

SUNK COSTS AND CONTESTABLE MARKETS

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ABSTRACT: The aim of this paper is twofold: to reformulate the concept of contestable markets in the context of property boundaries, and to recapitulate the characteristics of “sunk costs.” The first section outlines the idea of contestable markets developed in the 1980s and contrasts it with the perfect competition model. The second section explains the notion of sunk costs as entry barriers in the contestable markets framework. The third section summarizes the relation between costs and prices. The fourth section separates sunk costs from fixed costs and formulates main propositions on their nature. The fifth section deals with the contestable markets model, where sunk costs are perceived as an inefficient barrier to market entry. The sixth section modifies contestable markets theory in compliance with the “Austrian” theory of competition.

KEYWORDS: contestable markets, sunk costs, market competition, freedom of entry, price system, property rights

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1. CONTESTABLE MARKETS, COMPETITION AND PRIVATE PROPERTY

The neoclassical theory of prices developed in the beginning of 20th century is based on an unrealistic set of assumptions, which constitute the “perfect competition” model. The empirical significance of this model is questionable, since it seriously misrepresented the market process, and inspired ill-conceived policies aimed at promoting competitive enterprises. Fortunately the theory of competition has progressed in recent decades and moved away from perfect competition. One of the steps forward is a theory of “contestable markets.” The ambition of this theory was to abandon the abstract criteria of *perfectly competitive* markets and substitute them with the notion of *perfectly contestable* markets (Baumol, et al. 1983, p. 2). Although the latter model is not entirely accurate, it is still much closer to reality than the perfect competition model. One of the main advantages of the contestable markets school is its rejection of the primitive notion that any big company should be nationalized or subjected to extensive regulations (since it did not fulfill the ideal of perfect competition).

In developing the contestability approach, William Baumol and others stressed that there is no tradeoff between economies of scale and competitiveness of industries. Industries consisting of small number of highly centralized producers might be very competitive, even though they do not conform to the perfect competition ideal. Economies of scale do not cause uncompetitive results, if the threat of entry can function as if it were an economic watchdog. So, if one of the prevailing producers sells at a price above the market, new competitors are incentivized to enter the market and grasp the profit opportunity. Even industries with only one producer may be very competitive because of that possibility.

Any sector under consideration remains competitive as long as it stays contestable, i.e., there is the threat of entry by other companies. Perfect competition theory contends that a competitive environment requires the existence of many small companies and firms. Only then could one be sure that any individual firm has to act “efficiently” (otherwise it would lose its customers). The contestable markets theory takes a radically different view: a threat of entry will suffice to put pressure on producers to act

competitively. As long as there are no barriers to entry, entrants are free to contest the market, forcing the industry to be competitive. No additional requirements are required.

At first this approach seems to be compatible with the legal approach of the older anti-monopolist school, which viewed monopoly as a form of governmental privilege granted to select companies (Rothbard, 2004, ch. 10). A privilege that prohibits other firms from entering the market, or as Baumol would probably say, prevents potential entrants from *contesting* the market. Although these two theories of competition share undeniable similarities, contestable markets theory—apart from being a promising step away from the neoclassical theory of competition—is still under its negative influence.

One of the commentators suggested that contestable markets theory leads to libertarian conclusions on the role of government (Shepard, 1984, p. 575). If contestability of markets has nothing to do with the size of firms or the number of competitors, and focuses only on the freedom to entry, there seems to be no role left for the government to “support” competition. Baumol reacted, however, with great reservations about this interpretation and commented on such “libertarian ideology”:

Contestability theory does not, and was not intended to, lend support to those who believe (or almost seem to believe) that the unrestrained market automatically solves all economic problems and virtually all regulation and antitrust activity constitutes a pointless and costly source of economic inefficiency. (Baumol and Willig, 1986, p. 9)¹

Even though it appears that the concept of contestable markets could be reconciled with the “Austrian” theory of competition, the main theorist of contestable markets argues the opposite. According to theorists of contestable markets, modern industries do require, in some cases, property redistributions via antitrust agencies (to sustain competition). We admit the difference between free market theory of competition and contestable markets, but we plan to argue the opposite—that carefully examined, contestable markets

¹ Although, on the other hand, it has been stated in Baumol and Willig that “On balance, contestability analysis leans on the side of those who advocate extension of the domain of *laissez faire*” (Baumol et al. 1982, p. 476).

theory supports free market conclusions about the absence of rationale for antitrust policies. We have to see first how the theory of contestable markets criticized the perfect competition model and proposed the alternative. The foundation for this critique rests on a distinction between sunk and fixed costs.

2. WHAT DOES IT MEAN THAT A MARKET IS CONTESTABLE?

Let us examine a numerical example in order to demonstrate how contestable markets work competitively in the environment of economies of scale. For the purpose of simplicity, we select the following assumptions. We ignore the cost of capital and assume the normal rate of return to be zero. We divide costs into two separate categories: fixed and variable costs. Fixed costs are of course related to economies of scale.

Suppose the firm produces one widget per year for the price of 25 dollars. In order to create that product, it is necessary for the firm to buy materials and intermediate goods. Let us assume that materials, intermediate goods and other kinds of variable costs sum to 5 dollars per unit. Assume further the firm also uses one particular machine that wears out after five years. The amortization is not dependent on the amount of widgets produced; therefore, it should be treated as a fixed cost. The price for the machine is 100 dollars (amortization 20 dollars per annum). Here is a simple investment plan for each of five years:

One year:

Fixed costs per year (amortization of the machine): 20 dollars

Variable costs (materials and intermediate goods): 5 dollars

Price of the widget: 25 dollars

The machine is used up after five years. Total costs over a 5-year period and total revenues are equal to 125 dollars (we abstract from the return on capital). In this equilibrium state, all costs correspond perfectly to the price of the good.

One of the deductions built upon the perfect competition model is that fixed costs constitute a barrier to entry. Baumol and others

persuasively argued, however, that the existence of fixed costs is not a true barrier to entry. The reason is that fixed costs are *fixed* in the sense that they *do not vary* with the amount of output. Even though they do not vary, they still can be avoided after the payment had been made. In the above example, the machine was bought for a 5 year period, and its costs would not vary with the output (after the purchase). Nonetheless, it would still be possible to sell it after one year of usage. In that scenario the fixed cost could be partially recovered or even completely avoided. With that kind of opportunity, markets with economies of scale can be highly contestable and truly competitive.

Imagine one exclusive producer and seller of widgets deciding to increase the price for widgets from 25 dollars to 50 dollars. This creates an enormous profit opportunity for other entrepreneurs. The essence of the contestable markets framework is that fixed costs need not be true barriers for entrepreneurs to enter the market and grab those opportunities. When the price is raised to 50 dollars per widget, the potential competitor is able to enter the sector and engage in a “hit and run” strategy in order to gain extra profits. His appearance starts the process of lowering those higher prices. The progression of rivalrous activity can be described similarly in the perfect competition scenario, yet there remains a question of fixed costs. The entrant’s strategy of price cuts might work in the first year. Let us suppose that after the initial year, the situation goes back to the competitive level of a zero rate of profit (a widget price of 25 dollars). After the success of hit and run policy, the entrant decides to leave the market. Fixed costs need not be a barrier provided that the entrant is able to liquidate the machine at a sufficient price.

In the example, to avoid the costs, he would need to sell the machine at a price that excludes the costs covered by revenues during the first year. Therefore he would need to sell it for 80 dollars. Under those circumstances, fixed costs would not be a problem for a competitive entrant. The potential entry allowed by that feature is a pillar of the contestable market. A competitive market does not require perfect competition and the existence of uncountable set of suppliers. The potential threat of entry might be adequate even with fixed costs, which could be recovered. A hit-and-run approach would successfully work for a short time. After

the return to equilibrium, durable equipment could be sold, and venture capital would be free to leave the market without losses.

Fixed costs develop as a problem for the entrepreneurial project of a hit-and-run approach only if they cannot be liquidated, that is when they become *sunk costs*; costs that cannot be easily recovered (see for example Kessides, 1990). This is the example of a barrier to entry: a potential competitor might decide not to enter the market because of the expenses he needs to cover. This inquiry leads to a conclusion that markets with fixed costs are contestable, but markets with sunk costs are not.²

Notice the benefits of contestable markets theory over the perfect competition model. Baumol and others succeeded in abolishing most of the absurd assumptions of the latter. The perfect competition model stated four assumptions: an infinite number of producers and consumers, perfect information, homogeneity of all goods, and no barriers to entry and exit. Contestability theorists rejected the first three, and modified the fourth one—in the perfect competition model economics of scale are a barrier to entry. This should be considered as immense progress in the neoclassical theory of competition.³

Due to this advancement, the scope for an antitrust policy was narrowed. The perfect competition model provided almost a blank check for any type of “antitrust” intervention, since no sector was ever occupied by firms facing perfectly elastic demand curves. In the light of the contestability contribution, antitrust policy was supposed to focus on barriers to entry; with the key aspect of sunk costs that could restrain potential entrants.

It is worthwhile to see how contestability theorists explained that fixed costs are not barriers to entry. The explanation depends on how the word “barrier” is understood. In some sense, fixed costs

² Examples of sunk costs “include many categories besides physical capital, such as research and development, advertising to establish brand loyalty, and training to create special workers’ skills” (Shepard, 1984, p. 580).

³ However, Martin (2000, p. 9ff) points out that technicalities of contestability research very often implicitly use assumptions, which are quite similar to perfect competition suppositions. We do not deal with those possibly contradictory aspects, but focus on tenets of contestability research that appear to be breaking away from the perfect competition model.

can be considered as *barriers* to entry, since they do not allow several producers to enter the market. Had they not existed, perhaps more producers would be engaged in profitable production. In the same sense, other factors such as scarcity of capital goods, skills, and property can also be considered as barriers to entry (Carlton, 2004, p. 469).⁴ Yet even if fixed costs stop some particular producer from entering the market, it is not a problem. A more important consideration is whether this stopping is “inefficient” from the point of view of the market process. Baumol’s conclusion is that it is not; thus, following Weizäcker (1980), he defines “an entry barrier as *any* (unspecified) advantage over an entrant that an incumbent firm enjoys *if that advantage produces welfare loss*” (Baumol and Willig, 1981, p. 408). We could clarify that statement to fit the example above that was just discussed: fixed costs are “barriers” to entry, but they are *economically efficient* barriers to entry since they stop inefficient producers (producers with higher average costs) from entering the market.⁵ This reformulation will be helpful for the analysis of Baumol’s own idea of barriers to entry.⁶

3. THE NATURE OF COSTS AND PRICES

The mainstream approach is based on a division of “business costs” separated into two categories: fixed and variable. Variable costs are the ones that are “immediately adjustable with output.” Fixed costs, on the other hand, have to be paid no matter what the level of output is, so they are not adjustable and do not vary with the amount of goods produced. This sharp distinction, although illustrative, may not be a good portrayal of costs and may lead to serious misinterpretations concerning the nature of the market process.

⁴ On 7 possible definitions of a barrier to entry proposed by different economists through the second part of the 20th century, see McAfee et al., 2004, p. 461–462.

⁵ Naturally the other subject that could be discussed in this line of reasoning is the meaning of “efficiency” (“welfare loss” etc.). We intentionally avoid this discussion and accept a very loose, very broad and intuitive meaning of the word “efficiency,” which could be accepted by most economists. Efficiency is a feature of an economic system which *systematically* increases consumer possibilities for higher production, higher quality of products and lower prices. We do not adhere to the neoclassical concept of efficiency, welfare losses or any other form of utility calculations.

⁶ On the subject of contestability and its more specific problems consult Brätland (2004).

Contrary to this approach of supposed dissimilarity, there are different stages of variability (Rothbard, 2004, p. 591). Some costs are more adaptable to the quantity of output produced, others less. When a producer of shoes rents a factory, the rent is much less variable than the shoelaces. There are, however, other instances of variability, for example the costs of hiring personnel. Contracts with the crew and management may be fixed to some extent, yet it is always possible to increase the number of employees or to hire existing ones for longer working hours. The same applies to phone bills or power bills, which are usually neither perfectly variable nor perfectly fixed. On the one hand, the entrepreneur has to pay the energy bill, and on the other hand he might decrease the usage of energy. Even rent is not absolutely fixed, since it is always possible to hire another extra factory (for the purpose of increased production)—or in the case of decreased output, hire a smaller and cheaper one.

There are few important consequences of the fact that there is no sharp real-world separation of variable and fixed. First of all, the distinction between more and less variable costs is loosely related to the concept of “long run” and “short run.” The typical method is to associate fixed costs with the long run. But this certainly should not be the case. Even in the long run, there are costs more fixed than others, that is, costs varying less with output. Although in the longer run it is much easier to make costs more flexible, the distinction still is between more and less variable costs. Costs vary more or less both in the long run and the short run.⁷

Second of all, which concedes Baumol’s point, fixed costs are not unavoidable costs. Costs fixed more than others are costs that do not vary with the output. To assume that they are necessarily lost because they do not vary is a step too far. When a businessman is about to commit to a certain projects, his calculations include different degrees of variability. The money is being spent on all costs—both less and more variable. The money capital is “lost,” it is devoted to the production process and its “recovery” depends on entrepreneurial abilities. Variability is not important in such a consideration. Even after the payment of bills, it might still be possible to recover more variable and more fixed costs. For

⁷ See the great and insightful article on this: Wang and Yang (2001).

example when a particular factory has been closed, the already rented place for that business might be rented to somebody else. In that scenario, part of the cost would be recovered by reselling the services already purchased. The same is true with material and intermediate goods, which are more variable with the output.

This observation has consequences for the approach offered by neoclassical analysis.⁸ A typical textbook theory of pricing is incorrect in stating that the optimal choice for a firm is to equalize marginal costs with marginal revenues. This assumes that (more) fixed costs are not part of business calculations (once they have been made). The mainstream equates here erroneously fixed costs with costs that cannot be recovered. Some of the costs already suffered could be recovered and avoided—hence not only marginal costs are included in calculative considerations. Fixed costs (or fixed to a higher extent than the rest) also are part of the decision making of firms both in the long run and the short run. To profitably assess decisions in the market, businessmen need to compare monetary costs paid before the process of production and monetary revenues received for selling a product; therefore, price spreads are key.

We come here to the well-established theory of valuation and imputation. The imputation process is working backwards from prices of consumer goods to the higher order goods which produce them. All costs, no matter how they vary with the level of output, are linked to prices of final goods. The imputation process of assigning values to producer goods works independently of the distinction between “more fixed” and “more variable.” Every factor of production is supposed to contribute worthiness to the production of goods purchased by final consumers. If the factor does not contribute anything to creating a valuable consumer product, there is no reason for the entrepreneur to purchase it. Consequently, every single price of the factor of production relates to prices of possible consumer goods that might be created by it. This is despite variability of factors, because the only reason to pay for the factor is its possible contribution to increased consumer satisfaction.

Entrepreneurs pay not only for the direct use of a factor, but also indirectly for not using it in an alternate process. When a producer

⁸ Therefore contrary to Weitzman's claim (1983, p. 486) there can be fixed costs, which are neither sunk, nor variable.

of hammers pays for the steel, he is “taking” the steel away from other producers. He covers the opportunity costs by paying the price for *withdrawing the factors from alternative employments*.⁹ The significant part of that process is the speculative valuation of factors and entrepreneurial judgment concerning their future usefulness. Naturally, true “equilibrium” opportunity costs cannot be known in advance to any observer. The usefulness of employed factors is always a matter of a guess performed by entrepreneurs (Mises, 1966, p. 396).

4. THE NATURE OF SUNK COSTS

The only reason for entrepreneurs to pay for factors is their usefulness in production. The entrepreneur may make a mistake and purchase a factor which either does not contribute to production of consumer goods, or contributes to a lesser extent than expected. On the microeconomic level, this signifies *disequilibrium* between costs of factors and prices for finished products. Some of the costs should not have been paid for, since they did not contribute to consumer satisfaction. This disequilibrium state is referred to as *sunk* costs. These are costs of durable factors that have new market value, which is lower than the initial (discounted) outlay paid in a purchase. Sometimes economic authors call any type of costs paid in the past “sunk.” We object to this terminology, since those costs could simply be named as *past* costs.

Past costs may be recovered. Assume that the entrepreneur bought the machine for 100 units—100 units represent past cost. Now let us consider a few possibilities. Imagine that after a while a machine is worth 200 units on the market, or that its contribution to production of consumer goods is higher. Under the circumstances, past costs can be recovered, but they also might be turned into monetary profits. Consider another case—that market conditions changed in such a way that the entrepreneur cannot use profitably the machine in his line of production, but can sell the machine to another firm for the price of 100 units. In this situation, the past

⁹ See the illuminating treatment of this law of costs in one of the best expositions in Böhm-Bawerk (1962). We are focusing here on monetary calculation aspect and we abstract from subjective factors and subjective utility.

cost of the machine can be recovered and the money paid for it need not be lost or “sunk.” In fact money can be prevented from being wasted.

Let us consider a third case. Suppose the machine is less money-productive than the initial 100 units, and its market price falls significantly below 100 units. The difference between 100 units and the current value (or usefulness) of the machine embodies sunk costs. These costs cannot be avoided or recovered at the moment. The entrepreneur decided to spend the money in order to buy the machine, and now the cost is sunk; a machine becomes a part of inconvertible (or partially inconvertible) capital of the company.¹⁰

The analysis of sunk costs is confronted with a rudimentary question: why would any entrepreneur be willing to spend the money? If the current value of the machine is 30 units, why did anyone pay 100 units to own it? The obvious response is that a person who had bought the machine committed an *error*. This determines the first basic theorem on sunk costs: *sunk costs are caused by an entrepreneurial error*. If the entrepreneur had known in advance that the value of a machine was 30 units, then he would not have paid 100 units for it.¹¹ By making a conscious decision to do that, he would willingly consume his own capital, therefore 70 units would not denote sunk cost, but rather the price for a subjective pleasure of destroying his funds.

The presence of sunk costs results from uncertainty over the time horizon (because without passage of time under uncertainty there can be no error). This leads to the second theorem: *sunk costs are a phenomenon recognizable ex post*. It is not fully accurate to speak about sunk costs *ex ante*, that is before the decision is made (it is only possible to speculate about probable sunk costs which may appear in the future). If the entrepreneur needs to pay 100 units for the machine, he can either expect it to be worth the money, or not. If his assessment is that the cost is higher than potential revenues, he perceives a potential loss to suffer from the decision

¹⁰ In some cases inconvertible capital can still be productively employed, but not be liquidated.

¹¹ “The larger the sunk costs, the higher the prior expectation of profitability must have been. One does not sink funds, unless one expects such expenditures to be justified” (Frank, 1988, p. 341).

to buy. Therefore he decides to abstain from the purchase in order to avoid any losses associated with possible sunk costs.¹²

Although the presence of sunk costs is only recognized *ex post*, we can still meaningfully speak about the *ex ante* possibility of sunk costs. This possibility depends on uncertainty and risks associated with production processes. Moreover, the price of a machine depends not only on the process in which it is being used, but also on other processes in which it could have been used alternatively. It is more obvious in cases of more homogeneous goods like raw materials, land, or other durables. In case of any sudden change in economic circumstances, it is easier to liquidate land than to sell a specific tool used in the factory. The possibility of suffering from sunk costs in the future is highly correlated to specificity of capital goods. This establishes the third theorem on sunk costs—*the more nonspecific the factor of production, the lower the possibility it will be associated with sunk costs in the future.*

Sunk costs are not fixed forever. Their presence is conditioned by unexpected changes in market prices. The reverse is also true: sunk costs may disappear in dynamic conditions (or decrease, or increase). The assessment of sunk costs is derived from a comparison of past prices with *current* prices. Current prices, contrary to past prices, are not fixed and can change. Since sunk costs are the difference between past and current prices, they can also change. If the machine was bought for a price of 100 units, and its current value is 30 units, then 70 units represent sunk costs. This cost is not fixed, however, because the current value may rise, which would decrease the sunk cost. In some cases, a significant increase in the current market value would eliminate sunk cost completely and turn losses into profits. We have reached the fourth theorem: *sunk costs are not fixed once and for all.*

Sunk costs are fundamentally linked with the passage of time. Any production project that takes a longer time is subjected to more instances of economic changes. Therefore, under longer processes, more durable goods can change their value more often than during shorter projects. This constitutes the fifth theorem on

¹² In the theory of competition, prices should not be treated as given. In the above example, the decision not to buy factors certainly influences valuations and puts downward pressure on prices.

sunk costs—the longer the process of production in which the factor is involved, the more vulnerable the factor becomes to becoming a sunk cost in the future.

5. SUNK COSTS AND EFFICIENCY

Contestability theorists challenged the neoclassical idea of treating economics of scale as barriers to entry, because in some circumstances fixed costs could be recovered. As we pointed out in the second section, the statement should be carefully clarified. Fixed costs and economics of scale can in fact stop some entrepreneurs from entering the market. These obstacles constitute “efficient” barriers. Apparently existing producers are so efficient that potential entrants are not in a position to outcompete them. In other words, the market cannot be easily contested, because it is already characterized by a competitive state of affairs. Contrary to perfect competition claims, fixed costs perform valuable economic functions (see on this Armentano, 1982, p. 37). Follow this line of reasoning in order to determine whether sunk costs constitute a socially wasteful barrier to entry. Sunk costs are barriers just as fixed costs are, since they stop some producers from entering the market. Nevertheless, more important questions are: why do those costs exist in the first place, what is their social and economic function, and do they constitute an economically inefficient barrier to entry?

As noted previously, we can either deliberate about sunk costs already suffered, or possible future sunk costs. Factual sunk costs denote past mistakes and induce entrepreneurs to revise their plans.¹³ The existence of *ex post* sunk costs has the same social function as losses and bankruptcies. Sunk cost is not a problem; it is a signal to search for a solution. The problem was a mistaken initial decision, which led to spending the money. Sunk costs merely represent a necessary market correction of previous factor overvaluations. If the government decides to meddle with existing sunk

¹³ “We now realize that in a world of dynamic change unused resources have two functions. Firstly, they act as shock absorbers when combinations disintegrate. Secondly, their existence provides an inducement to invest in those capital goods which are complementary to them” (Lachmann, 1947, p. 209).

costs, its actions are similar to interfering in losses. This hampers the profit and loss mechanism and restrains its efficiency.

Responsibility for economic mistakes is a pillar of competition. If uncertainty and risks are to be priced and valued accordingly, competitors in the market need to expect that the government will not bail them out. The main goal of entrepreneurs' actions is the effective employment of factors. The capital value of assets stems from correct estimates of future prices and successful predictions of the future consumer market. Sunk costs as instances of error should be avoided by businessmen, since they indicate that there was some inefficient discrepancy between costs and prices. Actions to avoid sunk costs are to the benefit of consumers. If the government decides to intervene with sunk costs, consumer sovereignty is hampered, because instead of solely focusing on future consumer purchases, entrepreneurs also start to consider possible ways of receiving government's help (rent-seeking behavior). Intervention in this field is similar to typical subsidies funded by public money.

When costs are sunk, they are sunk for a reason. Wasted convertible capital implies that factors have been misallocated. There are grounds for updating market values in order to reflect new economic conditions. Significant downward adjustments in prices result from specificity of factors. If the factor is more nonspecific, its value adjustment need not be major, or may not need to happen at all. When mistakes have already been committed, the existence of sunk costs is a natural and efficient consequence. Those costs embody a necessary correction that needs to take place in the market for more specific factors.¹⁴

These observations apply to factual sunk costs recognized *ex post*. Contestability theorists are primarily interested in potential sunk costs, which may appear in the future. Those are considered as an inefficient barrier to entry. Nevertheless most of these observations above apply also to the notion of potential sunk costs.

¹⁴ "Every capital instrument is designed for a purpose. Where it is highly specific, this purpose is identical with a certain kind of (anticipated) use. Where it is "versatile," it may cover a wide range of uses. But in any case it is planned for some kind of use, and failure to succeed in any of them as reflected in loss of earning power will result in *revision of plan*" (emphasis added, Lachmann, 1947, p. 203). Sunk costs serve this function to revise plans.

Let us go back to the hypothetical case from the second section. In our example of widget production, the contestability of the market depends on the possibility of reselling durable equipment without significant losses after initiating a hit-and-run policy. During the first year, 20 units worth of money were used productively by employing the machine. Could the machine be sold for 80 units after that time, so that the entrant could have abandoned the market without covering any costs? According to contestable markets theory, if those exit costs cannot be avoided, the entry is not unrestrained and non-competitive results might follow.

If the factor cannot be easily sold (as in cases of human capital, public relations, research and development etc.), this difficulty reflects its specificity (including transactions costs and adjustment costs). Economic reality does not consist of easily flexible goods, which can be effortlessly substituted for others. To assume that is to entirely blur the nature of the world, and consequently the market process.¹⁵ As we have observed, the costs do not depend exclusively on the productivity of an undertaken process, but also on alternate productivities of competitive processes. When entrepreneurs pay for the factors of production, they also pay for withdrawal of factors from other alternative employments in which they could have been productively used. Probability (case probability) of sunk costs depends on the length of the process and specificity of factors used in it. It follows that the broader possibility of sunk costs results from the chance of committing the factors to wasteful, longer, and more specific projects. That possibility is not an instance of inefficiency, just as premium risks in insurance companies are not.¹⁶

¹⁵ "In other words, there can be no major change which leaves the existing structure and composition of capital intact. All such change tends to create situations in which there is too much of some capital assets and too little of others. In this fact lies the ultimate reason for that instability of the 'capitalist' economy which so many people deplore and so few understand" (Lachmann, 1947, p. 207). The only way to deal with this "instability" is to use one of the greatest inventions of the human mind—economic calculation in monetary terms. Part of that calculation consists of capitalizing sunk costs.

¹⁶ Thus, when Stiglitz et al. (1987, p. 886) are arguing that sunk costs lead to lack of competition, they are in effect anxious about the fact that reality is heterogeneous, not that markets are "failing." Markets are economizing to the best extent possible

Baumol notes:

The need to sink money into a new enterprise, whether into physical capital, advertising, or anything else, imposes a difference between the incremental cost and the *incremental risk* that are faced by an entrant and an incumbent. The latter's funds are already committed and are already exposed to whatever perils participation in the industry entails. On the other hand, a new firm must take the corresponding amount of liquid capital and turn it into a frozen asset if it enters the business. Thus, the incremental cost, as seen by a potential entrant, includes the full amount of sunk costs, which is a bygone to the incumbent. Where the excess of prospective revenues over variable costs may prove, in part because of the actions of rivals, to be insufficient to cover sunk costs, this can constitute a very substantial difference. This risk of losing unrecoverable entry costs, as perceived by a potential entrant, can be increased by a threat (or imagined threat) of retaliatory strategic or tactical responses of the incumbent (Baumol and Willig, 1981, p. 418)

Bailey, for example, suggested that a proper policy to increase competitiveness, apart from assuring freedom to entry and exit, is to also settle the rules "requiring lease or *shared use of sunk costs facilities*" (emphasis added, Bailey, 1982, p. XXII).¹⁷ We have reservations about this thesis, because this kind of approach should increase competitiveness (understood as an increase in the consumer's choice). More likely it would lead to exactly opposite results.

Contestability theorists' analysis of fixed costs could be extended to the case of sunk costs. Baumol argued that fixed costs perform valuable economic functions, but so do sunk costs *ex post* and *ex ante*. Even in cases where sunk costs exist disproportionately in the market, that is, when they differ from one firm to another (as between incumbents versus entrants), their economic role is comparable to the roles of different rates of return. One company may suffer huge losses, and another company may achieve tremendous profits. Those differences result from social appraisal indicating which processes should be undertaken.¹⁸

the fact that the world is heterogeneous and uncertain. It is a "failure" (or perhaps the beauty?) of the world, that it is not an easily adaptable homogenous blob.

¹⁷ On the supposed necessary role of nationalization and extensive role of government see also Bailey (1981).

¹⁸ Cairns and Mahabir (1988, p. 273) briefly discuss differences in sunk costs between the firms. Despite their suggestions those differences do not imply that competition

If some projects appear to be unprofitable, it implies that the factors devoted to them have more important uses and should be alternatively employed. In the same sense, sunk costs represent economic assessments of more or less specific factors under uncertain environment. If the process uses specific factors, less liquid capital, and is over a longer production period, then the natural consequence of those features is an increased subjective (case) probability of future sunk costs. This is an effective way (although *not* omnipotent way) of restricting entrepreneurs from starting relatively risky projects.¹⁹

Under dynamic circumstances of economic rivalry, some entrepreneurs are more skillful in avoiding sunk costs than their competitors. This also has consequences for consumer sovereignty: if the incumbent in the market has secured his position and has successfully dealt with the problem of sunk costs, he may be considered as more efficient than potential entrants. The profit and loss mechanism (sunk costs included) tells who manages the funds more efficiently and avoids unnecessary costs. The active side of that mechanism are entrepreneurs.²⁰ Bailey's proposition seems analogous to a proposition to redistribute additional profits from successful companies to weaker ones. There are compelling reasons to think that this would not create a competitive environment, or increase efficiency in the production of consumer goods. The entrepreneurial incentive to deal predominantly with consumer preferences would severely be weakened. Under a market system, profitability depends on consumers' choices.

is inefficient. It is not "losing money" per se that is inefficient, but an inefficient decision leads to losing money. Losing money is only the result and a signal.

¹⁹ There are opportunity costs of entering the market. The entrepreneur who wants to contest the market has to devote his resources and abstain from investing them somewhere else (Cairns and Mahabir, 1988, p. 271).

²⁰ On the neglect of entrepreneurial activity in modern economics, Baumol noted, "There is one residual and rather curious role left to the entrepreneur in the neoclassical model. He is the indivisible and nonreplicable input that accounts for the U-shaped cost curve of a firm whose production function is linear and homogenous. How the mighty have fallen!" (Baumol, 1968, p. 66). This applies also to the treatment of entrepreneur as a residual from sunk cost calculations. As French and McCormick show (1984, p. 417) part of entrepreneurial activity is to pay less than one expects to earn from employment. This applies to possibility of recovering costs.

Under a government policy of sharing sunk costs, profitability starts to depend on bureaucrats' choices. This changes the behavior of market participants.²¹ Government agencies cannot absolutely decrease sunk costs just as they cannot absolutely decrease losses. The state apparatus can merely *redistribute* losses or sunk costs and externalize burdens on other economic agents. It is the same with possible sunk costs and actual sunk costs.

So far we have avoided the problems of "true" or "objectively" recognized costs. Yet this also is a challenge for the application of contestability theory to antitrust policy. There is no compelling way to accurately determine which prices represent fully competitive conditions. It is impossible to measure (in monetary terms) a true level of sunk costs, since this measurement is based on an entrepreneurial judgment. Truthful assessment would require perfect foreseeing of the future state of the market—that is, it would require being in the position of a perfect planner.²² This fact is often forgotten when the contestability approach is being applied to practical research.²³

Capital irreversibility and possible sunk costs are definite constituents of economic calculation:

Irreversibility may have important implications for our understanding of aggregate investment behavior. It makes investment especially sensitive to various forms of risk, such as uncertainty of the future product prices and operating costs that determine cash flows, uncertainty over future interest rates, and uncertainty over the cost and timing of the investment

²¹ The existence of sunk costs affects the cash flows. "[E]xternal financing of capital investment is more difficult when the assets being financed have low recovery (resale) values or are sunk" (Worthington, 1995, p. 59).

²² "Sunk costs *resist accurate measurement*. Physical capital is subject to varying measures, and its sunk component *is often unknown* (in part because it varies with the time interval involved). Nonphysical forms of sunk costs may often be larger, but they too are *difficult to measure*" (emphasis added, Shepard, 1984, p. 582). It follows that an antitrust policy is difficult, unknown and resisting accuracy.

²³ In "testing" contestability level of particular industry researchers (or bureaucrats) assume too much. For example: "For simplicity we assume that there is no uncertainty about the level of sunk costs; instead, the entrant is assumed to know that level when he decides on entry." (Briglaue and Reichinger, 2008). Also contestability theorists are aware of the fact that they deliberate about equilibrium states, not dynamics features of the economy (Baumol et al., 1983, p. 495).

itself. Irreversibility may therefore have implications for macroeconomic policy (Pindyck, 1991, p. 1110)

Macroeconomic policy cannot wither away those risks and uncertainties associated with sunk costs. They are ordinary parts of economic appraisal and need to be priced accordingly. Sunk costs are natural buffers, which help in this process both in *ex ante* and *ex post* situations. Possible sunk costs inform about the specificity and length of an uncertain process. Factual sunk costs help to capitalize the losses and to reallocate the factors to more productive uses. Government fiat decrees cannot make those costs disappear. It can only lead to the redistribution of costs. Compulsory externalization of costs, however, does not lead to higher capital accumulation and a higher standard of living, but creates moral hazard incentives (see Hülsmann, 2006).

To summarize this section, sunk costs are *sunk for a reason*. These costs perform valuable economic functions. We considered both realized sunk costs, as effects of past mistakes, and probable sunk costs, which may be suffered in the future.²⁴ The necessity to sink costs is certainly a barrier to entry, as contestable markets theorists would tell us, but it is not an inefficient barrier to entry. Just as fixed costs are not an inefficient barrier to entry, because they play their role for the effectiveness of competition, so it is the case with sunk costs. They exist for a reason.

6. MARKETS CONTESTABLE UNDER PROPERTY CONSTRAINTS

Under socialism, all the factors are taken away from the owners without their consent. In a collectivist order, there is no competition. Every single decision is made by one entity. Economic problems of the socialist order result from the absence of competitive entrepreneurial appraisements. With private property boundaries, all

²⁴ This concerns even the most specific costs such as advertising, which will be completely sunk in case of a failure (Kessides, 1986, p. 87). The possibility of suffering those is not socially wasteful if one does not consider advertising as an unnecessary burden (see on this Kirzner, 1973, p. 151ff). Possibility of completely sunk costs in advertising certain products makes entrepreneurs *aware* that they might lose a lot of capital, which is to say, they might grossly misallocate the factors.

entrepreneurs and owners are influencing the prices by their own decisions to sell and buy, or to abstain from selling and buying. Prices allow for exclusions of production processes which are considered undesirable (in the current state of the market). This undesirability is expressed numerically in the expected return on capital, i.e., profitability. A legally exclusive force is not profitability, but rather ownership of factors. One of the components of private property rights is the right to exclude. The price system works solely because of that right, since beyond "profitability" there is exclusive property (which can stop any exchange from taking place).

Private property allows any owner to make offers in the market and utilize his resources for the benefit of consumers. Prices are created and changed in response to their decisions. In these realms, entrepreneurial skills in consumer satisfaction can be economized. The discrepancy between costs and revenues stimulates potential entrepreneurs to enter various markets and eliminate price differences. From this perspective, markets based on property boundaries are always contestable, since any exclusive owner of his capital and resources is free to contest any other producer and supplier of goods.

Competitive markets do not require homogenous products, perfect information, an infinite number of producers and consumers, or the lack of fixed costs. As our investigations suggest, they also do not require the absence of sunk costs, or any special type of policy to undermine sunk costs, because they are essential parts of the market process. Effective contestability of the market is guaranteed by freedom of entry. In the neoclassical analysis, this institutional freedom is neglected, because entrepreneurship is treated like a residual which is automatically motivated by existing price differences:

Obviously the entrepreneur has been read out of the model. There is no room for enterprise or initiative. The management group becomes a passive calculator that reacts mechanically to changes imposed on it by fortuitous external developments, over which it does not exert—and does not even attempt to exert—any influence. One hears of no clever ruses, ingenious schemes, brilliant innovations, of no charisma or of any of the other stuff of which outstanding entrepreneurship is made; one

does not hear of them because there is no way in which they can fit into the model (Baumol 1968, p. 67)²⁵

This critique from one of Baumol's earlier articles applies to the idea of sunk costs as defining competitive conditions. Under a strict contestability framework, entrepreneurs are also treated as passive calculators responding robotically to existing prices over which they do not exert a specific influence.

Competitive actions can be hampered by compulsory co-ownership. When this institution is introduced, entrepreneurs are interested not only in outcompeting other owners by better judgment, but are also interested in indirect or direct expropriations. Prohibiting entrepreneurs from entering particular markets, and making it difficult for them, are inefficient property-violation barriers. They decrease the motivation of incumbents to competitively respond to potential entrants. This necessarily leads to monopolistic consequences in different forms of inefficiencies of the structure of market prices and qualities of products.

Markets are contestable when there is freedom of entry into all industries. The government can only discourage entries or levy unnecessary costs on some entrants, incumbents, or taxpayers. Because of the above reasoning, we doubt that this kind of policy would produce an increased level of good and socially positive competition, but rather precisely the opposite. Following this line of reasoning, we also see that the modified contestability method can be reconciled with Rothbard's theory of monopoly (Rothbard, 2004, pp. 668–670). Markets are competitive with freedom of entry, and monopolization is caused by granting special privileges.

CONCLUSIONS

Contestable markets were a great advancement in the neoclassical competition theory. This new approach led to the rejection of three absurd assumptions of the perfect competition model. Even the fourth assumption on barriers to entry was significantly modified

²⁵ In this paper, one of Baumol's colleagues commented (p. 69, n. 4) that neoclassical analysis does not have a good theory of the entrepreneur, because it does not have a good theory of monopoly.

to vindicate positive effects of economies of scale. With our systematization of the concept of sunk costs, we were able to modify the assumption even more. Sunk costs are not negative burdens, because have desirable effects on competition. The general idea of contestability is largely correct, but requires more exactness: the competitive framework of the pricing process requires freedom of entry and conditions in which no entrepreneur is allowed to impose compulsory costs on his competitors.

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