

Table of Contents

Introduction	1
1. Background	4
1.1. Stochastic Processes	4
1.2. Basics of Graph Theory	4
2. Price Changes and Competition	6
2.1. The Idea	6
2.1.1. Relationship with other works	8
2.2. Mathematical Formulation	9
2.2.1. Price Process and Public Information	10
2.2.2. Distance between stores	10
2.2.3. Initial Price Changes	12
2.2.4. Competitive, Item, Time and Retail Effects	15
2.2.5. Weak and Strong Response Conditions	15
2.3. Other Proxys of Competition	16
2.3.1. N Retail	17
2.3.2. HHI	18
2.3.3. Market Share	19
2.3.4. Luxury Products	19
3. Data and Implementation	21
3.1. The Dataset	21
3.1.1. Price Change Frequency	22
3.1.2. Regular Prices	23
3.1.3. Initial Price Changes	24
3.1.4. Response Probability	25
3.2. Implementation	25
3.2.1. Chunking	25
3.2.2. Pipeline	27
4. Results	29
4.1. Competitive Environment	29
4.1.1. Close and Far Effects	29
4.1.2. N Retail	32
4.1.3. HHI	35
4.2. Market Power	37

4.3. Luxury Products	39
Conclusion	42
Bibliography	43