Why markets do not fail. Buchanan on voluntary cooperation and externalities

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HOPE Center Working Paper No. 2010-05

November 1, 2010

Duke University

Center for the History of Political Economy

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November 1, 2010

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Abstract

of

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by

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During the 1950s and 1960s, many economists were convinced that externalities were a cause of "market failures" -- because individuals are not capable of internalizing the costs their actions impose to others -- and therefore that the intervention of the state was necessary to allow an efficient allocation of resources. The paper presents the analyses of an economist, James Buchanan, who systematically tried to show that externalities should not be viewed as a problem for market efficiency. The central argument Buchanan used to defend markets was the human propensity to internalise the external effects of their actions and to pay for the goods they consume. We describe the intellectual trajectory he followed from the early 1950s -- when he started to work on "spillover" -- to the mid-1960s to complete a consistent explanation of the efficiency of market mechanisms and private arrangements in presence of externalities. By adopting an historical perspective, we are able to show the remarkable consistency of Buchanan's claims about externalities, even though he developed them in a period when the views of economists on the question were changing dramatically.

Keywords

Buchanan, externalities, social cost, market efficiency, spontaneous order

JEL codes:

B2, B3, H0, H1, H4.

1. Introduction

To economists, externalities -- that are defined as interdependence between individuals that do not take place on markets -- raise many complicated questions to solve and generate controversies difficult to settle. One, probably the most important, of them relates to the necessary intervention of the state and the efficiency of markets. In effect, it has been repeatedly argued that, in presence of externalities, the allocation of resources through market mechanisms cannot be optimal. Externalities therefore have almost systematically been presented as a cause of "market failure"—the expression was used in 1958 by Francis Bator to characterise the effects of external effects on the efficiency of markets. And, as a corollary, when individual activities generate non-market effects that influence the welfare of others, the intervention of the state is deemed as necessary to promote an efficient allocation of resources. Marshall was the first to point at the importance of these external effects for an economy. But it was Arthur Cecil Pigou who proposed the most influential analysis in *The Economics of Welfare* (1920).

In the late 1950s and early 1960s, important articles were written — "The Problem of Social Cost"(1960) by Ronald Coase and "Externality" (1962) James Buchanan and Craig Stubblebine — that challenged these arguments about the impact of externalities on the efficiency of markets, demonstrated that there were conditions in which individuals are able to negotiate efficient, mutually beneficial private or market arrangements and, therefore, that externalities should not necessarily be viewed as a problem for the efficiency of market transactions[2]. These works were noticed by some commentators and both Buchanan and Coase were cited, either for being praised (Wiseman, 1963, p. 41; 1965, p. 8) or criticized (Wellisz, 1964, p. 347). Less than a decade later, works devoted to externalities or to the problem of social cost still included references to Coase and "his" theorem while

2 In an article published in 1961 but that attracted almost no attention until the end of the decade, jurist and law professor Guido Calabresi reached a similar conclusion, that he nonetheless qualified by adding that it holds in theory only and that it "is *in fact* inaccurate" (1961, p. 506; emphasis added).

Buchanan was no longer mentioned. The situation lasted: it is barely necessary to note how incredibly successful Coase's analysis has been while Buchanan's work on externalities to this day remains largely unnoticed.

This is all the more surprising that Buchanan's explanation as to why externalities should not be viewed as a cause of "market failure" precisely do not suffer from the lack of realism that supposedly characterised Coase's demonstration and that led scholars to reject it as practically irrelevant. In contrast to Coase, Buchanan did not explain the efficiency of market mechanisms in presence of externalities by using "heroic" (McKean, 1970, p. 31) assumptions about transaction costs, as Coase did. He did not need it. Transaction costs play no role in the analysis proposed by Buchanan who rather based his theory on a simple behavioural assumption: individual's willingness to pay for the goods they consume and for the external effects their consumption create. More precisely, Buchanan's argument was twofold: first, externalities are not a major economic problem because, second, individuals are spontaneously ready to internalise the consequences of their actions on others. This was an argument that Buchanan repeatedly used, refined, stated. He put it forward, for the first time in the early 1950s -- that is well before was published "Externality", the first article that Buchanan entirely devoted to the phenomenon and when economists paid almost no attention to the externalities. This connection between a specific behavioural assumption and externalities has never, to our knowledge, been put forward. As has never been proposed any historical discussion of Buchanan's views on externalities.

The purpose of this paper is to recount the history of Buchanan's analyses of externalities and how to remove them, from the early 1950s -- when he started to work on "spillover" -- to the mid-1960s to complete his explanation of the efficiency of market mechanisms and private arrangements in presence of externalities. An historical perspective allows us to put forward the consistency of Buchanan's claims about externalities, even though he developed them in a period when the economists' views on the question were changing dramatically. But this does not imply that this trajectory was linear. Our claim is that there were two major turning points in the evolution of

Buchanan's ideas on externalities. The first one is relatively well known; it corresponds to his meeting with Coase and Gordon Tullock at the end of the 1950s that indeed fueled Buchanan's interest and led him to pay more and more attention to externalities. The second, far less studied and known, took place earlier: the publication of Paul Samuelson's articles about a "pure theory of public expenditures" in 1954 and 1955. Such influence has never, to our knowledge, been put forward for at least one reason: the comments Buchanan wrote about Samuelson's theory and the letters they exchanged have never been published. These documents are nonetheless important. They form the matrix, the basis of all the articles Buchanan wrote after 1955 on welfare economics and externalities. These notes and correspondence are an invaluable source of information on Buchanan's views on externalities.

Thus, relying on published works and also on archival material, we show that there exists a before and an after 1954; a before and after Samuelson. Or, in other words, we show that the history of Buchanan's thoughts on externalities can be separated in 3 periods. We devote a section to each of them: in a first section, we discuss how and in which context Buchanan started to work on "spillover" effects — he did not use the word "externalities" — before Samuelson and reasoned in terms of "social cost" even before Coase. Then, in a second section, we show that reading and analysing Samuelson on public expenditures allowed Buchanan to clarify and refine his views. The critical answers by Samuelson nonetheless tended to deter him from publishing his works. It is only, as we discuss in a third section, after he moved to the University of Virginia and made the acquaintance of Coase and Tullock, that Buchanan no longer hesitated to state his views. In a fourth and final section we summarize our arguments.

2. Spillover effects, the pricing of roads and the problem of social cost

The early 1950s, when Buchanan started his academic career in economics, were not a period in which externalities much attractedthe attention of economists. There were few articles (Meade, 1951; Scitovsky, 1954; and to a lesser extent, Bator, 1957) that were devoted to a phenomenon perceived as "unimportant" (Scitovsky, 1954, p. 145). Scitovsky wrote, in reference to actual situations, that "examples of it seem to be few and exceptional" (1954, p. 145). Bator identified only one example in the literature, that of "the beekeeper whose honey output will increase, other things equal, if the neighboring apple producer expands his output (hence his apple blossom "supply")" (1957, p. 42). And concluded, from "the very pastoral quality of the example" (Bator, 1957, p. 42), that "in a statical context such direct interaction among producers -- interaction that is not reflected by prices -- is probably *rare*" (1957, p. 42; emphasis added). By contrast, Buchanan insisted on the importance of "spillover" effects in certain situations and the necessity to take them into account. In particular, working on the problem of marginal cost pricing, he developed the argument that the price of public goods could be set at the level of marginal cost because individuals are ready to pay for the goods they consume and as long as one reasoned in terms of marginal *social cost* (2.1). In effect, Buchanan pointed at the existence of a problem of *social cost* and insisted that externalities were indeed problematic for an optimal functioning of markets (2.2). But this never prevented him to claim that the "pricing" of road services was the only efficient solution that could be used (2.3)

2.1. Public services, spillover and marginal cost pricing

Buchanan first mentioned "spillover" effects in "The Pricing of Highway Services" (1952), that was, and must be understood as, a sequel, an extension of a previous study, a 6-page long article published in 1951, that Buchanan had devoted to Knut Wicksell and his voluntary exchange theory, and entitled "Knut Wicksell on Marginal Cost Pricing". These two papers provide the basis of Buchanan's analysis of externalities.

2.1.1. Voluntary cooperation and the pricing of public services

In "Knut Wicksell on Marginal Cost Pricing", Buchanan's primary purpose was to show the relevance of Wicksell's views for the controversy, that took place among all the important economists of this time, on marginal cost pricing—is it possible, for enterprises with decreasing costs, to set their price at the level of their marginal cost[3]? Many argued that this was impossible without a necessary intervention of the state (through various means, subsidies or collectivisation of the services). This was not Wicksell's views. He demonstrated how, without difficulty, it was possible to equate the price with the marginal cost — even zero if marginal costs were non-existent — and then to cover the rest of the costs of production and of operation with tax revenues. The twofold solution thus proposed could appear as not very original and, in particular, "similar to the multi-part pricing systems proposed by Coase and others" as Buchanan himself admitted (1951, p. 178). There was one major difference that explained that Wicksell's solution was "superior" to other alternatives and that really attracted Buchanan's interest: "*its essential element of voluntarism*" (Buchanan, 1951, p. 178; emphasis added).

The way Wicksell justified his claim was original too and important too for the development of Buchanan's views. It was the first time Buchanan mentioned the role of subjectivism in the discussion of an economic problem. In effect, Buchanan explained his readers that the advantage of Wicksell's solution was to take into account the subjective benefits in terms of utility that accrue to the consumers of any good and the users of any service. And, necessarily and undoubtedly, these benefits were far greater than what the costs of production of the good or service. Buchanan used the example given by Wicksell — of a public enterprise with annual costs of 100,000 but that generates a subjective value of, at least, 226,000 — to prove that the provision of a public service would necessarily generate a huge surplus for the consumers. Thus, marginal cost pricing was legitimate at the macro-level. There remained to move down to the micro-level and to face the question of the determination of individual taxes. Certainly, Buchanan noted, it was "extremely difficult, if not impossible, to calculate each beneficiary's tax in relation to his gain in subjective utility resulting from the free provision of

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3 The paper is probably the product of a coincidence. Buchanan discovered, "[b]y sheer chance" (2007, p. 5) "buried in the dusty stacks of Chicago's old Harper Library" (Nobel Prize lecture) of the "unstranslated and unknown ... Knut Wicksell's 1896 dissertation on taxation" (2007, p. 5-6) just before Nancy Ruggles published two important surveys (1949, 1950) on the controversy on marginal cost pricing. Ruggles mentioned Wicksell's only work available in English, his *Lectures on Political Economy*, published in 1934. Buchanan, who had already referred to Wicksell in his "The Pure Theory of Government Finance: A Suggested Approach" (1949), saw an additional opportunity to explain more precisely the views of the Swedish economist and through them his own ideas by jumping into a lively and important debate for welfare economics.

the service" (1951, p. 175). But this was not a problem because everyone would benefit from the provision of the service: "the gains are so significant that even considerable departures from the correct apportionment of the tax among beneficiaries will still leave each individual with a net gain, great or small" (Buchanan, 1951, p. 175). As a consequence, each individual had an obvious incentive to pay taxes for the goods or services they consume. Wicksell's solution was disarmingly simple: "[s]ince the total costs of the enterprise must be paid exclusively by those receiving the benefits of the service provided, *all that is required* is that each beneficiary (or enough of them to pay the general costs) make some estimation of his surplus and be willing to contribute its value equivalent" (Buchanan, 1951, p. 177; emphasis added). Therefore, "[t]he losses must be made up from the "contributions" paid by those benefited" (Buchanan, 1951, p. 178).

Thus, Buchanan's laudatory views of Wicksell's voluntary exchange theory came from a combination of three elements: first, pricing (at the marginal cost) public services is possible because, second, individuals are ready to pay for goods or services that, third, provide them with subjective — but nonetheless real — benefits. These elements remained major features of Buchanan's works on externalities, as a factor of both internal consistency and originality compared to what most -- if not all -- economists wrote about externalities. For instance, it contrasted sharply with what Richard Musgrave believed about economic men and about Wicksell. Musgrave rejected the voluntary exchange theory as "highly unrealistic" (Musgrave, 1939, p. 419; see also 1941, p. 322) and accordingly "of little practical significance" (Musgrave, 1939, p. 220) because of the individuals tendency to adopt free-riding behaviors: "The very fact that [legal enforcement of individual tax contributions, independently of the individual's willingness to share part of the burden] appears universally necessary *ndicates the absence of a general willingness to comply with the obligation to contribute*" (Musgrave, 1939, p. 220; emphasis added)[4]. What made Musgrave claims interesting, at least for our purpose, was its connection to Wicksell.. In other words, the readiness to contribute that Buchanan

4 Musgrave's claim was certainly less new and original than Buchanan's. Among others, Sidgwick and Pigou had connected the efficiency of markets to self-interest (see Medema, 2007, 2009).

found plausible and presented as the main positive point in favour of Wicksell's theory was viewed as unrealistic and was retained as an argument against Wicksell by Musgrave[5]. A more complete defense of Wicksell needed more elaboration and, in particular, required an application to a specific practical question. Buchanan chose to study *the pricing of highway services*.

2.1.2. Public services, spillover and marginal cost pricing

Transportation was, in the late 1940s and early 1950s, "an area of emerging national importance" (Buchanan, 1958, p. xvii) and represented "a major social problem" (1952, p. 97) in the immediate post-WW II U.S.A. In the first years of the decade, a dramatic increase in the size of the metropolitan areas -- that absorbed 81% of the nation's population growth -- combined with an increase in automobile ownership -- by over 50% between 1945 and 1955 -- and a decline in public transportation to create a crisis that decision makers and planning agencies viewed as resulting from the insufficiency of capacities. Decisions were made and money spent to modernize or reconstruct and also to expand the existing network of highways[6], and accordingly, that the major economic problem was to find means to finance the production of more roads[7].

Buchanan departed from that dominant perspective. In the first paragraph of his 1952 paper, he noted that new capacities were a long-term solution only but, especially if progressing at a slow pace as it was[8], it would "provide no relief within the immediate future" (1952, p. 97). Rather than to increase the supply, Buchanan suggested that it would be more efficient to restrict the demand and limit the number of vehicles. To reach this objective, the "more appropriate and effective means ... lies in the utilization of the rationing device of the free economy, namely price" (Buchanan, 1952, p. 98). From

5 For a more complete and detailed comparison of Musgrave's and Buchanan's views on Wicksell, see Marianne Johnson's article (2006).

6 In 1947, the Public Road Administration decided that 60.640 kilometers of interstate highways should be built.

7 As an instance, in 1952 the Federal-Aid Highway Act authorized $ 25 millions for the interstate network of highways.

8 In January 1953, it was estimated that "only 24 percent of interstate roadway was adequate for present traffic". The States had completed only 10,327 km of system improvements at a cost of $955 millions.

this perspective, congestion was not a consequence of insufficient capacities but of an incorrect price charged to the users. Then, evidently, the main question was that of the determination the *correct* price for road services; a question that he answered within the Wicksellian frame he had sketched in 1951: the price for road services have to be set at the level of the marginal costs of production and taxes should be added to cover for the rest of the costs. But he then added an element that remained ignored in the analyses of this kind of issue: highways are what would later be known as impure public goods; the quality of the services they provide depends on the number of users; congestion reduces this quality and creates a "'spillover' cost represented in poorer service provided all users" (Buchanan, 1952, p. 100). This did not represent an obstacle to the use of a price mechanism but was rather a condition that could not be neglected. The price to charge still had to be set at the level of the marginal cost but spillover costs had to be included in the calculus. Thus, the "correct price" for highway services correspond "to the marginal *social* cost incurred in providing a unit of that type of service" (Buchanan, 1952, p. 100; emphasis added). And, of course, as said in the 1951 article, this was a realistic solution since individuals were be ready to pay a price including the external costs imposed by each consumer on others.

Buchanan had therefore demonstrated that Wicksell's voluntary exchange approach was theoretically relevant and could also be used to address an important empirical problem, provided that spillover effects were not forgotten and that prices set at the level of the marginal social cost.

2.2. Externalities and the problem of social cost

1954 was an important year for the problem on which Buchanan has been working: the Federal-Aid Highway Act authorized an expenditure of $175 millions for interstate highways. The same year, the president of the U.S.A., Dwight Eisenhower, for whom the modernization of the network of highways was a priority, established an Advisory committee on a National Highway Program. Chaired by general Lucius D. Clay, its objective was to find "a self-liquidating method of financing that would avoid debt" (Weingroff, 1996).

These events encouraged Buchanan to refine his views on the "pricing" of road services, even though this solution still did not receive much echo; a task that could not be completed without more investigations on the links between spillover effects, interdependence between users and market — price — mechanisms. He thus started a book, comparing different means to finance the construction or modernization of highways, on which he worked during the summer 1954 that he spent at the Rand Corporation. Although he never completed the book, there remain notes and draft versions of "Private Ownership and Common Usage: The Road Case Re-Examined" published in 1956[9] that he wrote in 1954.

The title of his first note — "Resource Allocation and the Highway System" — clearly indicates Buchanan's purpose: to determine "the proper amount of the nation's economic resources which should be devoted both to the utilization and the construction of the highway system" (Buchanan, 1954 b, p. 1). To propose solutions to "[o]ne of the most pressing domestic policy problems facing the nation" (1954 b, p. 1), he used the frame established in his previous publications, arguing that one could not ignore the existence of "external diseconomies in the consumption or utilization of highway services" (1954 b, p. 2). It is then that he referred for the first time to Frank Knight 's article on the "fallacies of the problem of social cost" (1924), in which Knight criticized Pigou for having forgotten the role of property rights and therefore ignored that a competitive system could promote an optimal allocation of resources[10]. But, rather surprisingly, Buchanan partially disagreed with Knight. In effect, he suggested that Knight's demonstration was "perhaps misleading" (Buchanan, 1954 b, p. 4), and his conclusions did not hold, because he ignored externalities. Indeed, Buchanan concluded, in contrast with Knight, that "when there exist external diseconomies in utilization, competitive pricing does not

9 This article was first written as an appendix to chapter 3, entitled "A Digression of Economists. Private Ownership and Common Usage: The Road Case Re-Examined".

10 Knight targeted two conclusions Pigou has reached in *The Economics of Welfare*: first, when there are public goods, diminishing returns and phenomena of congestion, then the rational behaviour of firms lead them to non-optimal investments and therefore to a non-optimal use of resources; second, and as corollary, taxes must be used to promote to an optimal use of resources. Knight, following Pigou, used the case of two roads. To him, Pigou was wrong because he overlooked that roads could be privately owned. In that case, Knight concluded, private owners would necessarily charge a price allowing an optimal allocation of resources and that would be equal to the tax the State could have set.

lead to an optimum" (Buchanan, 1954 b, p. 3) and that "competitive pricing could never take into account the spillover effects" (Buchanan, 1954 b, p. 3). In fact, competitive markets "tend to equalize private or individual marginal enjoyments but since interdependence is present these tend to be greater than social marginal enjoyments" (Buchanan, 1954 b, p. 5). Therefore, the competitive price would not be optimal. To reach an optimal allocation of resources "it is necessary that the prices of highway services be set equal to the marginal *social* costs of providing such services" (Buchanan, 1954 b, p. 6; emphasis added). It is thus necessary that the price also "includes the incremental costs (or reduced enjoyments) imposed upon other road users!" (Buchanan, 1954 b, p. 6). Thus, Buchanan used the same arguments as in 1951 and 1952: the subjective dimension of the costs and benefits ("enjoyment"), externalities of consumption and marginal *socia*l cost pricing in a twofold, Wicksellian, system.

The reference to the problem of "social cost" was even clearer in a second note also written during the fall of 1954, very close to what will become the 1956 "The Road Case Re-Examined". The title of the preliminary version is particularly significant, for it connects externalities — as *consumption* interdependence — to the problem of social cost: "Consumption Interdependence and the Interpretation of *Social Cost*" (emphasis added)[11]. Buchanan started again his note with a reference to Knight, noting that "Professor Knight's arguments have never been seriously questioned, and indeed, I have myself implicitly accepted it in specific reference to the road example" (Buchanan, 1954 c, p. 1). However, did he add,

> "[u]nder certain conditions it appears evident that the argument is not valid even if the somewhat

11 From this perspective, one must not forget that Coase mentioned Knight's 1924 article as a major source of inspiration of his own "Problem of Social Cost", explaining his implicit reference to Knight's article only because of its title -- "the title of my paper came from Frank Knight" (Coase, 1983, p. 215) -- that he choose to "indicate the topic [he] was talking about" (ibid.). In effect, he added: "I don't think the concept of social cost is a very useful one ... but it did indicate to people what I was talking about" (ibid). A few years later, Coase repeated the same statement, insisting that he the title of "the article "The Problem of Social Cost," ... [is] adapted from Frank Knight's article, "Fallacies in the Interpretation of Social Cost."" (1993, p. 250). He also gave additional details, a more precise explanation as to what had attracted him in the reasoning developed by Knight and why he saw his argument "as a natural extension of Knight's insight" (1993, p. 250). Therefore, Buchanan made the same reference not only to Knight but also to "social cost" 6 years before Coase's article was published and 4 years before Coase moved to Virginia.

> questionable case of external economies in production is excluded from consideration. *In the presence of either external economies or diseconomies of consumption, the competitive economy should not appear to allocate resources properly*" (Buchanan, 1954 c, p. 2; emphasis added).

Therefore, Knight's demonstration was "incomplete" (1954 c, p. 8) because it did "not carry through to the case of utilization or consumption interdependence" (1954 c, p. 8). Certainly, Knight was right in concluding that private property could lead to the equalization of "the marginal products internal to the trucking firms" (1954 c, p. 7). But ignoring the "external economies or diseconomies of utilization or consumption which are dependent upon the interdependence of consumption" (1954 c, p. 7) means that "nowhere in the pricing process are the external diseconomies of usage included" (1954 c, p. 7) and therefore implies that the price for road services would be lower than what it should be to guarantee an optimal allocation of resources. The only way to ensure an optimal allocation of resources is to determine a price that takes marginal internal and external costs into account.

Buchanan rapidly expanded the 9-page long note, transforming it into an article. In November 1954, he sent a quasi-definitive version of the paper to a few colleagues. Their answers and comments -- Malcolm W. Hog, 1 December 1954; Roland McKean, 1 December 1954 and Richard H. Leftwich, 18 Jan. 1955 -- allowed him to revise the article and to submit it, on March 15, 1955, to the *Quarterly Journal of Economics*[12]. The last version of the text, that was eventually published in 1956, is more refined in its technical aspects than the preliminary ones and less critical against Knight. Buchanan is also more precise in his way of defining externalities. In particular, he included references, that were absent from the previous versions, to the rare papers recently published and available when he was writing his article: Meade's and Scitovsky's works. Mainly, these references were used to stress the differences between his and their perspectives. He adopted the same starting point: external effects as a form of interdependence among economic agents. But he went beyond the (restrictive) definitions

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12 Edward H. Chamberlin, then editor of the Q.J.E. replied on June 1st that he rejected the manuscript. Buchanan submitted the paper to the American Economic Review and it was rejected again. It was eventually accepted, "with enthusiasm" by the Southern Economic Journal (Schwenning to Buchanan, August 22, 1955, Buchanan archives, Buchanan house, George Mason University).

Meade and Scitovsky adopted as *direct interdependence between producers*[13]. To him, as shown in the previous versions, problems were more important when there were consumption externalities. He thus defined externalities as interdependence between "individual utilities and productivities" (Buchanan, 1956 a, p. 309). In addition, Buchanan did not seem to restrict externalities as direct interdependence: any interdependence has both an indirect and a direct dimension when agents use the same resource. External effects therefore are everywhere. They characterize any interaction or, more precisely, any interaction that takes place in a decentralized economic system: "the statement that individual utilities or productivities are interdependent is equivalent to saying that a resources which is commonly used is not centrally owned" (Buchanan, 1956 a, p. 315). But his conclusion the efficiency of market mechanisms remained the same: external diseconomies would not be reflected in competitive prices. Thus, competitive ownership of the roads and competitive pricing would be efficient only when there are no externalities. On the other hand, centralized ownership and monopoly pricing would lead to an inefficient use of the roads too. The only "meaningful criterion for operational efficiency" (Buchanan, 1956 a, p. 315) was such that "the government ... own the roads and price the road services at the level of marginal social cost" (Buchanan, 1956 a, p. 315). Thus, as can be see, to Buchanan, externalities were not a problem of property rights only. And also, their existence could not be used to legitimize the intervention of the state. Market imperfections are not necessarily market failures[14].

2.3. How to finance the construction of highways? "Pricing" again

Buchanan completed "The Road Case Re-examined" in January 1955. The same month, on the 11th, the Clay committee presented its report to Eisenhower. Among the proposals on how to finance the

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13 Meade (1951) discussed "external economies and diseconomies" between two firms in a model in which the production function of each firm includes its factors and output and the factors and output of the other firm. Scitovsky identified four types of situations in which the "interdependence among the members of the economy" (Scitovsky, 1954, p. 144) is "direct (i.e. non-market) ... in the sense that it does not operate through the market mechanism" (1954, p. 144). Among the latter, direct and non-market interdependences between consumers or between consumers and producers cannot be defined as externalities. It is only when two firms are involved, i.e. when "[t]he output of the individual producer may depend not only on his input of productive resources but also on the activates of other firms." (1954, p. 144), that the phenomenon is "known under the name of 'external economies and diseconomies'" (1954, p. 144).

14 Steven Horwictz suggested this crucial distinction.

extension and modernization of the interstate highway system it included, the one they favoured consisted in issuing bonds, which would be managed by a Federal Highway Corporation. Immediately, Buchanan wrote a paper -- more a vulgarization article than an academic work[15]-- entitled "Painless Pavements: Highways by High Finance" in which he criticized the "extraordinary" (Buchanan, 1955 a, p. 2) proposal made by the Clay committee, that was supposed to "more than double the annual rate of highway expenditure without increasing taxes ... [and] ... without increasing the national debt" (Buchanan, 1955 a, p. 2). This meant that

> "the Clay committee has at last discovered the fiscal version of Aladdin's wonderful lamp, and that henceforth all governmental "good things" such as super-super highways may come to us without our having to bear either the burden of taxation of the sufferings of conscience over increasing national debt" (Buchanan, 1955 a, p. 2).

But, unfortunately, "good things come at a cost, whether they be provided by the government or the grocery store" (Buchanan, 1955 a, p. 2), and an increase in spending would necessarily, whatever was the means chosen to finance these expenditures, result in more taxes. Or, to put it in more technical terms, Buchanan rejected the idea, promoted by the committee, that is could be possible to separate spending from taxation. Therefore, the solution chosen by the Clay committee would create inflation, which was "the most inequitable form of taxation which has ever been devised" (Buchanan, 1955 a, p. 15). To him, the solution was simpler:

> "The answer to the whole highway problem lies in "pricing" the highway correctly. The existence of congestion on our streets and highways is solely due to the fact that we do not charge high enough "prices" for their use. This is one of the main functions of price in our free enterprise economy... [p]rice relieves potential congestion around our meat counters, our motels, and our models. Why do we shun its usage in the case of highway services?" (Buchanan, 1955 a, p. 14-15).

A few months later, in the spring of 1955, Buchanan served as a consultant for the Committee for Economic Development. An opportunity to demonstrate that economic tools and that "professionally trained economists [were] able to shed some light" (1958, p. xviii) on an "important issue in political economy" (1958, p. xvii), this experience was also a disappointment when he realized how "surprisingly little ... economists seemed to be able to contribute ... to the solution of this problem"

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15 Harry Jenkins, professor of economics at the University of Arkansas, to whom Buchanan sent the paper, suggested that he could sent it to "The Commercial and Financial Chronicle" or "The Freeman".

(1958, p. xviii). The prevailing theory of public finance, that he then named the "new orthodoxy", was ill-adapted to the American economy of the 1950s. A new theory was needed, and Buchanan decided that devising one should be one of his objectives and one he probably could reach. In effect, at that time, Buchanan had already sketched an original theoretical framework based on the idea of a correct price for public services — that is a price based on the marginal *social* cost. In addition, rather than assuming that individuals were led to take advantage from the existence of externalities, he believed that they were ready to pay for what they consume; that would solve any problem of social cost; an argument that was also rather original. However, he felt that he had produced essentially "orthodox" work, and the book he was writing threatened to be just another contribution to a set of works he thought were wrong. He would not publish anything on externalities before the end of 1959. This does not mean that Buchanan did not go on working on, and refining his ideas about externalities. Samuelson played a crucial role in this evolution.

3. Buchanan and Samuelson disagreement and the evolution of Buchanan's views on public goods and externalities

The silence of Buchanan coincided with the publication of Samuelson's "The Pure Theory of Public Expenditure" in 1954 and its graphic sequel, "Diagrammatic Exposition of a Theory of Public Expenditure", in 1955. There were many elements, in these works, that were appealing to Buchanan. First of all, Samuelson adopted an objective that was close to Buchanan's -- to propose a theory of government or of government finance -- but he based his analysis on a totally different assumption. While Buchanan claimed, as said above, that public expenditure and taxation should be treated interdependently, Samuelson used assumptions that implied that expenditures could be treated separately from taxation. In fact, to Samuelson, dealing with expenditures was sufficient and included an answer to the question of taxation. Thus, he claimed that a theory of government should be based on an analysis of public expenditure rather than on taxation -- what most economists have studied: "[e]xcept for Sax, Wicksell, Lindahl, Musgrave, and Bowen, economists have rather neglected the theory of optimal public expenditure, spending most of their energy on the theory of taxation"

(Samuelson, 1954, p. 387; see also 1958, p. 332).

It is not only that Samuelson had a purpose close to Buchanan's, in terms of public finance theory. He also insisted on the importance of externalities. More precisely, he dealt with externalities through pure collective goods. In effect, in the economy he analyzed, Samuelson assumed that there existed only two categories of goods: private and collective consumption goods. The latter were such that all individuals "enjoy in common in the sense that each individual's consumption of such a good leads to no subtraction from any other individual's consumption of that good" (1954, p. 387). Thus, while each individual's demand for private goods is independent from the demand of others, it is different with collective goods for which there exists a "jointness of demand" (1954, p. 389). With the later assumption, Samuelson wanted to introduce in the public finance theory a "vital" (1955, p. 350) element, namely "external economies" or "external interdependencies that no theory of government can do without" (1955, p. 350). Now, to take these specificities into account led to change the conditions that had to be satisfied to reach an optimal allocation of resources. Samuelson established a new condition, "which constitutes a pure theory of government expenditure on collective consumption goods" (Samuelson, 1954, p. 388), that was at the same time sufficient and necessary: the sum over all individuals of marginal rates of substitution in utility between one public and one private good had to equal the marginal of substitution in production between these two goods.

In terms of public policy, this condition had an important consequence since it demonstrated the "failure of market catallactics" (Samuelson, 1954, p. 389): "*no decentralized pricing system can serve to determine optimally these [optimal] levels of collective consumption*" (Samuelson, 1954, p. 388; emphasis in original). Or, more broadly, because Samuelson gave a general turn to his conclusion, targeting all the mechanisms that had been envisaged to defend market efficiency: the "'Scandinavian consensus,' Kant's'categorical imperative,' other devices meaningful only under conditions of 'symmetry' ... [are] ... utopian" (Samuelson, 1954, p. 389). None of them were able to satisfy Samuelson's sufficient and necessary condition to reach an optimal allocation of resources in presence of collective goods and externalities. These mechanisms worked only if individuals revealed their preferences about the quantity of collective goods they want to consume or, as Samuelson put, were "indoctrinated to behave like a "parametric decentralized bureaucrat" reveals his preferences by signaling in response to price parameters or Lagrangean multiplies to questionnaires, or to other devices" (1954, p. 389). But, as the terms in the preceding quotation show, this was not an option Samuelson envisaged seriously. He shared Musgrave's pessimistic views on human behaviour: "it is in the selfish interest of each person to give false signals, to pretend to have less interest in a given collective consumption activity than he really has" (Samuelson, 1954, p. 389). Hence a problem of social cost and a legitimation of the intervention of the state: "[m]yriad "generalized external economy and diseconomy" situations, where private pecuniary interest can be expected to deviate from social interests, provide obvious needs for government activity" (Samuelson, 1955, p. 356).

Surprisingly, there were no reactions from Buchanan to Samuelson's articles, at least as a formal published text. The surprise does not only come from Samuelson's opposition to everything Buchanan agreed with but also because those who first reacted to Samuelson developed a reasoning that bore similarities with the analysis proposed by Buchanan in 1952. Stephen Enke (1955) and Julius Margolis (1955) criticized Samuelson's characterisation of public goods for being unrealistically restrictive, ignoring that most of public goods were not pure but such that the level of consumption of each individual was affected by the consumption of others. But, although he seemed to remain out of the debate generated by Samuelson's articles, Buchanan was not indifferent to their content and conclusions. He read them and took notes about "The Pure Theory of Public Expenditure" just after its publication. Among many other quotations and formulas, he copied Samuelson's sentence on the inability of decentralized pricing system to determine optimal levels of collective goods. Actually, impressed by the work of Samuelson, his "cleverness" and "mathematical ability", Buchanan wanted to understand Samuelson's claims before trying to submit something for a possible publication (Buchanan to author, March 18, 2010). Buchanan thus wrote various notes to clarify his views, explain the reasons of a possible disagreement. He then initiated a correspondance with Samuelson to check that his claims were not “off base somewhere”[16].

It started after a discussion with Margolis and Musgrave in Detroit at the end of 1954, when Margolis was precisely putting together ideas in reaction to Samuelson. Then, in January 1955, he sent Margolis “a little note ... hurriedly written up which develops [his] initial reaction to the Samuelson note”[17]. He wanted to know if his claim was “substantially correct, and if it is a complete separate point from those that you develop”[18] because he was “not sure at all that it is right”[19]. Margolis replied that the “note certainly expands on Samuelson and illuminates his article[20] but nonetheless added that it did not include nothing new to solve the problem and, above all, nothing original compared to Samuelson:

> “your condition 2a is not a condition of optimality but is instead a condition necessary to achieve the optimum if we were to rely on a decentralized ‘pricing’ system. Though Samuelson does not specify 2a in a literary fashion he states the equivalent and he further claims that the absence of this condition is what makes the voluntary exchange theory incorrect”[21].

This reaction did not discourage Buchanan from sending Samuelson in early February almost exactly — there are only minor differences — the “Note on a Pure Theory of Public Expenditure” sent to Margolis a few days earlier. The main argument that Buchanan opposed to Samuelson, upon which rested all their disagreement and that Buchanan used again in later works such as “Externality” in 1962, was indeed summarized in the “condition 2a” Margolis referred to in his letter. Buchanan had added this condition because he found insufficient to reason, as Samuelson did, in aggregate terms to determine a Pareto optimal allocation of resources. His justification was that “the unique “social” marginal rate of substitution in production does *not* represent a *genuine* ratio of marginal costs to *each* individual” (Buchanan, 1955 b, p. 3; emphasis added). Samuelson's condition could guarantee that the Pareto frontier was reached but not that the most preferred allocation of resources was

16 Buchanan to Samuelson, 9 Feb. 1955, Buchanan archives, Buchanan house, GMU.

17 Buchanan to Margolis, 25 Jan. 1955, Buchanan archives, Buchanan house, GMU.

18 Buchanan to Margolis, 25 Jan. 1955, Buchanan archives, Buchanan house, GMU.

19 Buchanan to Margolis, 25 Jan. 1955, Buchanan archives, Buchanan house, GMU.

20 Margolis to Buchanan, Feb. 2, 1955, Buchanan archives, Buchanan house, GMU.

21 Margolis to Buchanan, Feb. 2, 1955, Buchanan archives, Buchanan house, GMU.

selected. To Buchanan, it was necessary to add an individualist condition, absent in Samuelson, and that "states that each individual must equate the marginal rate of substitution in consumption between any collective good and one private good with the marginal rate of substitution between these two goods in production *to him*" (Buchanan, 1955 b, p. 4; emphasis in original). Samuelson's aggregate condition was sufficient and necessary in one situation only: if "the cost of acquiring collective goods is the same for each individual" (Buchanan, 1955 b, p. 6)—a cost that Buchanan interpreted subjectively, in terms of marginal rates of substitution in utility between the public and a private good. This implied that Samuelson's condition was necessary and sufficient if it could be assumed that marginal rates of substitutions were identical for each individual; that is when differences between individual were neglected and when the same "prices" were charged to each individual. In any other situation, the individualist condition must be added to the aggregate Samuelsonian condition. This perspective had an important consequence: evacuating individual differences allowed Samuelson to focus on expenditures only and to neglect the taxation side of the problem; or, rather, to build a theory of public *expenditures* that would solve the problem of taxes at the same time. To Buchanan, treating expenditures independently from taxation, as Samuelson did and as the members of the Clay committee did, was a mistake: public expenditures necessarily impact individual taxes. But also, this was not a difficult problem to solve: by asking individuals what they were ready to pay even for public goods, it was possible to determine the amount of good to provide.

On February 15, 1955, Samuelson sent Buchanan a letter: 6 pages of "some critical thoughts" about his manuscript. The main point consisted in a rejection of Buchanan's idea of different individual prices for collective consumption goods that, to him, was not "natural"[22]. He was nonetheless ready to assume their existence—"who can stop us from doing so?"[23] did he ask, indicating that his was only playing an intellectual game. The artificiality of the analysis appeared even more clearly when

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22 "It is not natural to define personal prices of these at which an individual can buy as much or little of them as he pleases", Samuelson to Buchanan, Feb., 15, 1955, Buchanan archives, Buchanan house, GMU.

23 Samuelson to Buchanan, Feb., 15, 1955, Buchanan archives, Buchanan house, GMU.

Samuelson suggested a procedure that could serve to determine such prices: "we could imagine hypothetical questionnaires being answered by (guileless) citizens to all such shadow-price interrogations"[24]. Here, Samuelson was going back the ultimate argument of his 1954 article, a human tendency to free-ride: "[w]here collective consumption goods are concerned, each man in following his visible hand is led, as if by an invisible hand, *away from* the optimum point"[25]. The consequence of this "fundamental fact" was then that personal prices would be optimal if defined so that the quantities consumed by each individual were all equal. It is thus not only that, any attempt to take individual differences into account could but not lead to a non-optimal situation, but also that, if prices were identical for each and every consumer, Buchanan's individualist condition was necessarily verified if Samuelson's aggregate one was. The former was indeed redundant. Samuelson had exactly the same answer as Margolis.

Buchanan did not admit that his theory and Samuelson's could be conflicting, and did not understand why he was wrong. He then looked for a means to reconcile their positions, to "advance ... an interpretation ... which does serve to explain both your paper and your letter as well as my note, at least to my current satisfaction"[26]. Since Samuelson had insisted on the difficulty to incite individuals to reveal their preferences, Buchanan had the impression that the core of their disagreement was a matter of "revealed preferences and concealed indifference"[27]. It appeared to him that Samuelson had no problem in that matter because he certainly relied on a theory of revealed preferences. Thus, Samuelson was right and his sufficient condition necessary only under the assumption that "individual ordinal preferences can be derived ... by *revealed* choices"[28]; emphasis in original., that is if one assumed that individual utility functions could be derived objectively and exteriorly from the

24 Samuelson to Buchanan, Feb., 15, 1955, Buchanan archives, Buchanan house, GMU.

25 Samuelson to Buchanan, Feb., 15, 1955, Buchanan archives, Buchanan house, GMU; emphasis in original.

26 Buchanan to Samuelson, Feb., 25, 1955, Buchanan archives, Buchanan house, GMU.

27 Buchanan to Samuelson, Feb., 25, 1955, Buchanan archives, Buchanan house, GMU.

28 Buchanan to Samuelson, Feb., 25, 1955, Buchanan archives, Buchanan house, GMU.

observation of choices. Collective choices could be made by respecting individual choices. By contrast, and anticipating what he wrote in "What Should Economists Do?" he noted that for the first time, Buchanan believed that "individual ordinal utility function exist independently *of choice*"[29]. Under this assumption, individual choices do not reveal marginal rates of substitution and the prices of collective goods cannot be decided by external observers. Then, the only way to guarantee the respect of individual preferences, to assure that "[t]he amounts *actually* paid are made equal to the amounts *willingly* paid"[30] is to add Buchanan's necessary condition; without this condition, Samuelson's sufficient conditions could be satisfied but individual marginal conditions would not be respected.

To Samuelson, Buchanan was misinterpreting the problem when he assumed that it came from the existence of two conceptions of preferences[31]. The question was purely "logical", technical: do we need any "auxiliary conditions", as suggested by Buchanan, to ensure an optimal allocation of resources? He had no doubt that the answer be negative[32] and Buchanan had not "advanced any logical arguments to cause [him] to reexamine [his] opinion on this point"[33]. Buchanan nonetheless tried again to explain his point. In a latter dated of March 4, he repeated that, to him, differences between their theories were impossible to understand without assuming that they had different views about the nature of individual preferences. It was only "if you define preferences only on the basis of acts of choice" that Samuelson's condition was necessary and sufficient and Buchanan's redundant. He illustrated his argument with an interesting and fruitful argument that was used again in "Positive Economics, Welfare Economics, and Political Economy" (1959) and in "What Should Economists Do?" (1964):

29 Buchanan to Samuelson, Feb., 25, 1955, Buchanan archives, Buchanan house, GMU; emphasis in original.

30 Buchanan to Samuelson, Feb., 25, 1955, Buchanan archives, Buchanan house, GMU; emphasis in original.

31 He wrote to Buchanan: "I claim the issue of "revealed preferences" versus any other theory of preference is a red herring", Samuelson to Buchanan, March, 1, 1955, Buchanan archives, Buchanan house, GMU.

32 Even for the simplest possible reasons: "[a] mere count of unknowns and equations would itself predispose one in favor of my view, altho' we know that such arguments are not by themselves conclusive", Samuelson to Buchanan, March, 1, 1955, Buchanan archives, Buchanan house, GMU.

33 Samuelson to Buchanan, March, 1, 1955, Buchanan archives, Buchanan house, GMU.

Robinson Crusoe and Friday are on their island with a “Samuelson machine” to determine the optimal level of collective good that could be provided. If individual preferences are revealed by choices, as Buchanan believed Samuelson implicitly assumed, they therefore could be deciphered by the machine, which could then determine the amount Robinson Crusoe and Friday are ready to pay for the collective good. But, without an individualist condition that would impose that each individual pay only the amount he is wiling to, the machine could oblige one the the two individuals to assume the entire cost of production. No condition, no mechanism existed that could avoid the violation of individual preferences.

Samuelson received the letter when he was writing his “Diagrammatic Exposition of a Theory of Public Expenditure”— published in November 1955. Although it referred to some of the criticisms levelled against his previous article, the paper apparently bore no traces of his correspondance with Buchanan[34]. He added a cutting remark against voluntary exchange theories of public finance: “[m]uch of what goes by [this] name seems pure obfuscation” (1955, p. 355). There is of course no evidence that could allow us to interpret this as a consequence of the exchange with Buchanan. Samuelson did not react directly to Buchanan's last defense of his approach either. The discussion was apparently ended. As Buchanan wrote to Jenkins,

> ”[t]he little debate I started with Samuelson faded away after a few interesting exchanges. I suppose he came to the conclusion that I could not speak his language and he never seemed to understand mine. But at any rate he has proposed that we appear together on a program on the pure theory of government finance at the New York session”[35].

Buchanan declined the invitation: he was leaving to Italy, as he wrote to Musgrave[36], where he spent the academic year -- September 1995 to August 1956 -- on a Fulbright fellowship. There, although he

34 In the 1955 article, Samuelson did not only insist that he had made a different demonstration of the same result, namely ”the fatal inability of *any* decentralized market or voting mechanism to attain or compute this optimum” (Samuelson, 1955, p. 350; emphasis added)

35 Buchanan to Jenkins, May 5, 1955, Buchanan archives, Buchanan house, GMU. Buchanan referred to the American winter meeting of the Econometric Society (New-York City, December 27-30) where Samuelson presented “Aspects of the Abstract Theory of Public Expenditures”, published in 1958 under the title “Aspects of Public Expenditure Theories”

36 Buchanan to Musgrave, May 23, 1955, Buchanan archives, Buchanan house, GMU.

immersed himself in other even if related questions[37], he nonetheless kept on trying to make sens of Samuelson's approach. At last, in December 1955, he thought that he had understood the reasons of his difficulties[38]. But it was only a brief interlude. Buchanan read Samuelson's "Diagrammatic Exposition" and changed his mind[39]. At the beginning of February 1956, he wrote to Samuelson — "[y]ou will at least say that I am persistent"[40]— but he had good reasons to: "I now feel that my basic point in our earlier discussion although stupidly phrased and based on misunderstandings still has some relevance"[41]. Samuelson simply replied: "Alas, I have been so busy that I have simply not been able to find the time to give this [Buchanan's note] the attention it assuredly deserves. I did give the manuscript a quick reading the day it arrived, and it gave me the impression that your interpretation of my writings differs considerably from my own"[42]. This was an understatement. Buchanan found Samuelson's approach "more fruitful" (Buchanan, 1956 b, p. 13), "more acceptable" (Buchanan, 1956 b, p. 15) because it was "more restricted"—in the sense that "not only must the Paretian frontier be attained, but also that it must be attained in a Paretian way that is, in such a way that no one is made worse off the process of reaching it" (Buchanan, 1956 b, p. 13). In effect, according to Buchanan's interpretation, the very same individualist condition he had argued was necessary in his first comments appears also to be satisfied in Samuelson's "Diagrammatic Exposition": "The characteristics of the Samuelson optimal position must be emphasized. For each individual the "marginal price" of government is equal to his marginal rate of substitution between public goods and private goods" (Buchanan, 1956 b, p. 3).

37 First, he completed the English translation of Wicksell's essay; "A New Principle of Just Taxation" was then published in the "Classics in the Theory of Public Finance" edited by Richard Musgrave and Alan Peaocok. Second, he improved his knowledge of "the Italian masters in 'scienza delle finanze'" (Buchanan, 2007, p. 91).

38 In December 1955, he wrote to Samuelson: "I have now decided that my whole discussion of your pure theory of public expenditure last spring was based on a simple misunderstanding on my part"; Buchanan to Samuelson, 15 December 1955, Buchanan archives, Buchanan house, GMU.

39 Just when I reached the point of understanding of your earlier theory of public expenditure, you published the diagrammatic version", Buchanan to Samuelson, 2 Feb. 1956, Buchanan archives, Buchanan house, GMU.

40 Buchanan to Samuelson, 2 Feb. 1956, Buchanan archives, Buchanan house, GMU.

41 Buchanan to Samuelson, 2 Feb. 1956, Buchanan archives, Buchanan house, GMU.

42 Samuelson to Buchanan, 1956, Buchanan archives, Buchanan house, GMU.

Thus, Buchanan had demonstrated the possibility to interpret Samuelson in a way that confirmed that his views on externalities and public goods were relevant: his supplementary condition was necessary. He had also demonstrated that this implied, in contrast to what Samuelson said, a certain taxation schedule. In particular because individuals had an incentive to manipulate their willingness to pay only if they anticipate that the information could be used against them. Under the individualist condition, the risk disappeared: "the individual has nothing to loose by revealing the truth" (Buchanan, 1956 b, p. 15). In other words, his thesis about the link between expenditure and taxation was also confirmed. A theory of government finance could not focused *only* on expenditures, as Samuelson did in 1954 but, according to him, no longer did in 1955.

4. Explaining why externalities are not a problem: voluntary cooperation and constitutions

Thus, the notes Buchanan wrote in 1955 in anwer to Samuelson's theory of public expenditure were not published. As a follow up of what he had started to work on in Italy, Buchanan wrote and published a short article — "External and Internal Public Debt" (1957) — and a monograph — "Public Principles of Public Debt: A Defense and a Restatement" (1958) — on the problem of public debt. It was only in 1959 that Buchanan published again and, after that date, increasingly on externalities. His interests was fueled by various events—the organisation of a conference, the meeting with Gordon Tullock or the publication of Coase's seminal articles "The Federal Communications Commission" (1959) and above all "The Problem of Social Cost" (1960).

Buchanan analysed externalities from two complementary perspectives. First, he used again his argument about the voluntariness of exchange. The political stability and the affluence of the American society that he observed in the 1950s and in the early 1960s strengthened his confidence in the capacity of individuals to cooperate with each others and to develop private arrangements -- or, more broadly, his confidence in market mechanisms. This emphasis on the "positive virtues of the market" (Buchanan, 2007, p. 100) and on "market successes" (Buchanan, 2007, p. 101) represents the "political economy" part of his work, what Buchanan names the "Nutter-classical-Chicago" (Buchanan, 2007, p. 101) tradition. It is visible in his discussion of Tiebout or Musgrave's paper during a conference (4.1) or when he demonstrated demonstrated that externalities are compatible with a Pareto optimal allocation of resources (4.2), in particular because of the cooperative dimension of human nature (4.5). Complementarily, essentially as the consequence of his meeting and work with Gordon Tullock, Buchanan started a different research program -- that will be known as "public choice" theory -- , in which the focus is no longer on the efficiency of markets but rather on the limits of political processes. He thus paid more attention to "political failures", and stressed on the political dimension of externalities. He thus discussed the problem from the perspective of the legitimacy of the intervention of the state, as other new welfare economists did, but from a perspective in which collective action was viewed resulting from private bargaining (4.3); one of his claims being that a political treatment of external effects could be justified under the assumption, that he immediately dismissed as inconsistent, that individuals are not self-interested but behave altruistically (4.4).

4.1. Are externalities a major objective economic problem?

In 1959, Buchanan chaired the "program and planning committee" of a conference on "Public Finances: Needs, Sources and Utilization", sponsored by the Universities-National Bureau committee for Economic Research[43]. When preparing the conference, Buchanan found out that Charles M. Tiebout had written "A Pure Theory of Local Expenditures" (1956), in which he demonstrated how to deal with externalities in the frame of Wicksell's voluntary exchange theory. Tiebout claimed that free-riding was not a problem as long as individuals could move to the "community which best satisfies his preference pattern for public goods" (Tiebout, 1956, p. 418)—moving allowed individuals to reveal their preferences. Externalities could be treated at a local, rather than central, institutional level on a cooperative, rather than on a coercitive, basis. Challenging certain aspects of Samuelson's and Musgrave's theories, Tiebout did not however question the fact that externalities were a problem for

43 The conference was held in at the University of Virginia in Charlotesville, where Buchanan had moved from Florida State University in 1957.

markets efficiency. Invited to participate in the conference Buchanan organised, Tiebout developed a similar argument.

In “An Economic Theory of Fiscal Decentralization”, Tiebout discussed the economic efficiency of “fiscal” federalism, by comparison with unitary systems, and the appropriate division of labour between the different levels of government. From this perspective, he argued that spillover effects or externalities were “[o]ne major problem still confronts us under fiscal federalism with varied tastes and incomes” (1961, p. 94)[44] or “[i]nterest here is only in the externalities!” (Tiebout, 1961, p. 80). Actually, to Tiebout, the problem has a double dimension. First, exclusion: the residents of a community may benefit from the spillover effects resulting from the existence of a public good in a neighbourhood community without paying for them; how to exclude them from the consumption of the good? Second, if exclusion is impossible: how to determine the price individuals would have to pay for the involuntary consumption of these external effects? To Tiebout, there existed no correct answer and thus no simple way to determine a correct price. This led him to the conclusion that in a federal system, the solution cannot but consist in “involv[ing] a decision by a higher level of government, and one of the major functions of a higher level government, under fiscal federalism, is to arbitrate such spillovers” (Tiebout, 1961, p. 94). Thus, the existence of externalities and public goods legitimize the intervention of the state.

Musgrave, whose “The Theory of Public Finance: A Study of Political Economy” had just been published, was one of the co-organizer of the conference. He presented a paper entitled “Approaches to A Fiscal Theory of Political Federalism”, in which he criticized Tiebout's argumentation. Musgrave denied that the structure of a community could be determined by efficiency considerations only, as Tiebout argued. To him, federalism has political objectives too (Musgrave, 1961, p. 97). Joining a federation revealed a “wish to pursue certain objectives which require central government interference in the finances of the member states” (Musgrave, 1961, p. 97). In his argumentation Musgrave also

44 The papers were published by the N.B.E.R in a volume in 1961

referred to externalities and used them to justify the intervention of the state. Two situations are envisageable when there were spillover effects. Either "an efficient fiscal system permits the state to tax outside its jurisdiction, be it directly, or by appropriate shifting of tax burdens to outside residents" (Musgrave, 1961, p. 100) or, when this is impossible, the central government must "neutralize spillovers" (Musgrave, 1961, p. 100). In one way or the other, the intervention of the state was necessary.

Buchanan was one of the discussants of the papers Tiebout and Musgrave had presented. Among the points he raised, one worth being emphasized from the perspective of this paper. Buchanan argued that, if there were no externalities, then public goods would be exchanged by individuals as if they were private goods "until a uniform price were established" (Buchanan, 1961, p. 127); differences in prices would tell individuals that gains could result from trading goods. But, in the presence of externalities, trading public goods is almost impossible. Federalism is the only system that allows individuals to "trade" otherwise non-tradable goods "by shifting from one locality to the other" (Buchanan, 1961, p. 127). He thus used an argument similar to the one used by Tiebout in 1956 to contradict the conclusion the same Tiebout had reached in the paper presented in the conference. Buchanan then concluded that the virtue of federalism was to allow an efficient allocation of resources, even when there are externalities, because it allows individuals to "trade" public goods as if they were private goods by moving move from one community to the other. Federalism was a means to establish the correct price for public goods and could thus contribute to remove, to internalize externalities. Thus, it was possible to argue that, indeed, "the spillover effects mentioned by Tiebout" (Buchanan, 1961, p. 129) could be the only justification of intergovernmental fiscal transfers of income and, accordingly, that "the whole question boils down to determining the extent of importance of these effects, and, at least at the currently important margins of decision" (Buchanan, 1961, p. 129). And, his opinion was clear: "I do not think these effects are significant" (Buchanan, 1961, p. 129).

Buchanan insisted on the same conclusion in an article published a few months after the conference in October 1959 in the *Journal of Law and Economics*. "Positive Economics, Welfare Economics, and

Political Economy" opposed the positive political economy approach of welfare economics -- in which the role of the economist consists in discovering "what people want" (1959, p. 137) and "what is the structure of individual values" (1959, p. 130) -- to the normative new welfare economics -- in which the economist, seeing himself as an external and omniscient observer, is capable of "reading" the individual preferences of the the individuals and accordingly of determining the best possible outcome for the collectivity. Thus, his article was an extension to two conceptions of economics of the distinction between two conceptions of preferences made in his correspondance with Samuelson. Not surprisingly, therefore, he chose external effects to illustrate his claim. What appeared to be "major problem" (Buchanan, 1959, p. 130) for new welfare economics was only an "annoying complication ... [that] ... disappears in the approach to welfare economics suggested here" (Buchanan, 1959 p. 130). The reason is that, Buchanan argued, external effects are "fully reflected in the individual choices made for or against the collective action" (1959, p. 130). The alternative is immediate: if individuals face a "real" nuisance, meaning a nuisance implying an inefficient allocation of resources, they find a agreement acceptable to all parties to remove it; but, if no collective agreement is found, this means that the "presumptive efficiency criterion was wrongly conceived" (1959, p. 130). In other words, whether or not an external effect was problematic could not be decided *externally*, outisde of the individuals, by observing their choices. From his perspective, political economists simply have to observe "what people want" and "the structure of individual values" to identify external effects rather than to define them a priori, independently from individual behaviours.

There remained the question of the spatial dimension of public goods and the existence of externalities among groups that was most important Tiebout's message? Buchanan evacuated the problem in a footnote (1959, p. 130, fn 8) in which he stated that, indeed, groups must be devised in order include all the individuals affected by externalities. To him, there seemed to be no doubt that the condition will obviously always be fulfilled. And therefore no doubt that external effects were not a "major problem".

4.2. Externalities and the economics of politics

These 1959 articles can be viewed as a first attempt to present institutions as a means to solve the problems raised by externalities. At that time, the works viewed as marking the real beginning of what will be known as the "public choice" movement were published: Anthony Downs's article, "An Economic Theory of Political Action in a Democracy", and book, "An Economic Theory of Democracy", both in 1957; Duncan Black's "The Theory of committees and Elections" in 1958. In 1958 too, Buchanan had made the acquaintance of Tullock. A political scientist, the latter had a manuscript on a "General Theory of Politics" that he was trying to publish. Tullock convinced Warren Nutter and Buchanan, the two directors of the Thomas Jefferson Center for Studies in Political Economy and Social Philosophy at the University of Virginia, to grant him a one-year fellowship. This gave Buchanan and Tullock an opportunity to discuss the possibility to use economics to analyse political phenomena and to envisage working together as well. In the academic year 1959-1960, they started writing *The Calculus of Consent*, completed in 1960 and published in 1962, that is exactly when Coase was writing his two major articles on the harmful effects and institutions. The chronology is important precisely because Buchanan and Tullock propose an analysis of political phenomena in terms of "externalities", indeed arguing that the role of institutions and of collective action is to remove and to internalize "externalities". However, they did not argue that the existence of public goods and externalities implied the intervention of the state. On the contrary, Buchanan and Tullock questioned the straightforward connection established and almost unanimously accepted between public goods, externalities and the intervention of the state[45]. Their goal was to understand if and when private action but also voluntary cooperative private arrangements were sufficient to remove externalities:

> "If property rights are carefully defined, should not the pure laissez-faire organization bring about the elimination of all significant externalities? ... After human and property rights are initially defined, will externalities that are serious enough to warrant removing really be present? Or will voluntary co-operative arrangements among individuals emerge to insure the elimination of all

45 Reviewing "The Calculus of Consent", Meade noted that "[i]n discussing external economies and diseconomies economists have been much too ready to call in the State as a deus ex machina to remove the imperfections of the laissez-faire without examining the implications of this view for the political, as contrasted with the economic, behaviour of the individual citizen" (1963, p. 101).

relevant external effects?” (Buchanan and Tullock, 1962, p. 44).

And, once again as far as Buchanan was concerned, their claim was that the answer but rather depends on the willingness and capacity of individuals to devise voluntary contractual arrangements between them (Buchanan and Tullock, 1962, p. 44). In other words, when individuals feel that the problem they have to face can be solved collectively, then collective action is legitimate. Buchanan was following a line of reasoning that could be found in his 1959 article and he also developed in his review of Musgrave's 1959 public finance treatise (1960), when he noted that one cannot argue, as Musgrave did, that the existence of public goods or of externalities once and for all legitimize collective action. Collective action should not be decided on the basis of so-called objective properties of certain goods or some interactions. It depended on choices made by individuals, who decide when goods are public and wants are social.

From the perspective of this paper, the interesting part of this conclusion certainly lies in the fact that Buchanan and Tullock departed from the standard perspective adopted by welfare economists, such as Musgrave thus but also Samuelson and Tiebout, arguing that even if externalities can be viewed as a justification for collective action, this does not imply that the intervention of the state is necessary. The alternative was not between private and political organisation but between a voluntary (either private or collective) and a non-voluntary (or coercive) organization of economic activities. Voluntary and private, even if collective, arrangements are possible as a third -- between purely private and purely collective -- means for organizing collective action[46].

46 To economist Alan Peacock -- with whom Buchanan was acquainted and who was also close to one of Buchanan's friends, Jack Wiseman -- finding a 'Middle way', between the private and the public sector also appeared to be quite important. In a booklet entitled “The Welfare Society” and published in 1961 by a British think-tank tellingly named the “Unservile State Group", Peacock made a statement that echoed Buchanan and Tullock's conclusion. He wrote: “I find that some members of the Liberal Party accept the Collectivist position, and I am disturbed by it. It implies a pronounced lack of faith, not only in free enterprise subject to anti-monopoly control but also in the 'Middle way', i.e. the encouragement of non-profit making institutions such as educational trusts, housing and hospital associations. ... I do not suggest, and have never suggested that education and housing should be turned over to free enterprise. What I would like to see is greater diversity in the provision of these services, whether public or private, so that there is a genuine possibility of choice for ordinary citizens” (1961, p. XX).

4.3. Altruism, politics and externalities

The year *The Calculus* was written, in 1960, Buchanan spent 4 months at the *London School of Economics*, where he wrote a "Politics, Policy and the Pigovian Margins" (1962). The article once again exploited the vein of the critique of Pigovian economics and of the new welfare economics approach of externalities. Directly influenced by his recent collaboration with Tullock and his new interest in politics and the role of institutions, Buchanan centered his paper on the question of knowing if "externalities are either reduced or eliminated by the shift of an activity from market to political organisation" (Buchanan, 1962, p. 17). The answer was a synthesis of arguments made in the notes written in 1954, in his 1956 article on roads and arguments from *The Calculus*. He thus concluded that, under certain assumptions, these two forms of organisation achieve exactly the same result in terms of allocation of resources when transactions are made in presence of externalities. Typical of Buchanan's cautiousness, the statement also indicated that although externalities were a cause of market failures, this did not imply that they legitimised the intervention of the state. For, as stressed above, Buchanan believed that individuals were ready to pay for the costs of the external effects or to devise private, even if collective, arrangements to remove externalities. This was likely because individuals gain from the provision of certain services. These gains were the reason for cooperation. The argument remained implicit but was nonetheless clear: voluntary cooperation could or would result from self-interest and egoism. There was no need to envisage other explanations, such as the role of altruism for instance. In "Politics, Policy and the Pigovian Margins", Buchanan made his arguments explicit.

Once again, this new article was connected to older works. In that case, the origins of his reasoning can be found in "Individual Choice in Voting and the Market" (1954 c), in which he compared two ways of modeling human behavior. First, the economic representation of man as a rational and self-interested individual who makes decisions by comparing marginal costs and benefits and for whom "[n]o considerations of the "public" or the "social" interest are assumed to enter this ... calculus" (Buchanan, 1962, p. 20). At the other end of the behavioural spectrum, there was a model assuming that "each individual ... tries to identify himself with the community of which he is a member and ... tries to act in the genuine interest of the whole group" (1962, p. 22). The consequence was, wrote Buchanan "almost intuitively clear" (1962, p. 22): external (dis)economies are unavoidable in a world populated by self-interested individuals but disappear when or if individuals follow an ethical, "Kantian-like rule of action" (Buchanan, 1962, p. 22). This obviously meant that it was always possible to internalize externalities by moving decisions about the activities that generate them from economics to politics if and only if it was assumed that individuals "respond to different motives when they participate in market and in political activity" (1962, p. 23). Any defense of the necessary state intervention to remove externalities rested on a (more or less implicit) assumption: political decision makers are altruists or, more broadly, that individuals follow different behavioral rules in economics and in politics.

This assumption of a "bifurcated man" (Buchanan, 1962, p. 23) or of "behavioural dichotomy" (Buchanan, 1962, p. 24) had to be rejected for being "clearly extreme" (p. 24) and "naive" (p. 25) since it implies that individuals are "inconsistent" (p. 25) in their behaviours. Thus, altruism in politics may justify a political solution to the problems raised by externalities, as Pigovians implicitly claim, but only at the price of an inconsistent assumption about human behaviour. For his part, Buchanan defended behavioural and motivational consistency. This meant a belief in the assumption that individuals are rational and self-interested. And this also meant that externalities were unavoidable. Thus, Buchanan had set two limits: on the one hand, the unavoidability of externalities and the inefficiency of markets; on the other hand, the illegitimacy of the intervention of the state. Again, the solution lied in between: externalities could be removed through the intervention of the state. Even self-interested individuals are able to voluntarily cooperate, at least from time to time, and design institutional arrangements to allow a collective action in order to remove externalities. Altruism is not required to explain cooperation.

A few months after having written the paper, in June 1961, Buchanan attended a conference on Philanthropy, whose purpose of was to discuss, among others, issues such as "What is the appropriate ‘division of labor’ among government, the market, and private philanthropy, in meeting human needs most effectively?” (Fontaine, 2007, p. 13). The conference was of interest to Buchanan because of its meaning in terms of public finance and arbitrage between the private and public sectors, and also because of his recently completed paper on altruism and externalities. Among the papers presented at that conference, Kenneth Boulding's “Notes on a Theory of Philanthropy” insisted on altruism and utility interdependence, and on the need to refer to other social sciences to complement economic analysis (Fontaine, 2010, p. 27). This was a confirmation that altruism, as utility interdependence, was different from willingness to cooperate, that there was no need to behave altruistically to cooperate, and that altruism is not a condition for the existence of private arrangements.

4.5. Externalities and Pareto-optimality

In 1961 Coase's article on “The Problem of Social Cost” appeared in the *Journal of Law and Economics*[47]. Buchanan was then in England, at Cambridge, where he spent the academic year 1961-1962 on a Fulbright grant. He remembers that he was relatively isolated during this stay and had nothing specific to work on. This situation, combined with the publication of Coase's article, motivated the writing with Stubblebine of “Externality”. The latter article was therefore undoubtedly a reaction or a response to the publication of “The Problem of Social Cost”, in the sense that it incited Buchanan to use the material accumulated in particular in the comments on and correspondance with Samuelson and, to start with, the *two* conditions that have to be satisfied to reach a Pareto equilibrium. Buchanan and Stubblebine used an aggregate and also, quite naturally, an individualist condition. The first one was identical to Samuelson's condition and the second was the one Buchanan had always stressed as necessary in his letters and comments sent to Samuelson. In other words, Buchanan and Stubblebine, exactly as Buchanan's notes about Samuelson, claimed that it was not only sufficient to guarantee that the allocation be optimal for the society as a whole but necessary that it was optimal for each individual taken separately.

47 As one now knows, the publication is dated of 1960 but it was delayed until 1961.

This condition allowed them to define what they named a "Pareto relevant externality", that is an externality such that "the extent of the activity may be modified in such a way that the externally affected party, A, can be made better off without the acting party, B, being made worse off" (Buchanan and Stubblebine, 1962, p. 374). And also allowed them to define a Pareto-equilibrium in presence of externalities as a situation in which the marginal rate of substitution of the "externally affected party" was the equivalent to the *net* marginal rate of substitution of the "acting party"; by contrast, in an non-optimal situation, these two quantities would be different.

The gap between the two marginal rates of substitution is particularly important: it delineates the scope of negotiation between the individuals involved in the interaction because it represents potential "gains from trades". Thus, Buchanan and Stubblebine argued externalities can be removed, and Pareto improving actions can be undertaken, when trading gains are possible. This implied that external effects had two dimensions. In other words, they stressed an element that Pigou had forgotten in his analysis of externalities and that Coase had just put forward in his article on the problem of social cost, that is the reciprocity of the phenomenon. Buchanan and Stubblebine noted the weakness of Pigou's analysis and made a reference to Coase's article when they mention the problem. They did not link their result to the existence of property rights but to the simple and obvious fact that straightforward fact that "there must be two parties to any trading arrangement" (Buchanan and Stubblebine, 1962, p. 381)[48].

Buchanan and Stubblebine also referred to Coase's result that property rights do not matter influence the allocation of resources when there are externalities. But it was to note that their analysis has a domain of application wider that Coase's: their demonstration applies both to the externalities that affect interactions between firms and but also between consumers. Actually, the paper essentially

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48 That their analysis and Coase's differ was perfectly well perceived by Coase who reacted quite negatively to the paper. In particular, he wrote Buchanan: "I found your references to me unpleasing ... You will understand that I don't altogether like the implication that I am discussing an "externality relationship", since as I say explicitly in the conclusion that the right to create noise, smells etc is a factor of production like every other foactor of production and should therefore be treated in exactly the same way", Coase to Buchanan, Jan. 25th, 1962, Buchanan archives, Buchanan house, GMU.

focused on consumers. It was only to stress a difference with Coase that they mentioned firms, insisting that "Coase's analysis is applicable only to inter-firm externality relationships" (1962, p. 383) and does not apply to consumers -- because utility functions are incomparable (1962, p. 383)[49] and concluded "I don't see why this difference should be said to be due to the "incomparability of utility functions" (Coase to Buchanan, Jan. 25th, 1962, Buchanan archives, Buchanan house, GMU).. In addition, they immediately linked this assertion to their main result, namely that external economies or diseconomies do not disappear when a Pareto equilibrium is attained: "in this model, A will allow himself to suffer from an internal marginal diseconomy, at equilibrium, provided that he is compensated by B, who continues, in Pareto equilibrium, to enjoy a marginal *external* economy" (Buchanan and Stubblebine, 1952, p. 384; emphasis in original).

The result has "significant policy implications" (Buchanan and Stubblebine, 1962, p. 381). It demonstrates that "there is not a *prima facie* case for intervention in all cases where an externality is observed to exist" (ibid., p. 381). It was a theoretical demonstration, which therefore contrasted with the demonstration made by Coase that, as it is well known, was supported by an important number of legal cases. Without going into such details as Coase did, Buchanan nonetheless tried to illustrate his claim about externalities and the efficiency of markets. This resulted in "A Note on Public Goods Supply", co-authored with Milton Kafoglis (1963).

The article was a consequence of Buchanan's involvement with the Institute of Economic Affairs and of the recent publication of the memorandum -- written by John and Sylvia Jewkes -- about the inefficiency of the British National Health Service. The result was, noted Buchanan and Kafoglis, contradicting the orthodox Pigovian analysis that predicts that reverse: individuals do not internalise the external effects of their actions, that the supply of goods generated by the market does not correspond to the social optimum and therefore that the intervention of the state is necessary. The

49 Coase replied that he did not see why studying interactions between consumers rather than producers would involve "any substantial change in the analysis" (Coase to Buchanan, Jan. 25th, 1962, Buchanan archives, Buchanan house, GMU).

“comparative record” of the Jewekeses showed that private arrangements could be as efficient as collective and centralized solutions. The economic explanation Buchanan and Kafoglis provided did not use altruism but rested on a “most obvious point” (1963, p. 404), namely that consumptions are interdependent and that the quantity of goods consumed by one individual affect and depend on the quantity of goods available to others. For instance, “[a]n increase in the level of immunization privately undertaken by B will tend to reduce the purchase of medical services, say vaccinations, by A” (1963, p. 404). They thus used the example of a positive external effect. And their argument meant that, in presence of positive externalities, an optimal allocation of resources can be promoted though specific institutional arrangements that allow individuals to purchase the consumption of others (Buchanan and Kafoglis, 1963, p. 412); or, to put it differently, to trade public goods.

When this is possible -- that is, if negotiations are not costly -- collectivization is less efficient than private, market-like arrangements. Certainly, this is not always the case. There were circumstances in which private arrangements would be too costly -- to reach; this was in particular the case “when the interactions extend over a large number of persons” (Buchanan and Zafolgis, 1963, p. 412) and, as an implicit acknowledgement of Coase's argument, when transaction costs are too high. But this remained implicit and Buchanan and Zafoglis did not even conclude that these situations actually make room for collectivization. They thus noted that “[i]t is in reference of such situations that collectivization arguments are applied” (Buchanan and Zafolgis, 1963, p. 412), suggesting that it was not necessarily legitimate. Indeed, to argue that collectivization could be used to organise the internalization of external effects, it was necessary to take into account the costs of collective decision making. This was the argument put forward in *The Calculus* that was therefore used to complete their demonstration against collectivization.

4.6. Voluntary cooperation, externalities and institutions

Buchanan noted that the transformation of his research program from “political economy", and a focus on market efficiency, to “public choice”, and a focus on political failures, corresponded with his meeting with Tullock and dated from the publication of *The Calculus of Consent*. However, the first paper

Buchanan wrote after the book was released — "What Should Economists Do?", the presidential address he delivered at the 1963 annual meetings of the *Southern Economic Association*— dealt again with the virtues of market efficiency. Again, he insisted on the individuals' willingness to cooperate with others. This was a fact: "[i]ndividuals are *observed* to cooperate with one another, to reach agreements, to trade" (Buchanan, 1964, p. 219; emphasis added). And it could be explained quite simply. Cooperation results from "a certain propensity in human nature ... to truck, barter, and exchange" stressed by Adam Smith in *The Wealth of Nations* and that Buchanan also emphasized (1964, p. 213). Such propensity was in turn rooted in the mutual and subjective benefits that individuals could gain from trade: "[t]he motivation for individuals to engage in trade, the source of the propensity, is surely that of "efficiency," defined in the *personal sense* of moving from less preferred to more preferred positions, and doing so under mutually acceptable terms" (Buchanan, 1964, p. 219; emphasis added). Cooperation among individuals thus should be the rule, rather than the so-called important free-riding behaviors that appeared to be so crucial to Musgrave or Samuelson. In "What Should Economists Do?", he mentioned their existence *for the first time*. He described them a ghostly phenomenon, significantly speaking of the "spectre of the "free-rider" found in many shapes and forms in the literature of modern public finance theory" (Buchanan, 1964, p. 220).

Certainly, he admitted that, in certain circumstances, individuals may fail to voluntarily cooperate with others. He accepted to assume that, in presence of a negative externality and in contrast to their human nature, no individual be ready to pay for the costs of the nuisance. In other words, he accepted to assume that "market failures" could exist. However, he added that such situations could not last: "[i]ndividual citizens will be led, because of the same propensity, to search voluntarily for more inclusive trading or exchange arrangements" (Buchanan, 1964, p. 219). And if free-riding persisted; if no means was found to remove the external effects, then the solution, did he write, "is surely that of transferring, again voluntarily, at least at some ultimate constitutional level" (Buchanan, 1964, p. 220) the activities that generate external effects. Therefore, there was no doubt in his mind: individuals always voluntarily devise cooperative solutions, at one level or at the other, to solve the economic problems that result from their interactions. It is only if "coercion is introduced to prevent the emergence of alternative arrangements" (Buchanan, 1964, p. 219) that cooperation fails, leading to free-riding and to inefficient results. Free-riding is not the cause but the consequence of the intervention of the state. The role of the latter should always be limited to enforcing the choices and decisions voluntarily made by individuals.

More precisely, what kind of voluntary agreements can be devised to remove externalities? In 1965, Buchanan published two articles that provide an answer to the question. With "An Economic Theory of Clubs", Buchanan proposed "a theory of co-operative membership" (Buchanan, 1965 a, p. 1), aimed at filling a gap in neo-classical economics and in "the theories of Socialist economic organization", by taking into account the "explicit co-operation among individuals" (Buchanan, 1965 a, p. 1) and showing that there exists a third category of goods, between pure private and pure public goods. Once again, it was the idea that there exists a "middle way", to use Peacock's term, between purely a private organization and a purely collectivist one. Individuals build "clubs" that correspond to the provision of one given public good and pay a fee -- equal to their marginal utility -- to become a member of the club and consume the good. Therefore, the "theory of club" could be viewed as "a theory of optimal exclusion, as well as inclusion" (Buchanan, 1965 a, p. 13). External effects are perfectly internalized, benefits or costs only being supported by the members of the club.

The same year, Buchanan provided an ethical explanation, based on self-interest, to voluntary cooperation and to the existence of clubs. In other words, his purpose was to show once again that voluntary cooperation does not require altruism. Following an argument of the same nature as in his "Economic Theory of Clubs", Buchanan argued that spontaneous internalization of external effects depend on the size of groups within which individual activities take place. This is the "critical determinant" that "influences and individual's choice among ethical rules" (Buchanan, 1965 b, p. 1). Thus, ethical behaviours are a matter of a self-interested choice between two kinds of ethical rules: "follow the moral law" and "follow the expediency criterion" and the decision depends on whether the interaction takes place in a small or a large group, in a small-number or a large-number environment.

In effect, an individual's choice "depends upon his own predictions about the behaviour of others" (Buchanan, 1965 b, p. 3). In small-number environments, individuals anticipate that their behaviour will affect others and self-interestedly choose to "follow the moral law" while, in large-number environments, they "follow the expediency criterion".

From the perspective of external diseconomies, this implies that in small groups, the moral rule prevails and, therefore, individuals are ready to internalise the costs of their actions on others. In effect, each individual anticipates that others also base their behaviour on the same moral rule and thus accepts to bargain, if asked to do so, with those who suffer from external effects: "[i]n small-number groups, individuals suffering damages from external diseconomies imposed by the behavior of others can directly initiate arrangements through which they offer appropriate compensations in exchange for some contraction in the scope of the activities in question" (Buchanan, 1965 b, p. 38); externalities can be settled directly and spontaneously through private bargaining. In that case, bargaining difficulties and transaction costs are not obstacles to the possibility to devise "market-like contractual arrangements" (Buchanan, 1970, p. 69). But in large number-groups, the expediency criterion leads each individual to ignore the costs (or benefits) they impose on others. This corresponds to what Buchanan named the "large-number ethical dilemma", because of which the initiation of direct action and private bargaining is unlikely (1965 b p. 38); and because of which externalities remain a problem.

Therefore, externalities are an institutional problem in the sense that they depend on the size of the group within which interactions take place. And the reason that Buchanan put forward was that, within certain institutional environments, individuals may self-interestedly choose to behave ethically. Then, private bargaining is likely and efficient. When it is not the case, that is in environments favoring the expediency criterion, Buchanan also suggested to use private means to solve the problem -- in other words, it is not because individuals self-interestedly follow the "expediency criterion" that government intervention is necessary. What has to be done is to change "the rules through which activities are allowed to take place" (Buchanan, 1965 b, p. 38). A change in the rules of the game -- that is a change in the constitutional rules -- is likely to solve the problem of social cost (see a more detailed analysis in Buchanan, 1970). This is the only available solution, and it consists in devising a constitutional framework within which individuals will be led to follow the moral rule rather than the expediency criterion.

Conclusion

Between the early 1950s and the mid-1960s, Buchanan has consistently argued that externalities should not be viewed as a cause of market failures. More precisely, he fully accepted the fact that market mechanisms were inefficient in presence of spillover or external effects: competitive prices could not lead to an optimal allocation of resources because they do not include these effects. An optimal price in presence of externalities has to be set at the level of the marginal *social* cost of production. This nonetheless did not mean that Buchanan jumped, as most economists do, from this first conclusion to a more general conclusion according to which the presence of externalities legitimize the intervention of the state. He actually believed that private, even if collective, arrangements could be devised by individuals whose interaction was affected by externalities; in other words, he believed in cooperation, in the spontaneous willingness to pay for external costs. One necessary condition had to be verified to guarantee that collective actions would be undertaken: that mutual gains were possible or that *each* individual must equate the marginal rate of substitution in consumption between any collective good and one private good with the marginal rate of substitution between these two goods in production to him.

Buchanan's attitude towards externalities changed when his confidence in the American society and its institutions started to decline. He observed that individuals became more and more strangers to each others and that institutions were less and less adapted to face these behaviours. This culminated with the student revolts of the end of the 1960s. His optimism and confidence were then totally replaced with “pessimism": not only individuals were no longer ready to cooperate with others but institutions no longer worked correctly. It is not that externalities occupied less space in his research program but Buchanan spent more time on constitutions and on the rules of the game that should be set to control individual behaviours.

Our paper also sheds light on the progression of Buchanan's ideas on externalities and on interactions with other important economists Samuelson. We have thus shown that a turning point was the correspondance with Samuelson and the notes he wrote to comment “the pure theory of public expenditure”. In these notes, he used and refined older arguments and gave him enough material to write articles, in particular “Externality”, in the early 1960s. From this perspective, the publication of “The Problem of Social Cost” certainly had an impact on Buchanan but not directly on his views that were established before Coase.

Acknowledgements

Various versions of the paper were presented at the 2009 HES conference in Denver, at the ANR workshop in Ecole Normal Supérieure de Cachan (nov. 2009), at the Amsterdam-Cachan workshop (Amsterdam, dec. 2009), at the Colloquium, New-York University (March 2009) and at a lunch seminar at the Center for the History of Political Economy (Duke University) I thank all the participants for their comments, in particular Roger Backhouse, Marina Bianchi, Bruce Caldwell, Craufurd Goodwin, Philippe Fontaine, Jean-Baptiste Fleury, Sanford Ikeda, Israel Kirzner, Neil de Marchi, Steve Medema, Mario Rizzo and Roy Weintraub. I am grateful to James Buchanan for having accepted to answer my questions and for his comments on a preliminary draft. I also thank Jo-Ann Burgess for her kindness and help. I acknowledge the financial support of the Agence Nationale de la Recherche. The paper was completed during a fellowship at the Center for the History of Political Economy, Duke University.

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