Worksheet: The SSNIP Test for Market Definition

Defining the Market: Why It Matters

So far, we've been comparing market performance across different structures — perfect competition, monopoly, monopolistic competition, and oligopoly.
But all of those models rely on a **major assumption**: that we already know **the size and boundaries of the market** we're analyzing.

In practice, that assumption is rarely true.

Before we can evaluate a firm's behavior, measure concentration, or determine whether a merger could harm consumers, we must first define **what market we're talking about** — which products and locations count as being "in" or "out" of that market.

If we define the market **too narrowly**, it may appear that a firm has monopoly power when, in reality, consumers can easily switch to substitutes outside our definition.

If we define it **too broadly**, we may overlook true competition issues, allowing market power to go undetected.

That's why economists and regulators use the **SSNIP Test (Small but Significant Non-Transitory Increase in Price)** — also called the **Hypothetical Monopolist Test** — to systematically determine whether a group of products (or geographic area) constitutes a **relevant market**.

The SSNIP test helps us answer the question:

> "If a single firm controlled this set of products, could it profitably raise prices by a small but significant amount (e.g., 5–10%) for at least one year?"

- If yes → the market is correctly defined.
- If no → the market must be expanded to include close substitutes until that price increase becomes profitable.

Understanding the SSNIP Test

What Is the SSNIP Test?

The **SSNIP Test** (Small but Significant Non-transitory Increase in Price) is the standard analytical tool used by competition authorities (like the US **FTC** or **DOJ**) to define a *relevant market* in antitrust investigations—especially in merger analysis.

A **Relevant Market** is the smallest group of products (or geographic area) where a **hypothetical monopolist** could profitably impose a SSNIP.

Definition

SSNIP = A 5–10% Price Increase for About 1 Year

Term	Meaning
Small	Typically a 5–10% price increase
Significant	Large enough for consumers to notice
Non-Transitory	Lasts for at least one year
Increase in Price	The change being tested for profitability

Part I: Define the Initial Proposed Market

Scenario:

We are examining a proposed merger between **Organic Oats Inc.** and **Gluten-Free Granola Co.**

Initial Proposed Market Definition:

Premium, organic, unflavored oatmeal sold in 10-count single-serving packets.

Product Type	Current Price (P_0)	SSNIP (10%) Price (P_1)
Single-Serving Organic Oatmeal	\$4.00 per 10-pack	\$4.40 per 10-pack

Initial Question:

If a single company (a *hypothetical monopolist*) controlled all single-serving organic oatmeal packets, could it profitably raise the price by 10% (from \$4.00 to \$4.40) for one year?

Part II: Step-by-Step Mechanics and Formulas

The SSNIP test examines whether a small price increase would be **profitable** for a hypothetical monopolist, given that some consumers may switch to alternatives.

Step	Action & Detail	Key Concept / Formula
1. Apply the SSNIP	The hypothetical monopolist raises the price from P_0 to P_1. Initial Total Revenue (TR_0): $TR_0 = P_0 \times Q_0$	Price change
2. Observe Substitution & New Demand	Demand drops from Q_0 to Q_1 as consumers substitute away. Quantity lost: $\Delta Q = Q_0 - Q_1$	**Price Elasticity of Demand** (ε) measures how much quantity changes when price increases.
3. Analyze Profitability	Compare the gain in revenue on the units still sold to the loss from units not sold.	Profitability Test: Is $\Delta TR > \Delta Cost$?
4. Conclude	If the gain from higher prices exceeds the loss from lower sales, the SSNIP is **profitable**.	If **profitable**, market is correctly defined. If **unprofitable**, market is too narrow—expand and test again.

Part III: Analytical Questions

Scenario A: Price Increase Is Profitable

Question:

What does this imply about substitutes like instant grits or cold cereal?

Answer:

Consumers did **not** switch to alternatives after the 10% price increase. This means substitutes are weak, and "Organic Oatmeal" is distinct enough to be its own relevant market.

Scenario B: Price Increase Is Unprofitable

Question:

Which non-included products did consumers likely switch to?

Answer:

Consumers likely switched to **non-organic instant oatmeal** or **other hot cereals**. This suggests the initial market definition was too narrow, and the relevant market must be broadened.

Part IV: Iterative Application (The Expansion Rule)

If a SSNIP test **fails** (is unprofitable), we **expand** the market definition to include the closest excluded substitute, then re-run the test. This continues until the SSNIP becomes profitable. Here are the steps:

Initial Market (Failed)

- **Market Definition:** Single-serving *organic* oatmeal
- **Iteration Outcome:** Unprofitable
- **Interpretation:** Consumers switched to non-organic oatmeal.
- **Final Market Definition:** Too narrow — must expand.

Iteration 1

- **Market Definition:** Single-serving oatmeal (organic + non-organic)

Scenario 1: Price Increase Unprofitable

- **Iteration Outcome:** Consumers still switch (e.g., to bagels or breakfast bars).
- **Interpretation:** Market still too narrow — expand again.
- **Next Step:** Include the next closest substitutes (other hot cereals or breakfast alternatives).

Scenario 2: Price Increase Profitable

- **Iteration Outcome:** No further substitution outside oatmeal.
- **Interpretation:** Market correctly defined.
- **Final Market Definition: Single-serving oatmeal packets (organic + non-organic).**

Important Points

- If a SSNIP test fails (is unprofitable), the **market must be expanded** to include the closest excluded substitute.
- The process continues **iteratively** until a 5–10% price increase becomes **profitable**.
- The **final market definition** is the smallest set of products where a hypothetical monopolist could profitably impose that increase.

Part V: Geographic Scope Example

Scenario:

Two regional dairy firms merge. The initial market is *"Fluid Milk in Denver, CO."*

If the SSNIP test fails, consumers may be buying from nearby regions (e.g., **Colorado Springs** or **Wyoming**).

The market should expand to *"Fluid Milk in Denver and Colorado Springs"* and the test repeated.

Why Is the SSNIP Test Important?

The SSNIP test ensures that regulators define markets based on **economic behavior**, not company labels.

A merger is only considered anti-competitive if the merged firm could **profitably raise prices** in the correctly defined market.

Part VI: Real-World Case Studies

These examples show how the SSNIP (Hypothetical Monopolist) Test is applied in practice by regulators like the FTC and DOJ.
In each case, the debate centers on **how narrowly or broadly** the market should be defined — because that definition determines whether a firm (or merged company) would have enough power to profitably raise prices.

Staples / Office Depot (1997)

- **Proposed Market Definition:** "All office supplies" (a very broad category).
- **What Regulators Tested:** Whether a 5–10% price increase on **office supply superstores** (Staples, Office Depot, OfficeMax) would be profitable.
- **SSNIP Result:** The price increase **was profitable** in this narrower market.
- **Interpretation:** Customers who shopped at superstores didn't switch to Walmart or Target when prices rose — meaning those stores weren't close substitutes.
- **Consequence:** The FTC concluded that office supply superstores formed a distinct market. The merger was **blocked** because it would significantly reduce competition within that market.

Microsoft Antitrust Case (2000s)

- **Proposed Market Definition:** "PC Operating Systems Compatible with Intel Processors."
- **SSNIP Result:** A hypothetical monopolist controlling Windows could **profitably raise prices** — consumers didn't have close substitutes.
- **Interpretation:** Even though alternatives like Linux existed, few consumers were willing or able to switch.
- **Consequence:** The SSNIP test showed that Microsoft had **monopoly power** in this narrow market, reinforcing the DOJ's argument that Microsoft dominated PC operating systems.

Coca-Cola / Dr. Pepper Snapple (2018)

- **Proposed Market Definition:** "Carbonated Soft Drinks (CSDs) only."
- **SSNIP Result:** The price increase was **unprofitable** — consumers easily substituted with **non-carbonated beverages** (flavored water, sports drinks, juices).
- **Interpretation:** Carbonated drinks alone were too narrow a market because consumers saw other beverages as good substitutes.
- **Consequence:** The relevant market had to be **expanded** to include **all non-alcoholic beverages**, reducing concerns that the merger would create market power.

Key Takeaways

The SSNIP test helps regulators determine whether a company (or merged firm) could raise prices **without losing customers** to outside products.
- If a SSNIP is **profitable**, the market is **narrow enough** to show potential market power.
- If it's **unprofitable**, the market is **too narrow** — consumers are finding substitutes elsewhere.

The SSNIP test helps us define markets by looking at how real consumers would respond to a small, lasting price increase. It's the foundation of antitrust analysis because it connects market power directly to consumer substitution behavior.

Deriving Scenario A and B (using Critical Loss)

The SSNIP profitability check can be done cleanly with **critical loss analysis**.

Important formulas

- Let
  - t = SSNIP (e.g., $10\% \to t = 0.10$)
  - m = gross margin ratio = $(P - MC)/P$ (e.g., $30\% \to m = 0.30$)
  - ε = price elasticity of demand (negative). We'll use $|\varepsilon|$ in calculations.
- **Critical Loss (CL)**: the maximum percentage quantity loss that still leaves the price increase profitable

$$CL = \frac{t}{t + m}$$

- **Actual Loss (AL)**: the expected percentage quantity loss from the SSNIP (linear approximation)

$$AL \approx |\varepsilon| \cdot t$$

- **Profitability Rule**: the price increase is profitable if

$$AL < CL \quad \iff \quad |\varepsilon| < \frac{1}{t + m}$$

  Intuition: If the **actual** switching (AL) is smaller than the **critical** switching threshold (CL), the SSNIP "sticks" and is profitable.

Plug-and-Play Setup for the Oatmeal Example

- SSNIP: $t = 0.10$ (10%)
- Gross margin: $m = 0.30$

Then:

$$CL = \frac{0.10}{0.10 + 0.30} = \frac{0.10}{0.40} = 0.25 = 25\%$$

Interpretation: If the SSNIP causes **less than 25%** drop in quantity, it's profitable. The **elasticity cutoff** is $|\varepsilon| < \frac{1}{t+m} = \frac{1}{0.40} = 2.5$.

Scenario A (Profitable)

Suppose demand is **not very elastic**:

- $|\varepsilon| = 1.5$ (i.e., ($\varepsilon = -1.5$)
- $AL = |\varepsilon| \cdot t = 1.5 \times 0.10 = 0.15 = 15\%$
- $CL = 25\%$

Since

$$AL(15\%) < CL(25\%)$$

the 10% price increase is **profitable**.

Interpretation:

- With only a 15% quantity drop, switching to substitutes is too small to prevent profit gain.
- Substitutes (like grits or cold cereal) are weak.
- The hypothetical monopolist can profitably raise price, meaning "organic single-serve oatmeal" is a **relevant market**.

Optional check:

$$|\varepsilon| = 1.5 < 2.5 \quad \Rightarrow \quad \text{Profitable SSNIP}$$

Scenario B (Unprofitable)

Suppose demand is **very elastic**:

- $|\varepsilon| = 3.2$ (i.e., $\varepsilon = -3.2$)
- $AL = |\varepsilon| \cdot t = 3.2 \times 0.10 = 0.32 = 32\%$
- $CL = 25\%$

Since

$$AL(32\%) > CL(25\%)$$

the 10% price increase is **unprofitable**.

Interpretation:

- A 32% drop in quantity is too large—lost sales outweigh price gains.

- Consumers are leaving the narrow market for **close substitutes**, likely **non-organic instant oatmeal**.
- The original market was **too narrow**; expand and re-test with this substitute included.

Quantifying "Where Did They Go?" (Optional)

If the **diversion ratio** to product k (share of lost sales that divert to k) is known:

- Lost units due to SSNIP:
$$\Delta Q = Q_0 \times AL$$
- Units diverted to product k:
$$D_k \times \Delta Q$$

A high D_k toward **non-organic instant oatmeal** suggests it's the **closest** substitute.

If diversion is broader (e.g., bagels, breakfast bars), expand the market further.

Worked Iteration Example

Start: "Organic single-serve oatmeal only."

Result: Unprofitable SSNIP ($|\varepsilon| = 3.2$) $\rightarrow$ expand to include **non-organic** oatmeal.

Re-test with **All Single-Serve Oatmeal (organic + non-organic)**.

Assume elasticity now falls to ($|\varepsilon| = 0.6$).

Compute:

$$AL = 0.6 \times 0.10 = 0.06 = 6\%$$

$$CL = 0.25 = 25\%$$

Now

$$AL(6\%) < CL(25\%)$$

$\rightarrow$ SSNIP is **profitable** on the expanded basket.

Final Market Definition: Single-serving oatmeal packets (organic + non-organic).

Summary Cheat Sheet

1. Compute:

$$CL = \frac{t}{t+m} \quad \text{and} \quad AL = |\varepsilon| \cdot t$$

2. Compare:

$$AL < CL \Rightarrow \text{Profitable (market correctly defined)}$$

$$AL \geq CL \Rightarrow \text{Unprofitable (market too narrow)}$$

3. If unprofitable, **expand** to include the closest substitute and re-test.
4. Use diversion ratios to identify which product drives the substitution.

This step-by-step logic explains the math behind:

- **Scenario A:** weak substitutes → profitable SSNIP
- **Scenario B:** strong substitution → unprofitable SSNIP