

IBM MS/PC-DOS SYSTEMS

 **COSMI**
Tomorrow's Reality...Today

MONEY BAGS

Beat the Gnome of Zurich

USER GUIDE

**An interactive financial strategy
simulation for the IBM Personal Computer
Family and compatibles**

IBM-PC is a registered trademark of
International Business Machines, Inc.

Contents

Overview	1
What You Need To Play Money Trader	1
Levels Of Play	2
Beginner	2
Intermediate	2
Advanced	2
Expert	2
Starting The Game	2
The Screen	3
Using The Function Keys	4
F1 - Sell, Convert, Ship, Buy	5
F2 - Buy Forward, Sell Forward	5
F3 - Exchange Rates	5
F4 - Domestic Money And Eurocurrency Markets	6
F5 - International Stock Market Report	7
F6 - International Government Bond Yields	8
F7 - Real Assets Report	9
F8 - Currency Forward And Commodity Futures	10
F9 - Investment Advice And Event Analysis	11
F10 - Portfolio Summary	11
Trial Run	11
The End Of The Game	16
Continuing The Game Once The Calendar Has Ticked Away One Year	16
Leaving The Game	16

Finer Points Of The Game	17
Underlying Principles Of The Game	17
Purchasing Power Parity	18
Principle Of Interest Parity	18
The Effects Of These Principles And Events On The Game	19
PIP And The Forward Exchange Rate	19
Stocks, Bonds And Real Assets	20
The Effects Of Inflation	20
The Effects Of Unemployment And Recession	21
The Effects Of Political Turmoil	21
The Effects Of Election Results	22
The Effects Of Increases In Oil Prices	22
Using The Forward Market	22

Glossary Of International Finance	23
--	-----------

Overview

If you had a million dollars to invest, what would **you** do with it? Would you take advantage of overseas investments? And if so, would you buy stocks, gold, or lumber? Would you keep your money in U.S. dollars or convert it to German marks or Japanese yen? Would you be able to make your million dollars grow?

If you are interested, but lack the funds to play in the real world of international finance, then **MONEY BAGS** is the game for you.

If you are interested, but lack the knowledge needed to take part, then **MONEY BAGS** is the perfect way to learn.

MONEY BAGS combines the exhilarating excitement of a trading floor with the intricacies of a strategy game. You decide when to invest. You decide on how much. You decide when to pull out if the going gets rough. Your decisions will reveal whether **you** can survive the pressures of international finance.

When playing **MONEY BAGS**, your objective is to make the most money you can in one year. You start with a million dollars. You can invest all or part of your million, **but** where you invest and for how long depends on the world's current events.

Current events are displayed on the screen like news flashes. You get the same up-to-the-minute information available to a broker. Events range from economic events to political events. Your decision to invest may be affected by an election or by a military takeover.

The following pages are your guide, not only to the game, but to the world of international finance. Good luck, make money and have fun!

What You Need To Play Money Trader

- IBM Personal Computer with 128K of RAM;
- One 160K or 320K disk drive;
- One monitor and a compatible monitor card;
- **MONEY BAGS** program diskette;
- **MONEY BAGS** events diskette;
- IBM DOS 2.0 or higher

And an overwhelming desire to be rich!

Levels Of Play

There are four levels of play: beginner, intermediate, advanced and expert.

Beginner

The beginner level is designed to help you become familiar with the game. At this level, to control the pace of current events, press the **INS** key. Once you have a general feeling for the game, the intermediate, advanced and expert levels are where the real challenges lie.

Intermediate

The intermediate level puts you against an opponent: the gnome. The gnome is an expert in international finance. He can edge you out and make more money than you by buying or selling before you do. To keep the game exciting as you become more skilled, you can either speed up the pace of current events or the gnome's response time. At the faster pace, you have to make fast decisions to beat the gnome to those money-making opportunities.


Advanced

The advanced level increases the challenge by adding another element of uncertainty to the play. For each event, the logical outcomes are based on a probability distribution. In other words, for each event, the results are highly probable, but not one hundred percent sure.

Expert

At the expert level, the computer determines the pace of current events. Events can occur simultaneously. Before you can act, the opportunity to make money may be cancelled by the next event. Although you still set the gnome's response time, your analytical skills need to be very sharp in order to beat the gnome.

Starting The Game

Insert the IBM DOS 2.0 diskette into Drive A and turn your computer on. If the computer is already on, press the **Ctrl**, **Alt** and the **Del** keys simultaneously. Press **Enter**  when asked for the date and time. Insert the **MONEY BAGS** program diskette into Disk Drive B.

Type: **SYS B:**
Press: **↵**
Type: **COPY COMMAND.COM B:**

Now you have a self-booting MONEY BAGS program diskette.

Remove DOS diskette from Drive A.

Insert your MONEY BAGS program diskette into Disk Drive A. Turn your computer on. If the computer is already on, press the **Ctrl**, **Alt** and the **Del** keys simultaneously.

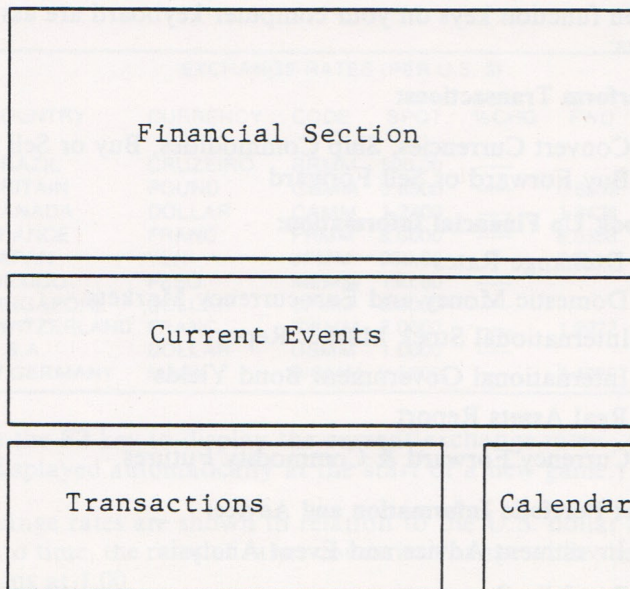
Insert the MONEY BAGS events diskette into Disk Drive A.

The MONEY BAGS menu of selections is displayed.

For the moment, Press **B** to play the beginner level.

The Screen

The computer display screen is divided into the following four areas:



The Financial Section is very similar to the financial section of a major newspaper. On this screen, you can see the latest exchange and interest rates, an international stock market report, international bond prices, and more. The function keys on the left-hand side of your computer keyboard display the different reports. More on this later.

The Current Events section displays the latest news flash. At the beginner and intermediate levels of play, you go on to the next event by pressing the **Ins** key. At higher levels, the events change automatically.

When you press the **F1** key, the Transaction section of the screen displays the different types of transactions that you can use to move your money around.

Lastly, the Calendar section displays the elapsed time since the start of the game. Even if you don't do a thing to your million dollars, the clock still ticks the time away. If you want to leave the game temporarily, press the **Esc** key ONCE to stop the game (and the clock). Press any other key (other than the **Esc** key) to resume play.

Using The Function Keys

The ten function keys on your computer keyboard are assigned as follows:

To Perform Transactions:

- F1** Convert Currencies, Ship Commodities, Buy or Sell Assets
- F2** Buy Forward or Sell Forward

To Look Up Financial Information:

- F3** Exchange Rates
- F4** Domestic Money and Eurocurrency Markets
- F5** International Stock Market Report
- F6** International Government Bond Yields
- F7** Real Assets Report
- F8** Currency Forward & Commodity Futures

To Get Portfolio Information and Advice:

- F9** Investment Advice and Event Analysis
- F10** Portfolio Summary

F1 - Sell, Convert, Ship, Buy

F2 - Buy Forward, Sell Forward

The F1 and F2 keys select a particular transaction. The different types appear in the Transactions section of the screen. The first time the F1 key is pressed, the sell transaction is displayed. The second time F1 is pressed, the convert transaction is displayed. The third and fourth time the F1 key is pressed, the ship and buy transactions are displayed. The fifth time the key is pressed, the sell transaction is displayed again. Try it out. Press the F1 key a few times. You don't have to enter a transaction. MONEY BAGS won't mind if a transaction is left on the screen.

While the buy transaction is displayed, pressing the F2 key changes the buy to a buy forward transaction. Also, while the sell transaction is displayed, pressing the F2 key changes the sell to a sell forward transaction.

In the Trial Run section, we will guide you through your first investments to give you a chance to practice with the different types of transactions.

F3 - Exchange Rates

EXCHANGE RATES (PER U.S. \$)						
COUNTRY	CURRENCY	CODE	SPOT	%CHG	FWD	%CHG
BRAZIL	CRUZEIRO	BRMM	500.00	----		
BRITAIN	POUND	GBMM	0.6500	----	0.6505	----
CANADA	DOLLAR	CAMM	1.2400	----	1.2428	----
FRANCE	FRANC	FRMM	8.0000	----	8.0358	----
JAPAN	YEN	JPMM	250.00	----	249.42	----
MEXICO	PESO	MEMM	150.00	----		
SINGAPORE	DOLLAR	SPMM	2.0000	----		
SWITZERLAND	FRANC	SWMM	2.0000	----	1.9922	----
U.S.A.	DOLLAR	USMM	1.0000	----		
W.GERMANY	MARK	WGMM	2.5000	----	2.4922	----

Press the F3 key to display the current exchange rates. (The rates are displayed automatically at the start of a new game.)

Exchange rates are shown in relation to the U.S. dollar and, from time to time, the rates of other countries change while the U.S. rate remains at 1.00.

The columns labelled COUNTRY and CURRENCY list the different currencies included in the game. The column labelled CODE lists the four-letter codes used in place of the country or currency name.

The SPOT column lists the spot exchange rate, the rate you pay if you buy and receive the currency right now or on the spot. The FWD column on the other hand, lists the forward exchange rate, the rate you have to pay if you order a foreign currency today, but exchange your currency for the foreign currency at some future or forward date. For example, you might need 249.96 Japanese yen to buy one U.S. dollar right away (the spot rate) or 249.38 yen in 30 days for the delivery of one U.S. dollar in 30 days time (the forward rate).

The two columns labelled %CHG display any unusual changes resulting from an event. A positive %CHG means that more of the foreign currency is required to buy one U.S. dollar and a negative %CHG means less of the foreign currency is required. You can always interpret a positive %CHG to mean that the currency has gone down in value relative to the U.S. dollar. This is because you need more of the foreign currency to buy dollars.

For example, if a political crisis hits Japan, a positive %CHG to both the spot and forward rates might register on the screen. This means that because of the crisis, more yen are required to buy one U.S. dollar. The yen has therefore gone down in value compared to the dollar.

F4 - Domestic Money And Eurocurrency Markets

DOMESTIC MONEY MARKET					PAGE 1 OF 2
COUNTRY	CODE	RATE % ANNUM	%CHG	CURRENCY HELD DOMESTIC	U.S.\$
BRAZIL	BRMM	50.01	---	0	0
BRITAIN	GBMM	9.983	---	0	0
CANADA	CAMM	11.98	---	0	0
FRANCE	FRMM	15.00	---	0	0
JAPAN	JPMM	6.003	---	0	0
MEXICO	MEMM	24.99	---	0	0
SINGAPORE	SPMM	8.002	---	0	0
SWITZERLAND	SWMM	4.006	---	0	0
U.S.A.	USMM	8.999	---	1002M	1001M
W.GERMANY	WGMM	5.008	---	0	0
FWD SECURITY					0

Press the **F4** key to display information on the Domestic and Euro interest rates. The Domestic rates are displayed first. To display the Euro currency rates, press the **PgDn** key. The **PgUp** key returns the Domestic rates to the screen.

The Euro currency market refers to funds that are deposited in London, but are not denominated in British pounds.

The Domestic money market refers to funds denominated in the currency of the country in which they are deposited.

On both the Domestic and the Euro money markets, the **COUNTRY** column lists the countries included in the game. The **CODE** column lists the four-letter codes used to identify the local money market. The **RATE %/ANNUUM** column lists the current interest rates for each country or currency. The **%CHG** column lists any changes in the interest rate due to an event. The **CURRENCY HELD** column lists what funds you have in each currency and what its equivalent in U.S. dollars would be at the current rate of exchange.

The interest rates offered by the Eurocurrency market are called London Inter Bank Offered Rates (LIBOR). These are usually a little higher than the domestic rates because the banks in the Eurocurrency market are not as heavily regulated. They can therefore offer higher interest rates to depositors and lower rates to borrowers.

F5 - International Stock Market Report

INTERNATIONAL STOCK MARKET REPORT					PAGE 1 OF 3	
COUNTRY	STOCK	CODE	VALUE DOMESTIC	%CHG	SHARE DOM	VALUE U.S.\$
BRITAIN	Barclay's Bank	GBBB	5.04	----	0	0
	British Petrol	GBBP	4.03	----	0	0
	DeBeers	GBDB	3.02	----	0	0
	Hawker Siddeley	GBHS	4.03	----	0	0
	Ass. Engineering	GBAE	60.49	----	0	0
CANADA	Dome Petroleum	CADP	6.06	----	0	0
	Bank of Montreal	CABM	32.31	----	0	0
	Cdn Pacific Ent	CACP	25.24	----	0	0
	Cominco	CACO	65.63	----	0	0
	Noranda Mines	CANM	28.27	----	0	0
	McMillan Bloedel	CAMB	30.29	----	0	0

Press the **F5** key to bring up the International Stock Market Report. The stocks cannot all be listed at once and therefore you must use the **PgDn** and **PgUp** keys to scroll through the listing.

Stocks are listed by country and are identified by a four-letter code. The VALUE DOMESTIC column lists the price for each stock in local currency. The %CHG column lists any change in price resulting from an event. The SHARE VALUE column lists the value of the shares you hold and their equivalent value in U.S. dollars at the current rate of exchange.

F6 - International Government Bond Yields

INTERNATIONAL GOVERNMENT BONDS						
COUNTRY	CODE	YIELD	%CHG	PRICE	CURRENCY HELD DOMESTIC	U.S.\$
BRAZIL	BRBD	57.52	---	100.00	0	0
BRITAIN	GBBD	11.49	---	100.00	0	0
CANADA	CABD	13.77	---	100.00	0	0
FRANCE	FRBD	17.24	---	100.00	0	0
JAPAN	JPBD	6.908	---	100.00	0	0
MEXICO	MEBD	28.75	---	100.00	0	0
SINGAPORE	SPBD	9.215	---	100.00	0	0
SWITZERLAND	SWBD	4.609	---	100.00	0	0
U.S.A.	USBD	10.34	---	100.00	0	0
W.GERMANY	WGBD	5.758	---	100.00	0	0

Press F6 to display government bond yields for each country.

The YIELD column lists the individual yields available for the different government issues. The %CHG column lists changes to the yield due to an event.

The PRICE column lists the current purchase price or market price. At the beginning of the game, all the bond prices start at par - 100.00 local currency.

The CURRENTLY HELD column lists the value of the bonds you hold, in local currency, based on current price, and their equivalent value in U.S. dollars at the current rate of exchange.

F7 - Real Assets Report

REAL ASSETS REPORT							PAGE 1 OF 2	
GOLD	CODE	PRICE U.S.\$/OZ	%CHG	OZ HELD	VALUE U.S.\$	SHIPPING U.S.\$		
LONDON	GBGD	464	---	0	0	10		
NEW YORK	USGD	422	---	0	0	10		
LUMBER	CODE	SPOT	%CHG	FWD	%CHG	M-BRD	VALUE HELD DOM U.S.\$	
CHICAGO	USLM	251	----	252	----	0	0	0
TOKYO	JPLM	271	----	272	----	0	0	0
TORONTO	CALM	251	----	252	----	0	0	0
SHIPPING:	CHIC - TOKY	(U.S.\$)	20	IN TRANSIT TO M-BRD				
	CHIC - TORO	(U.S.\$)	5	CHICAGO				0
	TORO - CHIC	(U.S.\$)	5	TOKYO				0
	TORO - TOKY	(U.S.\$)	20	TORONTO				0

Press **F7** to display the Real Asset Report. A report on gold and lumber is displayed first. Use the **PgDn** key to display the report on commercial property. The **PgUp** key returns the Gold and Lumber report back to the screen.

Gold can be bought and sold in New York or London. The price of gold is quoted in U.S. dollars per ounce; however, before buying gold in London, you must convert your funds to British pounds.

The columns %CHG, OZ HELD, and VALUE U.S. \$ list changes to the price due to an event, the number of ounces of gold you hold and its value in U.S. dollars based on the current price, respectively.

Shipping costs between London and New York are quoted in U.S. dollars per ounce. You may want to ship bullion between the two cities to take advantage of price differences.

Lumber is available in Chicago, Tokyo and Toronto. Prices (both SPOT and FWD) are quoted in U.S. dollars per thousand board feet.

The value of lumber you hold is listed both in local currency and in U.S. dollars.

Shipping costs between the three cities are quoted in U.S. dollars per thousand board feet. Like gold, you may want to ship lumber to take advantage of price differences. The number of thousand board feet you have in transit is also listed on the screen.

The %CHG, SQFT HELD and VALUE HELD columns list the same type of information you've seen in the other reports.

CURRENCY FORWARD AND COMMODITY FUTURE TRANSACTIONS						
TRANSACTION	COUNTRY	AMNT	TIME	RATE	CUR SPOT	HEDGE
POSITION CURSOR AND ENTER * TO HEDGE TRANSACTION						

For those unfamiliar with forward and/or future transactions, in a forward transaction, you agree to buy or sell a currency or a commodity 30 days hence at the forward rate.

If you contract to sell lumber at a future date for a forward price, the contract is called a commodity future. These transactions also appear on this report. The report displays the amount of lumber you are selling and the time remaining before delivery. Two prices are also listed. The first price is the contracted forward price - the price at which you've contracted to sell the lumber at the time of delivery. The second is the current spot price.

10

F9 - Investment Advice And Event Analysis

Press the **F9** key to display the Investment Advice and Event Analysis report.

During the game, as each current event occurs, you can display this report to help you with your decisions.

F10 - Portfolio Summary

Press the **F10** key to display the Portfolio Summary report. Because the report cannot be displayed all at once, use the **PgDn** and **PgUp** keys to scroll through the listing.

A portfolio summary is displayed on the screen listing your net worth along with a breakdown of the distribution of your funds. If you are playing the intermediate and expert levels, the portfolio of your opponent the gnome is also listed.

Trial Run

In this section, we will guide you through several transactions. To make it easy, we will ignore the events that would normally influence the kinds of transactions you would enter. Because we are ignoring the events, don't be surprised if you lose money!

There are five rules to keep in mind while entering transactions.

1. You can use the **F3 - F10** keys to look at the various reports while entering transactions.
2. To identify the currency, stock, bond or real asset, use its four-letter code.
3. In order to buy an asset of a particular country, you must have that country's currency.
4. When you sell an asset of a particular country, you receive the proceeds in that country's currency.
5. On forward currency transactions, 10 percent of the total forward contract is placed in a margin account. This amount must be in U.S. dollars and is used as a deposit which may not be spent until the contract matures or is reversed.

First, let's practice bringing up the different transaction types. Press the **F1** key several times and notice how different transactions are displayed. To enter a transaction such as a buy transaction, press the **F1** key until **BUY** appears on the screen.

The buy forward transactions can be brought to the screen by first pressing **F1** until **BUY** is on the screen, and then by pressing **F2** which changes the **BUY** to a **BUY FORWARD** transaction.

The same technique is used for the sell transaction. Press **F1** until **SELL** is on the screen. Then, press **F2** to change the **SELL** to a **SELL FORWARD** transaction.

To complete each transaction, fill in the boxes displayed on the screen. The information required is displayed above each box. The blinking line or cursor will tell you which box you are on. Use the following keys to move from box to box or to erase mistakes:

→	To move the cursor to the right;
←	To move the cursor to the left;
→	To move the next box;
Del	To erase everything inside a box.

Once you have all the boxes filled and you are sure you want to go through with the transaction, press the **Enter** **↵** key. When the transaction is complete, you can go ahead and select another transaction.

We are going to start a new game and play the beginner's level (see **Starting the Game**).

In the following examples, use the **F1** and **F2** keys to select the transaction. Fill in the boxes with the information we've provided below.

For openers, you will buy Canadian Pacific shares, a Canadian stock. Since your starting million is given to you in U.S. dollars at the beginning of the game, you'll have to convert U.S. dollars to Canadian dollars before you can buy the stock. You will convert 25% of your U.S. dollars to Canadian dollars of which you will use 50% to buy Canadian Pacific shares.

Let's start to play.

TRANSACTION	CURRENCY VALUE	CODE to CODE
CONVERT	25 %	USMM to CMM

To use 50% of the Canadian dollars to buy Canadian Pacific shares:

TRANSACTION	DOMESTIC CURRENCY	ASSET
BUY	50 %	CACP

Let's look at how your wealth has been distributed by pressing:

F4 Notice the amount of Canadian and U.S. dollars you hold.

F5 Notice the value of the Canadian Pacific shares that you hold.

Next, you'll buy gold in London and again, you will have to convert U.S. dollars to British pounds before you can purchase gold. You will convert 25% of what is left of your U.S. dollars into pounds. You will use all of the pounds (100%) to buy gold.

To convert 25% of what is left of your U.S. dollars to British pounds:

TRANSACTION	CURRENCY VALUE	CODE to CODE
CONVERT	25 %	USMM to GBMM

To use all the British pounds to buy gold in London:

TRANSACTION	DOMESTIC CURRENCY	ASSET
BUY	100 %	GBGD

Let's look at the Financial section again to see what effect our last transactions had by pressing:

F4 You still have the same amount of Canadian dollars (with a little interest added), but considerably fewer U.S. dollars.

F7 Notice that you now hold gold in London.

Next, you'll speculate on Japanese yen by buying it forward. You need to put 10 percent as a deposit. In this case, the deposit must be in U.S. funds so you don't need to convert. Let's use all our remaining U.S. dollars as a deposit.

To speculate on Japanese yen by buying it forward and to use the remaining U.S. dollars as a deposit:

TRANSACTION	CURRENCY VALUE	ASSET
BUY FORWARD	1000 %	JPMM

Note: To use the remaining amount of U.S. dollars you hold, you can buy ten times (1000%) as much the amount of U.S. dollars you hold because you only need to place a 10% deposit.

To see the effect of this transaction, press the following:

F4 Your remaining U.S. dollars have been placed in FWD SECURITY" and will remain here until the contract is reversed or expires.

F8 The forward contract appears on this screen.

Next, you'll sell 50% of your Canadian Pacific stock and use 80% of the proceeds to buy lumber. You'll use the remaining 20% to pay for shipping costs.

You'll ship the lumber to Tokyo and, once it gets there, you'll sell all of it (100%) to the Japanese.

To sell 50% of the Canadian Pacific shares:

TRANSACTION	ASSET VALUE	ASSET
SELL	50 %	CACP

To use 80% of the proceeds to buy lumber in Canada:

TRANSACTION	DOMESTIC CURRENCY	ASSET
BUY	80 %	CALM

To ship all the lumber to Tokyo:

TRANSACTION	ASSET AMOUNT	CODE to CODE
SHIP	100 %	CALM to JPLM

Before you can sell the lumber in Tokyo, you must wait for the shipment to arrive. Press the **F7** key to view the lumber IN TRANSIT. Press **F8** to see how much longer it will take before the shipment arrives in Tokyo. This might be a good time to take a short break and stretch out.

Our lumber has arrived. IN TRANSIT is once more set to zero and JPLM has been credited with the shipment. To sell the entire shipment:

TRANSACTION	ASSET AMOUNT	ASSET
SELL	100 %	JPLM

By now, the buy forward contract has expired. Upon expiry, Japanese yen were purchased at the contracted forward rate and sold at the spot rate. The difference is added (if you made a profit) or subtracted (if you lost money) to your U.S. currency account.

Our last transaction is to convert all your yen (the proceeds from the lumber) to German marks.

TRANSACTION	CURRENCY VALUE	CODE to CODE
CONVERT	100 %	JPMM to WGMM

Press **F10** to view your portfolio. How well did you do versus the gnome? The gnome wasn't playing against you, but he was also given one million dollars. He kept his million in a U.S. bank to collect interest. Did you make more than the gnome by being creative with your million, or would you have been better off collecting interest in a bank?

Ready to play on your own? Start the game again and play the beginner's level. For a new event, press the **Ins** key. To acquire a little more in-depth knowledge of the game, read the **Finer Points of the Game** section.

The End Of The Game

MONEY BAGS will show you how well you scored against the other players who have previously played the game. Of course, if you are the first person to use this game, you are automatically a high scorer.

For each level of difficulty, the top ten scorers are kept on record. If your score is sufficient to oust a previous player from the ranks, you will be asked to enter your name. Press the **Enter** **↵** key after you've typed in your name.

Continuing The Game Once The Calendar Has Ticked Away One Year

Once the calendar has ticked away one year, the play automatically ends.

To continue playing, press any key to continue the game.

Leaving The Game

Need to make yourself coffee and sandwiches? To leave the game temporarily without ending the play, press the **Esc** key **ONCE**. The game will wait until you return with your refreshments. Press any other key (other than the **Esc** key) to continue the game.

Had enough of international finance for the day? Press the **Esc** key **TWICE**. The game ends and the **MONEY BAGS** menu of selections is displayed. Remove the diskettes and turn your computer off.

Finer Points Of The Game

Underlying Principles Of The Game

As you play MONEY BAGS, notice that the exchange rates and prices of assets change even in the absence of new events. These changes are not random. They are a result of two basic principles operating in the world of international finance, the Principle of Purchasing Power Parity and the Principle of Interest Parity.

While the general trends caused by these two principles are unfolding, the events introduced into the game slow down or speed up the changes in exchange rates and asset prices. Some events even cause temporary violations of the principles and when these occur profits can be made, if you are quick enough!

Purchasing Power Parity

The Principle of Purchasing Power Parity (PPP) says that a change in exchange rates between the U.S. and another country reflects the difference between their rates of inflation.

Suppose the Canadian rate of inflation was 10 percent per annum while the U.S. rate of inflation was 8 percent. According to the PPP Principle, the difference in the rates of inflation would cause the Canadian dollar to depreciate 2 percent with respect to the U.S. dollar. The Canadian dollar declines in value so that Canadian goods can compete with American goods in the international marketplace.

For example:

At the beginning of the year, let us assume:

Rate of exchange is
 $1.20 \text{ CDN} = 1.00 \text{ U.S.}$

This means that \$12.00 CDN worth of Canadian goods can be bought with \$10.00 U.S.

During the year:

The Canadian rate of inflation = 10%
The American rate of inflation = 8%

By the end of the year:

Because of inflation, goods that cost the Canadian consumer \$12.00 CDN at the beginning of 1984 cost \$13.20 CDN by the end of 1984. Similarly, the consumer in the U.S. must now pay \$10.80 US for goods that cost \$10.00 US only a year before. Either consumer can buy products manufactured in his/her home country or abroad. Thus the Canadian goods are still competitive only if the exchange rate becomes 1.2222*, approximately 2 percent more Canadian dollars per U.S. dollar.

$$(*) 13.20/10.80 = 1.2222$$

We can therefore conclude that countries with higher rates of inflation than the U.S. will experience a depreciation of their currency compared to the U.S. dollar. Conversely, those countries with a lower rate of inflation than the U.S. will have appreciating currencies.

Principle Of Interest Parity

The *unhedged* form of the Principle of Interest Parity (PIP) says that the difference between the U.S. rate of interest and that of another country reflects the expected change in the exchange rate.

Suppose that the interest rate in Canada is 10 percent per annum while in the U.S it is 8 percent. This 2 percent difference would occur only if the Canadian dollar was expected to depreciate in comparison to the U.S. dollar by approximately 2 percent.

For example:

Current rate of exchange is
 $1.20 \text{ CDN} = 1.00 \text{ U.S.}$

Canadian rate of interest = 10%
American rate of interest = 8%

A U.S. dollar could be exchanged into \$1.20 Canadian dollars. After one year deposited at a Canadian bank at 10% interest, this would be worth \$1.32 CDN. A U.S. dollar in an American bank would have become \$1.08 US in the same time. The return for both would be the same only if the exchange rate were 1.22* at the end of the year.

$$(*) 1.32/1.08 = 1.22$$

If interest rates were not directly related to the expected change in exchange rates, investors would send funds to countries which have high interest rates such as Mexico or Brazil. However, countries with higher interest rates are expected to have a decline in their currency value.

A moment of reflection shows that both PIP and PPP share inflation as a common factor. The two principles tell us that countries with more rapid inflation will have depreciating currencies and higher interest rates.

The Effects Of These Principles And Events On The Game

PIP And The Forward Exchange Rate

The forward exchange rate is the rate at which you contract to exchange funds in the future. To exchange funds immediately, the rate used is called the spot rate.

The percentage difference between the future and spot rates is called a forward exchange *premium* or *discount*. It is a premium if the currency costs more for future delivery than immediate delivery, and a discount if the currency costs less for future delivery than immediate delivery.

The *hedged* form of PIP states that the forward premium or discount equals the difference in interest rates.

For example, if the interest rate in Canada is 10 percent while it is 8 percent in the U.S., then the Canadian dollar must be at a forward discount of 2 percent. Because of the difference in interest rates, the Canadian dollar forward price should be 2 percent less than the spot price.

Stocks, Bonds And Real Assets

Stocks are a riskier investment than leaving money on deposit in the money market. To compensate for this, the expected yield on stocks, from their expected rise in price, is higher than domestic interest rates. The extra expected yield is called the *risk premium* and is a reward for placing funds in riskier investments.

Bonds are also riskier investments than money market instruments because bond prices vary with changes in interest rates. Bonds provide *fixed coupons*. If interest rates move higher, coupons, which are fixed in value, cannot compete with the higher yields of other investments. To compensate, bond prices decline and the yield rises. (The yield is a combination of the coupon and the difference between the bond's purchase price and its face value.) Bond yields are generally higher than those available in the money market to reflect the higher risk.

Prices of real assets like gold, property and lumber move at rates determined by local inflation. In economies with high inflation, property prices rise, but the value to an international investor on average is offset by a decline in the currency of the rapidly inflating country. The offset of exchange rates causes property values in terms of U.S. dollars to move at the same rate when there are no locally specific factors affecting property prices. The equal inflation of property, when translated into dollars, is therefore the situation only on average. Departures from the average trend are, however, frequently triggered by events. Since gold prices are quoted only in U.S. dollars, it is only the U.S. inflation rate that matters for this real asset.

The Effects Of Inflation

As expressed by the PPP and the PIP, inflation drives the dynamics of MONEY BAGS. As the rate of inflation in any particular country increases, we can expect these trends:

- a. A more rapidly depreciating currency;
- b. Higher domestic interest rates;
- c. An increased forward exchange discount;
- d. Correspondingly higher expected yields on assets with risk premiums such as stocks and bonds.

Although exchange rates and asset prices always reflect the current inflation rates, there are profit opportunities that come up at the time the markets become aware of changes in inflation. For example, when inflation and therefore interest rates increase in a country, we can expect:

- a. A sudden drop in the spot and forward exchange rates;
- b. A sudden drop in bond and stock prices.

In addition, if the increase in inflation is in the U.S., we get an increase in gold prices.

Local property prices also tend to do well from inflation, although prices are hurt as interest rates respond.

The Effects Of Unemployment And Recession

Because recessions tend to reduce borrowing, they tend to lower interest rates. This helps bonds whose yields become more attractive. However, the lower interest rates do not necessarily help stock prices. While lower yields on competing investments are good for stock prices, the recession could reduce profits, lowering stock prices.

Recessions can also boost a currency value because they reduce importation of foreign goods. For example, for the Americans to purchase Japanese goods, U.S. dollars must be converted to Japanese yen. The fact that U.S. dollars are readily available on the market tends to lower their value. If the U.S. was experiencing a recession, Americans would buy fewer goods made in Japan. This would reduce the demand for yen and lower their value compared to the U.S. dollar.

The Effects Of Political Turmoil

If we look at a country experiencing a political crisis, we observe the following trends:

- a. A depreciating domestic currency;
- b. Declining domestic property, stock and bond prices.

Political crises are usually good for gold prices and the U.S. dollar. During a crisis, investors tend to free their fortunes from the domestic markets by buying gold or converting their funds to U.S. dollars. In times of turmoil, both gold and the U.S. dollar are looked upon as being more stable.

The Effects Of Election Results

Conservative governments or pro-business governments tend to be good for domestic stock prices because of expected laws in favor of businesses such as laws lowering taxes, and because of reduced inflation.

A pro-business administration is also good for a country's currency.

The Effects Of Increases In Oil Prices

Increases in oil prices tend to help the oil producing countries and hurt the users - both countries and companies. The biggest effect is often on highly industrialized countries with little or no oil resources of their own, and on automobile manufacturers, especially if they make fuel-inefficient cars.

Using The Forward Market

The forward market is a forum for hedging and speculation. Hedging is the avoidance of foreign exchange risks while speculation is the taking of those risks.

a. **An example of hedging:**

If you think a stock of a particular country is about to increase, but the value of that country's currency will fall, you can buy the stock and sell the currency forward in the amount you expect to receive on the sale of the stock. When you sell the stock for its increased value, you ensure the benefit against the currency's depreciation.

b. **Examples of speculation:**

If you think a currency is about to increase in value, buy it forward. If you are correct, the contract (which entitles you to buy the currency at the future date for the contracted price) will be valuable. You can then sell the contract for a profit.

If you think a currency is about to decline in value, sell it forward. For those not familiar with forward selling, note that you do not have to own a currency or commodity to sell it at a future date. When it comes time for you to deliver the things you have promised to sell, you can expect that you will be able to buy it at a more favorable price at the spot rate. You therefore cover your commitment to deliver.

A forward contract entitles you to sell the currency at the future date for the contracted rate. If the value of the currency falls below the contracted rate, you can buy the currency at the spot rate and sell the currency at the contracted rate - making a profit.

If it turns out after a day or two that your forecast is correct, you can lock in your profits to date by taking a reverse forward position. For example, if you've contracted to sell forward and the currency has declined in value sufficiently for you to make a handsome profit, you can buy the currency forward for the same future date as the first contract. In this way, if the currency reversed its trend before maturity of the first contract, you've assured yourself of profits.

Glossary Of International Finance

Bonds: Certificates indicating that a corporation or government has borrowed a certain amount of money (principal), for which it will pay a rate of interest (coupon) until the principal is repaid (the term of the bond). The price of the bond set by the issuer or the secondary market in which it is traded, together with its coupon and term, determine the bond's yield. If the bond has an infinite term (i.e. no repayment date), it is called a perpetuity and the borrower agrees to pay the coupon rate of interest ad infinitum. The bonds referred to in **MONEY BAGS** are perpetuities. Bond yields vary inversely with the price of bonds because the coupon is fixed.

Buy Forward: Purchase of a commodity or currency at a price agreed upon today for delivery sometime in the future.

Commodity Arbitrage: The purchase of a commodity in one market for sale in another. It is profitable when the selling price exceeds the buying price by more than the cost of transportation.

Hedging: In the case of an investor, a hedger is one who, when investing funds abroad, sells forward the foreign exchange to be received on the investment so as to eliminate the potential for risk of an exchange rate change. Borrowers from abroad buy forward the needed currency for repayment. Importers also hedge using the forward market to fix the future price of currencies needed to pay for purchases in foreign markets. Exporters hedge by selling forward the foreign exchange proceeds they expect to receive in the future.

Margin Requirements: The amount which is required by the vendor of a forward or future contract to secure commodities. It represents the margin of safety in the event that prices go against the investor, in which case the forward contract can be sold without loss to the selling bank or brokerage institution.

Money Market: The market in which borrowing and investing take place involving short-term debt (less than one year) instruments issued by governments and corporations.

Peso: Currency used in countries such as Argentina, Chile, Mexico, etc.

Portfolio: The securities held by an investor.

Pound: Currency unit used in countries such as Ireland and the United Kingdom.

Spot Exchange: The exchange of currencies in the form of bank drafts, on an immediate basis (usually one or two days).

Stocks: Certificates of ownership in a corporation. The return to investors from stock ownership is determined by periodic payments of earnings (dividends) and/or capital appreciation in market value. Stocks referred to in MONEY BAGS carry no dividend and price changes reflecting changes in market value only.

Yen: Japanese currency.

Cruzeiro: Brazilian currency.

Depreciation: Fall in value of a currency.

Deutsche Mark: West German currency.

Discounting: To compute today's value of an amount to be received or paid later. Today's value is obtained by finding what amount invested today would provide the future amount at the interest rate that could be earned.

Eurocurrency: The term for deposits in currency other than that of the country in which the deposits are held. For example, Eurodollars are U.S. dollar denominated deposits held outside the United States.

Events: An activity (news item) that may have an effect on the stock, bond, or money market; gold, lumber or real estate prices; and interest and exchange rates.

Forward Exchange: The agreement to exchange currencies, at a specified date in the future, at a price agreed upon at the time of agreement.

Forward Premium: The condition of a particular currency wherein it costs more for forward purchase than spot purchase. The forward premium on such a currency is the **forward discount** on the currency for which it is being exchanged.

Forward Speculation: Goods or property such as gold, lumber, property, etc., as distinct from monetary assets. Real asset prices tend to keep pace with general inflation. Forward purchase (or sale) of a currency expected to rise (or fall).

Franc: Currency used in countries such as Belgium, France, Switzerland, etc.

Gnome: An ageless dwarf who guards precious ores or treasure. Former British Exchequer Chancellor Healy had another meaning when he coined the term for international speculators that he blamed for undermining the value of the pound.

About The Authors Of The Game

Maurice Levi is Bank of Montreal Professor of International Finance at the University of British Columbia. Since receiving his PhD in Economics from the University of Chicago, Professor Levi has taught and done research at the Hebrew University of Jerusalem, the University of California Berkeley, the Massachusetts Institute of Technology (M.I.T.), and the National Bureau of Economic Research in Cambridge, Massachusetts.

Professor Levi has published a large number of scholarly articles in such journals as the **Journal of Finance**, the **American Economic Review**, the **Journal of Political Economy**, **Econometrica**, the **Journal of Money, Credit and Banking**, the **Journal of Monetary Economics**, the **Journal of Econometrics**, the **Canadian Journal of Economics**, and the **Journal of International Money and Finance** for which he is an associate editor. Professor Levi is author of **International Finance** (1983), **Economics Deciphered** (1981), and a number of other economics titles.

Martin Kupferman is a financial and economic consultant, and principal in the firm of Jay Martin Associates. He has worked as manager in the consulting firm of Currie, Coopers and Lybrand, and as a financial analyst with the international shipping division of a major Canadian conglomerate, where he participated in the management of the division's foreign exchange transactions.

Mr. Kupferman is a graduate of the University of Wisconsin, where he received his B.A. in Economics, and the University of British Columbia, from which he received his M.B.A. He has lectured at the graduate level in international financial management and, along with Professor Levi, has written on the international money markets for the **Financial Analysts Journal**. He has also co-authored a book on economic trends in the 1980s (**Slowth**, John Wiley and Sons, 1980).

About The Authors Of The Game

Maurice Levi is Rankin Memorial Professor of International Finance at the University of British Columbia. After receiving his Ph.D. in Economics from the University of Chicago, Professor Levi has taught and done research at the Hebrew University of Jerusalem, the University of California Berkeley, the Massachusetts Institute of Technology (M.I.T.), and the National Bureau of Economic Research in Cambridge, Massachusetts.

Professor Levi has published a large number of scholarly articles in such journals as the *Journal of Finance*, the *American Economic Review*, the *Journal of Political Economy*, *Econometrica*, the *Journal of Money, Credit and Banking*, the *Journal of Monetary Economics*, the *Journal of Economics*, the *Canadian Journal of Economics*, and the *Journal of International Money and Finance* for which he is an associate editor. Professor Levi is author of *International Finance* (1983), *Economic Harpings* (1981), and a number of other academic titles.

Martin Kuperman is a financial and economic consultant and principal at the firm of J.M. Martin Associates. He has worked as manager of the consulting firm of Cairns, Cooper and Lybrand, and as a financial analyst with the international shipping division of a major Canadian conglomerate, where he participated in the management of the division's foreign exchange transactions.

Mr. Kuperman is a graduate of the University of Wisconsin, where he received his B.A. in Economics, and the University of British Columbia, from which he received his M.B.A. He has lectured at the graduate level in international financial management and, along with Professor Levi, has written on the international money market for the *Financial Analysts Journal*. He has also co-authored a book on economic trends in the 1980s (Stewart, John Wiley and Sons, 1980).