



Feasibility Study of LEGO as a New Type of Investment

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Abstract. This research investigates whether LEGO sets are a good investment. Through tracking the offering and trading prices of 838 LEGO sets in eight series over the past 22 years, we evaluated the investment return of LEGO sets based on the HPR and APR theories. Compared to other traditional financial products, LEGO sets have a low investment threshold and do not require much financial knowledge support, making it simple to earn high returns and accept the danger of copies. Finally, several ideas for building a LEGO set investment are presented.

Keywords: alternative investment · valuation · LEGO · collectible assets · volatility

1 Introduction

In recent years, the major toy consumer has shifted from children to adults. In contrast to children, adults tend to have more financial resources and disposable capital for toys. With the adult toy market offering enormous economic potential, toys designed for adults have progressively become a new hot spot in the industry. Because of LEGO's high-quality control, thousands of adults worldwide are interested in collecting LEGO toys, allowing individuals to have a pleasant game experience and obtain value-added ability and collection value. LEGO's value is incredible, which also can be a recognizable currency on the illicit market. Previous scholarly publications have investigated how LEGO promoted the value of plastic particles. Our paper explores whether LEGO toys can be treated as a new form of investment product. In the following sections, we first look at how LEGO can be used as an investment rather than just a toy. The investment return of LEGO toys is found by comparing their sale price, the holding period, and the secondary market trading price, then calculating its return rate and standard deviation. Also, we search out how the value of LEGO toys has changed by employing statistics, and then compare LEGO toys to stock, bond, and precious metal investments. Finally, we analyze the investment cost and risk tolerance associated with LEGO toys. Due to the development of computer technology and information technology, platforms such as Bricklink and Brick Economy have emerged to facilitate the trading of Lego sets. And trading in such an open and transparent environment has largely eliminated the information asymmetry of trading. The favourable trading environment greatly promotes the investment value and liquidity of LEGO sets.

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2 The Role of Information Technology in LEGO Used Market Transactions

Decision and strategy support: The trading platform (e.g., brick economy) evaluates and analyses the investment value of each LEGO set according to its selling price, sales volume and expected retirement time, so that the evaluation results and analysis can better support users' decision making.

The role of coordination: integration and circulation of product information in the process of information collection, ensuring the timeliness of information, and improving the efficiency and quality of information collection work.

The role of facilitating market transactions: managing and coordinating the docking, selection, pricing, and inquiry process of LEGO sets. To standardise and program the market trading activities, improve the security and effectiveness of the transactions, and record the entire trading activities.

3 The Attributes of LEGO Products

This section analyzes the attributes that give LEGO toys their unique value and make them stand out from typical toys. Therefore, LEGO would tend to get a high rate of return as a new type of investment product.

3.1 Repositioning of Target Customer Groups

Troy Taylor, a 20-year LEGO employee, argues that the brand's marketing strategy has evolved since its core client base has shifted away from kids to adults. Children are typically the target market for toys, but marketing to children is subject to various legal and regulatory constraints. In contrast, marketing to adults is more accessible because it is less restricted by laws and regulations and can be reached directly through social media, reducing marketing costs and difficulty. As a result, LEGO shifted its concentration from branding activities to direct marketing, progressively emphasizing the significance of adult players as a target audience [1].

Adult LEGO lovers have become critical clients for the company, said as marketing director for LEGO. Adults have a strong preference for giant and expensive LEGO sets, particularly those well-known Intellectual Property products with specialized themes or large construction and machinery sets. On the one hand, they are compensating for the lack of toys and entertainment facilities during their childhood, and on the other, they have a strong desire to collect themed products. Additionally, they have more disposable income and discretion than children. The presence of adult LEGO fans fuels the rise of the secondary market for LEGO toys.

3.2 With the Discontinuation of Production, LEGO Products' Trade Price and Demand Will Climb

LEGO may take a set out of the market after it is released. When the LEGO firm stops manufacturing a set, the unopened packages held by the dealers and individual

consumers will become rare and precious. There are lots of reasons making LEGO's value climb. The first reason would be the dropped supply, and LEGO is almost impossible to be reproduced. Moreover, suppose the discontinued item is a well-known Intellectual Property product or has enormous bricks. In that case, its rarity will rise, making it more difficult to find on the market as time goes on while collectors' demand for it skyrockets.

4 Similar Art Collection Investment Analysis

In these few decades, the art investment market has been growing steadily. Art, stocks, and real estate are the top three investment vehicles today. The art collection is a medium to long-term investment that appreciates over time. Art collections generate significant returns, but there is a definite phase with weak liquidity and high storage costs. There is also a herding effect – investors would flow into a specific type of artwork when it offers considerable profits. Geographical location and personal taste determine the value of an artwork. Art collecting provides advantages over other industries: lower risk and a vital value preservation function since it is non-renewable. Furthermore, artwork has particular investment characteristics that distinguish it from a crowd of investment assets, thus diversifying portfolios based on its low volatility and poor correlation with other assets [2]. Researchers compiled a dataset containing more than one million painting transactions over fifty years to create an index of artwork prices. They estimated that art has an average real return of 4%, similar to corporate bonds. While financial assets have a better performance in terms of risk-reward considering Sharpe ratios [3], artwork outperforms physical assets, such as gold, commodities, and real estate. Previous research found that the return on stocks, people's real income, and consumer demand for luxurious artworks are the key factors determining the value of art [6]. The return on art is extraordinarily high in fast-growing regions like China, Russia, and the Middle East, attributed to the enormous income inequality and the significant increase in personal wealth of few persons in these regions [4].

5 The Calculation for the Return Rate

To calculate the rate of return, different methods of analyzing the yield of collective asset Investment have been considered. For example, we studied how wine is priced [5]. While wine and LEGO toys have similarities in terms of investment value, they are not identical. Due to the impossibility of changing the production time of wine later, the supply of wine produced in a particular year would show a downward tendency over time. However, The reintroduction of certain LEGO sets for various reasons may cause a shift in the number of unopened package sets in circulation and disruption supply and demand. As a result, applying the wine pricing method to determine the value and return of LEGO is not practicable or objective.

As a result, we adopt Holding Period Return (*HPR*) and Annualized Percentage Return (*APR*) to measure the yield of LEGO sets. The holding period yield, reflecting the overall return gained by holding a particular LEGO set over time, is calculated using the offering price (P_0) of a LEGO set and the secondary market trading price (P_T). The annualized percent return is then obtained employing the holding period return and the

holding year (Y). We don't consider compound interest as LEGO sets aren't like other financial investment products that can obtain a periodical dividend or Interest income.

$$HPR = (P_T - P_0) / P_0 \quad (1)$$

$$APR = HPR / Y \quad (2)$$

6 Methodology

6.1 Data

Data is obtained from a website named Brickeconomy, whose primary goal is to track secondary market transactions in real-time, recording transaction prices on Amazon, eBay, and Bricklink. Also, it provides recommendations for the selections of LEGO sets and the optimal time to purchase, according to the market supply and demand relationship and the news from LEGO company. Furthermore, it predicts when some sets would be discontinued.

We collected LEGO blocks' secondary market transaction data for the past 22 years, including 838 discontinued sets from various LEGO series. The information we gathered is mainly focused on numerous adult-oriented LEGO series, including the City, Creator, Technic, Star Wars, and Harry Potter series. Since this research considers the LEGO secondary market in Australia, Australian dollars are the currency for both transactions and offering prices.

We use the historical data to estimate the risk, i.e., the variance of the samples. The yield and volatility of the sets are computed by comparing the offering price and secondary market trading price in the year of offering. The relationship between yield, year of offering, and series is further investigated.

6.2 Data Pre-processing

We pre-processed the data via reviewing, filtering, and sorting before grouping the collected data [7]. We checked the raw data from the Brickeconomy website for both completeness and accuracy. Incomplete information and erroneous data that differed from the normal range were removed. The currency of data originating from all LEGO secondary market transactions in the region of Australia was ensured in Australian dollars.

6.3 Data Analysis

We categorized the sample by LEGO series and compared the returns of the different series horizontally after cleaning the raw data. We also analyze the relationship between the year of offering and return by utilizing a linear regression method. In this research, the sets with abnormally high returns are filtered for analysis to determine why they obtain such a high premium. By determining the factors affecting the return, we explored the investing value components as well as how to select and effectively invest in LEGO sets.

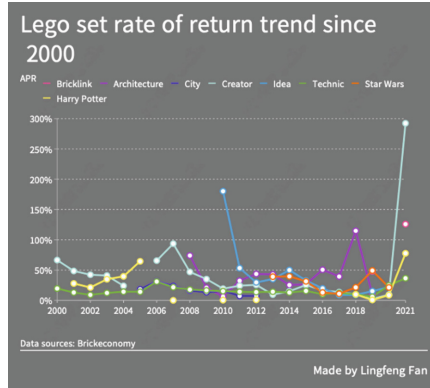


Fig. 1. Lego set rate of return trend since 2000

7 Findings and Discussion

We obtained transaction information for eight popular series of LEGO sets from Brick-economy. Star Wars, Harry Potter, and Technic have an extensive product supply. We employed a stratified strategy to sample these series randomly based on their release year. The release timing primarily impacts the return, shown in the LEGO set return graph above. The price of sets traded in the secondary market rises as time passes since the current release (Fig. 1).

Because fewer copies of longer-running sets are in circulation on the secondary market, the rarity leads to a significantly higher price than the newly retired set. However, the annualized percentage rate for the Harry Potter line shows an opposite trend, which has increased year by year from 2000 to 2004. The return rate of the Harry Potter LEGO series and the Harry Potter film series launched a specific correlation with the time. Following the film broadcast for a while, this series receded in the market, so LEGO did not launch a new Harry Potter series in some years.

The Star Wars range has a similar trend, with the release of the final chapter in Star Wars: The Rise of Skywalker in 2019, driving a sharp rise in returns for the Star Wars range of LEGO sets.

The ARCHITECTURE and CREATOR series, out of these eight, have consistently delivered strong returns. We examined the specifications of these sets and found that these two series are enormous block toys with many parts, resulting in adult players being the primary purchasers. Large blocks have a much higher collection value than small blocks, and the chance of reproduction for these two series in the event of discontinuance is relatively low. Therefore, these factors contributed to the investment return to keeping a relatively high position.

Many LEGO set series have a high return rate, so they have a specific investment worth compared to traditional financial items (Fig. 2).

However, for the years and series generated more than 100% return, we have further investigated. This situation is caused by only a few or even only one LEGO set retired

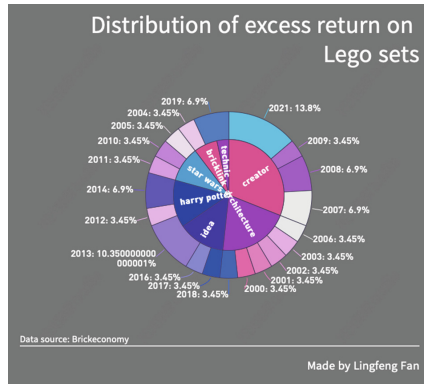


Fig. 2. Distribution of excess return on lego sets

this year, resulting in either extremely high or zero variance. As a result, we regard these instances as low-probability and non-representative.

Then we looked at the LEGO sets that had a lot of returns. The city series, designed for children, did not exhibit excess returns because the models are typically small and have a low number of bricks. ARCHITECTURE and CREATOR were the two series that generated the most considerable excess returns. The CREATOR series displayed higher returns with less time dependence. It comprises enormous street-sightseeing models, each having its own plot and easily linked to the others. This series is quite popular among adults, and it has a high collectible value.

For other series, the excess return indicates that the set’s value would peak after 7–8 years of release, providing the best return on investment.

During our research, some series of LEGO sets have seen replicas in certain years, resulting in a significant impact on yields. But the risk can be eliminated by changing the holdings of these sets. And some years were not discontinued, resulting in higher volatility of return variance for those years.

8 Conclusion

Examining the yield of LEGO sets, we discovered that collecting LEGO sets is an investing strategy that can lead to higher profits. The investment threshold is low since LEGO sets are inexpensive compared to other collectibles. Purchase channels are accessible in shopping malls and on the Internet. When making the investment decision, we could choose a set with more bricks or the giant building models. Additionally, selecting a limited edition or commemorative set explicitly created for a given scenario could increase income. Also, the possibility of replication suggests avoiding purchasing the same set in large quantities to distribute the risk. The reintroduction of LEGO into manufacturing could deal a severe hit to the set’s output. It’s a fantastic time to sell it six to seven years after the set offering. However, a year after the release of film and television works, revenue performance for products co-branded with that work would be higher, so investors should pay close attention to the release or re-release of these works to build a sales plan.

On the other hand, thanks to the development of information technology, the collection of Lego sets has become a beneficiary of the Internet economy. Thanks to the availability of trading platforms, this has allowed investors to access more information. The losses caused by information asymmetry are greatly reduced. Through these trading platforms buyers and sellers can be matched, increasing the effectiveness of the transaction. The development of Internet technology has given Lego sets more investment value and liquidity.

Collecting LEGO is less expensive than collecting art because there is no need to purposely create an environment with the right temperature and humidity and take security measures. LEGO sets are less susceptible to market swings than stock and foreign exchange investments, which can easily be affected by monetary policy and market knowledge. In conclusion, collecting LEGO items is an excellent method to diversify one's assets and generate high returns.

References

1. Sachitanand, R., Lego's strong growth is driven by the huge potential of the adult market. *Campaign China 2021*.(references)
2. Renneboog, L., Spaenjers, C., 2013. Buying beauty: On prices and returns in the art market. *Management Science* 59, 36–53.
3. Dimson, E., Spaenjers, C., 2014. Investing in emotional assets. *Financial Analysts Journal*, 70(2), 20–25.
4. Renneboog, L., Spaenjers, C., 2011. The iconic boom in modern Russian art. *Journal of Alternative Investments* 13(3), 67–80.
5. Dimson, E., Rousseau, P.L., Spaenjers, C., 2015. The price of wine. *Journal of Financial Economics*, 118(2), 431–449.
6. Goetzmann, W., Renneboog, L., Spaenjers, C., 2011. Art and money. *American Economic Review: Papers and Proceedings*, 101(3), 222–226.
7. Li, WD., 2014. *Applied Statistics*. Beijing: Tsinghua University Press, 55-5

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