

INTERNATIONAL AGRIFOOD MARKETS AND POLICY

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Lesson 19.03.2018

Lesson 21.03.2018

Lesson 26.03.2018

2. Public intervention in agriculture

2.1 Reasons underlying the public intervention

2.2. Model and tools of public intervention

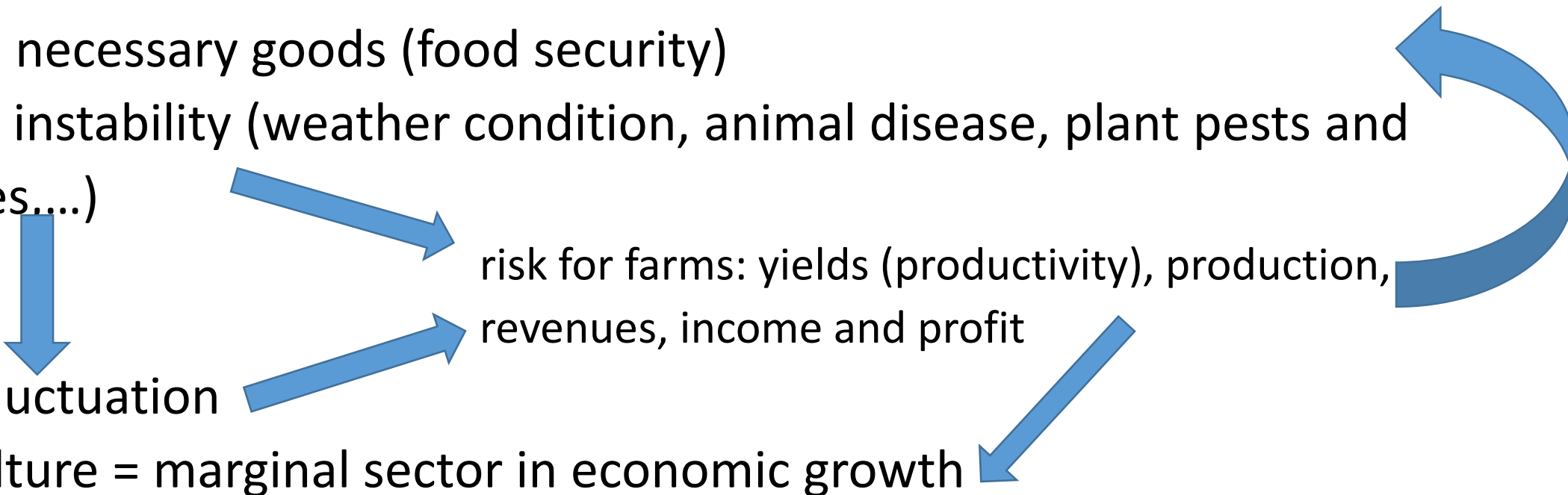
2. Public intervention in agriculture

Specific discussion Topics are:

- ✓ The reasons of public intervention in the agri-food supply chain
- ✓ Aims of the public intervention
- ✓ Policies, measures and tools of the public intervention

Government Intervention

Main agri-food characteristics and problems:

- Food = necessary goods (food security)
 - Supply instability (weather condition, animal disease, plant pests and diseases....)
 - ➔ risk for farms: yields (productivity), production, revenues, income and profit
 - Price fluctuation
 - ➔ risk for farms: yields (productivity), production, revenues, income and profit
 - Agriculture = marginal sector in economic growth
 - Asymmetric information about food characteristics (food safety and food quality)
 - Trade balance / exchange rate problems
 - Environmental problems
- 
- The diagram illustrates the flow of information and risk. A large blue arrow on the right points from the 'risk for farms' text back to the 'Supply instability' and 'Price fluctuation' bullet points. A smaller blue arrow points from 'Supply instability' to 'risk for farms'. Another smaller blue arrow points from 'Price fluctuation' to 'risk for farms'. A third blue arrow points from 'Agriculture = marginal sector in economic growth' to the 'risk for farms' text. A large blue arrow on the right points from the 'risk for farms' text back to the 'Supply instability' and 'Price fluctuation' bullet points.

Government Intervention

The traditional justification for a public intervention in the agri-food supply chain concerns with:

- the distribution of income (an equity consideration) or
- a failure of markets to work according to economic theory (an efficiency consideration).

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Government Intervention

The rationale behind and related examples of agricultural public spending

Rationale	Examples of public intervention
Correction of market failures	Financing the provision of goods that are not efficiently and sufficiently produced by the market, e.g. public investment in infrastructure, agricultural R&D and irrigation
Control of externalities	Public funding of environmental projects, afforestation/ reforestation projects and agro-ecological research
Addressing information asymmetries, eliminating information gap	Subsidizing agricultural insurance and agricultural credit; investing in public agricultural information system and in data (e.g. weather data collected by meteorological sites); financing agricultural extension
Reducing imperfect competition	Financing the activities that regulate against monopolistic behaviour; public investments in price and other market information systems, as well as in rural transport infrastructure
Provision of public and merit goods	Spending on protection of water quality and availability, indigenous species, habitats and ecosystems whose survival would have been threatened (e.g. on the EU Natura 2000), investment in animal health and welfare
Influencing resource allocation and efficiency	Expenditure on geodetic control and mapping, farm direct payments (e.g. CAP Single Payment Scheme), farm product subsidies, farm labour subsidies
The social, redistributive function of governments	Provision of direct transfers to lowest-income households (e.g. food stamps, aid for elderly); subsidization of agricultural producers' costs (inputs subsidies), provision of credit schemes, CAP support to semi-subsistence farmers

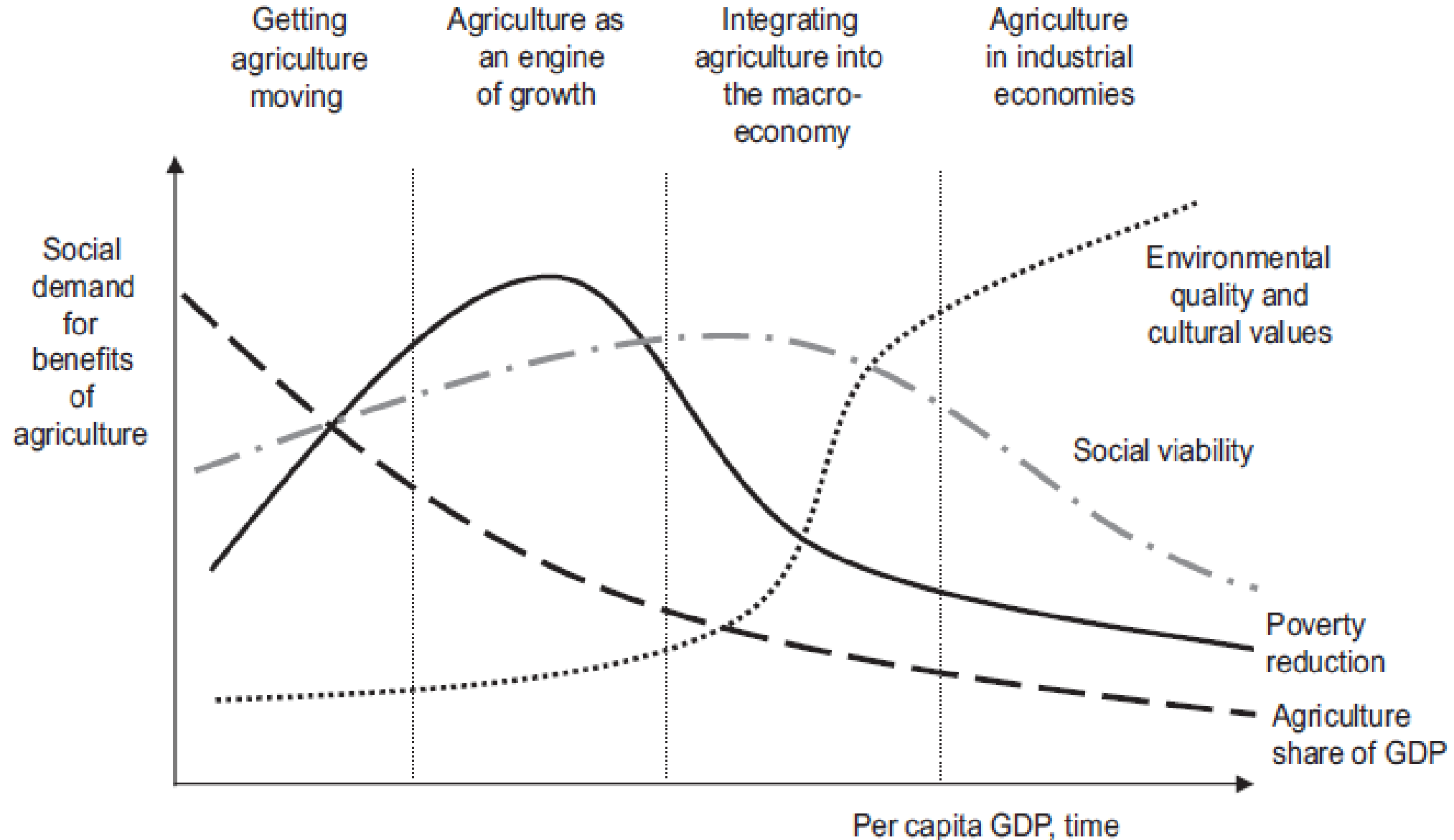
Government Intervention

Public spending related to agriculture could be determined by the roles the sector plays at different stages of economic development

The society's willingness to pay for non-market benefits generated by agriculture rises with economic development; it is the highest in rich urbanized countries with small proportions of the population engaged in agriculture, and is the lowest in the largely rural, poorest countries.

Government Intervention

Major roles of agriculture at different levels of economic development



Government Intervention

Main goals concern:

- Food security
- Food safety
- Environmental issues
- National and domestic goals (trade balance, exchange rate, political objective, international agreement,..)
- Sectorial and territorial objectives (farms and rural areas)

Government Intervention

Food security concerns:

- Food quantity: Amount of food available on the market to meet consumer needs
- Food price: price level that allows consumers access to food
- Security of food supply and national security

Government Intervention

Food safety concerns:

- Consumer health and safety
- Food quality, characteristics of goods, certifications and labels
- Domestic demand of agri-food products with specific quality characteristics (“specialties”)
- Export of agri-food of agri-food products with specific quality characteristics (“specialties”)

Government Intervention

Environmental issues concern:

- Environmental protection in general
- Externalities (positive and negative) of agriculture (market failures)

Government Intervention

National and domestic goals concern:

- Support the socio-economic growth
- Support the socio-economic changes in the society
- National goals: trade balance (exchange rate)
- Support/protect an infant industry
- International goals (international agreements, international cooperation,...)

Government Intervention

Sectorial and territorial objectives (farms and rural areas) concern:

- Support specific area and communities
- Support farm and agriculture productivity
- Support farm and agriculture production
- Support farm and agriculture income and profits
- Quality of life in the rural areas

Government Intervention

Policies, measures and tools:

- Intervention at farm level
- Intervention at sector level
- Intervention at supply chain level
- Intervention at market level
- Intervention at territorial level

Government Intervention

Policies, measures and tools:

- International agreement
- EU policies
- National policies and regulation
- Regional / local programs

Government Intervention

Policies, measures and tools:

- Price stabilization
- Revenues stabilization
- Income (profit) stabilization
- Price support
- Income support

Government Intervention

Policies, measures and tools:

- Regulatory schemes (labels, certification, production regulation, waste regulation, environmental regulation)
- Tariff and duty, non-Tariff Measures (non-tariff barriers)
- Export supports

Government Intervention

Policies, measures and tools:

- Environmental taxes
- Environmental regulation
- Environmental subsidies

Government Intervention

The most common specific policies are:

- Price stabilization: government stabilization and producer organization stabilization
- Price sustain (indirect farms income sustain): minimum price and deficiency payment
- Farms income sustain (direct support)
- Trade barriers: import barriers (tariff and import quota) and export subsidy
- Quota production: milk quota and set-aside measures
- Subsidy for environmental and social services
- Farm credit: interest rate facilitated, capital contribution, special farm credit system

Government Intervention

- Agricultural insurance plans
- Laws and regulatory schemes
- Others (technical support, special program for young farmers, organizational sustain to export, R&D, knowledge and innovation transfer system,...)

Government Intervention

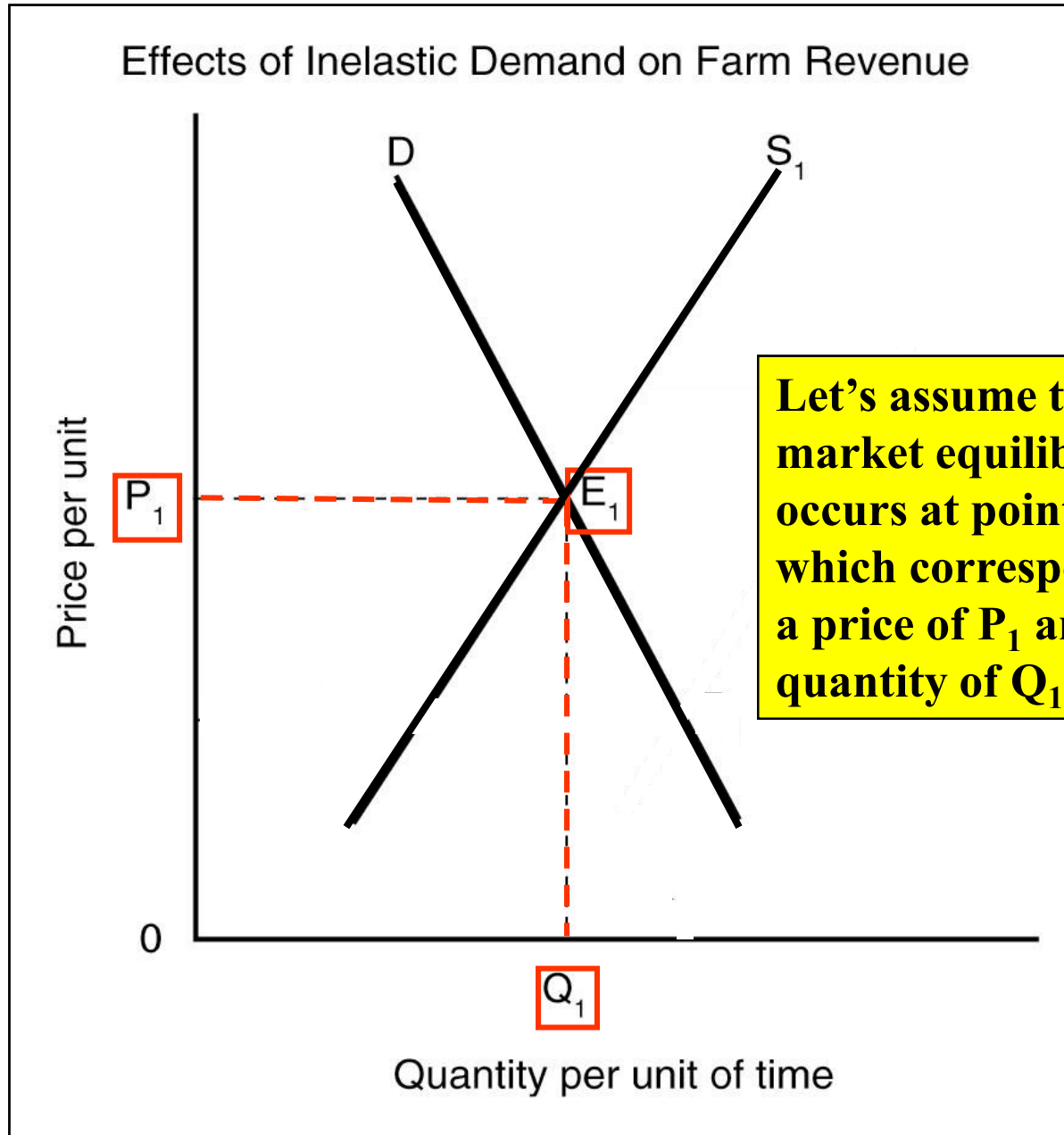
The most common specific policies, especially in the EU, are as follows

- Price stabilization: government stabilization and producer organization stabilization
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Price stabilization

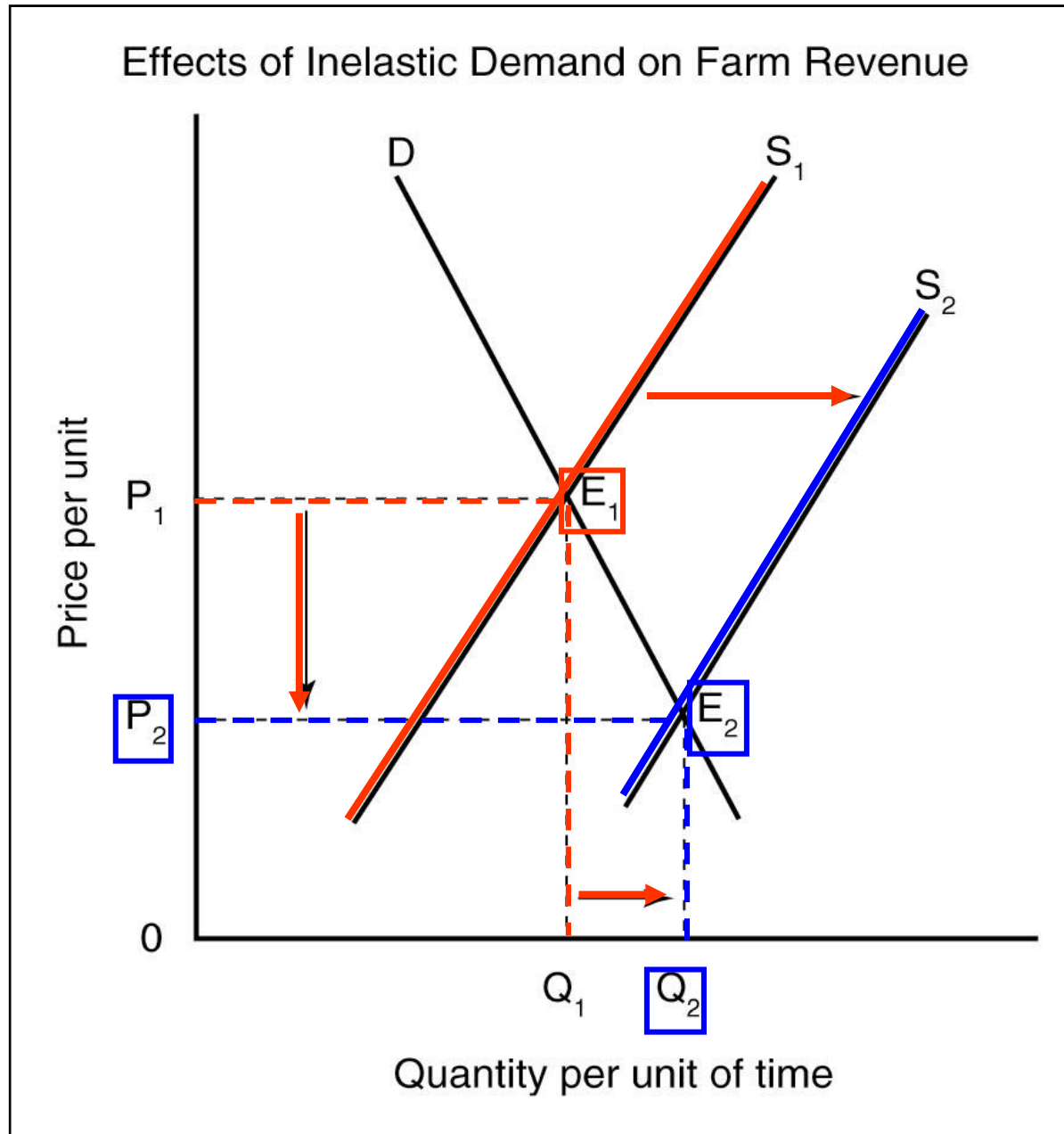
- Effects of inelasticity demand on farm revenues
- Stabilization measures
 - Government intervention
 - Producer organization intervention

Price stabilization



Let's assume that the market equilibrium occurs at point E_1 , which corresponds to a price of P_1 and a quantity of Q_1 .

Price stabilization



Increasing supply causing movement along demand curve from E_1 to E_2 will cause prices to fall more than the increase quantity, or $\% \Delta P > \% \Delta Q$.

Stated another way, area $0P_2E_2Q_2$ is *less than* area $0P_1E_1Q_1$.

Price stabilization

Revenue Implications

Own-price Elasticity is:	Cutting the Price Will:	Increasing the Price Will:
Elastic ($\eta_{ii} < -1$)	Increase Total Revenue	Decrease Total Revenue
Unitary Elastic ($\eta_{ii} = -1$)	Not Change Revenue	Not Change Revenue
Inelastic ($-1 < \eta_{ii} < 0$)	Decrease Total Revenue	Increase Total Revenue

Typical of Agricultural Commodities



Price stabilization

Stabilization measures - Government intervention

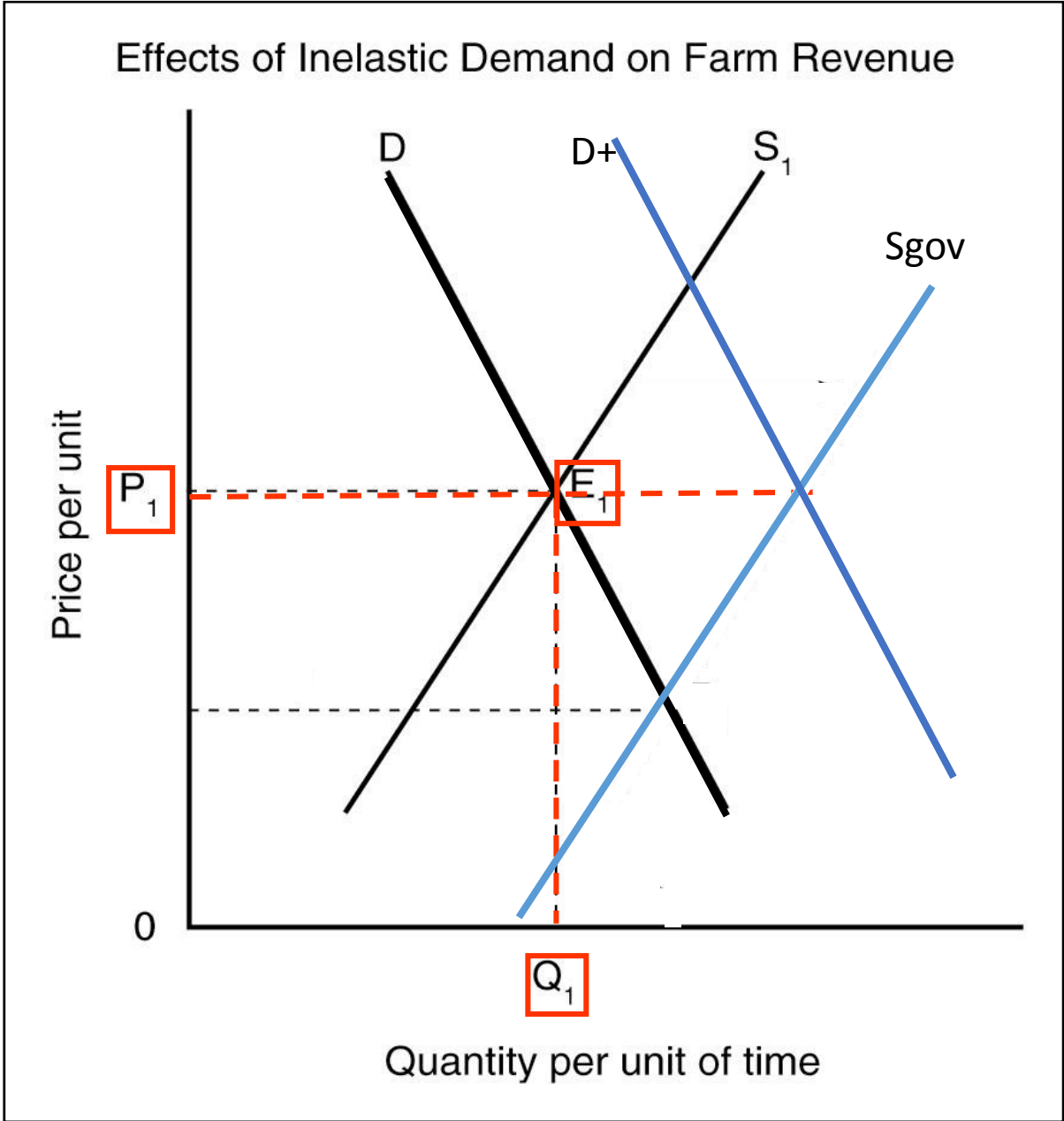
Government (public agency) purchase agricultural product (commodities; i.g.: wheat) when the supply is high, storage the product, and sell it when the supply is low.

Difficult to determine a “medium” supply: an hypothetical average level of quantity exchange and market price (equilibrium point)

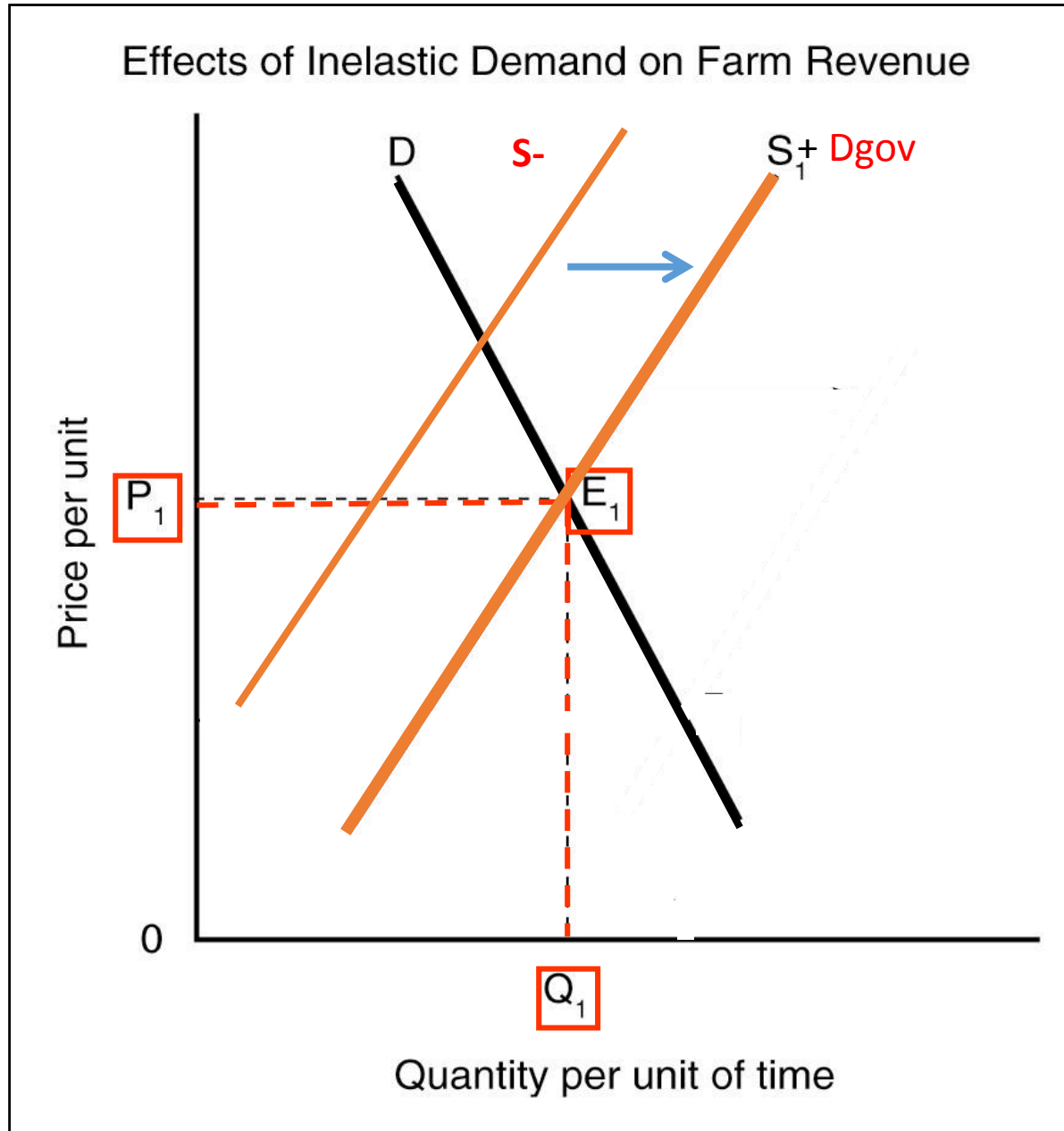
Needs to storage the product: cost for storage

The price can be stabilized, but the revenues (and income) not.

Price stabilization



Price stabilization



Price stabilization

The price can be stabilized, but the revenues (and income) not.

Before government intervention

High price => low revenues

Low price => high revenues

After government intervention

High price => high revenues

Low price => low revenues

Price stabilization

Stabilization measures – Organization of producers intervention

Organization of producers storage the agricultural product (commodities; i.g.: wheat) when the supply is high, and sell it when the supply is low.

This policy do not influence the demand but only the supply side

Needs to storage the product: cost for storage

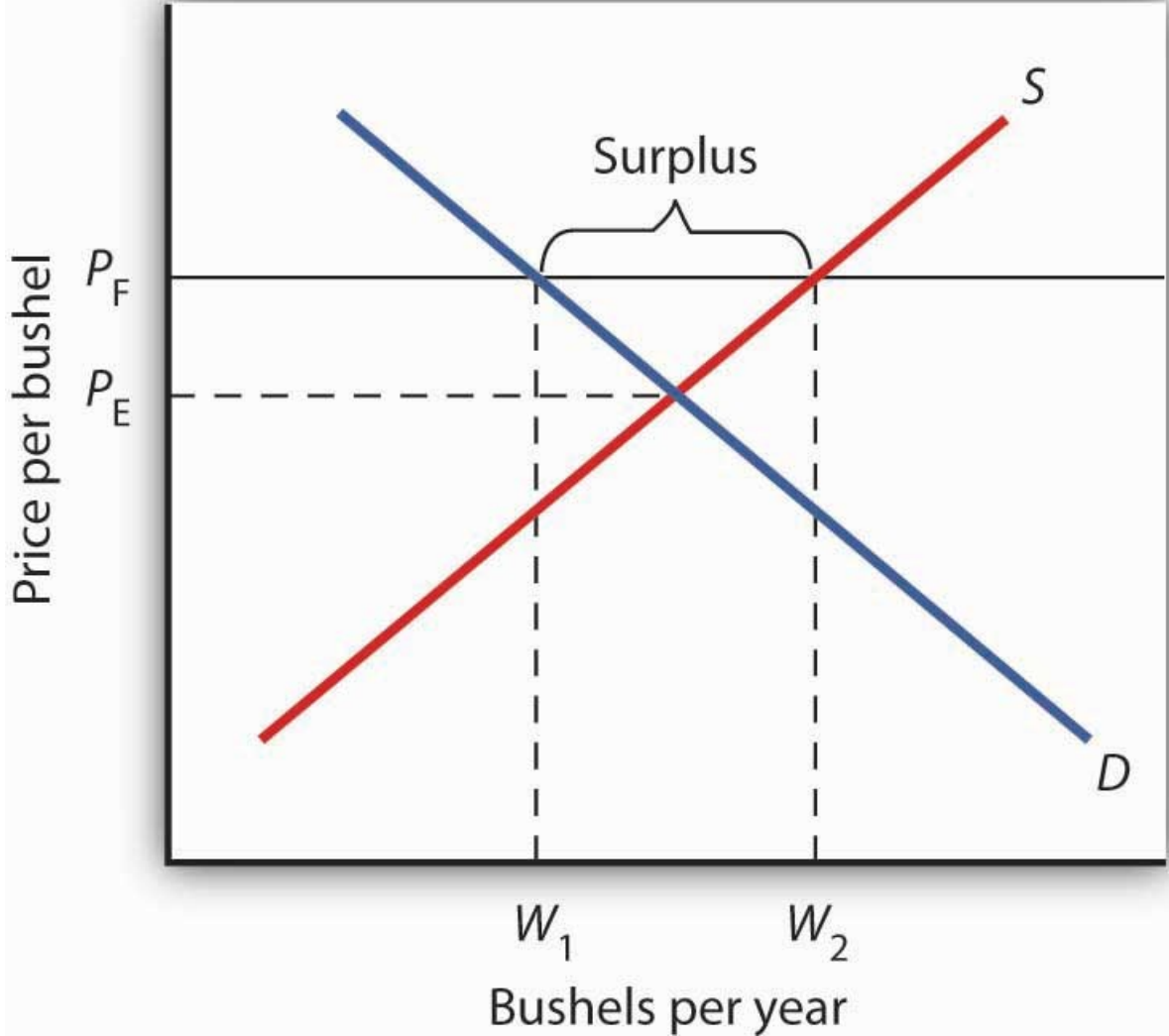
The quantity of product supply is stabilized, so also the price is stabilized, the revenues (and income) are stabilized.

Minimum price

The EU, governments or public agency established a minimum price

When the price fall under this target price the public agency purchase the agricultural product to sustain the price

Minimum price



Minimum price

Effects:

Production incentives

Supply growth

Supply surplus

High price (revenues and income sustain)

Intensive agriculture

The cost of these policy is payed by consumer and government (storage)

Structural surplus

Deficiency payments

Another method for assisting with the maintenance of farm income has been the use of *target price deficiency* payments

The government sets a predefined target price for particular crops

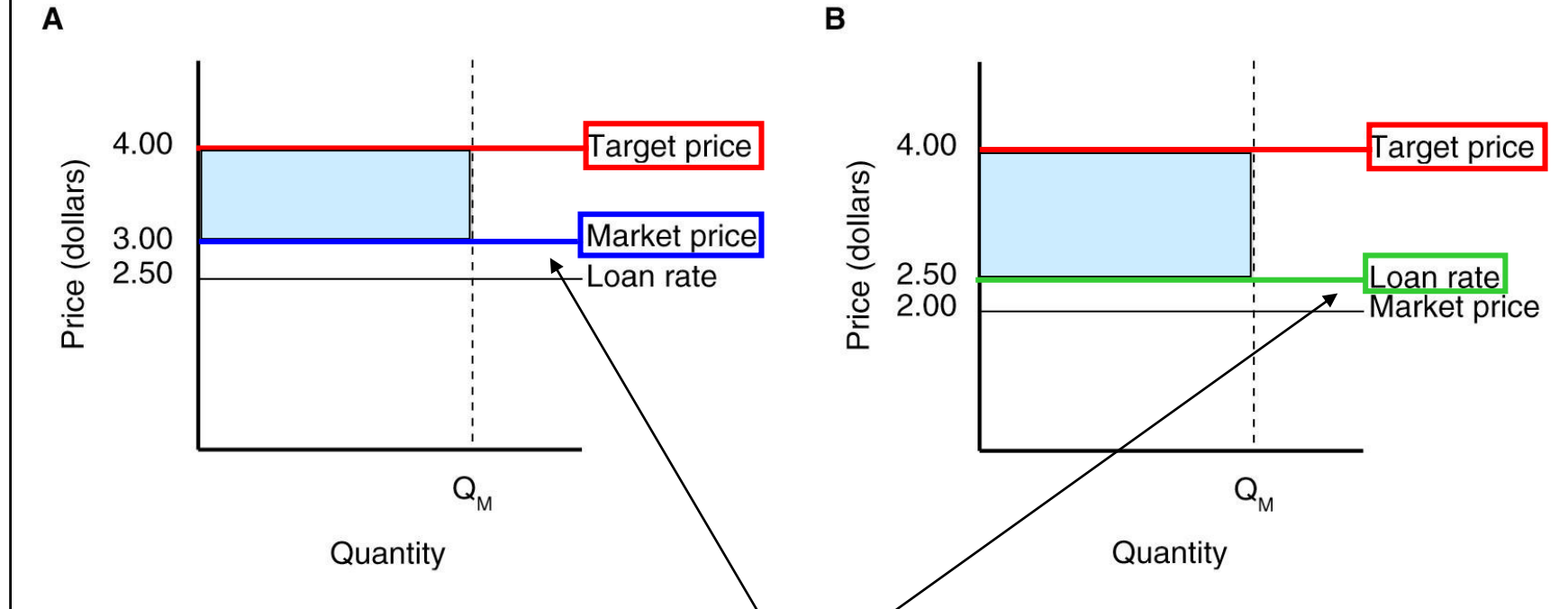
The crop-specific deficiency payment rate was based on the difference between the legislatively set target price and the lower national average market price during a specified time.

This policy:

- do not influence the market price
- support in direct way the income
- Is not payed by consumers

This scheme is used in USA and UK (before the entrance in the EU)

Deficiency Payment Mechanism



The deficiency payment was equal to quantity Q_M multiplied by the difference between the announced target price and either the loan rate or market price (blue shaded area above), which ever was *higher*.

Farms income sustain (direct support)

Direct sustain to income is the new approach of EU policy

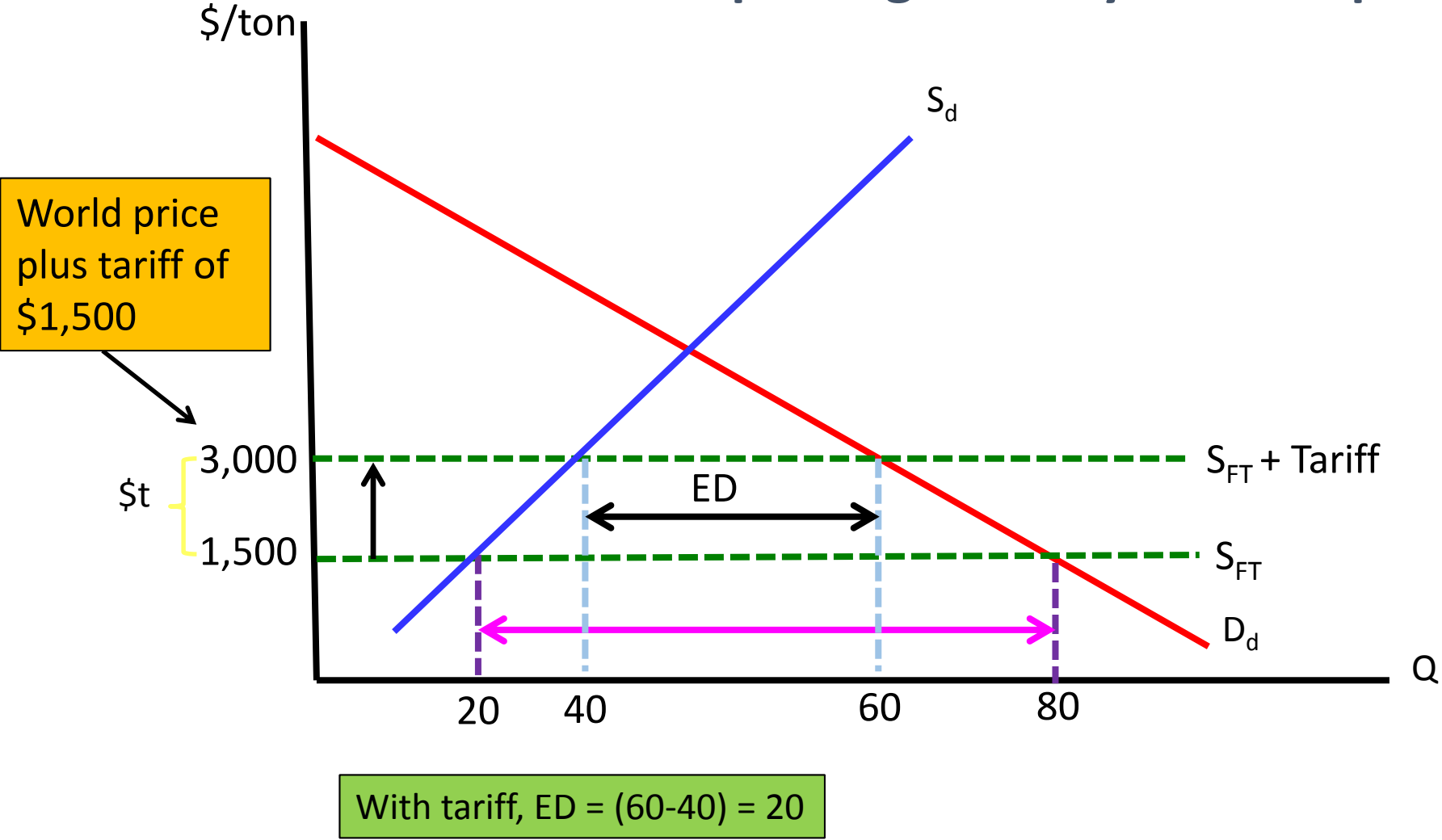
- It does not effect the market price
- It does not effect the production of farms
- Support the farmers and the rural areas

Trade barriers: import barriers (tariff and import quota) and export subsidy)

Import barriers effect on total social benefit

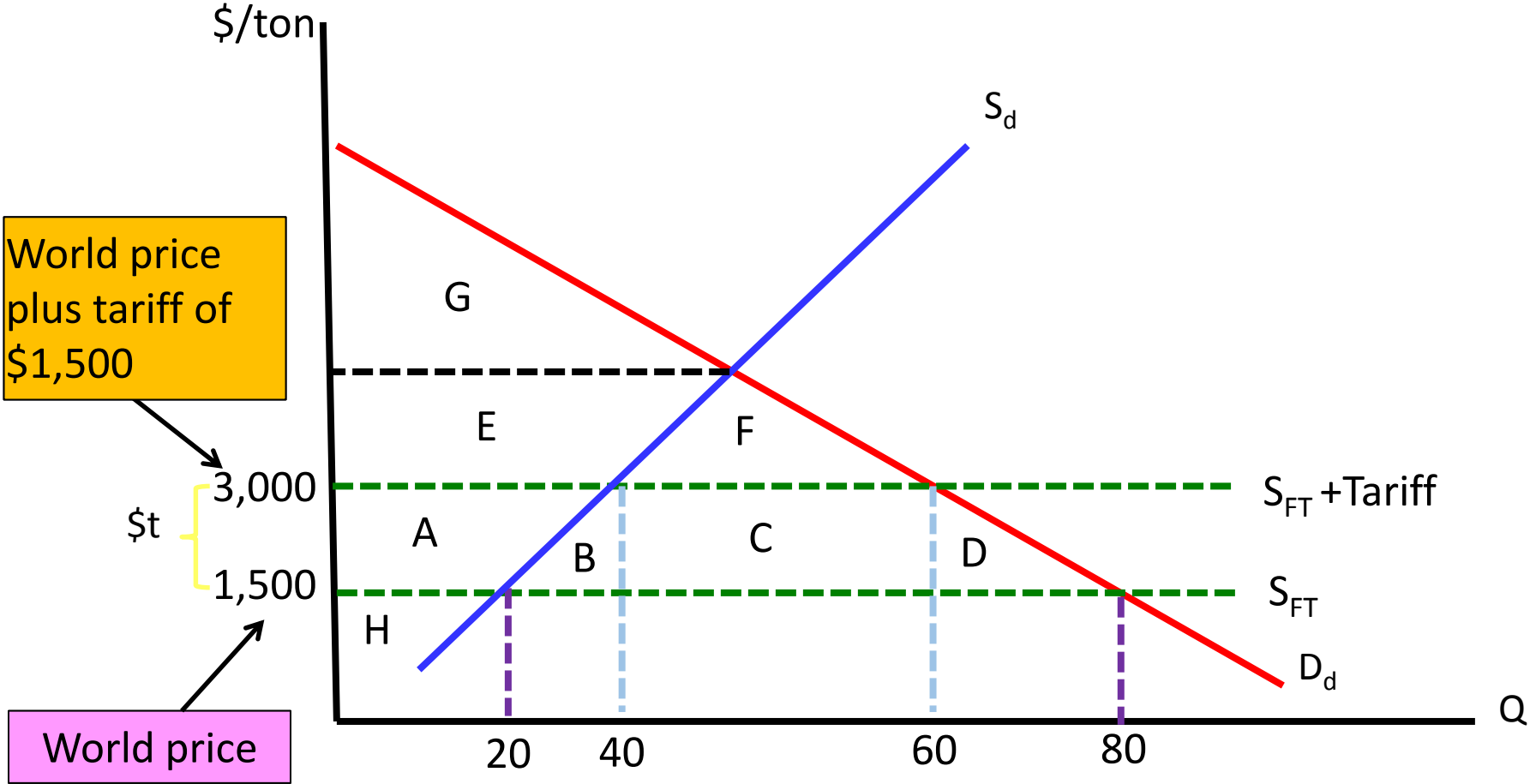
Trade barriers: import barriers

Importing Country Tariff Impact



Trade barriers: import barriers

Importing Country Tariff Impact



Trade barriers: import barriers

- ✓ **CS** before tariff on the previous slide was equal to Area **(A+B+C+D+E+F+G)**
- ✓ After the tariff, the CS would fall to Area **(E+F+G)**, or a *loss* of Area **(A+B+C+D)**
- ✓ **PS** ↑ from area **H** to Area **(A+H)** after tariff
- ✓ The tariff revenue received by the gov't is Area **C**
- ✓ *Dead-weight loss* to society is Area **(B+D)**

Quota production: milk quota and set-aside measures

Constraints on production (milk quota) or on input factor (land use)

Quantity reduction, price increase

Quota production: milk quota and set-aside measures

Set-aside requirements

Farmers must remove a certain % of cropland from production

Condition for receiving program benefits

Used for a majority for most major food and feed grains to reduce surplus production

Crop-specific %'s determined in part by expected ratio of ending stocks to total use

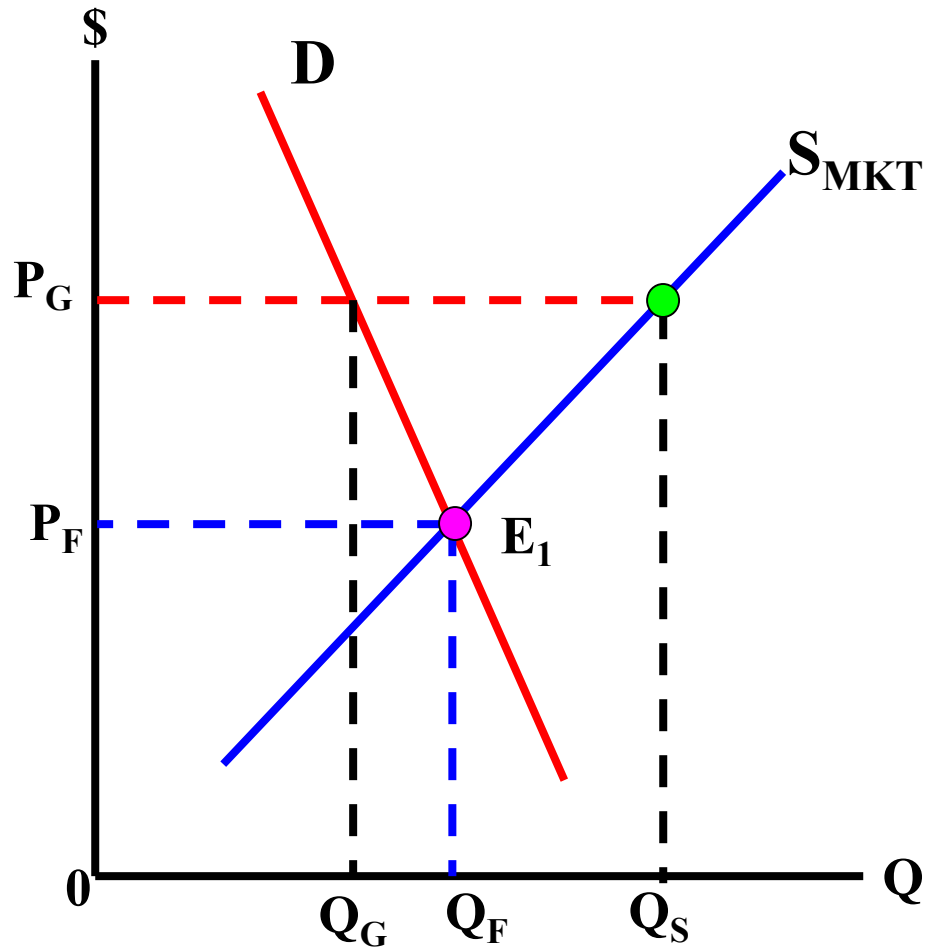
Major Problem

Farmers will set-aside their poorest land first and crop the remaining acres more intensely

Results in larger supply and lower prices than desired by policy-makers

Quota production: set-aside measures

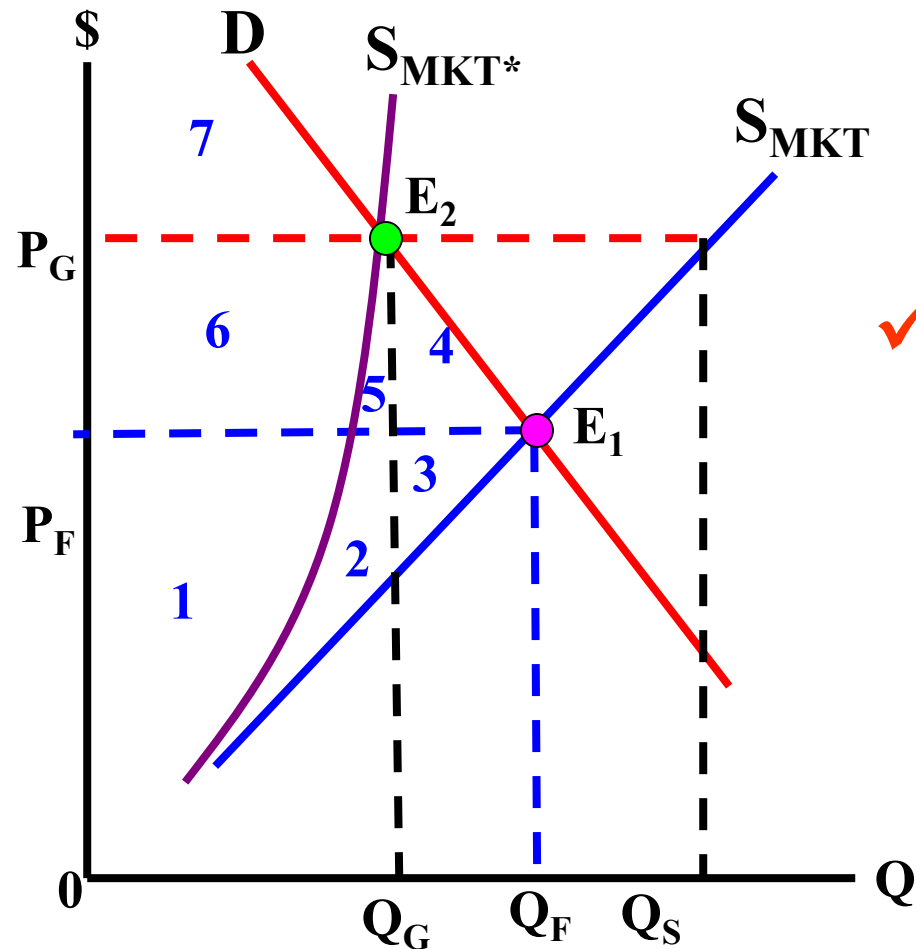
The Set-Aside Mechanism



- ✓ What are the market-level impacts?
- S_{MKT} , market supply curve prior to acreage restrictions
- E_1 is initial equilibrium at P_F, Q_F
- Assume the government wants to support farm price at level P_G

Quota production: set-aside measures

Why is S_{MKT*} curved?



✓ Assume that $X\%$ of land must be idled

➤ Resulting supply curve,

S_{MKT*}

➤ Achieve desired point

✓ Welfare effects

➤ Farmers give up areas 2 + 3 but gain area 6

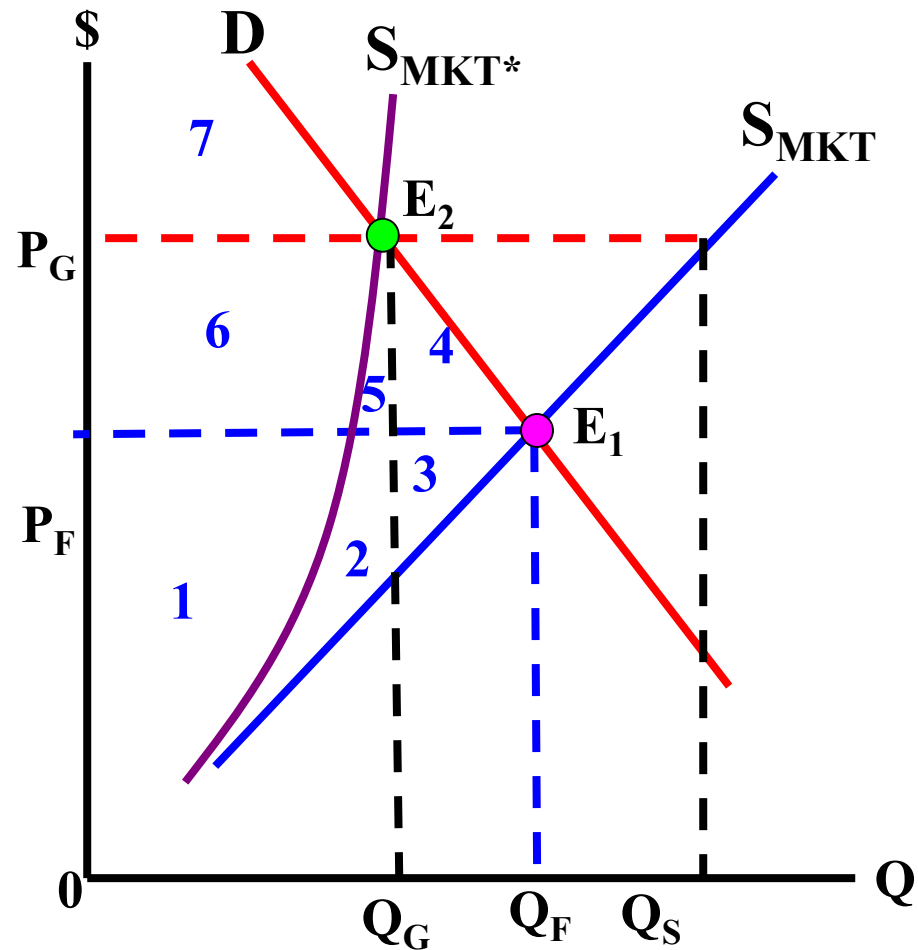
➤ On net, farmers gain as area 6 > areas (2 + 3)

➤ Consumers lose sum of areas 4, 5 and 6

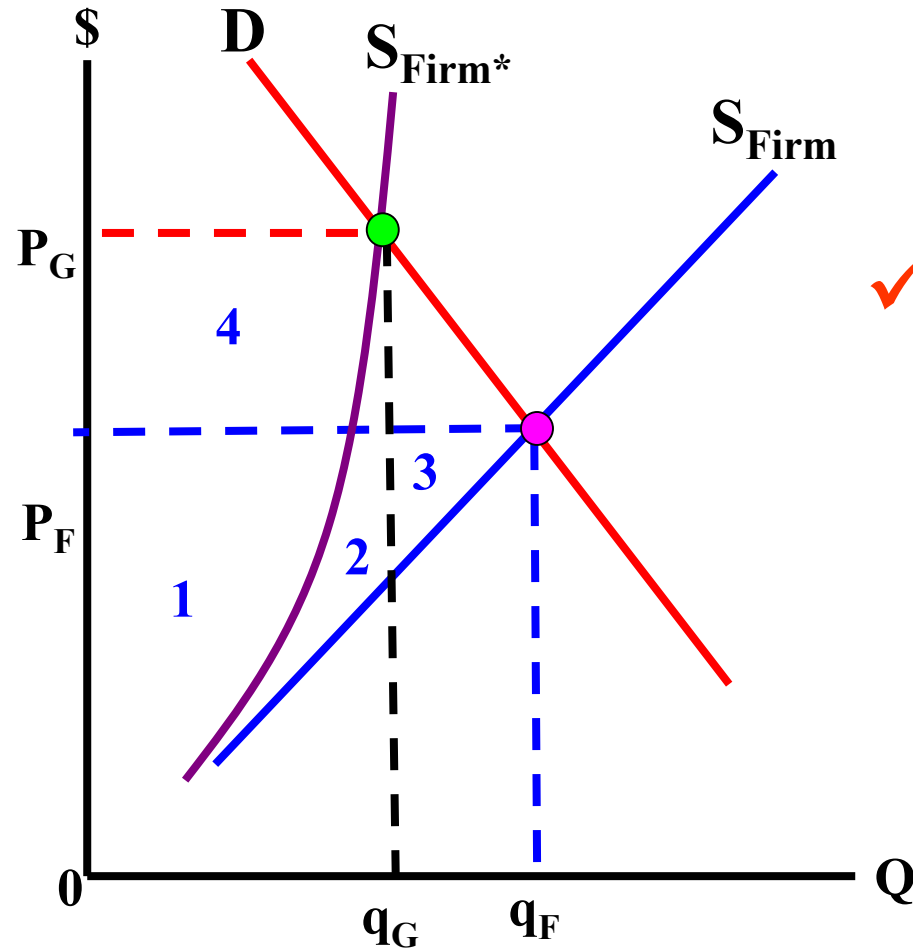
➤ Net loss to society = sum of areas 3+4

Quota production: set-aside measures

✓ Unlike CCC purchases, the set-aside program does not encourage production as under loan-rate program



Quota production: set-aside measures



✓ At the firm level the set-aside program causes output to be reduced from q_F to q_G

✓ Welfare Impacts (PS)

➤ Before policy = 1 + 2 + 3

➤ After policy = 1 + 4

➤ Gain = 4 - 2 - 3

➤ Whether gain is positive or negative depends on

- Supply elasticities
- Demand elasticities
- Amount of shift of S