Strength of Protection for Geographical Indications: Promotion Incentives and Welfare Effects

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Introduction

- Why are these producers unhappy? I could not find any explanation in the economic literature on GIs!
- The GI literature has so far considered a dichotomous policy: either GI producers have access to certification (which provides full protection for their labels) or they don't.
- We focus on the effect of the **strength** of GI protection on
  - Incentives to invest in **promotion** (i.e., in consumer information)
  - Welfare and its distribution among consumers and producer groups
- Background information on:
  - Geographical Indications
  - The concept of the **strength** of GI protection
  - The type of **promotion** in GI markets
  - The link between promotion and strength of protection

What are GIs?

Definition (TRIPS Art. 22)

> *"Geographical indications are...indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin"*

Examples: Champagne, Roquefort, Pecorino Romano, Stilton Cheese, Vidalia Onions, Café de Colombia, Pampas Beef, Darjeeling Tea

Economic function: Similar to trademarks, GIs identify the source of the good and reduce consumers search cost by avoiding confusion between similar products

- To function, labels require clearly defined property rights

The meaning of strength of GI protection

- **What represents an act of infringement of a GI label?**
  - The strength of GI protection refers to the degree of similarity between labels that represents an act of infringement of the rights over GI names
- **How strong are GI rights currently?**
  - TRIPS agreement requires
    - A basic level of protection for all GIs (Art.22.2)
    - Special stronger protection for GI wines (Art.23)
  - IP protection instruments differ across countries Picture removed

Polar case: Very strong IP protection

- **GI rights are exclusive in the EU**
  - Trademark "Cambozola" was found to infringe on the GI "Gorgonzola" on the base of "evocation"

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Polar case: Very weak IP protection

- **Close to the hypothetical case of pure counterfeiting**
  - Looks Italian ... but made in Canada.

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"Intermediate" strength case

- **GI rights are not exclusive in the US**
  - "Authentic" Gorgonzola Cheese made in Wisconsin.

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Promotion as Informative Advertising

Informative Advertising (Ozga 1960, Telser 1964)

- Beyond the borders of the GI area, consumers lack information about the existence, features or uses of the GI
- Scope for promotion to expand market demand

Extending reach function (Norman, Pepall and Richards AJAE 2008)

> *"...informs consumers how to extract utility from the product, either by telling them of its existence in the first place or, instead, how properly to make use of it"*
>
> *"...agricultural producers can attract more consumers to their product by telling them about the nutritional content and providing recipes or ideas about how to consume the product..."*

Speck Alto Adige and Asiago Cheese

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> *"...agricultural producers can attract more consumers to their product by telling them about the nutritional content and providing recipes or ideas about how to consume the product"(Norman, Pepall and Richards AJAE 2008)*

Prosciutto di Parma and Parmigiano Reggiano

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The link between promotion and strength of GI protection

- Promotion generates **information externalities**, under less than full protection, in two ways:
  - Spillovers of information across labels
  - Dilution of the informational content of GI promotion
- We make the following assumption:
  - The strength of protection determines the amount of information externalities

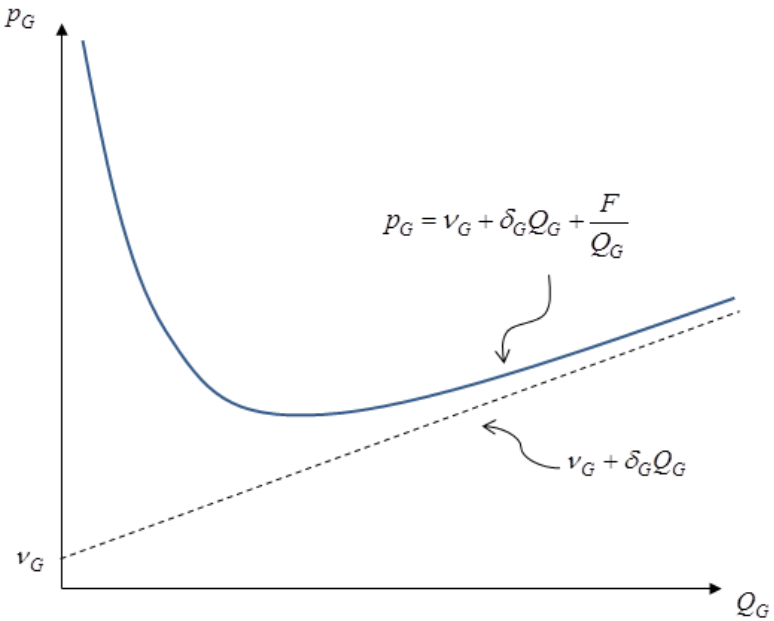
Demand side

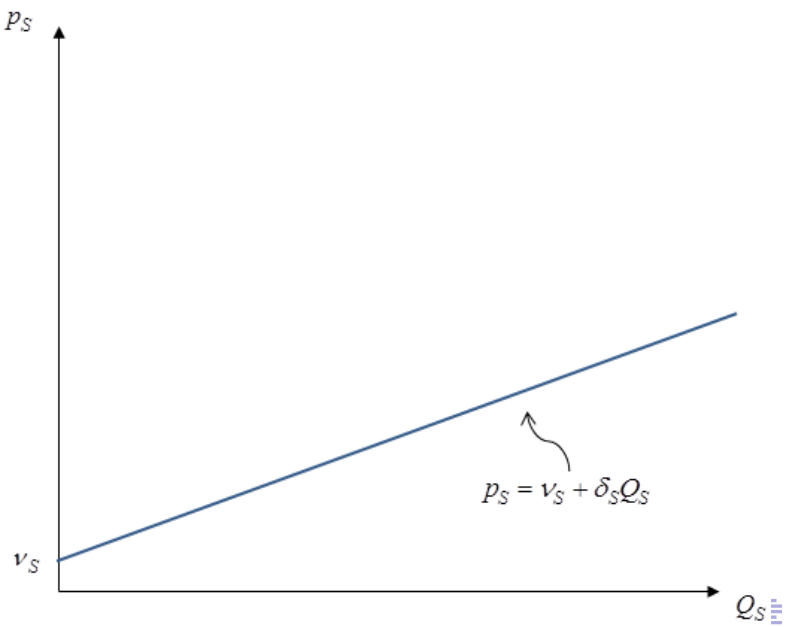
- Vertically differentiated ala Mussa and Rosen (1978)
- Two goods, a GI product (G) and a substitute good (S)
- Both goods are characterized by a basic attribute, measured by u
- Good G has a specific attribute, measured by h
- Mass M of heterogeneous consumers, $\theta \sim U[0,1]$
- Unit demand
- For a consumer of type θ, who is **fully informed**, preferences are:

$$U = \begin{cases} \theta(u+h) - p_G & \text{if one unit of the GI is purchased} \\ \theta u - p_S & \text{if one unit of good S is purchased} \\ 0 & \text{if nothing is purchased} \end{cases}$$

Supply side

- Structure similar to Moschini, Menapace, and Pick (AJAE 2008)
  - Two competitive industries (price-takers, free entry)
  - Mass ($N = 1$) of potential producers, independently decide whether to produce at an efficient scale ($\ell = 1$) or stay out
  - Diseconomies of scale at the industry level in both sectors
    - $c_j(\eta_j) = \nu_j + \delta_j \eta_j, \quad \eta_j \sim U[0, H_j], \quad j \in \{G, S\}$
  - The G industry invests F in promotion
    - F is decided collectively to maximize industry profits
    - F is shared equally



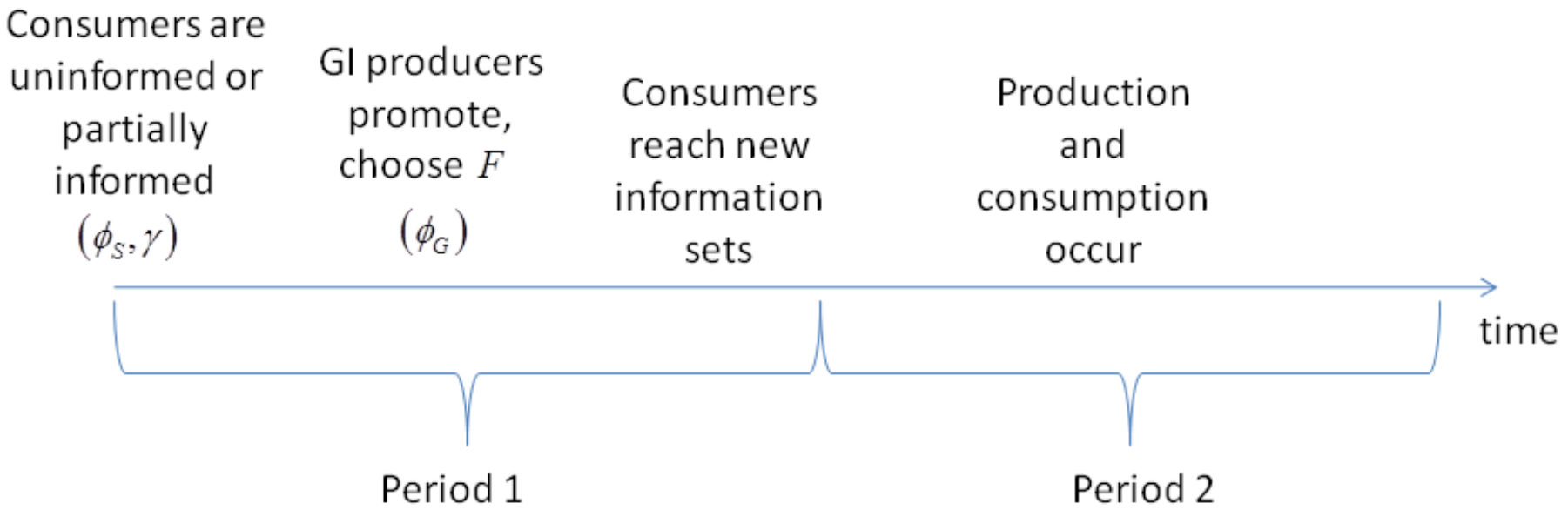


Additional notation and timing of the game

Additional notation:

- ϕ_G is the share of the population reached by promotion in sector G
  - following Butters (1977), $\phi_G = 1 - e^{\frac{-F}{tM}}$
  - t is the unit cost of promotion
- ϕ_S is the market reach of the S sector, exogenous
- $\gamma \in [0, 1]$ is the strength of GI protection

The timing of actions is as follows:



Consumer information (1)

- **With perfectly distinct labels**

		Label G		
		0	u	$u+h$
Label S	0	$(1-\phi_S)(1-\phi_G)$	—	$\phi_G(1-\phi_S)$
	u	$\phi_S(1-\phi_G)$	—	$\phi_G\phi_S$
	$u+h$	—	—	—

Consumer information (2)

- **With identical labels**

		Label G		
		0	u	$u+h$
Label S	0	$(1-\phi_S)(1-\phi_G)$	–	–
	u	–	$\phi_S(1-\phi_G)+\frac{\phi_G\phi_S}{2}$	–
	$u+h$	–	–	$\phi_G(1-\phi_S)+\frac{\phi_G\phi_S}{2}$

Consumer information (3)

- **Generalizing, $\gamma \in [0,1]$ measures the strength of GI protection**

		Label G		
		0	u	$u+h$
Label S	0	$(1-\phi_S)(1-\phi_G)$	–	$\gamma\phi_G(1-\phi_S)$
	u	$\gamma\phi_S(1-\phi_G)$	$(1-\gamma)\phi_S(1-\phi_G)$ $+(1-\gamma)\frac{\phi_G\phi_S}{2}$	$\gamma\phi_G\phi_S$
	$u+h$	–	–	$(1-\gamma)\phi_G(1-\phi_S)$ $+(1-\gamma)\frac{\phi_G\phi_S}{2}$

Partially informed consumer preferences

- Consumers who receive only the GI message and correctly retain it (segment x_1)

$$U = \begin{cases} \theta(u+h) - p_G & \text{if one unit of good G is purchased} \\ 0 & \text{if nothing is purchased} \end{cases}$$

- Consumers who receive only the S message and correctly retain it (segment x_3)

$$U = \begin{cases} \theta u - p_S & \text{if one unit of good G is purchased} \\ 0 & \text{if nothing is purchased} \end{cases}$$

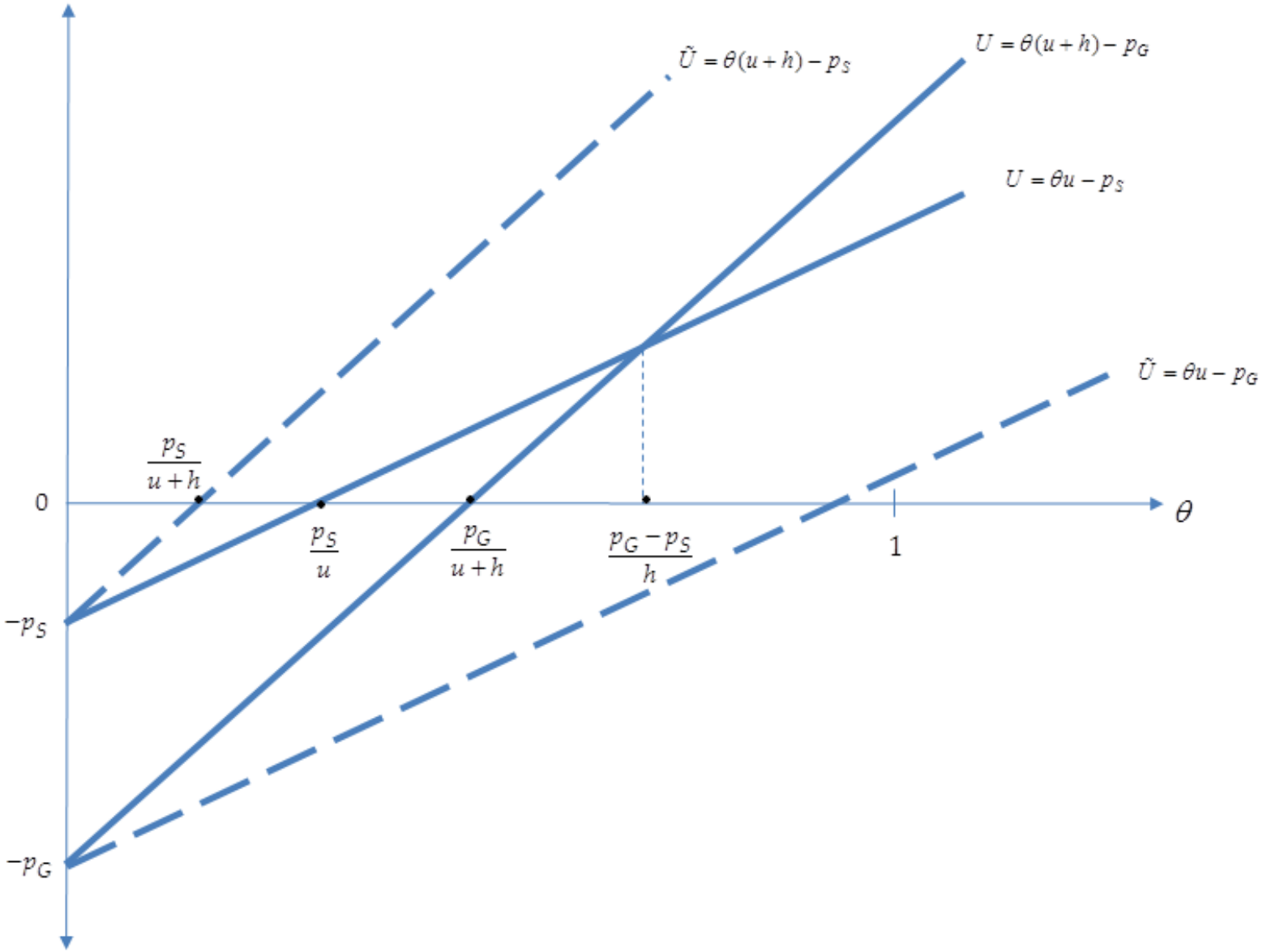
- Consumers who associate quality u to both labels (segment x_4)

$$\tilde{U} = \begin{cases} \theta u - p_G & \text{if one unit of good G is purchased} \\ \theta u - p_S & \text{if one unit of good S is purchased} \\ 0 & \text{if nothing is purchased} \end{cases}$$

- Consumers who associate quality $u+h$ to both labels (segment x_5)

$$\tilde{U} = \begin{cases} \theta(u+h) - p_G & \text{if one unit of good G is purchased} \\ \theta(u+h) - p_S & \text{if one unit of good S is purchased} \\ 0 & \text{if nothing is purchased} \end{cases}$$

Consumer decision problem



Example of demands

When prices satisfy $0 < \frac{p_S}{u} \leq \frac{p_G - p_S}{h} \leq 1$, demands are:

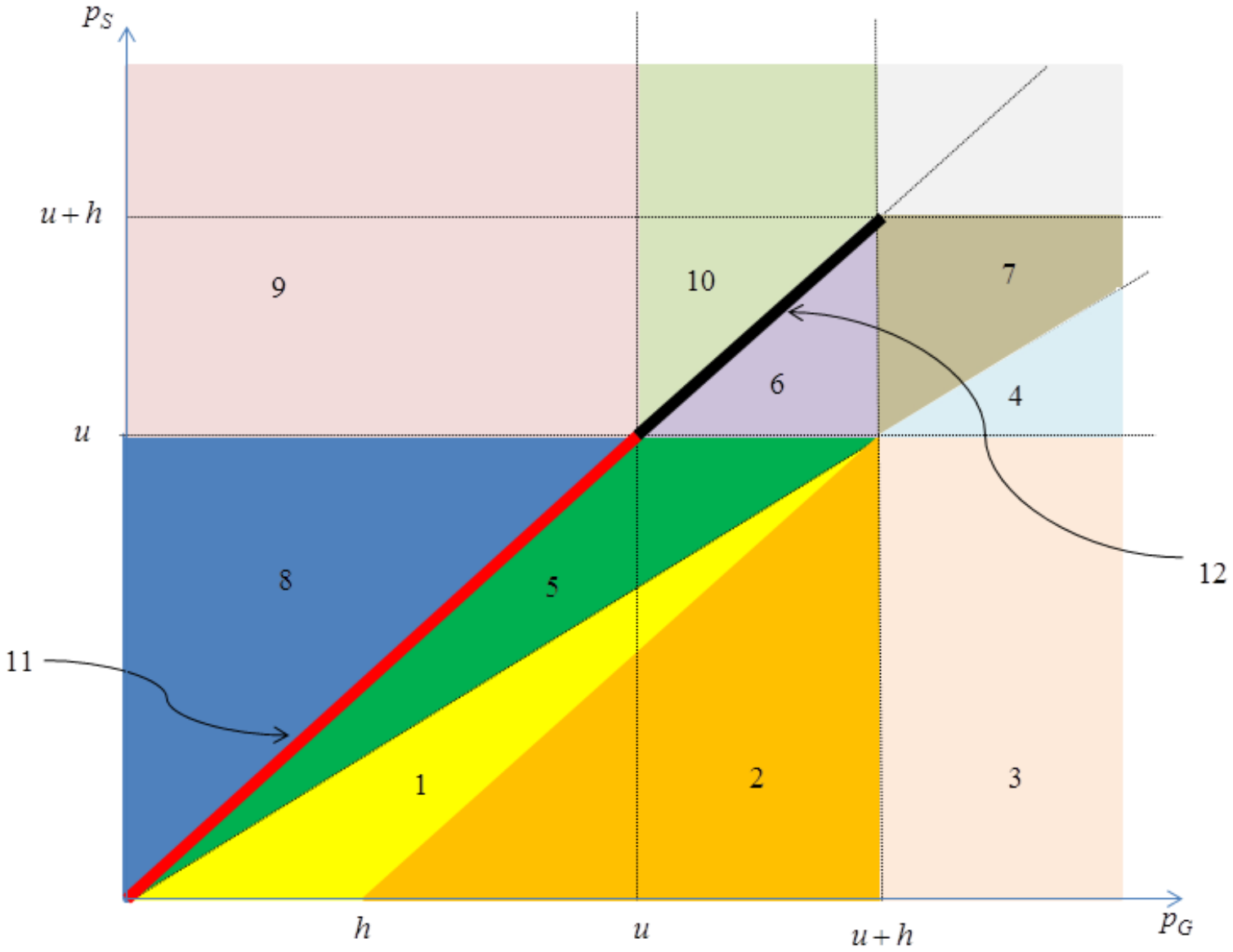
$$
\begin{aligned}
D_G &= M\left[\left(1 - \frac{p_G}{u+h}\right)x_1 + \left(1 - \frac{p_G - p_S}{u}\right)x_2\right] \\
D_S &= M\left[\left(\frac{p_G - p_S}{h} - \frac{p_S}{u}\right)x_2 + \left(1 - \frac{p_S}{u}\right)(x_3 + x_4) + \left(1 - \frac{p_S}{u+h}\right)x_5\right]
\end{aligned}
$$

where

$$
\begin{aligned}
x_1 &\equiv \gamma\phi_G(1-\phi_S) \\
x_2 &\equiv \gamma\phi_G\phi_S \\
x_3 &\equiv \gamma\phi_S(1-\phi_G) \\
x_4 &\equiv (1-\gamma)\phi_S(1-\phi_G) + (1-\gamma)\phi_G\phi_S/2 \\
x_5 &\equiv (1-\gamma)\phi_G(1-\phi_S) + (1-\gamma)\phi_G\phi_S/2
\end{aligned}
$$

Go to Table 3

Demand cases



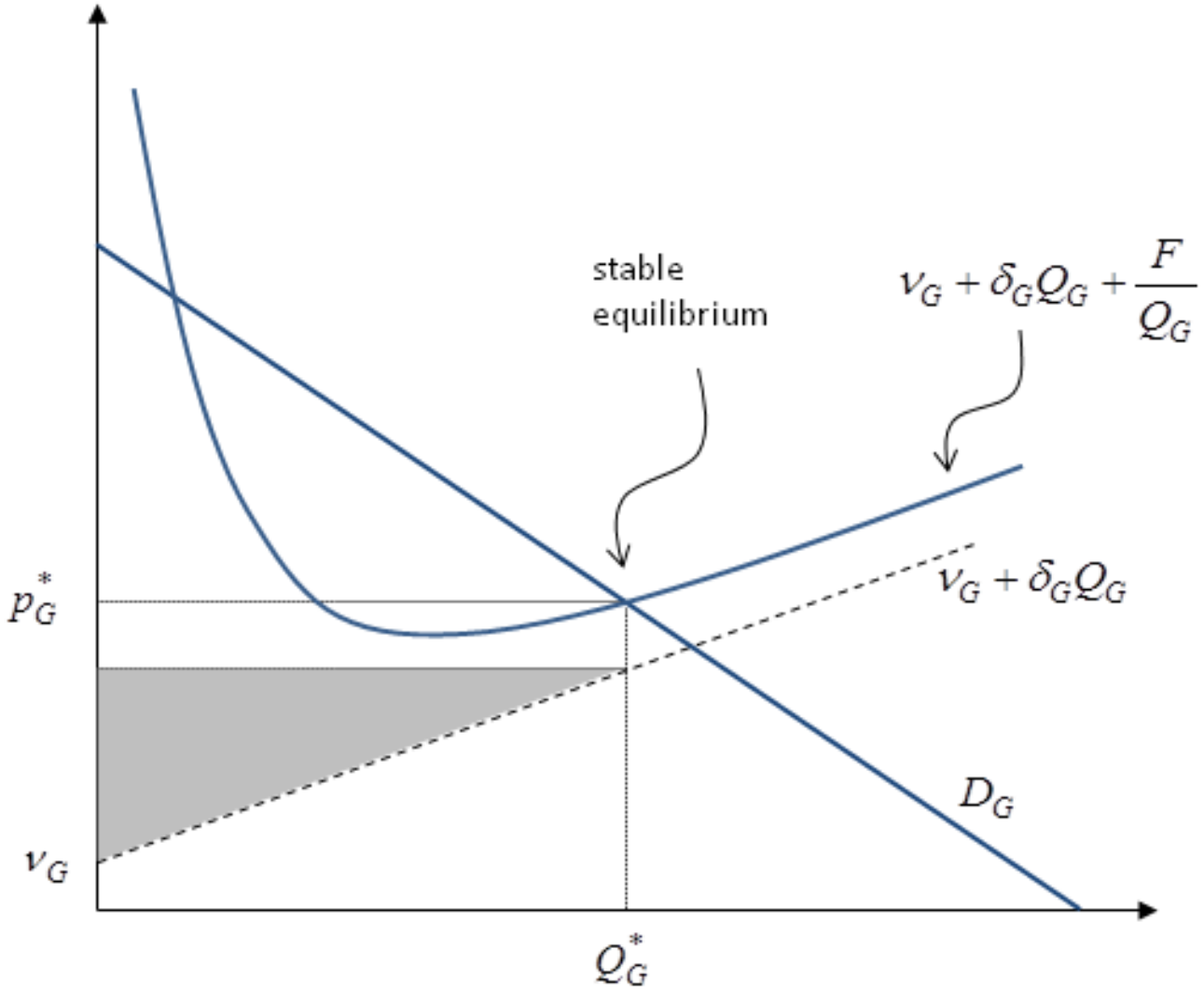
Market equilibrium for given promotion effort

- The 2-equation system of market clearing conditions is:

$$\begin{aligned} p_G^D\left(Q_G^*, Q_S^*\right) - \left(\nu_G + \delta_G Q_G^* + \frac{F}{Q_G^*}\right) &= 0 \\ p_S^D\left(Q_G^*, Q_S^*\right) - \left(\nu_S + \delta_S Q_S^*\right) &= 0 \end{aligned}$$

Promotion decision in sector G

Sector G chooses F to maximize industry's profit, $\phi_G^* = \arg\max \Pi_G(\phi_G)$.



Calibration

- The model is not amenable to an analytic solution
- We solved the model for a variety of parameters' values using MATLAB
- Baseline parameters:
  - We have normalized $u = 1$, $M = 1000$
  - We yield case 1
  - GI and substitute good have roughly equal importance, $\hat{Q}_G = \hat{Q}_S$
  - Nontrivial quality advantage for the GI, $h = .5$
  - $\nu_G = \nu_S = 0$ (marginal costs are born in the origin)
  - $\delta_G = \delta_S \frac{u+h}{u}$ (efficiency of production reflects the additional quality level)
  - $\hat{\phi}_G = \hat{\phi}_S = \frac{1}{3}$, $\hat{\theta} = \frac{1}{3}$
  - Solve for $\gamma = 1$, and yield $\delta_S = .0011$, $\delta_G = .00165$, $t = .045$
- Yield: $\delta_S = .0011$, $\delta_G = .00165$, $t = .045$
- Baseline parameters: $M = 1000$, $u = 1$, $h = .5$, $\delta_S = .0011$, $\delta_G = .00165$, $\nu_G = \nu_S = 0$, $t = .045$

Profit maximizing promotion effort of the GI sector

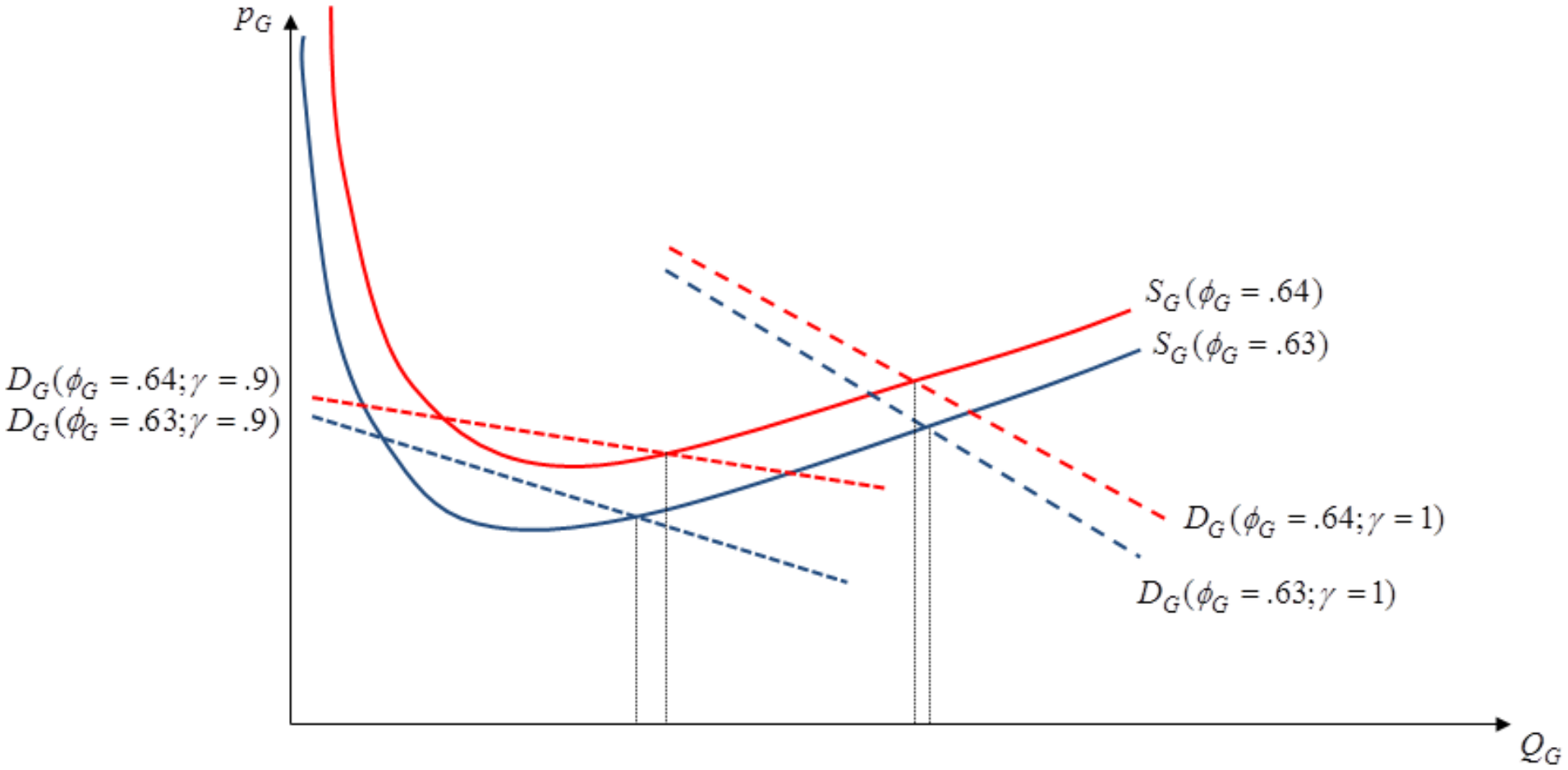
	Profit maximizing promotion efforts ϕ_G^*		
	$\phi_S = 0.1$	$\phi_S = 0.5$	$\phi_S = 0.9$
γ			
1.0	**0.84**	**0.70**	**0.63**
0.9	**0.84**	**0.71**	**0.64**
0.8	**0.83**	**0.71**	**0.64**
0.7	**0.80**	**0.71**	**0.65**
0.6	**0.79**	**0.71**	**0.66**
0.5	**0.77**	**0.70**	**0.00**
0.4	**0.74**	**0.73**	**0.00**
0.3	**0.67**	**0.04**	**0.00**
0.2	**0.48**	**0.04**	**0.00**
0.1	**0.00**	**0.03**	**0.00**
0	**0.00**	**0.03**	**0.00**

Baseline parameters: $M = 1000$, $u = 1$, $h = .5$, $\delta_S = .0011$, $\delta_G = .00165$, $\nu_G = \nu_S = 0$, $t = .045$

$\phi_S = 0.1$	Low awareness of good S
$\phi_S = 0.5$	Intermediate awareness of good S
$\phi_S = 0.9$	High awareness of good S

Go to Demand Structure

Example with a large contested market



Optimal strength of GI protection: quality advantage

- The entries in the table are the values of γ that maximize the objective functions listed in the first column
- Focus on the **quality advantage of the GI**:
  - Marginal GI, tiny quality advantage, $h = .1$
  - Baseline value of the GI quality advantage, $h = .5$
  - Strong GI, large quality advantage, $h = 1$

	$\phi_S = .1$			$\phi_S = .5$			$\phi_S = .9$		
	$h = .1$	$h = .5$	$h = 1$	$h = .1$	$h = .5$	$h = 1$	$h = .1$	$h = .5$	$h = 1$
Max W	**0.63**	**0.75**	**0.86**	**1**	**1**	**1**	**[0 , 0.60]**	**[0 , 0.54]**	**1**
Max CS	0.62	0.74	0.82	1	1	1	[0 , 0.60]	[0 , 0.54]	[0 , 0.42]
Max PS	1	1	1	0.70	1	1	1	1	1
Max Π_G	1	1	1	1	1	1	[0 , 0.60]	1	1
Max Π_S	0.42	0.27	0.23	0.70	0.36	0.30	0.90	0.55	0.43

Optimal strength of GI protection: cost of promotion

- Focus on the **cost of promotion**:
  - Cheap promotion, $t = .02$
  - Baseline value of the cost of promotion, $t = .045$
  - Expensive promotion, $t = .09$

	$\phi_S = .1$			$\phi_S = .5$			$\phi_S = .9$		
	$t = .02$	$t = .045$	$t = .09$	$t = .02$	$t = .045$	$t = .09$	$t = .02$	$t = .045$	$t = .09$
Max W	**0.71**	**0.75**	**0.85**	**1**	**1**	**1**	**1**	**[0 , 0.54]**	**[0 , 0.60]**
Max CS	0.71	0.74	0.78	1	1	1	[0 , 0.40]	[0 , 0.54]	[0 , 0.60]
Max PS	1	1	1	0.91	1	1	1	1	1
Max Π_G	1	1	1	1	1	1	1	1	1
Max Π_S	0.27	0.27	0.51	0.32	0.36	0.61	0.41	0.55	0.76

Optimal strength of GI protection: relative inefficiency

- Focus on the **relative inefficiency** of the GI sector:
  - Efficient GI sector (as efficient as the S sector), $\frac{\delta_G}{\delta_S} = 1$
  - Baseline value of relative inefficiency of the GI sector, $\frac{\delta_G}{\delta_S} = 1.5$
  - Inefficient GI sector, $\frac{\delta_G}{\delta_S} = 2$

	$\phi_S = .1$			$\phi_S = .5$			$\phi_S = .9$		
	$\frac{\delta_G}{\delta_S} = 1$	$\frac{\delta_G}{\delta_S} = 1.5$	$\frac{\delta_G}{\delta_S} = 2$	$\frac{\delta_G}{\delta_S} = 1$	$\frac{\delta_G}{\delta_S} = 1.5$	$\frac{\delta_G}{\delta_S} = 2$	$\frac{\delta_G}{\delta_S} = 1$	$\frac{\delta_G}{\delta_S} = 1.5$	$\frac{\delta_G}{\delta_S} = 2$
Max W	**0.85**	**0.75**	**0.67**	**1**	**1**	**1**	**[0 , 0.50]**	**[0 , 0.54]**	**[0 , 0.50]**
Max CS	0.81	0.74	0.67	1	1	1	[0 , 0.50]	[0 , 0.54]	[0 , 0.50]
Max PS	1	1	1	1	1	0.80	1	1	1
Max Π_G	1	1	1	1	1	1	1	1	1
Max Π_S	0.28	0.27	0.32	0.42	0.36	0.34	0.61	0.55	0.51

Optimal strength of GI protection: summary

	$\phi_S = .1$			$\phi_S = .5$			$\phi_S = .9$		
	$h = .1$	$h = .5$	$h = 1$	$h = .1$	$h = .5$	$h = 1$	$h = .1$	$h = .5$	$h = 1$
Max W	**0.63**	**0.75**	**0.86**	**1**	**1**	**1**	**[0 , 0.60]**	**[0 , 0.54]**	**1**
Max CS	0.62	0.74	0.82	1	1	1	[0 , 0.60]	[0 , 0.54]	[0 , 0.42]
Max PS	1	1	1	0.70	1	1	1	1	1
Max Π_G	1	1	1	1	1	1	[0 , 0.60]	1	1
Max Π_S	0.42	0.27	0.23	0.70	0.36	0.30	0.90	0.55	0.43
	$t = .02$	$t = .045$	$t = .09$	$t = .02$	$t = .045$	$t = .09$	$t = .02$	$t = .045$	$t = .09$
Max W	**0.71**	**0.75**	**0.85**	**1**	**1**	**1**	**1**	**[0 , 0.54]**	**[0 , 0.60]**
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Max PS	1	1	1	0.91	1	1	1	1	1
Max Π_G	1	1	1	1	1	1	1	1	1
Max Π_S	0.27	0.27	0.51	0.32	0.36	0.61	0.41	0.55	0.76
	$\frac{\delta_G}{\delta_S} = 1$	$\frac{\delta_G}{\delta_S} = 1.5$	$\frac{\delta_G}{\delta_S} = 2$	$\frac{\delta_G}{\delta_S} = 1$	$\frac{\delta_G}{\delta_S} = 1.5$	$\frac{\delta_G}{\delta_S} = 2$	$\frac{\delta_G}{\delta_S} = 1$	$\frac{\delta_G}{\delta_S} = 1.5$	$\frac{\delta_G}{\delta_S} = 2$
Max W	**0.85**	**0.75**	**0.67**	**1**	**1**	**1**	**[0 , 0.50]**	**[0 , 0.54]**	**[0 , 0.50]**
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Max PS	1	1	1	1	1	0.80	1	1	1
Max Π_G	1	1	1	1	1	1	1	1	1
Max Π_S	0.28	0.27	0.32	0.42	0.36	0.34	0.61	0.55	0.51

Conclusions

Producers

- Our findings confirm that GI and S-good producers have divergent interests as to the desired degree of GI protection

GI producers

- Generally, GI profits increase monotonically with the strength of protection
  - GI producers are likely to benefit from a strengthening of current GI provisions in important markets, such as the US

S-good producers

- Gain significantly with above-zero protection for GIs (such that GI producers promote)
- Never prefer maximum strength
  - Difficult to conclude whether they would benefit from a strengthening of current GI provisions

Conclusions

Consumers

- Prefer an intermediate level of GI protection when:
  - awareness is low (spillovers of info about the lower-priced good)
  - awareness is high (because of the adverse price effect of over-promotion)
- Prefer the strongest level of GI protection when:
  - awareness in intermediate (market reach effects)

Welfare

- Which level of GI protection is optimal from a welfare point of view depends on the level of awareness of the good in the market