

Reading Guide: Varian, *Intermediate Microeconomics*, Chapter 1 — "The Market"

This is a guide to reading Varian, not a substitute for it. Read this first, then read the chapter itself. If you have studied economics before, you have met this material already; the purpose here is to make visible what the chapter states once and then builds upon without further comment.

Varian's chapter is admirably honest. He states his assumptions, concedes several difficulties, and marks clearly what his model does not cover. Almost everything set out below is *in the text*. What the guide does is keep each requirement in view after the chapter has moved on from it.

The chapter's market is apartments in a college town. Some are next to the university, some further out. Varian calls these the inner and outer ring, treats the outer-ring rent as fixed and given from outside, and asks what determines the inner-ring rent and who ends up living there.

§1.1 — Constructing a model

What he says. Economics proceeds by building models, and a model is a simplified representation of reality. A one-to-one map would be useless; a model's power comes from leaving out irrelevant detail. There is an art to choosing the right simplifications. In general one should adopt the simplest model capable of describing the situation under examination, and then add complications one at a time.

He then makes the first simplifications: the outer-ring rent is exogenous, and all apartments are identical except for location — which is what makes it sensible to speak of *the* price.

What to hold on to. The rule about adding complications one at a time. Note it now and watch, through the rest of the chapter and the rest of your microeconomics training, how often the complications get added.

§1.2 — Optimization and equilibrium

What he says. Explaining human behaviour requires a framework, and economics uses two principles.

Optimization: people try to choose the best patterns of consumption they can afford.

Equilibrium: prices adjust until the amount demanded equals the amount supplied.

Varian comments on both. The first, he says, is almost tautological. The second he calls more problematic: it is conceivable that demands and supplies are incompatible at a given moment, that the adjustments take a long time, and that they might destabilise the whole system. His response is that this can happen but usually does not, and that in the apartment market we typically observe a fairly stable rent from month to month. It is that equilibrium price he is interested in — not in how the market gets there.

What it requires. That the process by which a market reaches equilibrium can be set aside without loss. Note that this is not smuggled in; it is stated, defended briefly, and then relied on for the rest of the chapter.

§1.3 — The demand curve

This is the section to read most slowly. Everything downstream rests on it.

What he says. Consider all the possible renters, and ask each of them the maximum amount he or she would be willing to pay for an apartment.

Start at the top. Someone is willing to pay most — say \$500. If only one person will pay that, then at a rent of \$500 exactly one apartment is rented. Suppose the next highest is \$490: at \$499 still only one is rented; at \$490, two are. And so on down the list.

A person's maximum willingness to pay is that person's **reservation price** — the highest price he will accept and still buy. Equivalently, it is the price at which he is exactly indifferent between buying and not buying: in this market, indifferent between paying p to live in the inner ring and living in the outer ring instead.

Plot price against the number of people whose reservation price is at least that high, and you have a demand curve. It is a staircase, with one step for each person (his Figure 1.1).

What it requires.

- Every potential renter has a reservation price.
- It is a property of the person, not of the situation he happens to be in.
- It is stable over the period the market operates.
- It is independent of other people's — otherwise the individual answers are not separate observations and cannot simply be added up.
- It exists prior to the market, since it is what the market is supposed to reveal rather than produce.

The move to watch

Having built the staircase from individuals, Varian observes that if there are many people whose reservation prices differ only slightly, it is reasonable to treat the demand curve as sloping smoothly downward. The jumps become small relative to the size of the market and can safely be ignored (Figure 1.2).

Compare the two figures. Figure 1.1 has a step for every person. Figure 1.2 has no people in it at all.

Notice what justifies the move: the *number* of demanders and the *closeness* of their reservation prices to one another. Not any claim that the numbers exist. And notice what it costs. Once you are working with the smooth curve, the question *does this person actually have a reservation price?* can no longer be asked, because there is no longer any person there to ask it about.

This is the single passage this week's fieldwork is aimed at.

§1.4–1.5 — Supply, and market equilibrium

What he says. With many independent landlords each seeking the best price, and renters fully informed about what landlords are charging, the equilibrium price of all inner-ring apartments must be the same. The argument: if a high price and a low price were both being charged, someone paying the high price could approach a landlord charging the low one and offer something in between, making both better off. Differing prices for the same good cannot persist.

In the short run the number of apartments is fixed, so the supply curve is vertical. Equilibrium is the price p^* at which quantity demanded equals quantity supplied; at that price nobody has reason to change behaviour. Below it, landlords face queues and some will raise their price; above it, some apartments stand empty and some landlords will cut. Everyone willing to pay at least p^* gets an inner-ring apartment; everyone else goes to the outer ring.

What it requires.

- Renters know what every landlord is charging.
- A renter can leave one landlord for another, and a landlord can take a renter from another, at no cost — the single-price argument depends on exactly this.

- Landlords adjust prices in response to queues and vacancies. Note that Varian tells this as a story rather than modelling it; who raises the price, by how much, and when, are not specified.

§1.6 — Comparative statics

What he says. Comparative statics compares two static equilibria without asking how the market moves from one to the other. Varian notes that such movement can take substantial time and that questions about it can be very interesting and important — but, he says, we must walk before we can run, and dynamic questions are set aside for now.

Two applications:

Condominiums. If some apartments are converted, the price need not rise. Suppose the ten demanders with the highest reservation prices buy condominiums instead of renting. Then demand falls by ten at every price and supply falls by ten, and the equilibrium rent is unchanged — with exactly the same people in the remaining inner-ring apartments. Most people find this surprising because they see the supply reduction and forget the demand reduction.

A tax on apartments. A \$50 annual tax per apartment leaves the rent unchanged and is borne entirely by landlords. Neither curve shifts. The intuition: the landlord was already charging the highest price compatible with full occupancy, so if he could have raised it he would already have done so.

What it requires. In the condominium case, that the ten highest reservation prices belong to the same ten people before and after. Both results also require the supply to be fixed; Varian says so explicitly of the tax.

§1.7 — Other ways to allocate apartments

What he says. Three alternatives to the competitive market.

The discriminating monopolist owns all the apartments and rents each to the highest bidder, so different renters pay different rents. Varian assumes this landlord knows every person's reservation price, and notes in passing that this is not terribly realistic. The striking result: exactly the same people get apartments as under the competitive market. What differs is how much they pay.

The ordinary monopolist must charge a single price, faces a trade-off between price and number rented, and will generally restrict the number of apartments in order to maximise revenue. Fewer apartments, higher rent.

Rent control caps the rent below p^* , producing excess demand.

The admission worth marking. On rent control Varian states plainly that the theory as developed has no answer to who gets the apartments. It can describe what happens when supply equals demand, but the model does not contain enough detail to say what happens when it does not. Who ends up housed then depends, he says, on who has the most time to spend looking around, who knows the current tenants, and so on — and all of this is outside the scope of the model.

Read that list again and set it beside your own experience of finding somewhere to live.

§1.8–1.10 — Which way is best? Pareto efficiency

What he says. To compare these institutions we need a criterion. If some people can be made better off without making anyone worse off, that is a Pareto improvement; an allocation admitting no Pareto improvement is Pareto efficient.

Where all voluntary trades have been carried out, the allocation is Pareto efficient — and the people holding inner-ring apartments must be the S people with the highest reservation prices, since otherwise there would be a trade left to make.

The verdicts: the competitive market is Pareto efficient. The discriminating monopolist is *also* Pareto efficient, since the same people end up housed. The ordinary monopolist is not, since apartments stand empty that could be rented to someone's benefit. Rent control is not, since a low-valuing tenant may occupy an apartment a high-valuing one would have taken — and Varian's demonstration has them sublet to each other.

Varian is explicit that Pareto efficiency says nothing about distribution. Renters are much worse off under the discriminating monopolist and the landlord much better off, and the criterion is silent on this.

What it requires.

- That "valuing an apartment more" is measured by willingness to pay. Everything in this section runs on that identification.
- That trades between renters are costless — the rent-control argument depends on unrestricted subletting.

Worth pausing on. A landlord who extracts from every renter the very most that renter can pay passes this test. If that sits badly with you, the place to look is not the arithmetic — it is the criterion, and what it does and does not measure.

The assumptions, in one place

Everything above, collected. As you read the chapter, find where each one enters.

1. All apartments identical except location.
 2. The outer-ring rent is given from outside the model.
 3. Every renter has a reservation price: a property of the person, stable, independent of others', existing prior to the market.
 4. Reservation prices are close enough together, and demanders numerous enough, that the staircase may be treated as a smooth curve.
 5. Renters know what all landlords are charging.
 6. Renters and landlords can switch partners costlessly; this is what forces a single price.
 7. Landlords adjust prices in response to queues and vacancies, by an unspecified process.
 8. Supply is fixed in the short run.
 9. How the market reaches equilibrium may be set aside; only equilibria are compared.
 10. Willingness to pay measures how much someone values an apartment.
 11. Trades between renters are costless.
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Assignment 1

Two parts. Do them in order and keep them separate.

Part A — Read

Read this guide, then read Varian's Chapter 1. If you have a copy of the accompanying workbook, do Problem 1.1, which builds a demand curve from eight named people with reservation prices of 40, 25, 30, 35, 10, 18, 15 and 5.

Part B — Fieldwork

Interview at least two people who have rented somewhere — fellow students, colleagues, family, neighbours. Not economists, if you can avoid it.

Ask them how they came to be living where they live. Let them tell it as a story, in the order it happened. Useful prompts:

- What did you think you could afford when you started looking?
- How did you arrive at that figure?
- How many places did you look at, and how did you find them?
- Did what you were willing to pay change while you were looking? What changed it?
- What settled it in the end?
- Did you know what other people were paying?

Do not explain what you are looking for, before or during. Once someone knows you are testing a theory, you are no longer collecting evidence about how he decided; you are collecting his opinion about the theory. Write down his actual words where you can, especially where he hesitates or contradicts himself.

The write-up: two parts, clearly separated

Part 1 — What you observed. Roughly 400–600 words. Where does what you were told differ from what the model in the reading guide requires? Work through the list of eleven assumptions and report what you found against them. This part contains observations only — what was said, what happened. No interpretation, no argument, no conclusions about whether the model is any good.

Part 2 — What you make of it. Roughly 400–600 words. Now say what you think the differences mean. Do they matter? For which of Varian's conclusions? Are some of his results untouched by what you found, and others not? If an interviewee did behave as the model requires, why do you think that was?

Why separate them. Because once you have decided what a finding means, you will remember the finding differently. Getting the observation down before you interpret it is a discipline we will use all term, and it is much harder than it sounds.

Two things to bring, whatever else you find

- **Any interviewee who gave you a clear figure without hesitating.** That is a finding, not an inconvenient case. Where did the figure come from — from inside the person, or from a scholarship, a parent, a spouse, a bank?
- **Anything that did not fit** either the model or your expectations. These are the most valuable thing you can bring, and the natural instinct is to leave them out.