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Effects of Typical Assumptions on the Measurement of the Upstream Transmission of Checkoff Program Benefits

Sang Hyeon Lee, Korea Rural Economic Institute,
Email: shlee@krei.re.kr

Gary W. Williams, Texas A&M University,
Email: gwwilliams@tamu.edu

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Sang Hyeon Lee¹ and Gary W. Williams²
¹Korea Rural Economic Institute, ²Texas A&M University

Introduction

The 1996 Farm Bill requires evaluations of the effectiveness of all federal checkoff programs. Many such evaluations make one or more assumptions which may bias their measurement of the transmission of the returns to producers.

Objectives

This study analyzes the effects of these simplifying assumptions on the transmission of soybean checkoff program benefits to producers by:

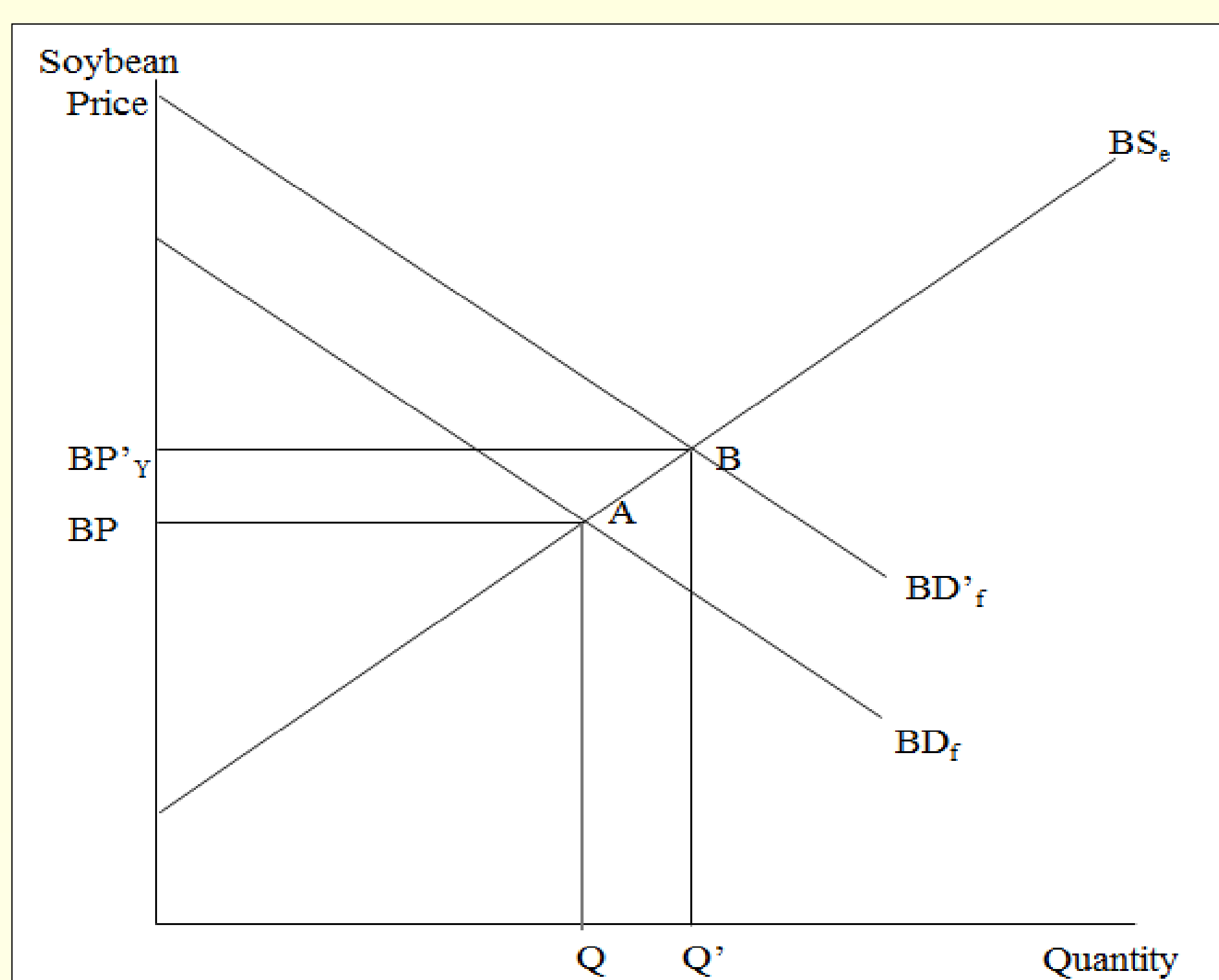
1. Measuring the overall returns transmitted to U.S. soybean producers by the U.S. soybean checkoff program over time
2. Conducting scenario analyses to determine the effects that three assumptions often made in checkoff program evaluations could imply for the measurement of the transmission of soybean checkoff program benefits to producers:
 - no price effect (perfectly elastic supply);
 - no supply response (perfectly inelastic supply);
 - no free-rider gains (Brazil and Argentina in this case).

Model and Data

- World Soybean Model: SOYMOD(Williams et. al. 2014)
- Annual Soybean Checkoff Expenditures are obtained from united Soybean Board and its primary contractors.

Conceptual Analysis

< Base Scenario: None of the simplifying assumptions hold >



Effects of a checkoff-promotion-induced change in demand:

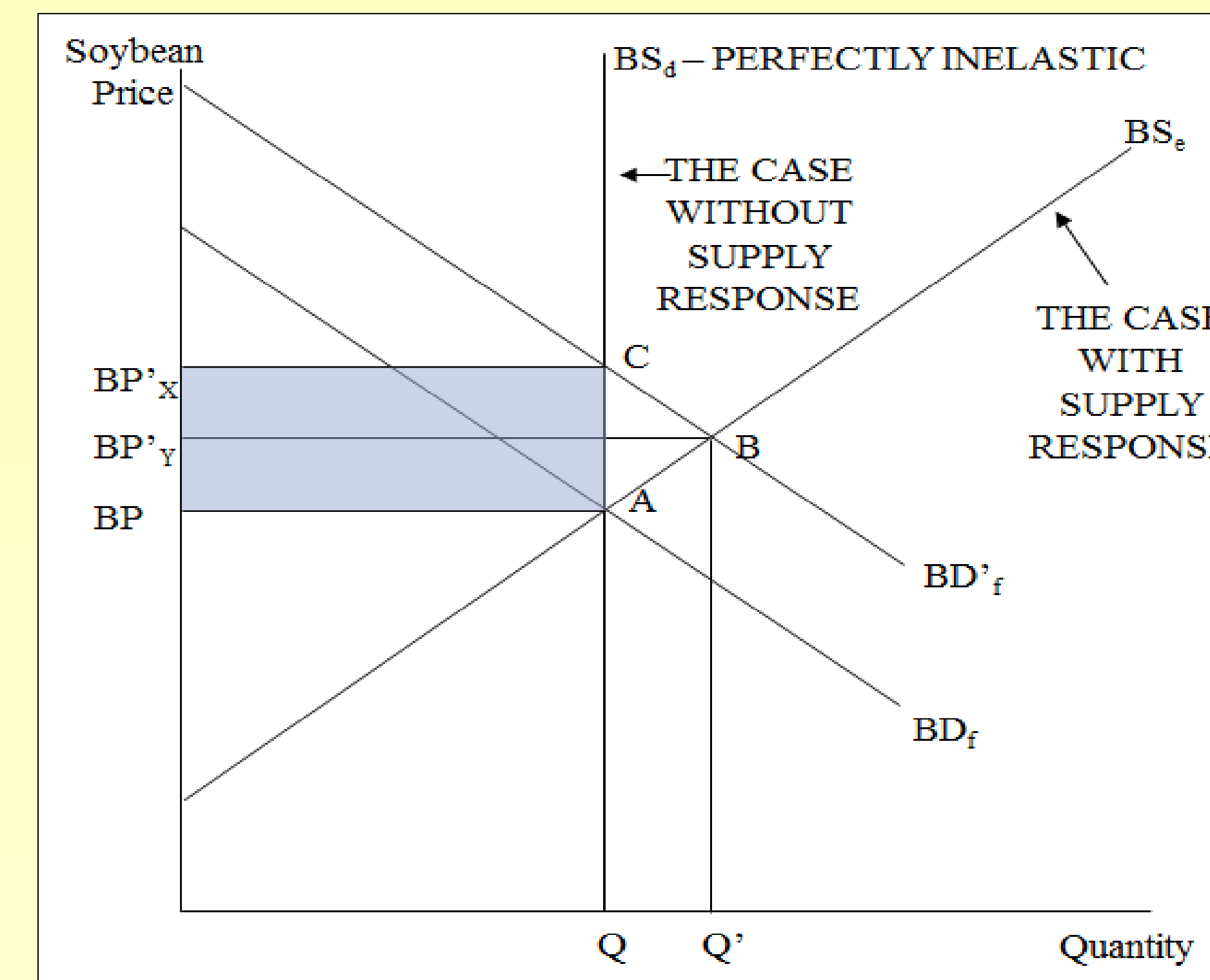
- Production : $Q \rightarrow Q'$
- Soybean price : $BP \rightarrow BP'_Y$
- Producers gain: $BP-A-B-BP'_Y$.

Conceptual Analysis

< No Supply Response: Supply is assumed to be perfectly inelastic >

A checkoff-promotion-induced change in demand can lead only to a price effect:

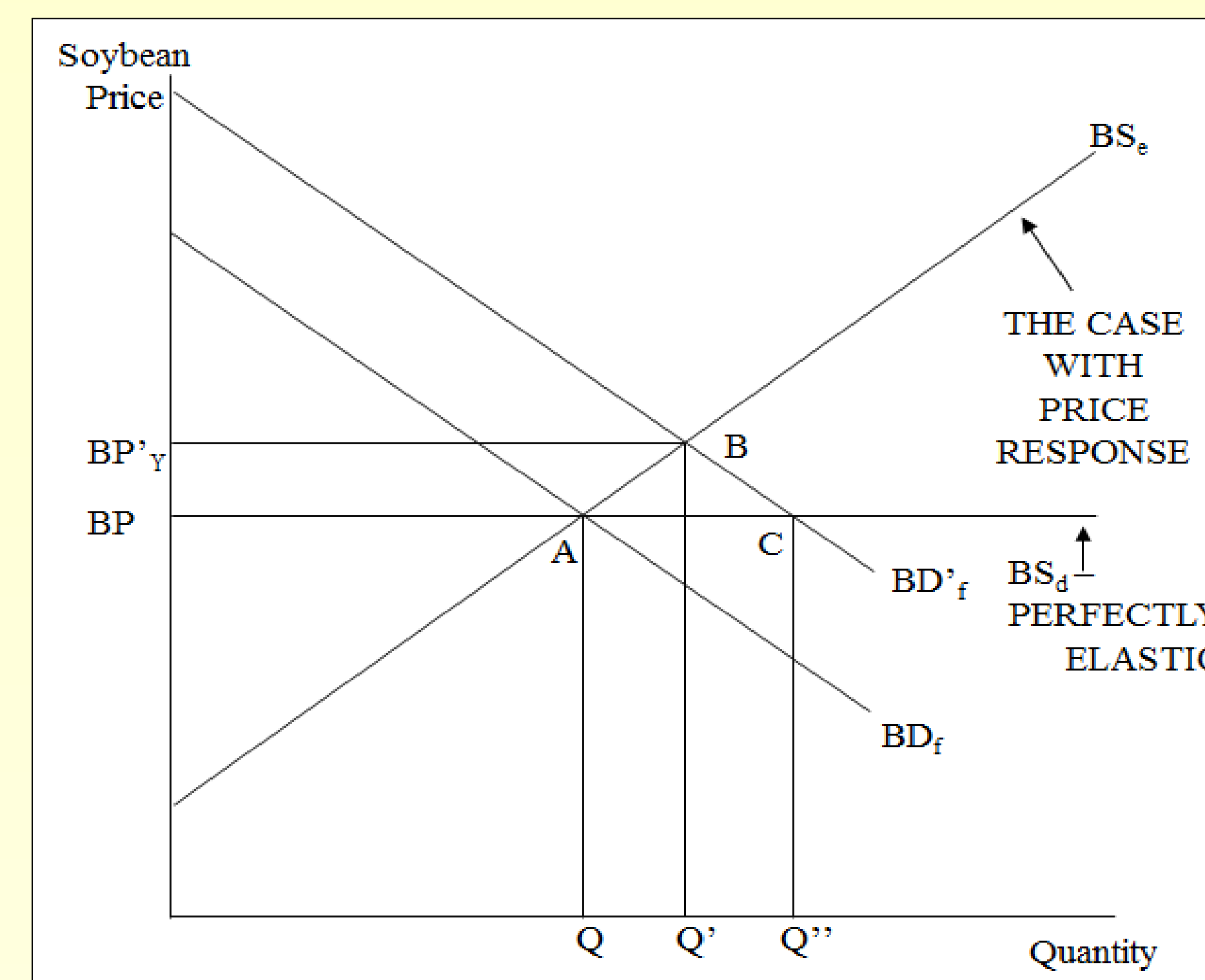
- Production : fixed at Q
- Soybean price : $BP \rightarrow BP'_X$
- Producers gain: $BP-A-C-BP'_X$.



< No Price Response: Supply is assumed to be perfectly elastic >

A checkoff-promotion-induced change in demand can lead only to a quantity effect.

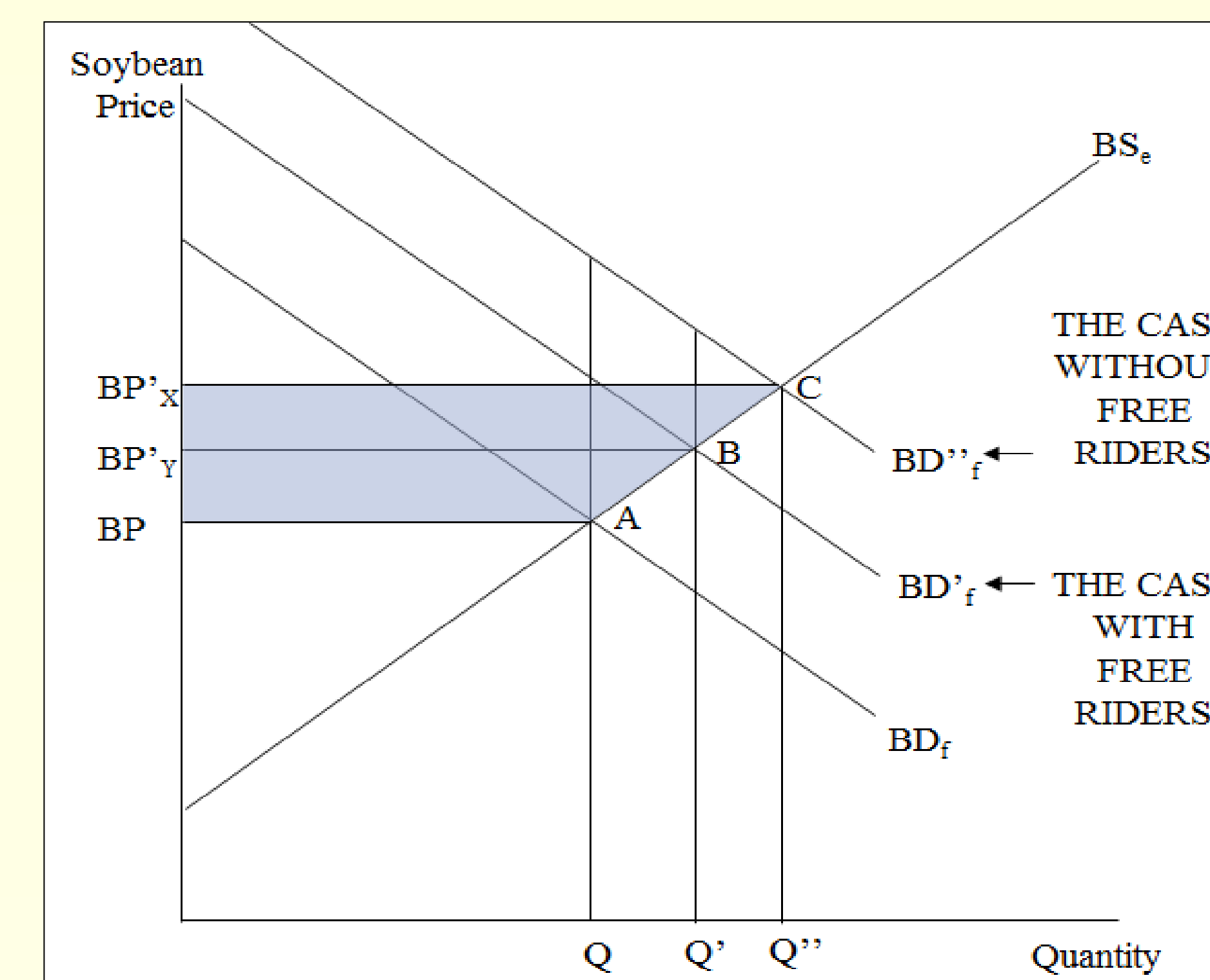
- Production : $Q \rightarrow Q''$
- Soybean price : fixed at BP
- Producers gain: zero



< No free-riders: No loss of gains from promotion to free riders >

Free riders (Brazil and Argentina in this case), reduce the gains of promotion to U.S. soybean producers:

- Production : $Q \rightarrow Q'$ instead of Q''
- Soybean price : $BP \rightarrow BP'_X$ instead of BP'_Y
- Producers gain: $BP-A-B-BP'_Y$ instead of $BP-A-C-BP'_X$



Simulation

- The model was simulated over the 1980/81-2012/13 period with and without soybean checkoff expenditures (base case).
- Three scenarios simulated: (1) no price effects allowed, (2) no supply response allowed, and (3) free riders not allowed to gain from checkoff-induced soybean demand increase.

Results

- Base case scenario results for the 1980/81 through 2012/13 period is Net Profit Benefit Cost Ratio (NBCR) to soybean producers of 6.9, indicating that the producer benefits from the soybean checkoff program exceeded the total expenditure of checkoff funds over that period.

Base Scenario: None of the simplifying assumptions hold

Net revenue (\$ million)	10,672.9
Soybean Checkoff Investment (\$ million)	1,356.2
Grower Net Profit Benefit-Cost Ratio (NBCR) (\$/\$ spent)	6.9

- Under the three scenarios, the effects of the soybean check-off program were over-estimated (▲) or under-estimated (▼) compared to the base scenario:

Effects of Simplifying Assumptions

Scenario	Soybean Production	Soybean Price	Cash Receipts	Cost of Added Production	NBCR (Comments)
(1)	▼	▲	▲	▼	▲ 226% (overestimated benefits)
(2)	▲	▼	▲	▲	▼ 37.7% (underestimated benefits)
(3)	▲	▲	▲	▲	▲ 23.2% (overestimated benefits)

(1) No supply response, (2) No price response, (3) No free riders

Conclusion

Simplifying assumptions commonly made in commodity checkoff program evaluations can result in sizeable errors in measuring the upstream transmission of the benefits of such programs to producers. The measurement errors can be both positive and negative depending on the assumptions made.