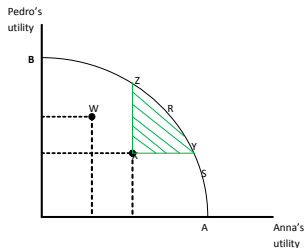# Efficiency and Markets

Charles Kolstad - Chapter IV

Introduction

- *How Much pollution should be produced?*

- Two concepts of efficiency:

1. obtaining the right amount of pollution control
2. allocating pollution control responsibility to specific polluters

- **The issue is:** *whether the outcome achieved by competition in a mkt economy is "best" for society*
 - It depends on ..... how SW is defined!

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- **Definition:**

1. An allocation is efficient or P.O, if it lies on the P.F, an allocation is inefficient if it is not on the P.F.

2. *Pareto Optimality = Efficiency*

- Competitive Markets are Efficient. An allocation achieved when a Perfectly Competitive Market operates is on the P.F.

- **Efficiency in Exchange: Goods:**
  - Two goods: *Cheese and Wine*
  - Two People: Anna and Pedro
  - I.C is concave upward
  - If Ana has only cheese and Pedro only wine, then both would prefer a little of each

- Wine and Cheese bargaining

- A P.O is when $MgRS^A_{CW} = MgRS^P_{CW}$
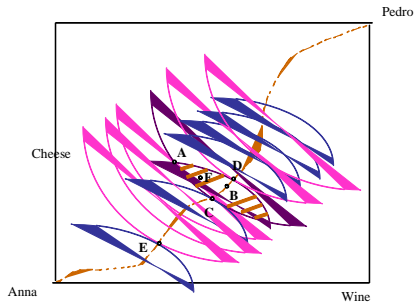
- Anna's budget for any (C, W) consumed:
  - $P_C C_o + P_W W_o = P_C C + P_W W$
  - $C = [C_o + \frac{P_W}{P_C} W_o] - \frac{P_W}{P_C} W$

- Two requirements:

1. The B.L must pass through (Co, Wo)
2. There must be some allocation at which the I.Cs of both parties are tangent to the B.L.
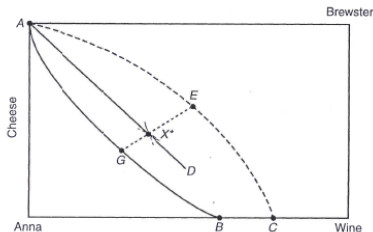
Figure 4.4 Market equilibrium in cheese–wine bargain. A, Initial endowment; GE, portion of contract curve that improves on A; X*, market outcome with initial allocation at A; AD, budget constraint.

- X* is market outcome
- $\frac{P_W}{P_C} = MgRS_{CW}^A = MgRS_{CW}^P$
- A Mkt eq. results in a PO allocation
- There are other allocations along the C.C that are also PO but will not result from the operation of a Mkt.

Wine and Garbage (Ignore Externalities!)

- The I.C is concave downward

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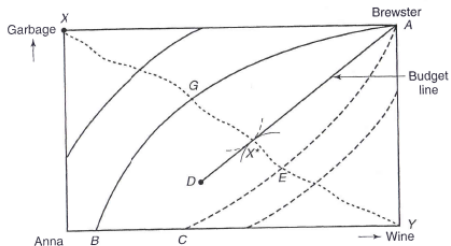
Figure 4.6 Garbage–wine exchange. A, Initial endowment; XGEY, contract curve; X*, market equilibrum with A as initial endowment; AD, budget constraint, AGBCE, region of Pareto improvement over A.

- **First Theorem of Welfare economics:** *In a competitive economy, a market equilibrium is P.O.*

- **Second Theorem of Welfare economics:** *In a competitive economy, any P.O can be achieved by market forces, provided the resources of the economy are appropriately distributed before the market is allowed to operate.*

Most Formally!!

- **Theorem 1**: *considers an exchange economy* $(u^i, e^i)_{i \in I}$. *If each consumer's utility function,* u^i, *is continuos and strictly increasing on* R_n^+, *the every Walrasian equilibrium allocation is in the Core. That is,* $W(e) \subset C(e)$.

- FWT: Under the hypotheses of T1, every W.E.A is P.O

- WEAs are not necessarily socially optimal

- *We MUST agree that an allocation that is not P.O. is not even a candidate for the socially best, because it would always be possible to redistribute things and make someone better off and no worse off!*

- Can the power of decentralized market system be used to achieve $\overline{x}$?
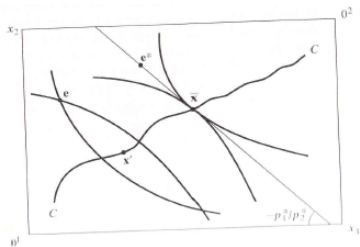
- Consider and exchange economy $(u^i, e^i)_{i \in I}$ with aggregate endowment $\sum_{i=1}^{I} e^i >> 0$, and each utility function u^i is continuos, strongly increasing and strictly quasiconcave on R_n^+. Suppose that $\overline{x}$ is Pareto efficient allocation for $(u^i, e^i)_{i \in I}$, and that endowments are redistributed so that the new endowment vector is $\overline{x}$. Then $\overline{x}$ is a C.E.A of the resulting exchange economy $(u^i, e^i)_{i \in I}$.

- Is a system that depends on decentralized, self-interesrted decision making by a large number of consumers, capable of sustaining the socially best allocation of resources?

- Why is pollution a problem in Market Economy??
    - markets fail when pollution is present
    - markets failures can be corrected