

The Paretian Optimum

Efficiency in the Allocation of Factors among Commodities, or, Efficiency in Product-Mix or Composition of Output:

A composition of output or product-mix is Pareto-efficient if it is impossible to increase the utility of one individual without reducing the utility of the other by reallocating the factors among the commodities, leading to a different product-mix.

The marginal condition for a Pareto-efficient product-mix states that the marginal rate of product transformation (MRPT) of Q_2 into Q_1 must be the same as the marginal rate of substitution (MRS) of Q_1 for Q_2 , for each consumer.

Here, the MRPT of Q_2 into Q_1 is equal to the quantity by which the production of Q_2 has to be reduced in order to produce one more (or the marginal) unit of Q_1 and, as such, it is equal to the numerical slope of the economy's production possibility curve or frontier (PPC or PPF).

An economy's PPC passes through all the combinations of the two goods (Q_1 and Q_2) that the available quantities of the two inputs (X_1 and X_2) can produce Pareto-efficiently. That is, any combination of the two goods that lie on the PPC gives us the maximum quantity of Q_1 that can be produced subject to the production of a given

quantity of Q_2 , or, the maximum of Q_2 subject to a given quantity of Q_1 .

In other words, the combinations of the two goods that lie on the PPC are those that lie on the Edge-worth contract curve for production (CCP) [Fig. 21.1]. That is, there is a one-to-one correspondence between the points on the CCP and those on the PPC. Since, as we move along the CCP, the quantity of one of the goods increases and that of the other decreases, the slope of the PPC would be negative.