Module 3

Lecture 22

Topics

3.7 Walras1

3.7.1 Partial and general equilibrium analysis

3.7 Walras1

Leon Walras' major contribution was in the field of general equilibrium theory. General equilibrium was conceptualized earlier than its partial equilibrium counterpart. Hence it was not a completely new approach when Walras published his Elements of Pure Economics. But none of the previous writers formally modeled the general equilibrium approach.

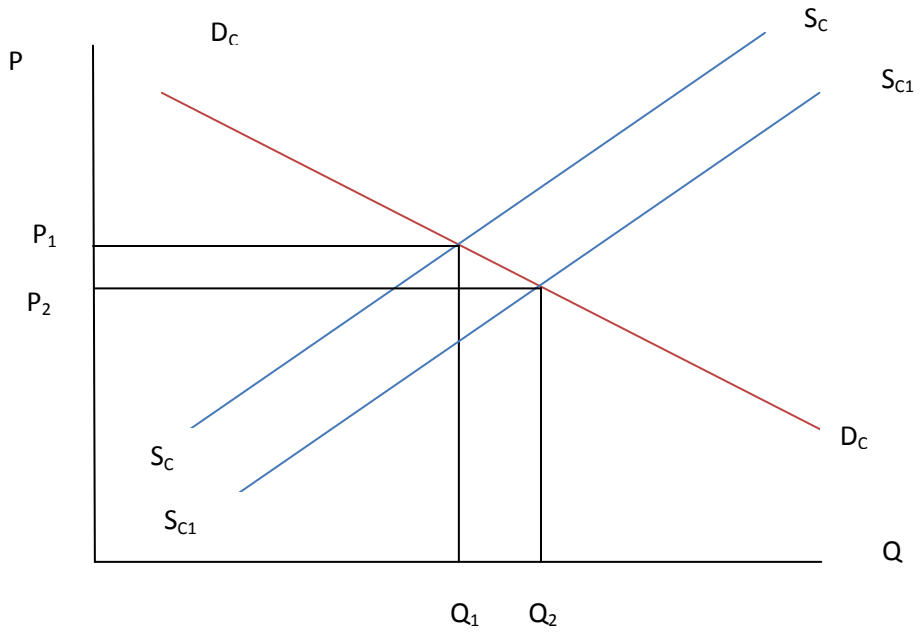
In 1838, Cournot made an enormous advance by modeling the theory of firm in mathematical form. He used calculus to prove marginal revenue must be equal to marginal cost to maximize profit. Cournot was a better mathematician than Walras, but did not attempt to model general equilibrium formally. Walras' was the first one to construct an allocation model of general equilibrium:

3.7.1 Partial and general equilibrium analysis

In model, some factors are theoretically held constant. In a partial model more factors are held constant than in a general equilibrium model.

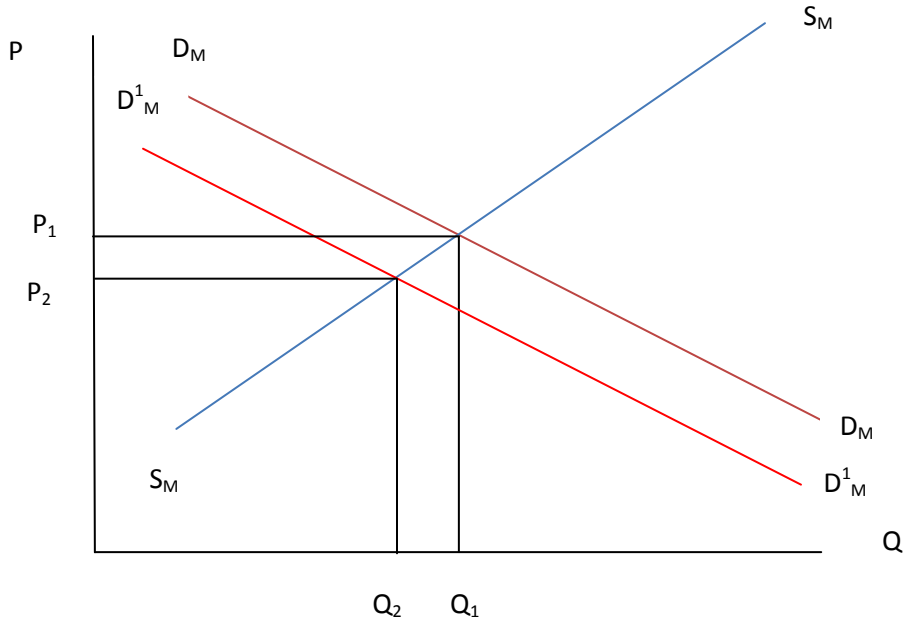
In partial equilibrium analysis we typically think of one market but in general equilibrium we look at the effect on multi market.

1. Suppose cost of chicken feed goes down. As a result the supply curve shifts down and the price of chicken goes down to P_2 from P_1



Market for Chicken

Partial equilibrium analysis ends here but suppose now we add another market of mutton. Reduction in chicken price will shift the demand curve for mutton downwards. This will lead to reduction in the price of mutton which will shift the demand curve for chicken to the left



Market for Mutton

This will lead to reduction in the price of mutton which will further shift the demand curve for chicken to the left. This will lead to further

- Reduction in chicken price.
- Leftward shift of DM.

This feedback mechanism must converge somewhere to bring a stable equilibrium. To understand the complexity we have to understand circular flow of income. An Individual is both a producer and a consumer

Consumer decision $\xleftarrow{\text{final goods price}}$ Individual $\xleftarrow{\text{Input prices}}$ Production Prices

Rule: MU/P must be equal for all goods consumed and P = minimum average cost for all goods consumed and in equilibrium all market must clear. In general equilibrium

⇨ demand = supply
and

Total income= total expenditure

Walrasian treatment raised some important questions.

1. Is a general equilibrium solution possible?

2. Does an economically meaningful solution exist? Is the solution a stable solution?

3. How will the equilibrium be achieved?

A solution to a general equilibrium model should yield the following values in equilibrium:

1. Prices of final goods.
2. Prices of factors.
3. Quantities of final goods demanded of supplied
4. Quantities of factors demanded and supplied.

Walras' biggest contribution is the modeling the inter connectedness.

There are some major problems of the Walrasian system some of which were solved after sixty years while some were not solved at all.

1. Hence the big question is that if a general equilibrium solution at all possible. For a solution to exist a fixed point theorem has to be applied. Some thought that by simply counting the number of equations and number of unknowns the existence could be deduced. Wald showed in 1933 that the problem is far more

complicated than that. In 1954 Arrow and Debreu formally proved the existence of a general equilibrium solution. However, some questions remained unresolved:

2. Is the solution economically meaningful?
3. How does production fit into the Walrasian system? No problem as long as constant returns to scale/exchange but serious problems in presence of increasing returns to scale.
4. Unique? May not be.
5. Stable? Some stability condition but not sure what were it is satisfied in reality.

We will discuss some of the more complex problems in the next lectures.