Chapter 2

Can Vehicle Purchases Be Considered As Financial Investment Tools? Evidence from Türkiye

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Abstract

This study investigates the hypothesis that purchasing brand-new vehicles can serve as a viable financial investment. An analysis of 17,285 second-hand vehicle listings for a specific brand and model was conducted using a case study approach grounded in empirical data. The findings reveal that an individual who purchased a vehicle in February 2020 and sold it in October 2023 would achieve a 540% return. This significant appreciation shows that, under certain market conditions, vehicles can be highly profitable investments. The study also highlights differences in returns between automatic and manual transmissions, indicating varying market preferences and demand dynamics. This variability emphasizes the importance of considering vehicle specifications and market trends when making investment decisions. Additionally, the research concludes that buying a vehicle in 2023 is consistently profitable, regardless of type or model. This consistent profitability underscores the strength of the automotive market during this period. These insights suggest unique investment opportunities in the automotive sector, influenced by supply chain disruptions, economic conditions, and changing consumer behaviors. Based on these findings, several recommendations are provided to help investors optimize returns in the vehicle market. .

1. Introduction

In periods of elevated inflation, individuals experience a significant decline in their purchasing power (Ho, 2005:926; Yazgan, 2003:143).

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In an effort to mitigate the impact of this phenomenon, individuals often resort to preemptive buying, acquiring more than their immediate needs to safeguard against future price increases and secure essential goods at lower costs (Springer, 1977:299). Meanwhile, some individuals seek to optimize their savings through investment. Particularly during times when real returns on financial investment instruments are negative in the face of high inflation, there is a discernible shift towards seeking alternative solutions (Fama & Gibbons, 1982:297). The procurement of brand-new vehicles as a financial investment is also predicated on this rationale.

In Turkey, the decline in purchasing power due to high inflation, coupled with increases in automobile prices surpassing inflation rates, has driven individuals towards the vehicle market. This trend is evident in the number of new car sales reported by the Automotive Distributors and Mobility Association (Automotive Distributors and Mobility Association, 2023). It was observed that there were 610,109 new car sales in 2020, 561,853 in 2021, 592,660 in 2022, and 840,925 in the period from January to November 2023. In contrast, the secondary market for used vehicles revealed higher sales figures compared to new cars during the same period from 2020 to 2023. Various studies have been conducted to determine automobile prices (Arawomo & Osigwe, 2016:1120; Bexter, 2020; Koç & Kostak, 2021:226; Satioglu et al., 2021:330). However, no explanation or determination regarding the evaluation of vehicle purchases as financial investment tools has been presented in the literature. This study is expected to be the first to contribute to the literature in this regard.

The research topic has been identified as the purchase of new cars and their subsequent sale as used vehicles. The primary objective of this research is to determine the potential profits an individual can achieve when considering a new car purchase as an investment vehicle. To achieve this goal, a general assessment will be conducted, alongside the identification of more profitable opportunities based on the technical specifications of the vehicles. Within this scope, several sub-research questions have been formulated:

(1) When considering new car purchases as an investment, what are the most ideal dates and durations to achieve the highest returns?

(2) When considered as an investment vehicle, which equipment level proves to be the most profitable?

(3) When considered as an investment vehicle, which fuel type is the most profitable?

(4) When considered as an investment vehicle, which transmission type is the most profitable?

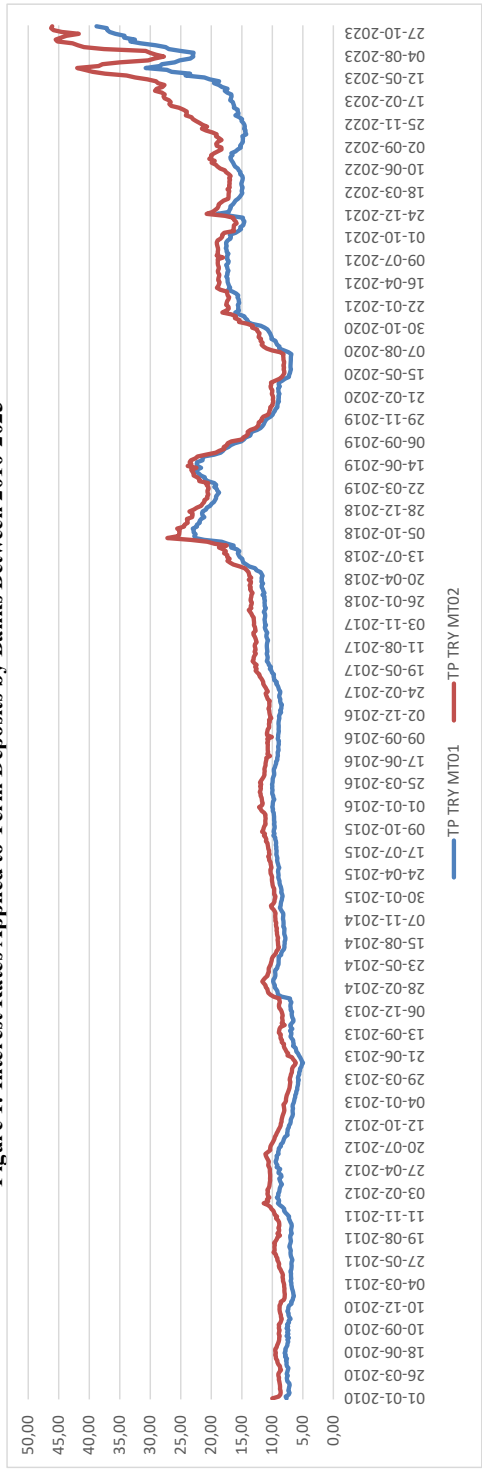
This research is structured around these questions. The first section includes a literature review on vehicle pricing. In the subsequent sections, the empirical application and results concerning the primary assumption of the study—purchasing new cars as an investment tool—are presented. Finally, the study concludes with evaluations and recommendations.

2. Literature Review

2.1. Investor Behavior in High Inflation Environments

While investors aim to increase their financial wealth, their behaviors can vary in an economic environment characterized by high inflation (González et al., 2016). The presence of investment opportunities that offer nominal gains but result in real losses prompts individuals to seek different alternatives. Recent studies suggest that vehicle purchases can be considered as a financial investment tool among these alternatives (Aksin & Önder, 2022:1319; Koç & Kostak, 2021:226). To understand the concept of vehicle purchases as an investment tool by individuals, it is essential to first examine the returns on current financial investment instruments. For instance, the nominal interest rates applied to term deposit accounts by banks are depicted in the graph below (Central Bank of the Republic of Turkey, 2023a).

Figure 1: Interest Rates Applied to Term Deposits by Banks Between 2010-2023



Notes: "TP.TRY.MT01" indicates the interest rate applied by banks to one-month term deposit accounts, while "TP.TRY.MT02" refers to the interest rate applied to three-month term deposit accounts.

Source: https://www.tcmb.gov.tr/wps/wcm/connect/TR/TCMB+TR/Main+Menu/Istatistikler/Faiz+Istatistikleri/Banka+Mevduat+Azami+Faiz/

Upon examining Figure 1, it is evident that an investor who places their money in a term deposit account could achieve an average nominal gain of approximately 45% per annum by 2023. Conversely, the Consumer Price Index (CPI) for vehicles showed a value of 968% in 2022 (Statista, 2023), compared to 548% in the previous year. This indicates an average increase of 76% in the prices of new cars from 2021 to 2022. The interest rates applied to term deposits remained around 20% or lower annually during 2021 and 2022. This significant disparity between the returns from term deposit accounts and the rise in car prices clearly illustrates why individuals might prefer vehicle purchases as an investment.

Table 1 presents the interest rates applied to Turkish lira-denominated term deposits for periods of up to one month (TP TRY MT01) and up to three months (TP TRY MT02), along with the real returns adjusted for inflation during the respective years (Central Bank of the Republic of Turkey, 2023b).

Table 1: Real Returns on Term Deposits from 2010 to 2023

Year	1-Month Interest Return	3-Months Interest Return	Annual Inflation	Real Gain (1-month term)	Real Gain (3-month term)
2010	7.47%	8.93%	6.40%	14.49%	34.17%
2011	7.08%	9.01%	10.45%	-29.39%	-12.59%
2012	8.24%	9.84%	6.16%	29.05%	51.44%
2013	6.22%	7.74%	7.40%	-14.05%	4.03%
2014	8.57%	9.86%	8.17%	4.36%	18.45%
2015	9.19%	10.55%	8.81%	3.82%	17.74%
2016	9.36%	11.10%	8.53%	8.76%	26.97%
2017	10.24%	12.31%	11.92%	-12.97%	3.03%
2018	15.93%	18.04%	20.30%	-20.53%	-10.60%
2019	17.63%	18.71%	11.84%	45.13%	53.50%
2020	9.33%	10.69%	14.60%	-33.76%	-25.07%
2021	16.59%	18.09%	36.08%	-52.57%	-48.51%
2022	15.50%	19.04%	64.27%	-74.73%	-69.29%
2023	24.27%	34.03%	61.98%*	-59.88%	-44.38%

Notes: * The annual inflation data for November 2023.

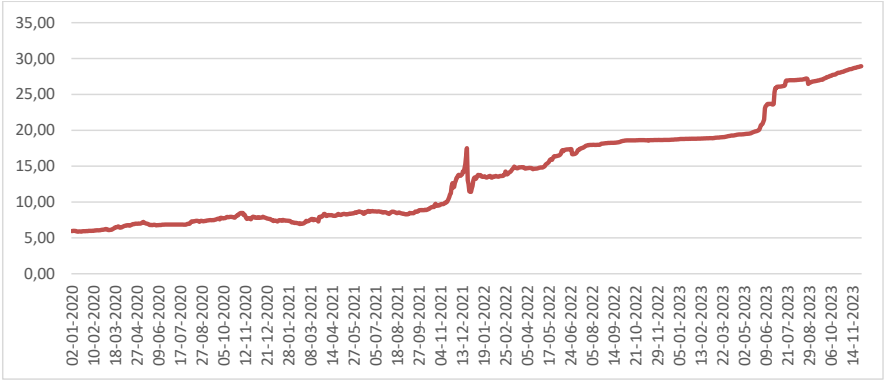
In the years under consideration, real returns were calculated by juxtaposing the interest rates paid on one-month and three-month term deposits with the annual inflation rates for those years. While nominal interest rates were relatively low in the initial years of the 2010-2023 period, by 2023, these interest yields had escalated to above 30%. However, after adjusting for the annual inflation experienced during the period, investors' real returns have persistently registered as negative from 2020 onward. This indicates that term deposits have effectively eroded real investor

returns in environments of high inflation. Consequently, investors have increasingly sought alternative avenues to safeguard themselves against steep price escalations and to preserve their purchasing power amidst declining economic conditions.

2.2. New Vehicle Prices and Variations

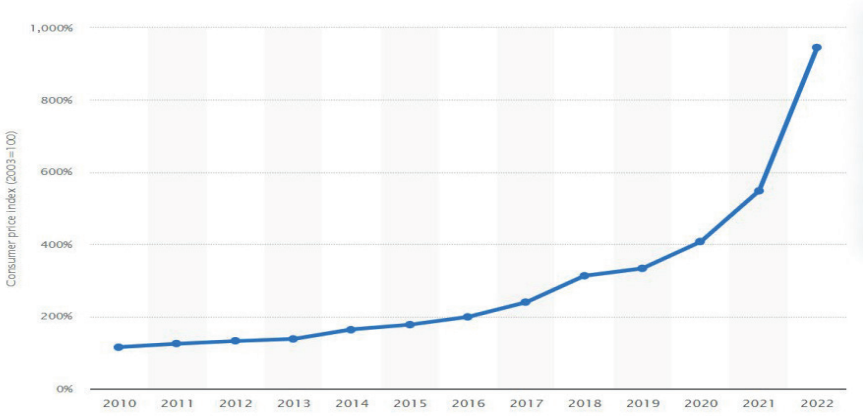
Historically, it can be stated that the process began towards the end of 2019 with the increase in Special Consumption Tax (ÖTV) rates on new vehicles (Koç & Kostak, 2021:229). Furthermore, the outbreak of the pandemic in 2020 precipitated production and supply issues across many sectors, including the automotive industry. The inability of automotive manufacturing enterprises operating within the country to access the chips used in production led to disruptions in manufacturing processes and a decrease in vehicle supply in response to rising demand (Mohammad et al., 2022:478). Additionally, the high volatility in the foreign exchange rate in 2022 and the rapid depreciation of the Turkish Lira against other currencies have led to astronomical increases in automobile prices (Central Bank of the Republic of Turkey, 2023c). Further details on the fluctuations in the dollar exchange rate can be found in Figure 2.

Figure 2: Dollar Exchange Rate from January 2020 to November 2023



It can be argued that the average import cost of an automobile has not varied in dollar terms (Koç & Kostak, 2021). However, the additional tax burden imposed by the government on vehicles in Turkey plays a significant role in determining the final sale price (Polat & Bulut, 2023:347). To better understand the components of the sale price and the tax burden of new vehicles, one can refer to the detailed explanations provided in the relevant study (Koç & Kostak, 2021:230). The graph below illustrates the increase in vehicle prices in Turkey:

Figure 3: Consumer Price Index for Motor Vehicles in Turkey from 2010 to 2022



As observed in Figure 3, the vehicle price index in 2022 surged to an astronomical 945.48%. By the end of 2023, the consumer price index for vehicles is expected to significantly exceed 1000%. This escalation in prices is attributed to several factors: the rapid depreciation of the Turkish Lira, continuously increased tax burdens on vehicles such as Special Consumption Tax (ÖTV) and Value Added Tax (KDV), supply constraints in new vehicles, and the rate of price increases surpassing income growth. These factors have fueled the desire among individuals to protect themselves against inflation and have led to an increased demand for new vehicles as investment assets, as the rate of price increases has outpaced real interest rates (Koç & Kostak, 2021:227; Polat & Bulut, 2023:350).

2.3. Second-Hand Vehicle Prices and Price Variations

The perception of new vehicle purchases as investment tools, combined with significant price increases, has directly influenced the used car market as well. Due to difficulties in accessing new vehicles, individuals have turned to the used car market, where increased demand has led to higher prices. In fact, from the beginning of 2021 until August 2023, the demand for used vehicles was so high that used car prices exceeded those of new cars. Consequently, the list prices of new vehicles became essentially symbolic, as their unavailability rendered them irrelevant. In response, the government has imposed restrictions on vehicle transactions, limiting individuals to no more than three sales per year in an effort to curb market price increases (Aksin & Önder, 2022:1330). However, individuals considering vehicle trading without income tax liability have found alternative ways to circumvent these regulations.

Another issue related to price increases is the difficulty in making historical price comparisons. For instance, if a vehicle purchased as new in 2020 or 2021 is sold in 2022 or 2023, its sale price is entirely determined by the used car market. This creates uncertainty for both potential buyers and sellers regarding the appropriate price of a vehicle, as the price at the time of purchase has no influence on current market values. Comparisons of past new vehicle prices with current prices are further complicated by changes made by manufacturers. Vehicles produced and sold in past years might be marketed today under different names, with different features or engine options, which disrupts price tracking mechanisms. For example, a specific brand's B-segment vehicle, first launched in its fifth generation in February 2020, was available with a total of 19 different engine and equipment options by September 2023. The substantial variation in prices even within a single model implies that incorporating other models from the same brand, and adding different brands, results in hundreds of different pricing options. This complexity presents challenges in analyzing historical new vehicle prices. Additionally, individuals whose perceptions of high or low prices have been disrupted may become indifferent to price increases. The uncontrolled and collective upward price movements in the used car market are also influenced by these factors.

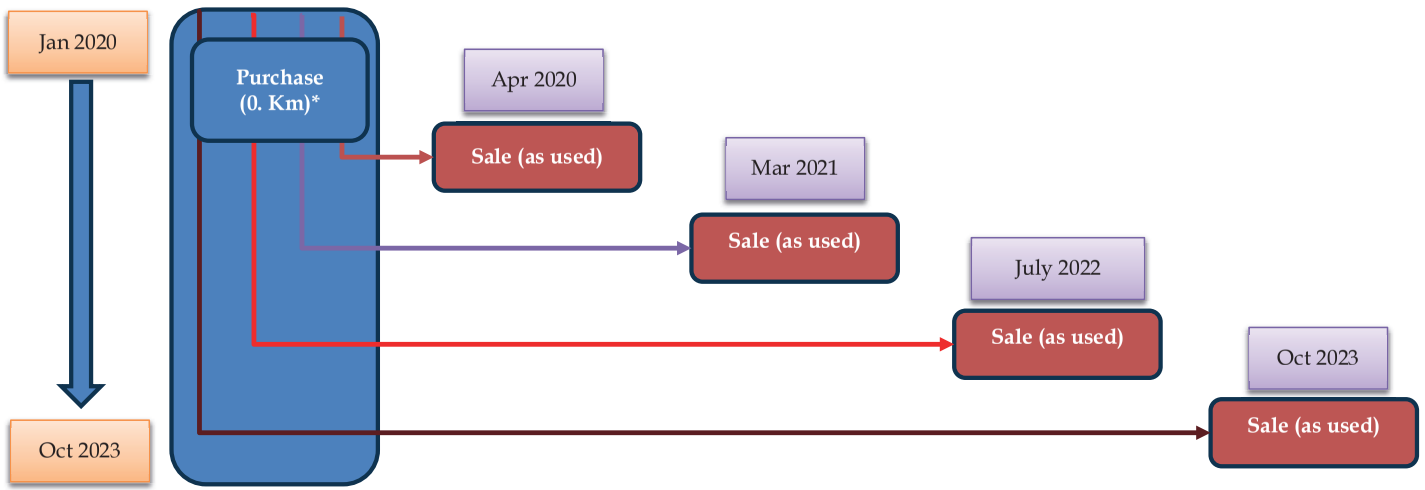
3. Empirical Application

3.1. Model

This study investigates the perception of vehicles as financial investment tools. Specifically, it hypothesizes that an individual purchasing a new car for investment purposes and selling it after a certain period can realize a profit. The analysis will compare the resale value of new car purchases each month from February 2020 to October 2023 with their subsequent prices in the used car market. The periods of April 2020, March 2021, July 2022, and October 2023 have been identified for this comparison. These intervals represent significant phases in Turkey, such as the onset and end of the pandemic, periods of high currency volatility, and attempts to curb rising car prices through increased interest rates.

The model under study is illustrated in Figure 4.

Figure 4: Research Model



Notes: * A new vehicle can be purchased in any month between January 2020 and October 2023. According to the relevant visual, a new vehicle purchased can be sold as a used vehicle in any period following the month of purchase. However, it is not temporally possible to sell it in a period before the month of purchase.

3.2. Data

To assess the viability of vehicles as financial investment tools, this study examined the new car prices of the Renault Clio, one of the best-selling brands in Turkey, from January 2020 to September 2023. The initial investment date for individuals considering car purchases as financial investments was assumed to be the date on which the new vehicle prices were recorded. To determine the potential profits from selling these hypothetically purchased vehicles in the used car market, data on their resale prices over a three-year period is required.

Individuals attempting to research used car prices face significant challenges in accessing data. The government collects price information during the used car sales process through notarial offices. Although the sale prices are listed on the notary sales document, the lack of statistical disclosure of used car sales prices or the inability to verify the accuracy of the prices stated on the notary document does not facilitate the validation or refutation of this matter. The lack of transparency in data retention and disclosure by institutions in the sector can also hinder researchers. As a result, researchers are forced to rely solely on the prices listed in advertisements for used car price studies. The extent of the negotiation by individuals considering a purchase and the reduction in the listed price at the time of sale remain undetermined. Given these constraints, data on used car prices for April 2020, March 2021, July 2022, and October 2023 were obtained from the "Sahibinden.com" (Sahibinden, 2023) used car listing site. An explanatory table for the relevant dataset is presented below.

Table 2: Number of Renault Clio Used Car Listings

	Automatic	Manuel	TOTAL
April 2020	106	429	535
March 2021	1101	1261	2362
June 2022	4128	2491	6619
November 2023	3735	4034	7769
TOTAL	9070	8215	17285

The dataset for this study includes used car listings for the Renault Clio models from the years 2020, 2021, 2022, and 2023, found on the designated listing site. A total of 17,285 used car listings were analyzed. The dataset contains both gasoline and diesel vehicles. LPG&Gasoline fueled vehicles are generally not available as new cars; therefore, to ensure comparability, they were not included in the sample.

3.3. Methodology

This case study aims to determine the potential gains that individuals in Turkey who purchased new vehicles in the past three years could have realized had they considered these purchases as investment vehicles. The study will identify which models of Renault vehicles could yield the highest profits, and determine the optimal times and periods for achieving the highest returns. These returns will be compared with the gains that could have been obtained from investing in term deposit accounts over the same period. Additionally, alternative investment opportunities will be evaluated within the scope of this study. Comparisons will be made with the profits from investing in foreign currency, gold, and stock market returns during the relevant periods. Thus, the study will not only assess car purchases as investment vehicles but will also examine their returns relative to other financial investment instruments.

4. Findings

The research has attempted to determine the potential profits that individuals could achieve by purchasing new zero-mileage vehicles as investment tools and subsequently selling these vehicles as used cars after a certain period. From February 2020 to September 2023, the study focused on new Renault Clio vehicles purchased in a specific month and sold as used vehicles in April 2020, March 2021, June 2022, and October 2023. The statistics related to the returns obtained from these sales are presented in Tables 4, 5, 6, and 7. Additionally, Table 3 provides the average sale prices of the vehicles planned to be sold as used during the respective periods. It is important to note in Table 3 that only 2020 models were sold in April 2020, both 2020 and 2021 models were sold in March 2021, 2020, 2021, and 2022 models in June 2022, and models from 2020, 2021, 2022, and 2023 were sold in October 2023. This differentiation is significant as the second-hand prices of the vehicles also vary according to the model year.

Table 3: Renault Clio Second Hand Average Prices

	Model 2020				Model 2021			Model 2022		Model 2023
	2020 Apr	2021 Mar	2022 Jun	2023 Nov	2021 Mar	2022 Jun	2023 Nov	2022 Jun	2023 Nov	2023 Nov
Joy 1.0 SCe	117,214	140,793	360,201	656,053	146,855*	375,709	668,026	404,840	685,691	725,475
Joy 1.0 TCe X-Tronic	128,887	172,839	439,880	756,825	178,832*	455,131	767,757	484,297	815,336	835,000
Joy 1.5 Blue dCi 85 bg	142,083	185,104	425,832	724,213	191,850*	498,810*	842,988*			
Touch 1.0 TCe 100 bg			417,609	741,011	164,063	437,500	816,000		784,000	785,446
Touch 1.0 TCe X-Tronic	138,422	186,004*	459,554	801,328	182,428	488,469	826,105	544,150	868,990	
Touch 1.3 TCe EDC 130 bg			480,948	826,200	195,154	554,000	893,175			
Touch 1.5 Blue dCi 115 bg	160,900	209,618*	441,325	792,611	185,864	483,246*	816,685*			
Icon 1.0 TCe 100 bg	147,662	176,689*	499,833	855,000	197,000	505,993*	856,455*			
Icon 1.0 TCe X-Tronic	154,475	208,205*	510,512	875,593	198,001	530,335	875,794		934,585	
Icon 1.3 TCe EDC 130 bg	170,352	228,444*	514,898	906,130	211,562	550,061*	931,045*			
Icon 1.5 Blue dCi 115 bg			534,000	962,500	239,219	621,969*	1,051,127*			

Notlar: The values in the table show the average second-hand prices of the models listed in the left column for April 2020, March 2021, June 2022, and October 2023. * Due to the lack of data, the estimated values for other models are obtained by considering the price increases compared to the previous year. Empty cells indicate that the respective models were not produced or not available in the second-hand market in those years.

Table 4: Profit Rates from Selling a New Car as a Used Vehicle in April 2020

	Model											
Purchase Date (new)	**Joy 1.0 SCe**	**Joy 1.0 TCe X-Tronic**	**Joy 1.5 Blue dCi 85 bg**	**Touch 1.0 TCe**	**Touch 1.0 TCe X-Tronic**	**Touch 1.3 TCe EDC 130 bg**	**Touch 1.5 Blue dCi 115 bg**	**Icon 1.0 TCe 100 bg**	**Icon 1.0 TCe X-Tronic**	**Icon 1.3 TCe EDC 130 bg**	**Icon 1.5 Blue dCi 115 bg**
2020m2	5.60%	8.58%	0.84%		5.26%		7.34%	11.86%	9.95%	10.26%	
2020m3	3.73%	-2.51%	-4.58%		-1.83%		1.90%	5.47%	2.98%	4.80%	
2020m4	1.92%	-4.32%	-7.14%		-2.31%		0.56%	2.90%	1.83%	3.56%	

Notes: The values in the table show the return rates for a new vehicle purchased in the month listed in the far-left column, if sold as a used vehicle in April 2020. Empty cells indicate models that have not yet been released or have been discontinued. Additionally, some empty cells are due to a lack of second-hand price data.

Table 5: Profit Rates from Selling a New Car as a Used Vehicle in March 2021

	Model											
Purchase Date (new)	**Joy 1.0 SCe**	**Joy 1.0 TCe X-Tronic**	**Joy 1.5 Blue dCi 85 bg**	**Touch 1.0 TCe**	**Touch 1.0 TCe X-Tronic**	**Touch 1.3 TCe EDC 130 bg**	**Touch 1.5 Blue dCi 115 bg**	**Icon 1.0 TCe 100 bg**	**Icon 1.0 TCe X-Tronic**	**Icon 1.3 TCe EDC 130 bg**	**Icon 1.5 Blue dCi 115 bg**
2020m2	26.84%	45.61%	31.37%		41.45%		39.84%	33.86%	48.19%	47.86%	
2020m3	24.60%	30.74%	24.31%		31.92%		32.75%	26.21%	38.80%	40.54%	
2020m4	22.43%	28.31%	20.98%		31.27%		31.01%	23.13%	37.25%	38.87%	
2020m5	17.33%	23.72%	17.15%		26.79%		27.04%	18.19%	32.03%	33.98%	
2020m6	8.70%	19.45%	9.53%		21.81%		18.43%	12.90%	26.41%	28.70%	
2020m7	18.81%	18.14%	8.50%		20.55%		17.37%	11.76%	25.20%	27.55%	
2020m8	8.39%	9.46%	3.47%				13.37%	4.61%	16.38%	18.43%	
2020m9	5.15%	2.94%	-1.49%		5.74%		7.00%	-1.78%	9.64%	12.04%	
2020m10	2.84%	-1.18%	-5.99%		1.70%		2.80%	-5.46%	5.74%	7.30%	
2020m11	-7.92%	-7.03%	-11.81%		-5.05%		-4.68%	-9.81%	-1.74%	0.24%	
2020m12	-7.92%	-6.01%	-10.96%		-4.07%		-3.80%		-0.81%	0.68%	
2021m1	-7.95%	-6.04%	-11.01%		-4.10%		-3.84%		-0.83%	0.64%	
2021m2	-7.95%	-6.04%	-11.01%		-5.53%		-3.84%		-2.21%	0.64%	
2021m3	-8.01%	-6.09%	-11.05%		-4.15%		-3.89%		-0.88%	0.59%	

Notes: The values in the table show the return rates for a new vehicle purchased in the month listed in the far-left column, if sold as a used vehicle in March 2021. Empty cells indicate models that have not yet been released or have been discontinued. Additionally, some empty cells are due to a lack of second-hand price data.

Table 6: Profit Rates from Selling a New Car as a Used Vehicle in June 2022

	Model										
Purchase Date (new)	**Joy 1.0 SCe**	**Joy 1.0 TCe X-Tronic**	**Joy 1.5 Blue dCi 85 bg**	**Touch 1.0 TCe**	**Touch 1.0 TCe X-Tronic**	**Touch 1.3 TCe EDC**	**Touch 1.5 Blue dCi 115**	**Icon 1.0 TCe 100 bg**	**Icon 1.0 TCe X-Tronic**	**Icon 1.3 TCe EDC**	**Icon 1.5 Blue dCi 115 bg**
2020m2	224.51%	270.58%	202.22%	253.91%	249.47%		194.41%	278.66%	263.35%	233.27%	235.01%
2020m3	218.76%	232.74%	185.99%	221.24%	225.93%		179.50%	257.02%	240.34%	216.76%	219.00%
2020m4	213.22%	226.56%	178.32%	215.18%	224.32%	211.29%	175.83%	248.32%	236.53%	213.01%	214.12%
2020m5	200.17%	214.87%	169.51%	203.72%	213.26%	201.53%	167.47%	234.34%	223.72%	201.99%	203.41%
2020m6	178.10%	203.99%	151.97%	191.02%	200.95%	190.52%	149.34%	219.38%	209.96%	190.08%	182.54%
2020m7	203.97%	200.67%	149.61%	187.81%	197.83%	187.73%	147.10%	216.15%	206.98%	187.49%	180.17%
2020m8	177.29%	178.58%	138.03%	151.72%		167.34%	138.68%	195.93%	185.36%	166.92%	160.61%
2020m9	169.01%	161.99%	126.63%	151.72%	161.26%	151.94%	125.28%	177.84%	168.83%	152.52%	147.34%
2020m10	163.11%	151.50%	116.27%	147.25%	151.26%	141.80%	116.44%	167.43%	159.27%	141.85%	137.44%
2020m11	135.58%	136.62%	102.87%	132.13%	134.59%	126.97%	100.69%	155.15%	140.92%	125.93%	84.84%
2020m12	135.58%	139.20%	104.83%	132.13%	137.01%	129.13%	102.54%		143.22%	126.93%	86.13%
2021m1	145.64%	147.41%	139.82%		151.84%	163.81%	121.68%		152.59%	142.32%	116.72%
2021m2	145.64%	147.42%	139.81%		148.08%	163.81%	121.67%		149.10%	142.32%	116.71%
2021m3	145.48%	147.29%	139.70%	139.07%	151.72%	163.68%	121.57%		152.48%	142.21%	116.64%
2021m4	127.70%	131.15%	139.70%	134.08%	137.12%	168.80%			138.89%		
2021m5	127.70%	126.55%	139.70%	129.06%	131.61%				133.73%		
2021m6	111.19%	116.73%	139.70%	116.58%	121.13%				86.08%		
2021m7	121.14%	127.57%	139.70%		131.61%				128.99%		
2021m8	121.14%	127.57%			131.61%				128.99%		
2021m9	121.14%	127.57%			131.61%				128.99%		
2021m10	111.07%	119.87%			125.20%				128.59%		
2021m11	97.74%	106.88%			112.38%				115.67%		
2021m12	65.58%	73.78%			83.70%				49.39%		
2022m1	63.90%	38.41%			51.57%						
2022m2	63.18%	55.17%			69.89%						
2022m3	38.69%	35.28%			49.53%						
2022m4	30.17%	29.49%			40.24%						
2022m5	29.34%	28.80%			39.53%						
2022m6	11.87%	10.82%			19.33%						

Notes: The values in the table show the return rates for a new vehicle purchased in the month listed in the far-left column, if sold as a used vehicle in June 2022. Empty cells indicate models that have not yet been released or have been discontinued. Additionally, some empty cells are due to a lack of second-hand price data.

Table 7: Profit Rates from Selling a New Car as a Used Vehicle in October 2023

	Model										
Purchase Date (new)	**Joy 1.0 SCe**	**Joy 1.0 TCe X-Tronic**	**Joy 1.5 Blue dCi 85 bg**	**Touch 1.0 TCe**	**Touch 1.0 TCe X-Tronic**	**Touch 1.3 TCe EDC 130 bg**	**Touch 1.5 Blue dCi 115 bg**	**Icon 1.0 TCe 100 bg**	**Icon 1.0 TCe X-Tronic**	**Icon 1.3 TCe EDC 130 bg**	**Icon 1.5 Blue dCi 115 bg**
2020m2	491.04%		413.99%	527.98%	509.37%		428.76%	547.73%	523.20%	486.49%	503.83%
2020m3	480.58%	472.48%	386.38%	470.01%	468.32%		401.97%	510.71%	483.73%	457.45%	474.97%
2020m4	470.48%	461.86%	373.34%	459.25%	465.51%	434.76%	395.38%	495.82%	477.19%	450.84%	466.18%
2020m5	446.71%	441.75%	358.36%	438.92%	446.24%	417.99%	380.37%	471.91%	455.23%	431.45%	446.88%
2020m6	406.51%	423.03%	328.53%	416.38%	424.77%	399.06%	347.80%	446.33%	431.63%	410.50%	409.26%
2020m7	453.63%	417.31%	324.51%	410.69%	419.33%	394.29%	343.79%	440.80%	426.51%	405.94%	404.98%
2020m8	405.04%	379.31%	304.81%	346.66%		359.26%	328.67%	406.22%	389.43%	369.74%	369.74%
2020m9	389.96%	350.76%	285.42%	346.66%	355.56%	332.79%	304.60%	375.26%	361.08%	344.40%	345.81%
2020m10	379.22%	332.72%	267.81%	338.73%	338.12%	315.38%	288.73%	357.46%	344.69%	325.61%	327.97%
2020m11	329.07%	307.11%	245.03%	311.90%	309.05%	289.90%	260.44%	336.45%	313.21%	297.60%	233.16%
2020m12	329.07%	311.54%	248.35%	311.90%	313.27%	293.62%	263.75%		317.15%	299.35%	235.48%
2021m1	336.75%	317.35%	305.29%		325.92%	325.33%	274.63%		317.13%	310.16%	266.25%
2021m2	336.76%	317.37%	305.28%		319.56%	325.32%	274.63%		311.36%	310.15%	266.25%
2021m3	336.48%	317.15%	305.09%	345.90%	325.72%	325.12%	274.45%		316.95%	309.97%	266.12%
2021m4	304.86%	289.92%	305.09%	336.60%	301.02%	333.37%			294.50%		
2021m5	304.86%	282.16%	305.09%	327.23%	291.70%				285.98%		
2021m6	275.51%	265.60%	305.09%	303.96%	273.97%				207.30%		
2021m7	293.19%	283.88%	305.09%		291.70%				278.15%		
2021m8	293.19%	283.88%			291.70%				278.15%		
2021m9	293.19%	283.88%			291.70%				278.15%		
2021m10	275.30%	270.90%			280.87%				277.50%		
2021m11	251.59%	248.98%			259.18%				256.16%		
2021m12	194.41%	193.15%			210.68%				146.70%		

2022m1	177.61%	133.02%	142.06%	137.20%
2022m2	176.38%	161.24%	171.30%	150.36%
2022m3	134.91%	127.75%	138.80%	131.96%
2022m4	120.48%	118.00%	123.97%	106.81%
2022m5	119.07%	116.84%	122.82%	105.90%
2022m6	89.47%	86.58%	90.57%	88.84%
2022m7	74.97%	74.96%	78.47%	76.70%
2022m8	57.63%	67.80%	71.74%	70.54%
2022m9	70.15%	67.80%	71.74%	70.54%
2022m10	70.15%	67.80%	71.74%	70.54%
2022m11	56.55%	61.13%	64.93%	64.28%
2022m12	81.93%	77.17%	71.40%	71.17%
2023m1	57.75%	47.79%		
2023m2	57.75%	47.79%		
2023m3	57.75%	47.79%		
2023m4	39.51%	32.75%		
2023m5	57.75%	47.79%		
2023m6	39.51%	32.75%		
2023m7	32.65%	27.31%		
2023m8	19.13%	21.90%		
2023m9	-12.27%	-9.43%		

Notes: The values in the table show the return rates for a new vehicle purchased in the month listed in the far-left column, if sold as a used vehicle in October 2023. Empty cells indicate models that have not yet been released or have been discontinued. Additionally, some empty cells are due to a lack of second-hand price data.

The study has sought to determine the gains individuals could achieve by purchasing new Renault Clio vehicles and selling them after a specified period, considering these purchases as investment vehicles. The analysis includes sales data from April 2020, March 2021, June 2022, and October 2023, examining vehicles purchased in February 2020. The findings, presented across Tables 4, 5, 6, and 7, indicate various profit margins depending on the model and specifications.

Table 4 reveals that the most profitable period to sell a new Renault Clio purchased in February 2020 was April 2020. Higher-equipped models and those with automatic transmissions were more profitable in the secondary market compared to their manual and lower-equipped counterparts. For example, the basic "Joy" trim in manual configuration yielded a 5.60% profit, whereas its automatic counterpart achieved an 8.58% return. The highest trim, "Icon," in manual, was the most profitable at 11.86%, with its automatic version also performing well at 9.95%. The least profitable model was the diesel "Joy 1.5 Blue dCi 85 hp," with a modest 0.84% gain. Sales of vehicles purchased in March and April 2020 were generally less profitable, with diesel models particularly resulting in a -7.14% loss for their owners.

Table 5 shows that for vehicles sold in March 2021, the most profitable purchase period was again February 2020. Unlike in April 2020, there was no clear advantage for higher-equipped models over others. The "Joy" trim in automatic configuration yielded a 45.61% return, while "Touch" and "Icon" trims returned 41.45% and 48.19%, respectively. Manual versions of the lowest trim "Joy" achieved a 26.84% profit, whereas the highest "Icon" trim in manual configuration returned 33.86%. Achieving around a 48% return in approximately 13 months is considered exceptionally high for that year. Diesel models performed well too, with manual versions generating a 31.37% return and automatic versions 39.84% if purchased in February 2020.

Table 6 indicates that the most profitable sale month for a Renault Clio purchased new was June 2022, with vehicles acquired in February 2020 showing the highest returns. Automatic transmission models particularly outperformed, with the "Joy" gasoline automatic purchased in February and sold in June 2022 yielding a 270.58% return, "Touch" 249.57%, and "Icon" 278.66%. The trend suggests that returns increase with higher trim levels. Any model purchased from February 2020 through December 2021 and sold in June 2022 saw at least a 100% profit. Buying a new vehicle in June 2022 and selling it within the same month could yield a 10% to 20% profit.

Table 7 found that selling a new Renault Clio in October 2023 was most profitable if purchased in February 2020, with manual transmission models notably yielding the highest returns this time. For instance, the manual "Touch" model provided a 527.98% profit, while the automatic version yielded 509.37%. The manual "Icon" model topped the charts with a 547.73% return. Vehicles bought in February 2021 and sold in October 2023 averaged a 300% gain, with those purchased in February 2022 still achieving a high 170% return. A vehicle purchased in February 2023 and sold in October 2023 averaged a 50% profit. These rates support the evaluation of vehicles as viable investment assets, also highlighting that significant value increases can occur as new cars are used over time and kilometers before being sold as used. It is also important to note that while a 2020 model vehicle was less than a year old in April 2020, by 2023 it is considered three years old, emphasizing that continued use of a new car can substantially increase its value.

5. Evaluation and Recommendations

Recent studies have observed a dramatic rise in the prices of new vehicles over the last three years, which has similarly affected the used car market. While the Motor Vehicle Price Index currently states these price increases statistically, this study's unique contribution lies in identifying specific price increases for particular models and brands in real-life scenarios.

This study hypothesizes whether purchasing a new vehicle can be considered an investment tool and finds substantial evidence supporting this assumption. Notably, a vehicle purchased in February 2020 and sold in October 2023 could yield returns up to 500%, a profit margin unattainable by term deposits or other financial instruments during the same period. Even investors who typically favor gold and foreign currency have not achieved returns comparable to those from vehicle investments, underscoring the substantial potential of automotive investments to attract demand and generate significant profits amidst steep price increases.

The comparison between manual and automatic transmission vehicles shows that automatics tend to yield higher returns, likely due to their increased demand in modern traffic conditions. This is particularly evident in urban areas with high traffic density, where automatic vehicles are more prevalent in the second-hand market, as detailed in the supplementary section of the study.

The study also observes significant impacts of trim levels on pricing and returns. Higher trim vehicles provide greater profits to the buyer, potentially

influenced by the Special Consumption Tax (ÖTV) imposed by the Turkish government. The ÖTV calculations are based on the import price of the vehicle, with higher trims increasing the import price and consequently falling into higher tax brackets. This escalates the price disparity between lower and higher trims over time, which is expected to widen the gap in their second-hand market prices as well.

Research indicates that individuals who engaged in buying and selling vehicles over a few months incurred losses in 2020. However, in subsequent years—2021, 2022, and 2023—even short-term vehicle trading has proven profitable. Contrary to conventional financial literature, these findings suggest that vehicle purchases should indeed be considered viable investment tools.

6. Limitations of the Study

This study was conducted using the new and used car prices of the Renault Clio between February 2020 and October 2023. It is believed that using other models apart from the Renault Clio would not significantly alter the findings of this study, given Renault's substantial representation in the new car market as one of the best-selling brands. However, incorporating a different brand's dataset might change the study's outcomes.

Another limitation is the assumption that individuals only purchased new cars and sold them as used vehicles after a certain period. In reality, used cars, like new ones, have experienced price increases, providing significant returns to their owners. Future research is anticipated to explore this aspect further.

It is important to note that since August 2023, interest rates applied by banks to auto and personal loans have been significantly increased and restricted in amount. This has adversely impacted both new and used car markets. Notably, a decline of about 10% in used car prices has been observed in November and December 2023. This aspect has not been included in the current study but is recommended for exploration in future research.

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