

Environmental Economics

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EPFL ENAC LEUrE

ENV-471

Master semester 2 or 4

Basics – Market

DEMAND MEETS SUPPLY

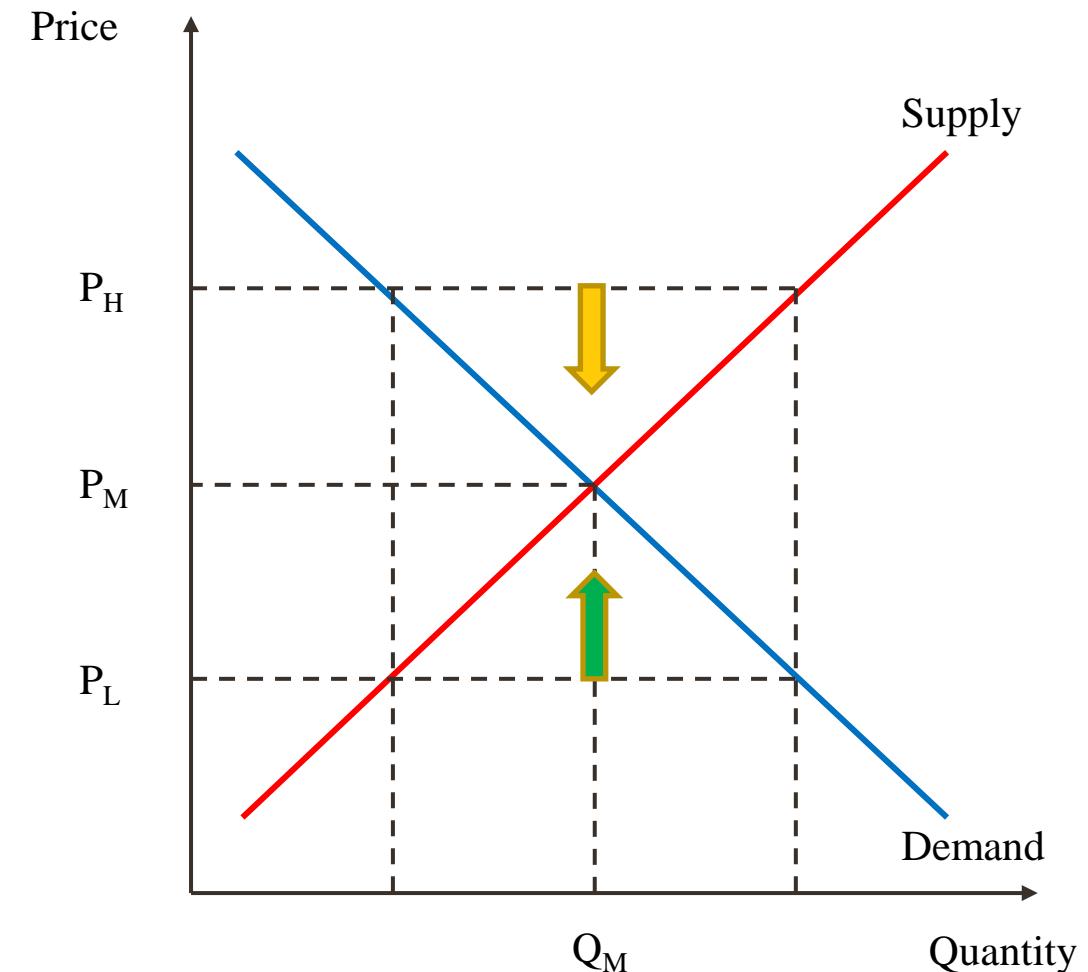
MARKET EQUILIBRIUM



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Market equilibrium

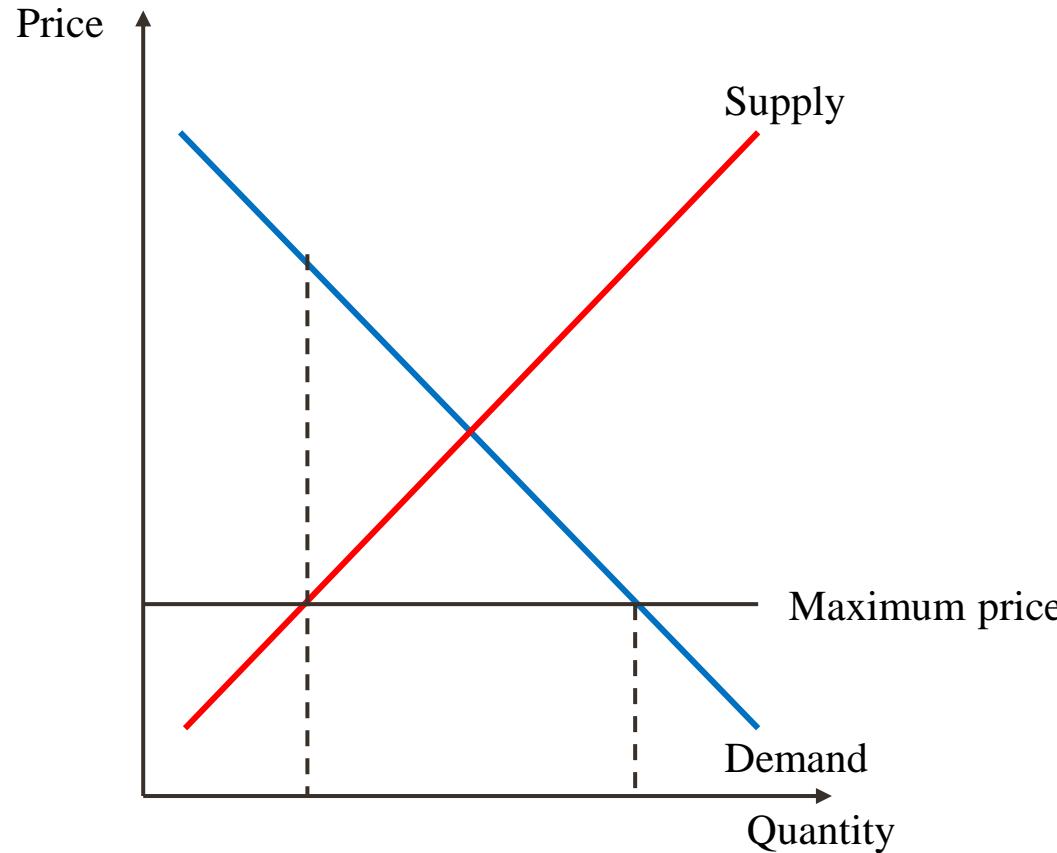
- Too high price: Supply exceeds demand, which pushes the price down
- Too low price: demand exceeds supply, which pushes the price up
- The price adjusts to clear the market
- **Market equilibrium:** pair (P_M, Q_M) such that $Q_D(P_M) = D_S(P_M) = Q_M$



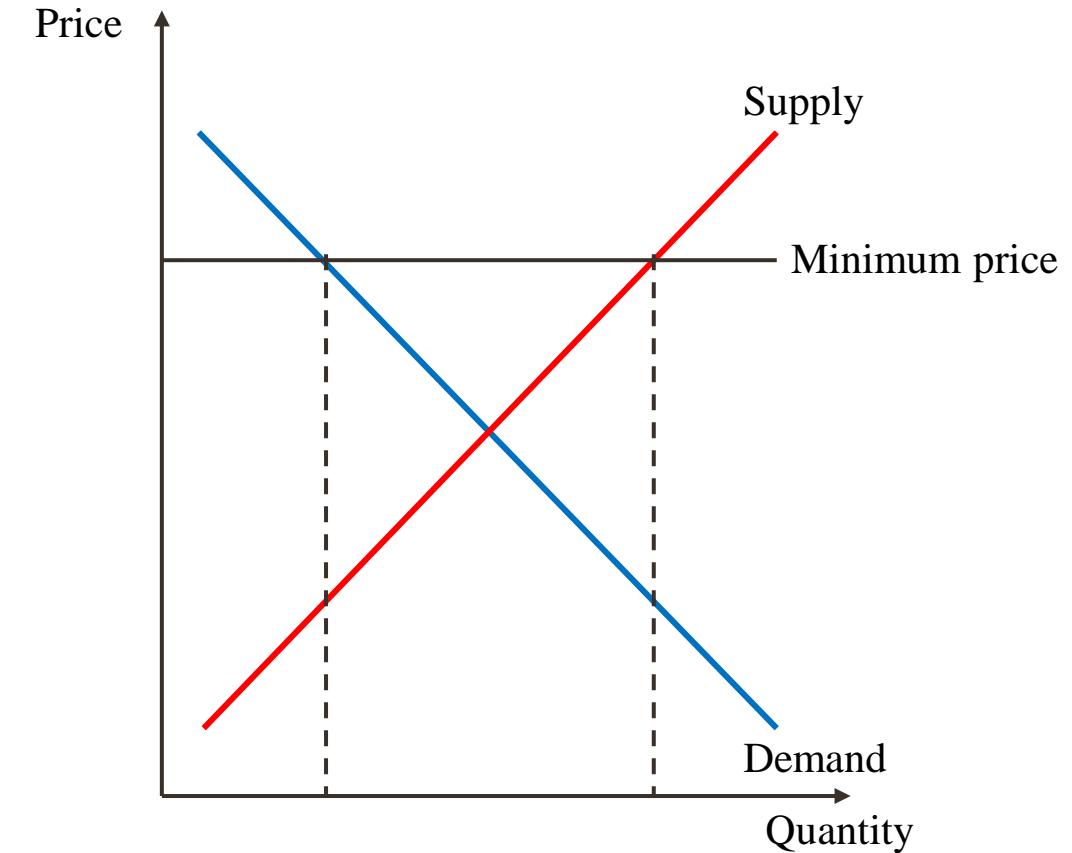
Price regulation

Administered prices induce disequilibria and undesired effects

price ceiling

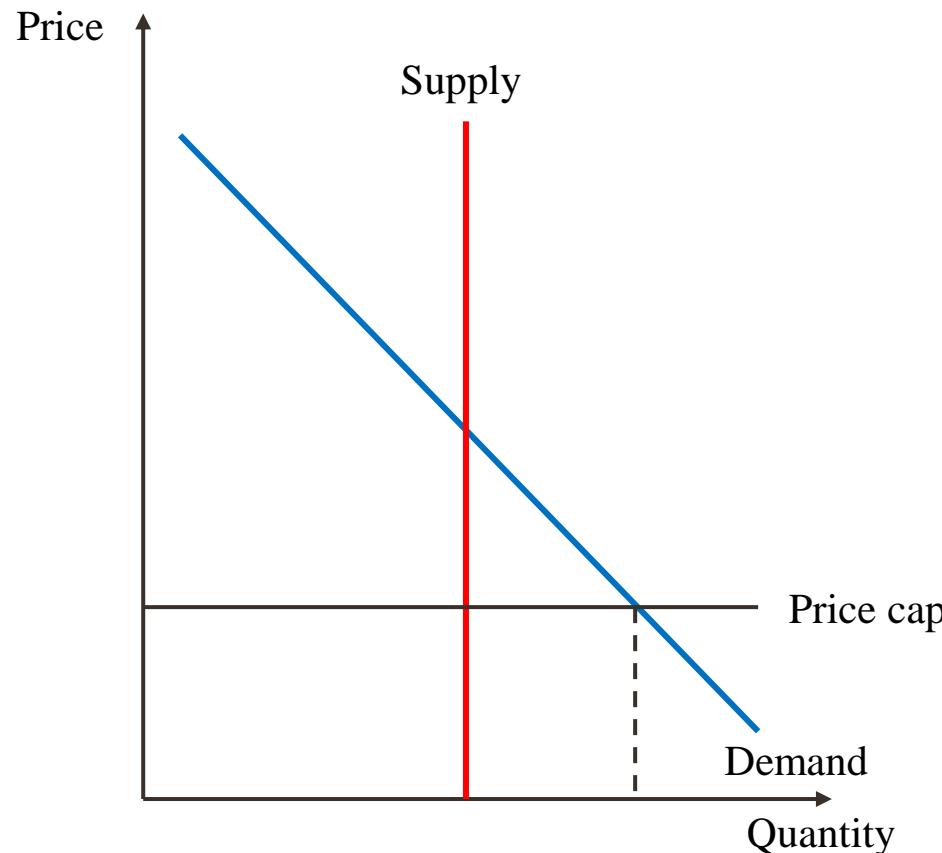


price floor



Price and quantity restriction

Suppliers may decide not to charge the maximum possible price
price ceiling with limited quantity



Queuing for hours in Zurich on March 7, 2023, for new limited-edition Moonswatch, only sold in Zurich, Milano, London and Tokyo. *Tages-Anzeiger* 8 March 2023

Basics – Market

PERTURBATIONS OF MARKET

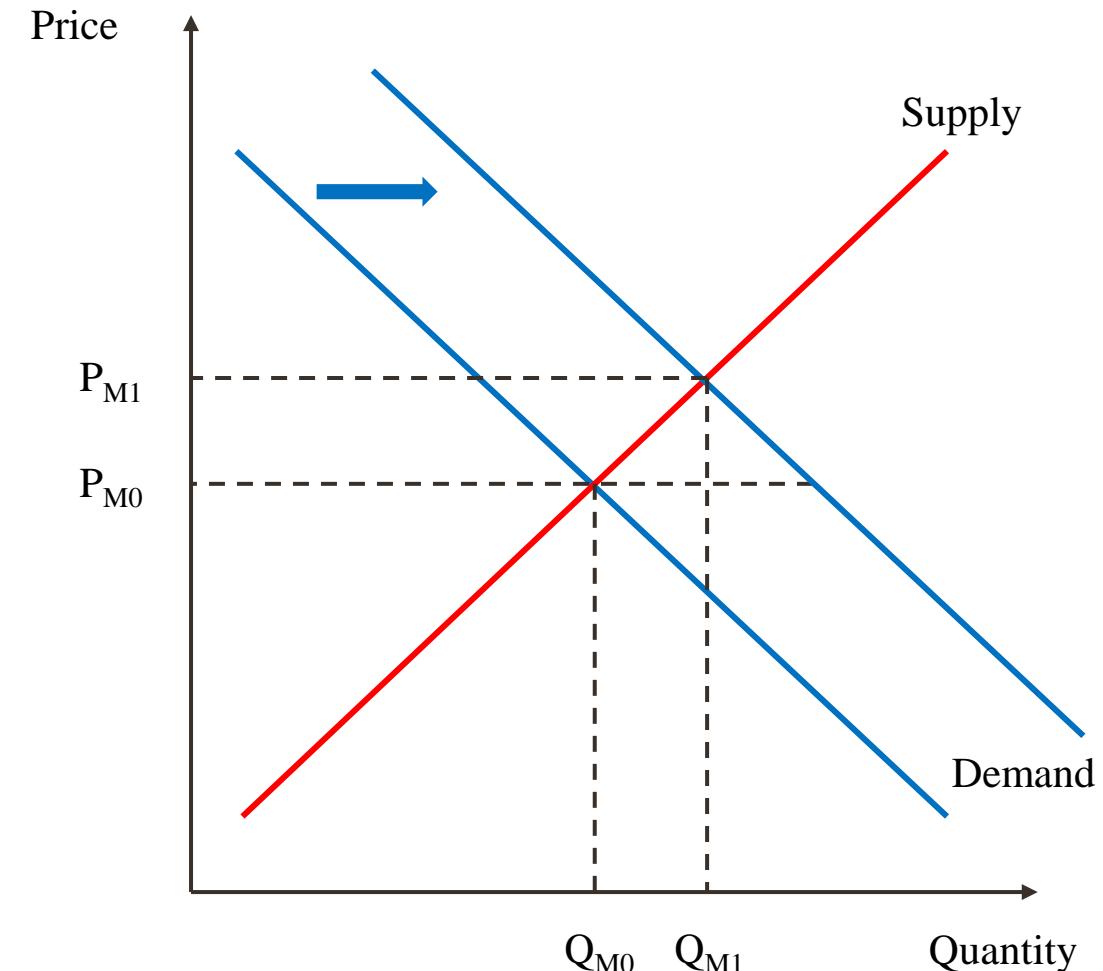
EQUILIBRIUM



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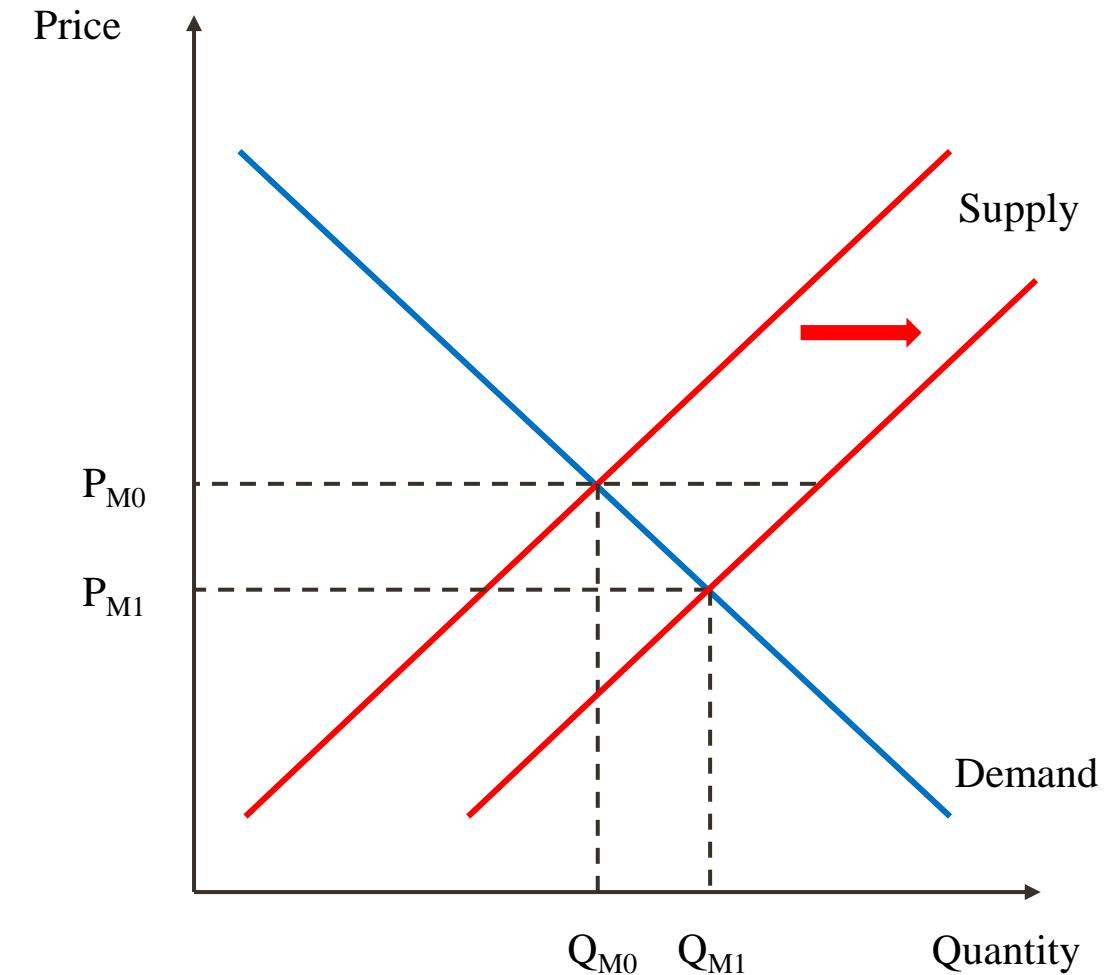
Increase of demand

- An increase of demand is a rightward shift (more quantity demanded for same price) or, equivalently, an upward shift (higher willingness to pay for same quantity) of the demand curve
- The new equilibrium has a higher price and a higher quantity
- A decrease of demand would have the opposite effect



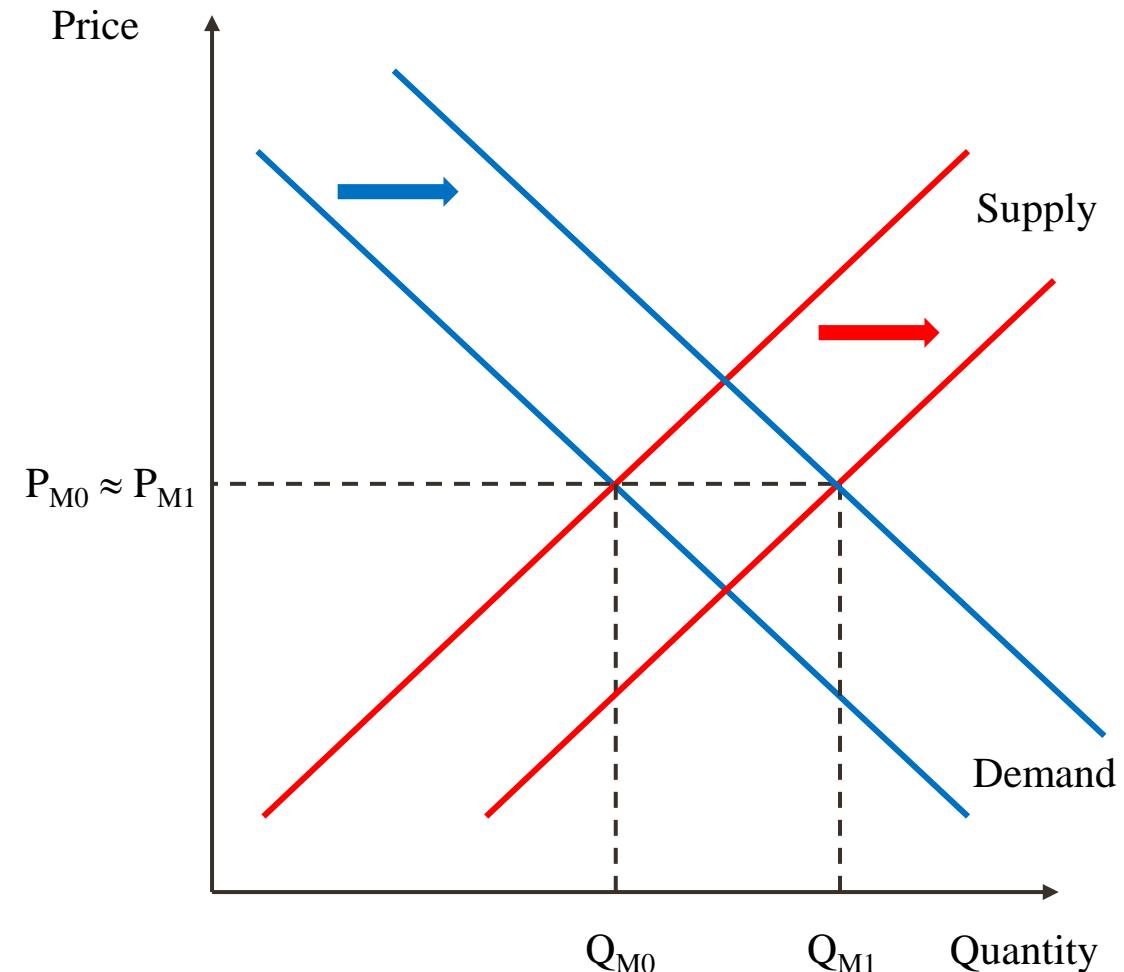
Increase of supply

- An increase of supply is a rightward shift (more quantity supplied for same price) or, equivalently, a downward shift (lower willingness to accept for same quantity) of the supply curve
- The new equilibrium has a lower price and a higher quantity
- A decrease of supply would have the opposite effect



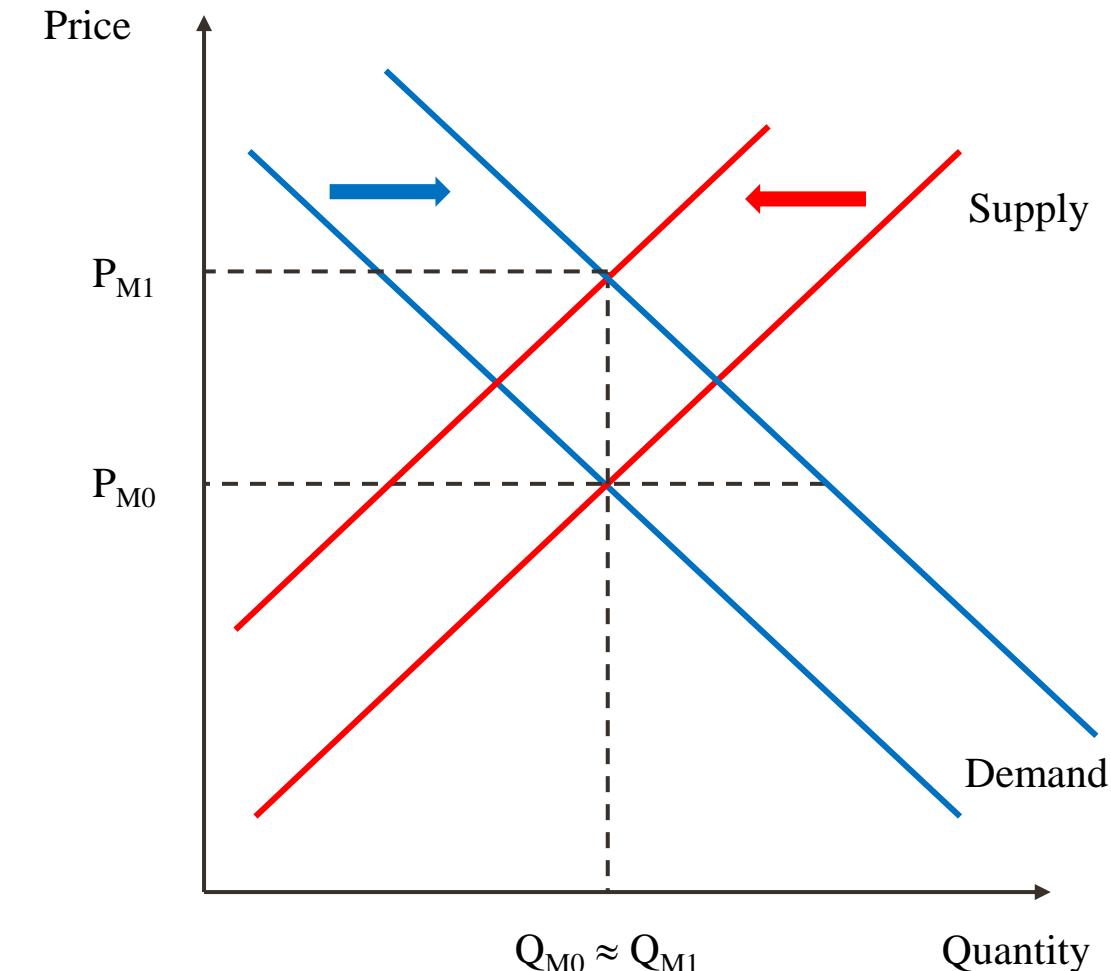
Supply and demand move in same direction

- When supply and demand both increase, the quantity traded can increase strongly with stable price
- When supply and demand both decrease, the quantity traded can decrease strongly with stable price



Supply and demand move in opposite directions

- When demand increases but supply decreases, the price can increase strongly while the quantity traded is essentially unchanged
- When demand decreases but supply increases, the price can decrease strongly while the quantity traded is essentially unchanged



Modifications of market equilibrium explained

DEMAND	SUPPLY	QUANTITY	PRICE
+	=	+	+
-	=	-	-
=	+	+	-
+	+	++	≈
+	-	≈	++

Observing markets

		Price		
		Decrease	Stable	Increase
Quantity	Decrease	D ↓	D ↓ & S ↓	S ↓
	Stable	D ↓ & S ↑		D ↑ & S ↓
	Increase	S ↑	D ↑ & S ↑	D ↑

From the change in price and quantity, we can infer which side of the market changed most

Basics – Market

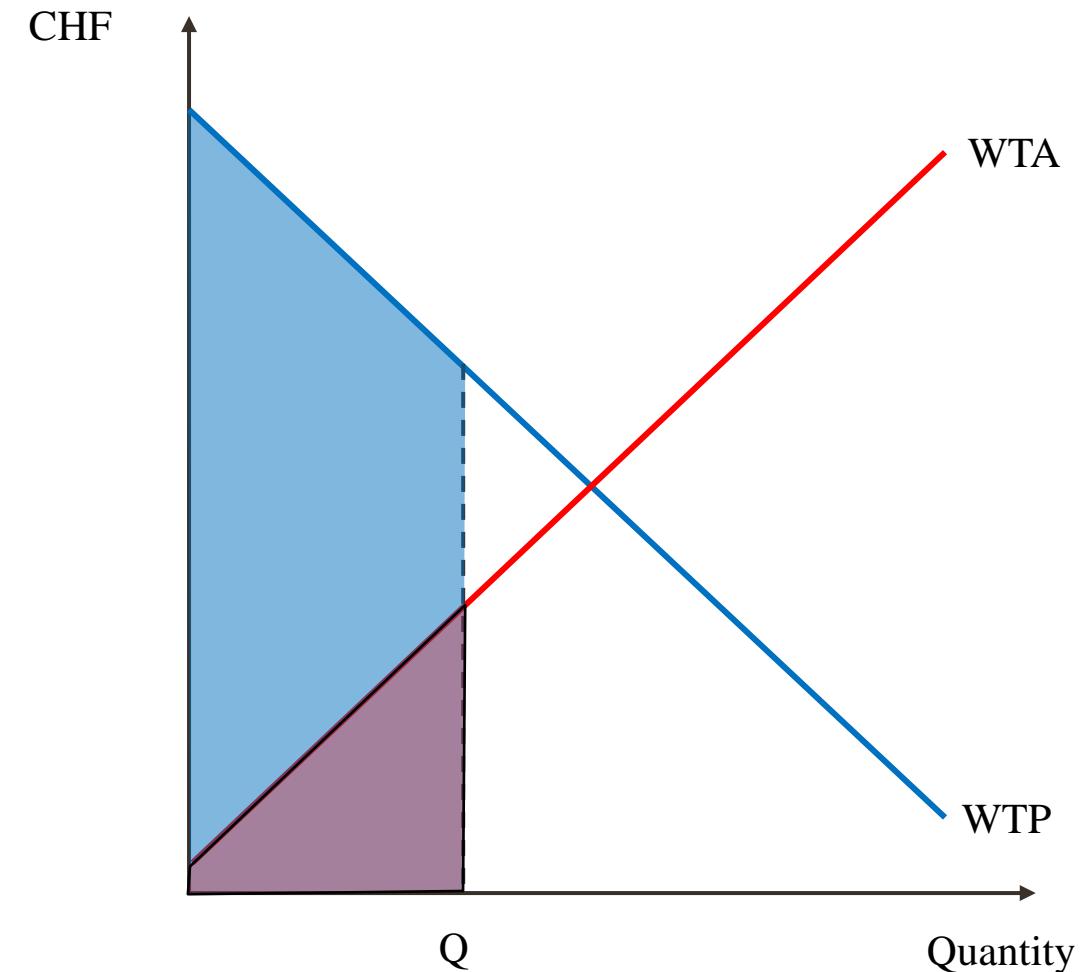
NORMATIVE VIEWS ON THE (COMPETITIVE) MARKET



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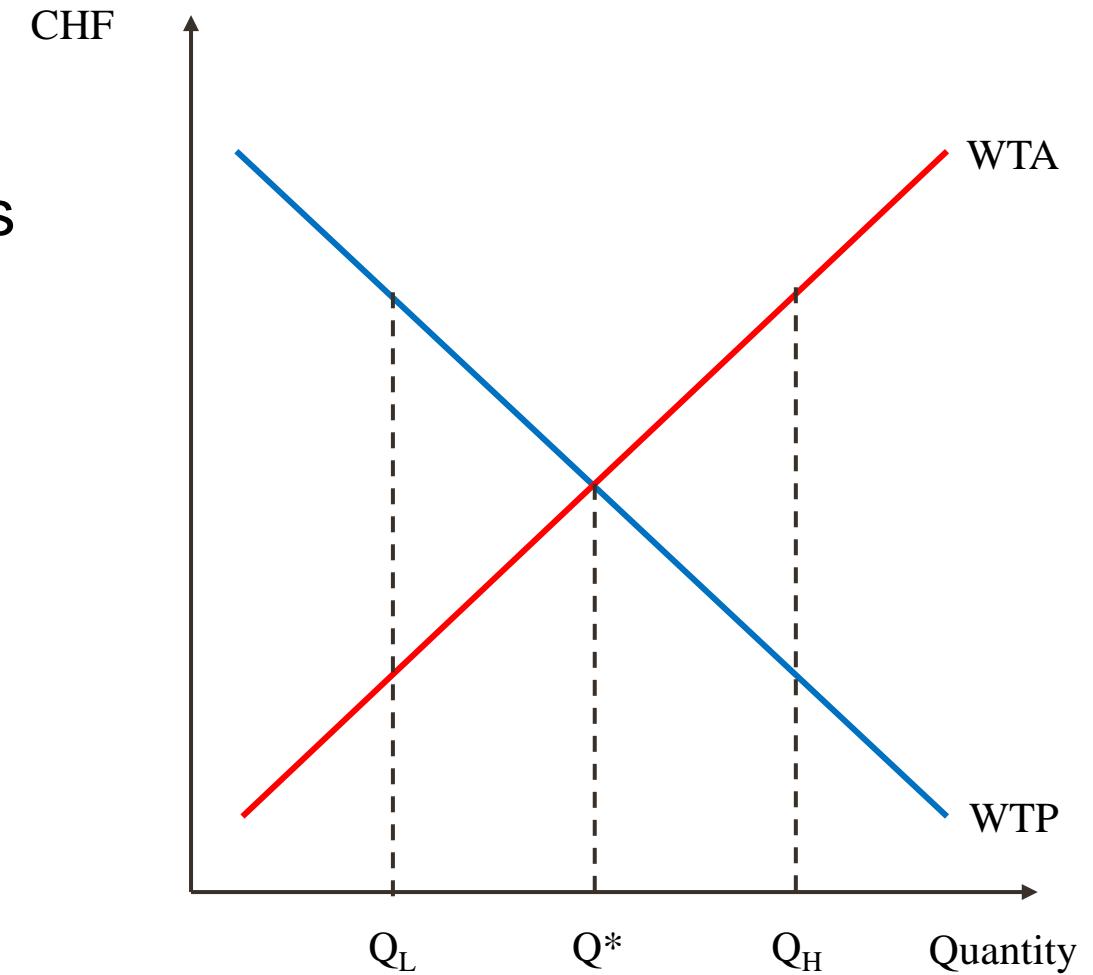
Social welfare

- Willingness-to-pay measures the welfare that buyers derive from the good
- Willingness-to-accept measures the cost of providing the good
- Net total welfare is equal to WTP of all buyers minus WTA of all sellers
- If the WTP and WTA are 'acceptable' from the point of view of society, then net total welfare = social welfare



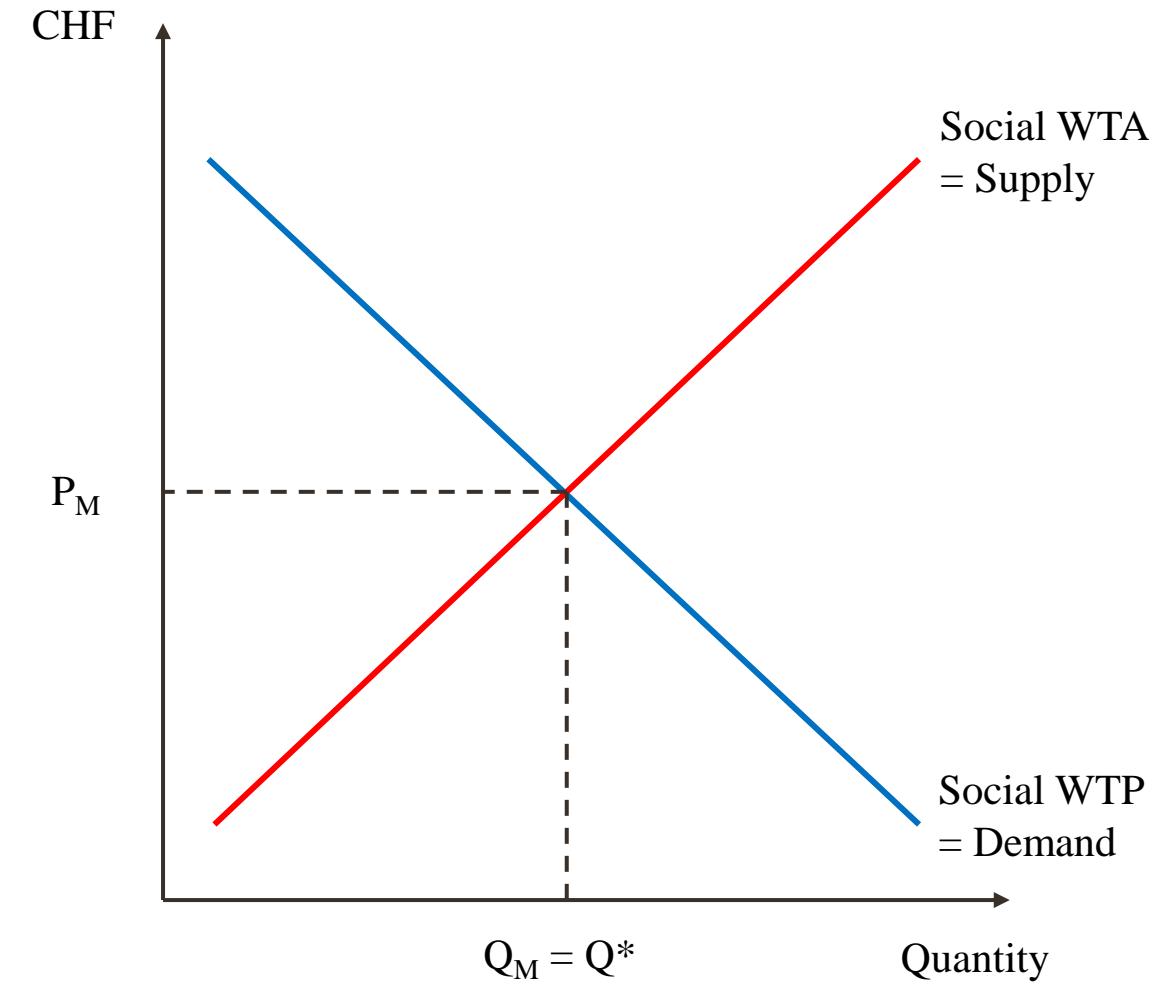
Maximum social welfare

- As long as an additional unit traded has $WTP > WTA$, trading it increases social welfare
- Social welfare is maximised for a quantity such that marginal WTP equals marginal WTA
- I.e. the WTP of the 'last' buyer is equal to the WTA of the 'last' seller



Social optimum and market equilibrium compared

- If...
 - social WTP = private WTP
 - social WTA = private WTA
 - the market is perfectly competitive
- ..., then, the market equilibrium maximises social welfare
- The price coordinates supply and demand in perfect decentralisation
- Perfectly rational producers and consumers, no external costs and benefits, perfect markets...



Conclusion

- In theory, markets maximize social welfare from trade
- This requires, however, a set of unrealistic assumptions
- Market actors strive to break the assumptions: cost externalisation, anti-competitive behaviour, short-cuts in decision making, etc.
- In theory, public authorities have the power to offset these imperfections and align markets with welfare maximisation
- If only the authorities were 'perfect' themselves...

Basics – Market

THE IMPORTANCE OF THE MARKET MODEL



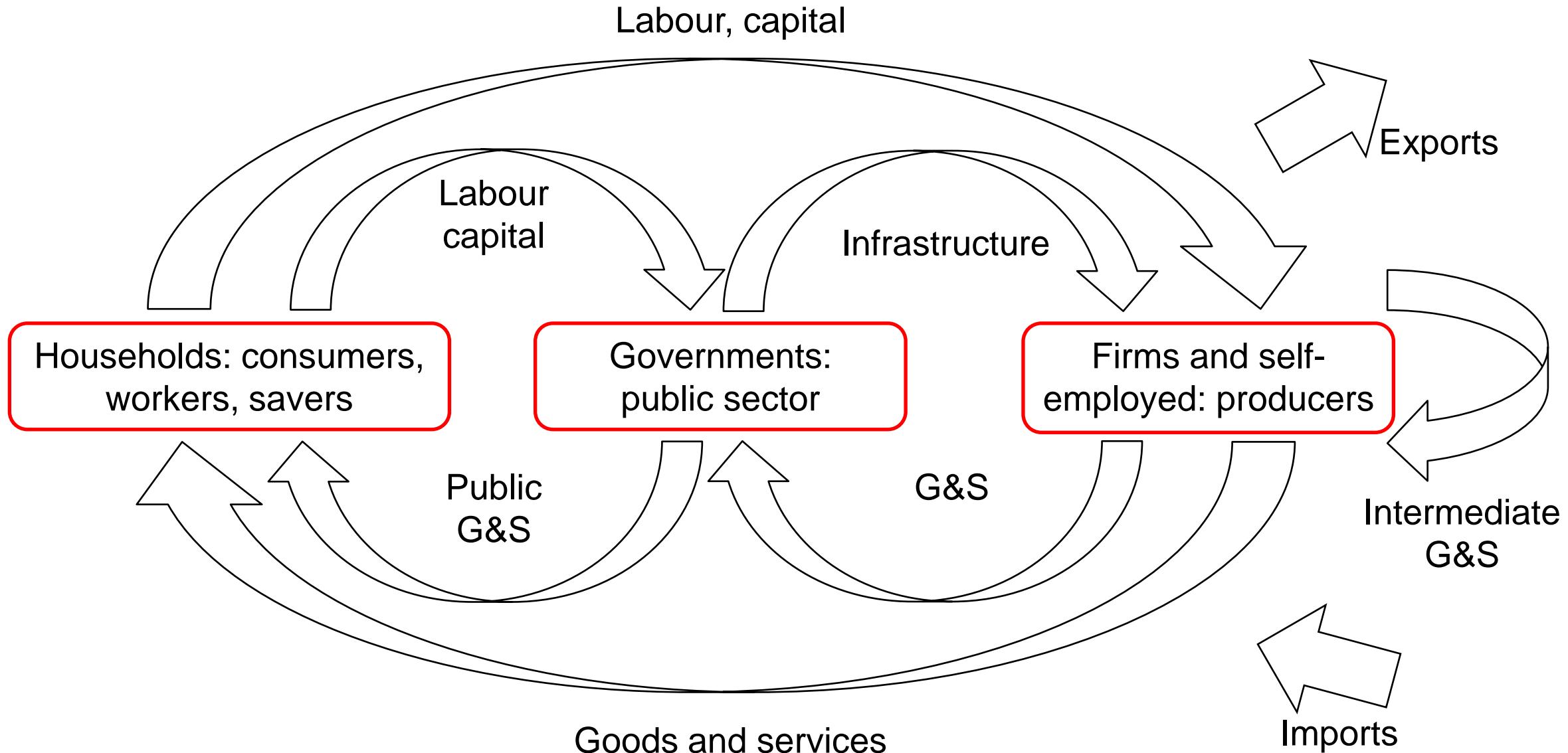
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Why is the market model so important in economics?

Many day-to-day and many important societal questions can be answered with the help of this model. E.g.:

- Why does this item sell for a higher price than that other item?
- Why did this price increase / decrease?
- Why is unemployment so high? Why do these people not find a job?
- Why are these people poor? Why can they not afford adequate housing or food?
- Why is there not more investment in renewable energy generation? Why is there still so much investment in coal mining?
- Why is the general price level rising (inflation) or falling (deflation)?

Main actors – economic circuits – real trades



Economic circuits – monetary flows

