When Monopoly Complements Monopsony: A Comparison Between a Zero Welfare Revenue Tariff and an Optimal Welfare Tariff

Andrew Schmitz

Ben Hill Griffin Eminent Scholar,

Food and Resource Economics Department, University of Florida.

Sheikh Jafar Emran

Food and Resource Economics, University of Florida.

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Introduction

- An optimal revenue tariff is designed by the government in the importing countries to collect revenue by exploiting both exporters and domestic consumers.

- In case of optimal revenue tariff the government exercises market power which generates a double distortion (monopoly and monopsony).

- Thus, the role of government resembles that of a 'pure middleman' who can distort prices with the imposition of tariffs and collect the necessary revenue (opposite to the optimal welfare tariff).

- But in reality governments are only able to impose tariffs that are below the theoretical optimal welfare tariff levels (Ossa, 2014). Thus, this statement also applies to the real-world prices under the optimal revenue tariffs.

Motivation

- The government often faces a tradeoff between collecting revenue and liberalizing trade.
- In the context of imperfect market power, the balance between tariff reduction and maximizing revenue is theoretically challenging.
- We feel that there is not enough theoretical framework that could explain this tradeoff, especially in the context of imperfect market power.
- We develop a new tariff that links welfare with a goal of collecting revenue. We call this tariff a zero-welfare revenue tariff which ensures the government earns specific revenue, but welfare is equivalent to free trade.
- Government gains at the expense of loss of domestic consumers and producers, but it guarantees that welfare is at least equal to free trade.

Literature

- Our work is pioneering as we introduce a new variety of revenue tariffs which is different from the conventional revenue tariffs.

- Tariffs have traditionally been implemented with the objectives of generating revenue, safeguarding domestic industries, or acting as negotiation tools, rather than aiming for optimal social welfare. As a result, the maximum revenue tariff which in general is higher than the optimal welfare tariff, is designed to generate the maximum possible revenue (Johnson, 1950).

- The revenue tariffs always emphasize revenue collection rather than welfare (Heady and Mitra,1987).

- Welfare function of the government is diverse in nature, inherently embedded with economic and political motives (Amador and Bagwell, 2012).

- When the conditions of smooth foreign offer curves, concave home trade indifference curves, and intersecting free trade offer curves are met, the maximum revenue tariff (the tariff that generates the most government revenue) will be higher than the optimum tariff (the tariff that maximizes overall economic welfare) (Tower, 1977).

Model

• We assume that there are two countries in the world namely home (H) and foreign (F). We first start our model assuming that the home country is the sole importer, and the foreign country is the only exporter of the good (x) (Amador and Bagwell, 2012). The countries have similar utility functions that are additively separable across the two goods as follows-

- $U = u(x^i) + n,\ i = \{H\ \&\ F\}$

- Let P^H and P^F denote the relative prices of good x with respect to good n in home and foreign countries respectively,
- $Q^H(P^H)$ and $Q^F(P^F)$ are supply curves,
- We initially assume $Q^H(P^H) = 0$ and the entire domestic demand is imported from the foreign countries,
- Assuming $\bar{x}$ is the volume of trade of good x. Let assume the inverse demand function for home country's import is $P^H(\bar{x})$ and inverse supply function for export for foreign country is $P^F(\bar{x})$. We assume $P^H(\bar{x}) < 0$ and $P^F(\bar{x}) > 0$,
- Import tariff (t) by definition satisfies the condition: $t = P^H(\bar{x}) - P^F(\bar{x})$. A higher t results a lower $\bar{x}$. Under free trade $t = 0$ and $P^H(\bar{x}) = P^F(\bar{x})$.

Model(Continues)

• $CS(\bar{x})$ and $PS(\bar{x})$ represents the sum of consumer and producer surplus at home and abroad, respectively. We further denote $TR(\bar{x})$ is the tariff revenue generated by the imposing tariff t.

$$CS(\bar{x}) = u\left(Q^H\left(P^H(\bar{x})\right) + \bar{x}\right) - P^H(\bar{x})\left(Q^H\left(P^H(\bar{x})\right) + \bar{x}\right) + TR^H(\bar{x})$$

$$PS(\bar{x}) = u\left(Q^F\left(P^F(\bar{x})\right) + \bar{x}\right) - P^F(\bar{x})\left(Q^F\left(P^F(\bar{x})\right) + \bar{x}\right) + TR^F(\bar{x})$$

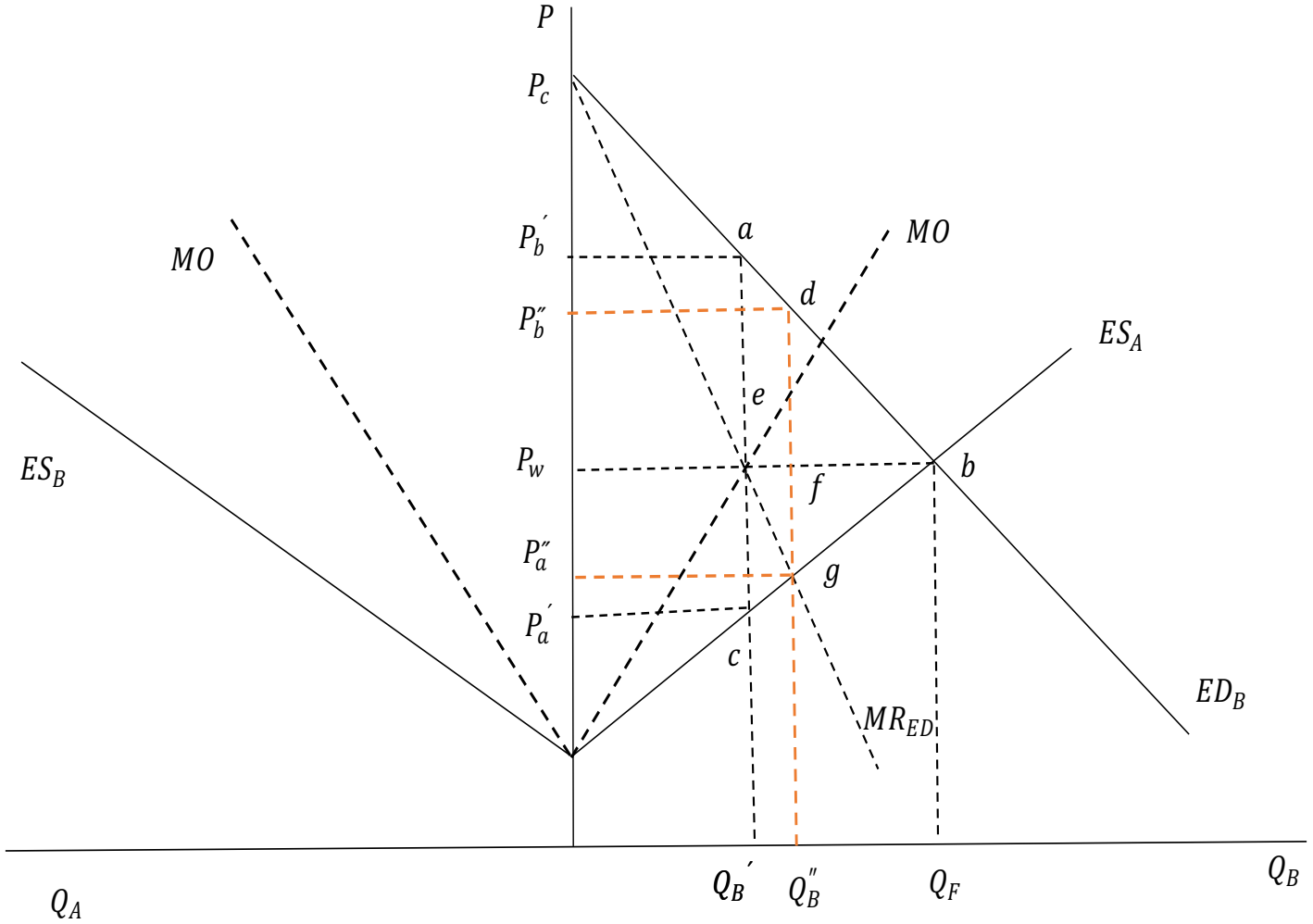
$$TR(\bar{X}) = (P^H(\bar{x}) - P^F(\bar{x}))\bar{x}$$

• By aggregating consumer surplus, producer surplus and tariff revenue, we reach to the total welfare of the home country-

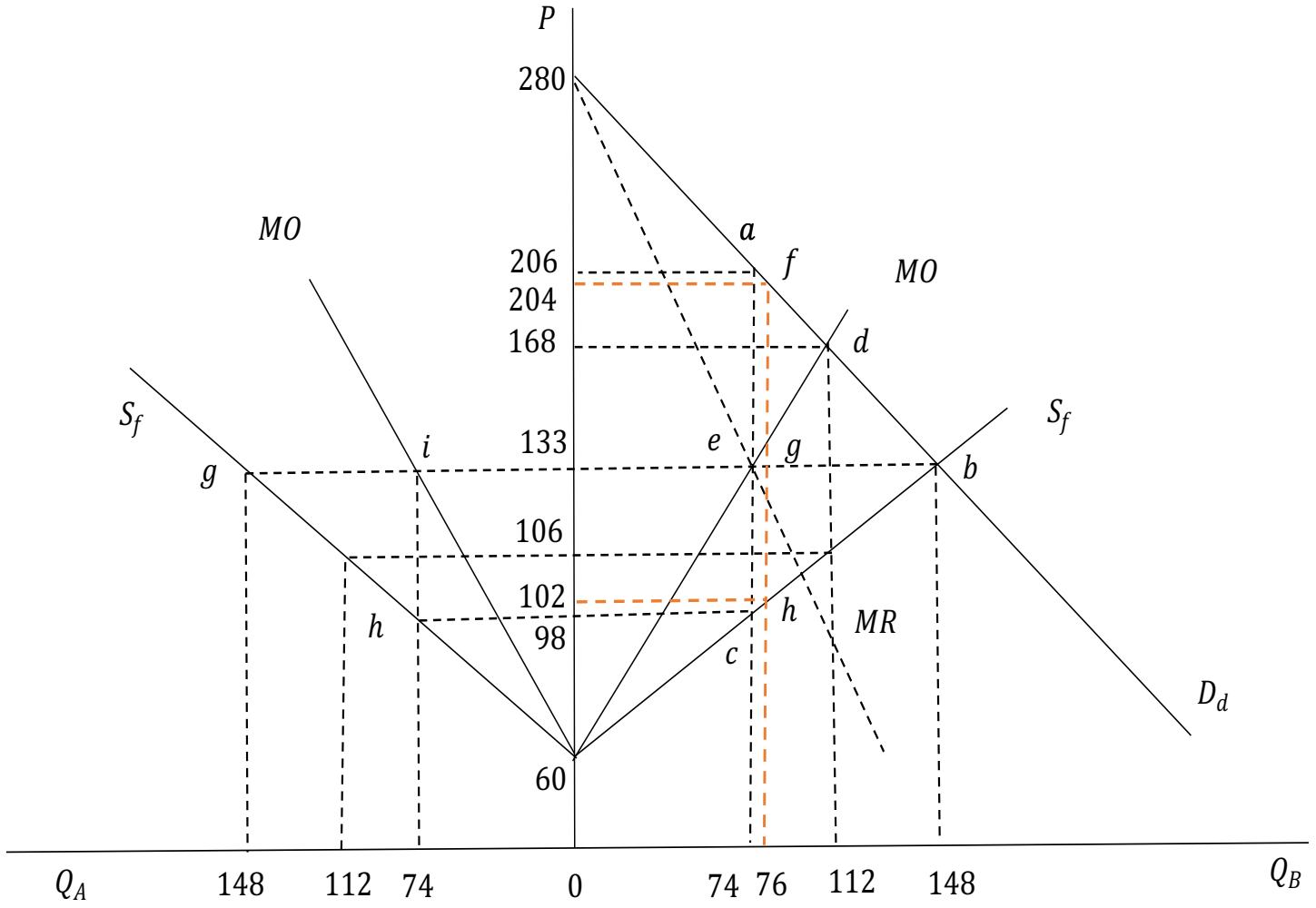
$$W(\bar{x}|\gamma) = SH(\bar{x}) + \gamma TR(\bar{x})$$

• where γ is the weight tariff revenue. γ represent that value of the tariff revenue of the home government (Matschke, 2008).

Optimal Revenue Tariff and Zero Welfare Revenue Tariff



Comparison of Zero Welfare Revenue Tariff and Optimal Welfare Tariff(Empirical Case)



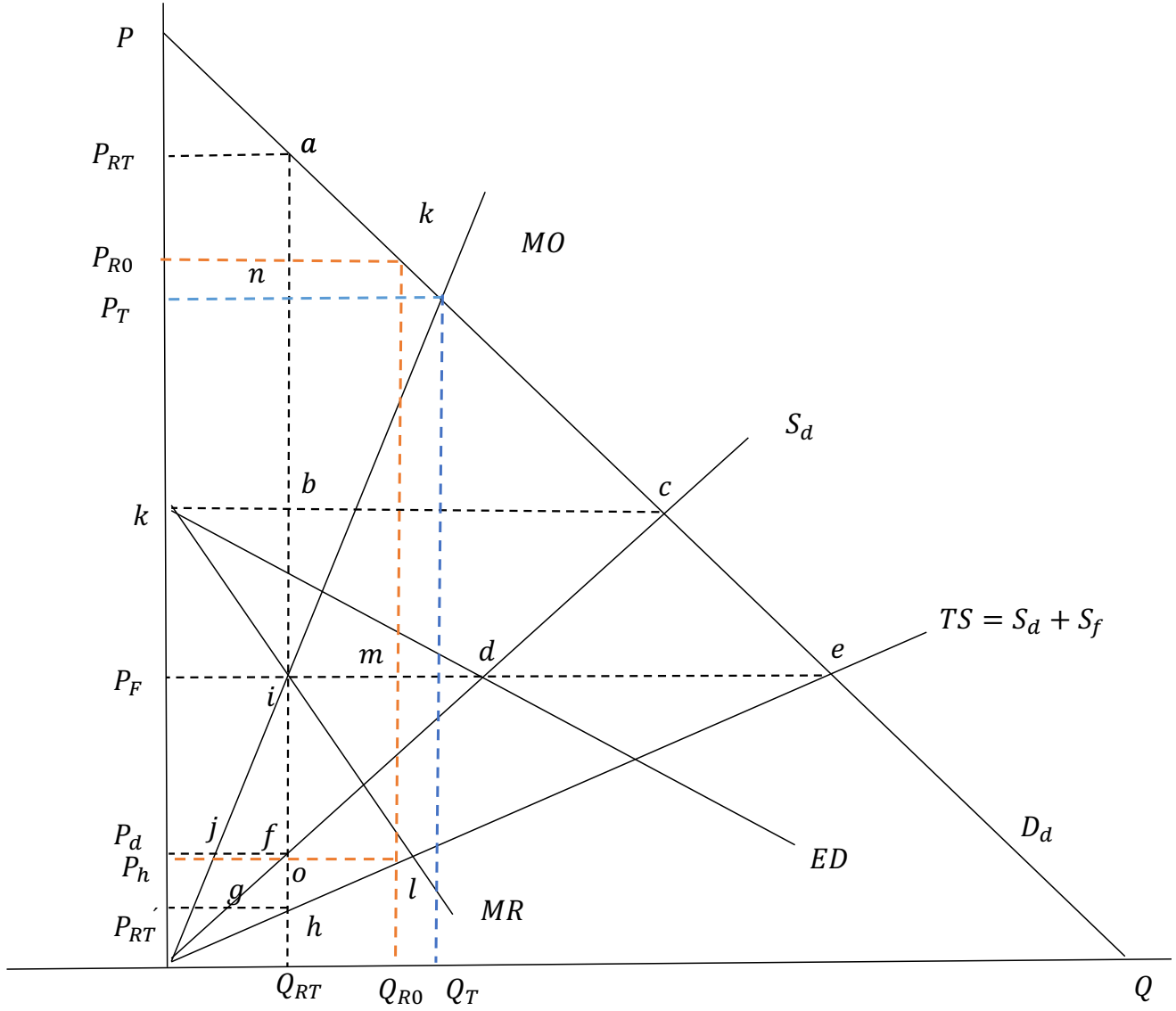
Welfare Under Free Trade, Optimal Welfare Tariff and Zero Welfare Revenue Tariff

	Home Country (d)						Foreign Country (f)	World Total Welfare (TW)
	Price (P)	Imports (M)	Tariff (T)	Consumer Surplus(CS)	Govt. Revenue (R)	Home Country Total	Exporter Surplus (PS)	
Free trade price (P_F)	133	148	0	10, 878	0	**10,878**	5,402	16,280
Optimal Welfare tariff price (P_T)	168	112	62	6,272	6,720	12,992	2,576	15, 568
Optimal Revenue Tariff (P_{ORT})	206	74	108	2,738	7,792	10,530	1,554	12,084
Zero welfare revenue tariff (P_{R0})	204	76	102	2, 888	7,752	**10,640**	1,596	12,236

Net Welfare Under Free Trade, Optimal Welfare Tariff and Zero Welfare Revenue Tariff

	Gain	Loss	Net
Free trade	• Exporter's surplus 5,402 • Consumer surplus 10,878 • Total surplus 16,280	0	Maximum Gain
Optimal welfare tariff	Government gain=6,944	• Loss of the exporter=3,510 • Loss of consumer surplus=6,272 • Harberger triangle=630 • Total loss= (3,510+6,272+630)=10,412	Loss compared to free trade=712
Optimal revenue tariff	Government gain=7,792	• Loss of the exporters=1,406 • Loss of consumer surplus=2,738 • Harberger triangle=2,701 • Total loss= (1,406+2,738+2,701)=6,845	Loss compared to free trade=4,196
Zero welfare revenue tariff	Government gain=7,752	• Loss of the exporter=3,472 • Loss of consumer surplus=2,888 • Harberger triangle=2,701 • Total loss=(3,472+2,888+2,701)=9,061	Loss compared to free trade=4,044

Extended Theoretical Model



Explaining the Zero welfare Revenue Tariff in Extended Model

- The loss in consumer surplus is equal to $(P_{RT}abk + kbiP_F + acb + bcdi + ced)$ due to the imposition of an optimal tariff.

- The loss in producer surplus is equal to $(P_F ijP_d + ifj + idf)$.

- The gain in government revenue is equal to $(P_{RT}abk + kbiP_F + P_F ifP_d + P_d fgP_{RT}^{'} + fhg)$.

- A zero welfare revenue tariff is a tariff which makes the gain in government revenue is equal to the losses of consumer and producer together so that the welfare is equal to that of under free trade.

Conclusion

- The revenue tariff in contrast to a optimal welfare tariff also generate revenue with higher welfare losses.

- Revenue tariff is often characterized as elevated and connotated as welfare depressing compared to an optimal welfare tariff. Thus, the optimal welfare tariff is welfare enhancing compared to a zero welfare revenue tariff.

- Despite the contrasting theoretical concepts of monopoly and monopsony, governments, as key players in international trade, can concurrently assume a dual role by imposing optimal revenue tariffs.

- In this context, the government functions akin to a 'pure middleman,' capable of distorting prices through tariff imposition and collecting essential revenue.

Conclusion (continues)

• We introduce a theory of the zero-welfare revenue tariff, aiming to achieve welfare equivalent to that of free trade.

• Employing the Excess Demand (ED) and Excess Supply (ES) framework, we demonstrate that the distribution of welfare under the zero-welfare revenue tariff is distinctly different from that under free trade.

• Our analysis reveals that government gains occur at the expense of a reduction in consumer and producer surplus. However, it ensures that welfare is at least equivalent to that of free trade.

Thank You!

Q & A