Beta and Stock Returns

A Portfolio Analysis

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Table of contents

Introduction

Introduction

We start our presentation asking us three questions about this project:

- What?
- Why?
- How?

What do we do?

- Analyse portfolios sorted by beta value
- Use Swiss stocks of Swiss Market Index
- Compare Returns with each other and the SMI

Why do we do that?

- Analyse if CAPM holds truth on Swiss stock market
- Analyse if higher risk equals higher return
- Analyse if beta sorted portfolios outperform SMI

How do we do that?

- Compare beta value
- Compare daily returns
- Compare cumulative returns

Results

Beta

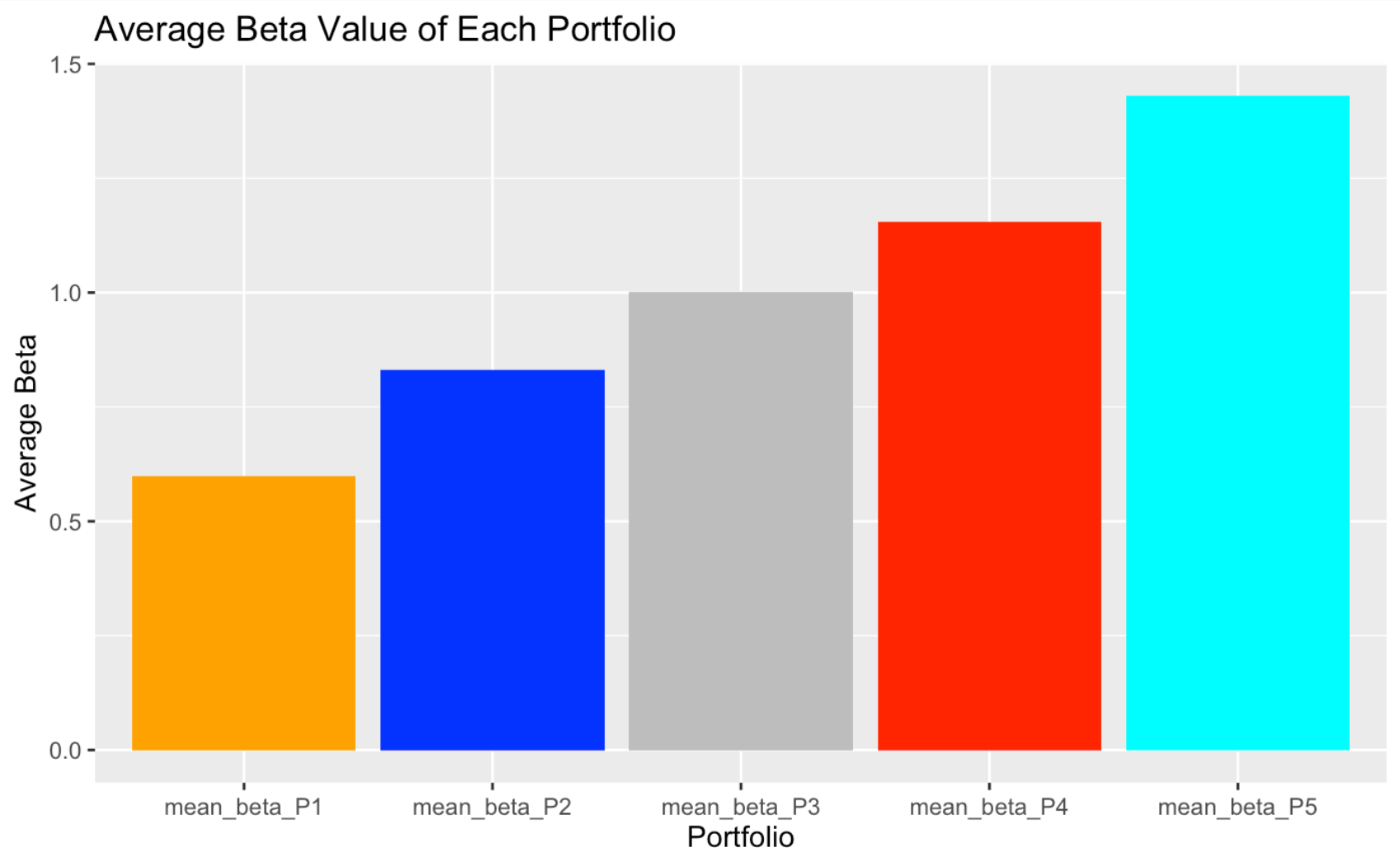

Figure 1: Average Beta Values

Beta

Figure 1 indicates:

- Average beta value vary from 0.6 to 1.43
- Portfolio 3 (PF3) has an average beta close to 1

Beta

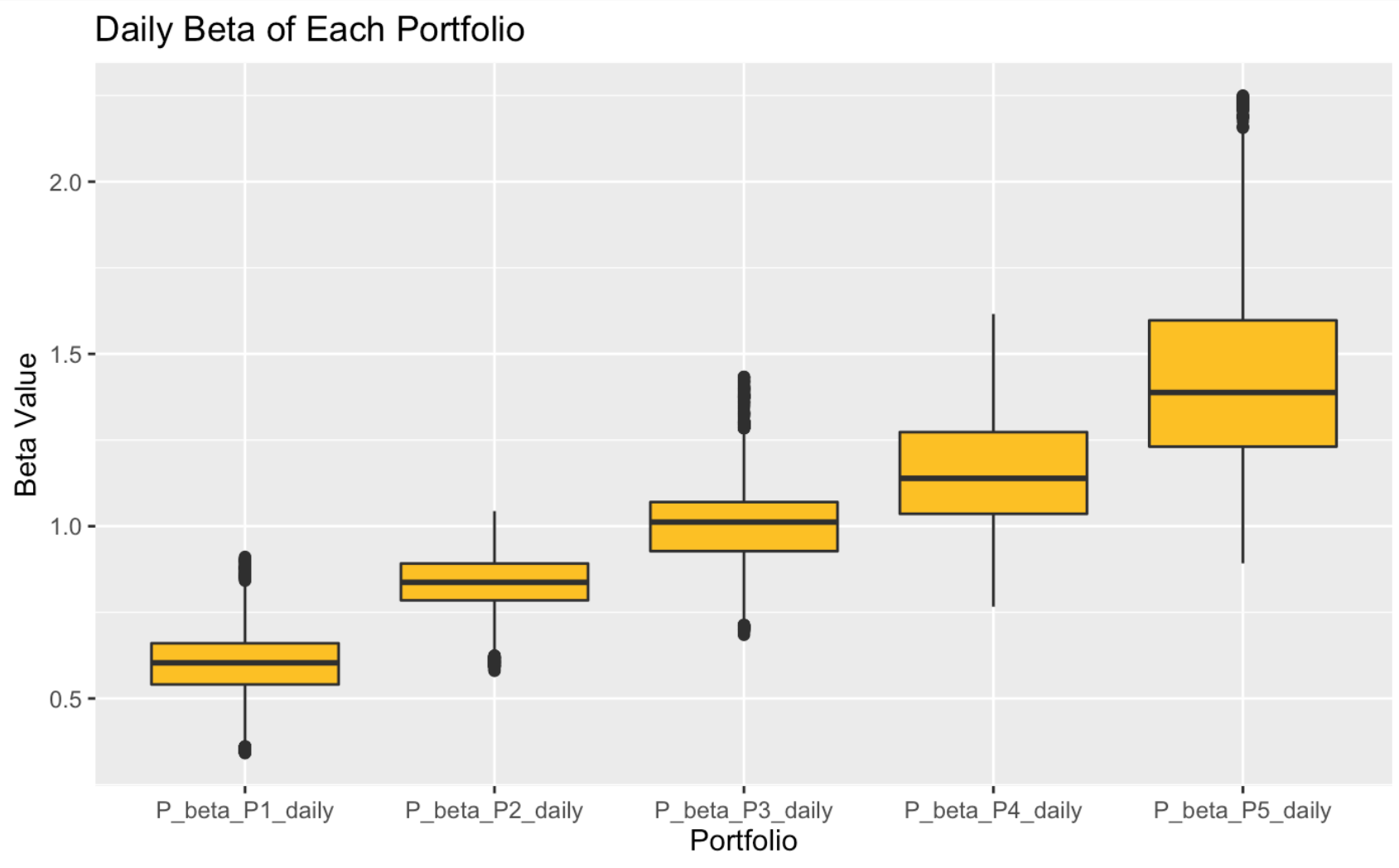

Figure 2: Daily Beta of each Portfolio

Beta

Figure 2 indicates:

- Higher variance for higher beta portfolios
- However: PF1 has larger outliers than PF2

Beta

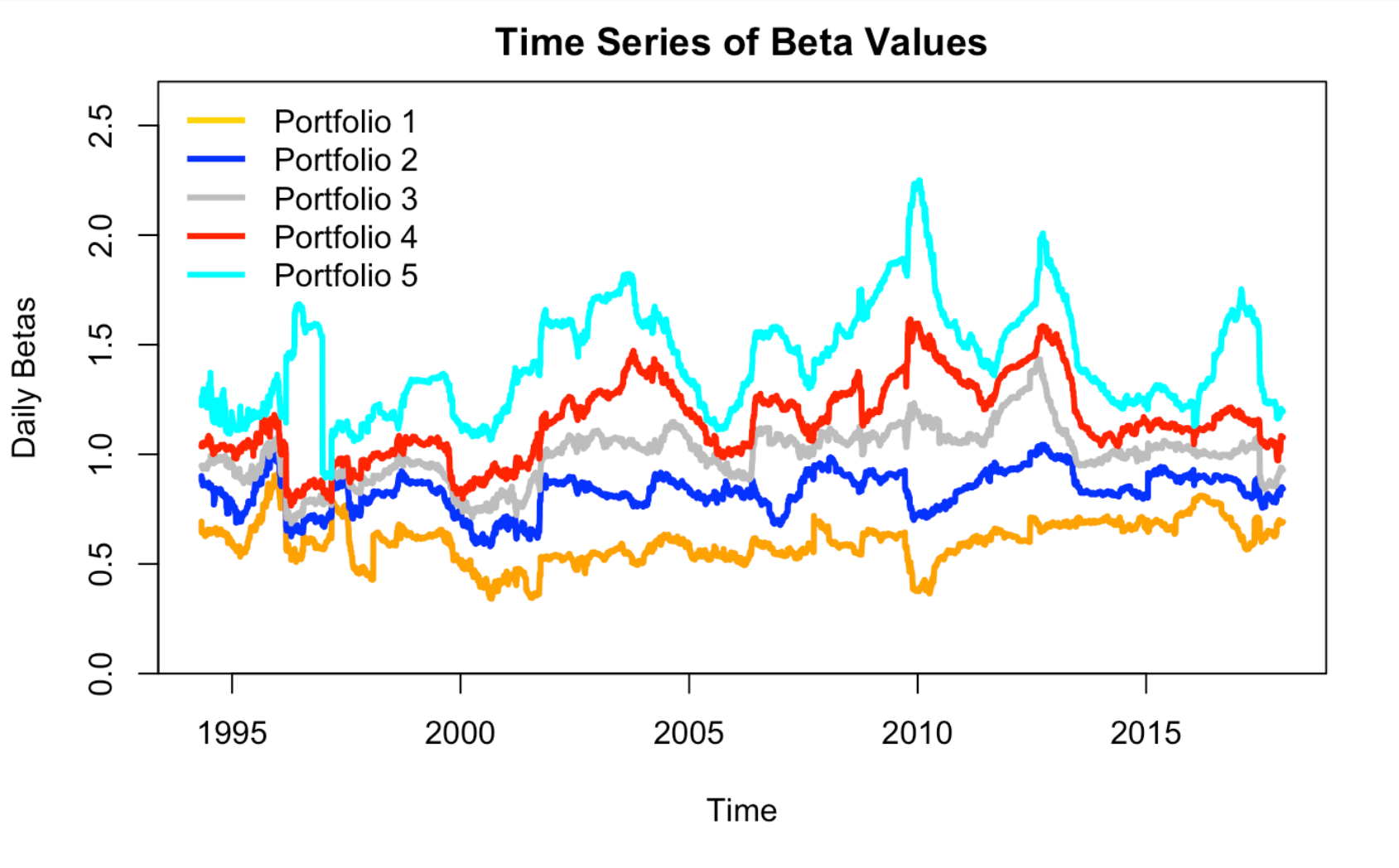

Figure 3: Time Series of Beta Values

Beta

Figure 3 indicates:

- PF5 extremely volatile
- Higher beta portfolio have stronger market movements
- Beta values consolidate in times of downward market shifts and drift apart in upward markets

Daily Returns

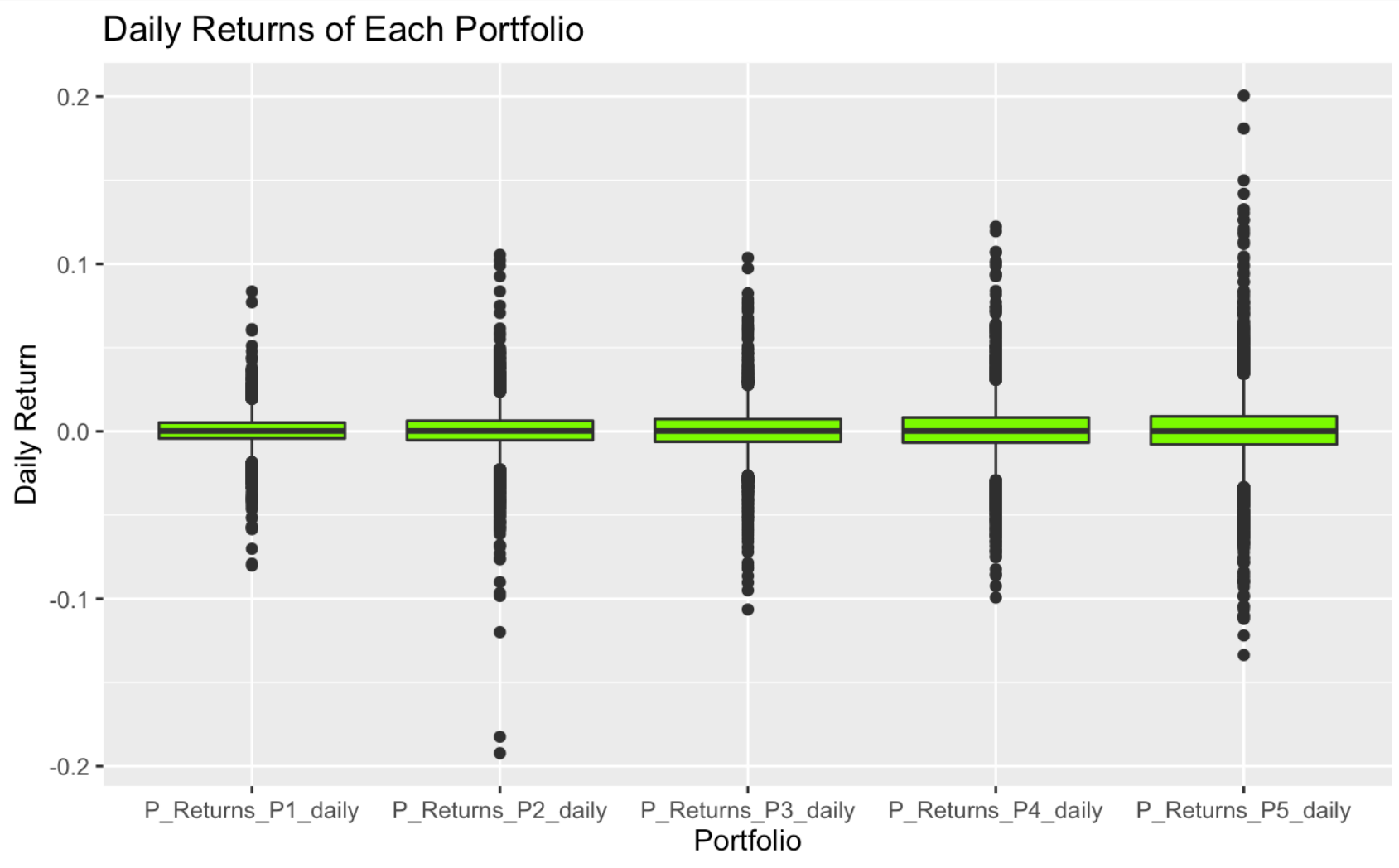

Figure 4: Daily Returns of Each Portfolio

Daily Returns

Figure 4 indicates:

- Variance increases with higher beta
- Higher beta lead to larger outliers, except for PF2, which has larger outliers than PF3

Cumulative Returns

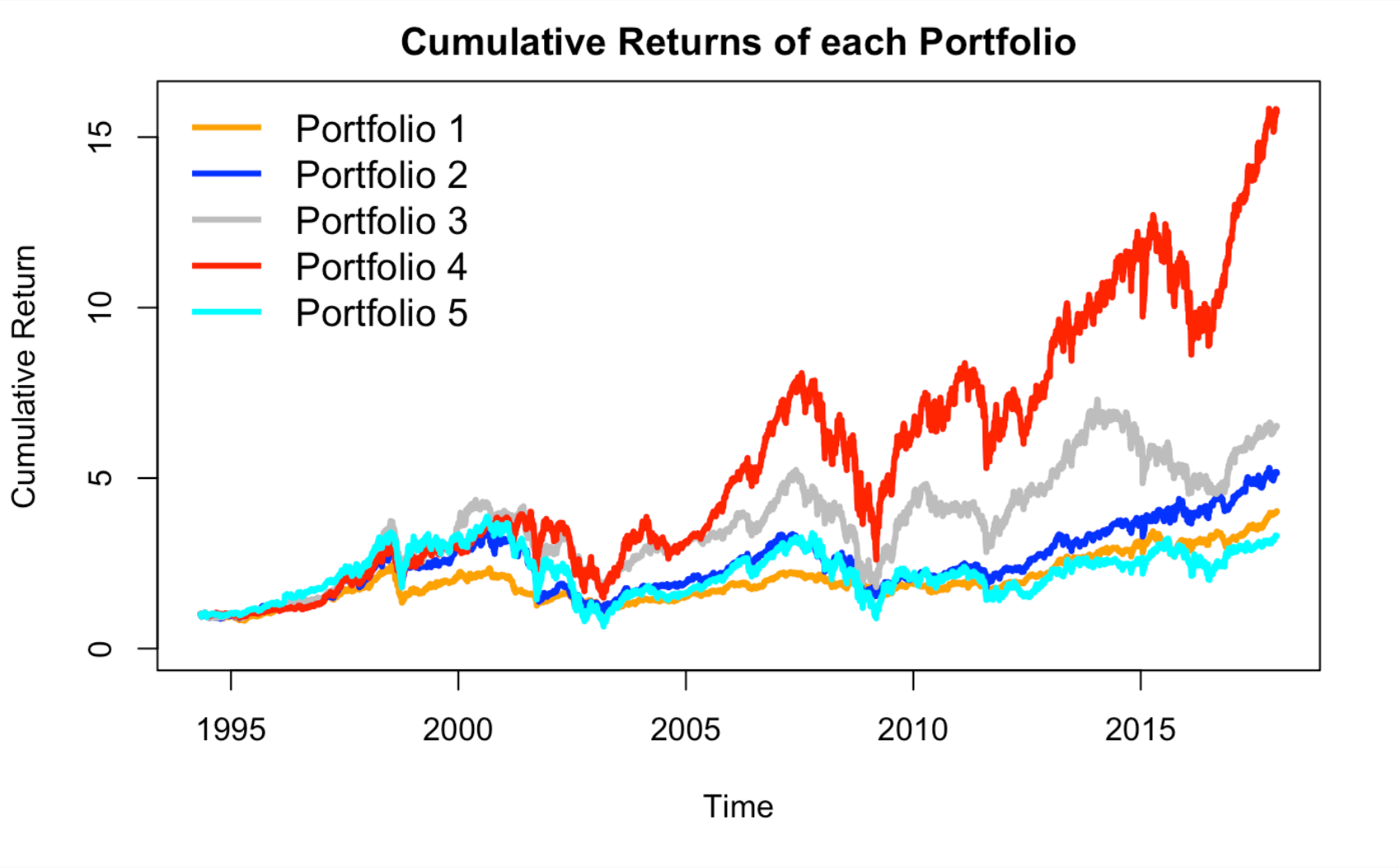

Figure 5: Comparison Cumulative Return between Portfolios

Cumulative Returns

Figure 5 indicates:

- PF4 has highest cumulative return (x15.74)
- PF5 has lowest cumulative return (x3.3)
- PF1-PF3 cumulative returns behave in descending order

Cumulative Returns

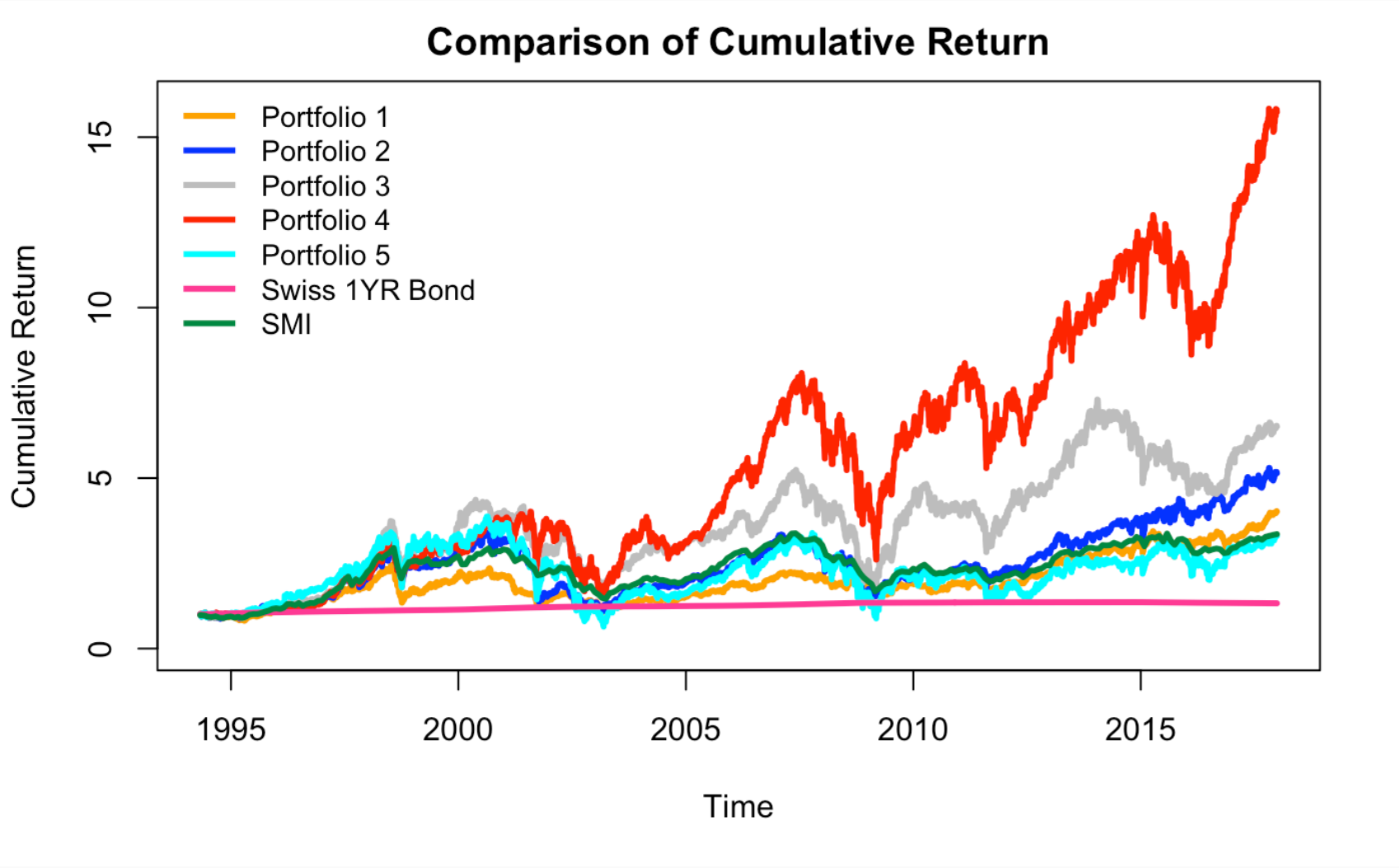

Figure 6: Comparison Cumulative Return with SMI and 1YR Swiss Bond

Cumulative Returns

Figure 6 indicates:

- PF1 to PF4 outperform SMI
- PF5 underperforms while having highest beta
- PF5 cumulative return sinks below 1YR Swiss Gov Bonds twice in the last 20 years

Cumulative Returns

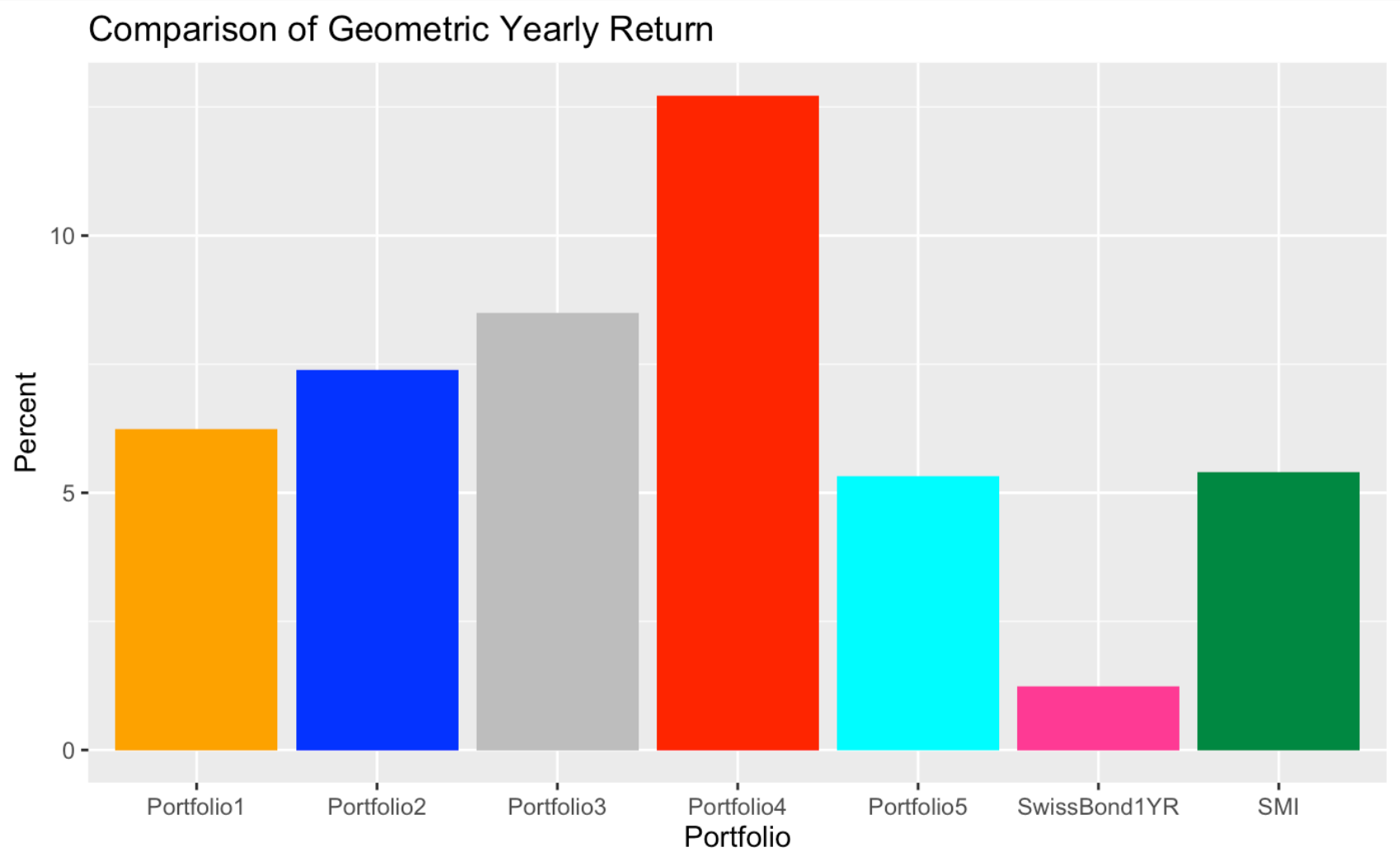

Figure 7: Comparison of Geometric Yearly Return

Cumulative Returns

Figure 7 indicates:

- Highest average yearly return: PF4 12.73%
- PF5 5.33% lower than SMI 5.41%
- PF1 to PF4 average yearly returns behave in descending order

Conclusion

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- Higher risk does not necessarily equal higher return
- Highest beta portfolio underperformes versus all other portfolios and the benchmark
- SMI probably doesn't fulfil requirements for being a market portfolio in compliance with CAPM
- Do other markets feature same findings concerning the beta portfolios?

Thank you for your attention!