

ECO3062-Gnosis Project

Token description

Gnosis (GNO) was launched in April 2017. The token is listed on many major cryptocurrency exchanges such as Binance, Coinbase, and more.

Gnosis would fall under the utility token category. This is because the token is primarily used to access the services provided within the Gnosis ecosystem. It is a utility token that offers access to its decentralised prediction markets.

The tokens are used within the Gnosis network to predict the outcome of events. If correct, the user will receive a pay-out of GNO tokens via a smart contract. If incorrect, they will lose the tokens they staked. It is a decentralised prediction market focusing on forecasting based on informed speculation and data to predict the results of future events.

Price and Volume Analysis

Figure 1 below displays statistics for the price and volume data of the Gnosis token since its launch up to the 11th of November 2024.

Price and Volume Statistics for Gnosis

	mean	sd
volumefrom	2012.258	6536.626
volumeto	176095	821081.6
GNO close price	72.17425	108.3562
date	21080	1513.091
GNO Return	.0021314	.0590433
ret_gnol	.0004224	.0583593
Observations	5241	

Table 1

Table 1 displays the mean close price and volume with large standard deviations, highlighting how Gnosis tokens are susceptible to significant price swings. As it is a smaller cryptocurrency it can have high volatility.

Figure 1 below shows the lifetime price chart for Gnosis, further showing the volatility of the altcoin. Gnosis' price reached an all-time high in 2021.

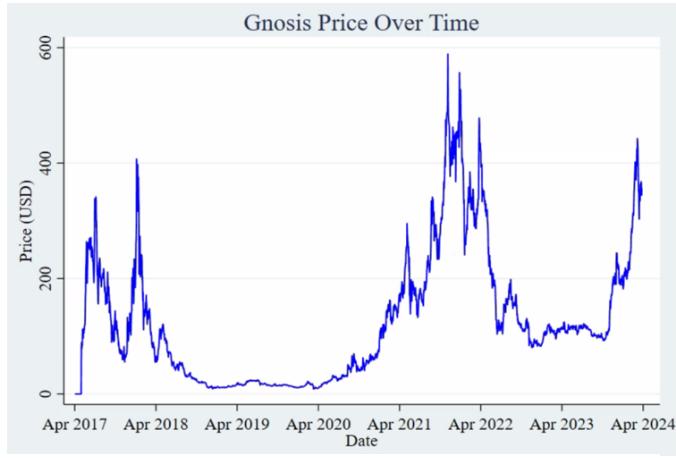


Figure 1

Trends from Bitcoin are reflected in Figure 1. As people's confidence in cryptocurrency increases as Bitcoin's price increases in years such as 2017 and 2021, this is reflected in the price peaking for Gnosis during these years also.

Figure 2 below shows the distribution of Gnosis returns. The blue line represents the normal distribution.

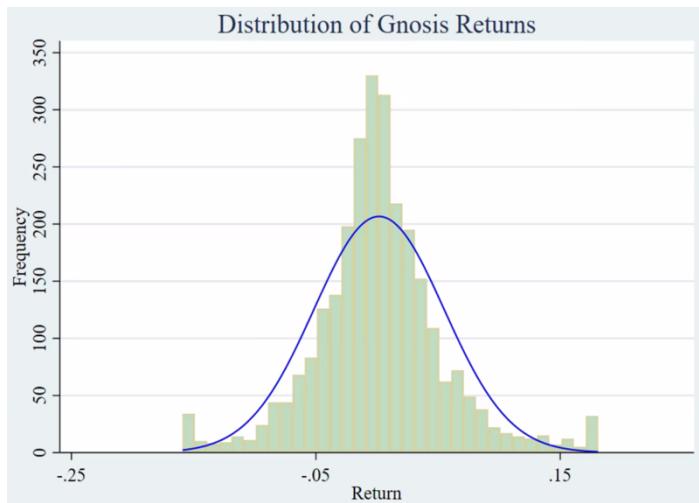


Figure 2

Overall, the histogram resembles the normal distribution shape with returns mostly concentrated around the centre and lowering each side. Most returns are around 0 further highlighting Gnosis as a utility token and not an investment asset.

Explaining Daily Gnosis Returns

Traditional risk factors include variables from financial markets that affect asset return. Table 2 below analyses the effect the Fama-French 5-factor model has on Gnosis Returns.

Source	SS	df	MS	Number of obs	=	1,595
Model	.40759606	6	.067932677	F(6, 1588)	=	16.57
Residual	6.50978155	1,588	.004099359	Prob > F	=	0.0000
Total	6.91737761	1,594	.004339635	R-squared	=	0.0589
				Adj R-squared	=	0.0554
				Root MSE	=	.06403

ret_gno	Coefficient	Std. err.	t	P> t	[95% conf. interval]
market_risk_premium	1.071759	.1349952	7.94	0.000	.8069713 1.336546
size_factor	.2533318	.2634215	0.96	0.336	-.2633587 .7700223
value_factor	-.1472054	.2314496	-0.64	0.525	-.6011842 .3067735
profitability_factor	-.2718435	.3315503	-0.82	0.412	-.9221659 .3784788
investment_factor	-.4016388	.4341574	-0.93	0.355	-1.253221 .4499431
risk_free_rate	-41.36877	27.92671	-1.48	0.139	-96.14586 13.40833
_cons	.0041301	.002306	1.79	0.073	-.0003931 .0086533

Table 2

Variables such as size, value profitability, and investment are not statistically significant. This means they cannot reliably explain the variation in Gnosis returns. However, the market risk premium is very significant with a p-value of 0. The coefficient of 1.071759 means for each 1% increase in the market risk premium, the return on Gnosis is 1.07%. This makes sense as when the market premium is high, investors expect a higher return for taking a risk.

Crypto risk factors are variables that affect cryptocurrencies. Factor size could be a variable impacting cryptocurrencies as larger and more established ones may behave differently from smaller ones. Table 3 below shows the effects of factor size on the returns of Gnosis tokens.

Source	SS	df	MS	Number of obs	=	1,207
Model	.039173254	3	.013057751	F(3, 1203)	=	3.13
Residual	5.02065287	1,203	.004173444	Prob > F	=	0.0249
Total	5.05982613	1,206	.004195544	R-squared	=	0.0077
				Adj R-squared	=	0.0053
				Root MSE	=	.0646

ret_gno	Coefficient	Std. err.	t	P> t	[95% conf. interval]
f_size1	.0825827	.0581334	1.42	0.156	-.0314713 .1966367
f_size2	.1400635	.0785849	1.78	0.075	-.0141152 .2942422
f_size3	-.1965101	.0827277	-2.38	0.018	-.3588167 -.0342034
_cons	.0015463	.0018639	0.83	0.407	-.0021105 .0052032

end of do-file

Table 3

Crypto risk factors that can be measured in terms of size include In Table 3 only ‘f_size3’ is statistically significant with a p-value of 0.018. It has a coefficient of -0.1965101 indicating as factor size increases, Gnosis returns decrease. Variables ‘f_size1’ and ‘f_size2’ are not statistically significant at the 5% level. However, positive coefficients show a weak positive relationship that factor size increases Gnosis returns, although these results are not statistically strong.

Google Trends displays how many times a phrase is searched on Google over time. For example, the words ‘GNO coin’. Regressing the Google Trends data of ‘GNO coin’ as an explanatory variable on GNO returns shows us the strength of the relationship between these variables. This is displayed below in Table 4.

Source	SS	df	MS	Number of obs	=	243
Model	.005074943	1	.005074943	F(1, 241)	=	1.52
Residual	.806814666	241	.003347779	Prob > F	=	0.2194
Total	.811889609	242	.003354916	R-squared	=	0.0063
				Adj R-squared	=	0.0021
				Root MSE	=	.05786

ret_gno	Coefficient	Std. err.	t	P> t	[95% conf. interval]
gnocoinworldwide	.0006183	.0005022	1.23	0.219	-.0003709 .0016074
_cons	-.0021654	.0037746	-0.57	0.567	-.0096008 .00527

Table 4

Table 4 does not display any support that variations in Google searches and results are not correlated with Gnosis returns. $F(1, 241) = 1.52$, Prob > F = 0.2194 means the study is not statistically significant. As Gnosis is a small cryptocurrency it is unlikely to have many searches and therefore limited data and low explanatory power.

Network statistics include variables such as the number of transactions, payments, and wallets with a positive balance. Table 5 below presents a regression of these variables on the return of Gnosis along with a constant term.

	(1) GNO Return	(2) GNO Return	(3) GNO Return
number of wallets ~	1.069* (5.25)		
number of transactions ~		0.00520* (6.56)	
number of payment ~h			0.0000355 (1.25)
Constant	0.000716 (0.62)	0.000869 (0.76)	0.00184 (1.61)
Observations	2707	2707	2707
R-squared	0.0101	0.0157	0.0006
Adjusted R-squared	0.0097	0.0153	0.0002

t statistics in parentheses

* p<0.1

Table 5

Table 5 shows that the number of payments is not significant at the 10% level and therefore does not significantly impact the returns of Gnosis tokens. The number of wallets has a positive correlation at the 10% level showing that every additional wallet is associated with a 1.069% increase in Gnosis returns. The number of transactions is also significant indicating that every transaction Gnosis returns increases by 0.0052%. However, overall R-squared values are very low indicating that these variables have a low correlation to Gnosis returns.

GNO returns at a weekly Frequency

	(1) Return t+1	(2) Return t+2	(3) Return t+3	(4) Return t+4	(5) Return t+5	(6) Return t+6	(7) Return t+7
Return t	-0.00259 (-0.06)	-0.0144 (-0.45)	-0.0207 (-0.67)	0.0686* (2.20)	-0.0317 (-1.01)	0.00310 (0.10)	-0.00207 (-0.07)
Crypto Size factor~1	0.0829 (1.42)	0.0847 (1.45)	0.0823 (1.42)	0.0770 (1.33)	0.0834 (1.43)	0.0828 (1.42)	0.0825 (1.42)
Crypto Size factor~2	0.141* (1.78)	0.138* (1.75)	0.142* (1.80)	0.137* (1.74)	0.144* (1.83)	0.140* (1.78)	0.140* (1.78)
Crypto Size factor~3	-0.195* (-2.26)	-0.196* (-2.37)	-0.197* (-2.38)	-0.188* (-2.27)	-0.199* (-2.40)	-0.197* (-2.38)	-0.196* (-2.37)
Constant	0.00155 (0.83)	0.00157 (0.84)	0.00161 (0.86)	0.00141 (0.76)	0.00161 (0.86)	0.00154 (0.82)	0.00155 (0.83)
Observations	1207	1207	1207	1207	1207	1207	1207
R-squared	0.0077	0.0079	0.0081	0.0117	0.0086	0.0078	0.0077
Adjusted R-squared	0.0044	0.0046	0.0048	0.0084	0.0053	0.0044	0.0044

Table 6

	(1) Return t+1	(2) Return t+2	(3) Return t+3	(4) Return t+4	(5) Return t+5	(6) Return t+6	(7) Return t+7
Return t	0.0147 (0.56)	-0.0215 (-0.78)	-0.00274 (-0.10)	0.0431 (1.63)	-0.0521* (-2.02)	-0.0166 (-0.65)	-0.0186 (-0.76)
market_risk_premium	1.075* (7.96)	1.070* (7.93)	1.076* (7.97)	1.064* (7.88)	1.071* (7.95)	1.079* (8.00)	1.078* (8.00)
size_factor	0.259 (0.98)	0.264 (1.00)	0.248 (0.94)	0.250 (0.95)	0.258 (0.98)	0.251 (0.95)	0.247 (0.94)
value_factor	-0.156 (-0.67)	-0.142 (-0.61)	-0.149 (-0.65)	-0.163 (-0.71)	-0.150 (-0.65)	-0.149 (-0.64)	-0.156 (-0.68)
profitability_factor	-0.278 (-0.84)	-0.291 (-0.88)	-0.302 (-0.91)	-0.293 (-0.89)	-0.302 (-0.91)	-0.308 (-0.93)	-0.300 (-0.91)
investment_factor	-0.372 (-0.86)	-0.387 (-0.89)	-0.353 (-0.81)	-0.341 (-0.79)	-0.362 (-0.83)	-0.349 (-0.80)	-0.331 (-0.76)
risk_free_rate	-39.75 (-1.42)	-42.55 (-1.52)	-40.79 (-1.46)	-40.02 (-1.44)	-42.72 (-1.53)	-41.48 (-1.49)	-41.08 (-1.47)
Constant	0.00395* (1.71)	0.00424* (1.84)	0.00405* (1.75)	0.00392* (1.70)	0.00429* (1.86)	0.00414* (1.80)	0.00405* (1.75)
Observations	1594	1593	1592	1591	1591	1591	1590
R-squared	0.0592	0.0594	0.0590	0.0607	0.0615	0.0593	0.0596
Adjusted R-squared	0.0551	0.0552	0.0549	0.0565	0.0574	0.0552	0.0554

Table 7

	(1) Return t+1	(2) Return t+2	(3) Return t+3	(4) Return t+4	(5) Return t+5	(6) Return t+6	(7) Return t+7
Return t	-0.0470* (-2.46)	-0.0288 (-1.52)	-0.0151 (-0.80)	0.00928 (0.49)	-0.0340* (-1.81)	0.00850 (0.45)	-0.0133 (-0.71)
number of wallets ~	-4.48e-08 (-0.17)	-8.05e-08 (-0.31)	-6.44e-08 (-0.25)	-6.81e-08 (-0.27)	-1.75e-08 (-0.07)	-3.15e-08 (-0.12)	-2.18e-08 (-0.09)
number of active a~s	-0.000142* (-4.67)	-0.000142* (-4.68)	-0.000142* (-4.67)	-0.000143* (-4.68)	-0.000139* (-4.58)	-0.000141* (-4.66)	-0.000142* (-4.68)
number of transact~s	0.000145* (8.47)	0.000145* (8.49)	0.000144* (8.43)	0.000144* (8.42)	0.000141* (8.30)	0.000141* (8.31)	0.000142* (8.34)
number of payment ~s	-4.90e-09 (-0.73)	-5.37e-09 (-0.80)	-5.14e-09 (-0.77)	-5.28e-09 (-0.79)	-4.83e-09 (-0.73)	-5.08e-09 (-0.76)	-5.10e-09 (-0.77)
Constant	-0.00327 (-0.87)	-0.00274 (-0.73)	-0.00289 (-0.77)	-0.00280 (-0.74)	-0.00349 (-0.93)	-0.00320 (-0.85)	-0.00327 (-0.87)
Observations	2706	2705	2704	2703	2702	2701	2700
R-squared	0.0431	0.0437	0.0426	0.0426	0.0418	0.0413	0.0409
Adjusted R-squared	0.0413	0.0419	0.0408	0.0408	0.0401	0.0395	0.0391

Table 8

Tables 6,7, and 8 R-squared values are higher than the daily models and increasing, this model better explains the variation in returns every week. However, the R-squared for all tables is still very low, giving the regressions weak explanatory power.

Size factor 3 in Table remains significant as Table 3 shows an inverse relationship between factor size and Gnosis returns.

Factors such as market risk premium remain constantly significant. This shows strength that over time is still significant.

Overall values have slightly increase in strength showing weekly frequency is a better way to measure the relationship between GNO returns and variables.

Gnosis FTX Event Study

In November 2022 FTX, one of the largest cryptocurrency exchanges at the time, collapsed. FTX users have suffered difficulties recovering their funds. This resulted in a loss of investor confidence in cryptocurrency and therefore prices. Figures 3 and 4 below show the impacts of FTX crashing on Gnosis. Gnosis despite not being listed on FTX still suffered because of its collapse.

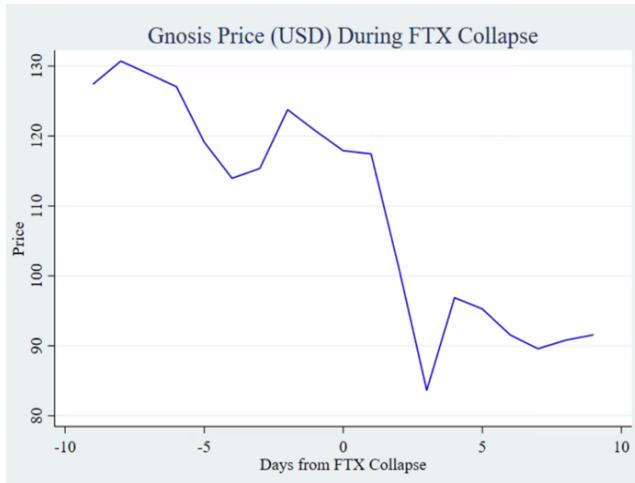


Figure 3

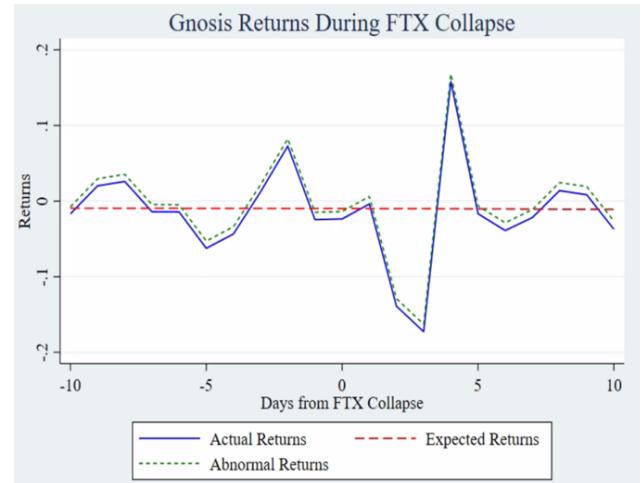


Figure 4

Figure 3 displays Gnosis's price falling over 30% days after the collapse. Figure 4 shows how Gnosis returns suffered due to this price fall. Positive returns were also shown a few days after as people tried to profit off Gnosis's price being unusually low.

As explained in Table 2 market risk premium has a positive relationship with Gnosis returns. Despite not even being listed on FTX, during times like a major cryptocurrency exchange crashing, the market risk premium is very low. This would cause investors to sell their volatile small tokens, like GNO, causing its price to fall sharply.

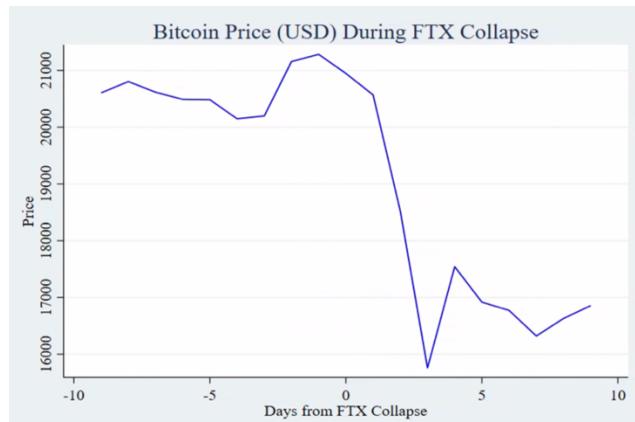


Figure 5

The FTX collapse resulted in Bitcoin suffering around a 25% price drop as shown in Figure 5. Bitcoin is the market leader, when this asset does well, many other cryptocurrencies tend to follow. However, as bitcoin is more stable than these smaller coins large falls in its price cause investors to liquidate these higher risk assets first in a market panic, causing GNO price to crash. This explains the correlation between Figure 3 and Figure 5.

Gnosis Binance Listing Event Study

On the 30th of August 2021, Gnosis became listed on Binance. This is a key event for an altcoin as Binance is a major cryptocurrency exchange therefore increasing the accessibility of the coin and its credibility.

Figure 6 displays the spike increase in the price of Gnosis tokens on the 30th of August 2021. This could be explained as Binance is one of the largest cryptocurrency exchanges. Many Binance users who were interested in the Gnosis project now have access to the token. However, despite the benefits of being listed on Binance, Gnosis' price continued to decrease in the ten days after the event.



Figure 6

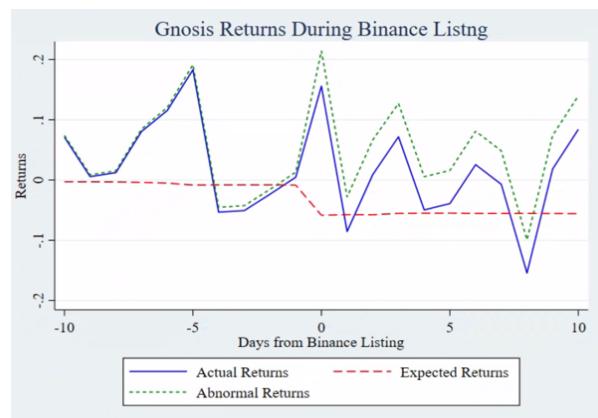


Figure 7

This can be explained by market sentiment and its influence on cryptocurrency prices. Anticipation of an event, such as a Binance listing can lead to excitement and cause people to buy the tokens before the listing. As buyers assume the price will increase, with increased accessibility on the 30th of August 2021 more people will be buying the token increasing their profits. This is shown in Figure 7 where returns are high on the day of the Listing. This could explain why Figure 6 displays the days before the listing, the price was very bullish. As investors were looking to profit from the tokens by selling them after the listing.

Figure 8 below displays an increase in trading volume after the Binance listing. This shows an increase when listed and the days after compared to before.

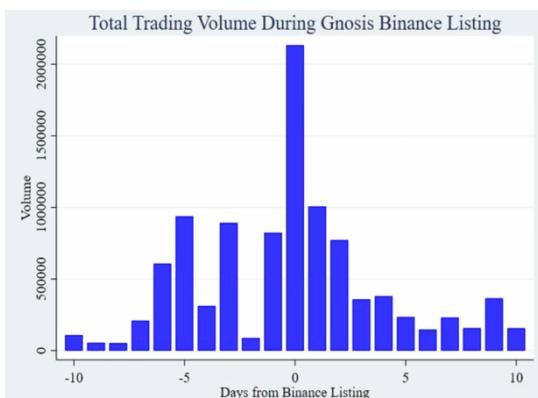


Figure 8

One reason for this increase in volume during and after the listing on Binance could be increased accessibility. As the token is now on a major cryptocurrency exchange millions of users can now buy and sell these tokens increasing the volume.

Unusually high volume was also displayed on the day of the listing in Figure 8. This could further justify the fall in Gnosis price in Figure 6. Much of this volume could be the people selling the Gnosis tokens which they bought in the days before the event as they anticipated a post-listing price spike. Shown with high volume as an increased number of investors sold Gnosis on this day, causing the price to drop in Figure 6 and volume to increase in Figure 8.

References

Google trends. (no date). Available at: <https://trends.google.com/trends/explore?date=2017-01-01%202022-01-01&q=GNO%20crypto,GNO%20coin> (Accessed: 04 December 2024).

Gnosis (GNO) - live streaming prices and market cap (no date) *CryptoCompare.* Available at: <https://www.cryptocompare.com/coins/gno/overview> (Accessed: 04 December 2024).

Statistical Software for data science (no date) *Stata.* Available at: <https://www.stata.com/> (Accessed: 04 December 2024).