JOURNAL OF ECONOMICS TEACHING

Learning Without Realizing: Economics Lessons in FIFA Ultimate Team

FIFA Ultimate Team, a component of the best-selling video game FIFA 23, is an economics lesson, in itself. The game mimics the real world with a monetary system and a labor market involving scarcity, price controls, and market manipulations. Users make decisions guided by cost/benefit, market prices, relative costs, opportunity costs, and expectations, in an attempt to build winning soccer teams. As such, they are learning economics without realizing it. In this paper, readers are introduced to the game and five economic lessons are offered to show how it reinforces economic content taught in high school and introductory college classes.

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1. Introduction

FIFA, a soccer video game available on multiple platforms, was introduced by creator EA Sports in 1993. In 2018, it became the best-selling sports video game series in the world (Guinness World Records, n.d.) and it is the fifth best-selling game in the US on the Xbox platform based on sales revenue (Clement, 2023). The 2020 version of FIFA exceeded 25 million players (Malgieri, 2020) and one-third of global users are under the age of 25 (Clement, 2022). Thus, it is likely that high school and college students are among the active users.

The FIFA Ultimate Team (FUT) component of the game was incorporated in 2009, and it is estimated to have generated almost $1.62 billion in revenue for 2021 (Byers, 2021). In FUT, gamers are engaged in a market economy involving the exchange of a valuable commodity (soccer players), market-driven prices, and a virtual monetary system. But the economic elements do not end there. Users are incentivized and have true opportunity costs associated with decisions. Additionally, the degree of scarcity of soccer players changes and price controls exist.

For teachers interested in sports other than soccer, there is good news. Every major sports game has an ultimate team equivalent. For example, NBA 2k MyTeam, Madden Ultimate Team, and MLB The Show offer parallel experiences for professional basketball, football, and baseball. Regardless of which sport's ultimate team game is being played, a user may possess an understanding of some complicated economic concepts without realizing it. In this respect, the games are an example of problem-based learning. Students might even begin our economics courses with an understanding of some of the foundations, even if they do not know the terminology.

Given the authors' greater familiarity with the FIFA games, the focus of this paper is on FIFA Ultimate Team and the incorporated economic lessons. However the lessons can be applied in the context of other sports' ultimate team components. The paper begins with a review of resources for economics games and simulations available to instructors, some of which use a sports framework, and literature related to the use of games (including commercially available ones) that help engage students in the classroom. An overview of the game elements is presented, focusing on the most basic parts, so that someone new to FUT will understand. Finally, five economics lessons tied to FUT are offered. Additionally, discussion questions are offered so that instructors may reinforce the lessons, and resources are provided for anyone interested in becoming a new user of FUT.

2. Related Literature and Instructional Game Resources

Activities that engage students in the economics classroom are of interest to educators who want to move away from "chalk and talk" approaches. Strategies include the use of movies, music, television shows, and forms of nontraditional media such as historical literature, podcasts, or even Fantasy Football (see Picault, 2019 and Wooten et al. 2021 for a nice overview). Games have been infused into the economics curriculum with applications to game theory, experimental economics, industrial organization, microeconomic theory, and macroeconomic theory, where "games" can include experiments, simulations, and even commercially available video games. Multiple websites offer instructors free economics games and simulations, for example, Vecon Lab Games[1] out of The University of Virginia (see Bostian & Holt, 2013) and ClassEx[2] out of The University of Passau in Germany (see Giamattei & Lambsdorff, 2019). Marginal Revolution University, from well-known textbook authors Tyler Cowen and Alex Tabarrok,

[1] Available at http://veconlab.econ.virginia.edu/games.php

[2] Available at https://classex.de/.

offers its top five in-person games for teaching economics, a good starting place for instructors seeking opportunities for this type of engagement.[3] Additionally, an economics instructor who does not know where to begin might benefit from reading Kaplan and Balkenborg (2010) which describes categories of classroom experiments and makes recommendations.

There are also simulations created specifically for the economics classroom. Ng (2019) discussed The Seven Wonders of Economics, a publicly available resource for use in principles of microeconomics.[4] While not free, Econland was designed with the macroeconomics classroom in mind (see Rogmans, 2018), as students apply concepts of monetary and fiscal policy to run their economy, making decisions about interest rates, tax rates, and government spending while keeping budget deficits in mind.[5]

Video games are a way to engage students in the classroom, as those built on virtual worlds may incorporate scarcity, decision-making, or an entrepreneurial approach. Thus, gamers apply the "economic way of thinking" (McCaffrey, 2014a, 2014b). There are many commercially available games built around an economy or business scenario. Quick (2022) overviewed several games with economic themes: Offworld Trading Company, Dune: Spice Wars, SimCity, The Yakuza Series, Civilization Revolution, Stardew Valley, Recettear: An Item Shop's Tale, and RimWorld. Vidal (2020) discussed the applicability of Civilization VI with its connections to natural resources, technology, labor, human and physical capital, and determinants of growth. Mateer and O'Roark (2020) demonstrated how ten economic concepts are involved in Animal Crossing: New Horizons. Toh (2021) analyzed player decision-making across commercial video games, where verbalizations from users revealed the application of economic logic. McCaffrey (2014b) discussed applications of scarcity, specialization, and trade in video games such as The Walking Dead, World of Warcraft, EVE Online, and MMORPGs video games.

Sports has been the framework for some economic classroom simulations and activities. Nagel (2016) offered an exercise based on Fantasy Football, where student groups pursued different paths that demonstrated the decisions team owners might make based on maximizing wins and/or maximizing revenue. Wooten and White (2018) discussed their simulation based on the movie/book Moneyball; students collected Major League Baseball data and used metrics to apply the lessons of marginal revenue product to a real-world labor market. Patterson, et al. (2022) extended the above activity but looked at marginal product in the context of ESPN's free Fantasy Baseball league by using regression controlling for performance.[6]

Game-based learning can promote a student-centered focus, enjoyment of economics, and student engagement. Masset, Weisskopf, and Bonvin (2021) noted that games helped maintain engagement in finance courses with significant economics content delivered during Covid. Dobrescu, Greiner, and Motta (2015) compared video gaming to textbook reading for learning comparative advantage. Students reported enjoying the games, but males at a greater level than females. Van Wyk (2013) interviewed students who reported that games had positive impacts on interpersonal relationships. Wardaszko and Jakubowski (2013) conducted focus groups and learned that teachers welcomed the use of educational games since students respond positively to new technologies in the classroom. Masset, Weisskopf, and Bonvin (2021) reported that the use of games reinforced student interest in the class.

However, only limited studies discuss perceptions of learning economics or impact on assessments. Van Wyk (2013) interviewed students engaged with several different games;

[3] Available at https://mru.org/teacher-resources/play-economics-games-classroom.

[4] Available at https://sites.google.com/site/gamesforecon/.

[5] Available at www.econland.com from the Sim Institute.

[6] Given the application of metrics, both Wooten and White (2018) and Patterson, et al. (2022) are more suited for upper-level college economics courses.

students communicated that they were valuable and aided in learning, noting connections to real life. Wardaszko and Jakubowski (2013) surveyed high school students, with data revealing that more than two-thirds of respondents believed they received new knowledge or developed new skills through video games. Survey results reported by Masset, Weisskopf, and Bonvin (2021) suggested that a majority of students perceived themselves as understanding content better as a result of games. Dobrescu, Greiner, and Motta (2015) used an experiment to determine that students involved in gaming did not score lower on assessments than those reading textbook chapters to learn content.

For those interested in implementing video game-based modules in the economics classroom, Lawson and Lawson (2010) offer recommendations for success, including ensuring that experiences are immersive, interactive, and social, with decision-making that involve consequences. Additional insights are offered by Wardaszko and Jakubowski (2013), based on focus groups of teachers who noted potential impediments including teachers' fear of new instructional methods, insufficient IT staff to address technology issues, potential for misuse, and challenges in grading. Feedback in open-ended questions in Patterson et al. (2022) generated comments from college students who wanted more in-class discussion of the simulation, less repetition of the same activities, and opportunities to complete work during class periods to get assistance.

Interestingly, FIFA Ultimate Team does not receive much mention in the existing literature, despite its applicability in economics instruction. This might be due to accessibility. The game does come with a price—almost $60 at the time of writing this manuscript for the 2023 edition. And it must be played on a relatively expensive platform such as PlayStation or Xbox (although these are popular items with high school and college-aged students).[7] The sports theme might lead non-users to perceive FUT as an experience that focuses primarily on virtually playing the sport (soccer), but the economic applications are well developed, as the discussion below confirms.

3. Potential Audiences

As the lessons below will illustrate, FUT incorporates many concepts that appear in the standard high school and college economics course. High school teachers knowledgeable with FUT (or another sports' equivalent) can tap into students' understanding to better illustrate economic concepts. Creative teachers might find an innovative way to infuse them into their classrooms as problem-based learning or, at minimum, to illustrate to students that they already understand some economic ideas. When not appropriate for a whole-class activity, certain students might be encouraged to create economics projects based on these games, since it involves a market they understand. It could be a way of exciting students who are otherwise difficult to engage. We can even conceive of a special topics elective in high school billed as the Economics of FIFA Ultimate Team (or equivalent version for another sport), sure to be extremely popular. For universities with a creative general education program, there could be room for a similar offering. In our Civitae general education curriculum, freshmen must select amongst courses aimed at refining critical thinking skills, with offerings that range from what Harry Potter can teach you about leadership to becoming an economically informed voter. A course built around FIFA Ultimate Team and understanding economic decision-making would be a perfect addition and sure to attract and engage students. In both high school and college settings, there could be an opportunity for a club advised by an economics instructor (the gaming clubs are some of the most popular on our campus). Thus, we can conceive of different audiences—both high school and university—where FUT can be used to excite students about studying

[7] A PC version of the game also exists, but the authors are not familiar with that platform. The price is significantly less than the version for the Xbox or PlayStation platforms.

economics. The opportunities are limited only by the imagination.

4. The Elements of FIFA Ultimate Team

A new FUT user can begin by exploring the most foundational elements of the game and they will very quickly start employing an economic way of thinking. The first step would be to assemble a team that can be competitive in the marketplace, which requires understanding the objective, monetary system, how to earn currency, how to buy and sell players in the market, and how to track player prices. The following sections detail these elements, which are later infused into five economic lessons. For this paper and to avoid confusion, the term "user" refers to an individual playing FUT (the gamers), and "player" refers to a card representation of a professional soccer player.

A. Objective of the Game

A FUT user becomes a team "manager/owner" endowed with a starter team—an "average" team with players of different quality levels but who are not tradeable. A user likely wants to maximize "wins" and this requires building a talented soccer team, something directly impacted by the acquisition of players in the game, representations of real-world soccer players—current, retired, or deceased—in player "card" form.[8] Users must earn currency (considering the different options), make investments in players, and manage resources thoughtfully. For example, the "striker" is key to scoring goals in soccer and acquiring good strikers might be the first economic decision the user makes.

B. FIFA's Monetary System

Player acquisition requires money, either real or using the currency in FIFA's monetary system. A new FUT user can rely on real wealth (like US dollars) to buy "points," or they can start accumulating virtual wealth called "coins." This means there are dual currencies in play—coins (virtual) and points (purchased with real money). Coins can be earned by playing soccer matches, selling players, or receiving rewards. Since a new user cannot sell his endowed players, he can quickly start earning by playing matches, where payment is received whether the team wins or loses.[9]

While real money can be used in FUT, it appears that the majority of users rely on virtual wealth. Nelson (2021) reported that 78% of FIFA-21 players did not utilize real money at all, with 90% of player card packs being purchased with the game's virtual currency. Akerman (2019) surveyed FUT users and concluded that just over 45% spent no real money, and another 25% spent between $1 and $100. Accounts registered to those under 18 are restricted to the use of coins only, but Nelson (2021) notes only a small percentage of accounts are associated with minors. However, minors may be misreporting their ages, something we can confirm as FIFA users is easy to do.

C. Player Cards, Ratings, and Packs

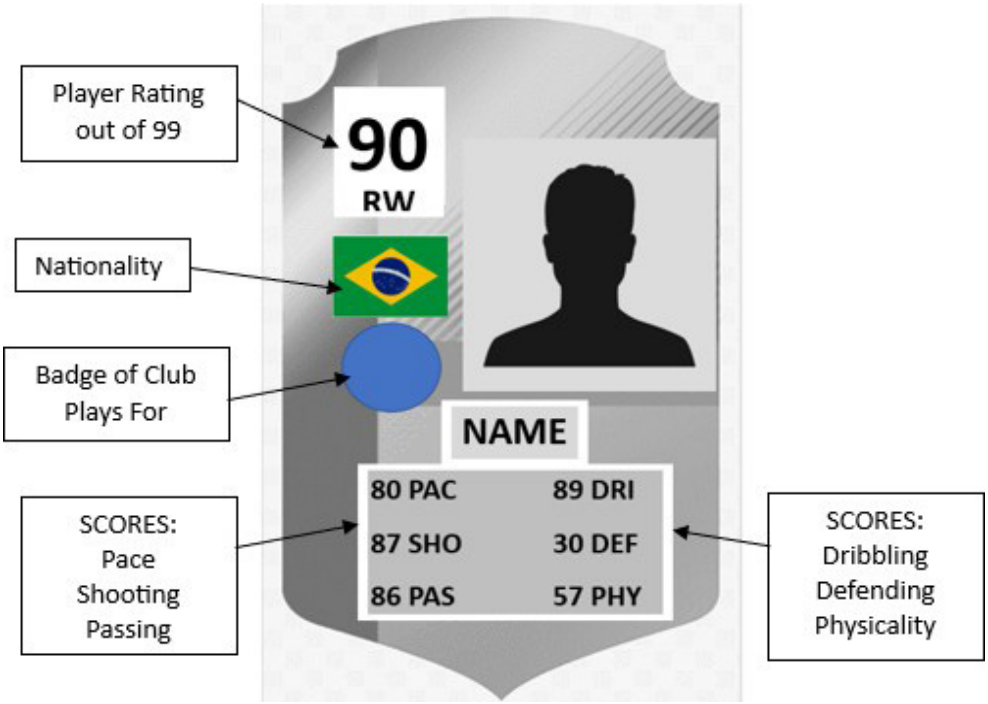
Players in FUT are represented by cards, where categories range from "standard" or "regular" to "ICON" (iconic players who are no longer actively playing, such as those retired or

[8] For a discussion of player cards and the content they contain, visit https://www.fifplay.com/encyclopedia/fut-player-cards/.

[9] Coins may not be purchased per EA rules. Also, coins and points are not equivalent, as points have restrictions. For example, points can be used to purchase packs of players, but they may not be used to bid on players in the marketplace. This might help reduce inequities since those willing to pay in real money cannot use it to bid (via purchase of points) on players they want in the marketplace.

deceased). Each player has a "rating" indicated by the large number in the upper left corner of Figure 1. Players have "attributes" that describe them, allowing users to determine which players best meet their needs and to determine their willingness to pay. Cards also indicate the player's position, the league he plays for, his nationality, and performance statistics including pace, shooting, passing, dribbling, defending, and physicality.[10]

Figure 1. Representation of a FUT Player Card



Given the large number of FUT users, there must be duplication of cards—there is not simply one Ronaldo or one Messi available (there are likely many thousands at any point in the market for players). At any given time, there will be millions of player cards on the market for sale and there are not this many professional soccer players in the game, making it clear that duplicate cards are being offered. But different players are available with varying degrees of scarcity, and this impacts prices (more on this below). There can also be several different versions of cards available for the same player, showing slightly different statistics and ratings, and commanding a different price in the marketplace.[11] For example, on April 14, 2023, eight different Lionel Messi cards were trading with ratings from 87 to 98 and prices from 65K to 4.92M coins. This means that one user fielding a team with Messi might be playing another user's team that also has Messi on the roster. And one team could have a "better" version of Messi (explained in more detail below).[12] Additionally, some player cards are indicated as"rare."[13]

Coins and points may be used to buy collections of players offered in "packs" that might

[10] These are composite scores that are comprised of a set of performance ratings that can be seen on futbin.com. Note that traditional performance measures, like those used in studies of marginal product, are external to FUT.

[11] Player performance in real-life impacts the probability that new versions of a player's card will become available in the game.

[12] But note that a team may only have one Messi card on the roster at a time.

[13] These are generally higher-rated players and are noted by a different "look" to the card (shinier and with brighter colors).

resemble a pack of baseball cards, where you do not know what you are getting until you pull off the wrapper.[14] This allows EA to continuously supply more players, given that new users enter the game over time. As an example, the 5K coin pack costs around $1 in FIFA points and the 125K coin pack costs around $23. Since users do not know the exact players that will be in the packs, they must factor in the cost versus the probability of securing desirable players in their decisions, so this is a gamble. A user could open a pack and get extremely lucky, like acquiring a Cristiano Ronaldo card. More likely, a user wanting to obtain Ronaldo will seek out the card in the virtual FUT marketplace.[15]

D. Buying and Selling of Players in the Market

The "transfer market" is where players are bought and sold, much like when Manchester City sold real-life Raheem Sterling to Chelsea in July 2022. Often, the market for FIFA soccer players is described with language that parallels stock trading. Indeed, there is a similarity—players can be bought low and sold high for a profit and users bid against each other to acquire players. Prices can be tracked over time and indices exist. But thinking of this only as a stock trading game is an oversimplification. There is an excellent parallel to the labor market. Users of FUT, acting as a hybrid of team manager and owner, are accessing the labor market for soccer players. And players command different prices in the market based on their attributes.

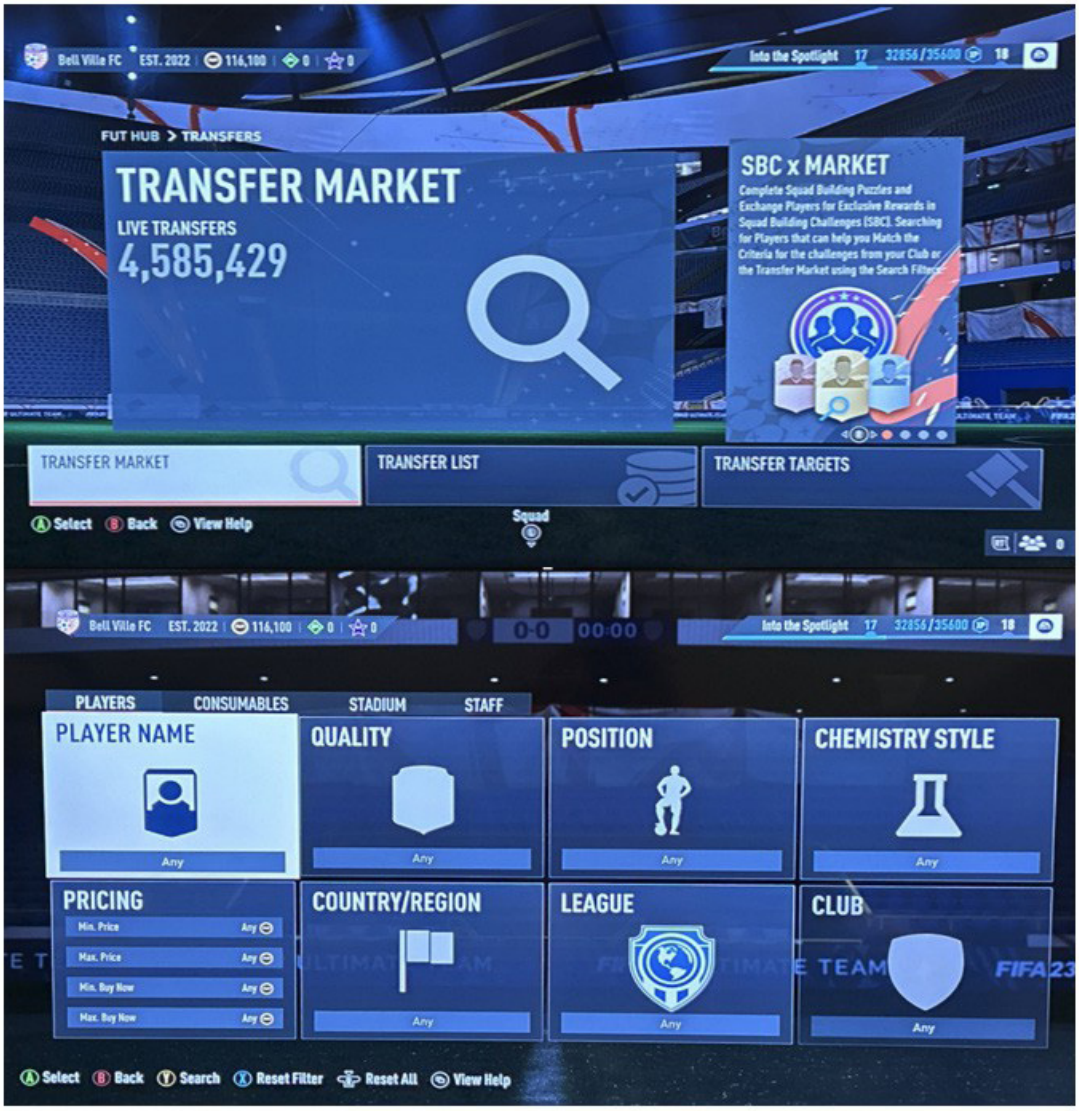
Inside FUT, a user will access the transfer market on the screen depicted in the top panel of Figure 2. On this date, there were over 4.58M player cards available on the market.[16] After entering, a user can search in many ways—by name, price range, country, etc.—as seen in the bottom panel.

[14] Note that points (bought with real money) may only be used to buy packs of players. Coins may be used to purchase players in the transfer market.

[15] Users can also obtain player cards by meeting certain EA objectives, where users can "unlock" players as they satisfy different levels.

[16] Again, this helps a user understand that there are lots of duplicates of the same card and also multiple different cards for some players, since there are not 4.58M unique players.

Figure 2. Entering the Transfer Market

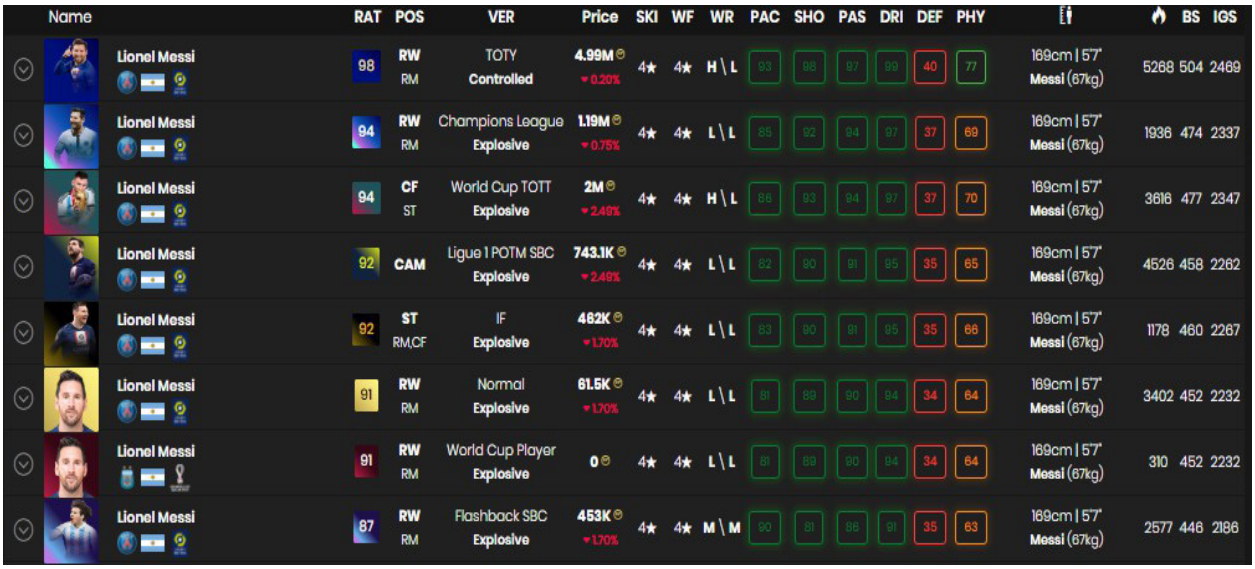


The transfer market mimics the real-world labor market, since players with more skills (as indicated by rating and attributes on cards) trade for higher prices, just as doctors command higher salaries than waiters.[17] Figure 3 shows the eight available Messi cards on April 16, 2023, representing different periods and achievements in the player's career, as seen on www.futbin.com. The cards have different ratings (ranging from 87 to 98 outlined in yellow), distinctions (related to World Cup performance, Team of the Year, etc., and visible when you click on the

[17] In the real-world market for athletes, we might discuss marginal revenue product, the increase in revenue associated with the addition of a particular player. Salaries might reflect the expected marginal revenue product. However, in FUT, information about revenue is not provided. Users are buying player cards based on ratings, which might correlate to real-world salaries. Also, the player attributes are indices of performance measures. However, some typical performance measures can be found on futbin.com. Metrics could be used to see the marginal impact that certain player attributes in FUT have on the prices of player cards. But the ability to create a "Moneyball" approach as discussed in the literature review is limited since not all necessary data is available in FUT.

specific card), and prices (4.99M coins down to just over 740K coins outlined in yellow).

Figure 3. Cards for Lionel Messi (April 16, 2023)

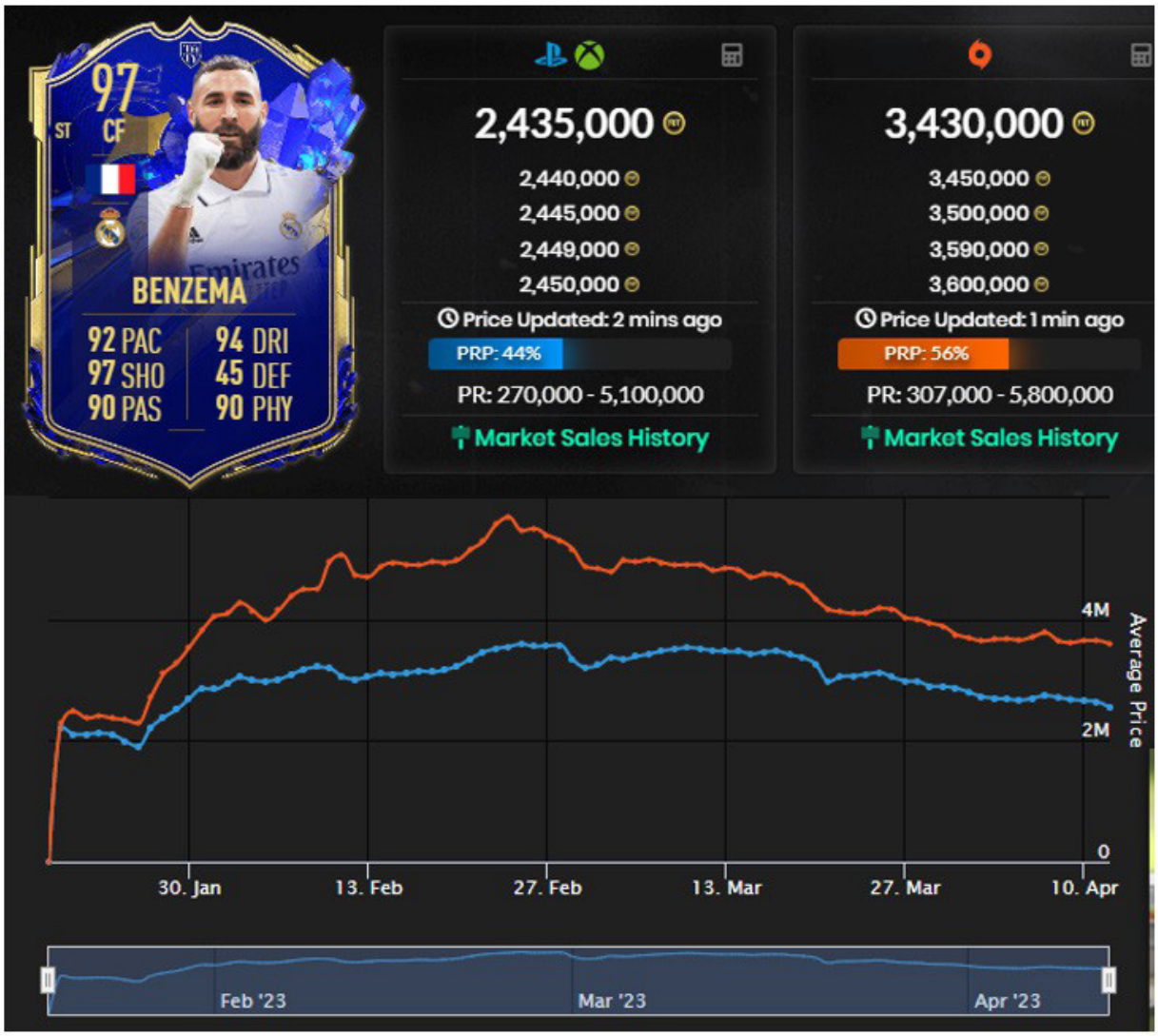


Players with much lower ratings sell for far more economical prices. For example, on this same date, Ronaldo Cisneros of Mexico playing for Atlanta United has a rating of 64 and a market price of only 1K coins. A new user of FUT will have to build a team with more economical players until they earn enough to buy players commanding higher prices.

E. Tracking Player Prices in the Transfer Market

The price of players can be tracked via publicly available sites external to the game, for example, www.futbin.com/market. A link brings you to market movers—those who are top gainers or losers—and to indices similar to the Dow or S&P. For example, the top panel of Figure 4 shows the price of a particular card for Karim Benzema of France, playing for Real Madrid, for all three platforms on April 13, 2023. On the same day, the four-month history of Benzema's price was available (Red=PC; BLUE=PlayStation and Xbox platforms).

Figure 4. Player Value in Futbin.com



5. Economic Concepts in FIFA Ultimate Team

From making decisions in an environment of scarcity to participating in a market where soccer players are bought and sold, users are applying an economic way of thinking to many elements of FUT. The discussion below offers five economics lessons that apply to FUT.

A. Lesson 1: Scarcity, Opportunity Cost, and Decision-Making

The monetary system, combined with market prices for players, ensures that decisions in FUT have real consequences and are incentivized. Users operate in a world of limited resources since they are constrained by the coins they have (for buying new players) and the tradeable players on their roster (which can be sold in the transfer market). A user's resources are scarce and consideration must be given to the best way to allocate them. Thus, users are likely to apply an"economic way of thinking"when making decisions. For example, in the acquisition of players, users of FUT bear real costs in coins. That means there is an opportunity cost when

deciding to buy a player as the chance to use coins for another acquisition is sacrificed. For example, buying a new striker could mean giving up the opportunity to purchase another goalie. By the same logic, the decision to sell a player has an opportunity cost since it means giving up the chance to utilize the player on the squad. Relative prices also matter. Given the high prices of the best players in the league, a user might decide to purchase multiple mid-tier players instead of a single superstar. Specifically, a user might decide to purchase an icon such as Steven Gerrard (who played for Liverpool) knowing that they will sacrifice the opportunity to purchase three mid-level players. However, it should be noted that a new version of FUT is released each year and earnings and players do not roll over to the next year. This potentially impacts decision- making in the game. Decisions made early in the one-year time horizon might be different than those made as a user reaches the end of the game.

Lesson 1 Discussion Questions:

1. Users of FUT have to decide how to spend their coins or real money (via points). Why would an economist suggest that their decisions have an opportunity cost? *(Students should acknowledge that users' coins are a limited resource. As such, users must think carefully about how to use them. The coins used to buy one player cannot be used to buy another. Thus, there is an opportunity cost associated with using coins and users should determine the optimal manner to allocate them.)*

2. Provide an example related to the acquisition of players that illustrates the application of relative prices. How does thinking about relative prices help you decide which player(s) to acquire? *(Students will likely explain that buying a high-priced player means sacrificing multiple lower-level players. Using the prices in the transfer market, they can offer examples. For example, on the date we obtained this data, player Mason Mount of Manchester United was selling for 174,000 coins. On that same date, Christian Pulisic of AC Milan was selling for 90,000 coins. The relative price of Pulisic is .51 Mount cards. In other words, when a user buys the AC Milan player, they forgo the opportunity to buy just over half of a Mount card. The calculation is 90,000/174,000. The relative price of Mount is 1.93 Pulisic cards, calculated as 174,000/90,000. Relative prices help frame the tradeoff that a user must consider when deciding how to allocate coins.)*

3. How does EA affect the degree of scarcity associated with players in the game? *(Students should explain that EA has control over the supply of players. Promotions are used to infuse more sought--after players into the game and sometimes players are made intentionally scarcer. For example, on Black Friday, EA releases abunchofplayer cardpacks ata discounted price knowing that more will be purchased. In this way, EA has injected new player cards into the market. When they do this, these players become less scarce. The impact on price is discussed in lesson C. Some students might discuss Squad Building Challenges where users form teams of players and then trade them in for other benefits in the game, such as special jerseys or players that are available only through these challenges. When teams are traded for these items, the players are removed from circulation and become scarcer.)*

B. Lesson 2: Maximization of Income, Wins, and Utility

The economic way of thinking is used to maximize the FUT user's ultimate objective, which is likely "wins" and "utility." For the typical FUT user, these may go hand in hand. Success in the FUT environment, measured by wins, likely leads to greater enjoyment of the gaming experience, and therefore, enhances utility (the economic measure of well-being). However, income maximization is an important component of wins maximization. A user must earn coins to acquire players, and higher income generally leads to the acquisition of a stronger team. Stronger

teams generate more wins and, potentially, more satisfaction for the user. Additionally, more wins open up opportunities to play in higher-level FUT leagues where payouts are larger and enjoyment/utility, might be enhanced.[18]

Lesson 2 Discussion Questions:

1. In the context of FIFA, how do you think that income maximization is related to win maximization? *(Students should be able to explain that the probability of winning is related to the quality of the team's roster. However, purchasing players requires coins. Therefore, users must make an investment in better players than what they were endowed with, in order to see more wins.)*

2. Which is more important in your utility function, wins or income? Explain why this is the case. *(This is subjective and depends on the individual users. Some users find enjoyment in the act of "flipping" players to try to make profits. In this way, they are likely more fulfilled by focusing on income. Their decisions might not lead to a greater number of wins. However, for others, enjoyment is tied to the performance of their team, as measured by the number of wins.)*

3. Can you think of any situation that illustrates a tradeoff between wins and income? *(Users might make decisions because undertaking a certain activity is fun for them. For example, a user might choose to pursue a Squad Building Challenge that is based on their favorite player, even if the cost ends up being quite high. In this case, a user is spending income that does not translate into wins. However, it might be utility-enhancing.)*

C. Lesson 3: Supply and Demand and Market Prices

To obtain players, users are bidding against each other in a competitive market. There is a demand for players—those willing to buy them—and a supply of players—those interested in selling them. In the market, demanders have the incentive to reveal their true willingness to pay, or they risk losing the player when outbid. Likewise, sellers have an incentive to reveal their true willingness to accept a bid, or they risk not selling the player, given that others may be selling the same player card. Even young users quickly realize the idea of consumer surplus—a user willing to pay 2.2M coins for Lionel Messi's 94-rated card understands the"savings" received when he purchases it for 2M coins, instead.

In the transfer market, where soccer players are bought and sold for coins, prices are determined by the interaction of supply and demand, just like the market for houses or used cars.[19] There are times when demand for certain players might increase or decrease, and these can be driven by real-world events or by challenges embedded in the FUT game that make players with certain attributes more desirable. The supply of players also changes continuously throughout the game, as new users join. Instructors have an opportunity to infuse demand and supply graphs to see how events impact market prices. They can also have students look at price data within the game. Finally, markets can "crash." Examples of changes in demand, changes in supply, and a discussion of market crashes are detailed below.

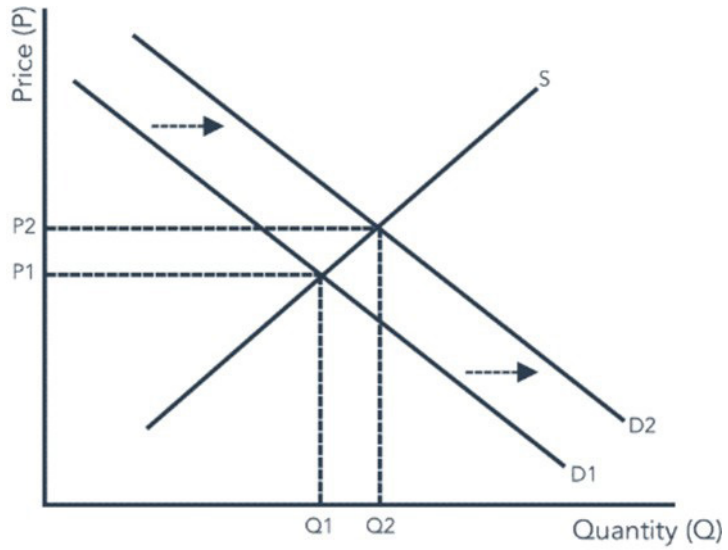
[18] Teams compete during the week and those that are highly successful are invited to play in the Weekend League against better competition.

[19] The process operates like an auction, where the highest bid wins, and barter trading of players is not allowed alongside the auction, there is a "buy it now" option (as seen in eBay), where the price is set by the seller.

Changes in Demand

Demand for specific players can be impacted by real-world events. For example, what if more users decide that they want to obtain players from Argentina after a World Cup win? A simple supply and demand graph, such as Figure 5, can be used to illustrate that the price of Argentinian legend Lionel Messi's 98 card will increase when demand increases (keeping in mind that there will be many duplicates of the same card so there is a set of perfect substitutes).[20]

Figure 5. The Market for Argentinian Player Lionel Messi (98 rating)



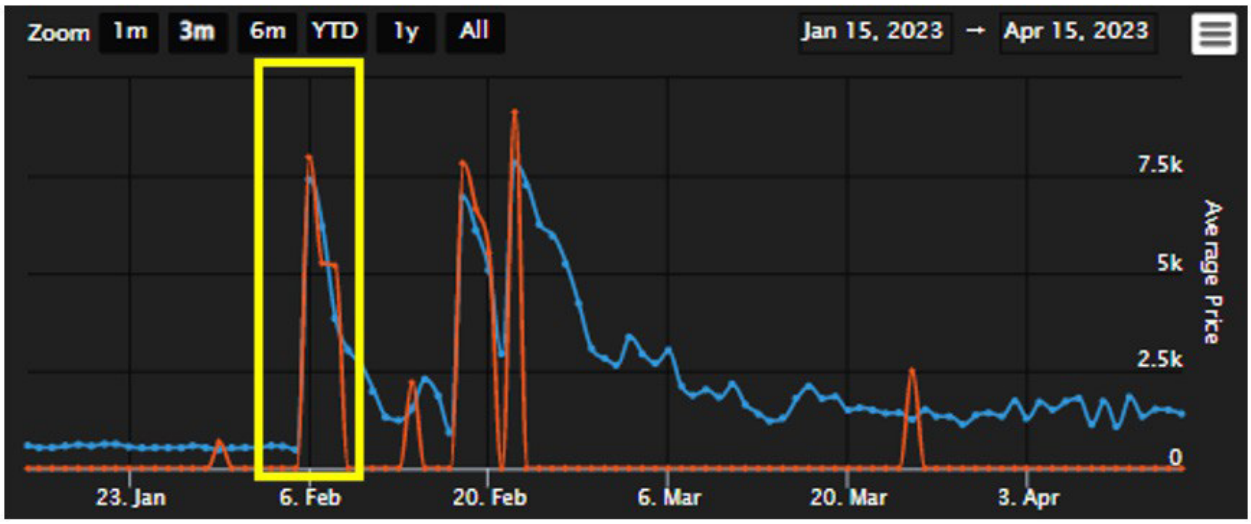
This exact scenario is depicted in Figure 6, which shows a market price increase in the Messi 89 rated card after December 18, 2023, when Argentina won against France in the 2023 World Cup.

Figure 6. Price Increase for Lionel Messi (Rating 89) After 2023 World Cup Win

[20] Given that there will be many of the same card being sold by different suppliers (perfect substitutes), there is an opportunity to discuss perfect competition.

Player Emiliano Sala died in 2019 after being sold to Leicester City (England) and overnight his FUT price increased from 600 to 6K coins. The same thing happened more recently when Christian Atsu of Ghana, who played for Al Raed of Saudi Arabia, died in the earthquake in Turkey on February 6, 2023. Figure 7 shows an immediate increase in the market price of this card from 471 to 7.4K coins.

Figure 7. Market Price for Christian Atsu (Al Raed)



There have also been price spikes associated with negative publicity. In late January 2022, Mason Greenwood of Manchester United was arrested on suspicion of sexual assault. This led to an almost immediate 100% increase in demand for this player, resulting in his FUT price rising from 900 to 1.6K coins. A similar pattern was seen for Benjamin Mendy of Manchester City, accused of sexual assault in 2021. These examples seem counter-intuitive; it would be easy to think that bad behavior would lead to a decrease in demand for players. The increased demand for Greenwood and Mendy might have been due to users' *expectations of future prices* (a ceterus paribus assumption for demand). Users might have expected EA to stop adding Greenwood and Mendy to card packs, a move that would make the players scarcer and their prices would increase.

Some demanded changes are created by EA itself, for example, through Squad Building Challenges (SBCs). SBCs are challenges created by EA where users build a squad (soccer team) and then trade it for other things of value. Some SBCs are harder than others and there is a collection to choose from.[21] Once an SBC is accomplished, the squad is bartered for other specific players, player picks, card packs, or virtual jerseys that the team can wear that are not generally available. For example, in one particular challenge, a user must use two players from La Liga, have at least three countries represented, and a minimum of five clubs, with an overall team rating of 76 (indicated by EA in the top left corner based on team composition), and a chemistry rating of 18. It is easy to understand how this particular challenge would increase the demand for players from La Liga, causing an effect like that illustrated in Figure 5. Thus, SBCs can to impact the demand for certain players or players with certain characteristics.

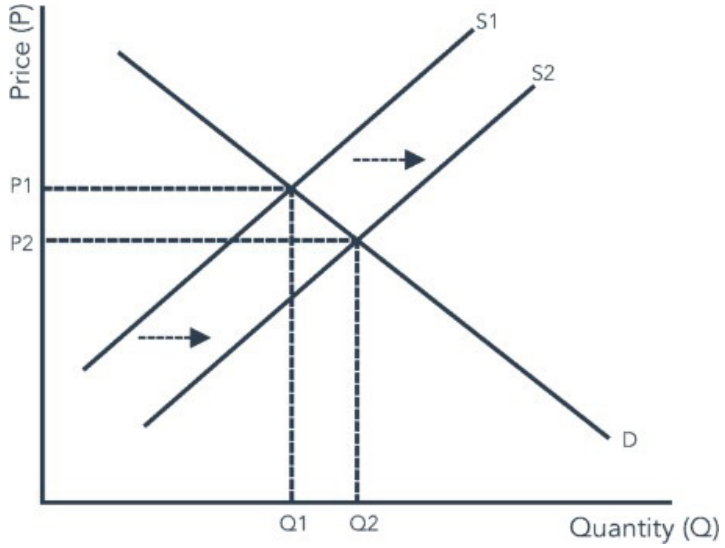
Changes in Supply

Users of FUT likely understand the intuition associated with increases in supply. There

[21] Current Squad Building Challenges can be found at https://www.futbin.com/squad-building-challenges.

is a continual increase in the supply of players over the one-year window of the game, as users purchase player packs and release cards into the transfer market. Since EA sells packs of cards on demand and there is a continuous stream of new players joining the game, the supply of a player's card likely increases over the year. Figure 8 illustrates that when more of the 89-rating Lionel Messi cards are acquired by lucky pack purchasers, their release into the transfer market increases supply and drives price down. Not surprisingly, the year window shows a general price decline.

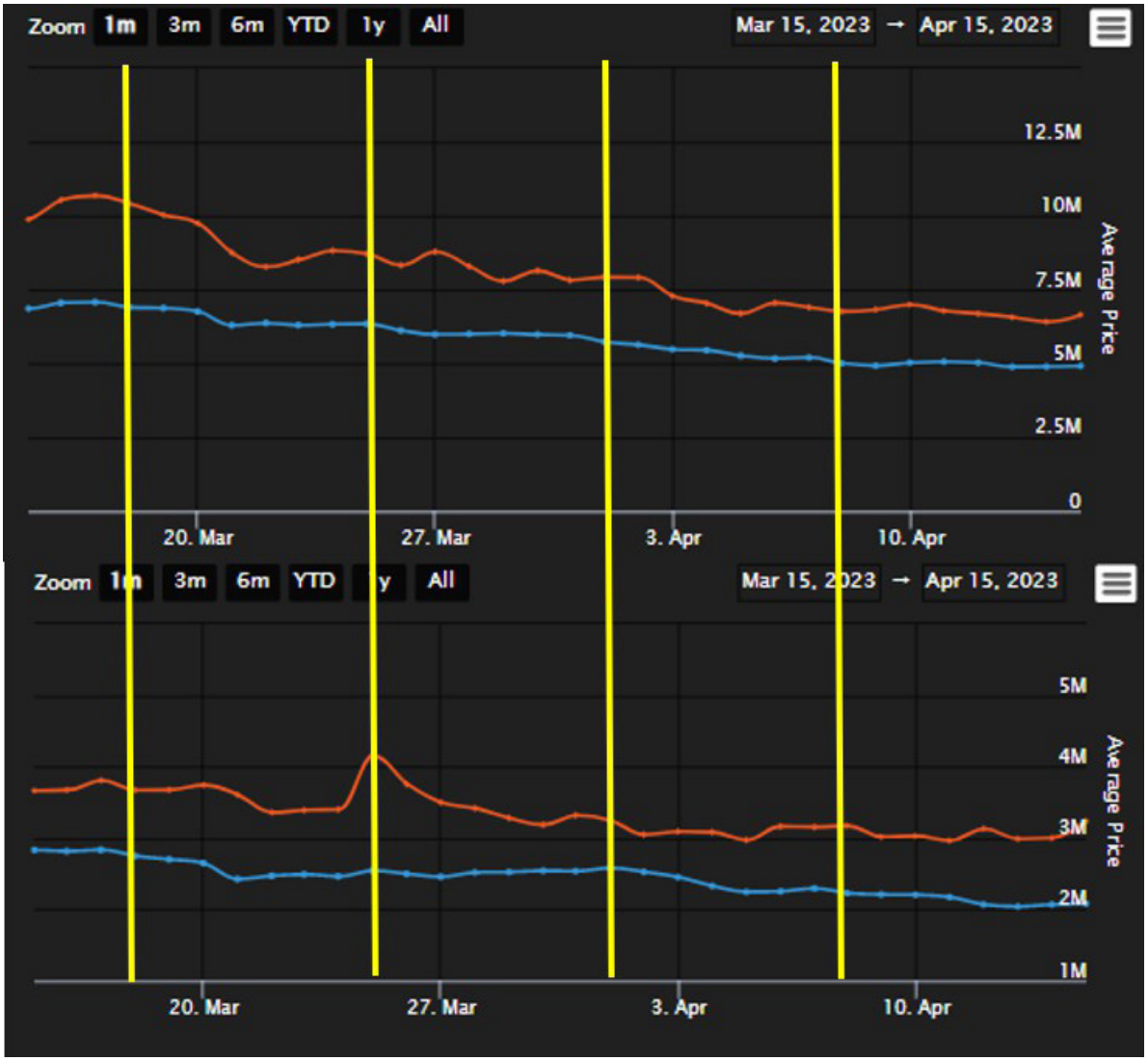
Figure 8. Market for Lionel Messi (89 Rated) Cards



But EA also manipulates the market at times, thus impacting supply. For example, if EA injects more cards for a particular player into the game, the supply of that card increases. This happens in different ways. First, EA will occasionally increase the supply of very rare players in the market simply to drive prices down, creating an effect similar to what was illustrated in Figure 8. (This is above and beyond the selling of packs on demand.) This happens on a need basis. Second, EA releases "promo packs" on Fridays. These are more expensive but have a higher probability of containing a rare player.[22] The release of promo packs results in a higher-than-normal supply of players in the transfer market. The increase in supply causes prices to fall. Figure 9 shows a one-month window of market prices for two of Lionel Messi's cards following the Friday release of promo packs.

[22] A normal premium pack has 12 items that are a mix of players and consumables (jerseys, balls, contracts, etc.). Three of the items are rare but some may be simply consumables. (Rare indicated by a different style of card.) The cost is 7.5K coins. An example of a promo pack is a 100K pack that contains 24 rare players. So the probability of getting rare players is known in the promo packs.

Figure 9. Release of Promo Packs and Impact on Messi Cards



While there is a general downward trend in prices over time, the release of promo packs (indicated by yellow lines) does generally appear to be followed by a decline in market prices. EA offers other promotions that impact the scarcity of players.[23]

[23] EA offers promotions that impact the value of player cards. For example, every Wednesday, FUT releases 23 "team of the week" players (up from 18 in previous versions). The players released during these promotions will appear in card packs less frequently, making them relatively scarcer. In addition, the players' "normal" card gets removed from packs, making it scarcer as well. In this context, users understand that increased scarcity leads to an increase in price since this is what the FUT user observes. EA also offers new player packs not normally available, for example, 50K, 100K, and 125K coin packs Unlike the cheaper packs, they contain proportionally more value in the form of rare players. So, when these packs are released, EA knows that the purchase of packs will be unusually high. As more packs are opened, more players are injected into the transfer market and prices decrease.

Market Crashes

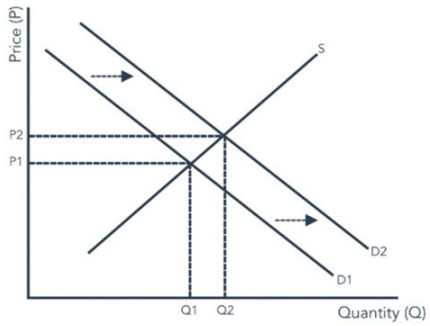
Like the stock market, markets in FUT can crash. This is usually due to increased market activity related to promotions. For example, when FIFA 22 released 50K preview packs, users could see what cards were expected to appear, thereby reducing risk. (Remember that normally the contents are unknown.) As more packs were virtually opened, more players ended up in the transfer market, causing an oversupply and a decrease in prices. Desirable players were selling for unusually low prices, providing users the opportunity to field better teams without the normal investment. Purcell (2021) stated it well in his introduction:

> An economy crashing, coin values depreciating, and people struggling to get by. You might think we're talking about the current global crisis, but we're actually referring to FIFA 22's Ultimate Team market. (Purcell, 2021, para. 1)

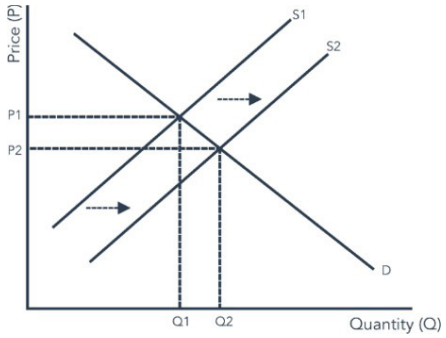
Of course, the community understands that market crashes offer a good opportunity to purchase players at low prices to resell them later.

Lesson 3 Discussion Questions:

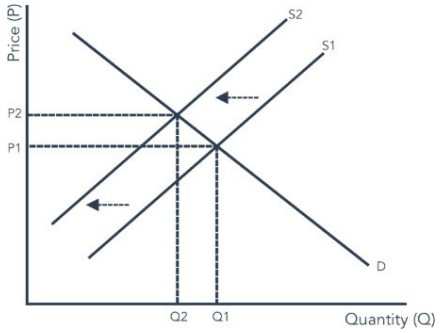
1. Suppose that Germany has just won this year's World Cup. Use supply and demand to illustrate what might happen in the transfer market in relation to the team's players. *(Students should tell you that the demand for players from this team will likely increase, meaning the demand curve shifts to the right. The result is that prices increase and the quantities exchanged increase.)*



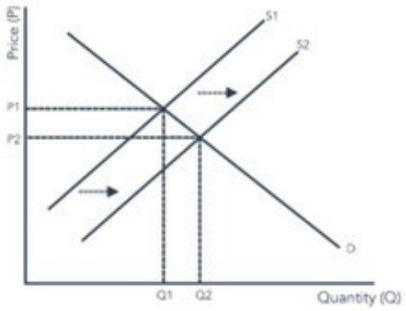
2. EA releases promo packs that have a surprisingly high number of ICON cards. Given this, how would you expect the price of ICON cards to be impacted in the transfer market? Use supply and demand to illustrate. *(Students should tell you that these player packs will be especially desirable to users, and for that reason, more will be purchased. Players that are not retained for a user's squad will be made available to others in the transfer market. This means the supply of ICON players increases, meaning the supply curve shifts to the right. As a result, prices decrease and the quantities exchanged increase. The relevant graph should look like the one below.)*



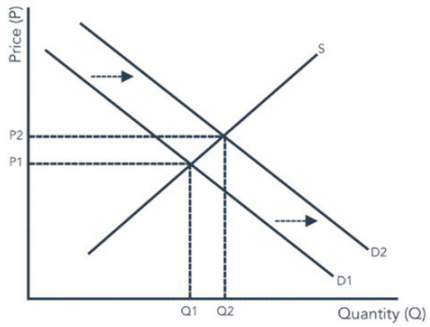
3. EA decides to make a certain player scarcer. Can you use supply and demand to illustrate the impact of this in the transfer market? *(Students should tell you that this is a supply decrease, so the supply curve shifts to the left. This makes the price of the player increase and the quantity exchanged decrease, keeping in mind that there are duplicate cards. The graph should look like the one below.)*



4. EA wants to decrease the price of a handful of ICON players that are selling for too high of a price. What strategy could EA use to achieve this? Can you use supply and demand to illustrate the scenario? *(Students should point to the fact that EA controls the supply of players and can inject more player cards into the game. They could, for example, have a promotion such as player packs with higher probabilities of obtaining ICON cards. More packs will be bought, infusing more ICON players into the game and then into the transfer market. This means supply increases and price decreases. The graph should look like the one below.)*



5. How do Squad Building Challenges (SBC) serve as a market manipulation? Give a hypothetical example and explain the impact on market prices that would result. Can you illustrate the scenario using supply and demand? *(Students will offer examples of the requirements for SBCs, and demand will go up for players with these attributes. For example, if more SBCs require players from AC Milan, then there will be an increased demand for these cards. A supply and demand graph should look like the one below, where demand shifts to the right. The result is that the price increases and the quantity exchanged of AC Milan player cards increases.)*



D. Lesson 4: Using Price Controls

In 2015, EA imposed price controls for players, both minimum and maximum. Thus, all players are subject to both a price ceiling and a price floor, thereby creating a range of prices at which transactions can be made. The move was in response to an illegal coin-selling activity that is still problematic today because it is reasonably easy to sell coins for real currency via FUT. This process of illegal coin selling is described below, as is the attempt to limit this practice through price controls.

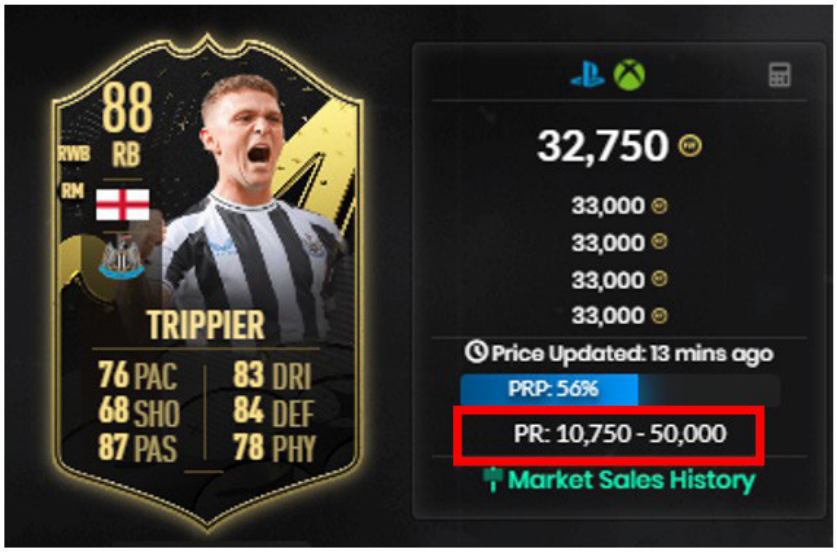
Consider this scenario. FUT user Kevin purchases coins from one of the many illegal coin sellers operating online and pays using US dollars. But now Kevin needs to receive the coins he has purchased. This happens in the transfer market. Kevin lists a worthless player on the market at a greatly inflated price, creating a situation that no FUT user would want to pursue. However, the illegal coin seller will purchase the player at an abnormally high price, and in that event, the coins are transferred to Kevin. The illegal transaction is complete at this point.

Imposing a price floor and a ceiling limits the opportunity for coin selling by making it harder (but not impossible) to enact the scheme described above. The process above requires that Kevin find a *worthless* player to serve as the medium for the transfer of the coins. The floor serves as a minimum below which the transfer market price cannot fall. Now, Kevin can find a cheaper player, but he cannot find a worthless player to use for this transaction. This is one constraint. The process above also required that the coin seller pay an absurdly high price for the player sold by Kevin so Kevin could gain the coins he purchased. But there is now a price ceiling on all players that makes it impossible for Kevin to list the worthless player at the ridiculously high price. This is a second constraint. The coin seller and Kevin can still exchange, but it is harder. The transaction requires that far more player cards be listed by Kevin and purchased by the coin seller since the range between minimum and maximum could be far smaller than the volume of coins purchased. The exchange can no longer be processed in one transaction.

From EA's perspective, price controls are necessary to combat illegal activity. But when introduced in the middle of the game as they were, the interference with prices was met with great resistance. Posts and comments still alive on the Internet referred to the "killing" of the

transfer market and even"Socialism."[24] Of course, as with any real-world price constraint, market participants might not like the price interference, as EA has more control than users might prefer. Additionally, sometimes the range is not set at the right level and users have to wait for them to be adjusted. For example, Kieran Trippier of Newcastle United had an EA-established price minimum of 10,750 on April 20, 2023, as seen in Figure 10 (outlined in red). If the bulk of users do not currently value the right back at this price, large volumes of cards will sit on the transfer market until EA adjustments are made. There may be prices below 10,750 coins at which buyers and sellers might otherwise agree to mutually beneficial exchanges. The same might be true at prices above the maximum of 50,000 coins. EA limits rational exchanges that might otherwise take place if not restricted by price controls.

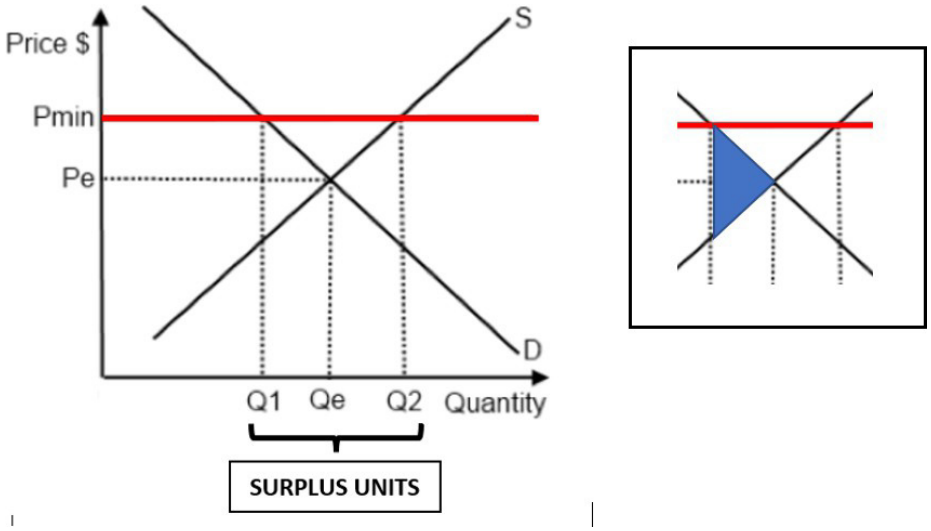
Figure 10. Price Minimum for Kieran Trippier



As seen in Figure 11, suppose a price floor has been imposed for Kieran Trippier at 10,750 (Pmin). But the market price was at something lower, such as 9K coins (Pe). The quantity demanded of cards would be Q1. But the quantity supplied would be Q2. This results in a surplus of cards in the transfer market of Q2-Q1. Rational exchanges of Qe-Q1, where willingness to pay exceeds willingness to accept, cannot be made. This results in a loss of both consumer and producer surplus known as a "dead-weight loss" (shaded in blue).

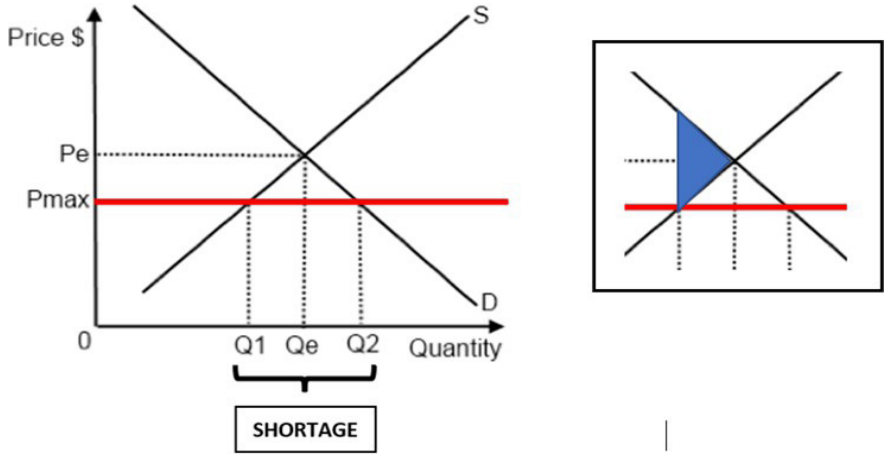
[24] See a fun exchange available at https://www.reddit.com/r/EASportsFC/comments/2ykor5/im_an_actual_university_professor_and_longtime/.

Figure 11. Potential Effect of a Price Minimum or Floor



By the same logic, if the maximum price, or ceiling, is set too low, there could be a shortage. In this case, the equilibrium price for Trippier is 50,000 coins (Pmax) but there are rational exchanges to be made at prices up to Pe, as seen in Figure 12. In this case, the quantity supplied is Q1, but the quantity demanded is higher at Q2. This results in a shortage of Q2-Q1. A similar dead- weight loss is created when rational exchanges are not made.

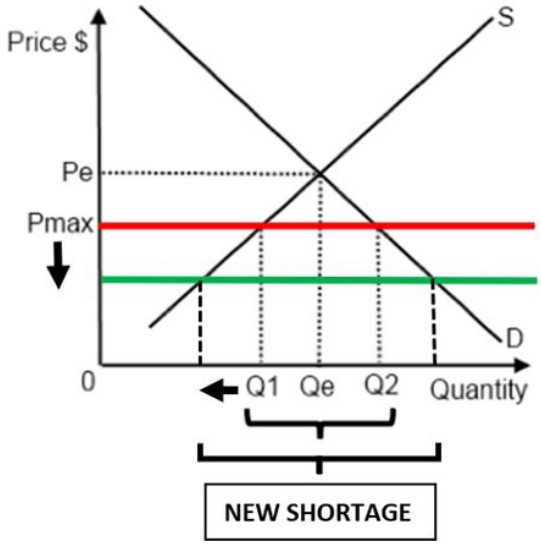
Figure 12. Potential Effect of a Maximum Price or Ceiling



A good example of a ceiling involves Benjamin Mendy, accused of sexual assault in 2022. As discussed above, the demand for Mendy cards increased with news of the accusation and prices went up. EA lowered the price ceiling to keep trade volumes low (Robinson, 2022), which resulted in a decrease in the quantity supplied.[25] Figure 13 illustrates this scenario. When the ceiling decreased from the red line to the green line, the quantity supplied decreased below Q1, resulting in a larger shortage. The strategy also prevented users from strategically trying to profit from the circumstances.

[25] EA also removed Mendy's card from the game by not allowing it to appear in card packs. Cards were still in circulation in the transfer market, but they were subject to the price constraints.

Figure 13. Lowering the Price Ceiling



Lesson 4 Discussion Questions:

1. What might cause EA to change the price floor for a player? *(EA might change the values of price floors if cards are not selling at the floor price. For example, suppose that EA puts a 1.39M coin minimum on retired player Ruud Gullit. If users do not feel that Gullit is worth 1.39M coins, then trades will not be made. At that point, EA will change the minimum to encourage trading. It is possible to see changes in price constraints at www.futbin.com/ priceranges.*

2. What might cause EA to change the price ceiling for a player? *(EA might change the values of price ceilings if cards are not selling at the ceiling price. For example, suppose that EA puts a 210K maximum on David Beckham, but users feel that he is worth more than this. At this point, trades will not occur and EA will have reason to raise the ceiling.)*

3. Suppose a soccer player is accused of bad behavior in a real-world incident and EA thinks that the price for this player's card will increase instead of decrease. If they do not want users to profit from this, what can EA do to manage the situation and reduce trading? *(Students might think back to an example like that of Benjamin Mendy, accused of sexual assault. As explained above, the price for Mendy increased, as opposed to decreasing. EA did not want users to profit from this situation. They decreased the price ceiling to make it less,desirable to sell Benjamin Mendy. For example, a player with a market price of 2.1M coins is unlikely to trade as frequently if EA were to lower the price ceiling to 1.5M.)*

E. Lesson 5: Unintended Consequences

The economic way of thinking includes considering unintended consequences, where actions or decisions have effects that are not anticipated or are unintended. There are some interesting unintended consequences related to FUT. The first is a result of FUT rules and the second is a social consequence related to gambling that has been addressed in some countries.

As students of economics learn, things that cannot be legally traded can often be obtained through black markets. Just as there is a black market for drugs or assault rifles, there have been black markets in FUT. First, per EA rules, neither coins nor players can be purchased for real money outside of the game. However, websites offering to sell coins are easily found

with a quick Google search. Also, reports conclude that black markets for players have existed (see Bliss, 2021 and Gomez, 2021). Finally, the black market has led to large-scale illegal operations, like the one in Ukraine, where more than 3,800 PS4 consoles were seized at a facility crypto- mining FUT currency (Grimshaw, 2021).

There are also concerns about elements of FUT that may constitute gambling. Purchasers of player packs are buying something with an unknown value (since exact contents are not usually known), which meets the criteria of a"loot box." Loot boxes are virtual collections of undisclosed items that can be used in games. They may give users a method for customizing characters, access to additional weapons, or features that might impact the ability to progress in the game. In 2019, the Belgium Gaming Commission announced a ban on these types of rewards and required that options for buying with real money be removed. Discussions communicate a concern for children, some citing research that connects loot boxes to problematic behavior concerning gambling (see Gerken, 2018; Kadish & Gatto, 2020; Kersley, 2021). The US has not banned loot boxes at the point of writing this paper.

Lesson 5 Discussion Questions:

1. What kind of situation might generate a market crash in FUT? Can you provide a hypothetical example to illustrate? *(Market crashes mostly stem from the demand for packs rising quickly. A market crash may be generated through multiple avenues such as high-level promo packs being made available, such as 50k coin preview packs mentioned above, high-rated players being released, such as Team of the Year players, that increases demand for packs or the cost of packs being lowered for a promotion such as "Black Friday" deals.)*

2. Why might it be a good strategy to purchase players in the transfer market after a market crash? For those who do purchase players at this point, what are likely their expectations related to the future price of these players? *(Students understand that buying low is a good strategy. Anyone who buys players after a market crash is expecting that prices will rebound. When they do, players can be sold in the transfer market and profits are earned.)*

3. Are there any other unintended consequences associated with gaming, in general, that you can think of? *(Students might discuss spending too much time on a device, getting less exercise, getting less fresh air, gaming as a substitute for social interaction, gaming as a distraction from doing their homework, etc.)*

4. There are some concerns about buying player packs in FUT because the contents are unknown. In this way, it is a "gamble." Some countries have even regulated this typeof game element, for example, by not allowing users to purchase with real money (via points). What are your thoughts on this element of FUT? Should player packs be restricted to purchases with coins only? *(Students will likely give a range of answers here. First, they might state that it would not matter to them since they are likely only using the coin currency and not real money. Second, they might point to the prices of player packs, something that is not overly expensive even if paying with real money via points. Packs might cost $1 for a 7.5K pack and $21 for a 125K pack, so the "gambles" do not involve large sums. Third, they might say that if someone understands the risks and weighs his potential benefits against the cost, and acts rationally, then it should be allowed. Fourth, students might say that the "gamble" is part of what makes the game exciting, and it is utility-enhancing, even when you don't get an ICON card in your pack. Finally, students might point to things such as lotteries, where people pay real money for a gamble and this is allowed.)*

6. How to Get Started with FIFA Ultimate Team

There is an overwhelmingly large amount of online content dispensing advice on how to get started and how to best earn virtual money in FUT. A good first step might be to review the starter guide, available at https://www.ea.com/games/fifa/fifa-22/news/fifa-22-ultimate-team-starter-guide. The primary author of this paper, a huge FUT player, also recommends the FIFA 23 Road to Glory episodes available on YouTube. There are also a host of online FIFA discussion forums where you can find answers to most of your questions.

7. Areas for Extension and Conclusion

FUT is a popular video game with high school and college-aged students. Without users realizing it, they are engaged in a sophisticated problem-based learning experience. As such, many students likely understand some basic economic concepts, even if they have not learned them in a classroom setting. It would be interesting to investigate this more fully, by pre-testing students to determine if those who are FUT players have a better general understanding of economic concepts than those who are not. Completing this at the high school level, before students receive instruction in economics, would be optimal and we encourage high school teachers with access to student populations to explore this idea further. More importantly, a creative instructor can tap into the enthusiasm that students have for FUT. In the high school setting, users enrolled in a basic economics course might be encouraged to develop a project related to the game. Given the rich source of data, it would be easy to track player prices over time. A student could also connect to real-world events, including good or bad performance on the field or behavior situations unrelated to performance (for example, accusations of assault). Students could correlate the prices of player cards to market manipulations that impact player values, such as Squad Building Challenges or price controls. For those who are more ambitious, a creative group of students could start a FIFA Ultimate Team Club at school, modeled similarly to an investment club—where soccer player commodities are researched and prices are tracked, students present their research and analysis to each other, and group investment decisions are made in the management of a single squad (purchases/sales of players, etc.). Of course, the primary author of this paper dreams about returning to the classroom, this time as an instructor, to teach a themed course on The Economics of FIFA. Ideas are limited only by the students' and instructors' creativity. We welcome our economics colleagues to expand on this topic by developing and sharing lessons for the implementation of these types of ideas.

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