

# 1. MICROTHEORY OF PRIVATE RENT IN THE COMMERCIAL ECONOMY: MARKET POWER

## 1. INTRODUCTION TO RENT EXTRACTION

### Main sources for the subject

The main sources from which we derive motivation to investigate the subject are:

- Baran&Sweezy 1966, *Monopoly capital*
- Chomsky 2021, *The precipice*
- Mazzucato 2021, *Mission economy*.
- Olson 2000, *Power and prosperity*
- Stiglitz 2017, *Inequality and rents*
- Idem 2019, *Guardian* 30.5.19, interview on his book *People, power and profits. Progressive capitalism for an age of discontent*, 2019
- “La funzione fondamentale dello studioso di scienze sociali sta nell’individuare quelli che sono i problemi effettivamente rilevanti della società nella quale vive e del tempo nel quale vive. Senza questa capacità, la pura abilità analitica ha una scarsa importanza” (Sergio Steve, quoted by Antonio Pedone in the abstract of his contribution (“Sergio Steve e il ruolo dell’economista nelle società contemporanee”) to the book Gorini-Longobardi-Vitaletti (a cura di) (2018), *Economia, politica e cultura nell'Italia del XX secolo. Attualità del pensiero critico di Sergio Steve*, Milano, Franco Angeli, p. 30.

### Nature of collective action/cooperation

*Collective action* is Olson’s term of choice for *cooperation*. The alternative *modalities of coordinating individual actions* in the pursuit of economic interests are the **conflictual one of the distributional struggle of the market (exchange)** and the **cooperative one of collective action**. When the interests are of the **rival type** both modalities are feasible, while when they are of the **common (shared) non-rival type** cooperation is by definition the only feasible one because the benefits are not subject to distribution. This does not mean that in this area there is no distributional struggle. There is, indeed, but since it cannot concern the distribution of goods, it can only concern the **distribution of the cost shares**, and the **amounts of the common goods**, as we will see shortly.

While the market modality is *free* by definition because agents are free to buy and sell whatever, and as much as, they want, cooperation may be free or *enforced* by authority.

In so far as agents are - to some extent - coordinating their actions *on a permanent basis* we shall say that they form a *group/community*.

### Private versus public groups/communities

A *group/community* can be viewed as *private* or *public*, depending on the nature of the interests binding its members:

- It is **private**, when these interests are of the *commercial-rival* type, or also of the *common* type, but *shared* on the basis of some *private affinity*, such as job/profession/business/trade, tastes, special preferences, special needs, social class (see here Judt’s concept of ‘gated communities’). We consider the goods/services satisfying these interests, even when common, to belong to the commercial economy, and therefore to **private wealth**, which we will generally denote by **Q**.
- It is **Public**, when the interests are of the *common non-rival* type, and *shared* on account of the members’ status/capacity as *citizens* of a *political community/polity*. We consider the goods/services satisfying these interests to belong to **public wealth**, which we will generally denote by **G**.

## Free versus enforced cooperation. Wealth creation versus wealth redistribution

*Cooperation* within a group may be implemented:

- through **free coordination** of individuals acting in conditions of full freedom of action,
- through the transformation of the group into a **stable organization**, endowed with some kind of *hierarchical power* structure and *binding behavioural rules* requiring people to act in accordance to the group's objectives, as in the case of firms, cartels, business and labour unions, private institutions and associations, etc.
- through **public coercive coordination**, as in the case of all types of **political communities** endowed with the **coercive power of government** (of all levels, local, regional/state, national/federal, supranational) to convert cooperation from a *free individual choice* into a **public obligation**. A useful beginning reference to the *economics of government* is Stiglitz & others 1989. But the subject of the meaning and role of the state and government power in human society is a complex and wide-ranging one, investigated by political thinkers ever since antiquity. A general in-depth discussion is found in Bourdieu's treatise (1992).

Cooperation may then be aimed at:

- the **creation** of private or public wealth.
- the **extraction/redistribution** of already created private or public wealth, between individuals or groups.

## The weakness of the incentives to free cooperation

In general, the evidence suggests that in both areas of rival and common interests the **incentives to freely cooperate** are weak while **those to engage in the distributional conflict** are much stronger, and so are those **to form well-organized groups to increase the power of rent/exploitation**. As a consequence, implementing **cooperation for wealth creation** requires in general the establishment of an *organization* endowed with the *power to impose behavioural rules* to individual agents.

In this and other subsequent Chapters we shall use the **diagrammatic methodology** to investigate the **reasons for the weakness of the incentives to free cooperation**:

- 1) In the present Chapter (on *private rent in the commercial economy*) the analysis is restricted to the area of rival interests.
- 2) In Chapters 2 (on *private rent in the public economy*) and 6 (on *the Nash-Lindahl theory*) the analysis applies to the area of common interests.
- 3) In Chapter 4 (on *elementary games*) the logic of the Prisoners' game entails no distinction between rival and common interests.

## The fundamental theorem of rent/exploitation

In the most general terms **rent extraction** is defined as a behaviour by which **an agent** or a **group of agents (collective action)** increase their **wealth/welfare** (income/benefits), **WW**, no matter whether commercial (rival) or public, not by *creating* it, but by *redistributing* it, i.e. by taking it away from others. Thus the theory of rent is closely associated to the distinction between *economic activities which create (additional) wealth* and those *which only redistribute elsewhere created wealth*. To make this point as clear as possible we remind the reader that one of the most widely practiced purely redistributive activity is *financial speculation*, whose quintessential instance is the so-called **Ponzi scheme/game** (Reich 2022).

There is a branch of economics containing a sort of *theoretical result* that we may call the **fundamental theorem of rent, FTR**. In short this can be formulated as follows: the act of extracting rent from the economy on the part of an agent or group of agents, is characterized by *three general features*: 1) extra WW maximization, 2) WW redistribution, 3) social loss:

1. If an agent is in a position to extract rent, then, by definition, he will extract it *up to the point where his extra WW is maximized*. This follows from the standard economic-behavioural

assumption of *WW maximization*, whereby the amount of extra WW gained by a rent-extracting agent is determined by the general principle of **maximizing behaviour**, aka (also known as) **marginalism**.

2. Rent extraction causes a **redistribution** of WW (wealth/welfare) between agents, *relative to what it would have been in the absence of rent power*, and the amount of WW gained by the rent-extracting agents is *less* than the corresponding amount of WW *lost* by those suffering that rent-extraction.
3. The excess of the losses suffered over the benefits gained is the **social welfare loss**, **SWL**, caused by rent extraction.

### **Market failures, market power, externalities, rent**

*Market failures* are a particular aspect of the *commercial economy of the market*. They exist whenever market transactions and incentives drive towards *non-Paretian allocations*. They come in different types:

- **Market power**. This exists whenever one agent or group is a **price maker** instead of a **price taker**.
- **Externalities**. These are *divergencies* between *private and social benefits* and/or *costs intrinsically associated with market transactions*. If they exist, they yield non-Paretian equilibrium allocations even in an economy with zero market power = universal price-taking.
- **Rent**. This exists when *an agent or group is in a position to acquire benefits at the expense of some other agent or group*.

These different types of market failures, though related to each other, must be understood as *distinct social phenomena*. However, *market power* and the exploitation of *uncompensated negative externalities* are widely viewed as the two most important forms of *rent extraction* (**Stiglitz 2012**), because in both some agents extract benefits at the expense of others, even if rent extraction through uncompensated externalities does not depend on market power.

### **Private rent 1: rent extraction by private agents in the commercial economy**

Rent extraction by *private agents* in the *commercial economy* comes primarily from the two sources of 1) *market power* and 2) the exploitation of *uncompensated negative externalities*. Such means of rent extraction may be enhanced via the collective action of so-called **special interests** or **pressure groups**. These are **well-organized groups of private agents**, acting collectively in order 1) to directly increase their market power, 2) to obtain **government protection against potential competitors**, or **legal allowance** or implicit tolerance to make profits out of negative externalities inflicted onto others, 3) to obtain **other private ‘commercial’ benefits** derived from government policies, interventions and expenditure programmes.

### **Private rent 2: rent extraction by private agents in the public economy**

Private agents can extract rent not only in the area of the **private ‘commercial’ economy of rival interests**, but also in the area of the **public ‘non-commercial’ economy of shared public interests**, where they act not in their capacity as ‘traders’, i.e. as *buyers* and *sellers*, but in their capacity as **taxpayers** and **voters**. They may do so by acting individually, but more frequently by **acting collectively** in order to increase their rent power, becoming **special interests** or **pressure groups** (see above) endowed with the *power to distort government policies*, in particular public interventions of various types (including legislation), and tax and expenditure programmes in order 1) to modify *public wealth creation* to *their own* advantage at the expense of *other* groups, and 2) to modify *their cost share* in public expenditures. The most typical and significant instances of such

rent extraction are found in the area of taxation, where individual taxpayers and groups of taxpayers may obtain **privileged tax treatment**, or implement **tax evasion**, **tax elusion** and **aggressive tax planning**, at the expense of other taxpayers. This type of private power to extract rent in the public economy in the conventional scenario of **government-enforced political cooperation** is analysed graphically in **Chapter 2** (on *the microtheory of private rent in the public economy*).

But it may also take place in the **Lindahl scenario** of the **provision of public goods under conditions of pure free cooperation**, by assuming that certain agents or groups have the power to impose onto other agents or groups different cost shares from those that would prevail in the absence of such power. This particular type of private rent power in the public economy is briefly analysed in **Chapter 6** (on *the Nash-Lindahl theory*).

### **Private rent 3: organized crime**

In the real economy a large chunk of rent is extracted via **illegal/criminal behaviour**, such as cheating, corruption, and especially **organized crime**. This topic lies outside the programme of this course and is dealt with specifically in a specialized branch of the literature. There are however two points worth mentioning here:

- In real economies the separation line between the **legal** and the **criminal business worlds** is far from neatly identifiable and observable. The two are *very difficult to disentangle*, both by government branches in charge of fighting illegal/criminal businesses, such as the judiciary and the tax police (in Italy the *Guardia di finanza*), and by researchers engaged in investigating its size and interaction with the legal business world.
- There is overabundant evidence that the **size of the illegal/criminal economy is exceptional**, exceeding by far the legal one in many countries and sectors.
- **illegal/criminal businesses fall squarely within the province of rent extraction**, because all its dealings are conducted under power relationships much stronger than the simple price making power in the legal economy (actual and threatened physical violence, threats, blackmails, extortions, etc.).

### **Public rent: rent extraction by public agents**

Private and public agents possess different types of rent power. This suggests a distinction between private and public rent:

- we shall speak of **private rent** when the rent extracting agents are **private**, such as *individuals, companies, cartels*, etc.,  
and
- of **public rent** when the rent extracting agents are **public**, such as all types of *governments* and *public institutions* carrying government power.

Public agents have *uniquely powerful means for rent extraction* which - by definition - are not available (at least directly) to private agents: foremost among such means is the **power to tax**, but government power reaches well beyond taxation to include the more general **power of making and enforcing laws** (taxes are established by law). What is known in the literature with the vaguely neutral term of **excess tax burden** is in fact under all respects a *typical type of public rent*, where

- the government gains an extra WW (**tax revenue**) which is subtracted from taxpayers through the exercise of its *power to tax*
- the **government's gain** is in general *less* than the **taxpayers' loss**, except in the case of lump-sum taxes
- the excess of the latter over the former is equal to the SWL (social welfare loss) caused by taxation (= **excess tax burden**).

## **2. PRIVATE RENT IN EXCHANGE**

In studying private rent extraction in the market, we first consider the simplest scenario of a **pure exchange economy** where *output is fixed*, and then go over to a **production economy** where *output is variable*. Our analysis is conducted entirely in graphical terms. Formal mathematical treatments of the subject can of course be found in the literature, but the graphical presentation is more than sufficient for an understanding of the basic issues. We start with the competitive equilibrium where all agents are price takers, and then introduce price-making into the picture.

## No rent: price-taking equilibrium

**F1.1** is the standard elementary tool for understanding and distinguishing the concepts of *efficiency* and *equilibrium* in a pure exchange economy.

**Output mix.** The output mix  $(\bar{X}, \bar{Y})$  is given. The area of the box is the set of all possible distributions (allocations) of the given output mix among the two agents  $A$  (blue) and  $B$  (red).

**Initial endowment.** Point  $P0$  is the initial endowment of the two agents. A straight line through  $P0$  is a budget line for the two. Its slope is the **(relative) price**  $p_X$  of  $X$  in units of  $Y$ . A clockwise rotation of the budget line, pivoting around  $P0$  means an increase in  $p_X$ .

**Contract curve.** The thick black line is the contract curve of all tangency points between the indifference curves of  $A$  and  $B$ . It is the set of all **Pareto efficient distributions/allocations**.

**A perfectly competitive market.** The perfectly competitive market is mimicked by the assumption of the (Marshallian) **auctioneer**. He starts at the initial endowment, by announcing an arbitrary price. This means a certain **budget line** going through  $P0$ . If the tangency points of the two indifference curves of  $A$  and  $B$  with the budget line coincide, the **excess demand** of  $X$  is zero (and so by complement is also zero the excess supply of  $Y$ ). This single point,  $PC$  (which stands for *competitive price*) in the Figure, lies by construction on the contract curve. If the tangency points don't coincide there is a positive/negative excess demand of  $X$ . If the excess demand for  $X$  is negative (a positive excess supply) the auctioneer decreases the price  $p_X$ , the budget line rotates anticlockwise until the (positive) excess supply vanishes at point  $PC$ . The opposite if the excess demand for  $X$  were positive (negative excess supply). Point  $PC$  is the *competitive allocation (distribution)* of this exchange economy, if the agents start at  $P0$ .

## Rent: price-making and the distributional conflict

The role of the auctioneer is to put both agents in the condition of **price takers**, as if there were a *perfectly competitive market*. But if in this exchange economy we allow agents to become price makers *there would no longer be the need of an auctioneer*. The price will be fixed not by some *exogenous agent* placed outside the economy, but by one or both of the economy's *trading agents*.

In the commercial economy of exchange, the agents are either *buyers* or *sellers*, and by definition, if prices do not fall from heaven the buyer wants to *buy at a low price*, while the seller wants to *sell at a high price*. It follows that the *distributional conflict* becomes an *endemic feature of the commercial economy*.

There are two possible scenarios: 1) one agent is price maker, the other is price taker, 2) both agents price makers.

## Unilateral price-making

Suppose agent  $A$  (blue) is the **price maker**, i.e. the one who has the market power to fix the price of  $X$  (the (relative) price of  $X$  is the only price in this economy) while agent  $B$  (red) remains a **price taker**. We start at  $P0$ , with such a low price of  $X$  that  $B$ , who has much  $X$  and little  $Y$ , doesn't want to sell any of it and is happy in his original position at  $P0$ . We see in the Figure that the budget line

must be the very flat one, tangent to  $B$ 's indifference curve  $IB0$ . We also see that at  $P0$   $A$ 's indifference curve is  $IA0$ . Since  $A$  is the price maker we ask: what price is he going to fix? The answer is: he will fix the price that maximizes his welfare in the given situation. And what will this price be? To answer the question, we construct what is known as  **$B$ 's offer curve of  $X$** , the *dark red curve* in the Figure. With such a low price of  $X$  the price maker  $A$  (who starts with much  $Y$  and little  $X$ ) wants to buy some of it, but  $B$ 's supply of it is zero.  $A$  sees that if he increases the price of  $X$  (a small downward rotation of the budget line) then  $B$  does put some of it on offer, and the exchange increases the welfare of both. The dark red curve shows the successive tangency points between the downward rotated budget line and  $B$ 's indifference curves. The Figure shows that  $A$  will increase the price of  $X$  until he reaches his highest indifference - the *thick blue indifference curve  $IA_{max}$*  - compatible with  $B$ 's offer curve, at point  $PMA$  (which stands for *price maker A*), subject to the constraint that he can't force  $B$  to sell anything, but only to accept his price, because this is the strict meaning of market power: only the power to fix prices, no power to force people to do or not do something! Since by further increasing the price the change in  $B$ 's offer of  $X$  would cause  $A$  to suffer a welfare loss, this is the new equilibrium allocation. We denote the price of  $X$  at point  $PMA$  by  $p_x \text{ min}$  because  $A$  is a *buyer* of  $X$ , and  $p_x \text{ min}$  is the 'lowest' price of  $X$  compatible with his welfare maximization.

Assuming  $B$  to be the *price maker* and  $A$  to be the *price taker*, and repeating the same reasoning of before, we construct the *dark blue curve* known as  **$A$ 's offer curve of  $Y$** , and see that the new equilibrium allocation would be at point  $PMB$  (*price maker B*). We denote the price of  $X$  at point  $PMA$  by  $p_x \text{ max}$  because  $B$  is a *seller* of  $X$ , and  $p_x \text{ max}$  is the 'highest' price of  $X$  compatible with his welfare maximization.

Comparing the new equilibrium allocation  $PMA$  with the competitive (efficient) equilibrium allocation  $PC$  we see that  $A$ 's welfare has *increased*,  $B$ 's welfare has *decreased*, and there is a *social welfare loss* because point  $PMA$  is off the contract curve. In other words, at  $PMA$   $A$  acquires an **extra rent (surplus)** for himself at the expense of a **loss** inflicted on  $B$ , relative to the competitive rent (surplus) both agents would have obtained at  $PC$ , and this **redistribution** causes a **social welfare loss**. The same happens with the new equilibrium  $PMB$  when the price maker is agent  $B$ .

**Price discrimination.** If agent  $A$ 's market power were such as to make him capable of applying a full price discrimination to agent  $B$ , then the new equilibrium would change to  $P3$ , where  $A$ 's welfare increases further at a further expense of  $B$ 's welfare (which would remain unchanged at its  $P0$  level). If the price maker were  $B$  the corresponding point would be  $P5$ . In the case of perfect price discrimination one would extract from the other his full rent. Such *maximum rent extraction* would then cause a *maximum of redistribution from one to the other and no social loss*. However, full price discrimination means charging continuously different prices to the same agent, which is practically impossible (indeed meaningless). The only price discrimination that can be applied in actual markets consists in *charging different prices to different categories of agents*, which is feasible only when *arbitrage between them is impossible*.

**Generalizing to any number of agents and goods.** Increasing the number of agents and/or of goods entails no loss of generality. *All results of this graphic exercise hold in the more general settings.*

## Bilateral price-making

What happens if **both agents are price makers**? They would then face two alternative strategies. They may choose to engage in a **distributional conflict**, each one trying to extract some gain at the expense of the other, or instead to **cooperate** for the creation of additional WW. Suppose they choose a 'conflictual' behaviour, because each one believes that he can get more via conflict than what he could get via cooperation. We may represent this by movements along the *thick black line* (drawn straight for simplicity) linking  $PMB$  to  $PMA$ . The new equilibrium would be closer to one or other of the two points depending on the respective power of rent extraction. We can see that



whatever equilibrium quantities were exchanged along the black line, they would *always be suboptimal allocations*.

But we see that, starting from any such ‘conflictual’ equilibrium on the black line, the two agents could ‘convert’ from conflict to *WW* creating cooperation, and increase the welfare of both by moving towards the contract curve. For example, starting at *PMA* they could do so by *changing the price* at which they exchange the *additional* quantities of *Y* for *X* until they reach the point of mutual tangency on the contract curve, as shown in the Figure. Similarly, if they started at point *PI* they could improve their welfare by moving to point *PC* simply by increasing the quantities exchanged, with *no price changes*.

### Universal price taking versus distributional conflict

Combining the *two market power scenarios* (unilateral or bilateral/multilateral market power) with the *universal price taking scenario* (competitive equilibrium) highlights a *fundamental aspect of the capitalist commercial economy*, currently emphasized by distinguished contemporary social students, such as, among others, **Olson (2000)**, **Stiglitz (2017, 2019)**, **Chomsky & Waterstone (2021)**: the *wealth (and welfare) distribution* among individuals and groups is governed not by *completion* but by *price-making*. Therefore:

1) *Market power* and the *distributional conflict* are inseparably connected: the distributional conflict exists *if and only if* there is uni- or multi-lateral market power,

2) In a pure imaginary world of *universal price taking* (= all prices of rival goods fall from heaven) there is *no distributional conflict*: the only thing agents can do is to adjust their individual demand/supply behaviour to the given prices.

## 3. COMPETITIVE RENT/SURPLUS AND THE BENEFIT OF TRADING

### Competitive rent versus extra rent

When studying the social fact of rent extraction we must distinguish between **competitive rent (surplus)** on one side, and **extra rent (extra surplus)** obtained through *rent extraction* on the other. **F1.2** is the *standard elementary tool* (drawn for simplicity with linear schedules) for understanding the concept of **competitive rent/surplus**. On the horizontal axis is the amount of good *X*, on the vertical axis is its price. The *blue decreasing line* is the buyer’s (consumer or producer) **demand schedule** for *X*, the *red increasing line* is the seller’s (consumer or producer) **supply schedule** of *X*. At each level of *X*, the height of the demand schedule is the buyer’s **marginal benefit** derived from *X*, and that of the supply schedule is the seller’s **marginal cost** sustained for supplying *X*. The area under the blue line from *O* to *X* is the **total benefit**, and that under the red line is the **total cost**. At the **competitive equilibrium** (*XC*, *pc*) the buyer gets a total benefit equal to the area under the blue line while paying an amount equal to the black rectangle. The excess of his total benefit over his total payment, the **blue triangle**, is the **buyer’s competitive rent/surplus**. Similarly, the seller pays a total cost equal to the area under the increasing red line while receiving a total payment equal to the black rectangle. The excess of his total receipts over his total cost, the **red triangle**, is the **seller’s competitive rent/surplus**.

When we say that an agent or group extracts rent from others we refer to the fact that they increase their competitive rent at the expense of the others’ competitive rent of others, and therefore speak of the acquisition of an **extra rent/benefit\***.

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\* In the **APPENDIX 1.A** of this Chapter we present in more detail the concepts of *Marginal* and *Total willingness to pay*, and of *Ordinary* and *Compensated demand* and *supply*.

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### The social benefit of trading

Even in its abstract simplicity, the notion of competitive rent shown in **F1.2** may contribute to our understanding of the **powerful drive towards trading**, which has always been one of the driving forces of development in the world economy: even in the purely imaginary world of universal price-taking and no exploitation, people would keep trading because they derive benefit from it.

### 3. PRIVATE RENT IN PRODUCTION AND BILATERAL MONOPOLY

#### Monopolistic buyer (monopsonist)

**F1.3** is the *standard textbook tool* for understanding the behaviour of a *monopolistic buyer* (*monopsonist*). Consider a market of a good/service  $X$ , produced by firms (producers) who sell it to firms (producers) who use it as an input for producing some output  $Q$ , which we use as the **numeraire** in our Figures. More generally, nothing really changes if we assume  $X$  to be a particular type of *labour* sold by *individuals*, or a particular *final (consumption) good* bought not by producers but by *consumers*.

We assume that in the market for  $X$  there are a *single buyer* who is a *price maker*, and *many sellers* who are *price takers*. The buyer's **demand curve** for  $X$  is the *thick blue line*  $D(X) = MPP(X) = AR(X)$ , representing the **marginal physical product** of  $X$  used by the buyer as an input for the production of  $Q$  (for the sake of accuracy we remind that we are assuming the single buyer to be a price taker in the market of  $Q$ ). Looked at from the point of view of the sellers, this demand curve is also the **average revenue curve**  $AR(X)$  because it is the unit price of  $X$  received by them. The **supply curve** of  $X$  by the sellers is the *thin red line*  $S(X) = MC(X) = AE(X)$ , to be interpreted as the **marginal cost** of producing  $X$ . Since it is the unit price of  $X$  paid by the buyer it is also the buyer's **average expenditure** curve. The total expenditure sustained by the firm for buying  $X$  is  $TE(X) = AE(X)X$ , and the **marginal expenditure** is the *thick red line*  $TE'(X) = ME(X)$ . The simple linear expressions are:

$$\begin{aligned} D(X) &= A - BX \\ S(X) &= AE(X) = a + bX \\ 1.1 \quad TE(X) &= (a + bX)X = aX + bX^2 \\ ME(X) &= TE'(X) = a + 2bX \\ D(X) &= ME(X) \rightarrow XB \end{aligned}$$

If both buyer and sellers were price takers the *competitive equilibrium* would be at point **CE** in the Figure, where  $D(X)$  and  $S(X)$  intersect, with quantity-price combination  $(XC, p_c)$  ( $E$  stands for *equilibrium* and  $C$  and  $c$  stand for *competitive*). The triangle area **P2-CE- $p_c$**  would be the **buyer's competitive surplus**, and the triangle area  $p_c$ -**CE-P7** the **sellers' competitive surplus**, respectively.

But here we assume the *buyer to be a price maker* and the *sellers to be price takers*. The **monopolistic buyer's equilibrium** changes from **CE** to the intersection **P3-MB** between  $D(X)$  and  $ME(X)$ , drawn as the *thick blue* and *red lines*, with quantity-price combination  $(XB, p_b)$ , where the new surplus of the buyer is *maximized* (**MB** stands for *monopolistic buyer* and  $p_b$  for the price of  $X$  paid by the monopolistic buyer). The quantity exchanged decreases by  $XC \rightarrow XB$  (where  $B$  stands for *buyer*), and the price paid by the price maker buyer to the price takers sellers decreases by  $p_c \rightarrow p_b$  (point **MB** on the  $S(X)$  curve). It is trivial to check that this change from the competitive to the monopolistic buyer's equilibrium allocation follows *pari passu* the FTR:

1) It increases the surplus of the buyer by an amount (extra surplus) equal to the **blue area**. The buyer's surplus is obtained by integrating the difference  $D(X)$  minus  $ME(X)$ . Then we see that the movement from **CE** to **P3** yields the **maximum surplus** equal to  $(E+G+H)$ . Finally, we see that  $(E+G+H) = (E+C+F)$  (the competitive surplus) +  $D$ , because  $D = (G+H) - (F+C)$ .

2) It decreases the surplus of the sellers by an amount (the sellers' loss) equal to the **red area**.



3) It causes a social loss (efficiency loss) equal to the **orange area**, which is equal to the *excess of the red area over the blue area*. Taking the coloured areas, we see that the buyer's extra surplus caused by **CE→P3** (the blue area) is also measured by the difference  $(G+A - C)$ , so that  $(G+A + B)$  (the sellers' loss) minus  $(G+A - C)$  (the buyer's extra gain) =  $(B + C)$  (the social loss).

The change **CE→P3** entails the three effects of rent extraction defined by the FTR: surplus maximization, wealth redistribution, social loss.

### Monopolistic seller (monopolist)

**F1.4** is the *standard textbook tool* for understanding the behaviour of a *monopolistic seller* (monopolist). Assume a *single seller*, of  $X$ , who is a *price maker*, and *many buyers* of  $X$ , who are *price takers*. The seller's **supply curve** of  $X$  is the *thick red line*  $S(X) = MC(X) = AE(X)$ , while the buyers' **demand curve** for  $X$  is the *thin blue line*  $D(X) = MPP(X) = AR(X)$ . The total revenue received by the seller for selling  $X$  is  $TR(X) = AR(X)X$ , and the **marginal revenue** is the *thick blue line*  $TR'(X) = MR(X)$ . The simple linear expressions are

$$\begin{aligned} S(X) &= a + bX \\ D(X) &= AR(X) = A - BX \\ 1.2 \quad TR(X) &= (A - BX)X = AX - BX^2 \\ MR(X) &= TR'(X) = A - 2BX \\ S(X) &= MR(X) \rightarrow XS \end{aligned}$$

If both sellers and buyers were price takers the *competitive equilibrium* would again be at point **CE** in the Figure, where  $D(X)$  and  $S(X)$  intersect, with quantity-price combination  $(XC, p_c)$ , with the two triangle areas already described being the seller's and the buyers' competitive surpluses, respectively.

But here we assume the *buyers to be price takers* and the *seller to be a price maker*. The **monopolistic seller's equilibrium** changes from **CE** to the intersection **P5 (MS)** between  $MR(X)$  and  $S(X)$ , drawn as the two *thick blue* and *red lines*, with quantity-price combination  $(XS, p_s)$ , where the new surplus of the seller is **maximized** (**MS** stands for *monopolistic seller* and  $p_s$  for the price of  $X$  received by the monopolistic seller). The quantity exchanged decreases by  $XC \rightarrow XS$  ( $S$  stands for *seller*), and the price paid by the price takers buyers to the price maker seller increases by  $p_c \rightarrow p_s$  (point **MS** on the  $D(X)$  curve). As in the previous case, the **blue area** is the **extra surplus** of the seller, while the surplus of the buyers decreases by an amount equal to the **red area**. By taking the coloured areas we see that the seller's extra surplus caused by **CE→P5** (the blue area) is also measured by the difference  $A - C$ , so that  $(A + B) - (A - C) = (B + C)$ : the buyers' loss  $(A + B)$  minus the seller's extra gain  $(A - C)$  is equal to the social loss  $(B + C)$ .

### Bilateral monopoly/distributional struggle

Now, what happens in the case of a **bilateral monopoly**, where both the buyer and the seller are *price makers*? In this case the two may choose either to engage in a **distributional struggle**, each trying to increase its extra surplus at the expense of the other, or to **cooperate** for the creation of additional wealth. If they chose a 'conflictual' behaviour (expecting to more than by cooperating) the new quantity-price equilibrium  $(XE, p_e)$  (where  $E, e$  stand for *equilibrium*) would lie at some point on the *thick black line* with rising and descending arrows linking **MB** to **MS** (drawn straight for simplicity), depending on the relative power of rent extraction by the agents. By way of example look at **F1.3**. We can see that, whatever quantity-price equilibrium were reached along such black line in case of 'conflictual' behaviour, it would always be suboptimal in terms of efficiency.

But the two agents, starting from any such ‘conflictual’ equilibrium on the black line, may decide to ‘convert’ from *rent-extracting conflict* to *wealth-creating cooperation*, increasing the surplus of both by increasing the quantity exchanged and changing the price of the additional quantity exchanged from  $p_e$  to  $p_c$ . For example, starting at **P3 (MB)** they could choose to increase the quantity exchanged from  $XB$  to  $XC$ , and increase the price of the additional exchange from  $p_b$  to  $p_c$ , thereby increasing the buyer’s surplus by an amount equal to the *orange area* C, and the seller’s surplus by an amount equal to the *red area* B. Again by way of example, if the starting point were at  $M$  with quantity-price  $(XM, p_c)$ , the two agents could increase their respective surpluses simply by increasing the quantity exchanged from  $XM$  to  $XC$ , with no price changes. This has exactly the same meaning of the similar cases discussed in **F1.1**.

### The special case of collective bargaining

The particular case frequently considered in discussing bilateral monopoly is that of the **labour market**: a *seller* consisting of a powerful union representing one or many types of labour, on the seller side of the market, and a *buyer* consisting of a powerful union of industries employing those types of labour on the buyer side. If so, on the demand side we still have a marginal physical product  $D(L) = MPP(L)$  (assuming the industries to be price takers on the market of their output), while on the supply side we have workers selling their labour, and the price  $p$  becomes the wage rate  $w$  (measured in units of the output as the numeraire).

**Reference.** In this Section, the diagrammatic discussion of market power and bilateral monopoly using **F1.2-3** is an elaboration based on the extensive treatment of the topic by **Pindyck&Rubinfeld (2001)**. Our Figures reproduce essentially their **Figure 14.17 p. 526**, with a few additional components. More generally our discussion is based on their Chapter 10, **Figures 10.13-17 pp. 353-7**, and Chapter 14, **Figures 14.15-17, pp. 523-7**.