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Reflexivity And Price Expectations In The Markets: A Comparative Analysis Of Price Formation In NVIDIA And Tesla

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Abstract
Theoretical concepts of reflexivity as proposed by George Soros are introduced in this paper to spot the differences between a stock price and a fundamental value in two prominent companies, NVIDIA and Tesla, that have high expectations. The process to decide on pricing based on the input of financial indicators and the output in terms of the market's recursive feedback loops is undertaken through the utilization of the results of two multiple regression models. The ana
lysis reveals that Tesla's price is very closely linked to major operational fundamentals such as revenue thus reflecting an "efficient" reflexive loop. On the other hand, the price of NVIDIA is highly dependent on valuation multiples and analysts' projections of future performance thus suggesting a reflexive loop that is more reliant on speculative future expectations than current operational performance. This difference amplifies the unique phases in growth and stories that are behind these two market leaders.

1. Introduction

According to George Soros' theory of reflexivity, there is a two-way feedback loop between market participants' perceptions (the cognitive function) and the actual economic fundamentals (the manipulative function). Participants are not only acting on information, but their actions also change the reality upon which that information is based. As a result, this recursive, non-equilibrium dynamic can allow prices to diverge considerably from any theoretical "fundamental value" for a prolonged period.

This article uses the same lens to analyze NVIDIA and Tesla which are two entities with characteristics of rapid growth, heavy investor scrutiny, and substantial volatility. By breaking down the statistical correlations between their stock prices and a set of financial variables, we can understand the nature of the dominant reflexive loops that are operating. The main research question is: How do the drivers of stock price, as revealed by regression analysis, reflect the underlying reflexive mechanisms and future expectations for NVIDIA and Tesla?

2. Methodology and Data Overview

The analysis relies upon the results of two multiple linear regression models.

NVIDIA (NVDA): The model is estimated from 31 observations. The predictor variables are EPS (Diluted), YoY Change in EPS, Revenue (B USD), YoY Growth in Revenue, Average P/E Ratio, Consensus EPS Estimate, and Actual EPS.

Tesla (TSLA): The model is estimated from 39 observations. The predictor variables are EPS (Diluted), Revenue (B USD), Average P/E Ratio, Consensus EPS Estimate, and Actual EPS.

The main model fit statistics are presented in the table below:

	Nvidia	Tesla
R square	.747	.969
Adj R-square	.684	.964
F statistic	11.831	206.511
Std.error	121.2	2.11

3. Analysis and Interpretation

3.1. Tesla: The Reflexive Loop of Execution and Scale

Tesla's regression model is highly effective, as shown by an R^2 of 0.969. This means that more than 96% of the changes in Tesla's stock price are accounted for by the fundamental variables in the model.

Dominant Fundamental Driver: The most decisive predictor is Revenue (Beta = 1.125, $p < .000$). This leads to the idea of a potent reflexive loop: increasing sales figures confirm Tesla's growth story and thus, by attracting more money and faith in the company's ability to scale, this again reinforces the company's power to grow further. The market is primarily valuing Tesla as a scaling industrial company.

The Role of Expectations and Contradictions: The negative signs for Consensus EPS Estimate (B = -11.816, p = .006) and Actual EPS (B = -2.634, though statistically insignificant) are quite unexpected but also very informative. The contrarian reflexive mode may be the one at work here. In case of high analyst estimates, if a company misses the expected results or a higher bar is reached, the stock price goes down; or in the opposite case, low estimates mean there could be a positive surprise. This shows that the market is extremely focused on Tesla's capability of going beyond what has already been factored in.

Interpretation:

The reflexive loop of Tesla seems to be very closely connected to real operational figures (revenue), but at the same time, it is largely influenced by the market's expectations versus the actual profitability. It is a loop of performance and narrative confirmation.

Coefficient Correlations[a]

Model			Actual EPS	YoY Change (EPS)	YoY Growth (Revenue)
1	Correlations	Actual EPS	1.000	.113	-.205
		YoY Change (EPS)	.113	1.000	-.851
		YoY Growth (Revenue)	-.205	-.851	1.000
		Average P/E Ratio	-.044	.034	-.332
		Revenue (B USD)	-.005	.857	-.937
		Consensus EPS Estimate	-.998	-.154	.256
	Covariances	Actual EPS	157823.953	3870.820	-15103.583
		YoY Change (EPS)	3870.820	7392.440	-13554.236
		YoY Growth (Revenue)	-15103.583	-13554.236	34333.270
		Average P/E Ratio	-32.003	5.299	-112.119
		Revenue (B USD)	-36.313	1403.025	-3305.783
		Consensus EPS Estimate	-165345.143	-5538.422	19805.518

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-152.727	89.272		-1.711	.100
	YoY Change (EPS)	-97.645	85.979	-.278	-1.136	.267
	Revenue (B USD)	6.766	19.049	.184	.355	.726
	YoY Growth (Revenue)	244.289	185.292	.555	1.318	.200
	Average P/E Ratio	7.189	1.824	.559	3.942	.001

Model Summary[b]

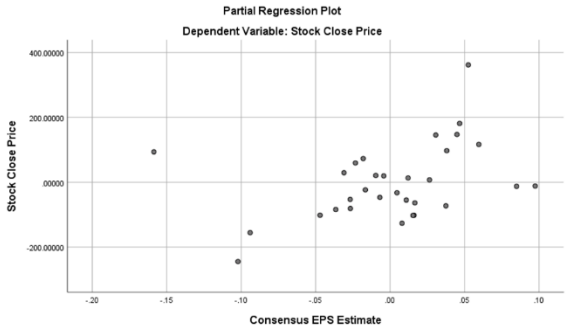
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	Change Statistics F Change	Change Statistics df1
1	.864[a]	.747	.684	121.23711579	.747	11.831	6

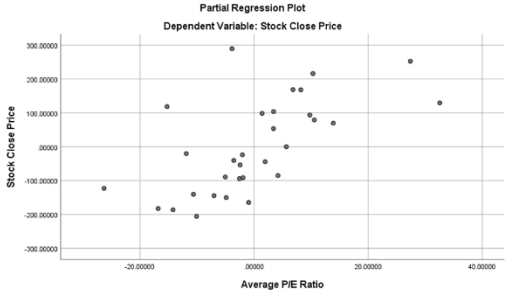
ANOVA[a]

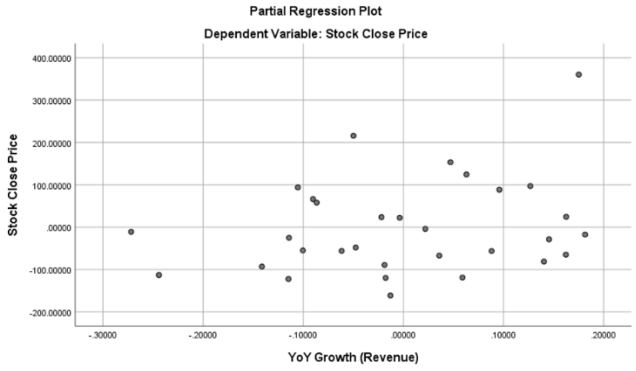
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1043422.170	6	173903.695	11.831	.000[b]
	Residual	352762.518	24	14698.438		
	Total	1396184.687	30			

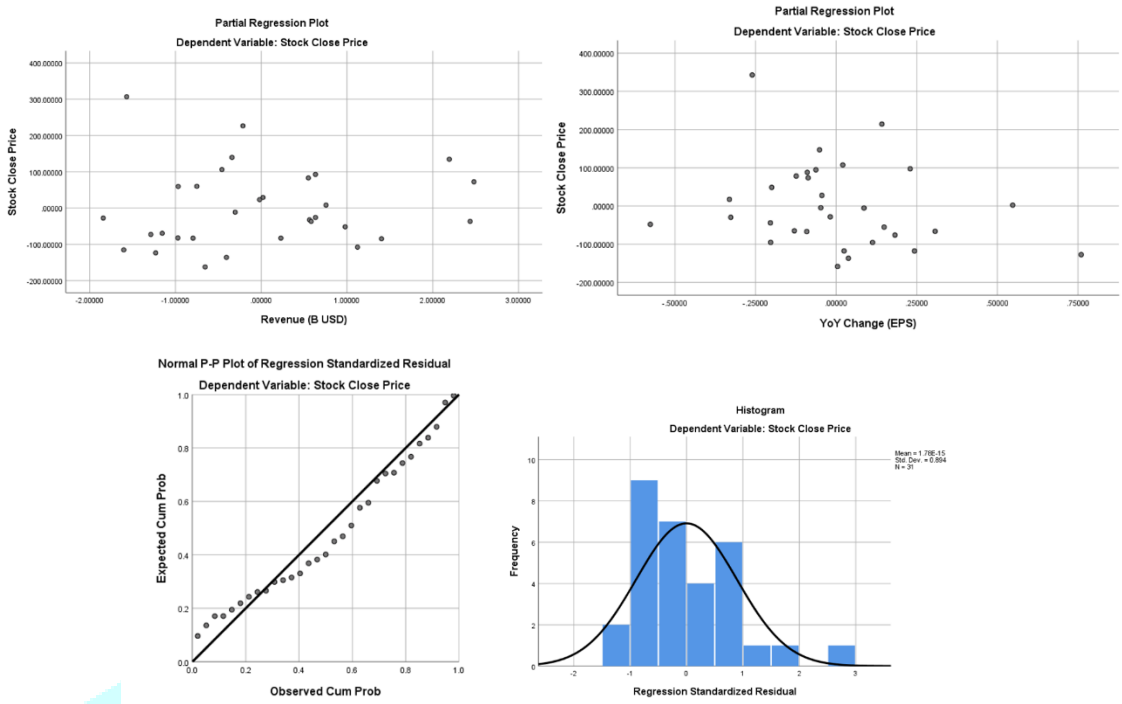
a. Dependent Variable: Stock Close Price

b. Predictors: (Constant), Actual EPS, YoY Change (EPS), YoY Growth (Revenue), Average P/E Ratio, Revenue (B USD), Consensus EPS Estimate









3.2. NVIDIA: The Reflexive Loop of Speculative Future Value

NVIDIA's model, a major one, reflects a different scenario. The model with an R^2 of 0.747 and a considerably larger standard error has less explanatory power that means other factors, probably narrative and speculative sentiment, play a dominant role.

Valuation as a Key Driver

First and foremost, the most statistically significant predictor is the Average P/E Ratio (Beta = 0.559, p = .001). It is a textbook example of a reflexive loop where higher prices lead to higher valuations that then attract more buyers thus further increasing the price and the multiple. The P/E ratio is not a fundamental input but a market-applied multiple, which shows that the perception of future potential is the main driver.

The Collinearity and Expectation Problem:

The model states that it is "Tolerance = .000 limit reached," and EPS (Diluted) has been dropped because of perfect collinearity with Actual EPS and extreme collinearity with Consensus EPS. This statistical problem is an interesting economic finding: the market is unable to differentiate the influence of past EPS, actual reported EPS, and estimated future EPS. They are all part of the same "AI dominance" narrative.

The Battle of Expectations:

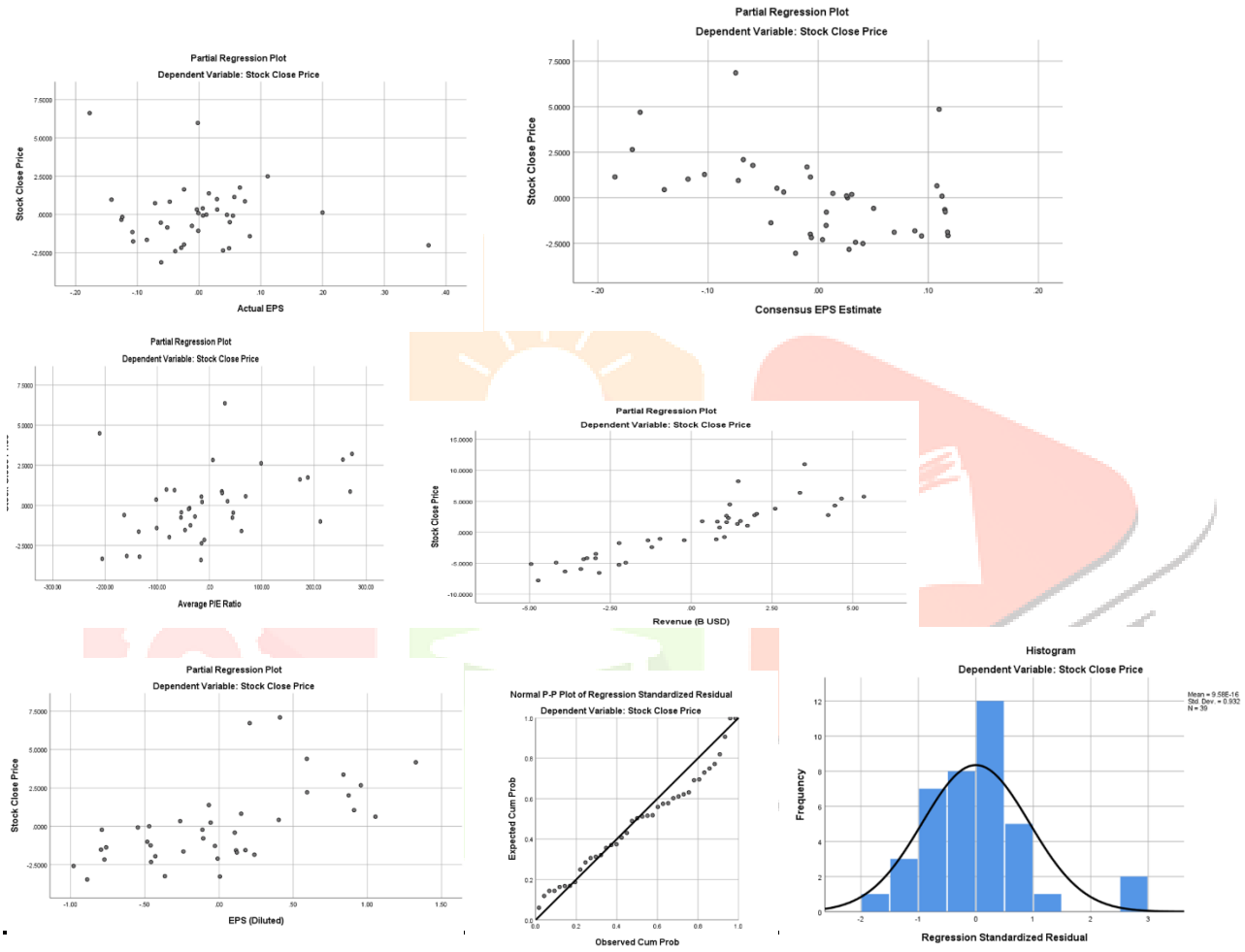
The coefficients for Consensus EPS Estimate (B = 847.262, p = .053) and Actual EPS (B = -815.105, p = .051) are extremely large, opposite in sign, and very close to significance. This indicates a fierce struggle of the reflexive loop. The positive analyst revisions very strongly increase the price, but the actual reported number can have a contradictory, negative effect—probably due to "selling the news" or the reality not meeting the over-the-top expectations built into the price.

Interpretation:

The fluctuation of NVIDIA's stock is to a great extent a feature of its valuation reflexive loop with a significant emphasis on its valuation narrative and future earnings potential, mainly related to AI. This loop is more a speculation and therefore possesses more chances to be incorrect, as current fundamentals (like YoY EPS Change and Revenue, which were insignificant) are getting less consideration due to the future.

4. Discussion: Correlating Reflexivity with Price Discrepancies

The difference between the models is the direct reflection of the kind of reflexive feedback loops that are ruling each stock.



Coefficient Correlations[a]

Model			Actual EPS	Average P/E Ratio	EPS (Diluted)
1	Correlations	Actual EPS	1.000	.440	-.394
		Average P/E Ratio	.440	1.000	-.414
		EPS (Diluted)	-.394	-.414	1.000
		Revenue (B USD)	-.278	-.666	.317
		Consensus EPS Estimate	-.711	-.041	-.057
	Covariances	Actual EPS	12.471	.004	-.812
		Average P/E Ratio	.004	7.781E-6	-.001
		EPS (Diluted)	-.812	-.001	.340
		Revenue (B USD)	-.120	.000	.023
		Consensus EPS Estimate	-10.080	.000	-.133

		B	Std. Error	Beta		
1	(Constant)	15.315	.845		18.117	.000
	EPS (Diluted)	2.731	.583	.238	4.683	.000
	Revenue (B USD)	1.429	.122	1.125	11.718	.000
	Average P/E Ratio	.007	.003	.132	2.525	.017
	Consensus EPS Estimate	-11.816	4.014	-.373	-2.944	.006
	Actual EPS	-2.634	3.531	-.091	-.746	.461

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	
1	.984[a]	.969	.964	2.1139486	.969	206.511	5	

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4614.251	5	922.850	206.511	.000[b]
	Residual	147.469	33	4.469		
	Total	4761.720	38			

a. Dependent Variable: Stock Close Price

b. Predictors: (Constant), Actual EPS, Average P/E Ratio, EPS (Diluted), Revenue (B USD), Consensus EPS Estimate

Tesla's "Efficient" Reflexivity

The high R^2 indicates that the company's share price, although unstable, effectively mirrors its main fundamental (revenue growth) trajectory. The differences between price and the simplest fundamental value are probably of a very short duration and caused by the volatility of profitability and the market's reaction to expectations vs. actuals. The reflexive loop is ultimately supported by the fundamentals.

NVIDIA's "Speculative" Reflexivity:

The reduced explanatory power and P/E ratio significance indicate a loop where the dominating perception is about infinite future growth. This may bring about larger and longer discrepancies between price and traditional valuation models. The price here is not only a reflection of current fundamentals but also an active wager on a specific, revolutionary future. Hence, it becomes more susceptible to heavy drops in case the narrative is questioned (a "Minsky moment" for the AI narrative).

5. Conclusion and Future Research

This paper shows that reflexivity theory is a potent conceptual framework for understanding statistical models of stock price. Tesla and NVIDIA, though both high-growth "story stocks," are operating different on reflexive mechanisms.

Tesla's price is influenced by a reflexive loop of scaling execution, with revenue being the main metric of validation.

NVIDIA's price is influenced by a reflexive loop of speculative future value, where the valuation multiple and analyst expectations are the main factors, thus resulting in a fragile and volatile dynamic.

Investors and researchers may take this as a sign that risk evaluation should be different for each case. The examination of Tesla would require concentration on its production and delivery capabilities whereas that of

NVIDIA would call for a comprehensive knowledge of AI market dynamics, strength of the narrative, and changes in sentiment.

Subsequent inquiry might use direct indicators of market sentiment (for example, news sentiment analysis, social media volume) to quantitatively gauge the "cognitive function" and thus further extend the reflexivity framework. A long-term study monitoring the changes in these regression relationships through market cycles would also be a great help in comprehending the development of these reflexive loops.

References

* Soros, G. (1987). The Alchemy of Finance.
* Regression Outputs: NVIDIA.doc & Tesla.doc by spss