

# Quantum Microeconomics

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Available with and without calculus at

<http://www.smallparty.org/yoram/quantum>

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# Contents

<b>README.TXT</b>	<b>vii</b>
<b>I One: The Optimizing Individual</b>	<b>1</b>
<b>1 Decision Theory</b>	<b>3</b>
1.1 Decision Trees . . . . .	5
1.2 Example: Monopoly . . . . .	6
<b>2 Optimization and Risk</b>	<b>11</b>
2.1 Reducing Risk with Diversification . . . . .	13
<b>3 Optimization over Time</b>	<b>19</b>
3.1 Lump Sums . . . . .	20
3.2 Annuities . . . . .	21
3.3 Perpetuities . . . . .	23
3.4 Capital Theory . . . . .	24
<b>4 More Optimization over Time</b>	<b>33</b>
4.1 Nominal and Real Interest Rates . . . . .	33
4.2 Inflation . . . . .	34
4.3 Mathematics . . . . .	36
<b>5 Transition: Arbitrage</b>	<b>39</b>
5.1 No Arbitrage . . . . .	39
5.2 Rush-Hour Arbitrage . . . . .	40
5.3 Financial Arbitrage . . . . .	41
<b>II One v. One, One v. Many</b>	<b>45</b>
<b>6 Cake-Cutting</b>	<b>47</b>
6.1 Some Applications of Game Theory . . . . .	47
6.2 Cake-Cutting: The Problem of Fair Division . . . . .	49
6.3 The Importance of Trade . . . . .	52

<b>7 Economics and Social Welfare</b>	<b>57</b>
7.1 Cost-Benefit Analysis . . . . .	58
7.2 Pareto . . . . .	59
7.3 Examples . . . . .	60
<b>8 Sequential Move Games</b>	<b>67</b>
8.1 Backward Induction . . . . .	67
<b>9 Simultaneous Move Games</b>	<b>77</b>
9.1 Dominance . . . . .	78
9.2 The Prisoners' Dilemma . . . . .	78
9.3 Finitely Repeated Games . . . . .	80
<b>10 Application: Auctions</b>	<b>83</b>
10.1 Kinds of Auctions . . . . .	84
10.2 Auction Equivalences . . . . .	86
10.3 Auction Miscellany . . . . .	88
<b>11 Application: Marine Affairs</b>	<b>93</b>
11.1 An Economic Perspective . . . . .	94
11.2 A Brief Look at Government Intervention . . . . .	94
11.3 ITQs to the Rescue? . . . . .	97
<b>12 Transition: Game Theory v. Price Theory</b>	<b>99</b>
12.1 Monopolies in the Long Run . . . . .	100
12.2 Barriers to Entry . . . . .	101
<b>III Many v. Many</b>	<b>103</b>
<b>13 Supply and Demand Basics</b>	<b>105</b>
13.1 The Story of Supply and Demand . . . . .	106
13.2 Shifts in Supply and Demand . . . . .	108
13.3 <i>Math</i> : The Algebra of Markets . . . . .	109
<b>14 Taxes</b>	<b>115</b>
14.1 A Per-Unit Tax Levied on the Sellers . . . . .	115
14.2 A Per-Unit Tax Levied on the Buyers . . . . .	116
14.3 Tax Equivalence . . . . .	118
14.4 <i>Math</i> : The Algebra of Taxes . . . . .	120
<b>15 Elasticities</b>	<b>125</b>
15.1 The Price Elasticity of Demand . . . . .	126
15.2 Elasticities of Supply (and Beyond) . . . . .	129

<b>16 Supply and Demand Details</b>	<b>133</b>
16.1 Deconstructing Supply and Demand . . . . .	133
16.2 Reconstructing Supply and Demand . . . . .	134
16.3 <i>Math</i> : The Algebra of Markets . . . . .	135
16.4 On the Shape of the Demand Curve . . . . .	135
16.5 On the Shape of the Supply Curve . . . . .	138
16.6 Comparing Supply and Demand . . . . .	139
<b>17 Margins</b>	<b>143</b>
17.1 Reinterpreting the Supply Curve . . . . .	143
17.2 Total Variable Cost and Producer Surplus . . . . .	145
17.3 Reinterpreting the Demand Curve . . . . .	146
17.4 Total Benefit and Consumer Surplus . . . . .	147
17.5 Conclusion: Carrots and Sticks . . . . .	148
<b>18 Transition: Welfare Economics</b>	<b>151</b>
18.1 From Theory to Reality . . . . .	153
 <b>Appendices &amp;etc.</b>	 <b>155</b>
<b>A Government in Practice</b>	<b>157</b>
A.1 Rules and Regulations . . . . .	158
<b>B Answer Key for Part I</b>	<b>163</b>
<b>C Answer Key for Part II</b>	<b>173</b>
<b>D Answer Key for Part III</b>	<b>183</b>
<b>Glossary</b>	<b>193</b>
<b>Index</b>	<b>200</b>



# README.TXT

**quantum** *Physics*. A minimum amount of a physical quantity which can exist and by multiples of which changes in the quantity occur. (Oxford English Dictionary)

The “quantum” of economics is the optimizing individual. All of economics ultimately boils down to the behavior of such individuals. **Microeconomics** studies their basic actions and interactions: individual markets, supply and demand, the impact of taxes, monopoly, etc. **Macroeconomics** then lumps together these individual markets to study national and international issues: Gross National Product (GNP), growth, unemployment, etc.

In structure this book—which covers only microeconomics—is not unlike a hiking trip. We start out by putting our boots on and getting our gear together: in Part I we study the optimizing individual. Then we set out on our path and immediately find ourselves hacking through some pretty thick jungle: even simple interactions between just two people (Part II) can be very complicated! As we add even more people (in studying auctions, for example), things get even more complicated, and the jungle gets even thicker. Then a miracle occurs: we add even more people, and a complex situation suddenly becomes simple. After hacking through thick jungle, we find ourselves in a beautiful clearing: competitive markets (Part III) are remarkably easy to analyze and understand.

Part I is the only truly mandatory part of this book, in that later chapters will reference topics from this chapter. For students, this means that understanding the basics from Part I is critical. For instructors, this means that adding or removing material in later chapters should be fairly painless. In particular, the text’s modular structure should provide smooth entry points for other material.

## About This Book

My hope is for this book to become a successful **open source** endeavor à la the Linux operating system (though on a much smaller scale). More on the nuts and bolts of what this means in a moment, but first some philosophizing.

You can find out more about open source [online](#)<sup>1</sup>; of particular note is Eric S. Raymond’s essay “The Cathedral and the Bazaar” (available in bookstores and also [online](#)<sup>2</sup>). Two of the maxims from this essay are:

- If you treat your [users] as if they’re your most valuable resource, they will respond by becoming your most valuable resource.
- (“Linus’s Law”) Given enough eyeballs, all bugs are shallow.

Raymond’s focus was on software, but I believe that these maxims also hold true for textbooks. (In the context of textbooks, “users” are students and instructors, and “bugs” are typos, arithmetic mistakes, confusing language, substantive errors, and other shortcomings.) Regardless, Raymond’s essay was one of the inspirations for this book.

Okay, back to the nuts and bolts. Legally, this book is licensed under the [Attribution-NonCommercial License](#)<sup>3</sup> developed by [Creative Commons](#)<sup>4</sup>. The details are on the websites listed above, but the basic idea is that the license allows you to use and/or modify this document for non-commercial purposes as long as you credit *Quantum Microeconomics* as the original source. Combine the legal stuff with the open source philosophy and here is what it all means. . .

**. . . For students and instructors** This book is freely available [online](#)<sup>5</sup>. (One advantage of the online edition is that all the “online” links are clickable.) Please contribute your comments, suggestions, and ideas for improvement: let me know if you find a typo or a cool website, or even if there’s a section of the book that you just found confusing and/or in need of more work.<sup>6</sup> If you’re looking for something more substantial to sink your teeth into, you can add or rewrite a section or create some new homework problems. Hopefully you will get some personal satisfaction from your contribution; instructors will hopefully offer extra credit points as well.

**. . . For writers and publishers** I am happy to share the  $\text{\LaTeX}$  source code for this book if you are interested in modifying the text and/or publishing your own version. And I encourage you to submit something from your own area of expertise as a contribution to the text: the economic arguments for specialization apply nicely in the world of textbook writing, and the alternative—having one or two people write about such a broad subject—is an invitation for trouble. (For an example, see this excerpt [online](#)<sup>7</sup>.) As mentioned above, this book is typeset in  $\text{\LaTeX}$ , a free typesetting program which you can learn about [online](#)<sup>8</sup> and/or from many mathematicians/scientists. You can also submit material in Microsoft Word or some other non- $\text{\LaTeX}$  format.

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<sup>1</sup><http://www.opensource.org>

<sup>2</sup><http://www.openresources.com/documents/cathedral-bazaar/>

<sup>3</sup><http://creativecommons.org/licenses/by-nc/2.0/>

<sup>4</sup><http://creativecommons.org/>

<sup>5</sup><http://www.smallparty.org/yoram/quantum>

<sup>6</sup>Another lesson from *The Cathedral and the Bazaar* is that finding bugs is often harder than fixing them.

<sup>7</sup><http://www.smallparty.org/yoram/humor/globalwarming.html>

<sup>8</sup><http://www.ctan.org>



## Acknowledgments

The individuals listed below commented on and/or contributed to this text. Thanks to their work, the text is much improved. Please note that listings (which are alphabetical and/or chronological) do not imply endorsement.

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