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The three roles of the ‘Coase theorem’ in Coase’s works

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[1000]

Abstract

This article aims at understanding Coase’s apparently paradoxical attitude towards his eponym ‘theorem’. On the one hand, he judges as excessive the attention devoted to an assertion that makes the assumption of zero transaction costs. On the other, he has never stopped reasserting its largely questioned validity. We explain this puzzle by identifying three roles of the ‘Coase theorem’ in his works: heuristic (to bring to light the role of transaction costs), critical (of the Pigovian tradition), and normative (Coase derives policy prescriptions).

Keywords: externalities, Coase, Coase theorem, Pigou

[975]

Since [the] publication [of ‘The Problem of Social Cost’] a vast amount of work has been carried out by lawyers and economists in developing the subject [of ‘law and economics’] and although often influenced by ‘The Problem of Social Cost’, what they have done has left that article far behind. It is now a relic, to be interpreted and, I am afraid, misinterpreted, by historians of thought. (Coase, 1996, p. 118)

1. Introduction

While at the London School of Economics, Ronald Harry Coase became interested in the economics of public utilities, broadcasting in particular. When he migrated to the United States in 1951, he pursued his interest on this subject and studied American television and radio broadcasting institutions.² In a passage of his article on ‘The Federal Communications Commission’ (Coase, 1959, *FCC* below), Coase argued that, like any other private good and despite the risk of interferences, radio frequencies could be allocated through prices, thus questioning the Pigovian tradition of externality analysis. Seeing this point as erroneous, the editors of *The Journal of Law and Economics* asked Coase to abandon it, which he refused. Some members of the University of Chicago suggested that he explain

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² See Medema (1994a) for a biography of Coase and a description of his main works.

his point of view at a seminar with, among others, Aaron Director,³ Stigler and Friedman. Coase's arguments convinced the participants and he wrote 'The problem of social cost' to develop [976] them further (Coase, 1960, *PSC* below).⁴ Asserting that, in the absence of transaction costs, the emitter and the receptor may negotiate to reach an optimal allocation of resources, Coase put forward the possibility of internalising externalities through the price system and, therefore, the existence of other solutions than public intervention to this problem. This criticism of the Pigovian analysis (Pigou, 1932) was to be summed up as the 'Coase theorem', the first formulation of which is owed to Stigler (1966, p. 113): 'Under perfect competition... private and social costs will be equal'.

Coase, however, did not state a theorem in a formal sense. In the *PSC*, he used examples to suggest the following proposition: in the presence of externalities, if transaction costs are nil and if property rights are clearly defined and allocated, agents achieve an optimal output that is independent of the initial allocation of rights. Agreements between the emitter and the receptor determine a level of harmful effect and a payment; they are analysed as a sale of all or part of a property right; that is, right of using a resource, previously defined and allocated.

Not only does the *PSC* fail to state any theorem, but also the 'Coase theorem' makes the assumption of zero transaction costs whereas Coase is known for having urged to introduce positive transaction costs in economics (for example, Coase, 1988a, 1992). What is striking is that the *PSC* is best known for the 'Coase theorem' although most of it examines the consequences of introducing transaction costs. When they are not nil, the result may no longer be optimal nor independent from the initial allocation of rights, which means that other solutions (such as governmental intervention) can be necessary and that law may have an influence on the economic output, conclusions that are totally opposite to the 'Coase theorem'.

What is, therefore, Coase's attitude towards his 'theorem'? First, he accepted the fatherhood of Stigler's proposition:

I did not originate the phrase, the 'Coase Theorem', nor its precise formulation, both of which we owe to Stigler. However, it is true that his statement of the theorem is based on work of mine in which the same thought is found, although expressed rather differently. (Coase, 1988a, p. 157)

Second, he deplors the excessive attention given to a 'theorem' that assumes zero transaction costs since his entire work, from his 'Nature of the firm' (Coase, 1937) onwards, intends precisely to introduce these costs in economics (Coase, 1981, 1988a). The *PSC* studied the zero transaction costs world to emphasise the influence of these costs on the result of the negotiations and on the choice of the best policy. This is what we call the *heuristic* role of the 'Coase [977] theorem'. Third, and more surprisingly, Coase repeatedly answered to the criticisms addressed to his 'theorem' (1981, 1988a, 1988b), stressing that they were 'invalid, unimportant or irrelevant' (1988a, p. 159).

Our aim is to understand Coase's apparently paradoxical attitude towards his eponym 'theorem'. On the one hand, he judges as excessive the attention devoted to this assertion. On the other, he has never stopped reasserting its validity. Against his own method, he defends a 'theorem' that he

³ Director was Professor at the University of Chicago Law School; he founded the *Journal of Law and Economics*, which Coase co-edited with him as soon as 1964, and then edited until 1981.

⁴ This account is based on Coase (1993, pp. 248–250) and Kitch (1983, pp. 220–221).

should logically reject. The question we ask, henceforth, is why does he give so much importance to the zero transaction costs world?⁵

Coase tries to validate the ‘theorem’ because it directly attacks Pigou (1932). He wants to show that, under the same assumption of zero transaction costs, the Pigovian interventionist solutions to externalities are not necessary. This is the second, *critical* role of the ‘theorem’. It has been shown, however, that Coase’s and Pigou’s analyses are not as remote as it may be first thought. Pigou assumes a world where transactions are impossible and takes into account the difficulties of public intervention, displaying a political pragmatism retrospectively close to Coase’s. The ultimate difference in their analysis thus lies in a different evaluation of the public intervention efficiency. Coase is indeed pessimistic regarding this point: he prefers a decentralised solution to harmful effects since he believes that a costly price system is generally more desirable than a costly public intervention. We outline here a *normative* role of the ‘Coase theorem’: Coase infers prescriptive conclusions from his ‘theorem’ when combined with his preference for a decentralised solution to externalities.

Section 2 explains the heuristic role of the first part of the *PSC*: Coase wanted to put forward the role of transaction costs by enlightening how absurd the analysis would be without them. However, the heuristic role on which he has insisted in the past two decades was not as clear as it was when he wrote his article, which was aimed first at criticising Pigou: this is the critical role studied in section 3. Focusing on the opposition between Coase and Pigou regarding the relative efficiency of governmental intervention will lead us to analyse in section 4 the normative role of the ‘theorem’. This ‘theorem’ translates Coase’s belief in the relative efficiency of the price system, which is why Coase infers from it some prescriptive conclusions. Section 5 concludes. Before proceeding, we make clear that we focus here on the Coasean version of the ‘Coase theorem’; that is, on Coase’s works on [978] externalities and not on the ‘Coase theorems’, which are as numerous as the interpretations of Coase’s examples.⁶

2. The heuristic role of the ‘Coase theorem’

Although it existed since the 1950s, Coase does not use the word ‘externality’ in the *FCC* and the *PSC*, but instead the expression ‘harmful effects’, to stress his questioning of the traditional-Pigovian treatment of this concept (Coase, 1988a, pp. 23 and 27). According to Coase, harmful effects are not specific, and that explains the fundamental change in the analysis of this question.

Change of method

Coase introduced an original approach to the problem of externalities based, in our view, on three new, although not independent, elements. First, the factors of production are conceived as property rights. This idea appears in the *FCC* with the *Sturges v. Bridgman* (1879) case that concerned a doctor who could no longer practise because of the noise generated by his neighbour, a confectioner. The alternative is: either the doctor owns the right to practise in silence and the confectioner has to move out, or the confectioner owns the right to practise, including making noise, and the doctor has to move out. According to Coase, there is no difference between each of these situations and the case of a

⁵ While Medema and Samuels (1997, p. 74) ask why Coase was relatively silent faced to the misinterpretation of the *PSC* and the neglect of his argument regarding the positive transaction costs world, we complementarily ask why he was so clamorous regarding the ‘Coase theorem’ and the zero transaction costs world. Logically, some of their conjectures answer both questions.

person owning a land that nobody else can cultivate. There is no ‘analytical difference’ between a right whose exercise does not create side effects and a right whose exercise creates harmful effects because ‘all property rights interfere with the ability of people to use resources’ (*FCC*, p. 27).

The *PSC* develops this idea and argues that a factor of production is a right to exert some actions, which may or may not harm other people. The doctor has to own the right of being protected from nuisances to practise, and the confectioner has to own the right to make noise to work. Hence, the right to harm or to be protected from harms is itself a factor of production. In Coase’s words: ‘If factors of production are thought of as rights, it becomes easier to understand that the right to do something which has a harmful effect (such as the creation of smoke, noise, smells, etc.) is also a factor of production’ (*PSC*, pp. 43–44).

[979] Considering the right to harm as any other factor of production required foregoing the moral notion of responsibility; the first change of approach thus implies a second, which is the reciprocity of the problem of harmful effects. This idea was also present in the *FCC* (p. 26): without the confectioner there would be no harm, but without the doctor, there would not be either. Coase writes in the *PSC* (p. 2):

We are dealing with a problem of a reciprocal nature. To avoid the harm to B would inflict harm on A. The real question that has to be decided is: should A be allowed to harm B or should B be allowed to harm A? The problem is to avoid the more serious harm.

Externalities are thus reinterpreted as a conflict of interest over the use of a property right. Coase here clearly distinguishes the ethical problem of responsibility from the economic one.

The third change of approach, deriving from the reciprocity, concerns the definition of this economic problem, which ‘in all cases of harmful effects is how to maximise the value of production’ (*PSC*, p. 15; see also *FCC*, p. 27).⁷ This is the reason why Coase focuses the comparison of different arrangements on the value of the social product they yield, in opposition to the Pigovian ‘comparison of private and social products [that] is neither here nor there’ (*PSC*, p. 34). In comparing the total values reached by alternative arrangements, one must take into account the drop of value generated by the harm or its prevention, ‘in total *and* at the margin’ (*PSC*, p. 2, Coase’s emphasis), the cost of operating the arrangement, and the costs that would be incurred by changing from one arrangement to the other. The *PSC* (p. 44) concludes: ‘In devising and choosing between social arrangements we should have regard for the total effect. This, above all, is the change in approach which I am advocating.’

The Coasean ‘Coase theorem’

In the *FCC*, Coase argues that the definition of rights over radio frequencies is sufficient to use the price mechanism. For any good, once the property right is distributed, the market transactions determine its final allocation. Coase suggests this idea with one example:

Whether a newly discovered cave belongs to the man who discovered it, the man on whose land the entrance to the cave is located, or the man who owns the surface under which the cave is situated is no doubt dependent on the law of property. But the law merely determines the person with whom it is necessary to make a contract to [980] obtain the use of the cave. Whether the cave is used for storing

⁶ See Medema and Zerbe (2000) for a review of these theorems and of their proofs and refutations.

⁷ This implies a cost-benefit analysis. The limits of Coase’s goal and method for economic policy are emphasised in Medema and Samuels (1998).

bank records, as a natural gas reservoir, or for growing mushrooms depends, not on the law of property, but on whether the bank, the natural gas corporation, or the mushroom concern will pay the most in order to be able to use the cave. (*FCC*, p. 25)

Coase here asserts that the legal system is neutral with regard to the final resources allocation (the use of the cave). He also suggests that this allocation maximises the value of production since the person who acquires the right is the one who offers the highest payment; that is, whoever values it the most.

Coase then broadens these ideas to the rights whose use implies effects on others, with the *Sturges v. Bridgman* case: again ‘the delimitation of rights is an essential prelude to market transactions; but the ultimate result (which maximizes the value of production) is independent of the legal decision’ (*FCC*, p. 27).

Subsequently, Coase (1988a, p. 158) will see in this assertion the ‘essence of the Coase theorem’, explaining that the *PSC* just developed this argument without reference to radio frequencies, as required by the editors of the *Journal of Law and Economics* (1993, p. 250), and put forward that it depended on the assumption of zero transaction costs (1988a, p. 158).⁸ The *PSC* applies Coase’s new method to the ‘case of straying cattle which destroy crops growing on neighbouring land’ (*PSC*, p. 2). The first part of the paper assumes that ‘the pricing system works smoothly (strictly this means that the operation of a pricing system is without cost)’ (*PSC*, p. 2).

In the first negotiation example (*PSC*, pp. 2–6), the cattle-raiser has to pay for all damage caused by his herd: he does not own the right to harm the farmer.⁹ The net gain from cultivating the land is \$2. If the rancher has a herd with two steers, the total damage is \$3; hence he has to pay \$3 to the farmer. Both would have a greater gain if the farmer abandoned his culture in exchange for a payment from the rancher between \$2 and \$3. Coase describes here a bilateral bargaining over the level of the externality (the size of the herd) and its price: ‘There is clearly room for a mutually satisfactory bargain which would lead to the abandonment of cultivation’ (*PSC*, p. 4). This final result is ‘optimal’ (*PSC*, p. 5)¹⁰ because it is *assumed* that [981] mutually satisfactory bargains are struck: ‘Of course, if such market transactions are costless, such a rearrangement of rights will always take place if it would lead to an increase in the value of production’ (*PSC*, p. 15). This is the efficiency thesis of the ‘Coase theorem.’

To suggest that the result is independent from the initial allocation of property rights, the *PSC* (pp. 6–8) develops a second example where the rancher owns the right to cause damage to his neighbour and the final allocation of resources is the same. The physical result – the level of the externality – is therefore optimal and invariable: ‘The size of the herd will be the same whether the

⁸ The assumption of zero transaction costs is not absent from the *FCC*, nor are the consequences of high transaction costs (*FCC*, p. 27).

⁹ If we use Calabresi and Melamed (1972)’s distinction, Coase assumes here a liability rule, but a property rule in the second example.

¹⁰ This optimality refers to Pareto-optimality even if Coase does not use this expression, which appears in the 1950s with the New Economics of Welfare being well understood. Pareto-optimal allocations are equivalent to allocations that maximise the value of the production (Kaldor-Hicks efficiency) if compensations are actually paid and if there is no wealth effect, assumptions that can be considered implicit in Coase’s argument. It seems that Coase does not use the term ‘Pareto-optimality’ to differentiate himself from the general equilibrium theory and the welfare theorems that lead to market failures and blackboard exercises.

cattle-raiser is liable for damage caused to the crop or not' (*PSC*, p. 7). This is the independence thesis of the 'Coase theorem'. The Coasean version of this 'theorem' is therefore the following:

It is necessary to know whether the damaging business is liable or not for damage caused since without the establishment of this initial delimitation of rights there can be no market transactions to transfer and recombine them. But the ultimate result (which maximises the value of production) is independent of the legal position if the pricing system is assumed to work without cost. (*PSC*, p. 8)

Introduction of positive transaction costs

The focus on the 'Coase theorem' has quickly led to forgetting that the 'very unrealistic'¹¹ assumption of zero transaction costs only concerned one third of the *PSC*; indeed:

In order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on. These operations are often extremely costly, sufficiently costly at any rate to prevent many transactions that would be carried out in a world in which the pricing system worked without cost. (*PSC*, p. 15)

Consequently, a bargain occurs only if its gain is higher than the cost involved. If all the exchanges of rights necessary to bring the optimal result do not take place, two consequences follow.

[982] First, the optimal result will not be achieved and other solutions than the negotiation may lead to better results. Coase provides here an innovative discussion on policy: since 'all solutions have costs' (*PSC*, p. 18), it is necessary to compare different collective arrangements (integration in a unique firm, public regulation, *status quo*) in terms of their net output values.¹² Hence it is only if the costs of the transactions are higher than their gains that an optimum is not obtained and that public intervention may be necessary. In opposition to the comparison with an 'ideal world', the Coasean method of policy design entails examining the initial actual situation and comparing the net values yielded by alternative arrangements (*PSC*, p. 43).¹³

Second, the independence of the result is equally questioned since the final allocation now depends on the initial distribution of rights; therefore 'the courts directly influence economic activity' (*PSC*, p. 19). It is finally his conclusion on the influence of the law and not its neutrality that is important for Coase.

We understand better Coase's apparently paradoxical attitude. On the one hand, he mentions 'the infamous Coase theorem, named and formulated by George Stigler, although it is based on work of [his]' and explains that he does 'not disagree with Stigler' (1992, p. 717). On the other hand, given the criticisms that he regularly addressed to standard microeconomics, it is logical that he denounces the excessive focus on a 'theorem' that makes the unrealistic assumption of zero transaction costs. Coase (1988a, p. 174) restores what distinguishes him from the world of the 'Coase theorem': 'The world of zero transaction costs has often been described as a Coasian world. Nothing could be further from the

¹¹ On the importance of realistic assumptions in Coase's view, see Coase (1982); and on the meaning of Coase's realism, see Mäki (1998b, 1998c). For general studies on Coase's views of the nature of economics, see Medema (1994a, chap. 6), Medema and Zerbe (1998), Mäki (1998a) and Wang (2003).

¹² Medema (1994a, p. 92) and Veljanovski (1977) make this comparative institutional analysis the main contribution of the study of the positive transaction costs world.

¹³ We find here one formulation of Coase's opposition to 'blackboard economics' that designs policies by comparison to a world existing only on the teacher's blackboard (for example, Coase, 1988a, p. 19).

truth. It is the world of modern economic theory, one which I was hoping to persuade economists to leave.’ However, after the publication of the *PSC*, economists focused on its first part, and that is why Coase (1988a, p. 13) writes that the *PSC* ‘has been widely cited and discussed in the economics literature. But its influence on economic analysis has been less beneficial than I had hoped. The discussion... has concentrated on the so-called “Coase Theorem”, neglecting other aspects of the analysis’, such as the influence of the law and the necessity of the comparative institutional approach.

The reconciliatory explanation is that the argument that neglects transaction costs was used to bring out their role and the necessity of [1983] their inclusion in economic analysis. That is what we call the heuristic role of the ‘Coase theorem’, which is explicit in Coase’s sayings:

I examined what would happen in a world in which transaction costs were assumed to be zero. My aim in so doing was not to describe what life would be like in such a world but to provide a simple setting in which to develop the analysis and, what was even more important, to make clear the fundamental role which transaction costs do, and should, play in the fashioning of the institutions which make up the economic system.¹⁴ (Coase, 1988a, p. 13)

The ‘theorem’ was for Coase only ‘a preliminary’ (1988a, p. 15), ‘a stepping stone on the way to an analysis of an economy with positive transaction costs’ (1992, p. 717), whereas economists devote themselves ‘to a detailed study of the world of zero transaction costs, like augurs divining the future by the minute inspection of the entrails of a goose’ (1981, p. 187).

The misunderstanding of the *PSC* was (and perhaps still is) so widespread that it has been thought there were two ‘Coases’, the one of the ‘Coase theorem’ and the one of the positive transaction costs world (Canterbery and Marvasti, 1992). At the beginning of the 1990s, McCloskey, who had understood that the *PSC* was mainly about the introduction of positive transaction costs, explained she has ‘given up hope of persuading any other economist of this interpretation, since the only economist who shares it is R. H. Coase’ (McCloskey, 1993, n. 2, as cited in McCloskey, 1998, p. 241). During this period, Medema (1994a, 1994b), and others, greatly contributed to re-establish the unity of Coase’s thought.¹⁵

However, Coase’s rejection of the economists’ focus on his ‘theorem’ should not make us forget that he also claimed the analytical validity of this assertion. He answered many of its criticisms (Coase, 1981, 1988a, 1988b), explaining that there were for the most part ‘invalid, unimportant or irrelevant’ (1988a, p. 159).¹⁶ Admittedly, even when Coase defends his theorem, he adds that we should not focus too much on it (Medema, 1994a, p. 91), but the reverse is still true: even when he criticises the attention devoted to the zero transaction costs world, Coase restates his argument regarding this world, thus favouring the focus on it. So the question remains: Why is this ‘theorem’ so important in his theory? [1984]

3. The critical role of the ‘Coase theorem’

The importance of the ‘Coase theorem’ in Coase’s thought cannot be explained only by its heuristic role. The argument that takes place in the world of zero transaction costs carries out another function:

¹⁴ This *reductio ad absurdum* reasoning is the same that explains the existence of firms (Coase, 1988a, p. 14).

¹⁵ See, for example, Williamson (1994) or Farber (1997) and also, much earlier, Veljanovski (1977).

¹⁶ Basically, Coase’s line of defense is that ‘most objections to the Coase theorem seem to underestimate what costless transacting could accomplish’ (1988a, p. 163).

to show that the Pigovian solutions to the problem of externalities are not necessary in this world. As Coase (1993, pp. 252–253) puts it:

‘The Problem of Social Cost’ demonstrated that in a regime of zero transaction costs (the assumption of standard economic theory) negotiations would always lead to a solution which maximized wealth. Consequently, the kind of government action that economists thought to be required was completely unnecessary given the assumptions of their analytical system. But, of course, all that this did was to show the emptiness of the Pigovian analytical system.

In his Nobel Prize speech, Coase clarified that the significance of the ‘Coase theorem’ was its undermining of the Pigovian system, and that its implications in terms of the necessity of including transaction costs appeared later in his mind:

It is my view that the approach used in that article will ultimately transform the structure of microeconomics... I should add that in writing this article I had no such general aim in mind. I thought that I was exposing the weaknesses of Pigou's analysis of the divergence between private and social products, an analysis generally accepted by economists, and that was all. (Coase, 1992, p. 717)

The title of the 1960 article was indeed referring to Knight’s criticism of Pigou, ‘Fallacies in the interpretation of social cost’ (1924).¹⁷ The study of the opposition between Coase and Pigou does not come from a historical reconstruction, but from the fact that Coase’s writings on his ‘theorem’ directly aim at Pigou. Without denying the rhetorical role of such a process, its analysis gives us indications on Coase’s project. The *PSC* and the *FCC* were published when the dominant analysis of externalities was the Pigovian analysis, as exposed in the second part of the *Economics of welfare* (Pigou, 1932).¹⁸ [985]

Coase’s criticism of Pigou when transaction costs are nil

Pigou was interested in divergences between the private and the social products of a good or service. In ‘simple competition’, a divergence occurs when

a part of the product of a unit of resources consists of something, which, instead of coming in the first instance to the person who invests the unit, comes instead, in the first instance (i.e. prior to sale if sale takes place), as a positive or negative item, to other people. (Pigou, 1932, p. 174)

Three cases are distinguished, according to the person C who receives the part of the product that does not come to the investor A. In the first case, C is the owner of factors of production rented by A (typically, land tenancy) and the problem may be solved by a modification of the contract. In the third case, C and A produce the same good: we have here the Marshallian external economies (external to the firm but internal to the industry). Finally, the second case refers to the case dealt with by Coase, technological externalities: C and A do not produce the same good. The definition is the following:

¹⁷ See Kitch (1983, p. 215) and Coase (1993, p. 250). Coase’s *PSC* extends Knight’s criticism of Pigou’s treatment of external economies to his treatment of technological externalities: the definition of private property rights may solve the divergence. There are other similarities between Knight (1924) and the *PSC*: the criticism of the assumptions of standard microeconomics and the claim that these assumptions describe an ideal system without need for public intervention but for the definition and distribution of property rights.

¹⁸ Coase refers to the fourth edition of *The Economics of Welfare* (Pigou, 1932), but Pigou’s argument was already built in the 1920 first edition and even in the 1912 *Wealth and Welfare*. If the *PSC* refers sometimes more to the Pigovian tradition than to Pigou himself, it mentions only one author, Pigou, and Coase answered twice (1988a, 1996) to the challenges addressed to his criticism of Pigou, substantiating his arguments by textual proofs. In these answers, however, he clarified that his ‘target (or targets) were the modern economists who had adopted Pigou’s approach’, referring to Samuelson, Stigler and Hahn (Coase, 1988a, p. 23). Medema and Samuels (1997, p. 82) suggest some explanations for this ‘Pigou fixation’.

One person A, in the course of rendering some service, for which payment is made, to a second person B, incidentally also renders services or disservices to other persons (not producers of like services), of such a sort that payment cannot be exacted from benefited parties or compensation enforced on behalf of the injured parties. (Pigou, 1932, p. 183)¹⁹

Pigou (1932, p. 185) stresses that the divergence in case of disservices is due to ‘the technical difficulty of enforcing compensation’. The government can suppress it by ‘extraordinary encouragements’ or ‘extraordinary restraints’, [986] whose ‘most obvious forms’ are ‘bounties and taxes’ (Pigou, 1932, p. 192). It can also intervene by direct regulation (Pigou, 1932, p. 194).

Coase criticises not only the Pigovian governmental solution, but also the method from which this solution arises. First, the analysis in terms of divergence between private and social costs diverts the attention from the reciprocity of the problem,²⁰ and from the goal of maximising the total value of output. Second, in a world of zero transaction costs, public intervention other than defining and allocating property rights is useless, may it be regulation or tax. The zero transaction costs world would also have this important role of criticism of the automaticity of the interventionist solution: ‘The mere existence of “externalities” does not, of itself, provide any reason for governmental intervention’ (Coase, 1988a, p. 26).²¹

The *PSC* had in Coase’s mind the role of an internal criticism of the Pigovian tradition: ‘Since standard economic theory assumes transaction costs to be zero, the Coase theorem demonstrates that the Pigovian solutions are unnecessary in these circumstances’ (Coase, 1992, p. 717). There would exist, however, a contradiction in Pigou’s analysis if it actually assumed zero transaction costs, which is far from being evident.

Reappraisal of Coase’s criticism

While Pigou could not answer to Coase’s criticisms (he died in March 1959), several articles have shown that Coase’s and Pigou’s analyses are closer than it seems at first sight.²² It appears rather easily that Coase criticises a misrepresentation of Pigou’s analysis. The latter seems to take into account positive transaction costs in his reasoning, at least some obstacles to the negotiation, as suggested by the two following elements.

First, the solution of the divergence by a modification of the contract is immediately put aside by Pigou in the case of an externality, and this is why the government has to intervene:

It is plain that divergences between private and social net product of the kinds we have so far been considering cannot, like divergences due to tenancy laws, be mitigated by a modification of the contractual relation between any two contracting [987] parties, because the divergence arises out of a service or disservice rendered to persons other than the contracting parties. (Pigou, 1932, p. 192)

¹⁹ The *PSC* is only concerned by one of the types of phenomena covered by this definition: production externalities. It excludes consumption externalities and in particular, as noted by a referee, demand externalities that Pigou (1932, p. 226 and 808) conceives: my demand for a good may be influenced by the total demand or production of this good, as a consequence of my desire for distinction or imitation.

²⁰ On the relevance of this criticism, see Aslanbeigui and Medema (1998, pp. 613–614).

²¹ Coase has often criticised the traditional analysis of market failures that automatically calls for public intervention: see, for example, his articles on marginal cost pricing (1946) or lighthouses (1974).

²² Mainly Goldberg (1981), De Serpa (1993), Simpson (1996a, 1996b), Demsetz (1996), Aslanbeigui and Medema (1998) and Hovenkamp (2009).

We see here that the contractual solution was first imagined; and that behind this absence of contract, some terms suggest impossibility. In his definition, Pigou (1932, p. 183) explains that ‘a payment cannot be exacted’: he eliminates the solution by negotiation (envisaged for the first case of divergence) since the divergence comes here from, precisely, the impossibility of negotiation. All his examples refer to large number cases, evoking a reason for these infinite transaction costs.²³

The second element suggesting that Pigou takes into account something like transaction costs is his discussion of the ‘costs of movement’ of resources (Pigou, 1932, p. 138–139).²⁴ These costs may impede some adjustments between the alternative uses of a resource, and the difference of value between the best arrangement considering the costs of movement and the best arrangement in the absolute is equal to the costs of movement.

Coase’s criticism when transaction costs are positive

Moreover, in the world of positive transaction costs, Coase considers some public solutions to externalities which he should share with Pigou (at least along with others, as integration and *status quo*). But he criticises these solutions, and in particular the three that he attributes to Pigou: direct regulation, non negotiable liability of the harm producer, and taxation. Coase therefore does not criticise Pigou as much as public intervention itself, even when transaction costs are positive.²⁵

In the *PSC*, public intervention appears as an alternative to the price system (for resource allocation), as would the firm. Both the government [988] and the firm may substitute administrative decisions for market transactions. Public intervention thus implies administrative or organizational costs, but it also implies costs due to the absence of a competitive control of prices (*PSC*, pp. 17–18).²⁶ This explains Coase’s criticism of the public allocation of radio frequencies. Not only are regulators vulnerable to political pressures, but, in the absence of prices, they also lack of information on costs and benefits, and on preferences (*FCC*, p. 18). Moreover, they are human beings who do not follow general interest²⁷ and notably apply some routines (Coase, 1966, pp. 441–442).

The *PSC* uses these arguments to criticise the three ‘Pigovian’ solutions to externalities in the world of positive transaction costs. First, if direct regulations may appear useful when transaction costs are high, and particularly when a large number of persons are involved – for example, in the case of a smoke nuisance (*PSC*, p. 17) – this solution encounters the same problems as any other public regulation: it is promulgated ‘by a fallible administration subject to political pressures and operating without any competitive check’ (*PSC*, p. 18). Moreover, this type of regulation, designed to apply to a

²³ See Demsetz (1996, pp. 567–569) and Aslanbeigui and Medema (1998, pp. 607–608 and pp. 615–616). Goldberg (1981) first pointed to Pigou’s analysis of complex contracts as resolving the first case of divergence. Coase remarks in the *PSC* that the Pigovian distinction between these two cases of divergence is fallacious since there are transaction costs in both (they make the contract unsatisfactory in the first case and impossible in the second). Pigou’s discussion about the resolution of the first case, somewhat pragmatist since he explains that complex contracts and public intervention are both unsatisfactory, is not warmly welcomed by Coase who blames it as not leading to ‘general conclusions about economic policy’ (*PSC*, p. 39).

²⁴ See De Serpa (1993, pp. 36–37) and Aslanbeigui and Medema (1998, pp. 609–610). This issue is re-discovered by Hovenkamp (2009, pp. 6–7), who adds Pigou’s stress on the consequences of imperfect knowledge.

²⁵ This issue is somehow raised by Demsetz (1996) who, however, stays with a caricatured vision of Pigou as having an idealist view of government.

²⁶ The other difference with the firm is that the State possesses the violent means to enforce regulation (*PSC*, p. 17).

²⁷ In Coase’s view, even more radically, general interest above the satisfaction of individual preferences does not exist and individuals are better placed to know these preferences (Pratten, 2001, p. 624).

wide range of situations, may not always be appropriate. The conclusion is straightforward: ‘Direct governmental regulation will not necessarily give better results than leaving the problem to be solved by the market or the firm’ (*PSC*, p. 18).

To criticise the second solution attributed to Pigou, liability of the harm producer,²⁸ Coase uses the example of crops destroyed by sparks from railway engines. He builds a numerical example where the value of the production is higher if the victim is liable compared with the case in which the harm producer is liable. The change of law would change the decisions (the farmer diminishes his crops if he is liable), and that is why Coase insisted earlier on the necessity to compare the total values yielded by each arrangement.

Finally, the *PSC* criticises the taxation policy. Although the amount of the tax is not detailed in Pigou’s book, Coase interprets the Pigovian oral tradition as advocating a tax equal to the value of the damage. In the case of a smoke nuisance, taxing the emitting factory will not be optimal if the costs of the neighbours’ moving is inferior to the cost of abatement for the factory;²⁹ [1989] it ‘would tend to lead to unduly high costs being incurred for the prevention of damage’ (*PSC*, p. 41). And we find again the reciprocity of the problem:

Without the tax, there may be too much smoke and too few people in the vicinity of the factory; but with the tax there may be too little smoke and too many people in the vicinity of the factory. There is no reason to suppose that one of these results is necessarily preferable.³⁰ (*PSC*, p. 42)

Coase suggests more complex taxes that would handle reciprocity, but they would be difficult to design since precise information would be lacking (*PSC*, pp. 41–42). Beyond that particular example, the criticism of the taxation solution lies finally on the regulators’ lack of information. Taxation is typically a ‘blackboard’ policy as Coase reminds us in his ‘Notes on the problem of social cost’ (1988a, p. 181): ‘Any tax system bristles with difficulties and what is desirable may be impossible.’³¹

Coase therefore criticises the Pigovian policy solutions in the presence of transaction costs. Again, this criticism would be stronger if Pigou was actually assuming an ideal government.

The opposition between Coase and Pigou: the (in)efficiency of public intervention

Pigou also has reservations on the efficiency of public intervention, and displays a pragmatism in policy that is retrospectively close to Coase’s: he also does not idealize government action. In the 20th chapter of the second part of his *Economics of Welfare*, Pigou explains that we cannot hope that the government attains the ideal results that economists can imagine. It is easy to read in this chapter some Coasean insights on the defects of government (fallibility, search for political and private interests) and

²⁸ This solution is not suggested by Pigou, but the absence of this liability may be interpreted to be at the source of the divergence (Coase, 1996, pp. 111–112): Pigou (1932, p. 134) indeed refers to ‘uncompensated damage.’

²⁹ A cost which is itself inferior to the amount of the damage.

³⁰ The problem here is the multiplicity of Pareto optima (Baumol, 1972, p. 314).

³¹ Coase answers here to Baumol’s criticism (1972). The latter (1972, p. 307) showed that ‘the conclusions of the Pigovian tradition are, in fact, impeccable’ in theory, if the amount of the tax is equal to the marginal damage for the optimal level of externality. Coase accepts this theoretical conclusion, but repeats that it is practically impossible, as emphasised by Baumol himself (1972, p. 318). He therefore concludes his ‘Notes’: ‘My point was simply that such tax proposals are the stuff that dreams are made of. In my youth it was said that what was too silly to be said may be sung. In modern economics it may be put into mathematics’ (1988a, p. 185).

on the necessary pragmatism in policy instead of blackboard (all solutions have [990] costs and have to be compared).³² Consider this passage, for example:

In any industry, where there is reason to believe that the free play of self-interest will cause an amount of resources to be invested different from the amount that is required in the best interest of the national dividend, there is a *prima facie* case for public intervention. The case, however, cannot become more than a *prima facie* one, until we have considered the qualifications, which governmental agencies may be expected to possess for intervening advantageously. It is not sufficient to contrast the imperfect adjustments of unfettered private enterprise with the best adjustment that economists in their studies can imagine. For we cannot expect that any public authority will attain, or will even whole-heartedly seek, that ideal. Such authorities are liable alike to ignorance, to sectional pressure and to personal corruption by private interest. (Pigou, 1932, pp. 331–332)

This is why public intervention ‘*might* make things worse’ (Pigou, 1932, p. xix, his emphasis). Aslanbeigui and Medema (1998, pp. 617–619) add other commonalities with Coase’s view of the failures of governmental intervention: administrative costs, information problems and distortions.

Pigou seems, however, more optimistic than Coase in the sense that he believes that there has been some progress towards efficiency during the nineteenth century. To suggest further improvements, Pigou (1932, pp. 333–334) details the flaws of representative bodies: (i) they do not have the necessary qualifications in economics; (ii) their members fluctuate and have short-term objectives; (iii) the areas on which they have authority do not coincide with economic considerations; and (iv) they are subject to all forms of electoral pressures. Whilst these defects are very close to Coase’s arguments, the difference is that Pigou (1932, p. 334) thinks that, although ‘these four disadvantages are all serious’, they all ‘can be, in great measure, obviated’.³³ It is therefore impossible to sustain that Pigou idealises public intervention and that this would constitute a failure of his argument. On the contrary, Coase and Pigou bring to light the same flaws of public intervention. However, these defects are perfectible for Pigou (whereas Coase sees them as crippling), and this is on this point that Coase’s criticism will eventually focus. [991]

Later confronted to the similarity of his analysis with Pigou’s, Coase had to reorient his criticism. He did so for the first time in his 1988 book, where he recalls Pigou’s 20th-chapter argument, and mocks his idealist way of imagining a perfect form of government:

Starting with a statement about the imperfections of government, Pigou discovers the perfect form of governmental organization and is therefore able to avoid enquiring into the circumstances in which the defects of public intervention would mean that such intervention would tend to make matters worse. (Coase, 1988a, p. 22)

Coase (1988a, p. 22) emphasises Pigou’s ‘optimistic opinion’ and rejects it as not grounded on facts. The second time, Coase (1996) answers to Simpson (1996a) who, based on a broader range of Pigou’s texts, enlightened the similarities between their arguments on policy, and he brings to light Pigou’s Socialist sympathies. This normativity does not question Pigou’s pragmatism or the Coasean flavour of his arguments, but confirms his ‘optimism’ regarding the efficiency of public intervention.

³² Goldberg (1981, p. 50, n. 8) mentions it; Simpson (1996a, pp. 71–73) develops the argument, but see Coase’s (1996) answer. For a more complete comparison between Coase’s and Pigou’s visions of the goal and efficiency of public intervention, see Aslanbeigui and Medema (1998).

³³ The members of these commissions could be chosen according to their expertise in the industry and for long periods; the area could be adjusted; and the terms of their contracts could free them from electoral pressures (Pigou, 1932, pp. 334–335).

Coase's criticism to Pigou therefore finally focused on Pigou's optimism. The critical role of the 'Coase theorem' cannot be reduced to the internal criticism of the zero transaction costs theory: the 'theorem' argued that public intervention does not have to be an automatic solution, but Coase goes further – arguing that it is even the solution the least needed of all. We infer that Coase does not criticise the Pigovian analysis as much as the necessity of public intervention, even when transaction costs are positive, and that this criticism is only justified by his own pessimism regarding the relative efficiency of governmental intervention. We will show that this gives a normative role to the 'Coase theorem'.

4. The normative role of the 'Coase theorem'

Coase's pessimism

Coase has not always been pessimistic regarding the efficiency of government. Despite the theoretical unity between 'The nature of the firm' and the *PSC* (Schwab, 1993), there is a radical change in Coase's views on politics, from socialism to a criticism of public intervention, which comes from empirical studies.

Discussing what Simpson (1996a, p. 58) called his 'deep skepticism as to the desirability of government intervention', Coase (1996, pp. 106–108) detailed the steps of his gradual political evolution. First, Plant's teaching at the London School of Economics introduced him to the ineffectiveness of the government; then his empirical studies on British public utilities deepened [1992] this view. But finally it is the common conclusion of the studies on the effects of regulation in the United States that definitely changed his political orientation: 'My views on government intervention in the economy have changed over my life but they have always been driven by factual investigations... My present position is that which I expressed in 1974' (Coase, 1996, p. 108).

In 1974 Coase argued that the empirical studies on the effects of public regulation of economic activities 'all tend to suggest that the regulation is either ineffective or that, when it has a noticeable impact, on balance the effect is bad', because the government 'has reached the stage at which, for many of its activities,... the marginal product is negative' (Coase, 1975, p. 61–62). Coase's belief that government regulation does more harm than good is therefore derived from empirical studies, his and others'.³⁴

This account gives a better understanding of Coase's joint assertions of political pragmatism and preference for the market. As shown by Medema (1994a, p. 95), 'Coase's preference for the market is driven less by ideological predisposition than by his view that, when government pursues its regulatory activities, it often serves to make matters worse rather than better.'³⁵ This does not prevent Coase from incorporating his evaluation of the efficiency of the market and of government regulation in his pragmatic evaluation of policy solutions to harmful effects. The *FCC* (p. 18) emphasised that 'the costs of operating the market' could exceed 'the costs of running the agency by a sufficiently large amount', in which case the last solution might be preferable. However, he immediately adds: 'But in the United States few people think that this would be so in most industries, and there is nothing about the broadcasting industry which would lead us to believe that the allocation of frequencies constitutes

³⁴ But it is also at the origin of some of his empirical studies, on broadcasting (Pratten, 2001) and lighthouses (Bertrand, 2006a).

³⁵ See also Medema and Samuels (1998), Pratten (2001) and Campbell and Klaes (2005).

an exceptional case' (*FCC*, pp. 18–19). That is to say: in theory we might prefer governmental intervention, but rarely in practice.

In the *PSC* (p. 18), the assertion that 'satisfactory views on policy can only come from a patient study of how, in practice, the market, firms and governments handle the problem of harmful effects' is also toned down. If we accept the theoretical presupposition that the price system is the arrangement of reference (see next subsection), public intervention would be justified if its net benefit is positive and then greater than the net benefit of the market. According to Coase, the first condition is not even met: '*It will no doubt be commonly the case that the gain which would come from [993] regulating the actions which give rise to the harmful effects will be less than the costs involved in Government regulation*' (*PSC*, p. 18, emphasis added). But why does Coase even wonder? Since the price system, even costly, leads to the best value of production, its efficiency over all arrangements being asserted: 'The main advantage of a pricing system is that it leads to the employment of factors in places where the value of the product yielded is greatest and does so *at less cost than alternative systems*' (*PSC*, p. 40, emphasis added). Coase's position in 1988 is even clearer; after having repeated that different solutions to external effects are possible, he claims: 'The ubiquitous nature of "externalities" suggests to me that there is a *prima facie* case against intervention' (1988a, p. 26).

Although Coase mentions that public intervention may be efficient to solve externalities when the price system is too costly, he endeavours to show that this case is rare, public regulation and taxation being often more costly than the market. Even when transaction costs are positive, public intervention is generally judged as less efficient than the price system: that is what we call his pessimism regarding governmental efficiency, hardly hidden in his criticism of Pigou. Of course, Coase does not offer a systematic plea in favour of the market because he is fundamentally pragmatic. He believes, however, that government often (if not always) makes things worse, and that it is doing so at a greater cost than the market. There is therefore a bias in his analysis of externalities, in favour of the costly price system over public intervention, which is reinforced by his belief in the efficiency of the price system without cost.

The efficiency of the price system

In the *PSC*, the price system is the institutional arrangement against which alternatives such as the firm and the government should be compared in terms of allocation of resources. The article begins by examining the market solution to external effects. Then, if it is too costly, the solution of integration into a firm should be envisioned. Then, if this latter solution is still too costly, the governmental solution may be tried, if it is not itself too costly. This line of reasoning³⁶ reveals Coase's assumption: a price system without cost is efficient. It is only if it is costly or if there is evidence of a specificity of the good exchanged, and if one can prove that another arrangement would lead to a greater net benefit that one may suggest this arrangement as a solution.

Why is the price system efficient in Coase's view? He writes: [994]

If rights to perform certain actions can be bought and sold, they will tend to be acquired by those for whom they are most valuable either for production or enjoyment. In this process, rights will be acquired, subdivided, and combined, so as to allow those actions to be carried out which bring about that outcome which has the greatest value on the market. (1988a, p. 12)

³⁶ Which is the object of Lazonick's criticism (1991) to 'The nature of the firm'.

The price system allocates the good to the highest bidder. It forces the confrontation of the real cost implied by the production of a good and what the consumer is willing to pay for this good³⁷: this direct relationship between the consumer and the producer is efficient.

If we assume that agents seek to use efficiently their resources and that the price system allocates the rights to whoever value them most highly, then the price system (without cost) allows the maximisation of the value of production.³⁸ Now, the efficiency of the price system is clearly the ‘Coase theorem’ claim, and Coase does not distinguish the two. Recalling the opposition to the first formulation of the ‘theorem’ in 1959, he said:

The law of property determines who owns something, but the market determines how it will be used. It’s so obvious to me that I couldn’t understand the fuss. All it says is that the people will use resources in the way that produces the most value, that’s all. I still think it’s an obvious point. You wouldn’t think there was a need for a Coase Theorem, really. (1997)

Not only is the efficiency of the price system the conclusion of the ‘Coase theorem’, it is also its assumption.³⁹ It is clear from the examples of negotiations that Coase used in the *PSC* that his theoretical framework is an Edgeworthian bilateral bargaining (Coase, 1988a, p. 160). In other words, he assumes that price-maker agents attain the contract curve, or strike mutually satisfactory bargains; that is, we are in a cooperative game where the efficiency of bargaining is presupposed, but not proven (Arrow, 1979, p. 24). And Coase will assert again the assumption of bilateral bargaining efficiency answering to the criticisms of the ‘Coase theorem’ in terms of [995] strategic behaviour (1988a, pp 161–163).⁴⁰ The ‘theorem’ is therefore no more than another formulation of the efficiency assumption of the price system that it conceptualises by a bilateral bargaining.

The prescriptive conclusions of the ‘Coase theorem’

The ‘Coase theorem’ as such does not prescribe any policy solutions; it is not normative in this sense (Veljanovski, 1977, pp. 535–536; Medema, 1999, pp. 229–230). However, if we combine, as does Coase, the beliefs that the price system without cost is perfectly efficient and that, even if costly, it is still better than governmental regulation, then prescriptive claims follow. When transaction costs are positive, Coase prefers to get closer to the world of zero transaction costs rather than having to use the governmental solutions first considered, either by getting close to its result or to its mode of operating.

First, the initial distribution of property rights has to imitate the result of a well functioning price system. In the *PSC*, as we have seen, the first consequence of the introduction of transaction costs is the influence of the property rights allocation on the economic result. Coase infers immediately the prescriptive claim according to which this economic influence has to be taken into account by the courts when attributing the property right. His insistence on reciprocity eliminated the moral

³⁷ Coase makes the assumption that the consumer’s willingness to pay for a good just reflects her preference, whereas it also depends on her initial endowment and on a social norm of the value of the resource (see, for example, Hausman and McPherson, 1996).

³⁸ Pratten (2001) showed how these ideas underlay Coase’s empirical studies about American and British institutions of television and radio broadcasting, and stresses the possible inconsistency between Coase’s criticisms of standard microeconomics and this efficiency assumption, which he took from it without demonstration.

³⁹ The self-evident nature of his ‘theorem’ in his own view is absolutely clear in the assertion Coase made in an interview, that he was ‘thinking [he] was making a proposition of the kind of two and two equals four’ (Coase, 2002).

responsibility problem; but what seemed a distinction between the moral responsibility and the economic problem becomes a subordination of the former to the latter. The judge has to attribute the right to the person who will use it in the way that maximises the output value.⁴¹ Coase writes:

It would therefore seem desirable that the courts should understand the economic consequences of their decisions and should... take these consequences into account when making their decisions. Even when it is possible to change the legal delimitation of rights through market transactions, it is obviously desirable to reduce the need for [1996] such transactions and thus reduce the employment of resources in carrying them out. (*PSC*, p. 19)

Limiting the need of the exchange entails distributing the right to the person who values it the most, which saves on transaction costs. And Coase takes up this idea in 1977, even broadening it to ‘what are termed personal rights or civil liberties, the kind of activity covered by the First Amendment’ (Coase, 1977, p. 32).

The second prescriptive conclusion is not explicit in the *PSC* but appears later: the efficiency of the price system has to be promoted.⁴² In Coase’s reasoning, it is better to resort to the price system even if costly than to public regulation, and a well-operating price system leads to an optimal result. One can easily infer that it is sufficient to ameliorate the functioning of the price system, which leads to reducing transaction costs. This second consequence appears with the first in Coase’s Nobel speech:

It is obviously desirable that these rights should be assigned to those who can use them most productively and with incentives that lead them to do so and that, to discover (and maintain) such a distribution of rights, the costs of their transference should be low, through clarity in the law and by making the legal requirements for such transfers less onerous. (Coase, 1992, p. 718)

Here we have to come closer to the conditions of the ideal negotiation. This rule appeared in passing in the introduction to his 1988 collection, in which Coase mentioned ‘the facilitating of market transactions’ as an alternative to public regulation (1988a, p. 24; see also p. 25). These prescriptive conclusions help us understand the importance of studying the zero transaction costs world: it is, to Coase, the ideal world to which we have to come closer.

5. Concluding remarks

We insisted on the fact that Coase’s criticism misrepresents Pigou. Since the latter takes into account something like transaction costs, Coase criticises less his analysis than public intervention itself. Nevertheless, since Pigou also criticises public intervention along the same line, Coase’s criticism hides a kind of pessimism: even if transaction costs are positive, public intervention is generally less

⁴⁰ These criticisms were formulated by, for example, Samuelson (1967) and Cooter (1982) (see Bertrand, 2006b). On this subject, it is not the least ironic that Pigou (1932, p. 200) highlighted the loss of resources incurred in bilateral negotiation because of its indeterminacy.

⁴¹ As stressed by Simpson (1996a, p. 61), it is ‘curious... that Coase... nowhere treats judicial decisions in private law by the courts of the state as a form of governmental intervention or action. Private law, evolving through judicial decisions, is, for reasons never made explicit, privileged against the criticisms he directs against government intervention’. Moreover, the criterion of efficiency to allocate rights entails circularity; other criticisms refer to selective perceptions and information problems, and they apply more generally to the comparative institutional approach. Consequently, Coase’s evaluation that public intervention is generally less efficient than the price system is tainted with normative judgments (see Medema and Samuels, 1998).

⁴² Both these prescriptions can be found in the New Law and Economics (for example, Posner, 1986). On the role of the ‘Coase theorem’ in the Law and Economics movement, see Medema (1998, 1999).

efficient than the price system. Aslanbeigui and Medema (1998, p. 619) summed up this opposition: [997]

Despite sharing many concerns over the difficulties or costs attached to government action, Coase and Pigou part company on implications for policy. The reasons for this divergence... can be found in their respective conceptions of market failure and their respective degrees of confidence in the ability of government to deal efficiently with the market failures.

The deep opposition between these two authors lies therefore in their evaluations of the relative efficiencies of the price system and public intervention, both serving and explaining their normative or political views. However, this opposition has to be linked to their respective welfare criteria: 'Coase's criterion of maximizing the value of output gives less latitude for governmental success than does Pigou's criterion, which combines elements of both equity and efficiency' (Aslanbeigui and Medema, 1998, p. 622, see also p. 611).⁴³

The 'Coase theorem' plays three roles in Coase's works: heuristic (to bring to light the role of transaction costs), critical (of the Pigovian tradition), and normative (Coase implies from it policy prescriptions). These roles are linked in various aspects; for example the reciprocity thesis serves all of them: it criticises traditional modes of intervention in which the polluter pays, and allows a new vision of the problem of externalities as an exchange of property rights, thus extending the size of the market.⁴⁴ The three roles of the 'Coase theorem' lie upon the thesis of the efficiency of the price system operating without costs. They explain why the *PSC*, even if it mainly studies the world of positive transaction costs, gives such a role to the zero transaction costs one. The latter plays for Coase the same role as the world of perfect competition for standard economists. It seems to be a heuristic role that would facilitate the demonstration, but finally they want to get closer to it, because of its characteristics: this is the normative role of these worlds.

[998]

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⁴³ Even if Coase mentioned the necessity of an ethical evaluation (*PSC*, p. 43), he never started it (Pratten, 2001, p. 620). On the contrary, to Pigou, economic welfare is just a part of total welfare, and distribution matters (see Myint, 1948).

⁴⁴ We are indebted to one of our referees for having stressed this issue.

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