

University of Science and Technology of Hanoi



Fundamentals of Data Science

S&P 500 Crisis Analysis

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ABSTRACT

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Data Collection and Management

3.1 Introduction

The dataset employed in this project is the Standard& Poor's (S&P) 500 Index data. It contains monthly historical records with key financial indicators such as Dividend, Earnings, and Price-to-Earnings (P/E) Ratio. The dataset consists of 1833 entries and 10 features, and is provided in CSV (Comma Separated Values) format.

Date	SP500	Dividend	Earnings	CPI	LIR	Real Price	Real Dividend	Real Earnings	PE10
2023-06-01	4345.37	68.71	181.17	305.11	3.75	4359.88	68.94	181.77	32.41
2023-05-01	4146.17	68.54	179.17	304.13	3.57	4173.45	68.99	180.35	31.14
2023-04-01	4121.47	68.38	177.17	303.36	3.46	4159.03	69.00	178.78	31.15
...
2017-09-01	2492.84	48.17	107.08	246.82	2.20	3091.85	59.74	132.81	32.97
2017-08-01	2456.22	47.85	106.06	245.52	2.21	3062.56	59.67	132.24	32.71

Table 3.1: S&P 500 Dataset

Features	Type	Data Type	Explanation
Date	datetime	Qualitative	Timestamp of the record
SP500	float	Qualitative	The nominal value at that time.
Dividend	float	Qualitative	The average dividend payout of companies.
Earnings	float	Qualitative	The average earnings of companies.
CPI	float	Qualitative	A measure of inflation and purchasing power.
LIR	float	Qualitative	The 10-year government bond yield.
Real Price	float	Qualitative	The inflation-adjusted S&P 500 index value (using CPI).
Real Dividend	float	Qualitative	Dividend values adjusted for inflation.
Real Earnings	float	Qualitative	Earnings adjusted for inflation.
PE10	float	Qualitative	The cyclically adjusted price-to-earnings ratio.

Table 3.2: Features Explanation

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