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Chapter 1: **Conceptual Foundations of Economic Policy (I)**

- Introduction
- Economic policy means and ends
- Why devote time to methodology?
- Some methodological issues: rationality and the *unintended* social repercussions of individual intentional behaviour
- Paretian welfare economics: The Pareto efficiency criterion and the two fundamental theorems of welfare economics
- Government intervention: market failures *versus* policy failures
- Failures of individual rationality: Modern behavioural welfare economics
- Failures of collective rationality: self-fulfilling and self-defeating expectations

Introduction (I)

- Two basic premises of mainstream economics:
  - Individual rationality is identified with *utility-maximization*.
  - The allocation of resources produced by a perfectly-competitive market economy is Pareto-efficient (i.e., first fundamental theorem of welfare economics).

- However, even if these premises were correct, it is possible to improve the workings of a market economy since:
  - Real-world economies are far from being perfectly-competitive, and the allocation of resources is, hence, sub-optimal.
  - The distribution of income generated by markets is unequal (and, perhaps, unfair) so there is room for increasing social welfare through income redistribution and the provision of a broad range of public goods (e.g., education, health).
  - Excessive macroeconomic volatility may reduce long-run economic growth which means that macroeconomic stabilization may also help to increase social welfare.

Introduction (II)

- The assumption that economic agents are 'rational' is the backbone of economics. By 'rational', mainstream economists mean that economic agents are utility-maximizers, namely, they:
  - *Evaluate* the costs and benefits of following different courses of action, and
  - *Choose* the course of action that maximizes a utility function that captures their preferences about alternative goals or desires.

- However, recent advances in the *neurosciences* do suggest that human beings may not be utility-maximizers since:
  - The reasoning procedures we use are often *unsound* in the sense that they tend to violate the rules of logic and Bayesian probability.
  - Our ability to collect, store, and process information is *bounded* or *limited*.
  - Willpower is also *bounded* which may help to explain phenomena like addictive behaviour (e.g., smoking, gambling, etc.).

Introduction (III)

- Second, perfect-competition is, in Weber's parlance, an 'ideal type' that is rarely, if ever, observed in real economies. Some examples of *deviations* from perfect-competition that prevent real economies from generating a Pareto-efficient allocation of resources are monopolies and oligopolies, externalities, and public goods.

- Third, the distribution of income generated by markets may be *unfair* in the sense that it may not be based mainly on 'merit'. Some studies show that personal income depends (about 80 percent on average) on 'who your parents are' (Milanovic 2012). This suggests that creating a meritocratic society may require:
  - The adoption of a *progressive* tax system
  - The provision of a broad supply of high-quality public goods (e.g., public health and education).

Introduction (IV)

- Fourth, some markets are *intrinsically unstable* and may be the source of macroeconomic volatility. A typical example are financial markets (e.g., stock markets, currency markets, etc.).

- The problem with these markets is that, in the absence of *institutions* that prevent instability from setting off by creating appropriate 'fire-walls', they may lead to recurrent financial crisis and recessions.

- In the light of it, most countries have evolved economic institutions to mitigate aggregate output volatility like fiscal automatic stabilizers and discretionary fiscal and monetary policy.

Economic policy means and ends (I)

- Lionel Robbins (1932, p. 31) defined economics as 'the study of the allocation of scarce means among competing ends'. Using means efficiently in the service of ends is, for most economists, the subject matter of economics. But using means in the service of ends also implies policy. Thus, policy implies knowledge of means and ends.

- Economic policy presupposes knowledge of:
  - *Possibility* reflects how the world works. This kind of knowledge gives us information about trade-offs among real alternatives.
  - *Purpose* reflects desirability, our ranking of competing ends, our criteria for distinguishing better from worse 'states of the world'.

Economic policy means and ends (II)

- Economics is largely concerned with *possibilities* or knowledge of trade-offs among competing ends (e.g., between inflation and unemployment).

- Economics consists of a set of *descriptive* or *explanatory* theories which reflect our best knowledge about how the means of policy are related to the ends and the former's efficacy and limitations. This part of economics is often denoted as 'Positive Economics' or, more often, Economic Theory.

- Yet policymakers cannot avoid making 'value judgements' about the relative desirability of competing economic policy ends. They need to establish a *ranking* of them.

Economic policy means and ends (III)

- Economic theory does not tell us how to rank competing ends. This corresponds to Ethics or, more often, to ideology. Policy-makers' decisions to promote egalitarian policies, reduce poverty and unemployment, protect the environment, are ultimately based on *normative beliefs* (i.e., beliefs about what is good or fair, etc.).

- There is no normative branch in the natural sciences. The reason is that non-human animals' behaviour is determined by instinct, not reason. Unlike human beings, neither non-human animals nor plants can choose; they do not have free-will. Thus, they cannot be immoral since the ultimate source of morality is our capacity to make choices, based on our descriptive and normative beliefs.

Economic policy means and ends (IV)

- The social sciences are not *value-free*. Unlike the natural sciences where scientists' value-judgements have little or no impact on their theories, social theory incorporates social scientists' values (e.g., ideology). Thus, it is not possible to distinguish sharply between Positive and Normative Economics.

- It is common to distinguish between Micro- and Macro-economic policies. While the former are designed to mitigate market failures that occur at the *micro-level* (e.g., collusion, asymmetric information, inequalities, instability in certain markets), the latter address *macro-level* failures such as business cycles and massive unemployment (see Figure 1 below).

Economic policy means and ends (V)

Micro-economic policies (Monitoring, surveillance and regulation)

- Asymmetric information (e.g., health care industry)
- Competition policy aimed at avoiding collusion among firms in oligopolistic markets
- Environmental protection
- Redistribution of income and wealth *via* taxation and provision of public goods
- Housing and public infrastructure (e.g., highways, energy infrastructure, etc.)
- Productivity-enhancing policies aimed at stimulating technological innovation

Macro-economic policies

- Mitigation of business cycles *via* monetary and fiscal policy
- Exchange rate and trade policy
- Income policies

Figure 1

Why devote time to methodology?

‘The physicist who is only a physicist can still be a first-class physicist and a most valuable member of society. But nobody can be a great economist who is only an economist—and I am even tempted to add that the economist who is only an economist is likely to become a nuisance if not a positive danger’ (F. A. Hayek, ‘The Dilemma of Specialization’, p. 123, *Studies in Philosophy, Politics, & Economics*, 1967).

‘There’s nothing more dangerous than a philosopher who’s learned a little bit of economics’ (James Tobin, *New York Times*, 3rd January 1982) to which Robert Nozick replied: ‘Unless it’s an economist who hasn’t learned any philosophy’.

‘Orthodoxy is the death of knowledge since the growth of knowledge depends entirely on the existence of disagreement’ (K. Popper, in *The Myth of the Framework: In defence of science and rationality*, 1994, p. 34).

Why devote time to methodology?

‘The study of economics does not seem to require any specialized gifts of an unusually high order. Is it not, intellectually regarded, a very easy subject compared with the higher branches of philosophy and pure science? Yet good, or even competent, economists are the rarest of birds. An easy subject, at which very few excel! The paradox finds its explanation, perhaps, in that *the master-economist must possess a rare combination of gifts*. He must reach a high standard in several different directions and must combine talents not often found together. He must be mathematician, historian, statesman, philosopher—in some degree. He must understand symbols and speak in words. He must contemplate the particular in terms of the general, and touch abstract and concrete in the same flight of thought. He must study the present in the light of the past for the purposes of the future’.

Quotation from the obituary of Alfred Marshall by J. M. Keynes (Keynes, 1924, pp. 322–323, emphasis added)

Why devote time to methodology?

‘It is better to be a human being dissatisfied than a pig satisfied; better to be Socrates dissatisfied than a fool satisfied. And if the fool, or the pig, is of a different opinion, it is only because they only know their own side of the question’ (John Stuart Mill, 1861, ‘Utilitarianism’, *Fraser’s Magazine*, vol. 64, p. 396).

‘Real wisdom is not the knowledge of everything, but the knowledge of which things in life are necessary, which are less necessary, and which are completely unnecessary to know’ (L. Tolstoi, ‘*A Calendar of Wisdom: Daily Thoughts to Nourish the Soul, Written and Se”*, 2010, p. 88).

‘There is nothing as practical as a good theory’ (Lewin K. 1943) in Psychology and the process of group living, *Journal of Social Psychology*, 17, 113–131. Reprinted in *The complete social scientist: A Kurt Lewin reader*, Martin Gold, Ed.) (1999) (pp. 333–345).

Some methodological issues (I)

- In mainstream economics the 'rationality assumption' (or 'Rationality Principle') is the idea that individuals maximize expected utility by:
  - *comparing* the expected costs and benefits of all possible courses of action, and
  - *choosing* the one that maximizes a utility function that represents their preferences among various goals or desires.

- Utility-maximization implicitly presupposes that agents' reasoning procedures are *sound* and their willpower is *unbounded*. The implication is that expected utility theory doesn't account for their behaviour adequately, as indicated in the upper part of Figure 2 below.

- Last, the hypothesis that individuals seek to maximize expected utility is untestable and unfalsifiable. Accordingly, expected utility theory is better interpreted as a *methodological principle* or even a *modelling device*, not as an explanatory theory of individual behaviour.

Some methodological issues (II)

- If reasoning procedures are *unsound* (i.e., if actors violate the rules of logic and/or probability) then people may make wrong decisions.

- Similarly, if willpower is *bounded*, people's actions may reduce their welfare (e.g., smoking, gambling) even though such form of behaviour is utility-maximizing, as defined by economists.

- As Figure 2 above shows, if actors' reasoning procedures are *unsound* or their willpower is *weak*, or both, they may fail to act appropriately to the 'Problem-Situation' (P-S) they face.

- This suggests that utility-maximization may *reduce* individual welfare when it is incompatible with an individual's long-run interests.

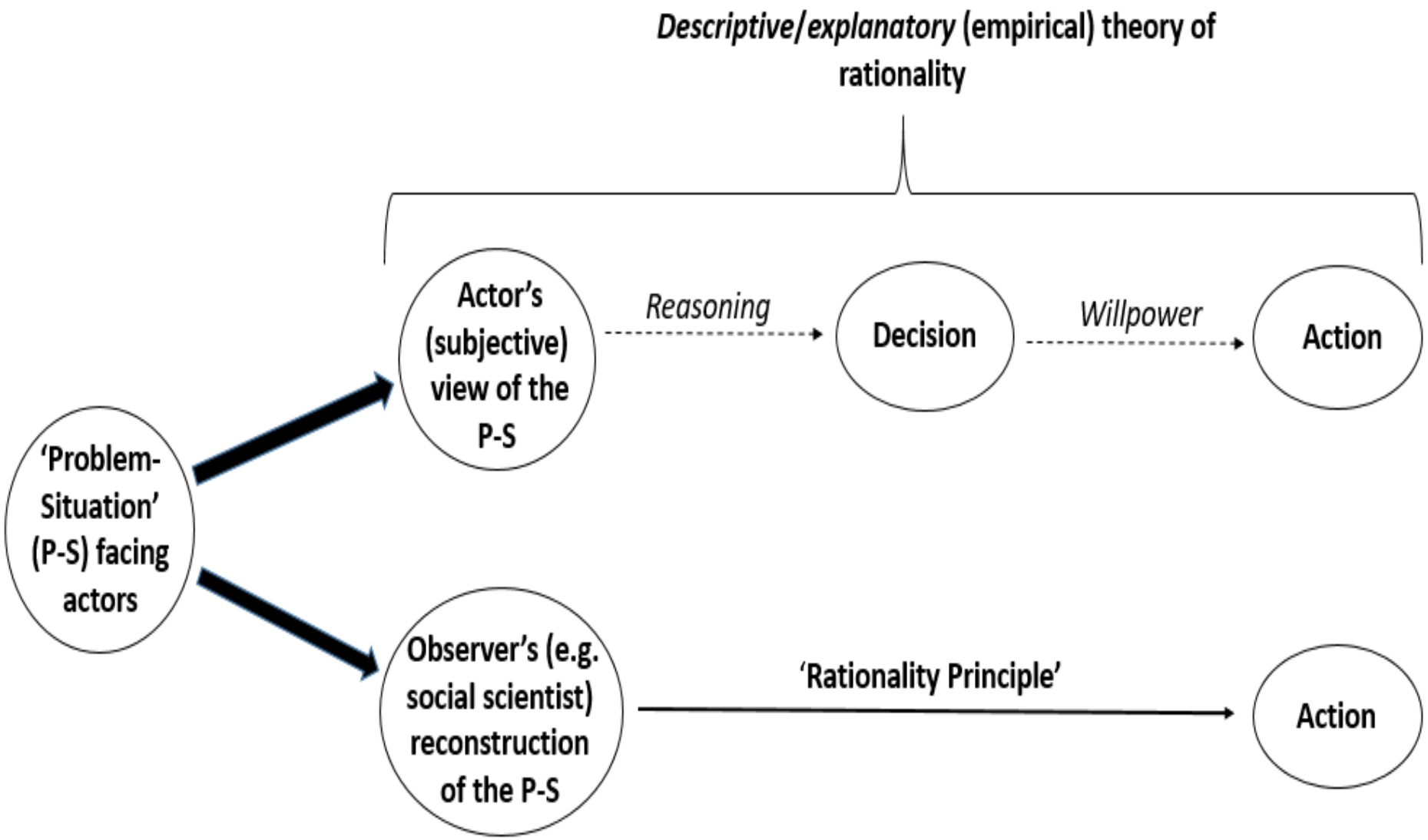

Descriptive/explanatory (empirical) theory of rationality
Actor's (subjective) view of the P-S
Reasoning
Decision
Willpower
Action
'Problem-Situation' (P-S) facing actors
Observer's (e.g. social scientist) reconstruction of the P-S
'Rationality Principle'
Action

Figure 2

Some methodological issues (III)

- Some philosophers (e.g., Nozick, Popper) and social scientists (e.g., Adam Smith, Hayek) have recognized in the past the centrality for the social sciences of the analysis of the '*unintended* social repercussions of individual intentional behaviour' (USR).

- The most famous example of USR is Adam Smith's 'invisible hand' metaphor whereby the selfishness (i.e. profit motive) of entrepreneurs *unintentionally* promotes social welfare by:
  - Allocating economic resources away from the production of those goods whose demand (price) is low and towards the production of those goods whose demand (price) is high.
  - Choosing the most efficient production techniques.
  - Helping shift financial capital away from industries where the profit rate is low and towards those industries where the profit rate is high.

Some methodological issues (IV)

- Smith's 'invisible hand' metaphor is an example of socially *desirable* USR. However, there is a myriad of socially *undesirable* USR such as asset price bubbles, bank runs, epidemics, environmental degradation, climate change, nuclear proliferation, etc.

- Thus, social interaction among a very large number of individuals may *unintentionally* cause the emergence of desirable or undesirable USR.

- Public policies may also generate undesirable USR which means that policy decisions need to be carefully assessed by considering, for instance, the *historical* and *institutional* context in which they will be implemented. There is no 'blueprint' for successful public policies and judgment is always necessary.

Some methodological issues (V)

- The distinctiveness of economics *vis-à-vis* other social sciences is the premise that interaction takes place predominantly in *markets* where prices act as *coordinating* devices. As put by F. Hayek in his famous analogy, the price system is a 'big telecommunications machine'.

- For example, if the price of peanuts goes up consumers will tend to buy a lower quantity of them and producers will increase the supply of peanuts so that the initial price increase is partially offset.

- The *price system* in a market economy is a typical example of what is known as a *negative* or stabilizing feedback mechanism. By contrast, some markets (e.g., asset markets) may exhibit *positive* (destabilizing) feedback mechanisms such as 'self-fulfilling prophecies'. These types of markets need to be regulated.

Some methodological issues (VI)

- It is in those cases in which either the non-existence of markets or the presence of intrinsically unstable markets (i.e., markets dominated by *positive* feedback mechanisms) that *regulation* is socially desirable.

- Most economies have evolved *economic institutions* that help regulate some markets (e.g., central banks, bank deposit insurance, consumer and worker protection regulation, stabilization policy, etc.)

- There are also social phenomena where markets are *non-existent* (e.g., traffic jams, environmental degradation, etc.) and whose occurrence is closely associated to 'coordination failures', or failures of 'collective rationality' among actors.

Some methodological issues (VII)

- **Questions for self-evaluation**:

1) What does the 'utility-maximization' hypothesis imply? Are human beings utility-maximizers? Why?

2) What do we mean by the '*unintended* social repercussions of individual intentional behaviour' (USR)? Can you give an example of USR other than Adam Smith's 'invisible hand' metaphor?

3) What is a feedback mechanism? Can you give an example of a positive feedback mechanism?

Paretian welfare economics (I)

- The Italian economist Vilfredo Pareto specified a condition of *optimal* or *efficient* resource allocation. This criterion can also be used to evaluate public policy projects.

- By this criterion, a policy change is deemed socially desirable if everyone is made better off (*strong* Pareto criterion) or, at least, if someone is made better off while nobody else is made worse off (*weak* Pareto criterion).

- Now, when the possibilities of making Pareto-improving policy changes are exhausted we are left with an allocation of resources that cannot be altered without someone being made worse-off. Such an allocation is called *Pareto-optimal*.

Paretian welfare economics (II)

- According to the Pareto criterion we can *only* evaluate the social desirability of policy changes that either improve or reduce the level of welfare of one or several households while the welfare of other households remains constant.

- The reason is that valuing changes that make some households better-off and other ones worse-off does require *comparing* the increased welfare of 'gainers' to the lost welfare of 'losers'.

- As argued by Lionel Robbins (1938), interpersonal comparisons of utility have no *scientific* basis so we cannot ascertain whether a policy change that makes some people better-off and others worse-off is socially desirable.

Paretian welfare economics (III)

- In Figure 3, starting from state *I* the Pareto criterion can evaluate policy changes (indicated by two ellipses) that take us from *I* to *any* point located on either the 'northeast' region in which both groups gain or one group gains and the other remains the same or, on the 'southwest' region, in which both groups lose (or one group losses and the other remains the same).

- In the former (latter) case, the Pareto criterion deems the policy change socially desirable (undesirable).

- However, most real-world policy changes we can think of imply that *at least someone is made worse off*. This suggests that the Pareto criterion is *irrelevant* for evaluating the desirability of most, if not all, policy changes.

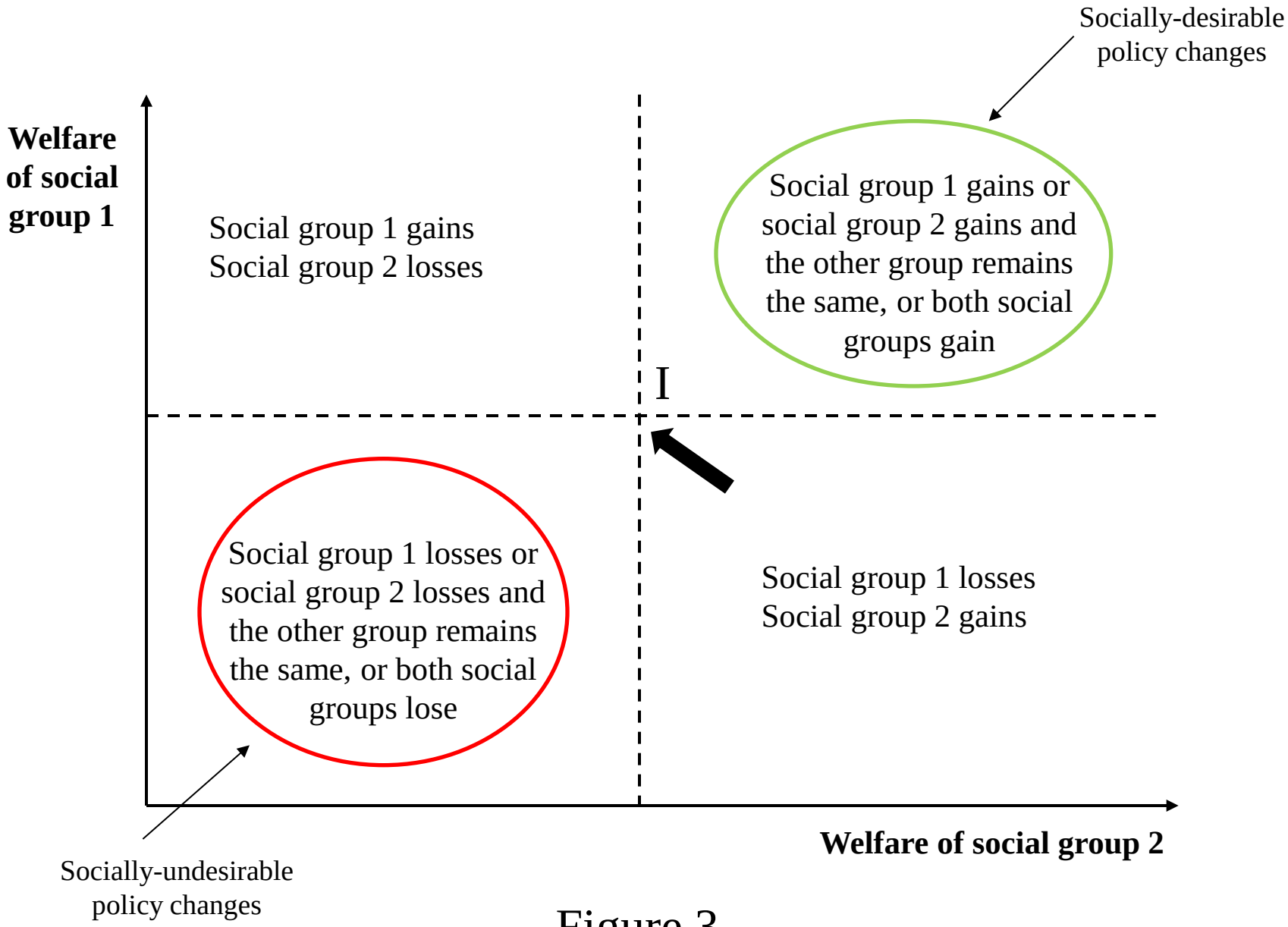

Socially-desirable policy changes
Welfare of social group 1
Social group 1 gains
Social group 2 losses
Social group 1 gains or social group 2 gains and the other group remains the same, or both social groups gain
I
Social group 1 losses or social group 2 losses and the other group remains the same, or both social groups lose
Social group 1 losses
Social group 2 gains
Welfare of social group 2
Socially-undesirable policy changes

Figure 3

Paretian welfare economics (IV)

- Yet, the Pareto criterion says nothing about policy changes that take us from *I* to *any* point on either the 'northwest' region (i.e., where social group 1 gains while social group 2 losses) or the 'southeast' region (i.e., where social group 1 losses while social group 2 gains).

- As we have intimated above, the problem with these two types of policy changes is that there is no scientific way of *comparing* the increase in well-being of would-be gainers to the decrease in well-being of would-be losers.

- This shows that the Pareto criterion *cannot* address those policy proposals that bring about *distributional* changes.

Paretian welfare economics (V)

- A second *shortcoming* of the Pareto criterion is that any policy change that satisfies it may be *unfair* if would-be 'gainers' are wealthy people and would-be 'losers' are poor, namely, if the policy change makes wealthy people wealthier and poor people poorer in relative terms.

- In short, the Pareto criterion is solely concerned with *efficiency* and does not consider *distributional* changes.

- Yet most, if not all, policy changes we can think of in real-life have *distributional* implications.

Paretian welfare economics (VI)

- A perfectly competitive market is one where no buyer or seller can *influence* the market price by her purchases or sales (i.e., they are 'price-takers' as opposed to 'price-makers').

- In fact, there is a close correspondence between an allocation of resources that satisfies the Pareto criterion and the allocation that results from a perfectly competitive market system; when a competitive equilibrium exists, it attains Pareto-optimality.

- This theorem is, arguably, the most important one in theoretical economics and is known as the *First Fundamental Theorem of Welfare Economics* (FFTWE).

Paretian welfare economics (VII)

- The condition for 'Pareto optimality' may be split into the *first-order* (necessary) and second-order (sufficient) conditions.

- If 'Pareto optimality' is attained, then:
  - The 'marginal rate of substitution' (MRS) between any pair of goods will be the *same* for all individuals consuming the goods and equal to the ratio of their relative prices (Optimality in exchange).
  - The MRS between any pair of production factors will be the *same* for all goods and production units and equal to the ratio of their relative prices (Optimality in production).
  - The MRS between any pair of goods will be equal to their *marginal rate of transformation* (MRT) which is the marginal rate at which one good can be *transformed* into another by allocating more resources to produce one and less to produce another (Top-level optimum condition).

Paretian welfare economics (VIII)

- The set of combinations of levels of utility of two individuals or social groups that satisfy all the requirements above for ‘Pareto optimality’ is known as a ‘utility possibilities frontier’ (UPF).

- In Figure 4 below, we can see that UPF is *concave*. That is, once we have reached a point on UPF an increase in the level of utility of individual or social group A implies a decrease in the level of utility of individual or social group B and vice-versa.

- It is for this reason that policy changes that imply movements along a given UPF *cannot* be evaluated by means of the Pareto criterion.

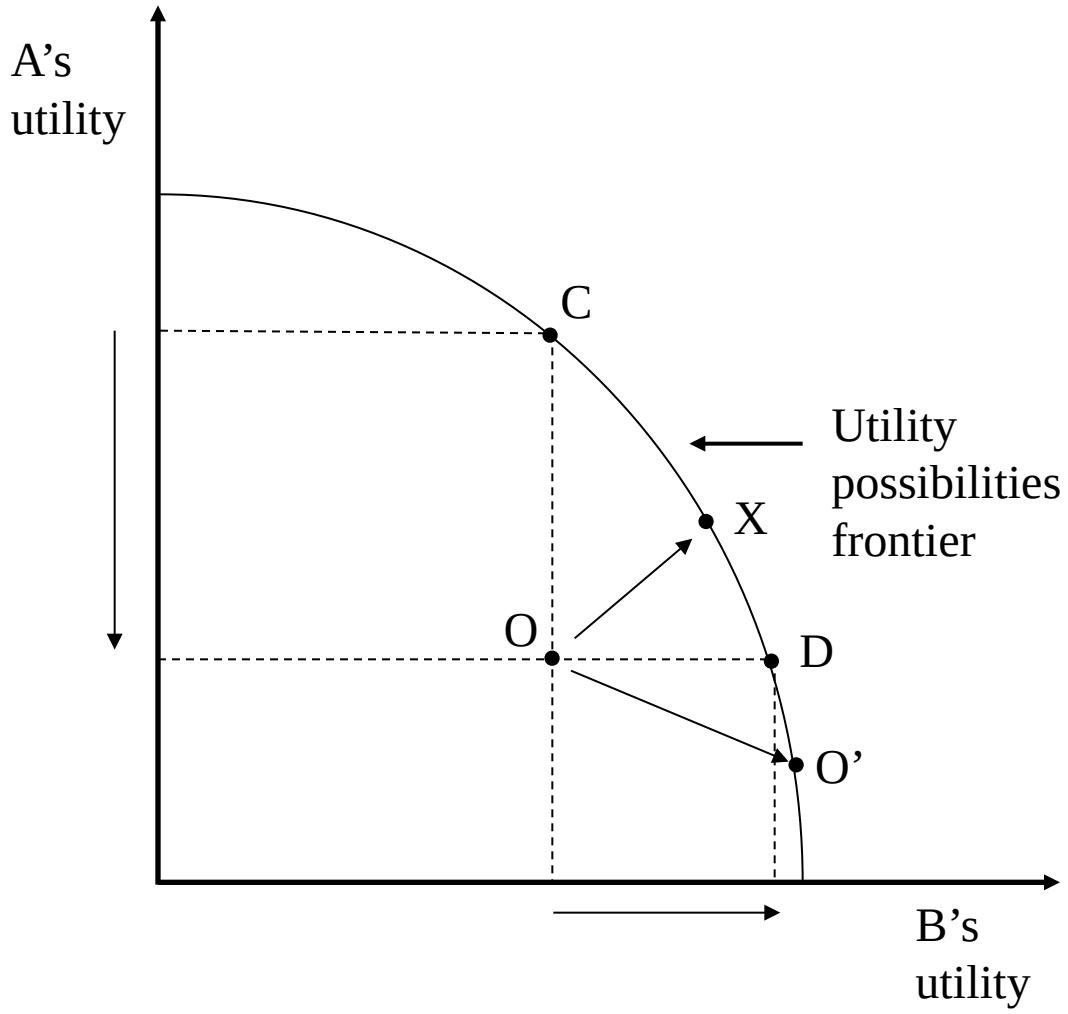

A's
utility
C
Utility
possibilities
frontier
X
O
D
O'
B's
utility

Figure 4

Paretian welfare economics (IX)

- We can think of three main types of policy changes:
  - Changes that represent a Pareto-improvement in the sense that, at least, someone is better-off and nobody else is worse-off (e.g., a movement from O to X). This type of policy changes are extremely rare.
  - Changes that imply movements along the UPF only have *distributional* implications since all points along a UPF are Pareto-efficient allocations of resources (e.g., a movement from C to D or from D to C). Changes in taxes that don't alter tax revenue or reallocations of financial resources across regions or geographical areas are usually of this kind.
  - Changes that have both *efficiency* and *distributional* implications. In a movement from O to O' there is an increase in economic efficiency and a distributional shift that makes 'A' worse-off and 'B' better-off. Most institutional changes are of this kind.

Paretian welfare economics (X)

- An implication of FFTWE is that the *final* distribution of goods among households is itself a function of the *initial* distribution of endowments of goods and/or production factors among them.

- One may alter the final distribution of income by *altering the initial distribution of endowments* without interfering further in the workings of a market economy. For instance, we may take the economy from point C to point D on UPF in Figure 4.

- Thus, the *Second Fundamental Theorem of Welfare Economics* (SFTWE) says that every possible Pareto-efficient allocation of resources can be obtained as a competitive general equilibrium given some initial distribution of endowments among agents.

Paretian welfare economics (XI)

- SFTWE says that no 'Pareto-optimal' outcome (including that preferred by the most egalitarian individual) is unattainable as a competitive equilibrium.

- Thus, concerns about social justice may not require interference with the workings of a market economy. It is sufficient to shift initial endowments *via* taxation or provision of public services.

- Last, the *Fundamental Theorems of Welfare Economics* suggest that 'perfect competition' is a normative benchmark that can be used for policy purposes; an 'ideal type' in Max Weber's sense that has *normative* status in the sense that it portrays a desirable 'state of affairs'.

Paretian welfare economics (XII)

- The usefulness of having a normative benchmark is that we can, in theory, increase social welfare by identifying *deviations* from the former and adopting public policy measures that make real economies get closer to it.

- But, even if such measures are not adopted, the mere existence of a normative benchmark may enable us to provide a *rationale* for potential 'Pareto-improving' policy changes.

- However, the identification of a social situation where there is a potential for a Pareto-improving public policy change *is never a sufficient condition for public intervention;* the latter may make matters worse. Judgement is always necessary.

Paretian welfare economics (XIII)

- **Questions for self-evaluation:**

1) Can we evaluate by means of the Pareto criterion policy changes in which some people become better-off and other people become worse-off? Why?

2) Does the Pareto criterion consider the *distributional* implications of policy changes? Why?

3) What is the significance for economic policy of the Fundamental Theorems of Welfare Economics?

4) Is interference in the allocation of resources generated by markets always justified whenever there is a 'market failure'? Why?

Government intervention (I)

- In Paretian welfare economics ‘perfect competition’ represents a *normative* benchmark that policy-makers can use to identify real-life situations where a Pareto-improving policy change is *a priori* possible.

- We do not seek to provide an exhaustive list of *deviations* from perfect–competition yet we may refer to the most relevant ones:
  - Natural monopolies
  - Monopolistic competition
  - Public goods
  - Externalities
  - Involuntary unemployment

Government intervention (II)

- A typical deviation from perfect-competition is the result of the presence of *increasing returns to scale* in some industries, i.e., total costs per unit of output produced decline with the scale of production.

- This is known as a 'natural monopoly' case: the firm that first reaches the *downward-sloping* section of its total average cost curve can reap the benefits of exploiting the economies of scale, lower prices more than their rivals can do, push them out of the market, and eventually become a monopoly.

- If *unregulated*, a monopoly will reduce output to attain a higher output price and obtain *higher profits* than would be possible were it to face competition.

Government intervention (III)

- Another common *deviation* from perfect-competition is known as ‘monopolistic competition’ or a type of industry where firms exhibit some degree of market power owing to their ability to *differentiate* their output and become ‘price-makers’.

- Monopolistic firms have incentives to *collude* with other rivals to reduce output, raise prices, and obtain extraordinary profits (e.g., OPEP cartel).

- For this reason, some economies have evolved *institutions* that monitor these industries to prevent them from colluding with other firms (i.e., anti-trust legislation).

Government intervention (IV)

- There are some goods which are either not supplied at all or are supplied in an *insufficient* amount (e.g., national defence, health care, education, etc.).

- Such goods are called *public goods* since, in sharp contrast to most private goods, they are *non-rivals* in consumption, that is, they can be consumed *simultaneously* by many people (e.g., a public park).

- If, in addition to being non-rival, nobody can be *excluded* from consuming a public good, that is, if it is non-excludable, we say that it is a *pure* public good (e.g., national defence, justice, security provided by the police force, etc.).

Government intervention (V)

- Another deviation from perfect-competition are *externalities* stemming from the fact that the market prices or private costs of some goods do not fully reflect the social costs or benefits of producing them.

- When the social cost of a transaction *exceeds* the private cost to the parties involved, we say that there is a *negative* externality (e.g., water or air pollution produced by a factory).

- To mitigate them policy-makers can *tax* the transaction so that the market price of the good that generates the externality reflects, partly or fully, its social cost.

Government intervention (VI)

- Likewise, when the social benefit associated to a transaction *exceeds* the private benefit to the parties involved, we say that there is a *positive* externality (e.g., public education and health care).

- The presence of a *positive* externality implies that the market produces an *insufficient* amount of a certain good and, hence, one possible way to mitigate this market failure is to *subsidize* its production to lower its market price or provide it directly *via* the public sector.

Government intervention (VII)

- A (massive) market failure is the presence of recurrent periods of *high unemployment* if, and only if, a significant proportion of it is *involuntary*.

- The recurrence of periods of high unemployment suggests that the labour market doesn't work like commodity markets in the sense of not being *self-stabilizing* or *self-adjusting* or attaining full employment automatically.

- For this reason, most economies have evolved institutions that aim at stabilizing aggregate output like discretionary *macro-economic policy* and fiscal *automatic stabilizers*.

Government intervention (VIII)

- To justify policy intervention, we need to identify situations in which at least someone can be made better off without making anyone else worse-off or, else, situations in which the increase in the welfare of would-be gainers will unambiguously *exceed* the decrease in would-be losers' welfare so that the former can, in principle, fully compensate the latter and still be better-off.

- The problem is that most real-world policy changes have both *efficiency* and *distributional* consequences. Even if everybody knows the potential efficiency gains, would-be 'gainers' may be unwilling to compensate would-be 'losers' and, hence, the latter may seek to block off policy changes that make them worse-off.

Government intervention (IX)

- Finally, in Paretian welfare economics it is often assumed that governments are benevolent, namely, that they act in a *neutral* or *aseptic* way.

- This may be a *wrong* premise in many real-life situations due to the presence of:
  - Pressure groups or lobbies that influence government decisions
  - Corrupt officials and policy-makers who take bribes from these groups

- A central premise of the *public choice* school in economics is that policy-makers seek to maximize the size of *their* agency (e.g., power) instead of finding the size that is best for society.

Government intervention (X)

- The presence of self-interested or corrupt policy-makers may drive a *wedge* between the *optimal policy* from a purely technical point of view and the one that is implemented.

- Thus, the existence of a variety of market failures does not necessarily imply that intervention is always desirable. It is desirable *only* if a market failure is thought to be *more damaging* than its associated government failure.

- That's why judgement is always necessary: a policy decision to intervene requires knowledge of the *specific* circumstances of each possible social situation.

Government intervention (XI)

- **Questions for self-evaluation:**

1) Why are monopolies and oligopolies a source of inefficiency and, hence, of decreases in social welfare?

2) Are public education and health care examples of public goods? Why?

3) Should governments *always* intervene when there is a market failure? Why?

4) What is the likely impact of the actions of pressure groups on the policy decisions made by governments? Why?

Failures of individual rationality (I)

- In the basic neoclassical model economic agents exhibit *perfect* foresight. However, the theory has been extended to situations of (quantifiable) risk and uncertainty, that is, social situations where individual actors exhibit *imperfect* knowledge about the outcomes of their actions.

- The standard approach to modeling such situations, known as 'subjective expected utility' (SEU) theory, is to treat actions as *gambles* with outcomes in the form of prizes and assume that the probabilities of the different outcomes consist of subjective 'degrees of belief'. Let us briefly illustrate SEU theory below.

Failures of individual rationality (II)

- In Figure 5 below we assume that an economic agent faces two options consisting of two actions. We assume that each option exhibits three *consequences* Cij where i = 1, 2, 3, and j = 1, 2 denotes the options.

- The utilities an agent assigns to Cij are denoted by Uij whereas Pij denotes the *subjective* numerical probabilities (i.e., 'degrees of belief') she assigns to the likelihood that Cij occurs.

- An agent assigns a *weighted* value to each of the two options that consists of the sum of the expected utilities for each Cij, that is, the utility Uij of Cij discounted by its probability Pij.

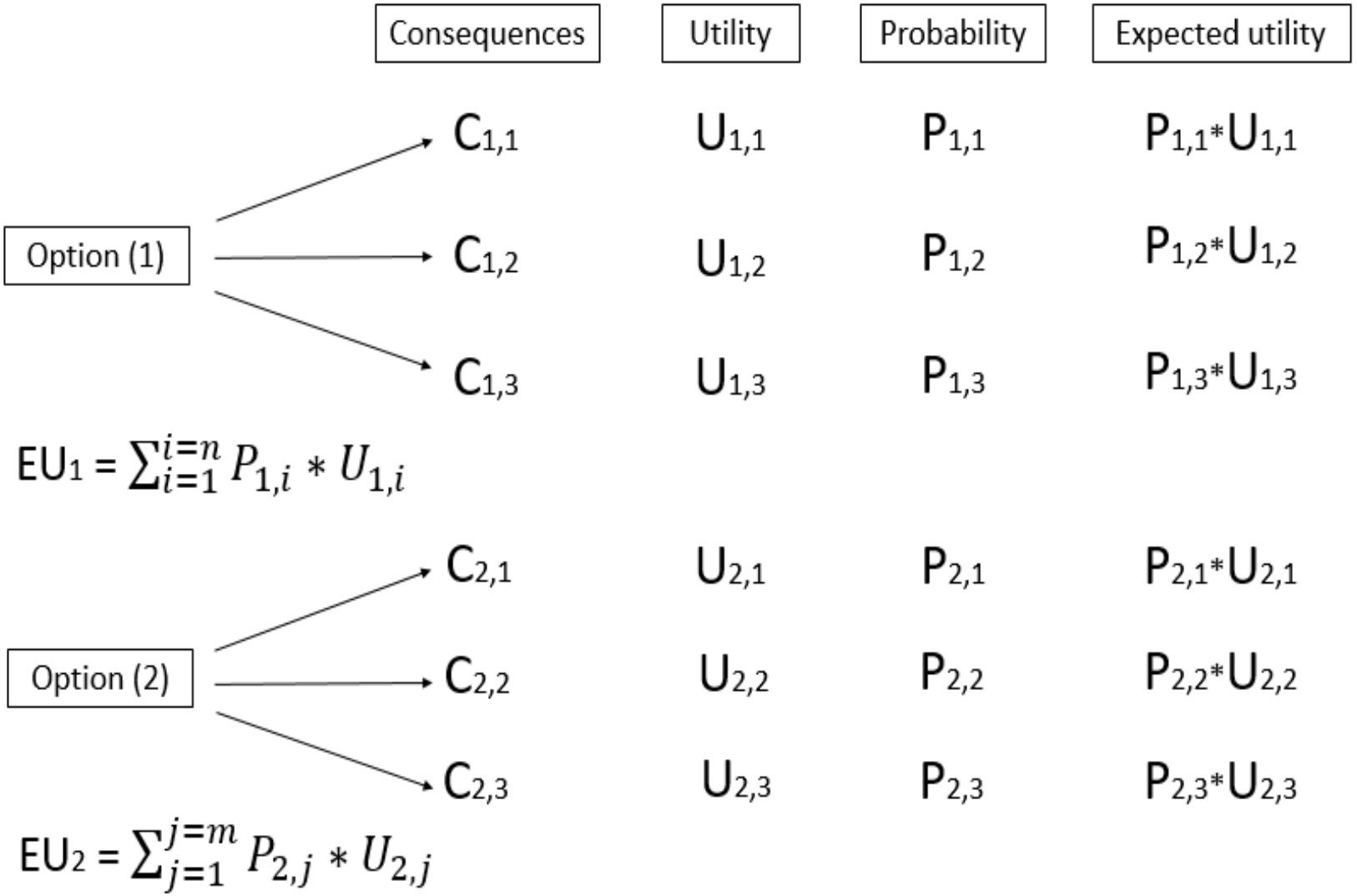

Consequences
Utility
Probability
Expected utility
Option (1)
C1,1
C1,2
C1,3
U1,1
U1,2
U1,3
P1,1
P1,2
P1,3
P1,1*U1,1
P1,2*U1,2
P1,3*U1,3
EU1 = ∑i=1i=n P1,i * U1,i
Option (2)
C2,1
C2,2
C2,3
U2,1
U2,2
U2,3
P2,1
P2,2
P2,3
P2,1*U2,1
P2,2*U2,2
P2,3*U2,3
EU2 = ∑j=1j=m P2,j * U2,j

Figure 5

Failures of individual rationality (III)

- The consequences of an action and the probabilities they occur are descriptive *beliefs* while utilities reflect actors' *preferences* among alternative desires or ends.

- The basis for choice is the *expected utility* rule also known as Bayes' rule. An agent chooses (1) if its expected utility exceeds the expected utility of (2), that is, if $EU_1 > EU_2$, and vice-versa.

- SEU theory relates individual choice to preferences by positing that an economic agent *never* prefers any feasible option to the one she chooses. In other words, SEU theory presupposes that agents are *utility-maximizers*.

Failures of individual rationality (IV)

- Mainstream economists interpret SEU theory as a *descriptive* or *explanatory* theory of human behavior as well as a *normative* theory of rationality. While the former purports to describe or explain how people act, the latter purports to show how people *should* act if they were 'rational'.

- In other words, they claim that SEU theory 'explains': (i) how people normally act, *and* (ii) how they should act.

- By contrast, 'modern' behavioral economists interpret it solely as a *normative* theory of rationality: they claim that SEU theory doesn't explain adequately how people normally act.

Failures of individual rationality (V)

- In what follows we restrict the discussion to the research denoted as 'Modern Behavioral Economics' (MBE) whose emergence is closely associated to the studies in Tversky & Kahneman (1974) and Kahneman & Tversky (1979).

- Advocates of MBE take SEU theory as the source of their 'null-hypotheses' and try to identify *systematic deviations* of actors' observed behavior from their *ideal* behavior associated to the normative benchmark represented by the former.

- Systematic deviations of observed behaviour from the type of behaviour predicted by SEU theory are treated as *anomalies.*

Failures of individual rationality (VI)

- After identifying (systematic) *deviations* of individual behavior from the pattern of behavior predicted by SEU theory, MBE theorists investigate how *psychology-based* theories can explain the anomalies, from the vantage of SEU theory, of individuals' observed behavior.

- The anomalies are observed patterns of behavior of individuals in lab experiments that *violate* the axioms of SEU theory.

- The central premise is that these anomalies are the consequence of agents' bounded rationality and bounded willpower.

Failures of individual rationality (VII)

- Individual behavior may systematically *deviate* from the type of behavior predicted by SEU theory for the following two reasons:

  – 'Bounded rationality' is the idea that people exhibit *cognitive limitations* that (i) impair their capacity to solve even simple analytical problems by using the rules of logic and probability, and (ii) have a limited or bounded capacity to collect, store, and process information.

  – 'Bounded willpower' is the idea that people's choices often do not seem to correspond to their *long-run interest* (e.g., addiction to alcohol or drugs, gambling).

Failures of individual rationality (VIII)

- For example, a common finding in lab experiments is that subjects often violate the 'conjunction rule' in statistical theory according to which the probability of an event A occurring cannot be less than the probability of A and another event B also occurring.

- To this, we may add that SEU theory presupposes that actors face situations of *quantifiable* risk or uncertainty which implies that:
  - They know all the consequences of every conceivable course of action, and
  - They can assign numerical probabilities to them.

- However, many of the situations we face in everyday life are ones in which uncertainty is *non-quantifiable* (e.g., likelihood of getting stuck in a traffic jam, purchase of certain investment goods).

Failures of individual rationality (IX)

- In such situations SEU theory cannot explain human behaviour yet this doesn't mean that human behaviour is irrational.

- Thus, the interpretation of SEU theory as a *descriptive* theory of human behaviour is problematic.

- For one thing, the lab experiments performed by cognitive psychologists reveal that people often *violate the rules of logic and probability* (i.e., rationality is bounded). For another, we know that willpower is also *bounded*: even if our decisions are correct, we may *fail* to carry them out because our will is too weak.

Failures of individual rationality (X)

- An example of the impact of bounded willpower on behavior is *addiction* to alcohol, drugs, and gambling. Even if an individual knows that smoking or taking drugs may seriously damage her health and think that she should give them up, *she may be unable to do so.*

- In fact, people often act in ways that may reduce their well-being even if they maximize expected utility as conventionally defined by economists. That is, choosing what we most prefer may sometimes run against our long-run interests.

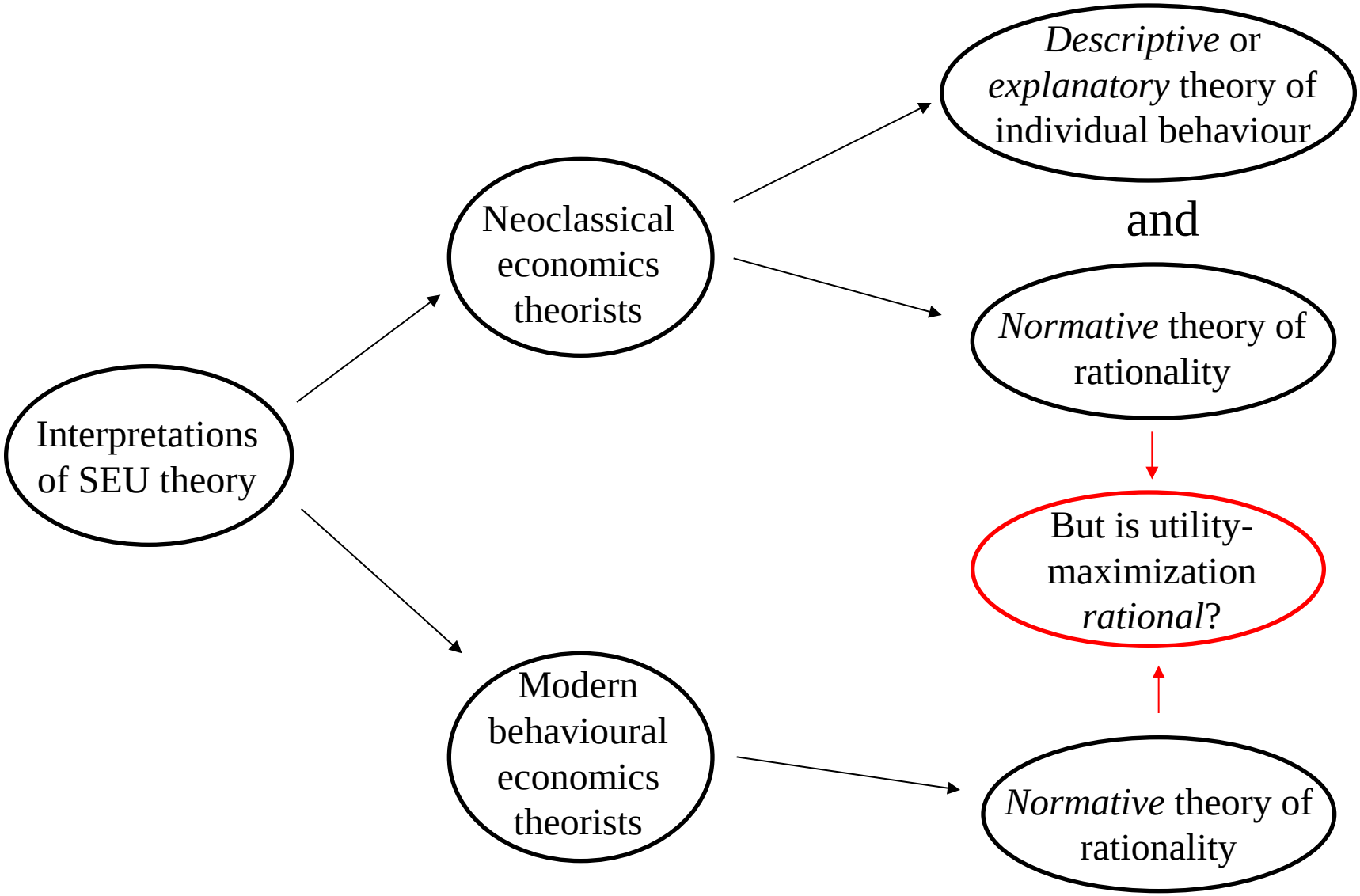
- In other words, as defined by economists, expected utility may not be highly correlated with one's good or well-being.

Failures of individual rationality (XI)

- That is, economists adopt the official definition of ‘utility’ as a person’s ranking of preferences whilst at the same time they use the same word to stand for a person’s good or well-being.

- Because an alternative preferred by a person is defined to have a higher utility for her, economists take it for granted that it must always be better for her; *they presuppose that a person always prefers what is better for her*.

- But this assumption may not be justified. A person may smoke or take drugs even though she knows that doing so may seriously damage her health. Thus, utility is not necessarily equivalent to a person’s good or well-being.


Interpretations of SEU theory
Neoclassical economics theorists
Modern behavioural economics theorists
Descriptive or *explanatory* theory of individual behaviour
and
Normative theory of rationality
But is utility-maximization *rational*?
Normative theory of rationality

Failures of individual rationality (XII)

- But then, maximizing utility understood as a person's ranking of preferences may not be rational. Rational behaviour appears to be behaviour that, at least, *increases a person's well-being*.

- To conclude, even if the notion of utility-maximization were a valid description or explanation of typical economic behaviour, as officially defined, utility-maximizing behaviour may, in some cases, turn out to be irrational.

- In chapter 2 we will argue that standard measures of well-being like *per capita* GDP (even if adjusted for the degree of inequality in income and wealth distribution) may not be a good proxy for living standards.

Failures of individual rationality (XIII)

- In ‘Paretian Welfare Economics’ (PWE) (discussed in previous sections) the focus is on observed *deviations* of real economies from a normative benchmark associated to perfect-competition.

- In such scenario, utility-maximization ensures that the resulting allocation of resources is *Pareto-optimal* provided the economy is perfectly-competitive.

- However, to the extent that all market participants are utility- (or profit-) *maximizers*, which is a core premise of the neoclassical approach, all that Paretian welfare economists can do is identify market failures and propose policies aimed at mitigating them.

Failures of individual rationality (XIV)

- PWE is based on the premise that *it is not possible for policy-makers to increase social welfare* other than by transforming market economies to make them closer to perfect-competition because, to the extent people are utility-maximizers, policy-makers cannot know better than people what is good for them.

- In contrast 'Behavioral Welfare Economics' (BWE) is premised on the notion that:
  - Economic agents may act against their long-run interests (e.g., addictive behaviour).
  - Policy-makers are *less likely* to violate the rules of logic and probability than ordinary people are, or may possess better information than they do and, hence, may know better than them what is in their long-run interest.

Failures of individual rationality (XV)

- These two premises lie at the core of the proposals formulated by welfare behavioural economists like ‘libertarian paternalism’ (Thaler and Sunstein, 2003) or ‘light paternalism’ (Loewenstein and Haisley, 2008).

- Building on vast amounts of research based on lab experiments, welfare behavioural economists maintain that they can devise *weakly paternalistic* policies that ‘steer’ individual behaviour in more self-interested directions minimizing *coercion*.

Failures of individual rationality (XVI)

- For instance, as Loewenstein & Haisley (2008, p. 212) explain, ‘paternalistic policies have the goal of benefiting people on an individual basis, premised on the idea that they cannot be relied upon to invariably pursue self-interest’.

- A ‘strong’ form of paternalistic public policy is one that makes use of *coercion* to force us to follow a certain course of action (e.g., prohibition of certain drugs, health and safety regulations, compulsory public pension schemes, etc.).

- By contrast, ‘weak’ forms of paternalistic public policies do not rely on coercion.

Failures of individual rationality (XVII)

- An example of a *weak* form of paternalism is planner's choice of a 'default' option that is known to affect *favorably* people's well-being in the long run like, for instance, a default pension scheme deemed appropriate by financial experts.

- As Thaler & Sunstein (2003, p. 176) explain, 'in a fully rational world such designed choices would have little effect (at least in high-stakes situations) because agents would choose the *best* option for them regardless of the default'

- However, studies show that there is a 'status quo' *bias;* people often stick to the *default arrangement* which may have dramatic long-run financial consequences for them.

Failures of individual rationality (XVIII)

- The observation that people often stick to the ‘default’ scheme suggests that most people are *not* fully aware of all the financial implications of choosing different types of scheme.

- This suggests that a *benevolent* social planner can, in principle, identify and select a ‘default’ option that is desirable for many people.

- Thus, social planners may use their alleged better knowledge of the features of different financial options to influence people’s behavior by setting up a ‘default’ option that is socially optimal.

Failures of individual rationality (XIX)

- Another example of *weakly* paternalistic policy is the massive vaccination of vulnerable social groups (e.g., children, elderly people). The reason is that people may not know which viruses are the deadliest or, else, may not afford to purchase vaccines.

- By identifying the deadliest viruses and encouraging members of vulnerable social groups to get vaccinated policy-makers can increase individual and social welfare.

- Thus, the main feature of 'weakly paternalistic' public policies is that people are *encouraged but not coerced into* following a course of action selected by policy-makers.

Failures of individual rationality (XX)

- **Questions for self-evaluation**

1) Is SEU theory an explanatory theory of rationality? Why?

2) What are, according to 'modern' behavioral economists, the main sources of violation of the assumptions of SEU theory?

3) What is the main difference between 'Paretian Welfare Economics' and Modern 'Behavioral Welfare Economics'? Why?

4) Why are compulsory public pension schemes a 'strong' form of paternalistic public policy?

Failures of collective rationality (I)

- The situations we discussed in the previous section stem from *failures of individual rationality*, namely, situations in which individual actors fail, for different reasons, to act adequately or appropriately to the problem-situation they face.

- Hereafter we assume that individual actors 'act adequately to the problem-situation they face *as they see it'* and identify situations where purposeful individual behaviour by a group of uncoordinated individuals may lead to a *sub-optimal* social outcome.

Failures of collective rationality (II)

- The natural framework to study these social situations is *Game Theory* (GT). We focus on the 2x2 (two actors and two options) case of three ‘non-cooperative’ games and use them to describe situations characterized by ‘coordination failures’, or *failures of collective rationality*.

- Situations in which there are recurrent coordination failures are ones in which public policy intervention may, in some cases, be justified.

Failures of collective rationality (III)

- Suboptimal social outcomes may consist of failure to provide a *public* good or failure to prevent the occurrence of a social bad (e.g., environmental disasters, financial crisis, etc.)

- The ‘coordination failure’ occurs because the members of the social group pursue their own goals and face insurmountable coordination costs. In other words, the members of the social group may have a strong incentive to ‘free-ride’.

- ‘Coordination failures’ are an important type of USR since the negative social consequences *are not intended* by the members of the relevant social group.

Failures of collective rationality (IV)

- The collective action problem of interest here arises mainly in connection with *non-excludable* public goods. If a good is *non-excludable* it is possible for an individual to 'free ride', namely, to benefit from whatever amount of it is provided by others *without* contributing to its provision.

- Now, if *every* member of a social group acts as a 'free rider' *the good will not be provided*. It is this strong temptation to 'free-ride' by most members of a social group that lies at the core of collective action problems.

Failures of collective rationality (V)

- The problem of public goods provision and collective action may be illustrated by the following game-theoretic models:
  - The ‘Prisoner’s Dilemma’ (PD) game
  - The ‘Chicken Game’ (CG), and
  - The ‘Assurance Game’ (AG) (also known as ‘Stag-Hunt Game’)
- These three ‘game-theoretic’ models are applicable to a broad class of social situations. The exposition focuses on the ‘two-actor-two-option’ (2x2) case.

Failures of collective rationality (VI)

- A key assumption of all game-theoretic models is that rationality is ‘common knowledge’ (Lewis, 1969): every actor knows that all other actors are rational, every actor also knows that every other actor knows that all other actors are rational, and so forth.

- The problems studied by GT are ones in which individual actors exhibit *strategic* rationality, namely, they consider other actors’ prospective behaviour when they make decisions. This stands in contrast, for instance, to the perfect-competition model in which firms exhibit *parametric* rationality (i.e., they take other firms’ behaviour as given).

Failures of collective rationality (VII)

- The PD game takes its name from a situation in which two individuals who have perpetrated a robbery are arrested and put in separate cells *with no interpersonal* communication.

- Each robber must decide whether he 'cooperates' with the other one (i.e., *not* confessing their participation in the event) or 'defects' (i.e., confessing their participation) in which case the one who confesses would get a milder prison sentence if the other robber does not confess, and vice-versa.

Note: In the pay-off matrix below the actual length of the prison sentence is *directly* related to the 'pay-off' indicated in the corresponding cell.

Failures of collective rationality (VIII)

- The (one-shot) 2x2 PD game is captured by the matrix below:

		Player 2	
		Cooperation	Defection
Player 1	Cooperation	2,2	4,1
	Defection	1,4	3,3

- The first entry in each cell of the matrix above is the payoff to player 1 whereas the second entry is player 2's 'payoff'.

- Clearly, *D* ('defection') dominates *C* ('cooperation') for each player. (*D, D)* is the *only equilibrium* (or Nash equilibrium) if players are rational. Yet *(D, D)* is a *Pareto-inferior* outcome since both players would prefer (C, C).

Failures of collective rationality (IX)

- In this example, player 1 prefers DC to CC, CC to DD, and DD to CD whereas player 2 prefers CD to CC, CC to DD, and DD to DC. *D* is the *dominant* strategy (Nash equilibrium, after John Nash) for every player since:
  - Each player prefers 'defection' if the other player 'defects' and
  - Each player also prefers 'defection' if the other player 'cooperates'.
- Thus, we have that:
  - Neither player finds it profitable to provide any amount of the public good (i.e., 'cooperation') by himself, and
  - *Uncoordinated* behaviour leads to a socially undesirable outcome since (D,D) implies that the joint prison sentence is 6 years whereas (C,C) implies that the joint prison sentence would be only 4 years.

Failures of collective rationality (X)

• PD game provides a *rationale* for government intervention in situations like ‘The Tragedy of the Commons’ (Hardin, 1968).

• The concept originated in an essay by W. Foster Lloyd in 1833 who uses the example of the effects of unregulated grazing on common land (i.e., the ‘Commons’) in Britain and Ireland in the 19th century.

• Lloyd (1833) describes the problem-situation of cattle herders who share a common parcel of land on which they are entitled to let their cows graze and shows that if a herder puts more than his allotted number of cattle on the ‘common’ land *overgrazing* results with the potential destruction of it.

Failures of collective rationality (XI)

• For each additional animal, a herder would receive additional material benefits while the group shared the resulting damage to the Commons. If all herders made this individually 'rational' decision the Commons would be depleted to the detriment of all herders. Thus, defection is the *dominant* strategy.

• The 'Tragedy of the Commons' may be represented by a PD game with *n* herders each of whom must decide whether to let their cows graze in the Commons.

• However, some commentators criticize the idea of representing situations like the 'Tragedy of the Commons' by a PD game and propose instead to represent it by the 'Chicken Game' (CG).

Failures of collective rationality (XII)

- They argue that the 'Tragedy of the Commons' and many social situations in which non-cooperation may have irreversible and dramatic social implications are better described by a CG.

- The principle of CG is that, while the ideal outcome is for each player to cooperate, individuals may prefer to 'free-ride'. Yet, if one of the players cooperates, conflict is averted and the game ends.

- CG has two 'Nash equilibria' where one player cooperates and the other defects. A Nash *equilibrium* denotes a situation where each actor's action is a best reaction to all other actors' actions so that everyone correctly anticipates everyone else's behaviour.

Failures of collective rationality (XIII)

• Thus, if each player can *profitably* provide some of the public good alone ('cooperate'), although *she would prefer not to do so if the other did*, the game becomes the 'Chicken Game' (CG):

		Player 2	
		Cooperation	Defection
Player 1	Cooperation	3,3	2,4
	Defection	4,2	1,1

• There are *two Nash equilibria* in which one player cooperates and the other defects. The ranking of choices for player 1 is: DC >CC, CC>CD, and CD>DD. The ranking of choices for player 2 is: CD>CC, CC>DC, and DC>DD.

Failures of collective rationality (XIV)

• Although combinations CD and DC (which add up to a total of 6 in the pay-off matrix above) are as socially desirable as CC (which also adds up to 6), they are not Nash equilibria because, in a *repeated* game each player has an incentive to defect if they expect the other player to cooperate and vice-versa.

• The existence of two *pure* or Nash equilibria in CG suggests that the social outcome (DC or CD) will depend on individuals' *expectations* about the behaviour of the other individual: player 1 defects if they expect player 2 to cooperate and vice-versa. The same is true for player 2.

Failures of collective rationality (XV)

• The name of this game is reminiscent of Nicholas Ray's 1955 classic film titled 'Rebel without a cause' starred by James Dean and Natalie Wood.

• In a scene of the film a group of Californian adolescents plays 'Chicken': a game whereby two cars, (James Dean is one of the drivers) head at full speed towards the edge of a cliff and try to jump out of the car before it falls down the cliff. The 'loser' of the game (i.e., the 'Chicken') is the one 'chickens out': the first who jumps out of the car.

Failures of collective rationality (XVI)

• In CG actors tend to act *contrary to what they expect others to do*. This pattern of behaviour may lead to the emergence of 'self-defeating expectations' (SDE).

• If expectations are *homogeneous* across a large group of actors and each actor acts *contrary* to what they expect other actors to do, expectations may be 'self-defeating' since the social outcome will be the *opposite* of what people *expected*.

• That is, if most actors *expect* most other actors to 'cooperate' then most of them will choose to 'defect' and vice-versa.

Failures of collective rationality (XVII)

- Let's consider the following example: traffic jams. If there are only two routes (A and B) to reach a certain destination starting from a specific location and drivers need to decide which route to take, the potential outcomes are:

  – Most drivers *expect* most other drivers to take route A and, hence, they will take route B instead to avoid traffic jams.

  – Most drivers *expect* most other drivers to take route B and, hence, they will take route A instead to avoid traffic jams.

  – Half the drivers *expect* most other drivers to take route A whereas the other half *expects* most other drivers to take route B

Failures of collective rationality (XVIII)

- In this example, the respective outcomes are:
  - Traffic jam in route B (i.e., self-defeating expectations)
  - Traffic jam in route A (i.e., self-defeating expectations)
  - No traffic jams if the two groups of drivers are of roughly similar size.

- Clearly, the first two outcomes are socially *undesirable* so there is room for a 'Pareto-improving' public intervention.

- In this example *moral* factors are irrelevant; the social outcome is determined only by expectations. However, in environmental degradation problems *moral* factors may play an important role since some individuals (e.g., activists) may sacrifice themselves to prevent the occurrence of environmental damage.

Failures of collective rationality (XIX)

• Last, if an individual contribution *is not enough to provide a public good, or if it provides too little of it*, each player may prefer *D*, if the other player chooses *D*, yet they may prefer to contribute if the other also contributes. Thus, we have a third game known as the 'Assurance Game' (AG) or 'Stag-Hunt Game':

		Player 2	
		Cooperation	Defection
Player 1	Cooperation	4,4	1,2
	Defection	2,1	3,3

• A repeated AG game has two Nash equilibria: one where both players cooperate and another in which both players defect. Player's 1 ranking is: CC > DD, DD > DC, and DC > CD. Player's 2 ranking is: CC > DD, DD > CD, and CD > DC. CC and DD are pure or Nash equilibria, yet *only equilibrium CC is socially optimal*.

Failures of collective rationality (XX)

• AG may shed light into a range of social phenomena including nuclear proliferation (NP), social norms, bank panics, and asset price bubbles. In the case of NP, we identify defection with a bad (i.e., develop nuclear bombs). Cooperation would imply that a country decides not to develop nuclear bombs.

• Now, if actors' expectations about other actors' behaviour are *homogeneous*, actors' pattern of behaviour in AG may result in the emergence of *self-fulfilling expectations* (SFE):

– If most actors *expect* most other actors to *cooperate*, they will choose to cooperate in which case widespread cooperation will result.

– If most actors *expect* most other actors to *defect*, they will also choose to defect in which case widespread defection will result thereby opening the possibility of adopting *Pareto-improving* public policies.

Failures of collective rationality (XXI)

• The case of SFE is best shown for the example of ‘bank runs’. These events may set off if rumours spread out about the alleged fragile *liquidity position* of a bank (Merton, 1948).

• As depositors rush to cash deposits, the liquidity position of the bank will deteriorate thereby helping to *fulfil* initial expectations and inducing further deposit withdrawals that tend to deteriorate the bank’s liquidity position even further and eventually make it illiquid and, possibly, bankrupt.

• The *instability* of commercial banking is the main reason most countries have evolved institutions like the ‘lender-of-last-resort’ facility of central banks and deposit insurance (i.e., ‘firewalls’).

Failures of collective rationality (XXII)

• Banks runs were immortalized in the scene of a bank run in a savings cooperative in a small US town the 1930s that appears in Frank Capra's classic movie 'It's a Wonderful Life' (1946).

• Asset price bubbles is another economic phenomenon based on SFE. These bubbles may cause financial crisis and recessions.

• Social phenomena associated to SFE are *intrinsically unstable* and, hence, may need to be *regulated* (e.g., financial regulation) to avoid undesirable social outcomes. SFE are an important type of positive or destabilizing feedback mechanisms as opposed to negative or stabilizing ones (e.g., price system, automatic pilot, thermostat, etc.)

Failures of collective rationality (XXIII)

- **Questions for self-evaluation**:

1) What is the significance of the assumption that rationality is ‘common knowledge’ in Game Theory?

2) What is the link between ‘coordination failures’ and the *unintended* social consequences of individual intentional behavior?

3) What is the difference between ‘parametric’ and ‘strategic’ rationality?

4) What is the most appropriate Game to account for social phenomena such as environmental degradation or climate change? Why?

5) What is the significance for economic policy of phenomena associated to self-fulfilling expectations? Why?