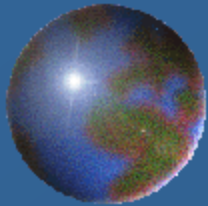


MALAYSIAN RICE TRADE AND GOVERNMENT INTERVENTIONS

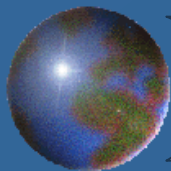
by :



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Contributed paper presented to the 55th Annual Conference of the Australian Agricultural and Resource
Economics Society, Melbourne, 8-11 February 2011.



Malaysia's Paddy and Rice Statistics



Percentage of labour force = 2.17%

Paddy planted area = 665,000 ha

Rice yield = 3.68 Mt/ha

Rice production = 1,590,000 Mt

Domestic consumption = 2,519,000 Mt

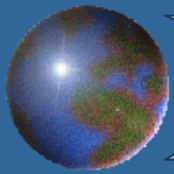
Imports = 1,070,000 Mt

Per capita consumption = 79 kg/year.

Self-sufficiency level = 63%

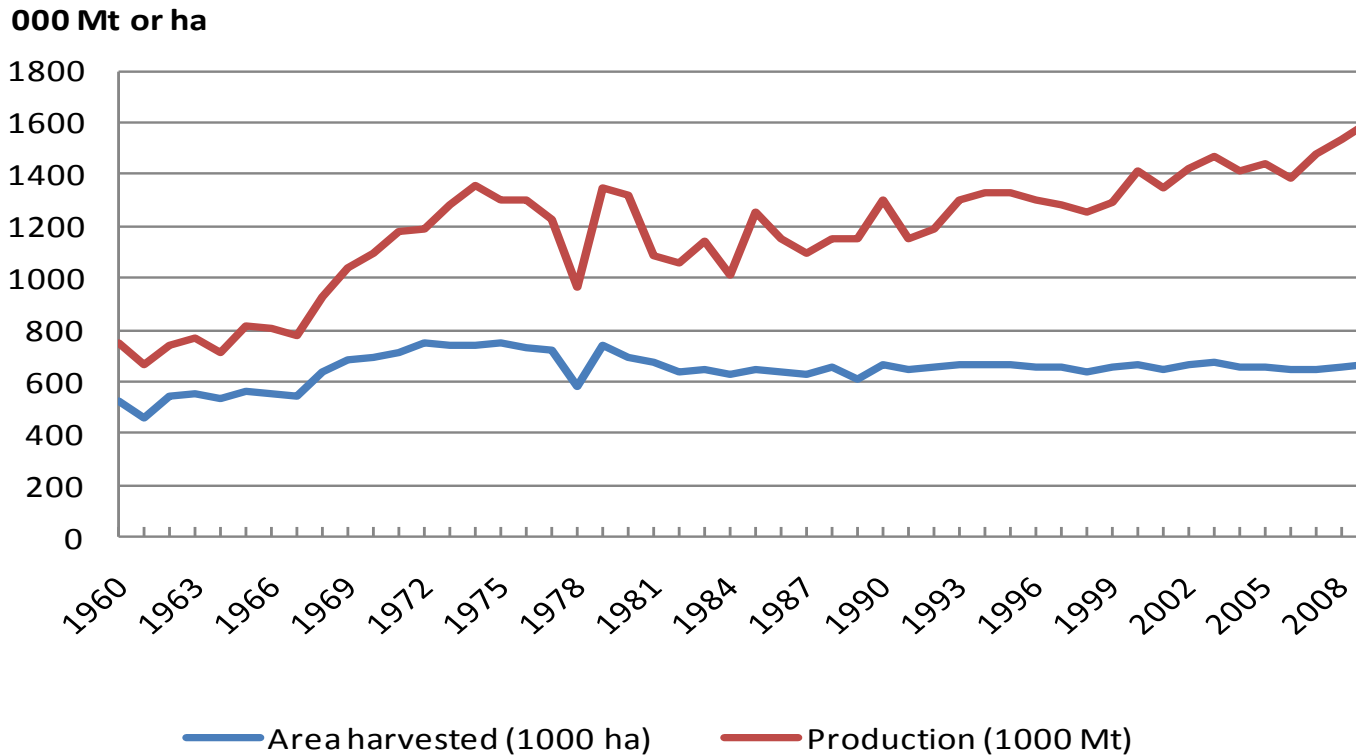
Domestic subsidies = RM1736.06 million

Guaranteed Minimum Price = RM750/Mt



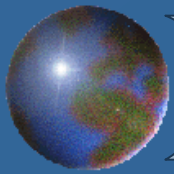
Introduction

Area Harvested and Production, 1960 - 2009

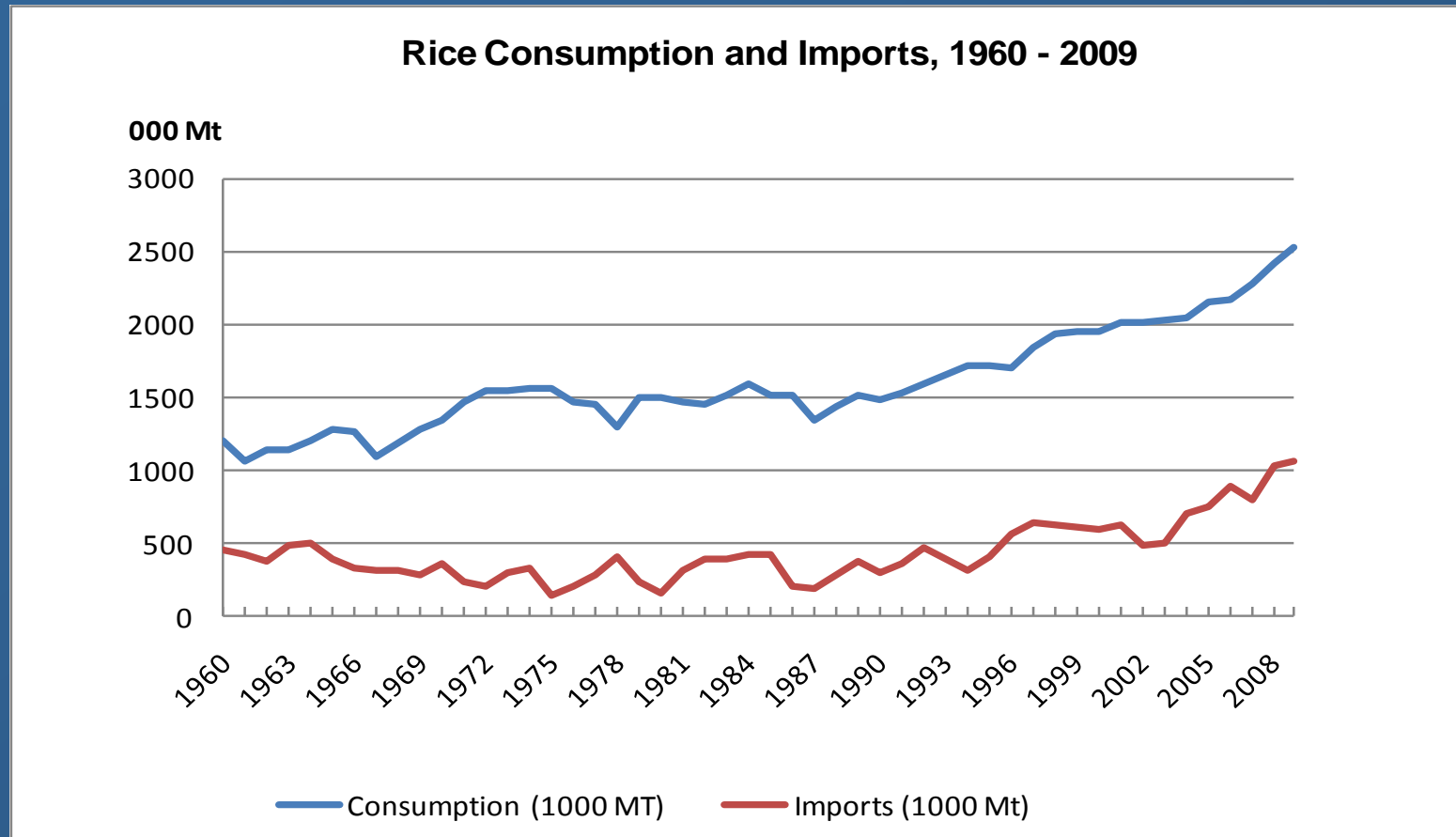


Source: USDA, PSD online (2010).

Figure 1 Area harvested and rice production, 1960-2009

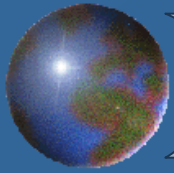


Introduction



Source: USDA, PSD online (2010).

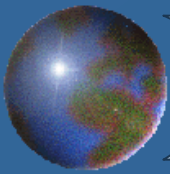
Figure 2 Consumption and imports of rice, 1960-2009



Introduction

➤ Protective measures in paddy and rice industry

- Existence of BERNAS as sole importer.
- Ad-valorem tariffs – 20 percent under CEPT of AFTA
 - 40 percent under AoA of WTO
- Domestic subsidies – Output subsidies
 - Input subsidies



Role of BERNAS in Paddy and Rice Industry

Farmers
•Sells paddy at RM998 per Mt

Millers

Private millers

BERNAS owned mills
- 34% of total paddy productions
(800,000 MT)

Wholesalers

Private Wholesalers

BERNAS Wholesaler

Retailers
•Controlled prices
ST15%=RM1.60/kg
ST10% = RM2.40 /kg
ST5% = RM 2.60/ kg

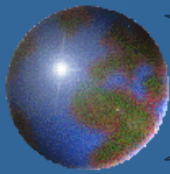
Monopoly power

BERNAS – sole importer

- Imports 35% of domestic consumption

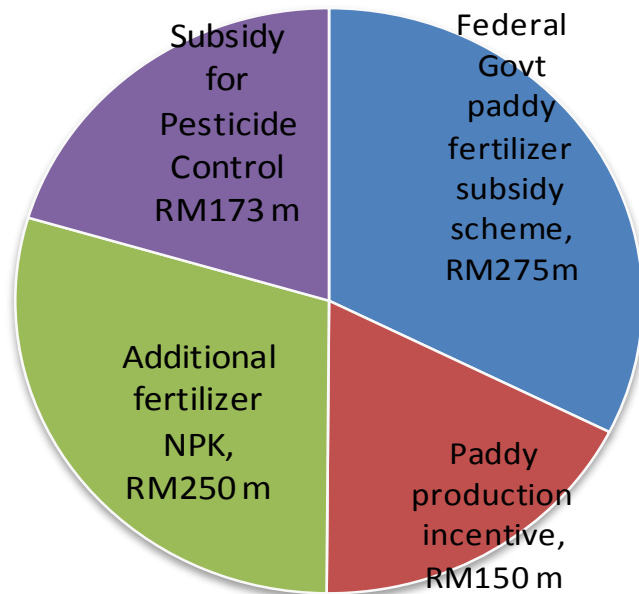
1. Stockpile
292,000 MT

2. Bernas Trading Stocks



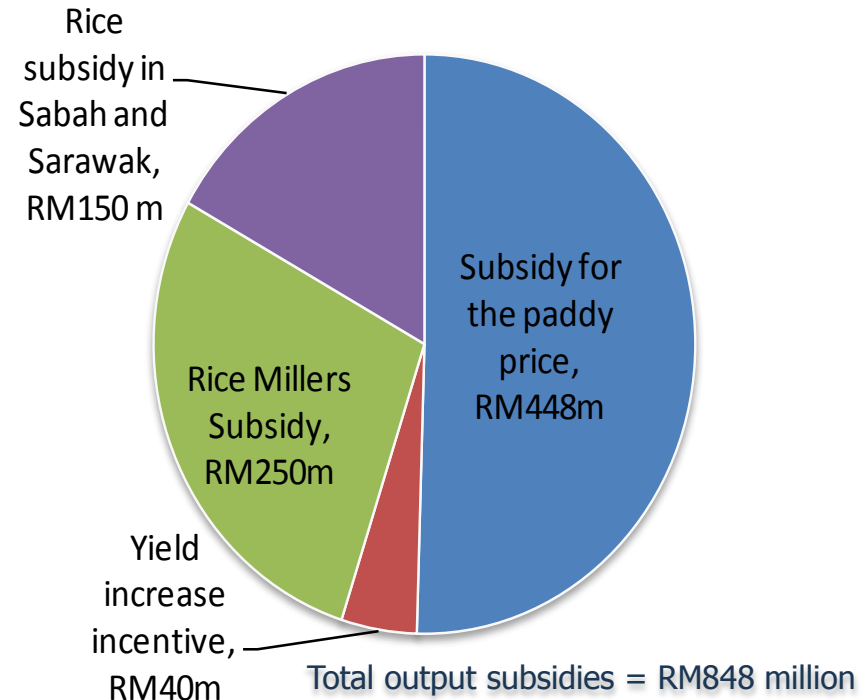
Introduction

Input subsidies, 2009



Total input subsidies = RM848.06 million

Output subsidies, 2009

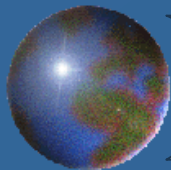


Total output subsidies = RM848 million

Source: Ministry of Agriculture and Agro-Based Industry (2010)

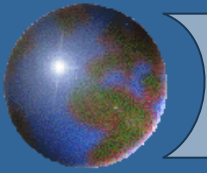
Figure 3 Subsidies and incentives, 2009

Total subsidies = RM1,736.06 million \approx US\$493 million



Objective of the study

To measure the welfare effects of eliminating the major government interventions in the Malaysian rice sector.

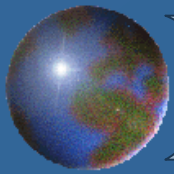


Data

- Year 2009
- Countries : Thailand, Vietnam, Pakistan and ROW

Variables and sources

- Rice Production – USDA/MOA
- Rice prices – MOA
- Domestic consumption – USDA/MOA
- Export quantities – UN Comtrade
- Import quantities – UN Comtrade
- Elasticities of demand & supply – FAPRI
- Tariff rates – Royal Malaysian Customs Department
- Subsidies – Ministry of Agriculture and Agro-Based Industry

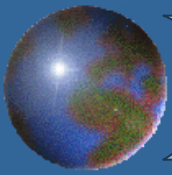


Spatial Equilibrium Model

- ✦ Assuming linear supply and demand functions
- ✦ Primal-dual model
- ✦ Quantity domain
- ✦ Adapted from MacAulay (1992)

- ✦ Net revenue objective function consists of :
 - ✓ Total revenue ($P'_y y$)
 - ✓ Total production costs ($P'_x x$)
 - ✓ Total transportation cost ($T'X$)

$$NSR = P'_y y - P'_x x - T'X \quad (1)$$



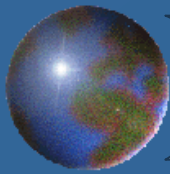
Spatial Equilibrium Model

Equation (1) in matrix form with objection function and constraints.

$$\text{Maximise NSR} \quad \begin{bmatrix} \lambda \\ -v \\ -T \\ 0 \\ 0 \end{bmatrix} - \begin{bmatrix} \Omega & 0 & 0 & I & 0 \\ 0 & H & 0 & 0 & -I \\ 0 & 0 & 0 & -G_y' & -G_x' \\ -I & 0 & G_y & 0 & 0 \\ 0 & I & G_x & 0 & 0 \end{bmatrix} \begin{bmatrix} y \\ x \\ X \\ \rho_y \\ \rho_x \end{bmatrix}, \begin{bmatrix} y \\ x \\ X \\ \rho_y \\ \rho_x \end{bmatrix}$$

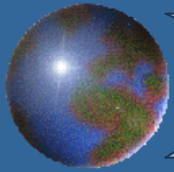
$$\text{subject to :} \quad \begin{bmatrix} \lambda \\ -v \\ -T \\ 0 \\ 0 \end{bmatrix} - \begin{bmatrix} \Omega & 0 & 0 & I & 0 \\ 0 & H & 0 & 0 & -I \\ 0 & 0 & 0 & -G_y' & -G_x' \\ -I & 0 & G_y & 0 & 0 \\ 0 & I & G_x & 0 & 0 \end{bmatrix} \begin{bmatrix} y \\ x \\ X \\ \rho_y \\ \rho_x \end{bmatrix} \leq 0'$$

$$(P_y' P_x' X') \geq 0'$$



Spatial Equilibrium Model

- ✿ Incorporates the sole importer (BERNAS) and domestic subsidies developed for base case.
- ✿ Domestic subsidies – own region negative transfer cost.
- ✿ Sole importer - fixed domestic price imposed as an additional constraint.
- ✿ Tariff rates - ad valorem tariffs, τ_{ij} are imposed for imports.



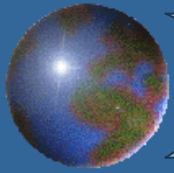
Scenarios

• Base case – current policy

- Existence of BERNAS, sole importer is a fixed price.
- Domestic subsidies.

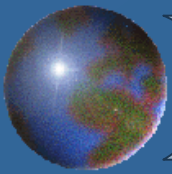
• Scenario 1 – removal of BERNAS

- Ad valorem tariffs of 20 percent and 40 percent imposed.
- Domestic subsidies remained.



Scenarios

- Scenario 2 – removal of subsidies
 - Fixed price remained.
- Scenario 3 – removal of fixed price and subsidies
 - Ad valorem tariffs of 20 percent and 40 percent imposed.
- Scenario 4 – removal of all trade barriers



Results

Demand and supply prices (% change from base)

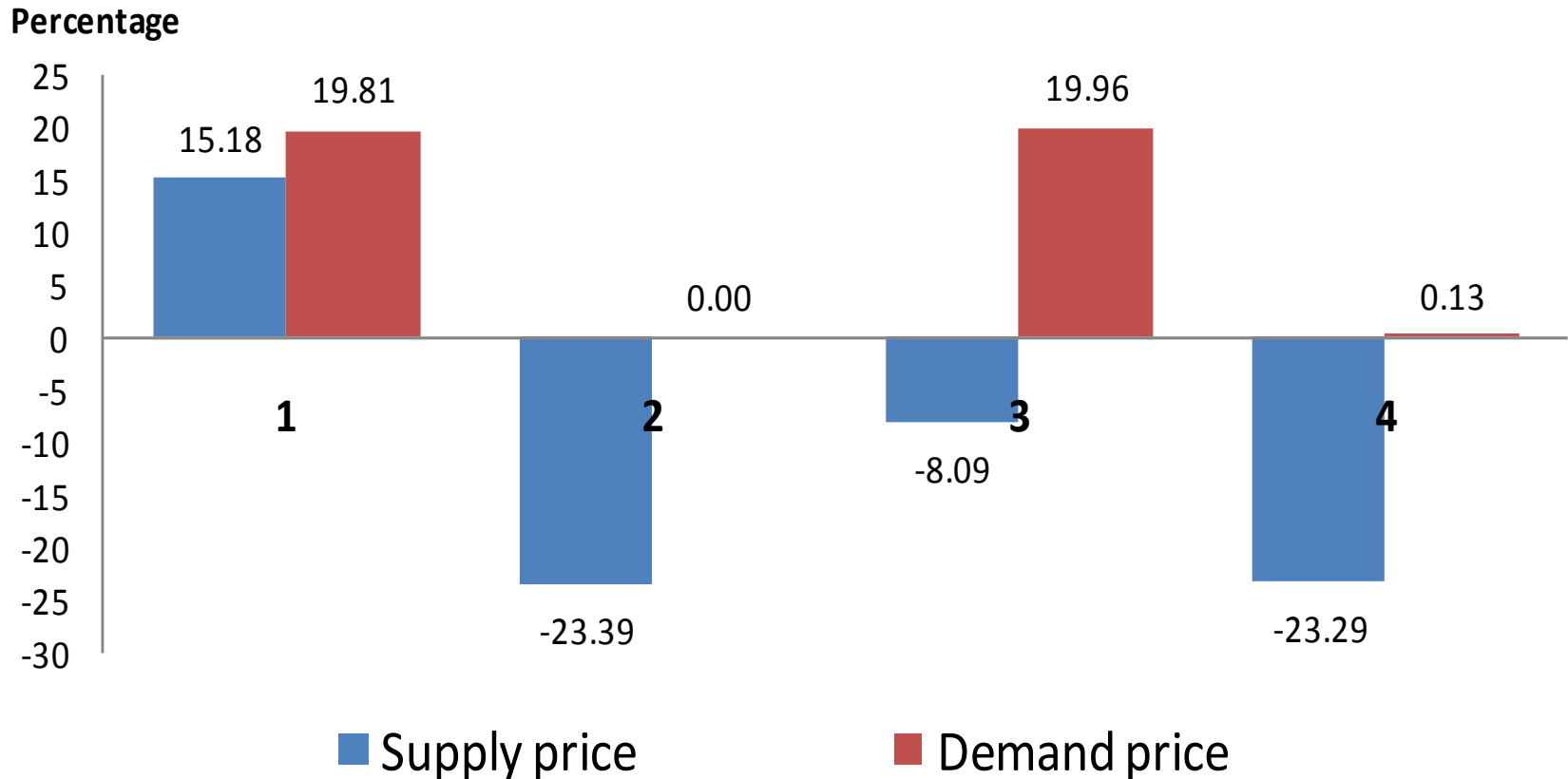
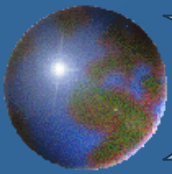


Figure 4 Demand and supply prices (percentage change from baseline estimate)



Results

Production, Demand and Imports (% change from base)

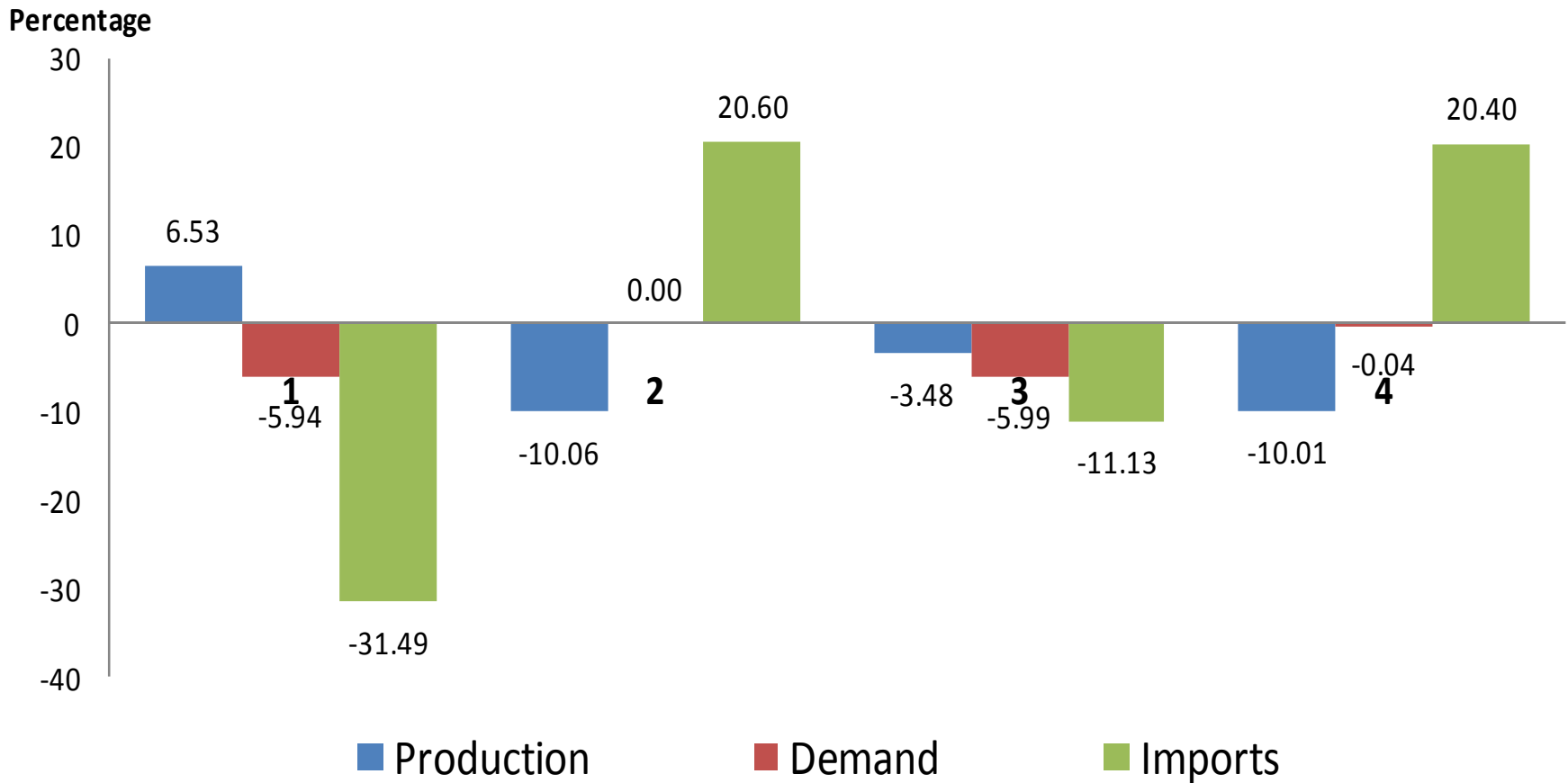
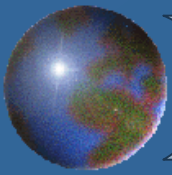


Figure 5 Production, demand and imports (percentage change from baseline estimate)



Results

Net welfare gain and government revenue (% change from base)

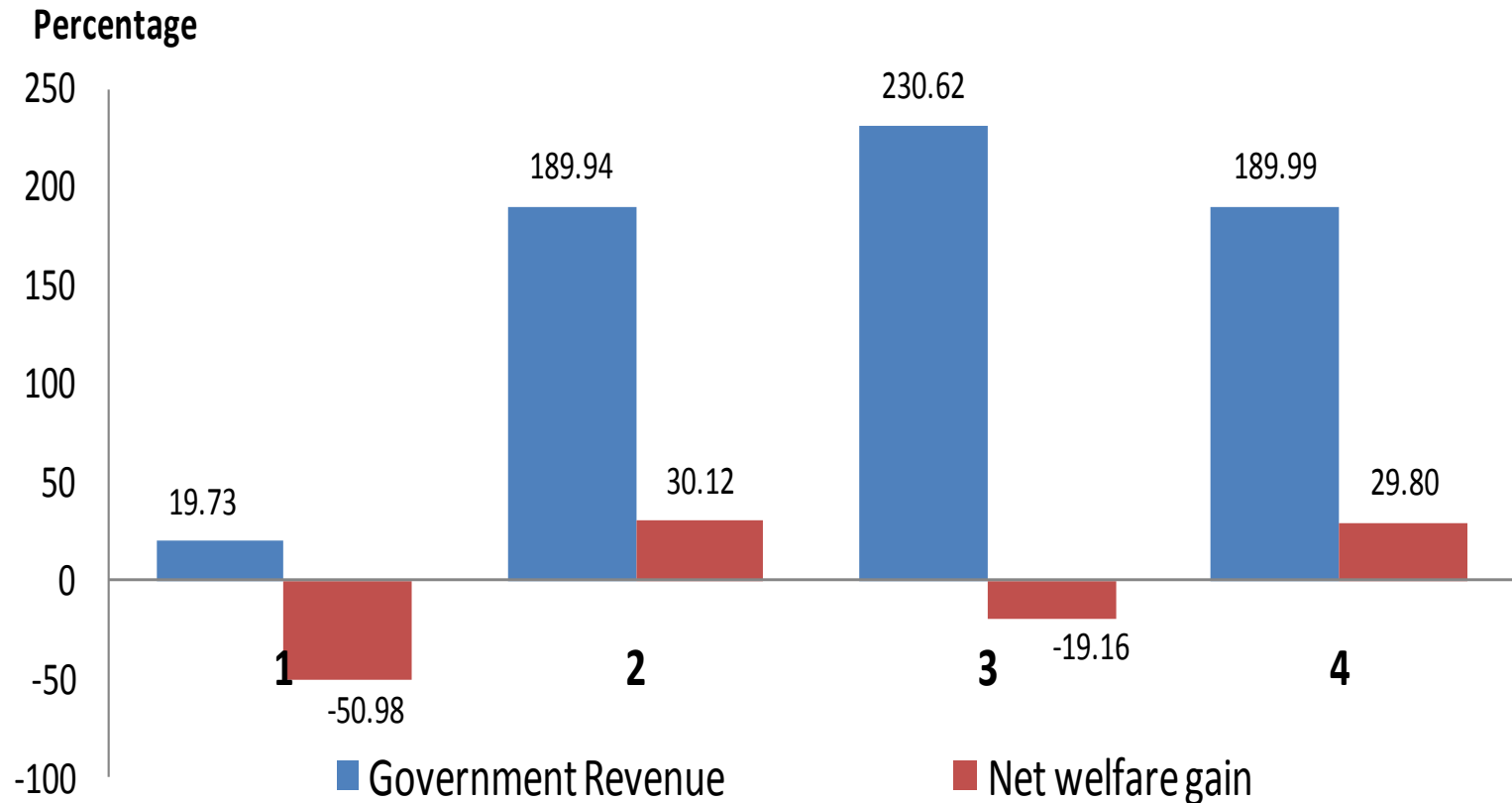
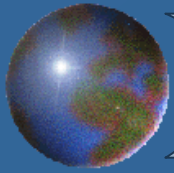


Figure 6 Government Revenue and Net Welfare gains percentage change from baseline estimate)



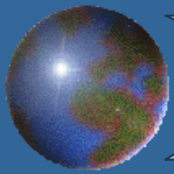
Conclusions

❖ Scenario 2 and 4

- ✓ Similar results.
- ✓ The sole importer, BERNAS, more likely to set the domestic price close to the world price.
- ✓ More preferred.

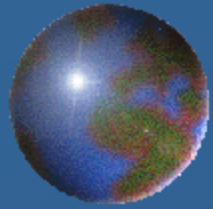
❖ Removing all trade barriers

- ✓ Net welfare increased.
- ✓ Government revenue increased.



Limitations

- ⊕ Static model
- ⊕ Linear demand and supply functions
- ⊕ Few countries
- ⊕ Rice as a homogenous good



THANK YOU