



# PROS AND CONS 2018: A Transactions Cost Analysis of Rebates and Non-Linear Pricing

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# Acknowledgements

- Co-authored with Bruce Kobayashi (FTC)
  - Views expressed here do not reflect those of the FTC or any of its Commissioners

# Introduction and Overview

- Overview of Non-Linear Pricing
- Transaction Costs and Antitrust Analysis
  - Coase (1960); Williamson (1974)
  - Klein Crawford Alchian (1978); Klein & Kenney (1983)
  - Joskow (2002); Posner (2005); Carlton & Keating (2015)
- Transaction Costs and Non-Linear Pricing
  - Metering Ties
  - Loyalty Discounts

# Transaction Cost Economics

- “[Transaction cost economics] takes a comparative contractual approach to economic organization in which contractual variety is expected to reflect an economizing purpose. The driving force affecting the choice of governance arrangements is the desire to economize on the total costs of goods and services, including costs associated with contractual hazards and the costs of institutional arrangements designed to address such hazards.”  
– Joskow (2002)

# Non-Linear Pricing and Transaction Costs

- Transaction costs affect how firms optimally price products in non-merger settings
- Two types of non-linear pricing commonly used to contract around transaction costs
  - Metering ties
  - Loyalty discounts
- Metering ties and loyalty discounts are frequent subjects of antitrust scrutiny despite generally enhancing consumer welfare

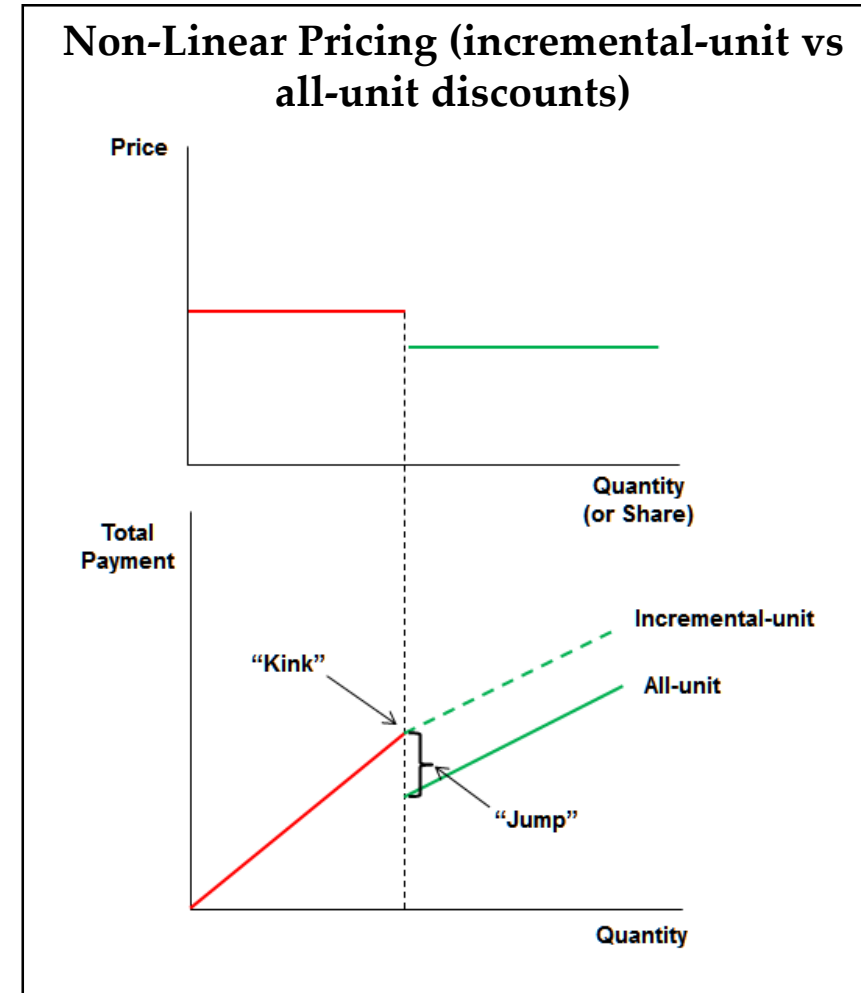
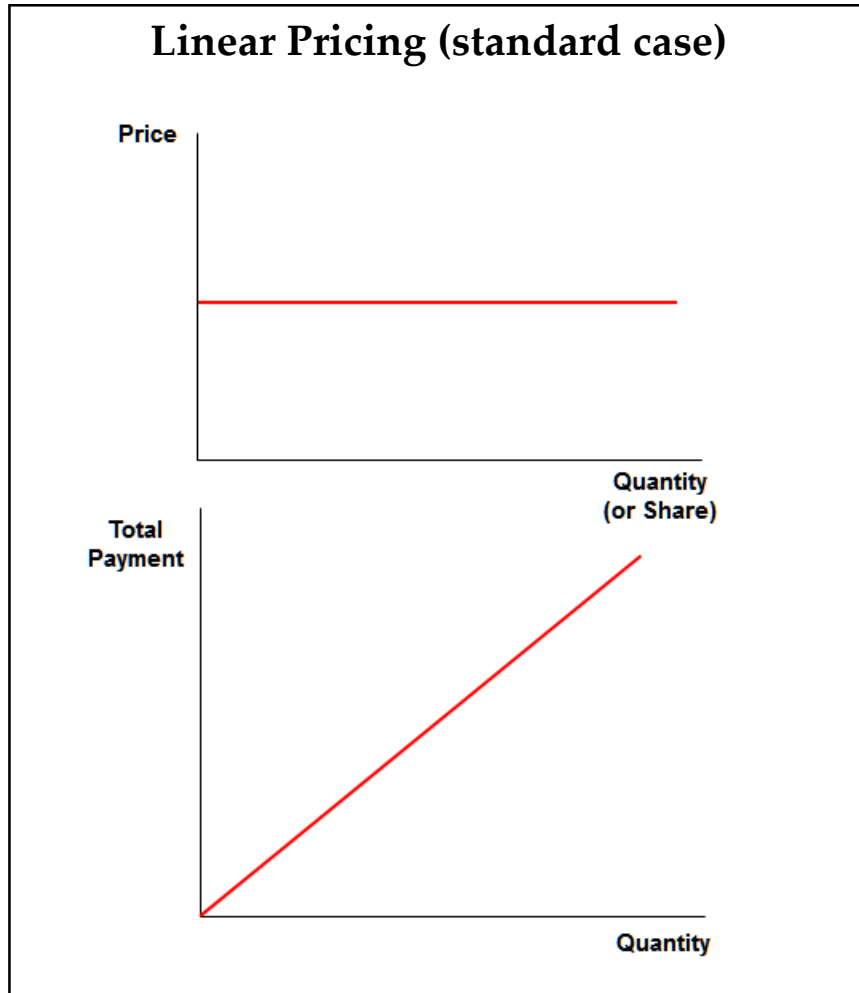


# NON-LINEAR PRICING OVERVIEW

# Non-Linear Pricing and Welfare

- Debate in the literature over welfare effects of metering ties
  - Elhauge (2009) (metering ties are third-degree price discrimination that typically reduce welfare)
  - Hovenkamp & Hovenkamp (2010) (metering ties rarely harm consumer welfare)
  - Elhauge & Nalebuff (2016) (metering generally lowers consumer welfare)
- Similar debate surrounding loyalty discounts
  - Wright & Moore (2015); Kobayashi (2005)
  - Elhauge (2012)

# Linear vs Non-Linear Pricing





# Potential Legal Standards for Loyalty Discounts

- Exclusive dealing law appropriate framework for analyzing antitrust claims
- Price-cost test as a sufficient condition for safe harbor
- Price-cost test as necessary condition for liability



# TRANSACTION COSTS AND METERING TIES

# Welfare Effects of Metering

- Consider conduct in U.S. Supreme Court case *Dawson Chemical v. Rohm & Hass* – with the Court allowing the latter to exert control of unpatented non-staple chemical (Propanil) used in process patent through contributory infringement suits.
- Implied license – no direct charge for use of patent
- Use of metering does not require costs of negotiating individual licenses and monitoring non licensed use and suing individual infringers



# Compare Welfare of Three Pricing Schemes

- **Linear uniform pricing of a license (fixed with respect to amount of chemical propanil bought/applied, and requires incurring transaction costs associated with licensing patent).**
- Two-part non linear pricing
  - Fixed fee (with transactions costs associated with licensing patent).
  - Running rate based on amount of propanil bought/applied.
- Implied License
  - No Fixed Fee (and importantly, no transactions costs associated with licensing the patent)
  - Only (a higher) running rate based on amount of propanil applied.

# U.S. Patent 3,816,092

**United States Patent** [19]

**Wilson et al.**

[11] **3,816,092**

[45] **June 11, 1974**

[54] **HERBICIDAL 3,4-DICHLOROANILIDES**

[75] Inventors: **Harold F. Wilson**, Moorestown, N.J.; **Dougal H. McRay**, Hatboro, Pa.

[73] Assignee: **Rohm & Haas Company**, Philadelphia, Pa.

[22] Filed: **Mar. 16, 1961**

[21] Appl. No.: **96,089**

**Related U.S. Application Data**

[60] Division of Ser. No. 31,253, May 24, 1960, abandoned, which is a continuation-in-part of Ser. No. 714,947, Feb. 13, 1958, abandoned.

[52] **U.S. Cl.** ..... **71/118**

[51] **Int. Cl.** ..... **A01n 9/20**

[58] **Field of Search** ..... 71/2.3, 118; 260/562

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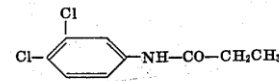
*Primary Examiner*—James O. Thomas, Jr.  
*Attorney, Agent, or Firm*—Connolly and Hutz

[57] **ABSTRACT**

Disclosed is a method for selectively inhibiting growth of undesirable plants in an area containing growing undesirable plants in an established crop, which comprises applying to said area 3,4-dichloropropionanilide at a rate of application which inhibits growth of said undesirable plants and which does not adversely affect the growth of said established crop.

**12 Claims, No Drawings**

The structural formula of 3,4-dichloropropionanilide is



The compound can also be named N(3,4-dichlorophenyl)propanamide, N(3,4-dichlorophenyl)propionamide or 3', 4'-dichloropropionanilide.

We claim:

1. A method for selectively inhibiting growth of undesirable plants in an area containing growing undesirable plants in an established crop, which comprises applying to said area 3,4-dichloropropionanilide at a rate of application which inhibits growth of said undesirable plants and which does not adversely affect the growth of said established crop.

2. The method according to claim 1 wherein the 3,4-dichloropropionanilide is applied in a composition comprising 3,4-dichloropropionanilide and an inert diluent therefor at a rate of between 0.5 and 6 pounds of 3,4-dichloropropionanilide per acre.

3. The method according to claim 1 wherein most of the undesirable plants are destroyed by the 3,4-dichloropropionanilide applied thereto without substantial adverse effect on the crop growing therewith.

4. The method according to claim 1 wherein the established crop is tomatoes.

5. The method according to claim 1 wherein the established crop is potatoes.

6. The method according to claim 2 wherein the established crop is monocotyledonous.

7. The method according to claim 2 wherein the established crop is dicotyledonous.

8. The method according to claim 2 wherein the undesirable plants include monocotyledonous plants.

9. The method according to claim 2 wherein the undesirable plants include dicotyledonous plants.

10. The method according to claim 2 wherein the established crop is a grain crop.

11. The method according to claim 2 wherein the undesirable plants include barnyardgrass.

12. A method for selectively inhibiting the growth of growing, tender, undesirable, annual plants which are susceptible to 3,4-dichloropropionanilide, said undesirable plants growing in an area containing an established monocotyledonous crop which is resistant to 3,4-dichloropropionanilide, which comprises applying to said undesirable plants a composition comprising 3,4-dichloropropionanilide and an inert carrier therefor at a rate of application which inhibits growth of said undesirable plants and which does not substantially affect the growth of said established monocotyledonous crop.

\* \* \* \* \*

# Demand for Consumable Good

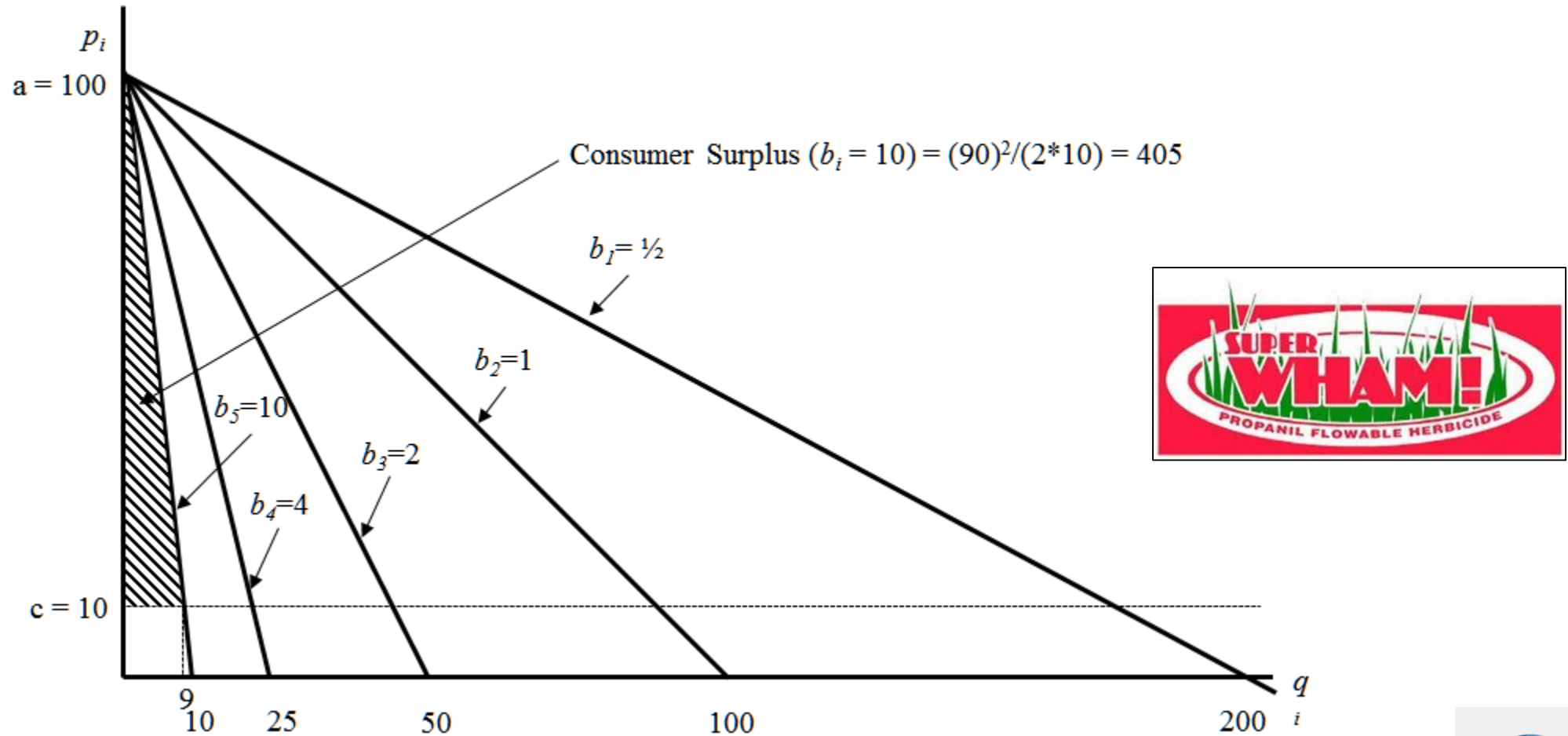


Figure 1 – Individuals' Demand for the Unpatented Consumable Good (Gallons of Propanil)

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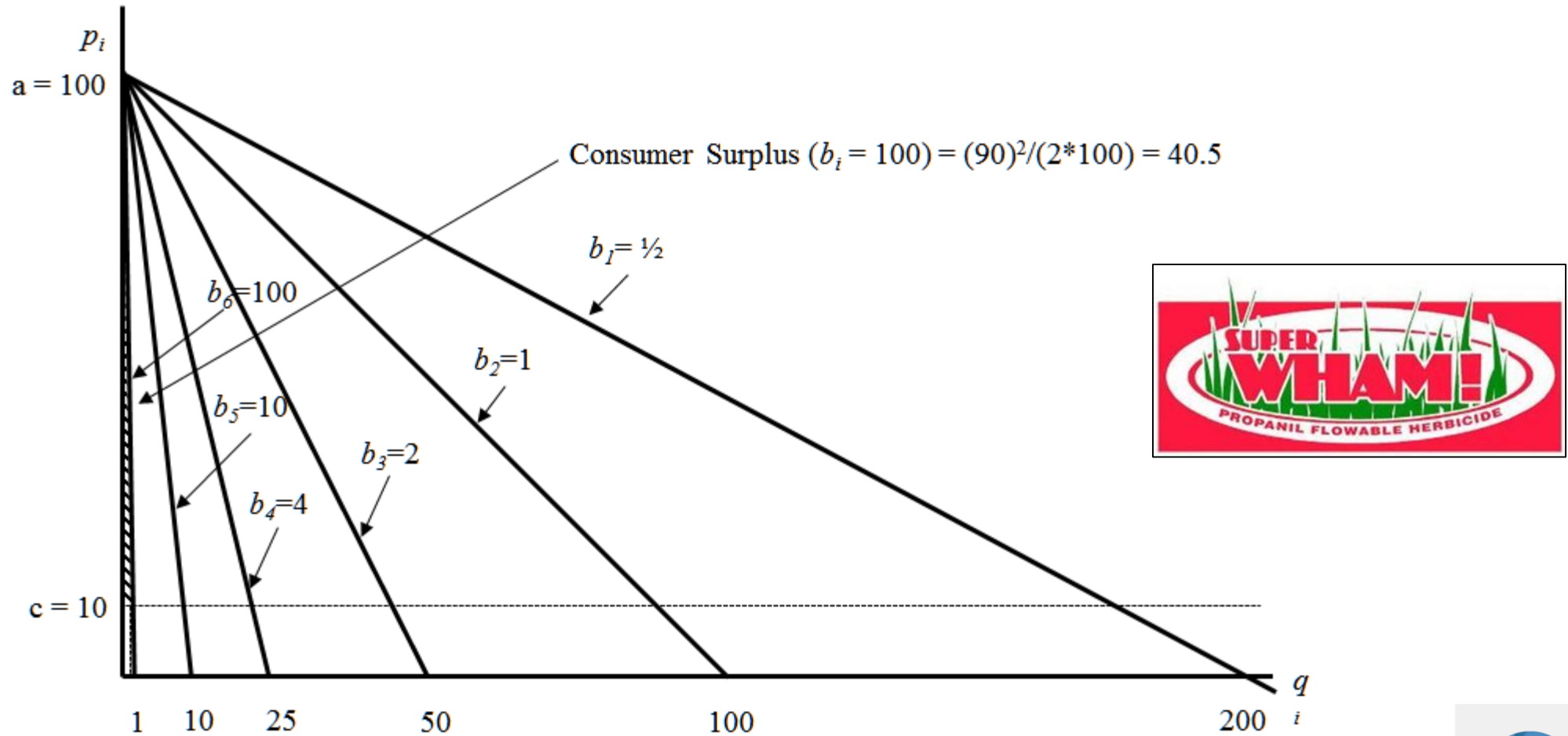
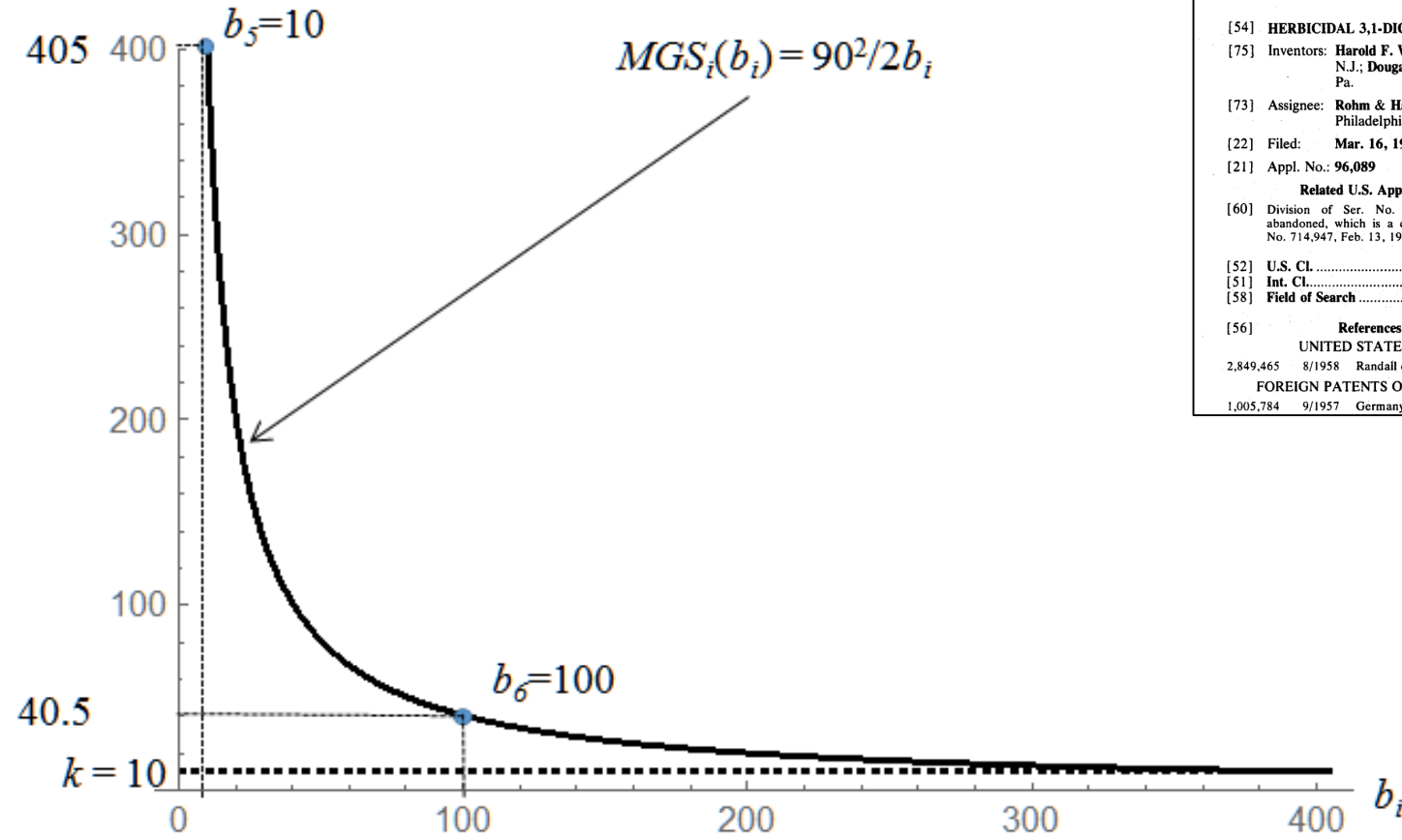


Figure 2 – Individuals' Demand for the Unpatented Consumable Good (Gallons of Propanil)

# Demand for Patent



**United States Patent** [19] **3,816,092**  
 Wilson et al. [45] **June 11, 1974**

[54] **HERBICIDAL 3,1-DICHLOROANILIDES**  
 [75] Inventors: **Harold F. Wilson**, Moorestown, N.J.; **Dougal H. McRay**, Hatboro, Pa.  
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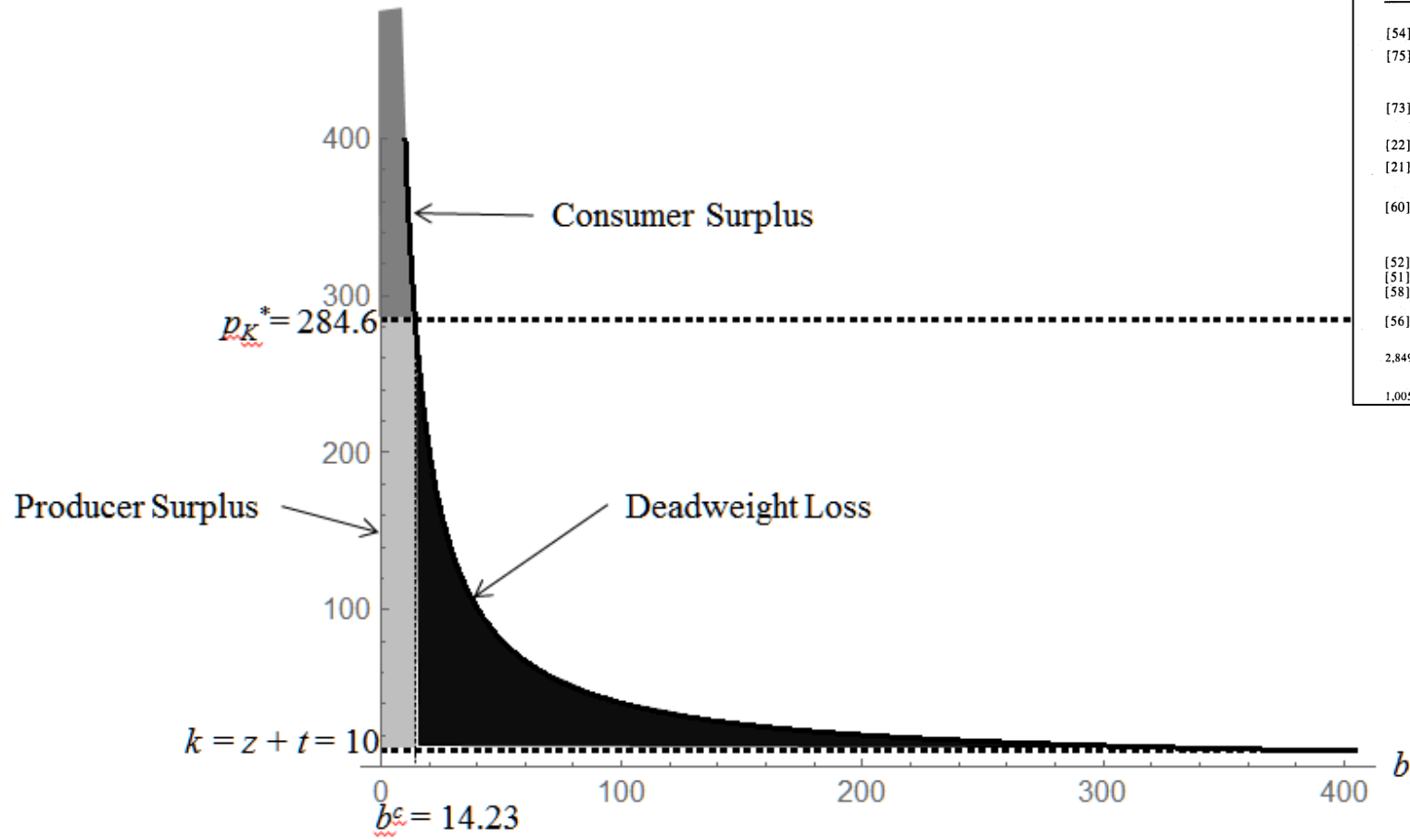
**Primary Examiner**—James O. Thomas, Jr.  
**Attorney, Agent, or Firm**—Connolly and Hutz

**12 Claims, No Drawings**

Figure 3 – Derived Market Demand for the Method Patent (Marginal Cost Pricing of the Consumable)



# Demand for Patent



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Wilson et al.		[45] <b>June 11, 1974</b>
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Figure 4 – Linear Pricing of Patented Method (Marginal Cost Pricing of the Consumable)

# Compare Welfare of Three Pricing Schemes

- Linear uniform pricing of a license (fixed with respect to amount of chemical propanil bought/applied, and requires incurring transaction costs associated with licensing patent).
- **Two-part non linear pricing**
  - **Fixed fee (with transactions costs associated with licensing patent).**
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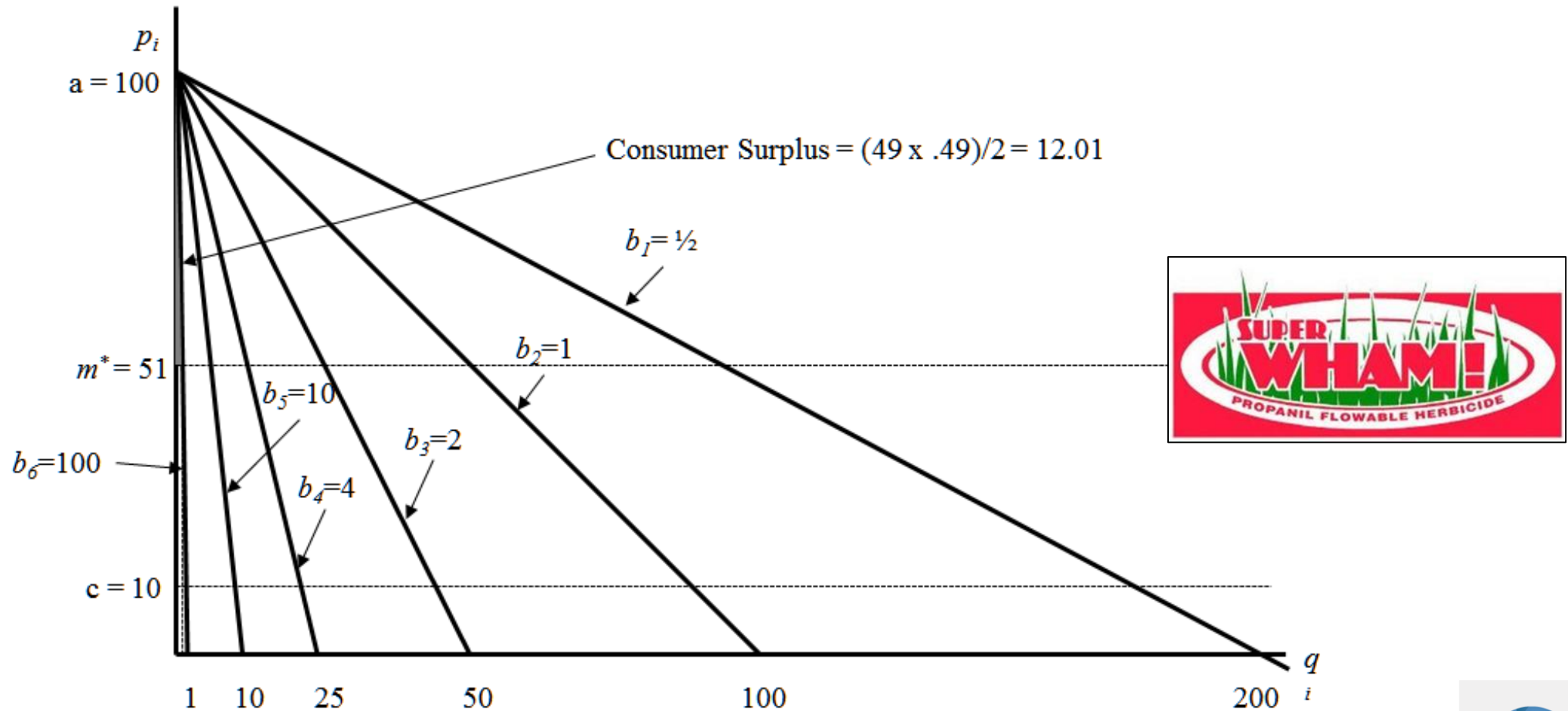
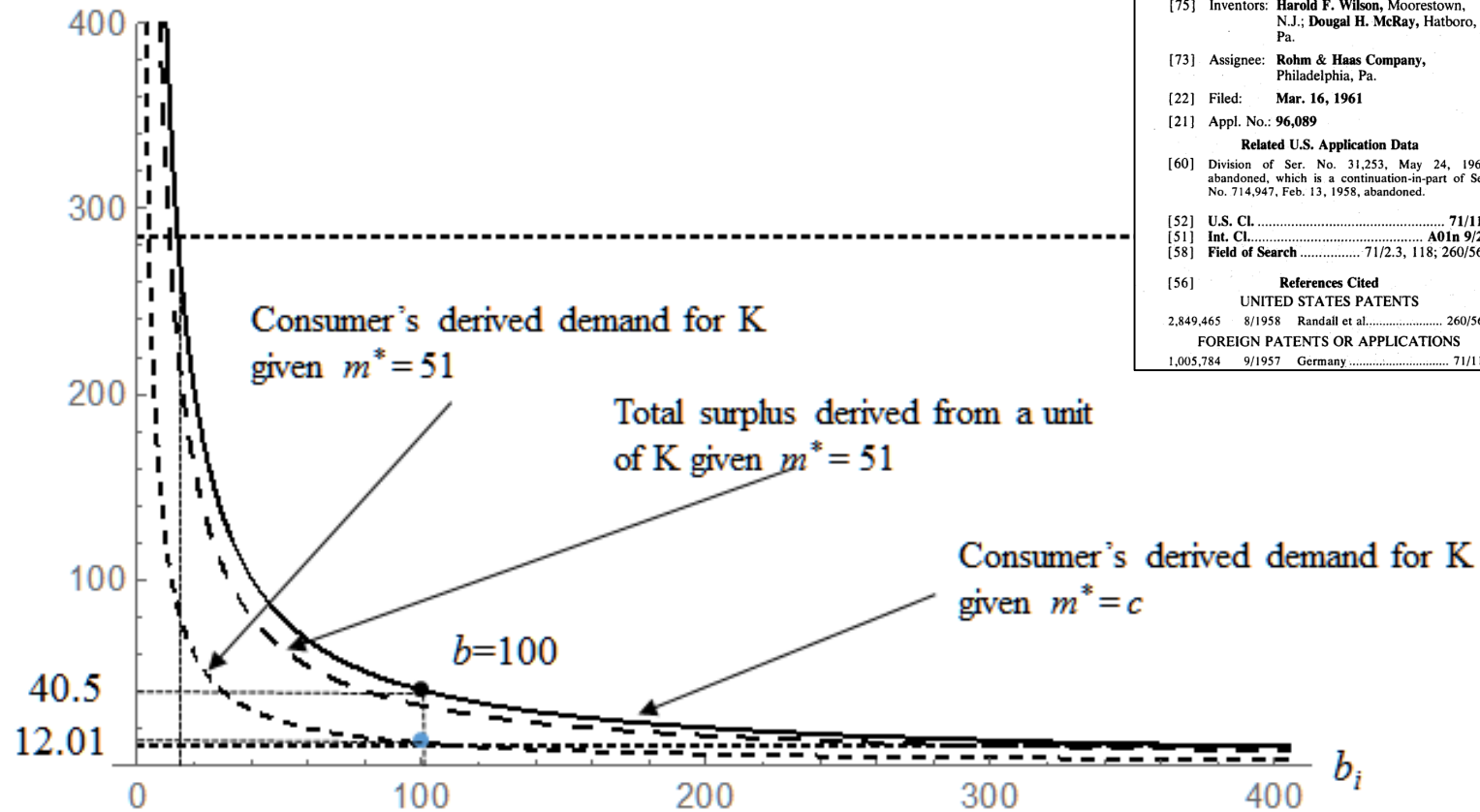


Figure 5 - Individuals' Demand for Unpatented Consumable Good and Metered Pricing

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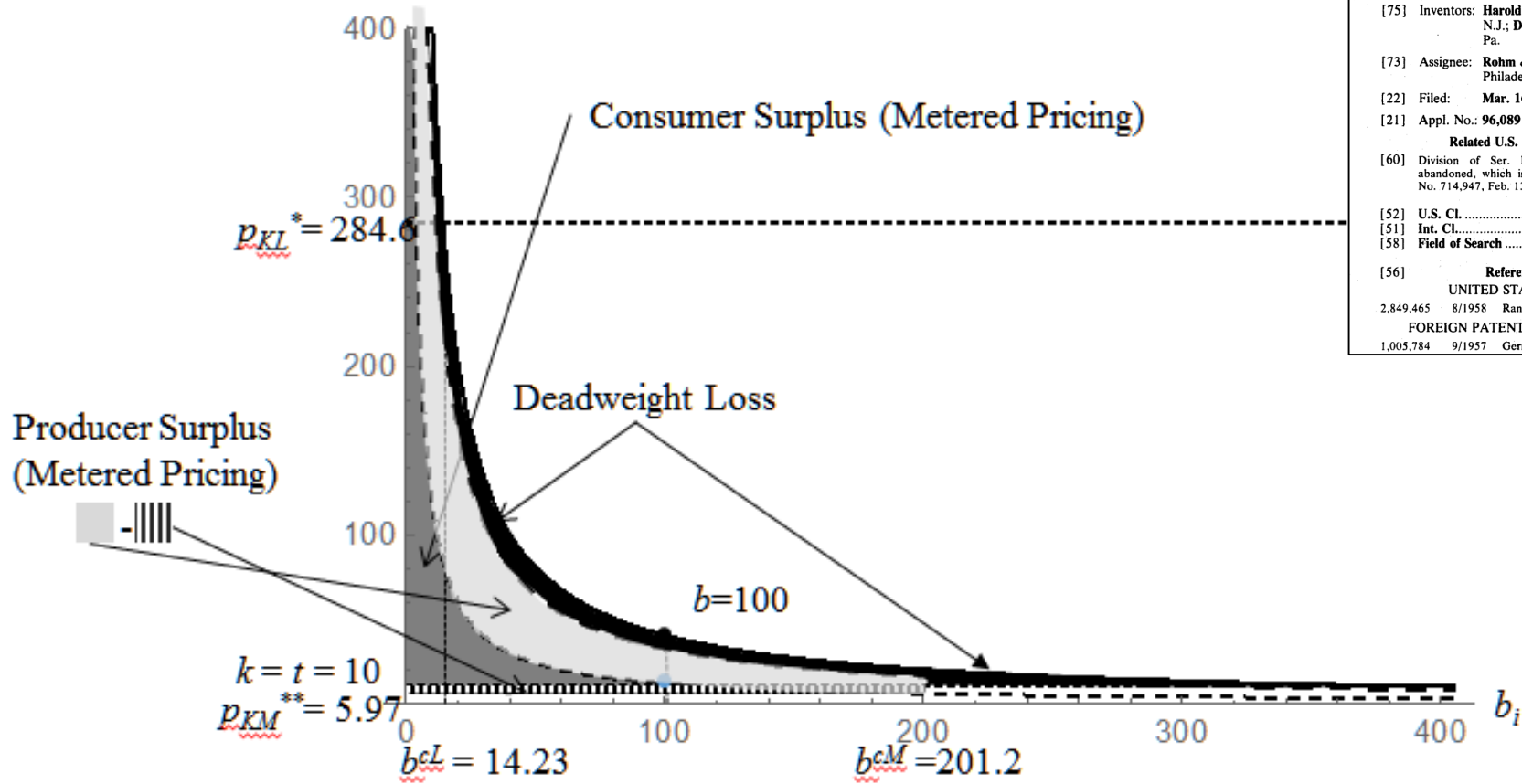
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**12 Claims, No Drawings**

Figure 6 – Derived Market Demand for the Method Patent ( $m^* = 51$ )

# Demand for Patent



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**Primary Examiner**—James O. Thomas, Jr.  
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**12 Claims, No Drawings**

Figure 7 – Derived Market Demand for the Method Patent and Welfare ( $m^* = 51$ )

# Compare Welfare of Three Pricing Schemes

- Linear uniform pricing of a license (fixed with respect to amount of chemical propanil bought/applied, and requires incurring transaction costs associated with licensing patent).
- Two-part non linear pricing
  - Fixed fee (with transactions costs associated with licensing patent).
  - Running rate based on amount of propanil bought/applied.
- **Implied License**
  - **No Fixed Fee (and importantly, no transactions costs associated with licensing the patent)**
  - **Only (a higher) running rate based on amount of propanil applied.**

# Product Label

1



## Herbicide

For Postemergence Control of Broadleaf,  
Grass, and Sedge Weeds in Rice Fields

### Active Ingredients:

Propanil: 3', 4' – Dichloropropionanilide.....41.20%  
Bensulfuron Methyl: Methyl 2-[[[[(4, 6-dimethoxypyrimidin-2-yl)  
amino]carbonyl]amino]sulfonyl]methyl]benzoate .....0.32%

**Inert Ingredients:**.....58.48%

**TOTAL**.....100.00%

This product contains 4 lbs. of propanil and 0.031 lb. of bensulfuron methyl  
per gallon of formulated product.

EPA Registration No. 71085-9

EPA Establishment No. 62171-MS-1; 62171-MS-3

### BROADCAST RATE

Apply 3 quarts of **DUET** per acre when most grasses have reached the 1 to 3-leaf stage. Use 4 to 5 quarts of **DUET** per acre when the grasses are large (4 to 5 leaf stage) or when unseasonably cool weather conditions prevail. Under dry conditions when grass and broadleaf weeds are stressed, in cases where rice fields have not been drained completely or where weeds are large enough, higher rates of product, 4 to 6 quarts per acre, should be used to achieve control. Barnyardgrass may be controlled up to 30 to 45 days after planting, before rice plants have reached the fully tillered growth stage.

**Tank Mix Options:** Apply 2 to 4 quarts (depending upon weed size and timing) of **DUET** per acre tank mixed with a postemergent rice application of **Newpath**. An additional application of any propanil formulation can be made prior to flood as long as no single application exceeds 6 lbs. a.i. or a total of 8 lbs. a.i. per acre per season.

When **DUET** is applied with **Newpath** follow the **Newpath** label for recommended surfactants.

When tank mixing with another herbicide, refer to the respective label for rates, methods of application, weeds controlled, proper timing, restrictions and precautions. Always use in accordance with the most restrictive label restrictions and precautions making sure no label dosages are exceeded.

**NOTE:** **DUET** applied to rice after the 4-leaf stage may cause visible injury under some climatic conditions. Rice plants usually outgrow such injury.

# Demand for Consumable Good

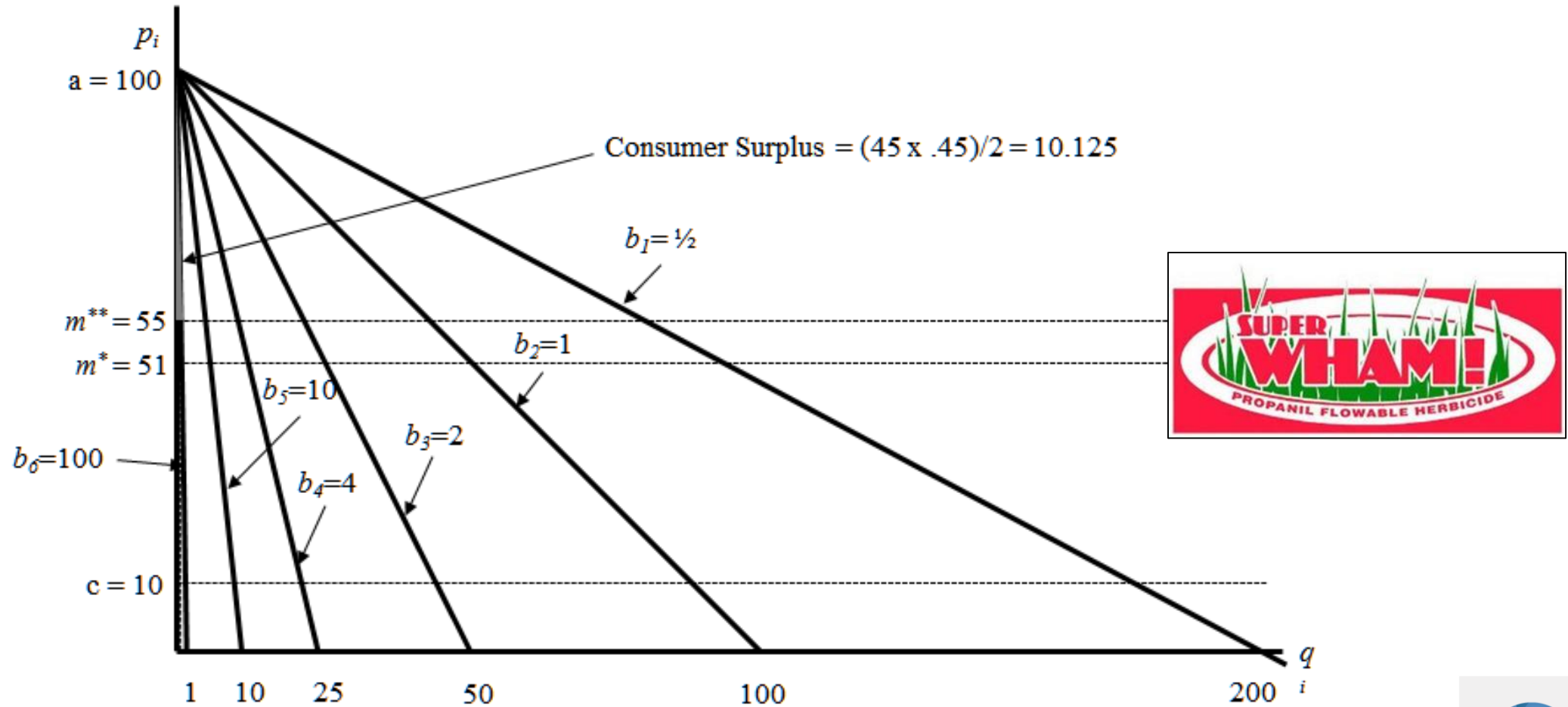
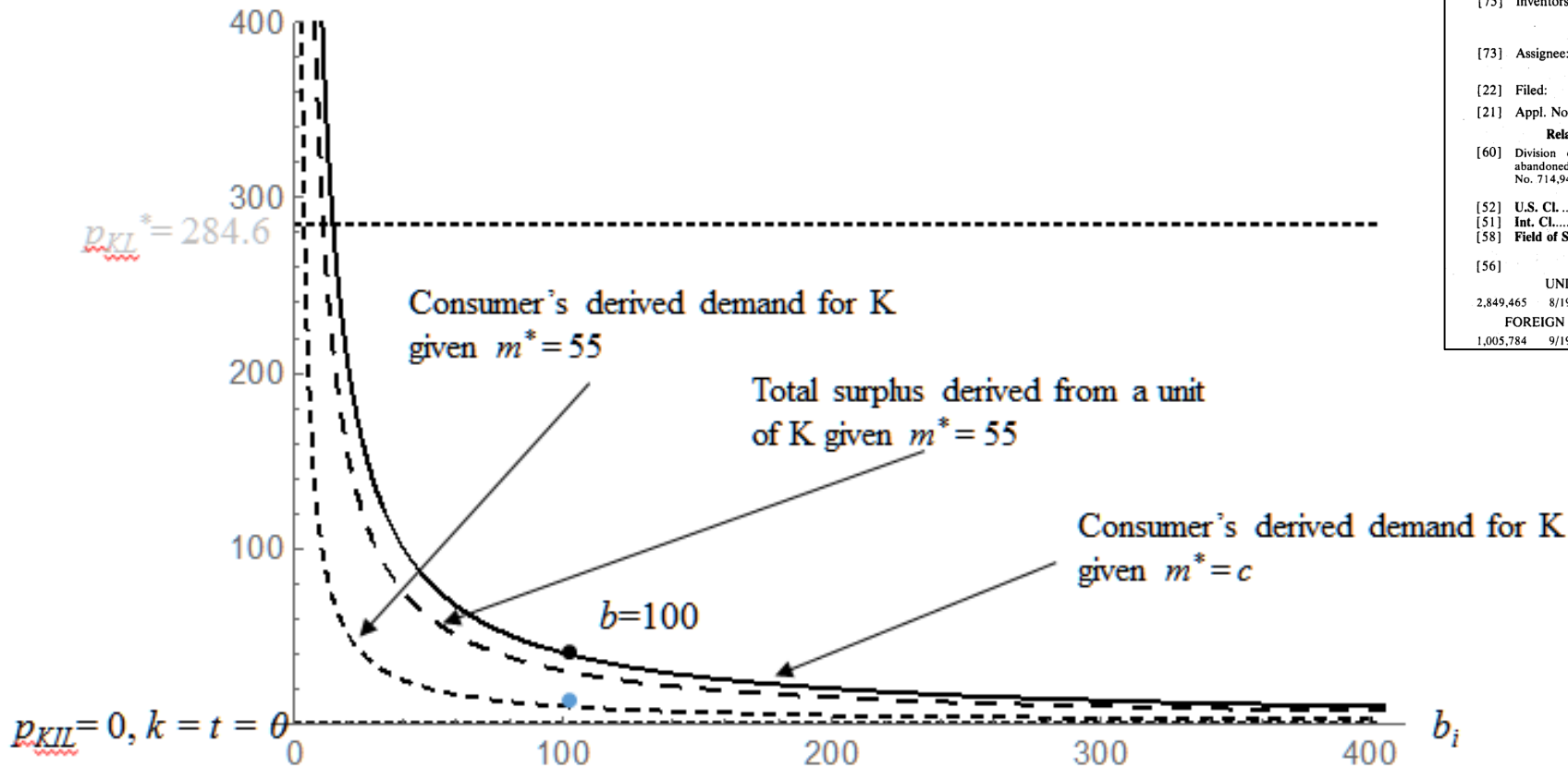


Figure 9 – Individuals' Demand for Unpatented Consumable Good and Metered Pricing



# Demand for Patent



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**Primary Examiner**—James O. Thomas, Jr.  
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**12 Claims, No Drawings**

Figure 10 – Derived Market Demand for the Method Patent (Implied License,  $m^* = 55$ )

# Demand for Patent

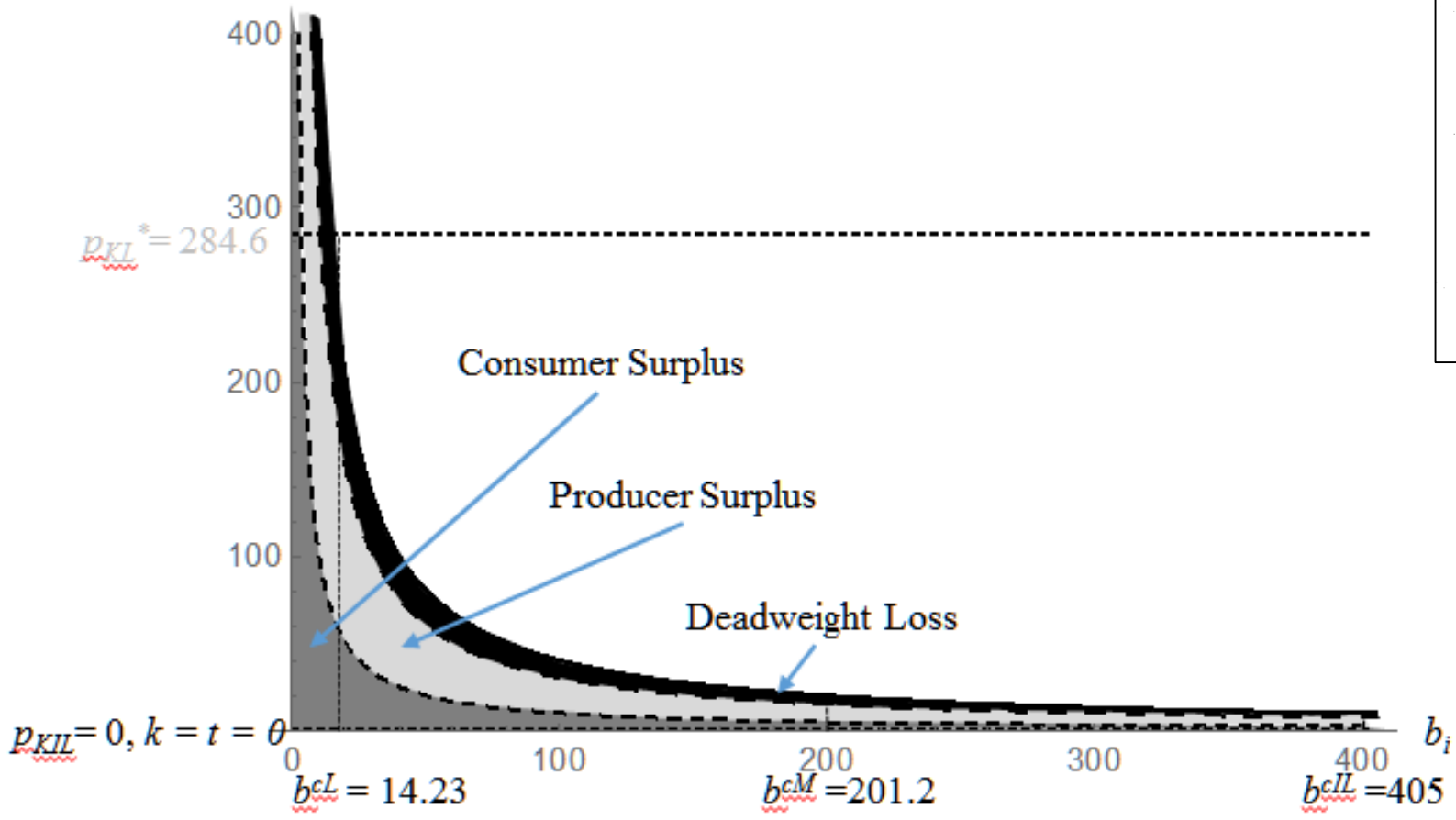


Figure 11 – Derived Market Demand for the Method Patent and Welfare (Implied License,  $m^* = 55$ )

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# Prices, Output & Welfare

	Price of Consumable $m$	Price of Patented Method $p_K$	Marginal Consumer Served $b^C$	Expected Output of Consumable $E(q)$	Expected Profit $E(\text{Profit})$	Expected Consumer Welfare $E(\text{Cons. Welfare})$	Expected Total Welfare $E(\text{Total Welfare})$
<b>LINEAR PRICING</b>	10	284.605	14.2302	0.745	9.32112	23.866	33.1871
<b>METERED PRICING</b>	51	5.96675	201.198	1.33	27.7859	14.8391	42.625
<b>IMPLIED LICENSE</b>	55	0	405	1.49	33.5266	33.5266	67.0531

Table 1 – Equilibrium Prices, Output, and Welfare Measures



# TRANSACTION COSTS AND LOYALTY DISCOUNTS

# Anti-Competitive Theories

- Raising rivals' costs by "taxing" customers' purchases from rivals
  - The supplier reduces the discount if the customer buys more units from rivals; reduction in the discount is a "tax" that the supplier imposes on its rivals
  - Raises rivals' costs and allows the supplier to raise price
- Exclusion by foreclosing rivals and/or potential entrants
  - Rivals' costs may increase further if rivals are denied scale economies
  - Supply and capacity may fall if rivals are denied minimum viable scale
- Predation by pricing some units below cost
  - With all-unit discounts, the marginal unit often is effectively priced below cost
  - Unlike traditional predation theories, infra-marginal units are priced above cost
  - Thus, this does not hinge on a "sacrifice today, recoup tomorrow" principle







# Incremental-Unit vs All-Unit Discounts



*Get 25% off when you buy four!*

- In this example, the two may be equivalent (e.g., for a buyer buying four units), but notice that the latter disguises the “below-cost” pricing of the last unit
- The FTC Decision and Order in Transitions explicitly singles out and forbids all-unit discounts
  - “By way of example, Respondent may offer or provide a discount of X% on all sales in excess of Y lenses, but it may not offer or provide a discount of X% on all lenses if sales exceed Y lenses”

# Examples of All-Unit Discounts by “Trigger”

<u>Discounter</u>	<u>Product</u>	<u>Trigger</u>	<u>Legal Action</u>
	Stern drive marine engines	Market-share	Sued by group of buyers, won on appeal (2000)
	CPUs	Market-share	FTC investigation settled by Consent Decree (2010)
	Spices	Shelf-space-share	FTC investigation settled by Consent Decree (2000)
	Condoms	Shelf-space-share	FTC investigation closed without action; sued by rival, but C&D won Summary Judgment (2012)
	Photochromic lenses	Complete exclusion	FTC investigation settled by Consent Decree (2010), forbidding all-unit discounts
	Hospital services	Complete exclusion	DOJ investigation settled by Consent Decree (2011)

# Pro-Competitive Rationales

- May induce the manufacturer to supply the retailer with promotional services (e.g., training the retailer's sales staff in the *product's* operations and attributes)
  - These services would not be offered without some assurance that the retailer will sell mainly the manufacturer's *brand*
- May induce the retailer to perform promotional services more effectively (Klein & Murphy, 1988); Klein & Wright (2007)
  - Some degree of exclusivity aligns the incentives of the retailer with those of the manufacturer
- May help manage demand uncertainty
  - Market share discounts do not punish loyal retailers when a negative demand shock occurs (unlike, for example, volume discounts)



# Incentive Conflict Over Promotion

- Retailer's incentive to allocate additional or higher quality shelf space to a given product are typically significantly weaker than product manufacturer's
- Retailers do not have incentive to stock the “right” products (i.e., products that maximize the joint profit of the manufacturer and retailer
  - Retailers allocate shelf space across products so that retailer incremental profit is approximately the same across all products
- Without a contract, retailer may inefficiently undersupply shelf space to manufacturer's product

# Transaction Costs Affect Contract Choice

- Transactions costs affect choice of contract
  - Wholesale price discounts, incremental price discounts, per-unit time payments (“slotting fees”)
- Shelf space share discounts / loyalty discounts may be easier or less costly to administer than other types of discounts
  - Shelf space share discounts allow one to use the same trigger (e.g., 75% of the product category’s shelf) in every store of a national chain, whereas with volume discounts one would have to tailor the trigger to the size of the store
  - Efficiently measure what manufacturer is purchasing

# Application: *FTC v. Church & Dwight*

- High transaction costs associated with discount program tailored to individual retail chains
  - Different discount schedules for different chains if discount is conditional on total amount of shelf space or total volume of sales
  - Discount schedules would need to vary based on chain's overall scale, size/location of stores, and other chain-specific details
  - Schedules would need to be adjusted to account for growing/shrinking chains in response to changes in demand, increases/decreases in the number of retail outlets in the chain, and other market conditions

# Application: *FTC v. Church & Dwight*

- Shelf space share discounts lower transaction costs
  - Amount of space allocated to Church & Dwight automatically adjusts as retailer adjusts total amount of shelf space devoted to condoms in store
  - Retailer can determine how much shelf space to allocate to condoms in each store and how to divide it between manufacturers based on Church & Dwight's discounts and other factors
  - Church & Dwight effectively advertising quality and popularity of its products through prominent or large share of shelf space

# Conclusion

- Transaction costs affect the way parties contract and optimally price products
- Consumer welfare is impacted by choice of contract
- Important to understand link between transaction costs and consumer welfare when analyzing non-linear pricing