

## APPENDIX VIII



# NBA Playoffs/FIFA World Cup Study – Study Instructions



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## 1. Introduction

Thank you very much for registering for our NBA Playoffs/FIFA World Cup Study!

In the next weeks you will have the opportunity to trade online contracts whose payoffs depend on the outcomes of this year's **NBA Basketball Playoffs** as well as the **FIFA Soccer World Cup '06** in Germany. In the course of this experiment you will be assigned to both one NBA market **AND** one FIFA market. Thus, in the first market you will trade on the NBA Playoffs and in the second market you will trade on the FIFA World Cup. But don't worry, you need not be both a basketball and soccer expert in order to successfully participate in this experiment!

Because the study is based on real sports events, the trading period for the NBA Playoffs will be from April 20 through June 22, 2006 (at the latest) and for the FIFA World Cup from the middle of May through July 9, 2006. Thus, the **overall trading period** lasts **from April 20 through July 9, 2006** and we kindly request that all participants actively trade throughout this period.

You can expect to earn cash payments of €20 (about \$24) per person on average, depending on your decisions, the outcomes of the games, and your individual trading performance. It is therefore possible to earn more or less than €20/\$24 (including earning nothing), but there is **NO** way for you to lose any money!

In order to make sure that all participants have the same information about the procedure of this study and on the trading software, we **strongly recommend that you go through this instruction file very carefully**. However, if you feel familiar with some of the information provided in this document, e.g. the NBA Playoffs mode or the trading system, you can skip those sections.

We set up an NBA/FIFA Study homepage where you can access the trading software, and get news and additional study-related information. There will also be a **FAQs section**, where you can get more detailed information on the trading system etc. You can reach this webpage at:

<http://www.internetexperiment.de/?sec=nba>

There will also be a support helpdesk which can be contacted via:

[tradingstudy@hss.caltech.edu](mailto:tradingstudy@hss.caltech.edu) or  
[trading.study@anderson.ucla.edu](mailto:trading.study@anderson.ucla.edu)

We hope that you will enjoy participating in this study--thank you very much for supporting our research!

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## 2. Timetable

In the following table you can find a summary of all key data related to this study:

Date/Period	Study	NBA Basketball Playoffs	FIFA Soccer World Cup
Wed, April 19		<ul style="list-style-type: none"> <li>▪ regular season ends,</li> <li>▪ set of qualified teams will be set (Playoff Matchups)</li> </ul>	
Thu, April 20	<ul style="list-style-type: none"> <li>▪ link to NBA questionnaire sent to participants via email,</li> <li>▪ practice market opened</li> <li>▪ all NBA markets opened, start of NBA trading period</li> </ul>		
Sat, April 22		<ul style="list-style-type: none"> <li>▪ Playoffs begin</li> </ul>	
Sat, May 20	<ul style="list-style-type: none"> <li>▪ link to FIFA questionnaire sent to participants via email</li> </ul>		
Mon, May 22	<ul style="list-style-type: none"> <li>▪ all FIFA markets opened, start of FIFA trading period</li> </ul>		
Thu, June 8		<ul style="list-style-type: none"> <li>▪ NBA Finals start date (winner Eastern vs. winner Western Conference)</li> </ul>	
Fry, June 9			<ul style="list-style-type: none"> <li>▪ opening game,</li> <li>▪ start of group phase</li> </ul>
Fry, June 9 through Fry, June 23			<ul style="list-style-type: none"> <li>▪ group phase</li> </ul>
Thu, June 22	<ul style="list-style-type: none"> <li>▪ last NBA markets closed</li> </ul>	<ul style="list-style-type: none"> <li>▪ latest possible end date of NBA Finals</li> </ul>	
Sat, June 24 through Tue, June 27			<ul style="list-style-type: none"> <li>▪ round of last 16 (1/8-finals)</li> </ul>
Fry, June 30 through Sat, July 1			<ul style="list-style-type: none"> <li>▪ 1/4-finals</li> </ul>
Tue, July 4 through Wed, July 5			<ul style="list-style-type: none"> <li>▪ 1/2-finals</li> </ul>
Sat, July 8			<ul style="list-style-type: none"> <li>▪ game for 3<sup>rd</sup> place</li> </ul>
Sun, July 9	<ul style="list-style-type: none"> <li>▪ last FIFA markets closed</li> </ul>		<ul style="list-style-type: none"> <li>▪ World Cup Final</li> </ul>
Mon, July 10	<ul style="list-style-type: none"> <li>▪ link for final questionnaire sent to participants via email,</li> <li>▪ start paying participants</li> </ul>		

Tab. 1: Timetable.

### 3. **Assets and Markets**

**Note: This section explains the most important and crucial aspects of the experimental design and should be read carefully by ALL participants!**

#### 3.1 **Contingent Claims**

The basic activity in this experiment is to trade claims which pay money depending on the outcomes of this year's NBA Playoffs and FIFA Soccer World Cup 2006. Since the first market you will be trading in is based on the NBA Playoffs, we will concentrate on these markets right now and tell you the details for the FIFA World Cup markets later on.

A typical market will consist of four intervals/ranges for the **total number of wins** for a particular team. **For example**, one market might trade four claims on the San Antonio Spurs, spanning the total number of games the Spurs will win in the 2006 Playoffs. One claim will pay a fixed sum of money, 100 Eurocents (= €1 which is about \$1.20) if, after the Playoffs are over, the Spurs have won 0-3 games. If you think the Spurs are likely to win very few games, you should buy this claim. If you think they are likely to win more than 3 games, you should sell this claim. Another claim will pay 100 Eurocents if their win total is 4-7; a third will pay 100 Eurocents if the total is 8-11; and a fourth will pay 100 Eurocents if the total is 12-16.

#### **General Question:**

**“How many games does a particular team win in the 2006 NBA Playoffs?”**

The basic idea of these markets is that after the Playoffs (and the World Cup) are over, exactly one asset/claim in each market will pay 100 Eurocents per claim, while the three remaining claims will become worthless. This is due to the fact that the claim intervals represent all possible outcomes, but do not overlap. However, since the outcome of the event is uncertain during most of the trading period, the price for a claim usually varies between 0 and 100 Eurocents. Before you start trading you should carefully think about how much you are willing to pay for these claims and how much you are willing to sell them for in the market!

You will be randomly placed into one market for NBA Playoff games and (later on) another for FIFA World Cup results. **Important:** Each market consists of four separate “team markets”, so you can trade in four different teams in each market. In each “team market” you will be endowed with a set of cash and assets representing an initial wealth of 1,000 Eurocents (= €10 or appr. \$12). You do not have to trade if you do not wish to.

Please note that there will be different partitions, i.e. asset intervals in the markets. The partitions in the NBA markets are as follows:

Partition 1: [0-3], [4-11], [12-15], [16] games won.

Partition 2: [0-3], [4-7], [8-11], [12-16] games won.

You will be randomly assigned to a market of twenty participants with one of the partitions above. There are no external and/or computer-controlled participants in the market. There are no explicit transaction costs for your trading.

### 3.2 Unit Portfolio

For each team there is an “extra asset” in the market which is called the unit portfolio (Unit PF). The Unit PF is based on the idea that a full set of all four assets will always guarantee a certain payment of 100 Eurocents. This payoff is independent of how many games a particular team has won, since exactly one (and only one) of the claims will pay 100 Eurocents, while the other three assets will expire worthless.

Therefore you will be able to exchange 100 Eurocents for a complete set of assets at any time in the experiment. Practically, this trade with the experimenter takes place via the unit portfolio, which can be purchased or sold like the other assets via the trading system. However, the trade partner for this deal will always be the experimenter and the price for the unit portfolio is fixed at 100 Eurocents, i.e. it does not depend on bids and asks in the market. In particular it should be clear that this trade does not allow any assessment of the value of a single asset, but the fact that all four assets combined represent a certain payment of 100 Eurocents. To clarify this, we return to our example of the San Antonio Spurs. If you buy one unit portfolio, there will be one asset of each claim in the market added to your portfolio. Thus, exactly one asset of type 0-3, one asset of 4-7, one asset of 8-11 as well as one asset of 12-16 will be added, while your cash will be reduced by 100 Eurocents.

**The Unit PF allows you to buy or sell a complete set of all four assets for a particular team at a fixed price of 100 Eurocents. You might want to do this in order to increase your cash on hand or stock in assets, without taking any risks.**

After buying a unit portfolio, you can trade and sell the purchased assets in the market independently! By selling a unit portfolio, 100 Eurocents will be added to your cash account, while simultaneously your portfolio stock will be reduced by one of each asset (please note that this sale is only permitted if you own at least one unit of each asset). Hence, by using the unit portfolio you can either enhance liquidity in assets (as long as you have enough cash), or enhance liquidity in cash (as long as you have at least one of all the four assets in the market).

By using the unit portfolio you can exploit arbitrage opportunities in the market more directly. Arbitrage means performing a transaction which results in a sure profit.

**Arbitrage opportunity 1.** If the market prices enable you to purchase a full set of assets for less than 100 Eurocents, you can realize a sure profit by buying these four assets for less than 100 Eurocents and selling them via the unit portfolio for 100 Eurocents to the experimenter.

**Arbitrage opportunity 2.** If it is possible to sell the four assets separately in the market for more than 100 Eurocents, you can buy a full set of assets via the unit portfolio for 100 Eurocents and sell them in the market for a higher price afterwards.

Such arbitrage opportunities are not excluded by the trading system automatically. Therefore, you should carefully watch for arbitrage possibilities!

#### **4. Payment/Incentives**

In order to motivate you to thoroughly think about your trading activities in this experiment, you will be paid based on your decisions, the outcomes of the games and thus, your individual trading performance. Keep in mind that there is **NO WAY FOR YOU TO LOSE MONEY**.

At the end of this experiment we will randomly draw **one** out of the four teams from your NBA market and **one** out of the four teams from your FIFA market. These “team markets” then serve as the basis for your payment. Please note, that you will not know which of the teams in your markets will be relevant for your payment until the end of this study, so you should think carefully about your decisions in all “team markets”!

We will then add your cash account to your final portfolio value (with the assets worth either 100 Eurocents or nothing) for both of the drawn NBA and FIFA “team markets”, and will pay you the resulting overall value in Eurocents (or US\$ at the current exchange rate; today’s exchange rate is about 1.20 \$/€).

**Example:** If at the end of the experiment you have 500 Eurocents and three assets worth 100 Eurocents each in the selected NBA “team market” plus 1,000 Eurocents and five assets worth 100 Eurocents each in the selected FIFA country’s “team market”, you will receive a payment of  $(500 + 3 * 100) + (1,000 + 5 * 100) = 2,300$  Eurocents (€23 ~ \$27.60).

As you will initially be endowed with cash and unit portfolios totaling 1,000 Eurocents (€10 ~ \$12) in each market you would earn  $2 * €10 = €20$  ~ \$24 if you do not trade at all.

Further details on the means of payment (check, PayPal etc.) will be provided later via email.

## 5. Trading System

### 5.1 Installation and Login

The trading system is based on Java technology, so you should have a recent Java version installed to run the trading software on your computer (Java 1.5, recently named Java5). If your Java version is outdated, you can get the latest version at:

<http://www.java.com/en/>

You can access your NBA resp. FIFA market via the study homepage at:

<http://www.internetexperiment.de/NBA-FIFA-Study/> (web site removed in the meantime).

by following the link of your particular NBA or FIFA market number (we informed you of your personal market affiliation by email). Please note that on the first login the trading software (5.5 MB) has to be downloaded to your computer. This will take a while but is not necessary on later logins. You should accept the security certificate issued by the “Chair of Finance, University of Muenster”. You will then see the “ECMS | Login” screen and will be asked for your “User:” ID (which we told you by email) and your personal “Password:” (which you chose after completing the first questionnaire). After clicking the “Login” button, the trading screen (“ECMS | internetexperiment.de (Uni Münster)”) will appear.

**Note: The following sections can be skipped if you have well-founded trading experience and feel comfortable with the continuous double auction trading mechanism!**

### 5.2 Trading Screen

The trading screen is divided into five areas (see figure 1):

**Information.** In this area you can find information on your current cash balance, portfolio value, and credit line. At the top of this box are tabs which allow you to switch between the four different “team markets”. (The screenshots presented in this document refer to the practice market which can be accessed via the study homepage!)

**Market.** This area gives you an overview of the assets (and intervals) that are traded in this “team market”, your own portfolio, the current market price as well as the best (i.e. highest) buy and the best (i.e. lowest) sell offers (which is called the order book). The best buy offer (sell offer) indicates the volume and the price limit of the highest buy offer (lowest sell offer) at the current time, separated by an “@” symbol. To give you an example: “2 @ 30.00” means that one or more trader(s) are ready to buy a quantity of two assets “RUS.[0-5]” at a price of 30.00 Eurocents each.

**Order Form.** In this area you can enter your own orders.

The screenshot displays the ECMS trading interface with the following components:

- Information Panel:** Shows account details: My ID: trader01, Current Time: 12:53:44, Time Left: 07:53:52, and Market: 0.
- Market Table:** A table with columns: Assets, My Portfolio, Current Price [€], Best Buy Offer [€], Best Sell Offer [€], Buy, and Sell.
 

Assets	My Portfolio	Current Price [€]	Best Buy Offer [€]	Best Sell Offer [€]	Buy	Sell
RUS.[0-5]	5	0.00	2 @ 30.00	-	Buy	Sell
RUS.[6-15]	5	0.00	-	-	Buy	Sell
RUS.[16-20]	5	0.00	-	-	Buy	Sell
RUS.[21+]	5	0.00	-	-	Buy	Sell
RUS.Unit PF		100.00	100.00	100.00	Buy	Sell
- Order Form:** A form for submitting orders. It includes dropdowns for Market (Russia) and Asset (RUS.[0-5]), radio buttons for Buy and Sell, and input fields for Quantity and Price. An "Order" button and a "Clear" button are present, along with a green "Order accepted" status indicator.
- My Orders Table:** A table showing the status of orders.
 

ID	Status	Market	Asset	Time	Buy/Sell	Price [€]	Qty	Edit	Delete
5	pending	Russia	RUS.[0-5]	12:53:50	Buy	30.00	2	Edit	Delete
- Edit Form:** A form for modifying pending orders. It includes dropdowns for ID, Asset, Market, and Buy/Sell, and input fields for Quantity and Price. "OK" and "Cancel" buttons are at the bottom.

Fig. 1: Trading Screen.

**My Orders.** This area shows all of your orders which are pending or which were executed (currently there is one pending order in the system) in chronological order. In this area pending orders can be transmitted to the “Edit Form” on the right hand side or they can be deleted and thus, removed from the trading system.

**Edit Form.** Here, you can modify your pending orders by altering the price limit or the quantity.

### 5.3 Order Submission

In principle, there are two different ways to submit an order:

1. You can enter all the values (market, asset, buy/sell, quantity and price) in the “Order Form” on your own and click the “Order” button afterwards to submit the order.
2. You can push one of the buttons “Buy”/“Sell” in the “Market” section. The respective asset will be transmitted to the “Order Form” automatically; if available, the best sell offer (if you clicked on the “Buy” button) or the best buy offer (if you clicked on the “Sell” button) will be set as default price. To complete your order, just indicate the quantity you want and click the “Order” button. Of course, all default values can be modified manually.

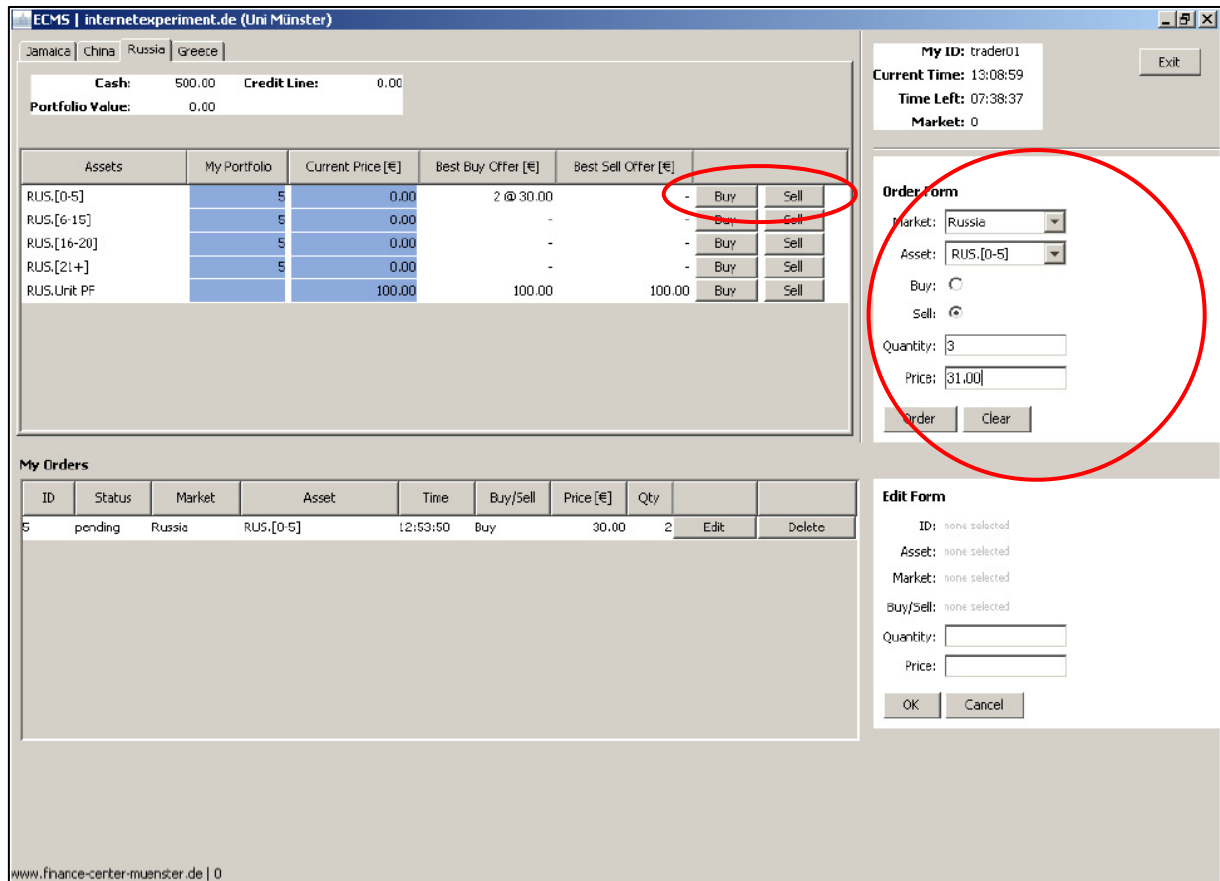


Fig. 2: Order Submission.

After submitting your order, it will be processed by the system. If your order is going to result in a trade, this can last for 1-2 seconds. Your trading screen will be blocked during this time.

In this context you should pay attention to the following two error messages:

*Error “not enough cash” and error “short selling restriction”*

These error messages will occur, if

1. either you do not have enough cash and/or if you already have too many pending buy orders (“not enough cash”), or if
2. you do not have enough assets and/or if you already have too many pending sell orders (“short selling restriction”).

Please note that any pending order will tie-up your cash (buy order) or assets (sell order) until these orders are executed or deleted. This prevents you from placing orders which might not be possible due to a lack of cash/assets. Pending orders can be deleted or edited at any time in order to make the tied-up cash/assets available again.

From figure 2 above you can see that an amount of  $2 * 30.00 = 60.00$  Eurocents is tied-up for the pending buy order at the moment. The disposable cash amount reduced to  $500 - 60 = 440$  Eurocents.

## 5.4 Order Execution

The trading system is based on a so-called “continuous double auction”. This means that a buy and a sell offer will be executed if the respective buy order has at least the same price limit as the corresponding sell order. Please look at the following order book, which contains a list of all active buy and sell offers in the market:

Buy Offers	Sell Offers
	1 @ 60.00
	1 @ 56.00
	1 @ 50.00
- none -	

Fig. 3: Order book.

Assume you would like to buy assets and enter a buy order for “6 @ 80.00“ into the trading system, i.e. you are willing to buy a quantity of six assets at a price limit of 80.00 Eurocents each. In general, only the best offers will appear in the order book of your “Market” section.

In this case, you know for sure that you will buy one asset at a price of 50.00 Eurocents in the market (best sell offer), as you can see from the trading screen.

The screenshot shows the ECMS trading interface. At the top, there are tabs for Jamaica, China, Russia, and Greece. Below this, the user's account information is displayed: Cash: 500.00, Credit Line: 0.00, Portfolio Value: 0.00. The main part of the interface is a table showing the order book. The table has columns for Assets, My Portfolio, Current Price [€], Best Buy Offer [€], Best Sell Offer [€], and Buy/Sell buttons. The assets listed are CHN.[0-5], CHN.[6-15], CHN.[16-20], CHN.[21+], and CHN.Unit PF. The Best Sell Offer for CHN.[16-20] is 1 @ 50.00, which is circled in red. To the right of the table is an Order Form with fields for Market (China), Asset (CHN.[16-20]), Buy/Sell (Buy selected), Quantity (6), and Price (80.00). Below the table is a My Orders section with a table for tracking orders. At the bottom right, there is an Edit Form section with fields for ID, Asset, Market, Buy/Sell, Quantity, and Price.

Fig. 4: Order book example.

The remaining part of the order book is hidden to you. However, since you are willing to pay up to 80.00 Eurocents per asset, you will buy a quantity of three assets in total (see Fig. 3).

The screenshot shows the ECMS trading interface for 'internetexperiment.de (Uni Münster)'. The top left displays account information: Cash: 334.00, Credit Line: 0.00, and Portfolio Value: 400.00. The top right shows the user's ID (trader01), current time (13:27:50), time left (07:19:46), and market (0).

The main area contains a table of assets and their current prices. The 'Current Price [€]' column shows 0.00 for CHN.[0-5], CHN.[6-15], and CHN.[21+], and 60.00 for CHN.[16-20]. The 'Best Buy Offer [€]' column shows 0.00 for CHN.[0-5], CHN.[6-15], and CHN.[21+], and 100.00 for CHN.[16-20]. A red circle highlights the '60.00' in the 'Current Price' column and the '3 @ 80.00' in the 'Best Buy Offer' column.

The 'My Orders' section shows a table of orders. The 'Price [€]' column shows 80.00 for the pending order (ID 15) and 50.00, 56.00, and 60.00 for the executed orders (IDs 10, 12, and 14). A red circle highlights the '80.00' price for the pending order.

The 'Order Form' on the right shows the market set to 'China' and the asset set to 'CHN.[16-20]'. The 'Order' button is highlighted in green, indicating the order is accepted.

Fig. 5: Splitted Order.

As you can see from the “My Orders” section in Fig. 5, your original order of six assets was split, so that three orders, each consisting of one asset, were executed (highlighted in green colour), while an order of three assets remains in the trading system. The price which is shown in the column “Price” equals the trading price (for the executed orders) and equals your limit price (for the pending order).

The “Current Price” in the “Market” area indicates that the last trade was executed at a price of 60 Eurocents. The remaining part of your order (“3 @ 80.00”) appears in the order book as the best buy offer.

Please note: Whenever two orders can be matched, they will always be executed for the price limit of the buy or sell order which was submitted the earliest (time priority).

**Note: For more detailed information on the trading system see the FAQs section on our study homepage!**

## 6. NBA Basketball Playoffs Mode

**Note: This section can be skipped if you are an NBA Playoffs expert and already know all the details!**

Overall, in the National Basketball Association (NBA) there are 30 teams which are divided into Eastern and Western conference (15 teams each). Each conference consists of three divisions with five teams in every division. Within a so-called regular season, each team plays in total of 82 games (which are divided evenly between home and road games). During the regular season, each team faces opponents in its own division four times a season ( $4 \times 4 = 16$  games), teams from the other two divisions within the same conference three or four times a year (in total 36 games) and all 15 teams of the other conference twice ( $15 \times 2 = 30$  games).

Afterwards, the NBA uses a particular seeding system in order to set the Playoffs match-ups: The top three seeds (1-3) for each conference are determined by taking the winners of the conferences' three divisions and ranking them by their regular season record (i.e., their relation between wins and losses). The remaining five seeds (4-8) for each conference are determined by taking the five best teams from the remaining pool of 12 teams.

The Playoffs themselves follow a tournament format: Each team plays a rival in a best-of-seven series, with the first team to win four games advancing to the next round. This means that two teams play against each other, until one of the teams wins four times. While the losing team is eliminated from the Playoffs and does not play any more games, the winning team advances to the next round and has the next match-up according to the following preset bracket:

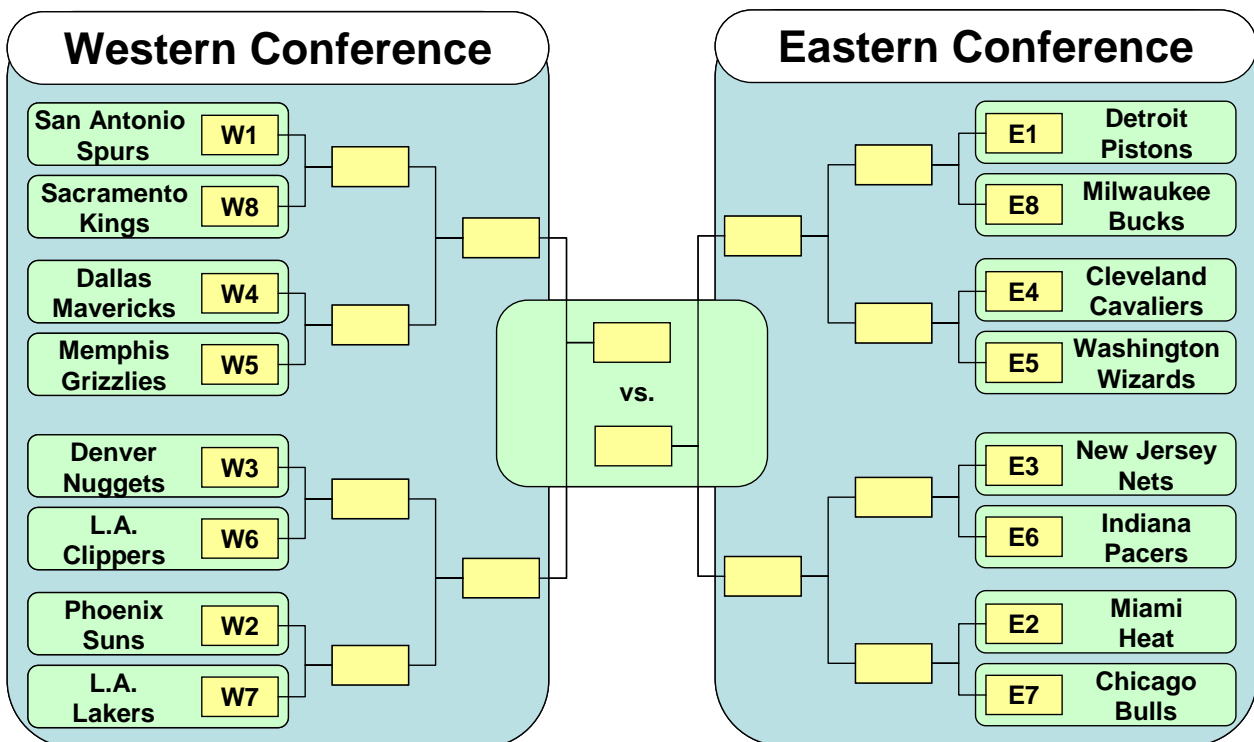


Fig. 6: Traditional NBA Playoffs Bracket with this year's teams.

In the final round (the NBA Finals), the winner of the Western conference faces the winner of the Eastern conference.

Home-court advantage in the NBA Playoffs follows a particular pattern and is based strictly on a team's regular-season record, without regard to whether a team won its division or not. In each round except the NBA Finals, the best-of-seven series follows a 2-2-1-1-1 pattern, meaning that the team with the better won-lost record has home court in games 1, 2, 5, and (the decisive game) 7, while the opponent plays at home in games 3, 4, and 6. In the NBA Finals, home-court advantage follows a 2-3-2 pattern, meaning that one team has home court in games 1, 2, 6, and 7, while the other team plays at home in games 3, 4, and 5.

Please note that the winning team in the NBA Finals always wins exactly 16 games in total; the team that makes it to the NBA Finals but loses, always wins 12 to 15 games etc., while the first-round losers win from 0 to 3 games.

## 7. *FIFA Soccer World Cup Mode*

**Note: This section can be skipped if you are a FIFA World Cup expert and already know all the details!**

After a two-year period of qualification, 32 national teams have qualified for the final tournament (FIFA Soccer World Cup 2006).

In December 2005, the qualified teams were drawn and assigned to eight groups of four nations each. Eight teams (Germany, England, Argentina, Mexico, Italy, Brazil, France and Spain) were seeded as group heads, based on their so-called FIFA ranking and their success in previous FIFA World Cups. The remaining teams were drawn randomly from the different continental zones (and by geographical criteria). They will now compete for the World Cup in two phases, a group phase and a knockout phase.

**Group phase.** From June 9 on, in all of the eight groups, each team plays every other team in the group once (pure round-robin schedule), guaranteeing that every team will play (at least) three matches. Every match consists of two periods of 45 minutes each and can end in a decision (three points for the winner) or a draw (one point for both teams). At the end of this phase, the two top teams from each group advance to the knockout phase.

**Knockout phase.** In this phase, teams play each other in single-elimination matches. If there is a draw at the end of the regular playing time (i.e. after the second period of 45 minutes has finished), there are two overtime periods, 15 minutes each. If there is still a draw after the 30 minutes of overtime, a penalty shootout is used to decide the winner. Please note that goals scored in a penalty shootout do not count for the (official FIFA) result of the game (unlike penalty-kicks during the game, which do count for the final score of the game).

In the round of 16 (1/8-finals), the winner of each group plays against the runner-up from another group. This is followed by the quarterfinals, the semifinals and the World Cup final, as can be seen from the following figure:

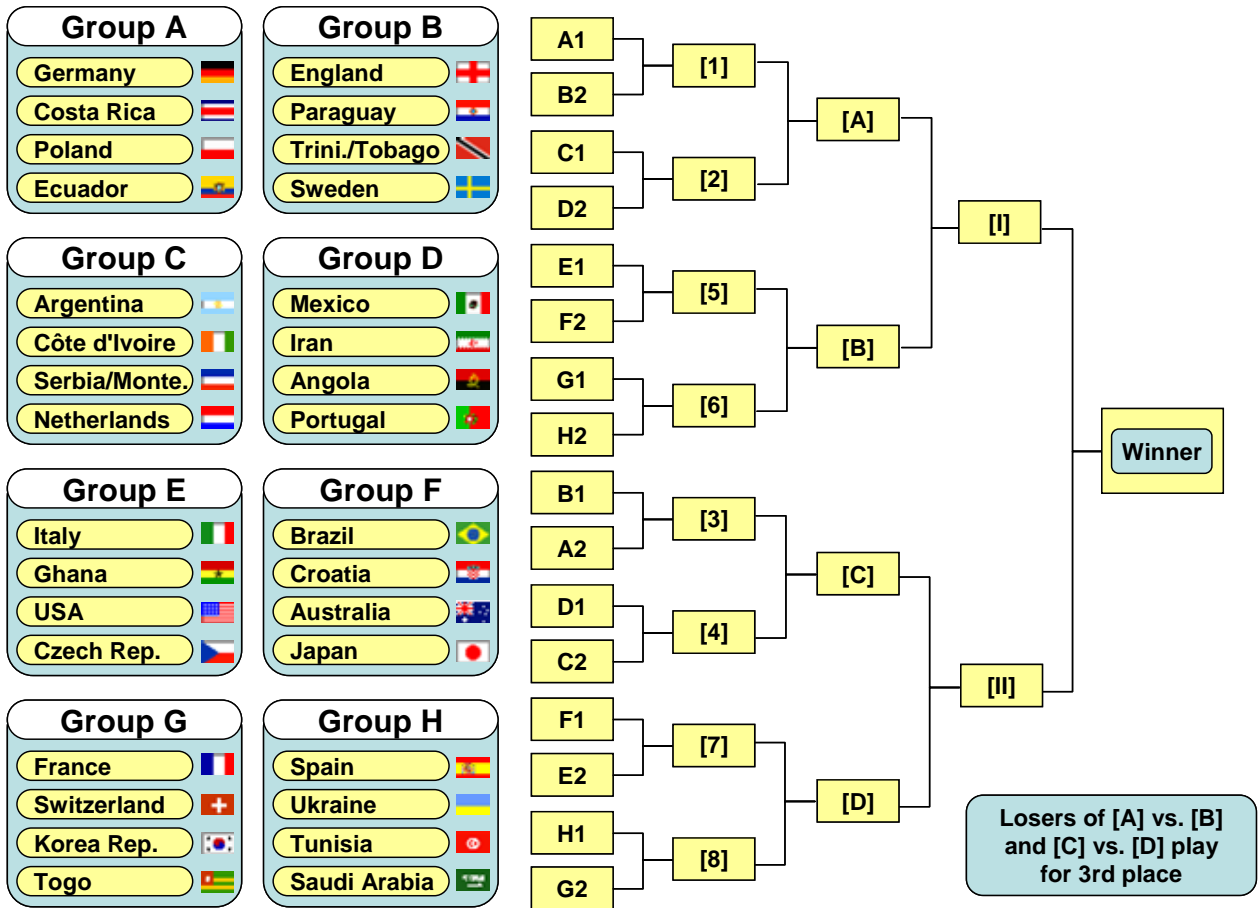


Fig. 7: FIFA Soccer World Cup Bracket.

The losers from the semifinals play each other in a third place match.