106.72 \text{ JPY} / \text{EUR}$$

The foreign exchange market does not have a single rate setter. Market rates change constantly. How reliable then is the rate to convert EUR to JPY, especially since it really is a cross rate derived from the exchange rates in Table 1.3 relative to the USD? Efficient markets and the potential for arbitrage provide some discipline to ensure that these cross rates remain valued fairly.

QUOTES

Table 1.3 provides the beginnings of an exchange rate table with cross rates. At times cross rates easily could be confused. For example, at one point the values for the USD/CAD currency pair were 0.99542

and 1.0046, respectively, in April 2010. The two currencies were so close to parity (an exchange rate value of 1) that it was difficult to tell which reciprocal was which just by looking at the value. The difference between the two rates was only 0.46 percent. Before proceeding, four quote styles and one convention merit discussion:

- Direct quote
- Indirect quote
- American quotation
- European quotation
- Decimal places and pips

Using the two columns of values from Table 1.3 as a reference:

- A *direct quote* is a quote where the base currency is expressed per single unit of the other currency.[13] In Table 1.3, the first column of values presents direct quotes for the U.S. dollar (USD). All values are expressed as the number of USD per one unit of each of the other currencies. A direct quote for the euro would be the number of euro per one unit of another currency. From Table 1.3, EUR row, that value would be 0.78681 EUR per 1 USD.
- An *indirect quote*, quite simply, is the opposite of a direct quote. The second column of Table 1.3 provides an example of an indirect quote for the U.S. dollar (USD). All values are expressed as the number of foreign currency units per one USD.[14] An indirect quote for the euro would be the number of units of another currency in the table per one euro. From Table 1.3, EUR row, the value would be 1.27095 USD per 1 EUR.
- An *American quotation* is a direct quote that uses the USD specifically. Values are expressed as the number of USD per one unit of each of the other currencies.[15] The first value column of Table 1.3 provides American quotes since the USD is in the numerator.
- A *European quotation* is an indirect quote that uses the USD specifically. Values are expressed as the number of foreign currency units per one USD.[16] The second value column of Table

1.3 provides European quotes since the USD is in the denominator.

Frequently the currencies reported in the media or newsletters mix the styles. For example, a report might state that the euro was trading at 1.27095 and the yen was trading at 83.97. In this example, the euro quote is a direct quote whereas the yen quote is an indirect quote.

The number of *decimal places* used in an exchange rate impacts the value of a transaction. Variability exists in the number of decimal places displayed. A common practice prior to 2005 was to quote rates to four decimal places. The fourth decimal place, the smallest value in the rate, was called a *pip*.[17] For example, the first value in Table 1.3 is 1.27095 USD per 1 EUR. If it were displayed to four decimal places, the rate would be 1.271**0**. The pip would be the zero, as shown in boldface. If the rate were to change to 1.271**1**, an increase of 0.0001, it would have changed by one pip.

As a result of increased computer-based trading, in 2005 Barclays added an additional decimal point, showing rates to 0.1 pip.[18] Table 1.3 displays rates with five decimal places. Electronic trading facilitated that move, as well as the ability to narrow spreads. The *Euromoney* 2010 survey noted that electronic trading accounted for over half of all trading.[19] Exchange rates with six decimal places can be found as well. One example is Ireland's rate for conversion to the euro. The euro conversion rules require exchange rates with six significant figures.[20]

Traders also speak in terms of "handles." For example, at 1.27095, the euro is at the "7" handle. The handle generally refers to a certain decimal place that represents a trading range for the currency. A move up to or down to the next handle could represent a significant technical movement, or a notable change in the value of the currency.

CURRENCIES AND EXCHANGE RATES: HIGHLIGHTS OF THEIR RELEVANCE AND RECENT HISTORY

Since the early 1970s most of the world's currencies have had floating exchange rates. A floating exchange rate means that the exchange rate market determines the rate.

Other currencies' exchange rates can be fixed, either to another single currency or to a basket of currencies. Timor-Leste, better known as East Timor, uses the U.S. dollar as its currency. China's exchange rate mechanism moved through five stages between 1979 and 2007, according to the People's Bank of China. In 2005 the Chinese yuan entered a managed floating exchange rate mechanism tied to a basket of currencies;[21] the policy was altered temporarily and was subsequently resumed.[22]

At times an exchange rate changes dramatically within a day. Over time currencies can gain or lose 40 percent, 50 percent, or more of their value. Currencies come and go for various reasons. Positive economic progress led to the introduction of the euro. Inflation played a part in Venezuela switching from the bolívar (VEB) to the bolívar fuerte (VEF). The VEF lacked three zeros found in the VEB, effectively making 1,000 VEB equal 1 VEF.

Numerous events from the 20th century shaped and impacted the environment in which we operate today. A few events that merit brief overviews include:

- The formation of the BIS in 1930.
- The Bretton Woods agreement, signed in 1944, which among other things led to the creation of the International Monetary Fund (IMF). The Bretton Woods conference also nearly disbanded the BIS.
- The closing of the gold window on August 15, 1971.

The Bank for International Settlements came into being in 1930 for the primary purpose of collecting, administering, and paying war reparations such as those imposed on Germany by the Treaty of Versailles. It also promoted central bank cooperation to maintain monetary and fiscal stability. From the end of World War II through the early 1970s, the BIS supported the Bretton Woods system.[23]

The Bretton Woods agreement, named after the town of Bretton Woods in New Hampshire, resulted from a three-week meeting in 1944 of over 730 delegates representing 44 nations. By 1946, the system was operating. Each signing country agreed to maintain an exchange rate pegged to gold. The IMF was established as part of the

process, its role being to maintain the fidelity of the fixed exchange rates. The United States linked gold to the dollar at a rate of USD 35 per ounce, effectively making the USD the world reserve currency.[24]

The ability to redeem dollars for a fixed amount of gold underpinned the pegged exchange rates of other nations, as established by the Bretton Woods Agreement. On August 15, 1971 President Richard Nixon ordered the conversion of dollars to gold to cease. As a result, other currencies could not peg their value to the gold standard as established at Bretton Woods. With the gold standard effectively abandoned, the exchange rates of the world's currencies that were pegged now were left to float.[25]

The Mundell-Fleming Model, a macroeconomic model, argued that a fixed exchange rate system could not coexist with effective independent monetary policy and free trade.[26] In other words, given the three variables of currency stability, international capital mobility, and autonomy in a government's domestic monetary policy, only two of the variables could be controlled simultaneously.[27] That model from the 1960s continues to find validation today. The issue is commonly known as the "Impossible Trinity" or the "Policy Trilemma," as a country is impeded by market forces from achieving all three objectives simultaneously.[28]

Currencies affect trade and capital investment—but perhaps saying this misstates their role. It is the *value of a currency relative to that of other currencies* that plays the key role. A strong currency, one that buys more units of another currency than it has historically, makes foreign goods less expensive, whether those goods are finished products or raw material inputs for manufacturing. It also raises the standard of living for users of that currency. Conversely, a weak currency, one that allows other currencies to acquire more units of the home currency than has been the case historically, could increase employment, manufacturing, and exports. The labor and products cost less for holders of the foreign currency once they convert it to the home currency. The same is true for investments. To a holder of a foreign currency the investments are less expensive.[29]

The issue though becomes one of balance. A weaker currency could become a worthless currency. Investors would avoid that cur-

rency and could withdraw investments already made in an economy in order to reduce future losses. A currency that is too strong makes an economy's exports more expensive, if not prohibitively so. In the absence of a market at such a high price, price deflation could result.[30]

BURGERS AND CURRENCY

The Economist publishes a Big Mac™ Index. The objective is to assess whether a particular currency is overvalued or undervalued.[31] Since McDonald's Big Mac is available in markets that use major currencies, the price of the sandwich can be obtained in each local currency. Market exchange rates then are used to convert the price to U.S. dollars. The result is a list of countries and the cost of the sandwich, in U.S. dollars, in each of those countries.

If the price is $3.50 in the United States, but $6.00 in another country, the assumption is that the other country's currency is overvalued. In this example, the other currency is overvalued by 71 percent.

The underlying concept is purchasing power parity (PPP). Discounting a number of factors, the concept expects that the same goods can be purchased at the same price in each country if the exchange rates are efficient.

Much research goes into studying purchasing power parity and effective exchange rates. The Organisation for Economic Co-operation and Development web site offers extensive amounts of data and numerous reports if the topic is of great interest.

Short-term exchange rates, however, are driven by supply and demand, releases of economic data, relative interest rates and changes in those interest rates, and other factors affecting a particular sovereignty or currency zone. Actions by central banks and the IMF also move the markets.

Purchasing power parity might be a better predictor of long-term exchange rate changes. The country with the overpriced burger might see the value of its currency fall over the long term. A paper published in 2003 by the Federal Reserve Bank of St. Louis, studying PPP, drew an interesting, somewhat sarcastic conclusion. It found PPP useful in deliberating about the equilibrium of exchange rate markets over the

long term. It referred to all the detailed research conducted to test PPP and concluded that the concepts and shortcomings of PPP arrived at by all the detailed research were about as effective as the Big Mac Index.[32]

Or, in the long term, is it all for naught? Bill Buckler, author of *The Privateer*, writes what could be described as either an established historical trend or outright pessimism:

> It has been well said by several competent economic historians that there are only two kinds of paper money—those which are already worthless and those which are going to be worthless. There has never been an exception to this rule. At some point in the history of all PURELY paper currencies, prices expressed in them become irrelevant simply because they are no longer used as a medium of exchange.[33]

Note the reference to *paper* currencies as a medium of exchange. The currency standard, according to ISO-4217:2008, contains four interesting *currency* codes: XAG, XAU, XPD, and XPT. The codes correspond to silver, gold, palladium, and platinum respectively. These four commodities are listed as currencies. A key difference from paper currencies is that these four commodities do not represent another party's liability, unlike paper money.

One also could argue that metals, unlike paper currency, have intrinsic value. Here again Bill Buckler helps clarify the economics of that assertion:

> In economics, there is no such thing as an "intrinsic value." Human beings impart value to economic goods by their buying or abstention from buying. The result is prices expressed in terms of money. As long as Gold is an "alternative" money, it will have a price. That will end once it re-assumes its age-old role as money itself.[34]

Is gold money? In August 2010, in the northern Malaysian state of Kelatan, gold dinars and silver dirhams were introduced as an alternative to paper money. Of course the values of gold and silver fluctuate with the commodity market, but Islamic law sets the weights for the gold dinar and silver dirham at 4.25 grams of gold and 3.0

grams of silver respectively. In USD terms, near the end of September 2010 the dinar coin carried a value of approximately $194 and the value of the dirham coin equaled $2.22.[35]

This chapter began with a simple postulate stated in the form of a question: Isn't currency conversion just multiplication? Now we ask questions about the long-term viability of today's currencies. Clearly currency conversion extends beyond multiplication and division. The rates for conversion of currencies arise from the value buyers and sellers of the currency place on each currency. Financial reporting relies on exchange rates to provide a comprehensive view in a single currency. Multiplication and division play a role. A background in the source of the rates, the influences upon the rates, and the volatility inherent in the rates provides perspective for the financial reporting process.

NOTES

1. Emerson, Ralph Waldo. (1957). *Selections from Ralph Waldo Emerson*, Gordon N. Ray (Ed). Riverside Editions. Boston: Houghton Mifflin.
2. von Kleist, K., Mallo, C., Grouchko, S., and Mesny, P. (September 2010). "Triennial Central Bank Survey, Foreign Exchange and Derivatives Market Activity in April 2010—Preliminary Global Results." Bank for International Settlements, Monetary and Economic Department. Basel, Switzerland.
3. Ibid.
4. Ibid.
5. *Euromoney*. (May 5, 2010). "Foreign Exchange Survey 2010 Results." Retrieved September 13, 2010 from *Euromoney*: www.euromoney.com/Print.aspx?ArticleID=2473939.
6. Ibid.
7. Interactive Data Corporation. (September 13, 2010). "Asset Class Coverage—Foreign Exchange." Retrieved September 13, 2010 from Asset Class Coverage: www.interactivedata.com/index.php/Contents/show/content/Asset-FX/sf_highlight/exchange+rates.
8. von Kleist et al., "Triennial Central Bank Survey."
9. Ibid.

10. International Organization for Standardization. (2010). "ISO 4217 Currency and Funds Name and Code Elements." Retrieved September 13, 2010 from International Organization for Standardization: www.iso.org/iso/support/faqs/faqs_widely_used_standards/widely_used_standards_other/currency_codes/currency_codes_list-1.htm.
11. International Organization for Standardization. (2010). "ISO 4217:2008." Retrieved September 13, 2010 from International Organization for Standardization: www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=46121.
12. Financials.com. (2010). "World Currency Formats and ISO 4217 Information." Retrieved September 13, 2010 from thefinancials.com: www.thefinancials.com/Default.aspx?SubSectionID=curformat.
13. Investopedia ULC. (2010). *Dictionary*. Retrieved September 14, 2010 from Investopedia: www.investopedia.com/terms/q/quotecurrency.asp.
14. Ibid.
15. Ibid.
16. Ibid.
17. GoForex. (2010). "Forex Basics." Retrieved September 14, 2010 from GoForex: www.goforex.net/forex-basics.htm#base.
18. Finextra Research. "Barclays Upgrades eFX Platform with New Precision Pricing" (April 7, 2005). Retrieved September 14, 2010 from Finextra Research: www.finextra.com/news/fullstory.aspx?newsitemid=13480.
19. *Euromoney*, "Foreign Exchange Survey 2010 Results."
20. European Commission. (February 19, 2010). "Converting to the Euro." Retrieved September 14, 2010 from European Commission: http://ec.europa.eu/economy_finance/euro/adoption/conversion/index_en.htm.
21. Bank for International Settlements. (2009). "China: The Evolution of Foreign Exchange Controls and the Consequences of Capital Flows." Bank for International Settlements. Basel, Switzerland.
22. The People's Bank of China. (June 19, 2010). *News*. Retrieved September 14, 2010, from The People's Bank of China: www.pbc.gov.cn/english//detail.asp?col=6400&ID=1488.

23. Bank of International Settlement. (2010). "BIS History—Overview." Retrieved September 24, 2010, from Bank for International Settlement: www.bis.org/about/history.htm.
24. Wiggins, A. (November 29, 2006). "Bretton Woods Agreement." Retrieved September 24, 2010, from The Daily Reckoning: www.dailyreckoning.com.au/bretton-woods-agreement/2006/11/29.
25. Investopedia ULC. (2010). "Nixon Shock Definition." Retrieved September 24, 2010, from Investopedia: www.investopedia.com/terms/n/nixon-shock.asp.
26. Young, W. & Darity, J. W. (2004). "IS-LM-BP: An Inquest." *History of Political Economy,* 36 (Supp. 1): 127–164.
27. Bearce, D. H. (2007). "Monetary Divergence: Domestic Policy Autonomy in the Post–Bretton Woods Era." Retrieved November 04, 2010, from The University of Michigan Press: www.press.umich.edu/pdf/9780472099610-ch2.pdf.
28. Aizenman, J. (May 2010). "The Impossible Trinity (aka The Policy Trilemma)." Retrieved November 04, 2010, from University of California, Santa Cruz—Economics: http://econ.ucsc.edu/faculty/aizenman/Tril_Aizenman_Dic.pdf.
29. Ibid.
30. Ibid.
31. *The Economist*. (July 22, 2010). "Burgernomics When the Chips Are Down."
32. Pakko, M. R., & Pollard, P. S. (November–December 2003). "Burgernomics: A Big Mac™ Guide to Purchasing Power Parity." *Federal Reserve Bank of St. Louis Review*.
33. Buckler, W. (September 15, 2010). *The Privateer,* 2010 (Mid-September): 662. Noosa Heads, Queensland, Australia: William A. M. Buckler. © 2010—The Privateer. www.the-privateer.com (reproduced with permission).
34. Ibid.
35. AFP. (September 4, 2010). "Islamic Gold Dinar Gains Ground." Retrieved September 24, 2010, from Free Malaysia Today: http://freemalaysiatoday.com/fmt-english/news/general/9970-islamic-gold-dinar-gains-ground.