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# Esports in Korea: A study on League of Legends team performances on the share price of owning corporations

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**Claremont Mckenna College**

**Esports in Korea: A study on League of Legends team performances on the  
share price of owning corporations**

**SUBMITTED TO  
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**AND**

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**For  
SENIOR THESIS**

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## **I. Acknowledgements**

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Finally, I would like to thank my family for always believing in me, no matter what. I hope that one day I can take care of you as well as you selflessly cared for me.

## **II. Abstract**

This thesis utilises event studies to measure the impact of League of Legends Esports teams on the share prices of their main sponsors and parent company, namely, the CJ Corporation, Korean Air, the Kt Corporation, Samsung Electronics Co Ltd and SK Telecom. Hypothetically, the success of a team, the acquisition of a major player or the beginning of a sponsorship would have a positive effect on the corporation reflected in an increase in the firm's daily share price returns. Results showed that this was indeed true especially for a team's success in large competitions such as the SBENU Summer Championships 2015 and the annual World Finals. As such, corporations can benefit from increasing their investments into the scene as a result of the quantifiable win-win scenario apparent for both firm and team.

### **III. Introduction**

In Korea many large corporations sponsor Esports teams to compete in various different video games under their brand. As a firm's share price is often a function of people's perception of a firm, it is hypothesized that positive events such as beginning a sponsorship or a team's success during a tournament or campaign season will increase the value of a firm's shares whilst a loss will negatively impact them.

Mackinlay (1997) demonstrates an event study by 'using financial market data' to 'measure the impact of a specific event on the value of a firm.' Given the nature of the market place, the market should quickly adjust to compensate for the effects of events, adjustments that will be immediately reflected in the firm's share prices. As such, the economic impact of an event can be measured by observing the changes in security prices.<sup>1</sup>

#### **The History of Esports and the rise of League of Legends**

In the words of Jack Ma, 'We're not investing in football, we're investing in entertainment...Alibaba's future strategies are health and entertainment'. And he is not the only one with that mind set. As the 21<sup>st</sup> century continues to mature, firms are seeing the value in new and somewhat untraditional industries that have grown in leaps and bounds in recent years. One of these industries is that of Esports s.

Electronic sports, otherwise known as Esports s is a form of mental sports where participants contend with each other in various different video games. Although to most this may seem like an unheard of branch of sports, competitive gaming has existed for much

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<sup>1</sup> Mackinlay, C. (1997, March). Event Studies in Economics and Finance. Retrieved April 18, 2016, from [http://www.jstor.org/stable/2729691?seq=1#page\\_scan\\_tab\\_contents](http://www.jstor.org/stable/2729691?seq=1#page_scan_tab_contents)

longer than one would expect. In 1980 Atari hosted the first video game tournament<sup>2</sup> featuring one of the most iconic retro games in existence, Space Invaders. Space Invaders is a simple game where the player controls a side scrolling spaceship strafing the earth's atmosphere at the base of the screen. The objective of the game is to shoot down rows of aliens as they descend towards Earth. The tournament featured 4 regional competitors, including the representative of Chicago who was being sponsored, were flown out to New York City to compete in the nationals of Space invaders. The tournament was won by Rebecca Heineman who took home a stand-up arcade cabinet. Heineman would go on to work on titles such as Bard's Tale and Dragon Wars and the video game industry would also continue to grow featuring competitions of increasing scale and prestige. 1997 featured what is considered by many to be the first real video game tournament with Dennis 'Thresh' Fong winning a Ferrari 328 GTS for his championship performance on the First Person Shooter (FPS) Quake'.

Launched in 2009, by Riot Games, League of Legends is a free to play spin off of the classic Multiplayer Online Battle Arena (MOBA) genre. Being the first and only title released by the firm, Riot Games was quick in taking advantage of the genre's inherently competitive and strategic gameplay and creating multiple championships and tournaments, attracting hundreds of thousands of players to their rapidly growing fan base. The championships became known as the League Championship Series (LCS). As Marc Merill, Co-founder and President of Riot Games said, "We lose a lot of money on Esports s. It's not something, currently, that we do to drive return or profitability...if we bring value to our players, they'll

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<sup>2</sup> Edwards, T. F. (2013, April 30). Esports s: A Brief History | Gaming | ADANAI. Retrieved March 12, 2016, from <http://adanai.com/Esports s/>



reward us with engagement.”<sup>3</sup> Riot generates a variety of different content outside the game itself, such as the weekly Championship matches, analysis and Esports articles.

## **The Game**

The basics of a MOBA is incredibly simple. The game features two teams of 5 players, each of whom controls a single champion. Waves of allied computer controlled minions are spawned down three lanes from each team’s home base in a relentless attempt to push the other team back and destroy the opposing nexus. The role of the player is to aid these minions in their push whether this is by destroying opposing champions, minions or turrets. Of course the game grows exponentially more complex when there are over 120 different champions to choose from. Each have their own unique mechanics and abilities that interact differently with various other champions and as such many hours of practice are required to master each Champion and all of its unique facets.

Furthermore, outside of the three lanes, other objectives are scattered throughout the arena in zones known as ‘the jungle’. Example include a Dragon that give bonus stats to your team, the blue sentinel which grants a single player faster mana regeneration and cool down reduction (a shorter minimum delay between spell casts) and the Baron, the end all of objectives that grants your team and minions bonus stats as well as a large amount of gold to spend on items. As such, controlling these objectives, synergising as a team and even selecting the best champions to execute your strategy turns an otherwise simple affair into an extremely strategically in-depth contest of skill and wits.

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<sup>3</sup> Tran, E. (2012, October 17). The Time Has Come: League of Legends' Impact on the Rapid Growth of Esports - IGN. Retrieved April 11, 2016, from <http://www.ign.com/articles/2012/10/17/the-time-has-come-riots-impact-on-the-rapid-growth-of-Esports>

Figure 1.0 below, provides a visual aid to help one better understand the basic layout of the map. The standard ‘meta game’ or, essentially the standard strategic setup of the 5 members of a team include one ‘top laner’ and one ‘mid laner’, each of whom will primarily defend the top and mid lane respectively. The bottom lane is held by two players, the ‘AD (Attack damage) Carry’ and his partner the ‘Support’. These players are supplemented by the final member of their roster, the ‘Jungler’ whom roams unseen through the jungle applying pressure to the enemy.

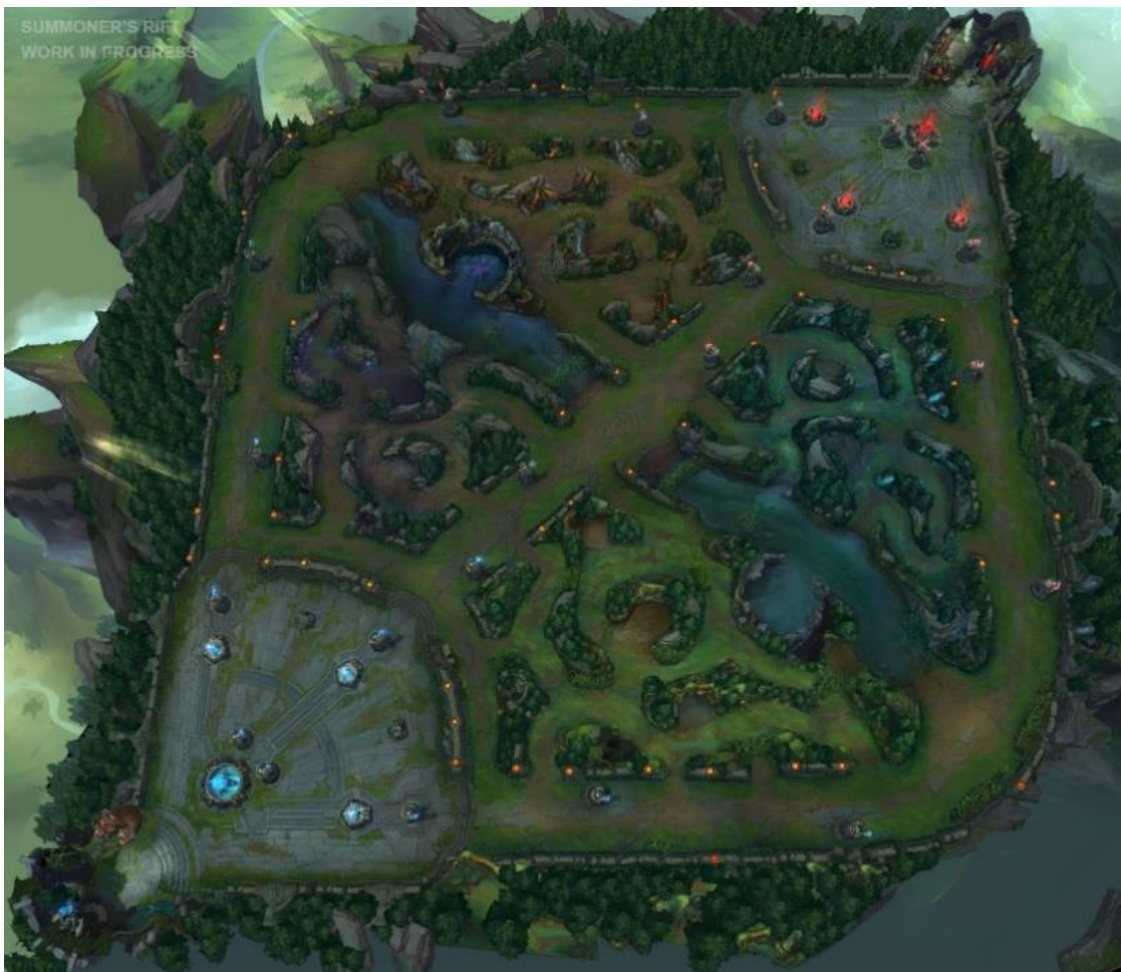


Figure 1.0<sup>4</sup>

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<sup>4</sup> Peterson, U. (2015, August 13). Lol summoner rift jungle map Powered by RebelMouse. Retrieved March 16, 2016, from <https://www.rebelmouse.com/uhassegopeterson/lol-summoner-rift-jungle-map-1294574973.html>

Not only is the game fun and entertaining for individuals to play but watching professional's play the game at the highest level is also incredibly rewarding as not only is it an insight into how one can improve oneself but professionals are capable of working together as a team or perform highly technical in game manoeuvres that the average individual could only ever dream of achieving.

Being free to play, the Riot's profits come from players purchasing an in game premium currency known as 'Riot Points' to unlock what is, for the most part, aesthetic content for their avatars. To maintain a level playing field premium currency is unable to purchase anything that will give a player a competitive edge over another. The low barriers to entry of a free to play game with a low skill floor, albeit, a high skill ceiling has made the game exceedingly accessible to the public.

### **The Competitive format and Korea**

Before the formation of the LCS, throughout the year, many different organisations such as the Esports s League (ESL) or Intel would organise tournaments where teams would earn circuit points. These points work as an impromptu league system as without the existence of a formal league format. Circuit points allowed Riot to objectively identify the best teams from around the world. At the conclusion of a season, Riot Games would invite the teams from all around the world to participate in the World Finals.

However, in 2012, Riot games launched fully professional gaming leagues around the world branding it the League Championship Series (LCS). Similar to English Football's Barclay's Premier League, teams will go head to head twice in a round robin format to claim the top position before being entered into the regional finals where the top teams are then invited to the World Championships. Similar to the UEFA Champions League of European

football, the top ranked teams from each region will contend with each other for the crown of the best team in the world.

Korea was one of the early adopters of the Esports trend and in the year 2000, became one of the first nations to officially licence pro gamers, create the Korean e-Sport Association (KESPA) as well as expand the Ministry of Culture, Sports and Tourism to encompass the growing industry of Korean Esports. Before long, televised Esports became increasingly common place with OnGameNet and MBCGame televising regular tournaments of then popular games such as StarCraft: Broodwar and Warcraft III: The Frozen Throne on 24-hour cable TV game channels. In March of 2012, the first iteration of Korea's first League of Legends Season began under the name 'OLYMPUS Champions Winter 2012-2013' where it is now known as the OnGameNet organised 'LoL Champions Korea' (LCK).

In Korea, Esports has, for a long time, been more than gaming. It has evolved into a way of life similar to Basketball in the United States or Football in South America. PC Bangs, or internet cafes are a staple throughout the nation as the South Korean youth immerse themselves in video games. To put simply, in 1999, Esports debuted on South Korean television whilst over 15 years later, this is still a novel concept in the west. Thus, it comes as no surprise that Korean culture has evolved around Esports to the extent that Korean teams are owned and sponsored by Large Korean organizations, operating essentially as a form of marketing for these companies.

At the end of the Season 4 World Championship, the West and China poured excessive amounts of money into recruiting Korean players, individuals who were viewed to be much more talented and having a better understanding of the game. As such, a large number of Korean players departed their home country, motivated by foreign money, creating what is known as the Great Korean Exodus. Amongst the departing players was the entirety

of the Season 4 winning roster as well as Season 3 world Champion ‘Piglet’. The large talent drain on Korea left many wondering if the age of Korean supremacy was at an end. Korea answered by crushing the Season 5 competition and setting up an all Korean grand final where SKT T1 triumphed 3-1 over the ROX tigers.

One of the largest reasons for Korea’s complete dominance over the scene is their advanced infrastructure. Whilst in the West, organizations are only beginning to embrace the benefits of gaming houses, coaches and creating the best possible environment for their players, over in Korea, a well-oiled machine continues to excel in what it has always excelled at, creating championship winning teams.<sup>5</sup>

The Korean competitive league distinguishes itself from the other regions by favouring a best of three format to determine the winner of a set. Featuring a round robin format, each team will play two best of three sets against all the other teams within a season. At the end of a season the top 5 teams are entered into the playoffs, a best of five gauntlet styled tournament where the fifth seed takes on the fourth, the winner will take on the third and so on and so forth. The winner of the playoffs are crowned the season champions and earn a spot at either the World Finals or the Mid-Season Invitational, depending on if it is the Summer or Spring Season respectively. Conversely, the bottom 2 teams of the regular season, the ninth and tenth place, enter relegations and have to compete for their spot in the top flight by playing in the redemption promotion tournament against the top two teams of the Challenger series, the best teams vying for a spot in the LCK.

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<sup>5</sup> L. (2015, Fall). Home Grown Talent, A Deeper Look at Korean Esports s Glory. Retrieved April 18, 2016, from <https://gamurs.com/articles/home-grown-talent-a-deeper-look-at-korean-Esports-s-glory>

In the League of Legends scene, Azubu Frost was arguably the first highly successful Korean team, qualifying for the grand finals of the Season 2 World Championships where they fell 3-1 to the Taipei Assassins, a match that boasted over 1.1 million concurrent viewers. Until that period of time, that was the most watched Esports event of all time.<sup>6</sup>

In 2013, Korea returned with a vengeance when SK Telecom T1 defeated the Chinese first seed Royal Club 3-0 in the Grand finals to claim the crown of World Champions. This feat was accomplished with a peak viewership of over 8.5 million concurrent individuals.<sup>7</sup> To put this into perspective, more people watched the 2013 grand final than the 2013 NBA finals or the 2013 World Series.<sup>8</sup>

Korea successfully defending their title in 2014 with Samsung White's victory and again in 2015 when SK Telecom T1 reclaimed their title in front of an ever growing number of fans. SK T crowned themselves two time champions in front of 334 million unique daily

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<sup>6</sup> Breslau, R. (2012, October 22). League of Legends Season 2 Championships most watched Esports event of all time. Retrieved April 18, 2016, from <http://www.gamespot.com/articles/league-of-legends-season-2-championships-most-watched-Esports-event-of-all-time/1100-6398663/>

<sup>7</sup> McCormick, R. (2013). 'League of Legends' Esports finals watched by 32 million people. Retrieved April 18, 2016, from <http://www.theverge.com/2013/11/19/5123724/league-of-legends-world-championship-32-million-viewers>

<sup>8</sup> Schwartz, N. (2014). More people watch Esports than watch the World Series or NBA Finals. Retrieved April 18, 2016, from <http://ftw.usatoday.com/2014/05/league-of-legends-popularity-world-series-nba>

impressions, essentially the number of unique viewers who tuned in every day over the course of the 5 week tournament.<sup>9</sup>

One of the largest differing factors between Western Esports and Korean Esports is that teams in the West are owned by exclusively gaming firms whilst Korean Esports teams are generally backed by a major sponsor the team represents. This is usually a large corporation with business interests outside of professional gaming, for example, Korean Air in the aviation industry. As such, this study is made possible by focussing on Korean teams owned by publicly traded corporations. This thesis will attempt to measure how the team's welfare, be it success or failure, will statistically significantly affect the firm's share prices.

Today, the LCK features a ten team league consisting of the Afreeca Freecs, CJ Entus, Jin Air Green Wings, Kongdoo Mosnter, kt Rolster, Longzhu, Rox Tigers, Samsung, SBENU Sonicboom and SK Telecom T1. These teams compete 4 days a week in the regular season at the Yongsan E-Sports Stadium in Seoul, South Korea, the historic Esports arena home to Esports for over a decade.

### **The Five Firms**

Five companies were identified to be publicly traded and to have consistently sponsored teams through the many seasons of the LCK. These traits are important as they allow access to historical data of publicly traded stocks and shares. These firms are as follows: the CJ Corporation, Korean Air, Samsung, SK Telecom, and the Kt Corporation.

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<sup>9</sup> Figueira, M. (2015). The viewership of the 2015 League of Legends World Championship toppled Riot's expectations. Retrieved April 18, 2016, from <http://www.lazygamer.net/genre/moba/viewership-2015-league-legends-world-championship-toppled-riots-expectations/>

SK telecom is a subsidiary of one of the largest conglomerates in South Korea. Founded on the 8<sup>th</sup> of April 1953 by the late Chey John-hyun, they changed their name in 1997 from the SunKyoung Group to the SK group. SK telecom is the largest wireless mobile phone service provider in South Korea. Created in 1984, as the Korea Mobile Telecommunications Services Corp., SK telecom grew to become the local market leader with a 50.5% share as of 2008.<sup>10</sup> Dong-Hyun Jang was appointed CEO and president of this subsidiary in March of 2015 joining Dae-Sik Cho who have been in command since March 2013. The 2014 annual report indicated an ‘annual revenue of KRW 17,163.8 billion, an operating profit of KRW 1,825.1 billion and net profit of KRW 1,799.3 billion’<sup>11</sup> Korea’s most successful team, SK Telecom entered the scene by purchasing the roster of Eat Sleep Game to form SKT T1 S before later forming their sister team, SKT T1 K. Following the restructuring banning the use of sister teams, led by their talismanic captain Lee “Faker” Sang-Hyeok, SKT reformed into the current reigning two time World Champions, SKT T1.

The CJ Corporation was founded by Lee Byung – Chui as ‘Cheil Jedang’ in August of 1953 as a sugar and flour manufacturer and a part of the Samsung Group. Breaking away in 1996 and changing its name to the CJ Co., Ltd in 2002, the CJ Corporation is currently under the stewardship of Gyeong Sik Son, their CEO as well as chairmen Lee Jay-Hyun and Sohn

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<sup>10</sup> Sun-young, L. (2008, May 1). Mobile operators pressured to cut call, message rates. Retrieved March 22, 2016, from <http://news.naver.com/main/read.nhn?mode=LPOD&mid=sec&sid1=&oid=044&aid=0000070179>

<sup>11</sup> SK Telecom Co., Ltd. Annual Report 2014. (2014). Retrieved March 22, 2016, from [http://asia.cdn.euroland.com/arinhhtml/KR-SKM/2014/AR\\_ENG\\_2014/index.htm](http://asia.cdn.euroland.com/arinhhtml/KR-SKM/2014/AR_ENG_2014/index.htm)



Kyung-Shik.<sup>12</sup> Now evolving to produce in the film as well as Television broadcasting industries, CJ have grown into much more than a simple flour mill. CJ finished 2014 with sales of KRW 11,701,797 million, an operating profit of KRW 579,930 million and a gross income of KRW 2,443,371,595 million.<sup>13</sup> On the 24<sup>th</sup> of May 2012, CJ became one of the first sponsors to acquire a League of Legends team, sponsoring both CJ Entus Blaze and CJ Entus Frost. Despite having fielded some of League of Legend's finest players such as MakNooN, Ganked By Mom and CloudTemplar, CJ has never reached the dizzying heights of their colleagues.

The KT Corporation was founded as Korea Telecom in the winter of 1981 as a public utility. The company was privatized after 20 years in May 2001 and changed its name to KT although still remaining a telecom firm. The current CEO Chang-Gyu Hwang was appointed in 2014. Being South Korea's first telephone company, KT controls 90% of the country's fixed-line subscribers and 45% of high speed internet users.<sup>14</sup> KT's financial report as of December 31 2015 showed profits of KRW 631,288 million, operating revenue of KRW 22,281,221 and an operating profit of KRW 1,292,944 million.<sup>15</sup> The KT Corporation sponsors a multi-gaming organization known as KT Rolster who entered the League of

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<sup>12</sup> So- Hyun, K. (2013, March 04). [Power Korea] CJ rises as beacon of Korean food, shopping, pop culture. Retrieved March 25, 2016, from <http://www.koreaherald.com/view.php?ud=20130304000759>

<sup>13</sup> Base Menu. (n.d.). Retrieved March 25, 2016, from <http://www.cj.co.kr/cj-en/company/investor/financial;jsessionid=5DA1AD0C0B31EF23FBCC215B5B30FFD8>

<sup>14</sup> NewsWorld .NOVEMBER 2006. (n.d.). Retrieved March 22, 2016, from <http://nw.newsworld.co.kr/cont/article2009/0905-60.htm>

<sup>15</sup> KT corporation and Subsidiaries Consolidated Financial Statements. (n.d.). Retrieved March 23, 2016, from <http://quote.morningstar.com/stock-filing/Other/2015/12/31/t.aspx?t=:KT>

Legends scene with sister team Kt Rolster A and Kt Rolster B. Renaming to the Arrows and Bullets respectively, before restructuring to be known simply as KT Rolster.

Samsung is a multinational conglomerate founded by Lee Byung-chull 78 years ago in 1938 by Lee Byung-Chui as a trading company. Over the years, the firm expanded into diversifying fields such as food processing, insurance and of course, the electronics industry. Samsung is one of the largest firms in South Korea, making up 17% of South Korea's GDP in 2013.<sup>16</sup> Samsung has been led by Chairman Lee Kun-hee since his reappointment in 2010. In 2015, Samsung boasted a gross profit of KRW 77,171,364 million, profits of KRW 19,060,144 million and revenues of KRW 200,653,482 million.<sup>17</sup> On the 7<sup>th</sup> of September 2013, Samsung entered the scene by acquiring and rebranding these the rosters of MVP Blue and MVP White into the sister teams Samsung White and Samsung Blue. The Samsung organization had their most successful year in 2014 with both teams qualifying for the world finals with Samsung White claiming the title after defeating Blue in the Semi-finals. Following the restructuring, Samsung is represented by Samsung Galaxy.

A low cost airline that begun operations in 2008, Jin Air, led by CEO Won Ma is a subsidiary of Korean Air. As Jin Air does not have publicly traded stocks, the study will

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<sup>16</sup> Daniel, J. (2013, April 4). Shell, Glencore, and Other Multinationals Dominate Their Home Economies. Retrieved March 23, 2016, from <http://www.bloomberg.com/news/articles/2013-04-04/shell-glencore-and-other-multinationals-dominate-their-home-economies>

<sup>17</sup> Consolidated Financial Statements of Samsung electronics Co., Ltd. And Subsidiaries (2016, February 25). Retrieved March 22, 2016, from [http://www.samsung.com/us/aboutsamsung/investor\\_relations/financial\\_information/downloads/2015/2015\\_con\\_quarter04\\_all.pdf](http://www.samsung.com/us/aboutsamsung/investor_relations/financial_information/downloads/2015/2015_con_quarter04_all.pdf)

instead incorporate Korean Air share prices to use as an approximate for Jin Air. In 1962, the South Korean Government founded Korean Air Lines as a rebranding of the Nationalized Korean National Airlines. Korean Air was privatized in 1969, becoming a part of the Hanjin Transport Group. Today, Korean Air is under the leadership of CEO Cho Yang Ho. Korean Air ended 2014 with a gross profit of KRW 1520204 million, an operating income of KRW 395,047 and sales of KRW 11,909,748 million.<sup>18</sup> On the 10<sup>th</sup> of September 2013, Jin Air obtained the rosters of Eat Sleep Game and Hood Good Day to form the Jin Air Green Wings Stealth and the Jin Air Green Wings Falcons. Despite their long presence in the league, the Green Wings have rarely challenged for the top position. However, as of late, this is like to change.

### **The Esports market**

In 2015, the Esports s market was estimated to be approximately \$612 Million in annual revenues with Asia, primarily China and Korea, dominating the industry controlling a 61% share.<sup>19</sup> This is a continually growing industry as viewership continues to rapidly grow

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<sup>18</sup> Korean Air Lines Co., Ltd. And It's Subsidiaries. (2015, March 19). Retrieved March 24, 2016, from [https://www.koreanair.com/content/dam/koreanair/en/documents/AboutKoreanAir/InvestorRelations/FinancialStatements/Korean\\_Air\\_2014\\_Financial\\_Statements.pdf](https://www.koreanair.com/content/dam/koreanair/en/documents/AboutKoreanAir/InvestorRelations/FinancialStatements/Korean_Air_2014_Financial_Statements.pdf)

<sup>19</sup> Dreunen, J. V. (2015, May). Esports s The Market Breif 2015. Retrieved March 13, 2016, from [http://www.snjv.org/wp-content/uploads/2015/05/Esports\\_s\\_Market\\_Brief\\_2015\\_SuperData\\_Research.pdf](http://www.snjv.org/wp-content/uploads/2015/05/Esports_s_Market_Brief_2015_SuperData_Research.pdf)

annually. While 2012 featured approximately 58 million viewers, 2013 74 million, 2014 boasted 89 million viewers globally.<sup>20</sup>

While one may expect prize money to be a large sum of these earnings especially as the League of Legends World Championships 2015 boasted prize pools of over \$2 million over half of which are claimed by the victor. However, to firms sponsoring their Esports teams, the prize money only represents a small portion of their earnings. In addition to the sale of merchandise, a large portion of profits are made from advertising and streaming. League of Legends garnered 20 Million viewers in their last World Championships and OnGamenet made \$203 million last year from adverts played during streams and subscription fees alone. A stream is the modern day equivalent of cable television. A company may choose to 'stream', that is to say, essentially broadcast, live events directly to computers all over the world. Viewing is generally free of charge but viewers may have the option to enjoy the stream at a higher quality for a small subscription fee. Furthermore, streams are not limited to large gaming events. Rather, anyone can stream a game on platforms such as Azubu or Twitch Tv. Firms and individuals make a profit from the subscriptions to their 'channel' or the optional donations individuals may make to freely support their favourite entertainers, otherwise known as 'streamers'.

Last year, corporate sponsorship in North America totalled \$111 million even including basketball legend Rick Fox purchasing his own team to compete in the Spring Split of the North American LCS. As such, due to massive the massive amounts of exposure the

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<sup>20</sup> Casselman, B. (2015, June 12). Resistance is futile: Esports s is massive ... and growing. Retrieved March 16, 2016, from [http://espn.go.com/espn/story/\\_/id/13059210/Esports-s-massive-industry-growing](http://espn.go.com/espn/story/_/id/13059210/Esports-s-massive-industry-growing)

game receives, it quickly rose to prominence rapidly growing an enormous player base to become the most played PC game in 2015<sup>21</sup>.

In Korea, Esports suffered a setback between 2008 and 2012 with crises such as the falling in interest of the then popular StarCraft Broodwar and the lack of interest in its successor, StarCraft 2. As such, the industry suffered greatly with broadcasters MBC Game discontinued in 2012 and OnGameNet managing to survive by fighting to stay afloat albeit eventually having a large portion of their Esports broadcasts removed off television broadcasts. Although Korea has yet to regain its title as the largest Esports economy in the world, they continue to recover at an incredible pace.

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<sup>21</sup> Most played PC games 2015 | Statistic. (2016). Retrieved March 13, 2016, from <http://www.statista.com/statistics/251222/most-played-pc-games/>

#### **IV. Prior Studies**

One of the first event studies linking the performance of a sports team to fluctuations in the market was done by Brown and Hartzell (2001).<sup>22</sup> The Boston Celtics Limited Partnership being publicly traded allows the results of the Celtic's basketball games to be correlated to the partnership's share returns, trading volume and volatility. Furthermore, an analysis was also done to link other events aside from the performance of the Celtics such as the construction of the Boston Garden or the installation of Rick Pitino as head coach.

It was discovered that investors, to a degree, utilize match results as a function of their trading habits. As returns are a function of game results, the effect of a loss far had a significant effect on stock prices, a trait wins do not emulate. This is not true during play-off games as both wins and losses matter. It was observed that, excluding play-off related income and expenses, every extra win in a year led to an increase in net revenue of \$0.06 per share the following year. Furthermore, volatility and volume of trading was far higher during the season than the off-season. One of the most significant results was the appointment of Rick Pitino as trading 'volume soars to about 70 times its daily average, and over the month of the even (approximately) the unit price rises \$2, or 8.2%.'<sup>23</sup> As such, these results show that for firms tied to sports, not only do on-field results matter but so do events related to the welfare of the team.

Coates and Humphreys (2008) examined the effects of on-field success by Japanese baseball teams in the Nippon Professional baseball league and the fluctuations of the share prices of owning corporations. Findings reinforced the idea that wins and losses are having an

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<sup>22</sup> Gregory Brown & Jay Hartzell, 2001. "Market reaction to public information: The atypical case of the Boston Celtics," *Journal of Financial Economics*, Elsevier, vol. 60, pages 333-370, May.

<sup>23</sup> Ibid Brown & Hartzell

effect on the owning corporation's share price returns. Furthermore, although a team's victory could positively impact a firm's share prices, the effects are not as large as a loss will negatively impact it.<sup>24</sup> What is more interesting is the result of unexpected wins and losses. That is to say, winning a game a team is expected to lose has a larger impact than winning a game a team was expected to lose, perhaps due to stock traders anticipating the result of a match and pricing stocks accordingly. However, in accordance with Brown and Hartzell, the effect of an unexpected loss, once again, outweighs that of an unexpected win.

Edmans, Garcia and Norli (2007) explored the relationship between stock market reactions and sudden changes in investor mood. A large sample of sports were selected, such as football, rugby and basketball as well as across regions such as North America, Europe and the Asia/Pacific region. Edmans et al. had the null hypothesis that the results of a game of football should not cause a statistically significant shift in the stock market. What was discovered was that there was, in fact, a significant market decline after losses. That is to say, events such as elimination from the World Cup will cause an abnormal stock return of -49 basis points. As well as this, across the entire sample size, sponsoring firms all attained abnormal returns of at least +0.36% on the date of the sponsorship announcement. Furthermore, the impact of a loss is more apparent in small stocks with more local investors as well as in important games such as the grand finals. It is important to note that sponsorship deals in the Asia/Pacific region might still be in the development phase, equaling only to approximately 50% of European investment or 30% of North American

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<sup>24</sup> Dennis Coates & Brad R. Humphreys, 2008. "The Effect of On-Field Success on Stock Prices: Evidence from Nippon Professional Baseball," Working Papers 0805, International Association of Sports Economists; North American Association of Sports Economists

investments.<sup>25</sup> Another observation made was that size of the abnormal return was inversely proportional to the size of the firm, this may be due to the fact that the effect of a sponsorship on a smaller firm is much more visible as there is potentially less external ‘noise’ influencing the data as well as a higher incremental awareness increase for smaller firms.

Kim’s thesis in 2013 is an event study that builds on this past research as a closer look was taken into Chinese and Korean football teams and how both positive and negative events pertaining to these teams affect the share prices of the owner corporations.<sup>26</sup> Kim’s thesis contributes to the growing literature that ownership of a football club extends far more than a matter of acquiring a symbol of wealth. The ownership of a football club has in fact, some degree of economic returns on investment reflected in the share price returns of owning corporations. Kim shows that investments into football teams can actually result in quantifiable win-win scenarios for both the club and for corporation. For example it was shown that there was a ‘positive and significant effect of the acquisition of Guangzhou Evergrande FC by Evergrande Group on March 1, 2010’.<sup>27</sup> Furthermore, following positive events such as Beijing Guoan FC claiming of the Chinese Super League title on the 31<sup>st</sup> of October 2009, share price returns of the winning team’s owners, the CITIC group, were

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<sup>25</sup> Edmans, A., Garcia, D., & Norli, Ø. (August 27). *The Journal of Finance* Volume 62, Issue 4, Article first published online: 14 AUG 2007. Retrieved April 24, 2016, from <http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6261.2007.01262.x/pdf>

<sup>26</sup> Kim, MJ Min Jun, "Money Craving in China and Korea: Football Club Performance and the Share Prices of Owing Corporations" (2015). CMC Senior Theses. Paper 1044. [http://scholarship.claremont.edu/cmc\\_theses/1044](http://scholarship.claremont.edu/cmc_theses/1044)

<sup>27</sup> Ibid, Money Craving in China and Korea: Football Club Performance and the Share Prices of Owing Corporations



abnormally higher than the baseline normal returns would suggest. Kim also highlighted the significance of player transfers in share price returns, citing examples such as the Ianis Zicu transfer to the Pohang Steelers FC on the 4<sup>th</sup> of January 2012 and the Darko Matic transfer to Beijing Guoan FC on the 4<sup>th</sup> of February 2009.

One specific type of event that this thesis will observe the effects of is a firm's announcement of sponsoring a new team. Reiser, Breur and Wicker (2012) show the effect of sponsorship announcements on the firm's value. Taking data from 1999 to 2010, an event study analyzed the data for a variety of different sports across various different regions. Results showed that sponsorship announcements have a positive effect on the sponsor's share price returns. However, the level of impact is not consistent throughout sport or region with abnormal returns are significantly higher for sponsorship deals with a national reach.<sup>28</sup>

In addition to this, the benefits of sponsorships are twofold. Kamakura (1995) analyzed the effects of announcements of celebrity endorsement contracts, finding results that on average indicate a positive effect on stock returns, implying that celebrity endorsements are a worthwhile investment in advertising.<sup>29</sup> With Esports being one of the pillars of Korean culture, Korean's have placed their Esports athletes in the same social standing as any athlete or movie celebrity would be in the West. As such, a firm has the double incentive to

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<sup>28</sup> Resier, M., Breuer, C., & Wicker, P. (2012). The Sponsorship Effect: Do Sport Sponsorship Announcements Impact the Firm Value of Sponsoring Firms? Retrieved April 24, 2016, from [http://www98.griffith.edu.au/dspace/bitstream/handle/10072/48706/82048\\_1.pdf?sequence=1](http://www98.griffith.edu.au/dspace/bitstream/handle/10072/48706/82048_1.pdf?sequence=1)

<sup>29</sup> Kamakura, W. A. (1995, July). The Economic Worth of Celebrity Endorsers: An Event Study Analysis. Retrieved April 24, 2016, from [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2424837](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2424837)

invest into a team as investors are not only rewarded with a positive increase in share price returns but also from the celebrity endorsements of these athletes.<sup>30</sup>

As the literature has shown, the effect of sponsorship deals have a quantifiable impact on the share prices of sponsoring companies, making itself apparent in the form of abnormal returns. Furthermore, the performance of an on field sports team have also been shown to directly correlate to the share price return of a sponsoring firm. As such, the question must be asked, will the same apply to a smaller yet, rapidly growing, industry such as Esports s?

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<sup>30</sup> Young, D. (2015, October 03). Why is Korea so good at Esports s? - Ebuyer Blog. Retrieved April 24, 2016, from [http://www.ebuyer.com/blog/2015/10/why-is-korea-so-good-at-Esports s/](http://www.ebuyer.com/blog/2015/10/why-is-korea-so-good-at-Esports-s/)

## **V. Methodology**

The efficient market hypothesis states that firms will have abnormal returns, that is to say, when events concerning the company and thus, their sponsored teams are both unforeseen and relevant to future performances, returns will be non-zero. Alternatively, the null hypothesis implies 0 correlation between a team's performance and the company's share prices meaning an event will not cause a statistically significant shift in a company's share price. Events such as the transfer of players, both the acquisition of new talent and the departure of a member of the roster have also been incorporated as these factors enhance the team's value as well as impact the teams expected future performances.

The efficient market hypothesis also assumes that all individuals have an equal amount of access to information resulting in stocks being perfectly priced based on all previous knowledge. As such, market efficiency will reflect the impact of Esports related events.

Of all the League of Legend teams competing in Korea, 5 firms that have been consistent in sponsoring a team (or in some cases, two teams) over lengthy periods of time. These firms are the CJ Corporation, Korean Air, Samsung, SK Telecom and The KT cooperation. For these firms events were identified that were likely to impact shares of the firm. These events will include victories and defeats in important matches, such as a final, winning a trophy and beginning a sponsorship contract. The event window (the minimum number of observations before and after the event date) and estimation window (the minimum number of observations before the event window) chosen are  $\pm 1$  days and 15 and 30 days respectively.

As the duration of a tournament rarely exceeds a month, an estimation window of between 15 and 30 days were selected so as to attempt to capture the effect of the

tournament's progression on investor's expectations in the days leading up the grand finals. As for the event window, although short horizon event windows are, relative to long horizon event windows, more powerful, this is only the case if abnormal returns are generated around the date of the event. Unfortunately in some cases, the effects of an event may not be fully captured within a short window. Nevertheless, a long horizon estimation window may be too loosely defined resulting in data that captures an excess of external noise, interfering and confounding the data. As such, for the case of Esports, a short event window was preferred. A difference of 1 day on either side of the event was selected as the share prices were expected to quickly adjust to the events with no lingering effects or aftershocks after the main event. Essentially, abnormal returns were expected to be concentrated around the event window, reinforcing the case of a short horizon event window.

As event studies observe abnormal returns due to the significance of prominent events, the normal performance of a specific parent company will be calculated using a market model designed by Eugene Fama in 1969. Assuming a linear relationship between the daily returns of the firm and the daily returns of the relevant value-weighted market index.

$$R_{ft} = \alpha_f + \beta_f R_{mkt} + e_{ft}.$$

Where  $R_{ft}$  is the daily return of the firm at time  $t$ ,  $\alpha_f$  is the intercept, and  $\beta_f$  is the coefficient of  $R_{mkt}$  which is the daily return of the value-weighted market index and  $e_{ft}$  is the error for firm  $f$ .

Brown and Warner (1980) discovered that 'beyond a simple, one factor market model, there is no evidence that more complicated methodologies convey any benefit. In fact, we

have presented evidence that more complicated methodologies can actually make the researcher worse off<sup>31</sup>.

This model has the daily return of the firm as the dependent variable and the daily return of the value-weighted market index as the independent variable. The benchmark normal return is the return around the event window that would have followed in the absence of any shift.

Abnormal returns are calculated by subtracting the estimated normal returns from the actual returns of the event date.

$$AR_{ft} = R_{ft} - \hat{\alpha}_t - \beta_f R_{mkt}.$$

Cumulative abnormal returns were then calculated by adding all the abnormal returns for the firm. If the null hypothesis holds in which the event has no significant impact on share price, the abnormal return should be normally determined with a 0 conditional mean and variance.

$$\frac{\sum AR_{ft}}{\delta AR_{ft}}$$

The significance of the abnormal returns were calculated by means of a t-test. This was obtained through the division of the cumulative abnormal return by the standard deviation of abnormal returns. The statistical significance will be determined at the 90%, 95%, and at the 99% level which corresponds to absolute statistical values of 1.64, 1.96, and 2.58.

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<sup>31</sup> Brown, S. J., & Warner, J. B. (1980, April). Measuring Security Price Performance. Retrieved April 25, 2016, from [http://www.simon.rochester.edu/fac/warner/Jerry\\_Papers/JFE-September\\_80.pdf](http://www.simon.rochester.edu/fac/warner/Jerry_Papers/JFE-September_80.pdf)

## **VI. Data**

### **Selected dates**

The dates selected for the study correlates to events that were thought to potentially be statistically significant and thus impact the average daily returns of the firm. Selected dates include the result of an important championship, the transfer of a talented player, sponsorship deals and impactful rulings made by Riot Games or Kesda. To maintain precision and confounding effects on the data, dates that had overlapping event windows were omitted.

The daily returns of the CJ Corporation, Korean Air, SK Telecom Co Ltd, Samsung Electronics Co Ltd, the Kt Corporation and the Korea Stock Exchange Kospi Index were obtained from the Bloomberg database. As the Jin Air Green Wings were sponsored by Jin Air, a subsidiary of Korean air the share prices of Korean air was as an approximate of Jin Air share prices as Jin Air are not publicly traded. Days in which no trading took place were omitted from the data set so as to ensure that the estimation windows do not include any zero observations.

Events selected for CJ, Jin Air, Kt, Samsung and SKT are below in tables 1.1, 1.2, 1.3, 1.4 and 1.5 respectively.

### **Player Transfers**

Another important aspect of the game is the purchase and sale of players to and from an organization. Some of the events selected below attempt to capture these transfers by marking the announcement of a departure or arrival of a player. Whilst there is currently very limited way in which to quantifiably judge a player's performance, these players were selected due to the high regard in which they are held by other professionals, the community and those knowledgeable in the scene.

The majority of players will be referred to by means of their In-Game-Name (IGN). However, occasionally their real names may be used in conjunction with their IGNs. For example: Yoon “Maknoon” Ha-Woon was the top laner for teams such as the Kt Arrows.

## **Rulings**

Throughout the existence of a formal professional League of Legends circuit, the ruling that distinguish itself in having shaken up the gaming world. On the 28<sup>th</sup> of October 2014 and largely impacted Korea in that a single organization is now limited to being able to field only a single team.<sup>32</sup>

For some Korean organizations, this meant merging their two sister teams into a main team with substitutes. For most Korean organizations, such as the then dominant Samsung who sent a quarter finalist and the eventual World Champion into the 2014 World Finals, this meant keeping as many of their best players as possible and getting as much as possible on the sales of their departing World finalists.<sup>33</sup> For the majority of these players, their future lay outside Korea in wealthier regions such as North America and China. These regions could afford a higher salary for these players, an important consideration given that for the average professional gamer, careers are short with very little to look forwards to after retirement. Furthermore, Korean talent is unquestionably higher than that of any other region, winning 3

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<sup>32</sup> Deesing, J. (2014, October 28). Korean Professional League Getting Overhauled. Retrieved March 30, 2016, from <http://www.redbull.com/us/en/Esports/stories/1331687251385/korean-professional-league-getting-overhauled>

<sup>33</sup> Deesing, J. (2014, November 05). Samsung White and Blue Torn Apart by Roster Swaps. Retrieved March 30, 2016, from <http://www.redbull.com/us/en/Esports/stories/1331688668203/samsung-white-and-blue-torn-apart-by-roster-swaps>

of the last 5 World Championships and even having an all Korean final in the last finals. This ruling became known as the Korean exodus with Korea losing the majority of its talent abroad.

Concerning the dates selected for the rule change, each team will have a second date associated with this rule change. The date where they announce their single consolidated roster. Unfortunately, for some teams, this date was unavailable as changes were slowly made to the roster over the course of one or two months.

### **Tournament placings**

A larger emphasis was placed on summer tournaments as spring and winter competitions held little to no significance whilst summer tournaments were often directly correlated to qualifications to the World Championships. The main criteria for tournaments selected was the prestige of the tournament, or its significance, for example, the Regional Finals, of which the victor will receive a seed and therefore a place in the World Finals. The event date used for the results was the final day of the tournament in which the observed team competed in. That is to say, the point in the competition where the team was either eliminated, or crowned the victor.



## VII. Results

The share price reactions of the CJ Corporation is presented below in Table 4.1. The Findings are divided into two categories, the significance of events with an estimation window of 15 days and an estimation window of 30 days. In both cases, the event window remained constant at one day on either side of the event.

With a 15 day Event Window, a number of events concerning the CJ corporations were statistically significant. Notably, the entrance of the company onto the Esports scene with the creation of their own roster on the 24<sup>th</sup> of May 2012 possesses a statistical significance at the 99%, as well as the acquisition of both Azubu rosters creating the sister teams CJ Entus Frost and CJ Entus Blaze on the 30<sup>th</sup> of November 2012 with a statistical significance at the 95% level. This is particularly significant as CJ was the first publicly traded firm, and one of the first firms to enter the market, setting the stage for the widespread growth Esports experiences today. Furthermore, this date has a positive coefficient signifying the positive reactions investors had to this event. Other player transfers that were statistically significant were the departures of Ambition and Coco as well as the acquisition Cain and Reach on the 30<sup>th</sup> of November 2012, a move viewed by many as the long needed overhaul CJ's long underperforming roster and coaching staff.

Statistically significant tournaments placements were the Season 2 Regional finals on the 12<sup>th</sup> of September 2012, IEM Season 7 on September 16<sup>th</sup> 2012, IEM season 9 on the 14<sup>th</sup> of March 2015 and the SBENU Champion Summer 2015. These events were all significant at the 90% level except for the IEM Season 9 tournament, which had a 95% confidence level. What makes IEM cologne unique is that it is one of first large scale international tournaments that CJ participated in, essentially, their first international brand exposure in the League of Legends scene. Their loss to European team Fnatic in the semi-finals of the tournament could

have been reflected in the negative coefficient of abnormal returns as many local investors likely anticipated a higher finish on CJs first international endeavours.

The results discovered with a 30 day estimation window mirrored the 15 day estimation windows except for a loss of confidence from a 95% level to a 90% level for the Season 2 Regional Finals, the SBENU champions' summer 2015 and the creation of CJ's first line-up. However, what is interesting to note is that, the rule enacted on the 28<sup>th</sup> of October 2014 disallowing the use of Sister Teams, and thus forcing CJ to merge their rosters into a single line-up, develops a statistical significance at the 90% level when tested with a 30 day estimation window. This is perhaps due to the fact that many perceived this change to have weakened the Korean region as Sister teams were an integral part of Korean infrastructure, allowing any team to practice new strategies behind closed doors, training against their counterparts, however, both of CJs rosters were significantly underperforming. This change perhaps allowed some to hope that CJ would acquire some new talent in the form of those to be displaced from their current rosters. Figure 1.1 shows the share price trends for the CJ Corporation.

Together, these results suggest that there could possibly be a non-definitive correlation between tournament placement, important roster changes and Esports team sponsorship onto the share prices of the corporation. Table 2.3 showcases the findings of events concerning the Jin Air Green Wings. Utilising an estimation window of 15 days, only three events were statistically significant. At the 90% confidence level, only the 6<sup>th</sup> place finish in the SBENU champions' summer 2015 on the 7<sup>th</sup> of August 2015 was significant. The 95% level highlights two events, The 2<sup>nd</sup> place finish in the 2015 Season Korea Regional finals on the 9<sup>th</sup> of May 2015 and the Rule Change disallowing the use of sister teams. The significance of the 2015 playoff success was likely highly significant due to the rather poor season run with Jin Air finishing in 6<sup>th</sup>, barely qualifying for the finals before

embarking on a miraculous run through the gauntlet, finally only falling at the Grand Finals and narrowly missing out on the last seed for the 2015 World Finals. Once again the rule change of the 28<sup>th</sup> October 2014 has a statistically significant impact on Korean Air share prices though, unlike the CJ case, this change has a negative coefficient.

Concerning the 30 day window, whilst the Rule change remains consistently significant, as does the 2<sup>nd</sup> place finish in the 2015 Korean Regional finals, however Jin Air's 6<sup>th</sup> place finish in the summer season of 2015 loses its significance. However, Jin Air's 5<sup>th</sup> place finish in the SK Telecom LTE-A LOL Masters 2014 became significant at the 90% level. However, what must be noted about the Jin Air results is that the effects of events on the price and shares of the Jin Air Green Wings will be diluted. This is as mentioned in my methodology, the share prices of Korean air were used to approximate share price reactions of Jin Air, a subsidiary of Korean air. Korean Air's historical share prices are shown in figure 1.2 below.

Table 2.5 shows the statistical significance of events concerning the Kt Corporation, applying a 15 day estimation window. The bullet's second place finish in the HOT6ix Champions Summer 2013 on the 31<sup>st</sup> of August 2013 was significant at the 95% confidence interval. Three events were significant at the 99% confidence interval, Kt's second place finish in the SBENU Champions Summer 2015 on the 29<sup>th</sup> of August 2015, the 5<sup>th</sup> place finish in the 2015 Season World Championship on the 18<sup>th</sup> of October 2015 and the rule change of the 28<sup>th</sup> of October 2014. When approximating the abnormal return with a 30 day estimation window, results were similar except that Kt's finish the HOT6ix Champions Summer 2013 became increasingly significant, rising to the 99% confidence level.

Once again, the rule change was statistically significant across both estimation windows. Kt's second place finish in the SBENU Champions summer 2015 was significant

as they completed the season having performed greater than expected. The effects of this season may have been diluted as the season implied a campaign lasting approximately 2 months. However, despite their strong showing at the Regional finals, their poor showing at the world championships, did not signify a negative share price shift as one would expect, showing a coefficient of 0.193. Figure 1.3 demonstrates the share price trends of the Kt Corporation.

Samsung's share prices were correlated to their various events in tables 2.7 and 2.8, representing a 15 and 30 day estimation window respectively. Observing the results of a 15 day estimation window, an observation that was surprising was the lack of statistical significance in Samsung White's crowning as world champions on the 19<sup>th</sup> of October 2014 whilst Samsung White's triumph over their sister team, Samsung Blue in the semi-finals of the same World Championship was significant to the 99% confidence level with a coefficient of 2.161. Samsung's 7<sup>th</sup> place finish in the SBENU Champions Summer 2015 was also statistically significant and has a positive coefficient despite having a low overall placement. The rule change was once again statistically significant at the 99% level with a positive coefficient as well as Samsung's announcement of their new roster on the 2<sup>nd</sup> of December 2014. However, unlike other sponsors, at this point in time, Samsung were sponsoring two of the top four teams in the world, coupled with the fact that the new line-up announced was relatively underwhelming, the positive coefficient is rather perplexing. For the 30 day estimation windows, much of the results were similar, barring the loss in significance of Samsung white's victory over their sister team Samsung Blue in the World Championship Semi-finals, which is now significant at the 95% level. Samsung electronics' share price returns are shown in figure 1.4.

Finally, SK telecom's results were presented above in tables 2.9 and 2.10 featuring estimation windows of 15 and 30 days respectively. Observing the results of a 15 day

estimation windows, although the formation of SKT's initial roster was not statistically significant, the creation of their second roster on the 28<sup>th</sup> of February 2013, SKT T1 K was statistically significant at the 99% level, albeit with a negative coefficient. This may be due to the fact that almost the entirety of K's roster was composed of amateurs, essentially unknown quantities in the scene. Though it must be noted that as time passed, these rookies quickly grew into their own, becoming some of the game's most iconic players. K's victory over the Korean Regional finals on the 7<sup>th</sup> of September and eventual crowning as World Champions on the 4<sup>th</sup> of October 2013 were also statistically significant, however, the World Finals victory had a negative coefficient was surprising especially considering how the team swept the competition,

Another event of statistical significance at the 99% level was the departure of Piglet and PoohManDu, two members of SKT's World Championship winning line-up, on the 17<sup>th</sup> of September 2014, where the team had a dreadful season, failing to even qualify for the World Championships and attempt a defence of their title. However, the departure of another member of their World Championship winning team 3 months later, Impact, was not statistically significant perhaps due to his relatively lacklustre play during the twilight of his time on the SKT roster. Finally, after a yearlong hiatus from the world stage, SKT reclaimed their title as World Champions on the 31<sup>st</sup> of October 2015, an event with a coefficient of 1.417 and a confidence level of 99%. Shortly after reclaiming the title, team captain, and widely regarded as the greatest League of Legends player of all time, Lee "Faker" Sang-hyeok re-signed his contract with SK telecom for the 2016 season. The event had a confidence level of 99% and a positive coefficient of 0.323 signifying investor's perception in the importance of retaining the iconic Korean superstar.

When observing events with a 30 day estimation window, the results were largely similar barring a loss in confidence concerning the departure of Piglet and PoohManDu on

the 17<sup>th</sup> of September 2014, an event now having only a 95% level of statistical significance. Furthermore, the coefficient of the K's victory during the 2013 World Championships not only remained consistent with a 99% confidence interval but also had a positive coefficient when regressed onto the share prices of SK telecom. Taking these two sets of results together, there appears to be a correlation between SKT's success, particularly at the absolute highest level of competition and the fluctuations of their share prices. Furthermore, relative to other teams, SKT share prices seem to be much more largely impacted by the transfer of players. This is likely as every impactful transfer involved a player of SKT's world championship winning roster in 2013.

It is important to note that the rule change on the 28<sup>th</sup> of October 2014 held no significance to the SKT organisation, perhaps due to the overwhelming success of SKT T1 K and their title as reigning world champions, the question of which players would stay and which would leave were rather apparent. SK telecom's historical share prices are shown in figure 1.5.

As a whole, the results indicate, an admittedly inconsistent, correlation between League of Legends events and the share prices of owning corporations. In particular, a large number of large scale international tournaments finishes were deemed to be statistically significant. Examples of this include CJ's 3-4<sup>th</sup> place finish at IEM 7, Samsung White's victory over sister team Samsung Blue during the 2014 World Championships or SKT's two World Championship victories. This is likely due to the perceived benefits of an increase in brand exposure for these Korean firms at a large scale international level.

The beginning of a sponsorship deal by a major corporation failed to yield many significant results with the exception of the CJ Corporation's foray into the League of Legends scene, likely as it is the first such venture into a rapidly growing, but unknown,

factor. Furthermore, player transfers seem to be held in the regard that only players of the highest quality seem to have any impact on share prices. Examples of this includes the resigning of “Faker” on SKT or the departure of Ambition and Coco from CJ Entus.

Surprisingly, some players such as Jin Air’s control midlaner ‘GBM” or Kt’s super star top laner Yoon “Maknoon” Ha-Woon did not impact share prices at a statistically significant level.

The rule change enacted on the 28<sup>th</sup> of October 2014 was a statistically significant impact at the 99% level for firms such as the Jin Air, the Kt Corporation and Samsung electronics. One reason for this is that during the 2014 season, all three of these teams were struggling to compete even at a domestic level. As such, the rule change opened up the possibility of stealing talent from other organizations so as to bolster their own rosters. Unfortunately, as reflected in CJ Entus’s share price returns, most of these players were poached by foreign regions such as China and the West who were simply willing to pay more for top tier talent. Kt Rolster’s new roster announcement following this change was also nearly statistically significant with a t value of -1.624 with a 15 day estimation window and a coefficient of -0.001. The rule change also had no impact on the share prices of SK telecom perhaps due to the loyalty of players such as “Faker” who reportedly declined contracts valued up to \$1 million by Chinese sides.<sup>34</sup>

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<sup>34</sup> P., & Jou, E. (2014). Top League of Legends Player Worth Close To \$1 Million. Retrieved April 25, 2016, from <http://kotaku.com/top-league-of-legends-player-worth-close-to-1-million-1653937237>

## VIII. Conclusion

The goal of this thesis was to provide a quantifiable measure of a League of legends team success, player transfers or, failure, on the share price of their main sponsoring corporation. As the results show, although for the most part, the transfer of players and the beginning of a sponsorship lacked statistical significance, there is indeed a relationship between these events and the owning corporation, particularly for increasingly prestigious tournaments involving not only an enormous prize pool but more importantly, the incredible amounts of viewing exposure events such as the World Championships or the SBENU Champions Summer. Furthermore, significant rule changes such as the limitation of allowing a firm to sponsor one team was, in most cases statistically significant, perhaps due to how it changed the landscape of Korean infrastructure within the game.

Moreover, results were in accordance with that of previous research, for example, Brown and Hartzell (2001) or Kim (2015) in showing that the performances of a sponsored team will have a statistically significant impact on the share price returns of a sponsoring corporation. While owning corporations benefit from both the brand exposure an Esports stream provides as well as the celebrity endorsements of the players on the team, these teams benefit from the monetary support and infrastructure the sponsoring corporations provide them. As such the common misconception that purchasing and running a sports team is merely a symbol of prestige, will hopefully begin to dispel as results of the Korean League of Legends Esports scene shows that owning corporations should consider increasing investment into the scene as there exists a quantifiable mutually beneficial scenario for both firm and team.



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## X. Appendix

### Events Selected

**Table 1.1 CJ Corporation Event Dates**

Event	Date	Implications
Begins sponsorship by creating their own roster	24/05/2012	
CJ finishes 9-16th in the Azubu The Champion Summer 2012	03/07/2012	KRW 4,000,000.00
CJ finishes 5th in the Season 2 Regional Finals Seoul	12/09/2012	No WC Seed
CJ finishes 3-4th in the IEM Season 7 Global Challenge Cologne	16/12/2012	4,500 US Dollars
Acquired both Azubu Rosters, Forming Blaze and Frost	04/02/2013	
Frost finishes 4th in the HOT6iX Champions Summer 2013	28/08/2013	KRW 18,000,000.00
CJ Entus is reformed into a single team	02/12/2014	
CJ finishes 5-6th in the IEM Season 9 - World Championship	14/03/2015	5,000 US Dollars
CJ finishes 4th in the SBENU Champions Summer 2015	19/08/2015	KRW 20,000,000.00
CJ finishes 3rd in the 2015 Season Korea Regional Finals	04/09/2015	No WC Seed
Ambition and Coco leave, Cain and Reach join	30/11/2015	
Rule Change, no sister teams	28/10/2014	

**Table 1.2 Jin Air (Korean Air) Event Dates**

Event	Date	Implications
Obtained Eat Sleep game and Hoon Good day's roster	10/07/2013	
Jin Air places 5th in the SK Telecom LTE-A LoL Masters 2014	08/06/2014	KRW 5,000,000.00
Falcons Place 9-16th in the HOT6iX Champions Summer 2014	11/07/2014	KRW 6,000,000.00
Stealths place 5-8th in the HOT6iX Champions Summer 2014	25/07/2014	KRW 6,000,000.00
Jin Air Places 6th in the SBENU Champions Summer 2015	07/08/2015	KRW 10,000,000.00
Jin Air Places 2nd in the 2015 Season Korea Regional Finals	05/09/2015	No WC Seed
GBM leaves	05/11/2015	
Jin Air Places 3-4th at IEMSeason X -San Jose	22/11/2015	5000 US Dollars
Chaser, Cpt Jack and TrAce leaves	29/11/2015	
Rule Change, no sister teams	28/10/2014	

**Table 1.3 Kt Corporation Event Dates**

<b>Event</b>	<b>Date</b>	<b>Implications</b>
Began sponsorship by creating Kt Rolster A and B	10/10/2012	
The Bullets finish 2nd in the HOT6iX Champions Summer 2013	31/08/2013	KRW 40,000,000.00
Bullets finish second in the Season 3 Korea Regional Finals	07/09/2013	No WC Seed
Maknoon Leaves	07/10/2013	
Kt bullets win IEM Season 8	16/03/2014	60,000 US dollars
Arrows win the HOT6iX Champions Summer 2014	16/08/2014	KRW 80,000,000.00
New team announced	02/12/2014	
Kt finishes 2nd in the SBENU Champions Summer 2015	29/08/2015	KRW 10,000,000.00
Kt finishes 1st in the 2015 Season Korea Regional Finals	05/09/2015	S5WC Qualifications
Kt finishes 5-8th in the 2015 Season World Championship	18/10/2015	75,000 US dollars
Mach, Fixer, Piccaboo and Edge leave	01/12/2015	
Rule Change, no sister teams	28/10/2014	

**Table 1.4 Samsung Electronics Event Dates**

<b>Event</b>	<b>Date</b>	<b>Implications</b>
Began sponsorship by acquiring MVP Ozone and MVP blue	07/09/2013	
White finishes 9-10th in the Season 3 World Championship	04/10/2013	45,000 US Dollars
White finishes 3rd in the HOT6ix Champions Summer 2014	06/08/2014	KRW 24,000,000.00
Blue finishes 2nd in the HOT6iX Champions Summer 2014	16/08/2014	KRW 40,000,000.00
Blue place 3-4th in the 2014 Season World Championship, losing to White	11/10/2014	150,000 US Dollars
White Wins the 2014 World Championship	19/10/2014	1,000,000 US Dollars
New roster is released. Rather underwhelming.	02/12/2014	
Samsung Qualify through the 2015 Champions Summer Promotion	16/05/2015	Requalify into the LCK
Samsung finishes 7th in the SBENU Champions Summer 2015	13/08/2015	KRW 10,000,000.00
Samsung finishes 9-14th in the 2015 LoL KeSPA Cup	07/11/2015	
Rule Change, no sister teams	28/10/2014	

**Table 1.5 SK Telecom Event Dates**

<b>Event</b>	<b>Date</b>	<b>Implications</b>
Begins sponsorship by acquiring the roster of Eat Sleep Game, forming S	13/12/2012	
Formed a second Roster, K	28/02/2013	
S finishes 3-4th in the IEM Season 7 - World Championship	09/03/2013	13,500 US Dollars
K Wins the Season 3 Korea Regional Finals	07/09/2013	S3WC Qualifications
K Wins Worlds 2013	04/10/2013	1,000,000 US Dollars
K Wins the RIOT All-Star Invitational 2014	11/05/2014	50,000 US Dollars
K Finishes 2nd in the 2014 Season Korea Regional Finals	30/08/2014	Does not qualify for worlds
Piglet and PoohManDu are released	17/09/2014	
Impact Leaves	19/12/2014	
T1 finish in 1st place in the SBENU Champions Summer 2015	29/08/2015	KRW 100,000,000.00
T1 Wins Worlds 2015	31/10/2015	1,000,000 US Dollars
Faker resigns his contract with SKT	16/11/15	
Rule Change, no sister teams	28/10/2014	



## Results

### Key

Statistical significance: 90%	Statistical Significance: 95%	Statistical Significance 99%
Greater than 1.64	Greater than 1.96	Greater than 2.58

### The CJ Corporation

Table 2.1 CJ Corporation, Event Window $\pm 1$ , Estimation Window 15 days			
Event	Date	Coef.	t
Begins sponsorship by creating their own roster	24/05/2012	0.381	3.140
CJ finishes 9-16th in the Azubu The Champion Summer 2012	03/07/2012	0.243	0.632
CJ finishes 5th in the Season 2 Regional Finals Seoul	12/09/2012	0.132	2.182
CJ finishes 3-4th in the IEM Season 7 - Global Challenge Cologne	16/12/2012	-0.596	-2.394
Acquired both Azubu Rosters, Forming Blaze and Frost	04/02/2013	0.366	2.168
Frost finishes 4th in the HOT6iX Champions Summer 2013	28/08/2013	1.412	0.230
CJ entus is reformed into a single team	02/12/2014	1.596	1.548
CJ finishes 5-6th in the IEM Season 9 - World Championship	14/03/2015	-1.104	-9.113
CJ finishes 4th in the SBENU Champions Summer 2015	19/08/2015	1.129	1.984
CJ finishes 3rd in the 2015 Season Korea Regional Finals	04/09/2015	0.843	0.454
Ambition and Coco leave, Cain and Reach join	30/11/2015	1.752	6.810
Rule Change, no sister teams	28/10/2014	0.006	1.150

Table 2.2 CJ Corporation, Event Window $\pm 1$ , Estimation Window 30 days			
Event	Date	Coef.	t
Begins sponsorship by creating their own roster	24/05/2012	0.272	2.409
CJ finishes 9-16th in the Azubu The Champion Summer 2012	03/07/2012	0.413	0.784
CJ finishes 5th in the Season 2 Regional Finals Seoul	12/09/2012	0.222	1.649
CJ finishes 3-4th in the IEM Season 7 - Global Challenge Cologne	16/12/2012	-0.566	-2.376
Acquired both Azubu Rosters, Forming Blaze and Frost	04/02/2013	0.603	2.245
Frost finishes 4th in the HOT6iX Champions Summer 2013	28/08/2013	1.266	0.192
CJ entus is reformed into a single team	02/12/2014	1.599	1.547
CJ finishes 5-6th in the IEM Season 9 - World Championship	14/03/2015	0.030	3.706
CJ finishes 4th in the SBENU Champions Summer 2015	19/08/2015	1.290	1.881
CJ finishes 3rd in the 2015 Season Korea Regional Finals	04/09/2015	1.016	0.430
Ambition and Coco leave, Cain and Reach join	30/11/2015	1.835	8.054
Rule Change, no sister teams	28/10/2014	1.653	1.662

## Korean Air

**Table 2.3 Jin Air (Korean Air), Event Window  $\pm 1$ , Estimation Window 15 days**

Event	Date	Coef.	t
Obtained Eat Sleep game and Hoon Good day's roster	10/07/2013	0.604	0.444
Jin Air places 5th in the SK Telecom LTE-A LoL Masters 2014	08/06/2014	0.860	1.859
Falcons Place 9-16th in the HOT6iX Champions Summer 2014	11/07/2014	0.330	0.182
Stealths place 5-8th in the HOT6iX Champions Summer 2014	25/07/2014	0.582	0.524
Jin Air Places 6th in the SBENU Champions Summer 2015	07/08/2015	3.077	1.936
Jin Air Places 2nd in the 2015 Season Korea Regional Finals	05/09/2015	1.424	4.590
GBM leaves	05/11/2015	0.923	0.223
Jin Air Places 3-4th at IEMSeason X -San Jose	22/11/2015	1.729	1.501
Chaser, Cpt Jack and TrAce leaves	29/11/2015	1.374	0.130
Rule Change, no sister teams	28/10/2014	-0.251	-3.645

**Table 2.4: Jin Air (Korean Air), Event Window  $\pm 1$ , Estimation Window 30 days**

Event	Date	Coef.	t
Obtained Eat Sleep game and Hoon Good day's roster	10/07/2013	0.806	0.052
Jin Air places 5th in the SK Telecom LTE-A LoL Masters 2014	08/06/2014	0.964	1.745
Falcons Place 9-16th in the HOT6iX Champions Summer 2014	11/07/2014	0.462	0.168
Stealths place 5-8th in the HOT6iX Champions Summer 2014	25/07/2014	0.789	0.354
Jin Air Places 6th in the SBENU Champions Summer 2015	07/08/2015	1.648	1.485
Jin Air Places 2nd in the 2015 Season Korea Regional Finals	05/09/2015	1.853	5.824
GBM leaves	05/11/2015	0.458	0.013
Jin Air Places 3-4th at IEMSeason X -San Jose	22/11/2015	1.488	1.398
Chaser, Cpt Jack and TrAce leaves	29/11/2015	1.447	0.132
Rule Change, no sister teams	28/10/2014	0.247	3.923

## The Kt Corporation

**Table 2.5: Kt Corporation, Event Window  $\pm 1$ , Estimation Window 15 Days**

Event	Date	Coef.	t
Began sponsorship by creating Kt Rolster A and B	10/10/2012	0.074	0.556
The Bullets finish second in the HOT6iX Champions Summer 2013	31/08/2013	0.356	2.281
Bullets finish second in the Season 3 Korea Regional Finals	07/09/2013	0.581	1.038
Maknoon Leaves	07/10/2013	-0.547	-0.376
Kt bullets win IEM Season 8	16/03/2014	0.840	0.732
Arrows win the HOT6iX Champions Summer 2014	16/08/2014	1.246	1.079
New team announced	02/12/2014	-0.001	-1.624
Kt finishes in 2nd Place in the SBENU Champions Summer 2015	29/08/2015	0.549	5.585
Kt finishes in 1st Place in the 2015 Season Korea Regional Finals	05/09/2015	0.519	0.896
Kt finishes 5-8th in the 2015 Season World Championship	18/10/2015	0.363	2.867
Mach, Fixer, Piccaboo and Edge leave	01/12/2015	0.524	0.136
Rule Change, no sister teams	28/10/2014	0.594	2.692

**Table 2.6: Kt Corporation, Event Window  $\pm 1$ , Estimation Window 30 Days**

Event	Date	Coef.	t
Began sponsorship by creating Kt Rolster A and B	10/10/2012	0.132	0.444
The Bullets finish second in the HOT6iX Champions Summer 2013	31/08/2013	0.118	2.808
Bullets finish second in the Season 3 Korea Regional Finals	07/09/2013	0.392	0.799
Maknoon Leaves	07/10/2013	0.252	0.241
Kt bullets win IEM Season 8	16/03/2014	0.337	0.589
Arrows win the HOT6iX Champions Summer 2014	16/08/2014	1.154	1.113
New team announced	02/12/2014	0.069	1.604
Kt finishes in 2nd Place in the SBENU Champions Summer 2015	29/08/2015	0.414	8.391
Kt finishes in 1st Place in the 2015 Season Korea Regional Finals	05/09/2015	0.440	0.784
Kt finishes 5-8th in the 2015 Season World Championship	18/10/2015	0.193	4.173
Mach, Fixer, Piccaboo and Edge leave	01/12/2015	0.617	0.190
Rule Change, no sister teams	28/10/2014	0.405	3.446

## Samsung Electronics

**Table 2.7: Samsung Electronics, Event Window  $\pm 1$ , Estimation Window 15 Days**

Event	Date	Coef.	t
Began sponsorship by acquiring the rosters of MVP ozone and blue	07/09/2013	2.161	0.126
White finishes 9-10th in the Season 3 World Championship	04/10/2013	1.657	0.597
White finishes 3rd in the HOT6ix Champions Summer 2014	06/08/2014	0.523	0.946
Blue finishes 2nd in the HOT6iX Champions Summer 2014	16/08/2014	0.893	0.273
Blue place 3-4th in the 2014 Season World Championship, losing to White	11/10/2014	2.047	3.246
White Wins the 2014 World Championship	19/10/2014	2.015	0.197
New roster is released. Rather underwhelming.	02/12/2014	1.599	1.783
Samsung Qualify through the 2015 Champions Summer Promotion	16/05/2015	2.460	0.156
Samsung finishes 7th in the SBENU Champions Summer 2015	13/08/2015	2.025	3.022
Samsung finishes 9-14th in the 2015 LoL KeSPA Cup	07/11/2015	1.560	0.441
Rule Change, no sister teams	28/10/2014	1.795	3.330

**Table 2.8: Samsung Electronics, Event Window  $\pm 1$ , Estimation Window 30 Days**

Event	Date	Coef.	t
Began sponsorship by acquiring the rosters of MVP ozone and blue	07/09/2013	1.402	0.235
White finishes 9-10th in the Season 3 World Championship	04/10/2013	1.572	0.454
White finishes 3rd in the HOT6ix Champions Summer 2014	06/08/2014	1.289	1.172
Blue finishes 2nd in the HOT6iX Champions Summer 2014	16/08/2014	1.030	0.215
Blue place 3-4th in the 2014 Season World Championship, losing to White	11/10/2014	0.557	2.054
White Wins the 2014 World Championship	19/10/2014	1.616	0.176
New roster is released. Rather underwhelming.	02/12/2014	1.603	1.780
Samsung Qualify through the 2015 Champions Summer Promotion	16/05/2015	2.454	0.154
Samsung finishes 7th in the SBENU Champions Summer 2015	13/08/2015	1.761	3.477
Samsung finishes 9-14th in the 2015 LoL KeSPA Cup	07/11/2015	1.688	0.537
Rule Change, no sister teams	28/10/2014	1.720	3.267

## SK Telecom

**Table 2.09: SK Telecom, Event Window  $\pm 1$ , Estimation Window 15 Days**

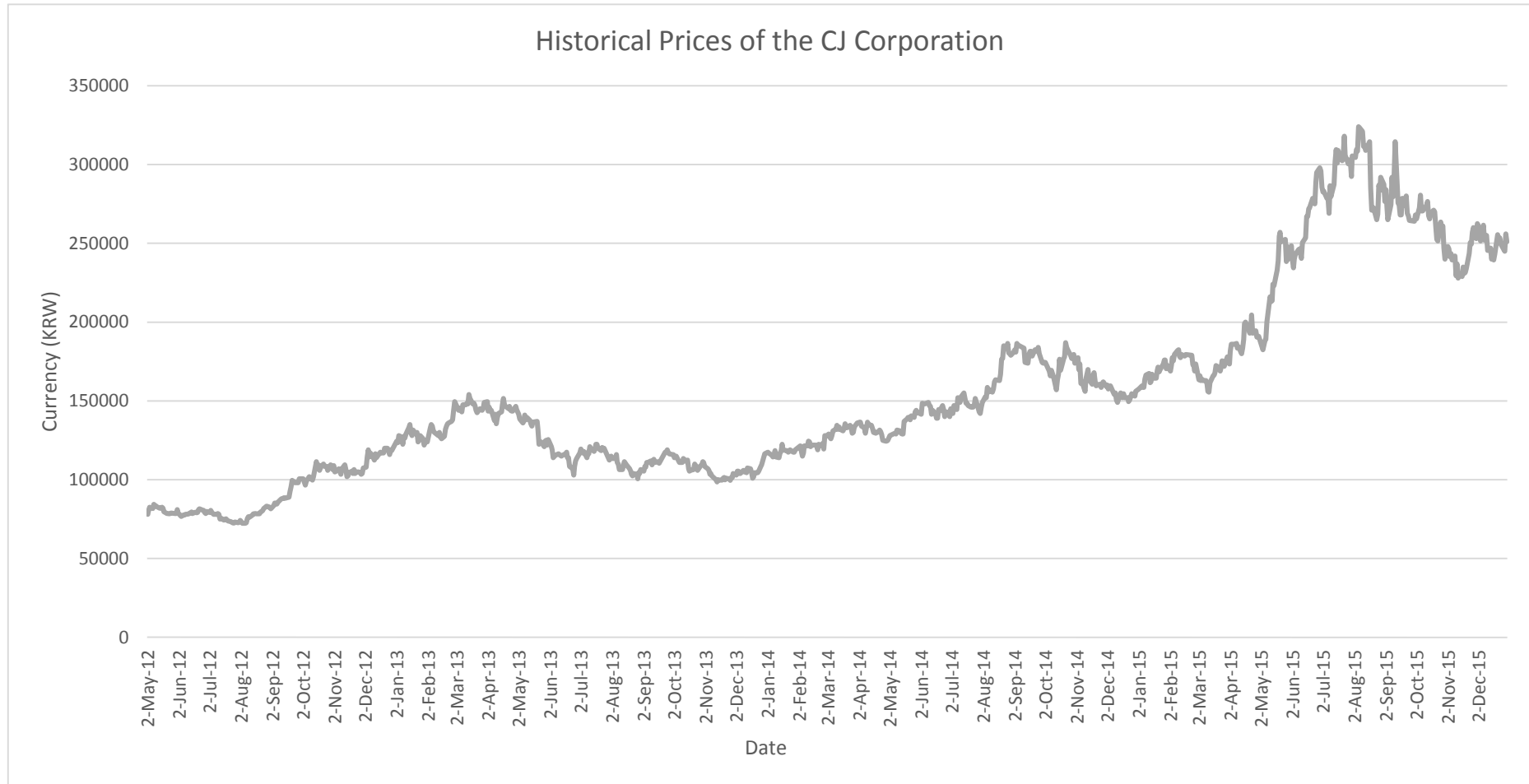
Event	Date	Coef	t
Began sponsorship by acquiring the roster of Eat Sleep Game, forming S	13/12/2012	-0.219	0.974
Formed a second Roster, K	28/02/2013	-0.660	3.986
S finishes 3-4th in the IEM Season 7 - World Championship	09/03/2013	-0.195	-0.721
K Wins the Season 3 Korea Regional Finals	07/09/2013	0.658	-4.064
K Wins Worlds 2013	04/10/2013	-0.422	3.341
K Wins the RIOT All-Star Invitational 2014	11/05/2014	1.226	-1.290
K Finishes 2nd in the 2014 Season Korea Regional Finals	30/08/2014	0.927	0.660
Piglet and PoohManDu are released	17/09/2014	1.193	-2.646
Impact Leaves	19/12/2014	0.805	-1.385
T1 finish in 1st place in the SBENU Champions Summer 2015	29/08/2015	0.046	1.265
T1 Wins Worlds 2015	31/10/2015	1.417	-2.870
Faker resigns his contract with SKT	15/11/2015	0.323	5.162
Rule Change, no sister teams	28/10/2014	0.303	0.388

**Table 2.10: SK Telecom, Event Window  $\pm 1$ , Estimation Window 30 Days**

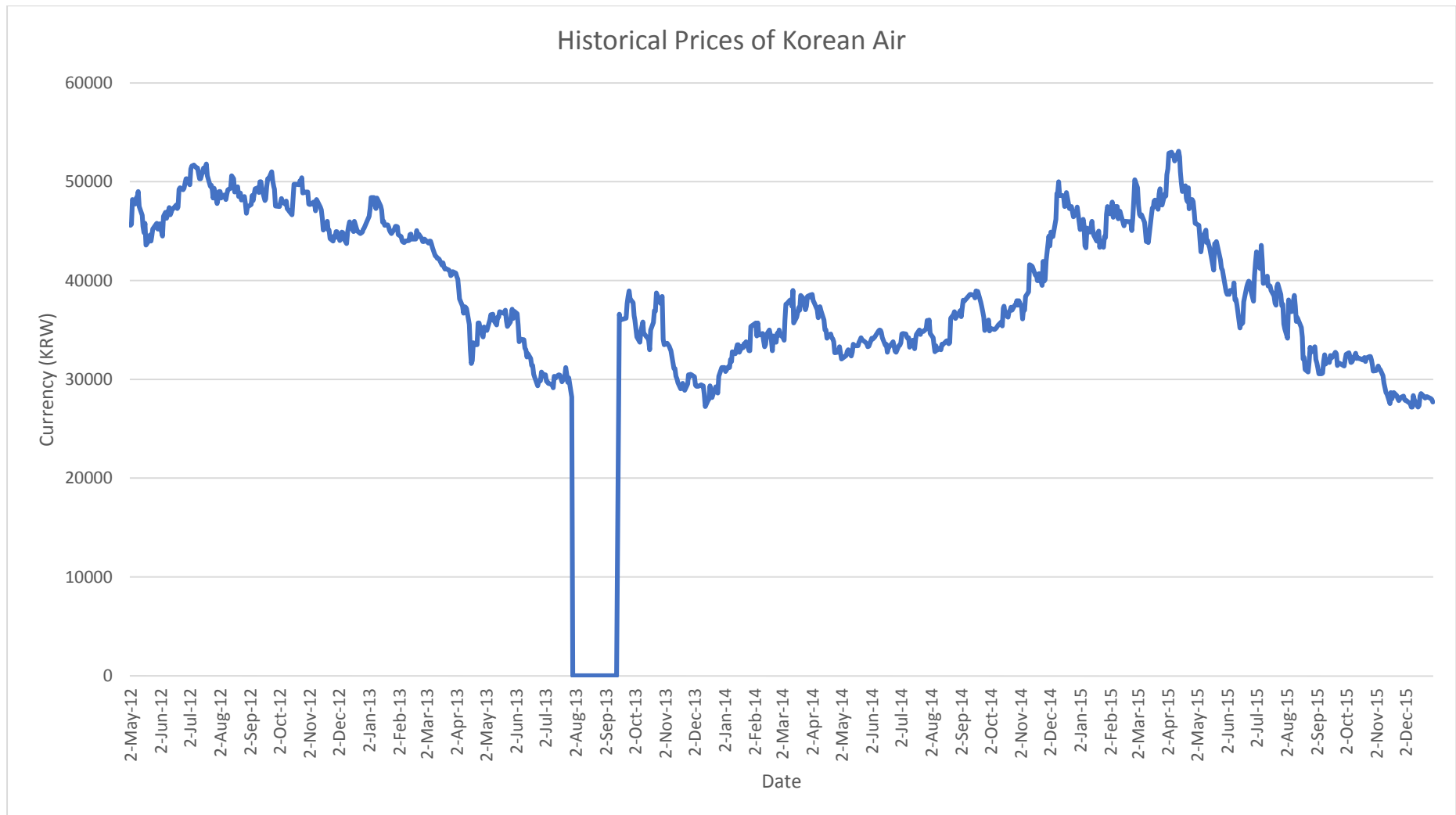
Event	Date	Coef.	t
Began sponsorship by acquiring the roster of Eat Sleep Game, forming S	13/12/2012	-0.011	0.682
Formed a second Roster, K	28/02/2013	-0.589	4.226
S finishes 3-4th in the IEM Season 7 - World Championship	09/03/2013	0.460	-0.334
K Wins the Season 3 Korea Regional Finals	07/09/2013	0.495	-3.537
K Wins Worlds 2013	04/10/2013	0.344	3.427
K Wins the RIOT All-Star Invitational 2014	11/05/2014	0.945	-1.074
K Finishes 2nd in the 2014 Season Korea Regional Finals	30/08/2014	1.222	0.796
Piglet and PoohManDu are released	17/09/2014	1.327	-2.540
Impact Leaves	19/12/2014	1.054	-1.114
T1 finish in 1st place in the SBENU Champions Summer 2015	29/08/2015	-0.078	0.990
T1 Wins Worlds 2015	31/10/2015	0.703	-3.051
Faker resigns his contract with SKT	15/11/2015	0.611	6.973
Rule Change, no sister teams	28/10/2014	0.020	0.606

## Graphs

**Figure 2.1, The CJ Corporation**

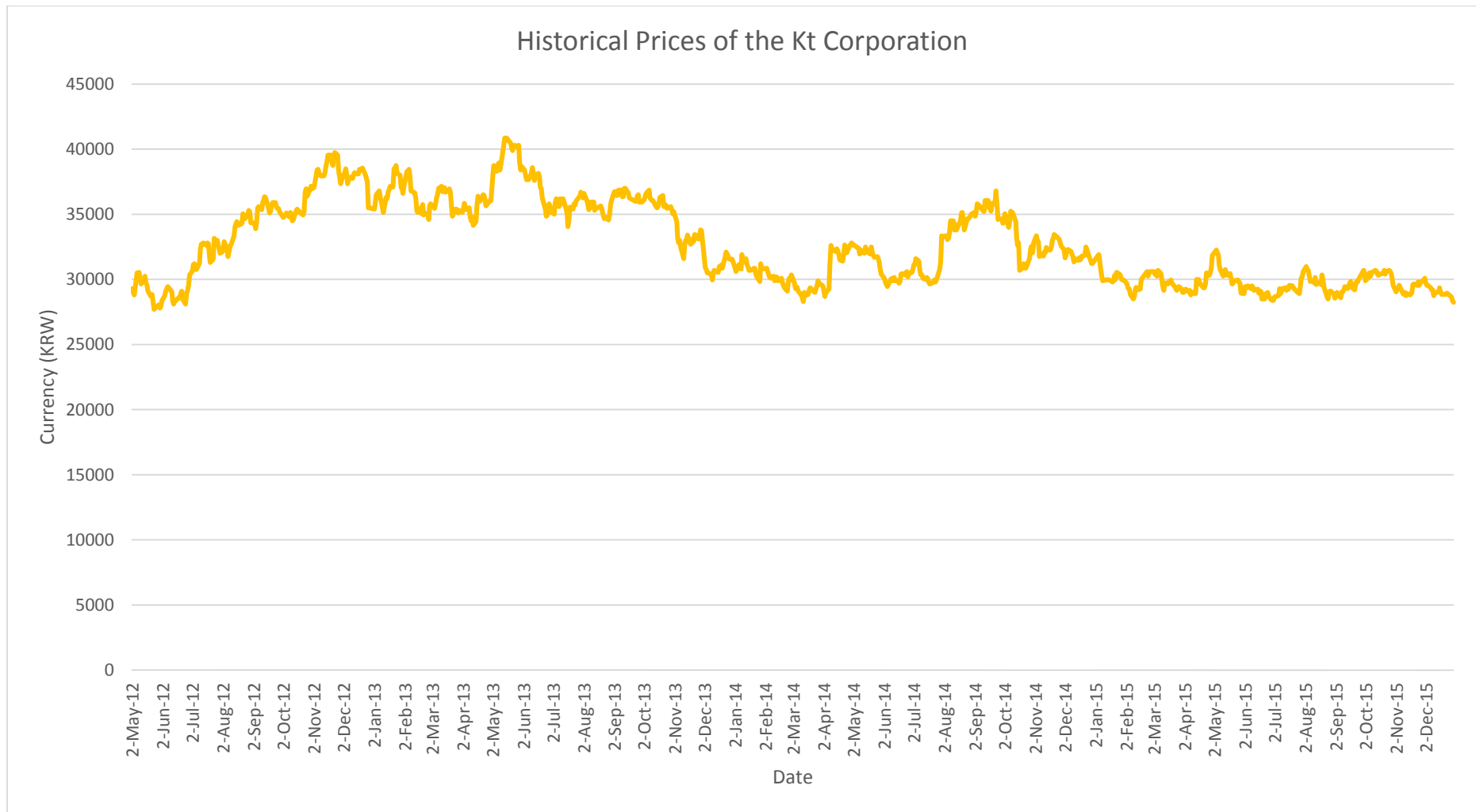


**Figure 2.2, Korean Air**



\*From July 30 2013 until September 13 2013, the stocks of Korean Air were delisted.

**Figure 2.3, The Kt Corporation**





**Figure 2.4, Samsung Electronics**

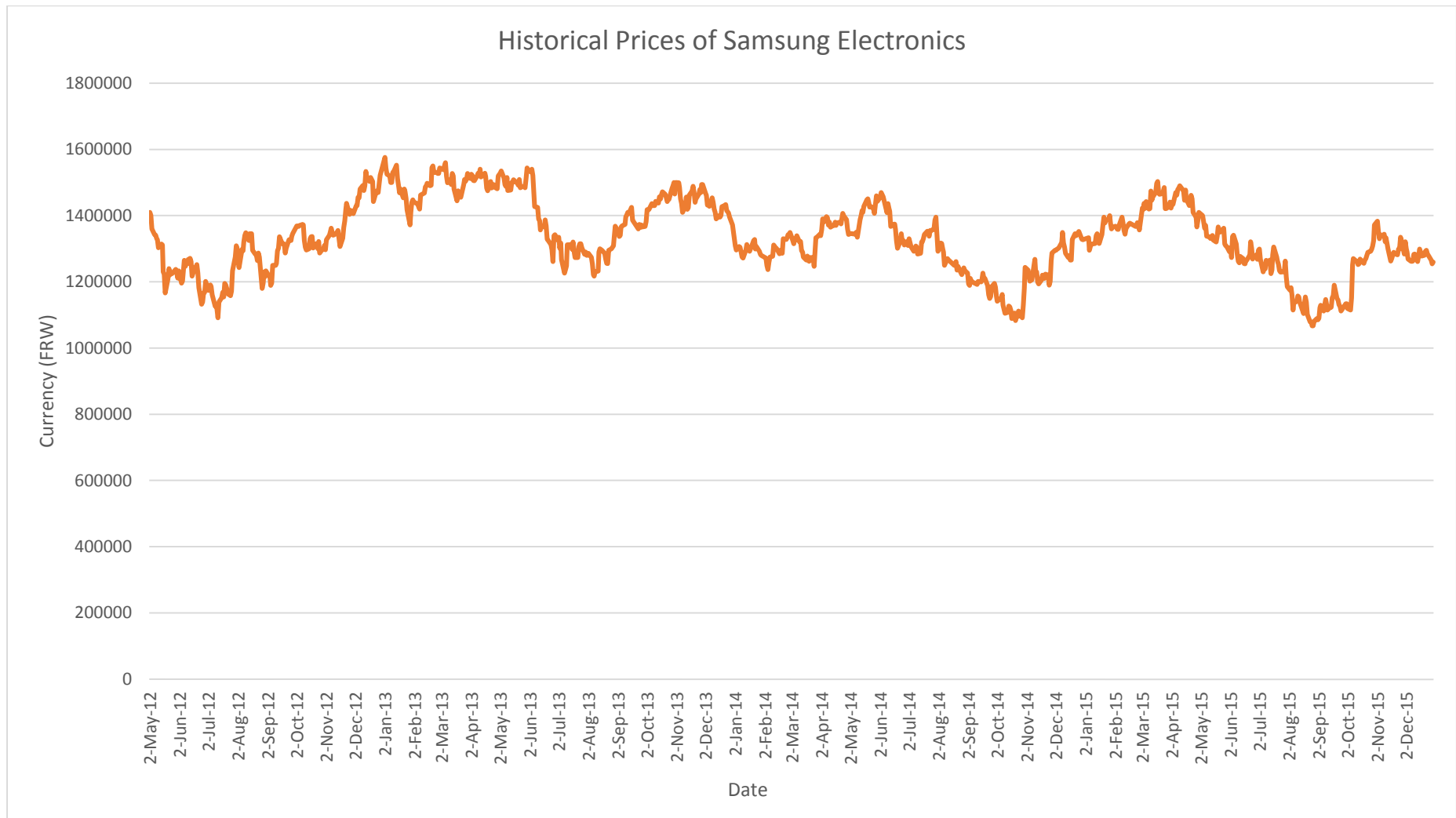


Figure 2.5, SK Telecom

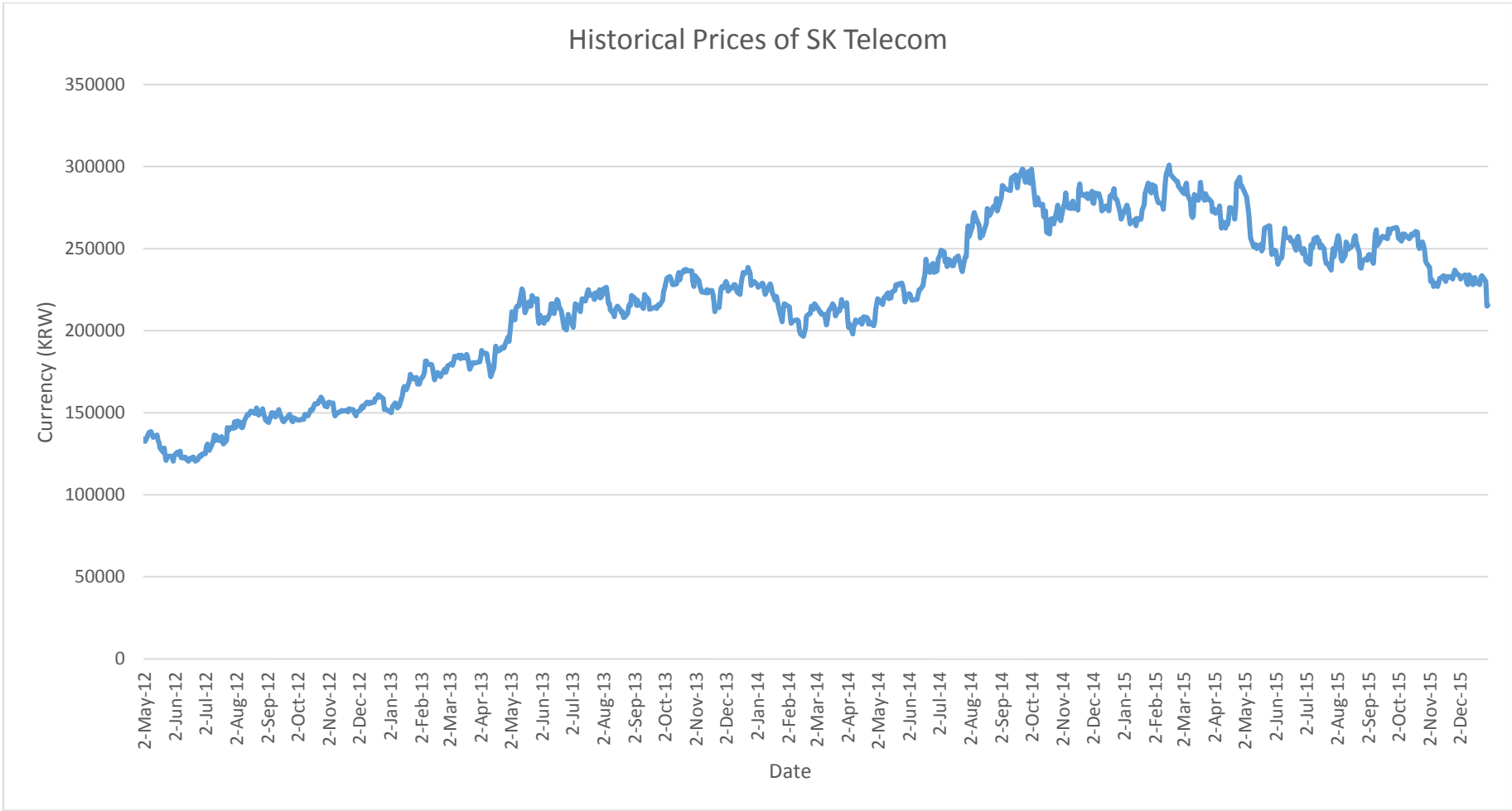


Figure 2.6, KOSPI Index

