

The Soft Budget Constraint : A Theoretical Clarification

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Introduction

The concept of the soft budget constraint (SBC), first introduced by J. Kornai in the context of socialist economies (Kornai (1979) (1980)), is now widely used in describing similar phenomena in post-socialist, developed and developing market economies. The concept, under the hand of its inceptor, alludes to a situation in which a state-owned enterprise may survive even in case of persistent losses thanks to the financial aid of a paternalistic state. Hence, the concept does not refer to a single bail-out, but a recurrent practice of rescuing firms. Then, managers would expect a rescue if losses are made, and their expectations would shape their behaviour. The SBC was prevalent in socialist economies.

Despite the shift from government to bank financing of state-owned enterprises, SBC remain an important problem in economies undergoing post-socialist transition, albeit to varying degrees. Kornai (1999b) underlines five main groups of instruments leading to the SBC in the post-socialist transition¹ : 1) fiscal subsidy; 2) soft taxation; 3) soft bank credit (non-performing loans); 4) soft trade credit (the accumulation of trade ar-

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¹ In fact, in our opinion, Kornai's major contribution to the analysis of the post-socialist transition may be summed up in his insistence on the need to "harden" the budget constraint. At the beginning of the post-socialist transition, it was widely held that the 'Holy Trinity' of liberalization, privatization and stabilization would suffice to produce an efficient market. However, Kornai has always emphasized that hardening budget constraint should be given equal priority with these. The 'magic square' instead of the 'Holy Trinity' is what

rears between firms); 5) wage arrears. The SBC is particularly pressing in Romania, Russian Federation, China, Albania, Azerbaijan, Tajikistan, Belarus, etc. (Kornai (1999b) p. 3a; Berglof and Roland (1998) p. 19; Li and Liang (1998)). The survival of the syndrome of the SBC is especially critical in the Russian case, to the point that Pinto *et al.* (1999) dub Russian society as a “non-payment society”. In this case, enterprises do not pay their suppliers, and similarly employers do not pay their employees or debtors their lenders. The executive and judiciary system also tolerate the situation. The SBC is not unknown in developing countries either. The considerable degree of government intervention in many developing countries, the particular importance of parastatals in industrial production, and the lack of numerous fully-fledged market institutions in developing countries lead to situations in which several cases of SBC may be identified (Raiser (1994)). Anderson (1995) stresses the importance of personal relationships in the politics of certain Middle Eastern countries and argues that many leaders of the region repeatedly obtained easy (soft) international credits due to their political significance. Huang and Xu ((1998) quoted in Kornai (1999b) pp. 10, 20) try to analyse the contagious risks and financial crises, particularly the recent Asian financial crisis in terms of SBCs.

The corporate finance literature has equally identified a number of sources and channels of transmission, or propagation, of SBCs not only in transition economies (Berglof and Roland (1998)), but also in developed capitalist economies (Dewatripont and Maskin, 1995; Maskin (1996)). In fact, the relation between the loss-making or insolvent firms and commercial banks on the one hand, and the relation between insolvent commercial banks and the central bank, on the other hand, is also very relevant in capitalist countries. The extent to which these firms or banks are subjected to “financial discipline” and bankruptcy procedures under a fully developed market economy constitutes a crucial problem in the general process of Schumpeterian “destructive creation”. Furthermore, the SBC syndrome may be investigated in case of different branches of a multinational firm, or in the relationships between central and local governments (Qian (1994)). Dewatripont and Maskin (1995) apply the concept to explain differences between Anglo-Saxon (USA and UK) and German-Japanese corporate finance. Aizenman (1993) underlines the relevance of the SBC for all economies with limited controllability of the decision making processes. For example, the concept may be used to clarify the consequences of a separation between the central bank and the treasury or among ministers or local governments with regard to fiscal resources. The importance of this issue has been recognized in the recent macro and development literature, which focuses on coordination failure caused by multiple competing decision makers (Dewatripont and Tirole (1996); Daver and Panunzi (1997)). Last but not least, the

can be found in his most recent contributions regarding the “organic development” of a private, market economy: “There is close causal relations between healthy development of private sector, hardening of the budget constraint, forceful restructuring of production, and as the ultimate result, the growth of labour productivity.” (Kornai (2000) p. 10).

concept is also mobilized to analyse the research and development (R&D) investment under different institutions in developed countries (Bös D. and C. Lülfesmann, 1996; Huang and Xu (1998)).

The scope of this paper does not allow us to provide a detailed study of different empirical aspects of the SBC. However, the practical significance of this phenomenon and its pervasiveness justify our endeavour to scrutinize the theoretical meaning of the SBC.

Since the beginning of the nineties, a vast formalized literature has been developed to capture different causes and consequences of the SBC. In practice, various definitions of the SBC have been used in the literature and several surveys have identified the theoretical and empirical aspects of this phenomenon². While the focus of this literature has been the “softness” of budget constraint, it failed to note the change in the meaning of the “budget constraint” that has occurred since Clower’s seminal paper (1965) on the subject. In fact, the widespread use of the SBC notion has led to “softness” (lack of rigour) in the use of the budget constraint concept.

The purpose of this paper is to examine the meaning of the budget constraint (BC) in Clower, Kornai, and the recent literature in order to provide a theoretical clarification of the SBC syndrome.

Section 1 discusses Clower’s interpretation of the BC as a **rationality postulate** which should be clearly distinguished from both a **bookkeeping identity**, and an **equilibrium** or **optimality** condition.

Section 2 studies Kornai’s critique of Clower’s interpretation of the BC as well as his standpoint on the subject. It will be argued that for Kornai the BC is not a rationality postulate, but an **empirical fact** regarding the behavioural regularity of agents. This behavioural regularity is determined by the institutional environment. Different degrees of the BC, ranging from soft to hard ones, may be distinguished. The SBC defined as *ex post* bailouts of the loss-making firms by a paternalistic state refers to a survival behaviour (corresponding to H. Simon’s satisficing criterion) by managers. The HBC, by contrast, describes the behavioural regularity of agents in a competitive market economy. In Kornai’s terminology, the HBC refers to what Clower calls BC. However, contrary to Clower, Kornai’s contention is that the HBC implies both a rational behaviour and the satisfaction of equilibrium and optimality conditions. Accordingly, we will underline a contradiction in Kornai’s viewpoint with regard to the meaning of BC. While in his analysis of the SBC, Kornai deals with the BC as an empirical fact, in his explication of the HBC, he considers the BC as a profit-maximizing (efficiency) condition.

We share with Kornai the treatment of the BC as an empirical fact and argue that this position is more coherent than Clower’s definition of the BC. The reason is that even though Clower’s distinction between the rationality

² For a survey of the theories on SBC, see Maskin (1996); Berglof and Roland (1998); Kornai (1998b). For an empirical survey on the SBC, see Begg and Portes (1993); Kornai (1999b).

postulate and optimality condition is justified, it cannot be denied that they are consistent. However, the BC as an empirical fact may not have any bearing on the optimality condition. Conversely, we do not agree with Kornai that the HBC implies the application of the Walras law, since it once again confuses what Clower tried to clarify, i.e. to distinguish between the rationality postulate and equilibrium or optimality conditions. It will be further argued that Kornai's contradiction is particularly developed through his efficiency analysis of the SBC. We will especially stress the contradiction between the use of "satisficing" (survival) criterion in the definition of the SBC, on the one hand; and the use of efficiency analysis in determining the inefficiencies of the SBC, on the other hand.

Section 3 explores the recent formalized literature on the SBC. While Kornai's explanation of the SBC is **exogenous**, this literature provides **endogenous** explanations of the SBC. Kornai's intuition is formalized and developed further in two directions: its pure economic ingredient (asymmetrical information) has been developed by the contractual theory; its political ingredient by the Public Choice theory. The first orientation endogenizes the SBC as a non-commitment and time inconsistency phenomenon³. Decentralization is frequently advocated as a solution to devise an optimal self-enforcing contract. However, the formal authority relationship, i.e. the vertical or hierarchical relationship cannot be captured in this perspective. The second orientation endogenizes the political aspect through lobbying activities and interprets the SBC as a rent-seeking phenomenon. In this perspective, bribery as well as legal obligations are identified as solutions to the SBC. The new microeconomics in its different versions (contractual theory, public choice, etc.) treats the budget constraint as a matter of **choice** of **profit-maximizing** agents in their **strategic behaviour**. It will be argued that this recent literature further develops the efficiency element of Kornai's analysis and holds the position which has been sharply criticized by Clower namely, the BC as both a rationality postulate and optimality condition. However, a branch of the incomplete contract theory (unverifiable incomplete contracts) shows that the SBC may be an efficient solution for developing innovative activity. This result mitigates the two Kornai effects that emphasize the inefficiencies of the SBC.

Although the efficiency element of Kornai's analysis may be invoked as a theoretical background for recent endogenous explanations of the SBC (notably those of the Complete Contracts Theory and the Public Choice Theory), it will be stressed that Kornai's original theory of the BC as an empirical fact is completely irreconcilable with this literature's notion of the BC as a strategic behaviour of the profit-maximizing agents.

³ One of the referees finds objectionable that "(T)he author designates the behavior of the principals as time-inconsistent...That term should be used only in the context of individual choice". However, in the contemporary market theories, the term is also used in case of principals in general, be it state or other collective entities, since principals are also considered as "representative agent": "Dewatripont and Maskin (1995), Schaffer (1989), and Schmidt (1996) have developed models in which time-inconsistency of the Center lies at the heart of the soft budget constraint syndrome" (Segal (1998) p. 597).

A short conclusion will follow.

1 The budget constraint : A bookkeeping identity or a rational postulate

The concept of budget constraint (BC) is one of the fundamental concepts of standard microeconomics⁴ concerning the household's behaviour. Disregarding the possibility of credit, it simply asserts that the household's total spending plan cannot exceed its budget constraint, namely the total expected monetary revenue at its disposal. For a long time, the budget constraint has been considered as a **bookkeeping identity**. We owe the treatment of BC as a "rational postulate" of the household's "planned" (or intended) behaviour to Clower (1965), Clower and Due (1972), and Clower and Leijonhufvud (1975 (1981))⁵. Clower (1965) employs Say's Principle (SP) as synonymous of BC and tries to clarify the prevalent confusion among economists between SP and Walras' Law⁶. According to Clower, SP should not be defined by Keynes' familiar formulation : "Supply creates its own demand", since it does not imply any bookkeeping identity between aggregate supply and aggregate demand. It only states that "...the net value of an individual's **planned** trades is identically zero." (Clower and Leijonhufvud

⁴ Walras intimated the "rationality" version of the budget constraint. He imposed a restriction of "zero value of (planned) trade" for the individual trader, but this was quid pro quo (Say's Principle), not income constrained utility maximization (see Jaffé (1954) p. 165). According to Jaffé, Walras considered his equations of exchange which were "budget constraints" as part of the requirements for justice in exchange. This interpretation has been contested by Walker (1996, p. 47-48) who denied any normative implication for budget constraints in Walras. While the budget constraint is implicitly present in Walras, as Costa (1998, p. 137) rightly argues the concept of budget constraint cannot be found in Walras. Allegedly Vilfredo Pareto (1909/1927) first formulated the concept. Hicks acknowledged primarily Pareto, and Slutsky (1915), and all later users of the budget constraint concept apparently drew on the same source (see, for example, Kornai (1980)). The budget equation in Hicks (1939, p. 305) bears a close resemblance to Pareto's "budget of the individual" (1909/1927, p. 160; 1911, p. 90) and Costa (1998, p. 137) conjectures that constrained utility maximization entered standard price theory by way of Pareto. The modern versions of the concept were first developed by Hicks (1939) and Samuelson (1948); it was then introduced by Arrow-Debreu (1954), Debreu (1959), and Arrow-Hahn (1971) in the general equilibrium theory. Patinkin (1956) integrated it in his monetary theory of general equilibrium.

⁵ In these articles, Clower and Leijonhufvud's purpose is to show that the neo-classical price theory may be regarded as a special case of Keynesian economics, valid only in conditions of full employment. In the same vein, Eisner's (1975) and Tobin's (1975) articles can be quoted. The importance of this discussion notwithstanding, our present paper follows another line of inquiry, namely the significance of the budget constraint in economic theory.

⁶ What "Say's Principle" or "Say's Law" means is an old subject of controversy among economists. Schumpeter (1954, vol. 3, chapter six) and Sowell (1972) summarize Say's Law in six propositions. Quoting at length Say's writings, Baumol (1977) tries to show that at least eight different "laws" or formulations can be derived from Say's works. Lange (1942, p. 64) contends that Say's Law applying to a barter economy is a particular case of Walras' Law which applies to a money economy. This contention has been criticized by Clower and Leijonhufvud (1981, pp. 97-98). For our purpose what really matters is not the historical clarification between different versions of Say's Principle or Say's Law, but whether SP (as equivalent of BC) is describing a **bookkeeping identity** or a **rational postulate** of an individual transactor's behaviour. In this perspective, the distinction between Walras' Law and SP becomes crucial.

(1981) p. 80, emphasized by me). He intentionally does not refer to the “net market value”, since SP only holds that the “expected” or “planned” purchases of a household cannot exceed its “planned” or “expected” revenues. Trades that Clower refer to are “theoretically admissible” and are not **actual market** trades. In this respect, prices and quantities are also conceived in the context of “mental experimentation” and hence make an allusion to “expected” purchase prices and “planned” quantities and not to quantities actually purchased or prices actually paid (Clower and Due, 1972, p. 64).

Considering a very basic exercise in microeconomics, SP amounts to the household’s decision problem of determining how a given amount of money R_m will be allocated to purchase quantities Q_x and Q_y of two commodities that are available at given money prices P_x and P_y . If the household is assumed to be risk-averse, the set of all theoretically admissible trades of money for commodities will consist of points that lie on a single budget line such as :

$$P_x Q_x^* + P_y Q_y^* - R_m = 0 \text{ where } Q^* = (Q_x, Q_y) \quad (1)$$

Let us denote budgets that satisfy equation (1) by $Q = (Q_x, Q_y)$. The set of budgets Q is, of course, a subset of the set of all possible budgets Q^* , i.e. $Q^* \in Q$. By definition it is true that

$$P_x Q_x + P_y Q_y - R_m \equiv 0 \quad (2)$$

In other words, all theoretically admissible budgets Q identically satisfy equation (1). This zero-net-value identity is defined as SP by Clower. However, in this example, SP is explained in its non-aggregative version. Although J.B. Say, himself, did not provide an aggregative version of his principle, it is not hard to formalize an extension of his model. Clower and Leijonhufvud (1981) extend the basic model in two respects. The first one is to allow that the household retains some of the available money for future disposal. In this case, the application of SP implies that the set of theoretically admissible budgets should be revised as $Q = (Q_x, Q_y, Q_m)$ where Q_m denotes the quantity of money that the household plans to hold for future disposal. Then the zero-net-value identity may be defined as

$$P_x Q_x + P_y Q_y + (Q_m - R_m) \equiv 0 \quad (3)$$

The second extension is to permit that the household be a supplier of non-money commodities as well as a supplier of money. Applying SP to this case, the zero-net-value identity can be formulated as

$$P_x(Q_x - R_x) + P_y(Q_y - R_y) + (Q_m - R_m) \equiv 0 \quad (4)$$

where the symbols R_x and R_y , like the symbol R_m represent decision parameters and denote (non-negative) stocks of non-money commodities available for possible sale. Now if we assume that the household is a possible

transactor of a large but finite number of commodities $(1, 2, \dots, m)$ where the m -th commodity is money, then we obtain

$$P_1(Q_1 - R_1) + P_2(Q_2 - R_2) + \dots + P_{m-1}(Q_{m-1} - R_{m-1}) + (Q_m - R_m) \equiv 0 \quad (5)$$

To simplify the notation, we define the household's excess demand for the k -th commodity by the relation:

$$x_k = Q_k - R_k \quad (k = 1, \dots, m) \quad (6)$$

Using equation (6), identity (5) can be redefined as

$$P_1x_1 + P_2x_2 + \dots + P_{m-1}x_{m-1} + x_m \equiv 0 \quad (7)$$

Now if we consider a large but finite number of households, then we may distinguish among quantities associated with different transactors by adding a second numerical subscript $1, 2, \dots, k$ to relevant variables. For instance, the variable x_{ij} denotes the j -th transactor's excess demand for the i -th commodity. In the new matrix of theoretically admissible trades, the individual household's aggregate demands for any commodity can be symbolized as

$$\sum_{j=1}^k x_{ij} \equiv X_i \quad (i = 1, \dots, m) \quad (8)$$

We may then write the money value of aggregate excess demand for the i -th commodity as

$$\sum_{j=1}^k p_i x_{ij} \equiv p_i \sum_{j=1}^k x_{ij} \equiv p_i X_i \quad (i = 1, \dots, m) \quad (9)$$

The last term is zero, since the money value of the sum of all aggregate excess demands is identically equal to zero. Hence we obtain,

$$\sum_{i=1}^m p_i X_i \equiv 0, \quad (i = 1, \dots, m) \quad (10)$$

This last equation is called by Clower, the "aggregative version of SP" (Clower and Leijonhufvud (1981) pp. 87-88). This version of SP is **formally** equivalent to what O. Lange (1942, p. 64) dubbed as Walras' Law. Although they are **formally** equivalent, they are not **economically** equivalent. Economically speaking, two major conceptual distinctions should be emphasized between SP and Walras' Law. First, Walras' Law describes **market** prices and quantities. As Patinkin (1956, p. 25) suggests this law asserts that if prices are such that all markets for non-money commodities satisfy the general equilibrium condition, namely if $X_i = 0$ for $i = 1, \dots, m - 1$,

then the money market must also be in equilibrium $X_m = 0$. To put it differently, if supply equals demand on $m - 1$ markets, then the market is in equilibrium on the m -th market (Arrow and Debreu, 1971, p. 4). However, Clower's definition of SP (both in its simple and aggregative versions) refers to the aggregate excess demand for **planned** (notional, intended, desired) purchases or sales of commodities. It is not related to any actual market prices or quantities. The term market cannot be employed to describe the individual (or aggregate) decision-making behaviour. Second, in the economic literature the reference to Walras' Law tacitly assumes that the trading plans of individual transactors satisfy some sort of **optimality** conditions, i.e. maximize some function in addition to relevant behaviour constraints. This assumption is certainly true for the statements of Lange, Arrow, Debreu, Hahn, and Patinkin for whom individual excess demand functions are defined independently of Walras' Law. However SP does not imply that all individuals in the economic system are behaving optimally and hence are maximizing some function. Nonetheless, it is worthy to note that the maximizing behaviour is entirely compatible with the rationality postulate and subsequently Clower's conceptual distinction between optimality and rationality has no bearing on the real decision-making process. According to Clower, "The familiar budget constraint...asserts...that no transactor consciously **plans** to purchase units of any commodity without at the same time **planning** to finance the purchase either from profit receipts or from the sale of units of some other commodity. For later reference, I shall call the last and very general proposition Say's Principle. This is essentially a **rational planning postulate**, not a **bookkeeping identity** or a technical relation. Unlike the market principle known as Walras' Law, moreover, Say's Principle does not depend on the tacit assumption that values are calculated in terms of current market prices, or on the equally tacit assumption that market prices are independent of individual purchases and sales. Neither does it suppose that individual behaviour is in any sense **optimal**. Thus, Say's Principle may indeed be regarded as a fundamental convention of economic science, akin in all relevant respects to such basic ideas of physical science as the Second Law of Thermodynamics." (Clower (1965) p. 116, emphasized by me).

Clower's contribution may be summarized by three propositions : 1) the budget constraint (SP) is not a bookkeeping identity but a rational postulate; 2) SP does not imply any maximizing behaviour; and 3) SP even in its aggregative form should not be confused with Walras' law. In our opinion, although the first and the second propositions are sound, however the rationality assumption is compatible with the maximizing behaviour. In fact this compatibility explains why the aggregate version of SP is formally equivalent to Walras' Law.

2 The budget constraint : a rational postulate or an empirical fact

J. Kornai borrows Clower's interpretation of the budget constraint (SP) as an *ex ante* behavioural regularity and does not confuse it with the bookkeeping category of the balance sheet of the firm. The latter is an *ex post* identity, whereas the BC is an *ex ante* constraint "related to the firm manager's expectations" (Kornai (1979) p. 807, emphasized by me). Nevertheless Kornai rejects Clower's definition of BC as an *ex ante* rational behaviour. Because BC as a rational postulate should always hold true for describing the behaviour of transactors except for the very exceptional cases such as "a thief or a philanthropist" (Clower and Due (1972) p. 65). For Kornai, the BC is not an **axiome** but an **empirical fact**⁷ (Kornai (1980) p. 320). Its existence as well as its intensity (or degrees) depends on the institutional matrix which forms agents' expectations or **attitudes** in a particular economy. In other words, the BC as a "decision rule" is determined by the particular institutional setup of an economy and not by the unconditional rationality assumption. More generally, macroeconomics cannot be founded on the assumption that there exist patterns of micro behaviour valid for any social and historical conditions. For instance, Kornai (1979, 1980) introduces the concept of the soft budget constraint (SBC) in the context of socialist economies referring to the phenomenon that socialist firms are bailed out persistently by state agencies when revenues do not cover costs. A competitive capitalist economy may be characterized by the hard budget constraint (HBC), where the BC (in Clower's sense) is systematically applied in decision-making.

⁷ In his recent contributions, Clower (1994) advocates that there is no way to make progress in economic science except by first discarding neowalrasian analysis and treating economics as an inductive science. He writes: "(T)he neowalrasian code exerts an insidious influence even on those who, like myself, have long harbored doubts about conventional formalist economics. For reasons that even in retrospect are inexplicable to me, my every attempt to break out of the neowalrasian mold seemed to end in a toy model that has a fundamentally neowalrasian cast; in effect, the neowalrasian code acts like a black hole, consuming everything it touches and cloning even residual orts into an Arrow-Debreu monster." (1994, p. 810). Nevertheless, Clower (1995) does not reject entirely axiomatics in economics. Borrowing the physicist J.L. Synge's distinction between the real world (R-World) and the model or mathematical world (M-World), he underlines that "It is not meaningful to ask of a formal model whether it is true or false, only whether it is more or less useful than another model for a particular purpose." (1995, p. 309). In this sense, the budget constraint can never be interpreted as an empirical fact, but only as a rationality axiom. However, we may ask why the BC cannot be reinterpreted in accordance with "economics as an inductive science", especially when in reality the BC does not hold not only in exceptional cases such as the behaviour of a "thief or a philanthropist", but also in the behaviour of managers in socialist economies, or in many post-socialist economies, etc. In our opinion, the treatment of the BC as an empirical fact contributes to economics as an inductive science.

2.1 The softness and hardness of budget constraint and Walras' law

It is noteworthy that Kornai applies the concept of BC not only in case of households or individuals but also in case of **enterprises**. In standard microeconomics, enterprises maximize profits subject to transformation function (technology constraints). Only households are subject to a BC. One of Kornai's theoretical inventions is to broaden the application of the concept of BC as an *ex ante* behavioural regularity in case of firms. The SBC describes the attitude of firms in a socialist economy where a paternalistic state never lets any firm go bankrupt and always bails out a loss-making firm. The paternalistic relationship between the state and firms is the institutional matrix that explicates the lack of responsiveness of socialist enterprise to price fluctuations (Kornai (1980) chapter 14; 1985, pp. 50-52; 1992, p. 146). Kornai's definition particularly underlines the *ex post* bailouts or *ex post* state intervention⁸. However, an *ex ante* state intervention may equally lead to the SBC. If an economic unit obtains some subsidies, tax reliefs, preferential loans, etc. before the start of the financial period, its BC is soft in a preliminary sense. This observation brings Szabó (1988) to distinguish between a **preliminary** (*ex ante*) and an **incremental** (*ex post*) softness of budget constraint. Although Kornai considers the dichotomy between *ex ante/ex post* state intervention as rigid (Kornai (1998a) p. 14), it is rather "incremental" than "preliminary" softness which he thoroughly analyzes⁹. This type of softness can shed some light on the problem of **survival**. The BC is hard if grave financial difficulties drive the firm to bankruptcy. It dies of its losses. The BC is soft if the paternalistic state guarantees automatically the survival of the firm. Such an economy may be labelled as a "no-exit-economy" (Raiser (1994) p. 1852). This institutional setup generates some particular norms¹⁰ or behavioural regularity which drive the firm not to adopt a profit-maximizing behaviour. Kornai and Weibull (1983, p. 166) state: "In describing the behaviour of the firm, we want to have a more general framework than the usual profit-maximizing pattern... In addition, we apply – following Simon (1959) – the satisficing model of decision-making. This approach seems to be more general and realistic, and in the present model profit maximizing appears as a special case of the more general pattern." In his later works, Kornai rarely quotes H. Simon and his "satisficing criterion" (Simon, 1952-53, p. 26), and he allegedly ignores the relation between the "bounded rationality" assumption and "satisficing" modelling.

⁸ As Schaffer (1998, p. 84) notes the *ex post* bailout definition of the SBC is allegedly more relevant to the policy-making discussions, since "Policy-makers are often encouraged to 'harden the budget constraint' of chronic loss-making firms by letting them close down, refusing them subsidies..."

⁹ It should not be forgotten that in a socialist economy as well as a capitalist economy, there exist some **strategic sectors** or **strategic priorities** in producing some products or services that lead to a preliminary softness of BC. Hence, despite the sound remark of Schaffer with regard to the importance of *ex post* bailouts in policy-making, the relevance of *ex ante* softness in policy-making cannot be ignored. This particular form of softness is not elaborated in Kornai's oeuvre.

¹⁰ For an analysis of the concept of "normality" in Marshallian tradition in general and in Kornai's works in particular see Vahabi (1998).

Nevertheless, for Kornai the SBC is essentially a non-maximizing survival behaviour. Kornai's treatment of the SBC as an empirical fact (and not a rational postulate) allows him to strengthen Clower's interpretation of the BC as a non-maximizing (non-optimal) behaviour. The *ex ante* SBC as *ex post* bailouts (incremental softness) can easily reconcile the survival attitude of the firm with its non-maximizing (non-optimal) behaviour. In this context, the "satisficing criterion" based upon the "bounded rationality" assumption is more convenient to describe the behavioural regularity of a firm functioning under a paternalistic state than Clower's rationality postulate¹¹.

The non-maximizing behaviour of an enterprise marked by the SBC may also be tackled from another aspect. According to Szego (1991), Kornai's SBC notion presumes that causality runs from savings to investment, whereas savings do not constrain investment at the aggregate level. Instead, aggregate investment determines aggregate savings. Furthermore, the enterprise is not constrained by its savings and its investment is autonomous¹², since it is based on its ability to obtain credit and to vary its leverage ratio. "Consequently, the level of credit taken on by the firms is determined by, rather than the determinant of, the level of investment." (Szego (1991) p. 330). She concludes: "If credit money is truly endogenous in a capitalist system, then a hard budget constraint does not exist in capitalist or socialist systems." (p. 330). However, as Kaldor (1982) argues, the volume of bank lending or its rate of expansion is always limited only by the availability of credit-worthy borrowers. Hence, the distinction between credit worthy and non-credit worthy borrowers becomes crucial. That explains why Kaldor (1985) acknowledges the relevance of Kornai's SBC notion not only for describing a socialist system but also for "Britain in wartime and in the immediate postwar years": "Professor Kornai attributes this to the absence of effective budget constraints on business enterprises that cannot go bust or be liquidated even though they have continuing losses, as well as to an insatiable appetite for new investment, so the number of projects started, or in train, generally exceeds the volume initially planned." (Kaldor (1985) p. 37). Criticizing Szego's article, Kraft (1993) also stresses the distinction between the credit worthy and non-credit worthy borrowers and suggests an interesting demarcation line between a "hard-finance" economy and a "soft-finance" one: "Lenders in a hard-finance economy are profit-oriented, while lenders in a soft-finance economy are not." (Kraft (1993) p. 156). Although

¹¹ Keren (1993) also underlines the non-maximizing behaviour of a firm under the SBC and advocates that the Nelson-Winter's (1982) evolutionary view of the firm is more compatible in this context: "Under a SBC the assumption of a maximizing firm, be it of profits, growth, or any other objective, becomes untenable, and one has to adopt the Nelson-Winter (1982) view of the firm as an organization following certain historically determined rules of behavior, or policies. All firms may be acting according to a given 'corporate culture' but the financial market may act like a Darwinian disciplinarian to weed out all nonconformist firms. In a socialist system all survive, not only those fittest for the market. Consequently we must think of socialist firms as followers of given rules of thumb, designed to function well in the bureaucratic environment..." (p. 338).

¹² Kneil (1988) argues that since the firm is not constrained by its savings, we should rather speak of "finance constraint" than "budget constraint".

Kornai's formulation of the state's *ex post* bailouts relies upon exogenous money theories, Kraft endeavours to reformulate it in terms of endogenous money theories. Accordingly finance constraints can be considered as soft when banks (either commercial banks or the central bank directly) provide all the liquidity firms need regardless of repayment prospects and prospective return (Kraft (1993) p. 159). In other words, banks (like a paternalistic state) consent to give "loans" to enterprises on a non profit-oriented basis.

One of the major implications of the SBC is that SP as a rational postulate is not valid in a classical socialist economy and together with it, Walras' Law (in the sense of Clower) is not valid either. The reason is that the validity of Walras' Law presupposes an HBC. Even though the application of BC (rationality postulate) is a **necessary** condition, it is not **sufficient** for the validity of Walras' Law. Contrarily to a classical socialist economy, in a competitive market economy the HBC is prevalent and it determines the behavioural regularity of every entrepreneur. Accordingly SP is valid. But does it mean that Walras' Law is valid in such an economy? Kornai's answer is positive. "In the capitalist system the firm has a hard budget constraint...in a socialist economy in contrast the firm's budget constraint is soft... It follows from this that in the former system Walras's law prevails. In the latter system, however, Walras's law is not effective, at least within the firm sector." (1980, p. 558). To put it differently, in a competitive market economy, Walras' Law holds since SP is valid. However, as Clower and Leijonhufvud (1981, p. 92) demonstrate, the validity of SP does not exclude unemployment and thus does not imply automatically the validity of Walras' Law. Although Kornai concedes the distinction made by Clower (1965) between SP and Walras' Law in case of a socialist economy, he blurs this distinction with regard to a competitive market economy. In our opinion, the demarcation line between a competitive market economy and a socialist economy cannot be made by referring to the validity of Walras' Law in the former and its non-validity in the latter. In fact, budget constraint (soft or hard) describes a **behavioural regularity** of households, firms, and state at a **microeconomic** level and not an equilibrium condition at a macroeconomic level. For instance, even in a classical socialist system not all agents are marked by the SBC. While socialist firms have a SBC (Kornai (1980) p. 515), households are subject to the HBC (Kornai (1980) pp. 514) since they cannot expect to cover their planned expenditures by anything except their expected revenues. The socialist state has a BC which is neither completely hard, nor completely soft. It is not hard, since the state budget has to cover losses of socialist enterprises. It is not always soft, since current expenditures of state agencies are usually subject to HBC (Kornai (1980) pp. 528-29). The macroeconomic regularities of an economic system cannot be derived directly from its microeconomic behavioural regularity. Borrowing Kornai's terminology, our contention is that the causality direction is rather from institutional setup to behavioural regularity than the other way around. In the *Economics of Shortage* (1980) two contradictory lines of argument may be found in this respect. On the one hand, Kornai

acknowledges that institutional setup explicates behavioural regularities, on the other hand, he distinguishes different macroeconomic (dis)equilibrium states on the basis of microeconomic regularities. This contradiction stems from Kornai's hesitation between a **behaviouralist** and an **institutionalist** approach¹³. An institutionalist approach is quite compatible with Clower's distinction between SP and Walras' Law, since this distinction stresses the relative autonomy of microeconomic assumptions from macroeconomic (dis)equilibriums.

It is noteworthy that wherever Kornai adopts a clear institutionalist standpoint (Kornai (1984)), he locates economies on a continuum ranging from entirely soft to totally HBC, depending on the degree to which market coordination of activities is replaced by bureaucratic coordination. Different degrees of BC are thus considered as **empirical** facts **exogenously** given in different institutional contexts. They provide a basis for a comparative static analysis of different economic systems or sectors. The originality of this type of comparative analysis is that it focuses on the comparison of two different systems with regard to their specific institutional peculiarities, for example socialism as a **shortage** economy is compared with capitalism as an **underemployment** economy. This excludes the comparison of socialism as a **concrete** economic system with a pure competitive market economy as an **ideal** system. The problem with Kornai's work (1980) is that we do not find only this type of comparative analysis. In fact, two contradictory lines of comparative analysis may be distinguished in his arguments. While a first line of comparative analysis suggests a study of a socialist economy as a SBC economy with reference to a pure competitive market economy as a HBC economy, a second line of study advocates a comparison of a socialist economy as a shortage economy with a capitalist economy as an underemployment economy. In our opinion, the second line of study is consistent with an institutionalist approach and contributes to "economics as an inductive science"¹⁴, whereas the first line of study may be criticized for its logical inconsistencies.

¹³ Kornai's recent definition of "institutions" is also based on his hesitation between an institutionalist and a behaviouralist approach: "It (institution-M.V.) includes, for instance, the prevailing legal order in the system concerned, its moral norms and its property rights, the distribution of positions of power, the incentives working on the actors in society, and the information structure." (Kornai, (1999a) p. 9). This definition includes both formal and informal rules on the one hand, and motivational and informational structures on the other hand. While the first ingredient is compatible with an institutionalist approach (North (1990) 1993), the second one is inspired by a behaviouralist approach (Simon, 1991). It should be noted that chronologically Kornai first adopted a behaviouralist approach (1971) and later preferred (1980) an institutional explanation of economic phenomena (see Vahabi (1997)).

¹⁴ As we noted earlier, this expression is coined by Clower (1994). Simon (1997) also advocates an empirically based microeconomics. Kaldor's insistence on "stylized facts" instead of axiomatics and the need for developing an "economics without equilibrium" (Kaldor (1985)) can be interpreted in the same vein. By treating the BC as an empirical fact, the present paper tries to contribute to the same research program which considers economics as an inductive science.

2.2 The soft budget constraint and its economic and political ingredients

In describing the SBC, Kornai refers to all kinds of situations in which a firm can obtain an income through the exercises of economic power in the market place, bargaining power in government and other offices, or simply as a consequence of the paternalistic relationship between institutions and the firm (Kornai (1986)). There are at least two conceptually separable elements in the essential SBC problem: one is related to the **pure economic power** relationships and the other is associated to the **political power relationships**. The first one includes the exercises of economic power due to the monopoly position in market, or due to the asymmetrical information between agents. The second one refers to particular formal authority relationships existing between superiors and subordinates in a vertical or hierarchical structure.

Regarding the relationship between the SBC and the monopoly position of firms, Kornai contends: "The economy is becoming highly concentrated; huge corporations being founded. They are no longer price-takers but price-makers. This is one of the basic factors from the point of view of softening the budget constraint. A large capitalist corporation is able to react to input price changes not by adapting its input-output combination, but by adjusting output price to actual costs plus the expected mark-up. By its price-making power it can almost 'automatically' guarantee its survival, its self-perpetuation." (Kornai (1980) pp. 311-12). Compared to a competitive market economy, a monopoly economy is characterized by a softer BC since agents are price-makers. In this way, Kornai is suggesting that the SBC is a more general phenomenon applying not only in socialist economies, but also in developed market economies. However, Kornai's argument does not seem convincing and it is even contradictory with his own formulation of the SBC. This is because a monopolist price-maker tries to "maximize" its profits (and is usually motivated to gain "super-profits" or "monopoly rents") and this is contradictory with a "satisficing" behaviour under a SBC. Furthermore, contestable market theories (Baumol (1982)) aver that even in a monopoly situation incumbent firms cannot "automatically" guarantee their survival due to competitive threats by "potential" entrants. Besides, a monopolist price-maker setting a price higher than the marginal cost may be forced to reduce its production below the quantity at which the unit cost is at its minimum, simply because of buyers' reluctance to buy at that price. Thus the seller should try to win buyers over from her competitors by some other means, especially non-price ones. In other words, an imperfect competition situation does not automatically imply a sellers' market. It may be quite compatible with a buyers' market. Consequently, the SBC cannot be explained by the mere price-making capacity of agents. These possible objections may perhaps explain why this line of argument has not been followed by Kornai in his recent writings: "...(T)he producer under imperfect competition competes for the buyer, tries to learn as much

as possible about his demands and adapt to them..., reversing the situation in a shortage economy, where the buyer tries to win the seller's favour with flattery or bribes." (1997, p. 17).

Asymmetrical information structure between socialist managers (Agents) and ministries (Principal) is also regarded by Kornai as a factor leading to the SBC. "A very important element in the SBC syndrome is that external assistance is a matter of bargaining for more subsidy, tax-exemption, for permissive administrative prices, etc. Everything is negotiable-not on the market but with the paternalistic institutions." (Kornai (1985) p. 50). This lobbying by managers for preferential treatment of their enterprises is closely related to their "private" information concerning the real capacity of their enterprise and with regard to their "unverifiable" (for their superior ministries) level of effort in realizing the directives of a taut plan. In the non-written "contract" between socialist managers (Agents) and paternalistic state (Principal), there exist a moral hazard and an adverse selection problem that partially explain the extent of budget softness as the outcome of firms' opportunistic behaviours and their bargaining power. Kornai's recent definition of the SBC (Kornai (1997) 1998b) explicitly incorporates the notion of "contract violation". Budget constraint is softened if 1) buyers do not pay for the goods they buy; 2) debtors do not honor their debt contracts; 3) tax payers do not pay taxes; 4) producers do not cover their costs out of their revenues (Kornai (1997) pp. 141-42; 1998b, pp. 1-2). Although this "contractual" interpretation of the SBC has been recently emphasized by Kornai, in his previous writings he did not identify the lobbying activities of managers as the main cause of the SBC. He argued that the SBC was essentially an outcome of a paternalistic state¹⁵. The SBC was thus posited **exogenously** as an **empirical** fact depending on particular political and institutional relationships. Kornai's main concern was to investigate the **consequences** of SBC in terms of efficiency in comparison with a competitive market economy.

2.3 The soft budget constraint and two Kornai effects

Kornai's principal result may be summarized in following terms : in a comparative static analysis, the SBC is a source of both **real** and **nominal (or monetary)** inefficiencies. The first type of inefficiency (real inefficiency) is related to the fact that the presence of *ex post* bailouts increases the

¹⁵ Kornai depicts a classical socialist system as a "command economy" rather than a "bargaining economy". The difference is crucial, since in the former one, the emphasis is on hierarchical vertical relationships while in the latter, the focus is on the lobbying powers of large enterprises and regional party organizations. As Szamueli and Csaba (1998) note : "From our perspective, the basic strength of the analysis (Kornai's analysis-M.V.) was its presentation of the **command economy** as a logically closed system, in which all subsystems and phenomena depend upon one another... Antal gave a detailed account of the emergence of a **bargaining society** in place of the enlightened absolutism of O. Lange and W. Brus. Unlike Kornai, Antal stressed the fundamental role of the political and the institutional system in reproducing patron-client relationships in formally decentralized areas." (p. 185, emphasized by me).

firm's demand for inputs beyond the standard perfectly competitive level. This phenomenon is known as "Kornai effect", since it was first explored by Kornai and Weibull (1983) and then developed in other formalized versions by Goldfeld and Quandt (1988 (1992) 1993), Ambrus-Lakatos and Csaba (1990), Scott (1990), Magec and Quandt (1994), Pun¹⁶ (1995), and Prell (1996). According to Kornai, the SBC syndrome is partially responsible for generating the chronic shortage characteristic of the socialist system. This relation is being questioned by Bajt (1991), whereas some recent models endeavour to establish a relationship between the SBC and the shortage phenomenon even during the post-socialist transition (see Qian (1994)). Following Prell, we name this type of inefficiency as the **first Kornai effect**. The second type of inefficiency (nominal inefficiency) is related to the fact that firms under the classical socialist system have a weak price responsiveness. Prell (1996, p. 268) calls this phenomenon the **second Kornai effect**. In this way, the SBC may be decomposed into two different types of softness which correspond to what Gomulka (1986, p. 77) dubbed as "r-softness" (the letter "r" standing for real) and "m-softness" (the letter "m" standing for monetary or nominal softness). In his critical appraisal of Kornai's theory of the SBC, Gomulka defines the "r-softness" as resource loss, or efficiency slack evaluated at competitive market prices. This resource loss softness clearly corresponds to the first Kornai effect. He considers the "m-softness" as efficiency loss evaluated in terms of actual distorted prices. This nominal softness clearly corresponds to the second Kornai effect. For measuring the real inefficiency (r-softness) and monetary inefficiency (m-softness), Scott (1990) suggests to decompose the SBC in two parts, namely income effect and substitution effect by using both Hicks, and Slutsky measures. In our opinion, despite the fact that the Hicks and Slutsky measures are defined for consumption analysis and thus for households' budget constraints, they can also be soundly employed to clarify graphically inefficiencies in case of the SBC if the "transformation curve" or technical constraints be regarded as firms' budget constraints. A graphical presentation can be useful in order to distinguish between these two different types of inefficiency.

Suppose that for producing a given output Y , two kinds of input (X_1, X_2) are used. In case of perfect competition, the BC is hard and the production function may be denoted as $Y_h(X_1, X_2)$. The firm produces Y^- from the input vector X_1^-, X_2^- , $Y^- = Y_h(X_1^-, X_2^-)$ for a total input costs of C_h , where h stands for a point on the HBC. The relative price input ratio is $\text{tg } \alpha = X_1^-/X_2^-$. In case of the SBC, the firm produces the same quantity of output Y^- on an inferior production function, $Y_s(X_1, X_2)$ from the input vector X_1^+, X_2^+ for a total input costs of C_s , where s stands for a point on the SBC. The relative price input ratio is $\text{tg } \beta = X_1^+/X_2^+$. The source of this technical inefficiency may be Leibenstein's X-inefficiency or the use of some obsolete technology. The extent of budget softness measured

¹⁶ Contrarily to other cited theories, Pun (1995) does not compare situations with SBC to those without SBC in order to grasp the role of Kornai effect. His objective is to investigate whether the input demand is higher with softer budget constraints or not.

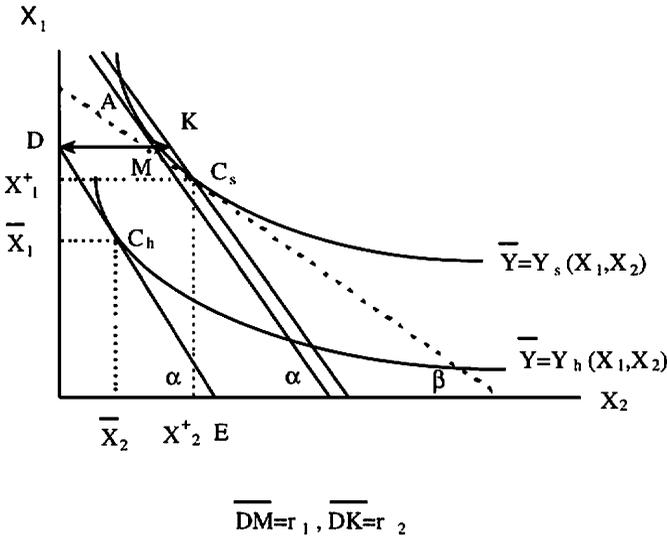


Figure 1 : The First Kornai Effect

by the difference between C_s and C_h can be broken down in two ways. The first way, shown above in figure 1, measures the extent of real inefficiency. This first Kornai effect (r -softness) can be split in two parts: the first part ($C_h - A$) measures the technical inefficiency (which is equivalent to the income effect in consumption analysis), the second part ($A - C_s$) measures the substitution effect generated by distorted input prices.

Suppose that C_h and C_s denote respectively the cost levels of firms H (functioning under the HBC) and S (functioning under the SBC). If firm H , initially subject to C_h , decides to shift to the technically inferior production function $Y_s(\cdot)$ while maintaining its relative input prices of $tg \alpha = X_1^- / X_2^-$, then it should bear additional costs of r_1 (measured in units of X_2) in order to produce the same quantity of output. r_1 can be considered as the Hicks measure of the budget softness, since it takes into account the loss associated with the degradation of technical efficiency from $Y_h(\cdot)$ to $Y_s(\cdot)$. However, r_1 cannot be empirically measured, since point A is not observable. Thus the Slutsky measure r_2 may be more convenient. In other words, the evaluation of the first Kornai effect can be carried out in two ways, either by the Hicks measure or by the Slutsky measure, the second one being empirically preferable. The second Kornai effect (m -softness) may be analyzed in the same manner.

Suppose that C_h and C_s denote respectively the cost levels of firms H (functioning under the HBC) and S (functioning under the SBC). If firm S , initially subject to C_s , decides to shift to the technically superior production function $Y_h(\cdot)$ while maintaining its relative input prices of $tg \beta = X_1^+ / X_2^+$, then it would have the same level of production Y^- with a cost saving of m_1 (measured in units of X_2). This is the Hicks measure, since it measures

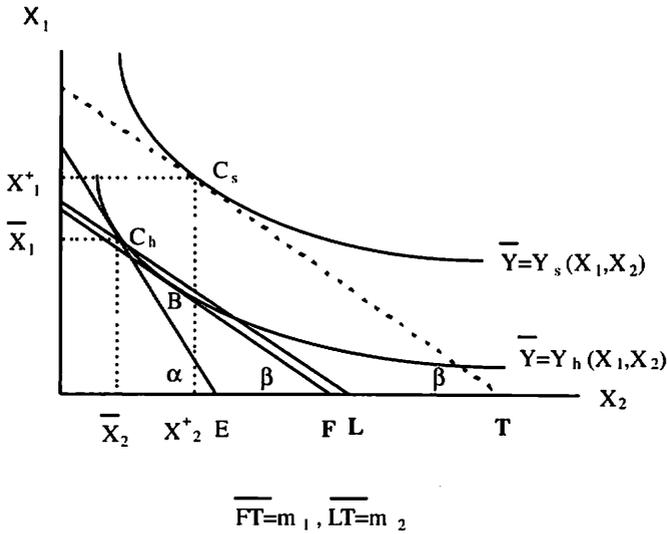


Figure 2: The Second Kornai Effect

the extent of required subsidies to cover the firm's loss functioning on a technically inferior isoquant. However m_1 cannot be empirically measured, since point B is not observable. Thus the Slutsky measure m_2 may be more convenient. In other words, the evaluation of the second Kornai effect can be carried out in two ways, either by the Hicks measure or by the Slutsky measure, the second one being empirically preferable.

Our general result may be summed up as follows: in a comparative static analysis, the SBC (both r-softness and m-softness) is always a source of **inefficiency**, and it can be empirically evaluated by the Slutsky measure.

Both Kornai effects have been widely formalized. The first Kornai effect is usually represented by a simple model treating the firm as an expected-profit maximizer¹⁷. The crux of these models is that output (or output price) is uncertain and the firm receives subsidies when its operating profits are negative. Goldfeld and Quandt (1988, 1990, 1992), Ambrus-Lakatos and Csaba (1990) develop a family of models of the SBC in which the size of the subsidy received by a loss-making firm is determined in part by resources devoted by the firm to managerial lobbying activities. The general result of their models is that the SBC can increase factor demand and, hence contribute to shortage in socialist economies. Hillman, Katz, and Rosenberg (1987) also examine the consequences of government *ex post* bailouts on input demand. In their model, the firm is subject to an un-

¹⁷ Goldfeld and Quandt who particularly contributed in the formalization of the first Kornai effect acknowledge that their profit-maximizing hypothesis does not correspond to Kornai's analysis of managers' behaviour in a centralized economy. This is because the principal motivation of these managers is to ensure the subsistence, survival, and viability of their enterprises that may be called (following Simon) "identification with one own's job" (Goldfeld and Quandt (1988) p. 505).

certain output price. A low price triggers a government bailout, because otherwise the firm should reduce employment and unemployment is politically costly. Despite the fact that the authors do not explicitly refer to a SBC situation, their model also formalizes the first Kornai effect. Goldfeld and Quandt (1993) explore the softness effect in case of a double uncertainty with regard to revenue and cost. The model exhibits a diversity of solutions, including a full range of multiple equilibria where the effect of bailouts on input demand depends on the technology, the variances of the random variables and the correlation between them. Finally, Prell's model (1996) shows that the first Kornai effect holds for all neoclassical production functions on the basis of diminishing returns. However, the validity of the second Kornai's effect depends on more restrictive conditions. It holds for the case of linear marginal product whether the effect (price responsiveness) is defined in terms of slopes (Kornai (1992)) or in terms of elasticities. For other types of functions, it only holds entirely where the elasticity of substitution between factors $\sigma < 1$, whereas if $\sigma > 1$ the converse of the effect holds, namely the SBC firm is more responsive in elasticity terms than the competitive firm.

Reviewing the formalized literature on the inefficiency of the SBC, two critical remarks should be raised. First, although these models treat uncertainties with regard to the cost or income, the uncertainty concerning the nature of the product is excluded. In other words, firms are always supposed to produce a generic or a standardized product. The **innovative** activity is not the object of analysis. Borrowing Schumpeter's distinction between "adaptive response" and "creative response" (Schumpeter (1947) pp. 149-150), we claim that Kornai's inefficiency effects relate to the SBC in an economy with **adaptive response** where there is no real innovative entrepreneurial activities. However it is not clear whether the SBC in an economy with **creative response** may lead to inefficient results¹⁸. It may be justly argued that a comparative static analysis is not convenient to capture the effect of the SBC in the context of creative response. The soundness of this observation notwithstanding, it brings us to recognize the limits of a comparative static analysis. Second, there exists a contradiction between Kornai's definition of softness and his inefficiency effects. Because as we noted above, he defines the softness of BC on the basis of survival (and not maximizing) attitude of managers, whereas the efficiency analysis requires a model based upon maximizing behaviour. In fact, Kornai refers to a competitive market economy in its equilibrium (optimal) state as an economy with a HBC. Like Clower, Kornai defines BC as a behavioural regularity; but unlike Clower he confuses a behavioural regularity with the existence of equilibrium. The problem with Kornai's definition of BC is that he interprets this constraint both as a **behavioural regularity** (in case of SBC) and as an **equilibrium condition** (in case of HBC). While the definition

¹⁸ In fact, Bös and Lülfesmann (1996) modelize the **efficiency** effect of the SBC in an innovative sector where the contracting firm does not produce a generic product but a specific goods whose technology is (at least partly) unknown at the date the project is started.

of BC as a behavioural regularity does not imply maximizing behaviour, the definition of BC as an equilibrium condition implies maximizing behaviour. Kornai's efficiency analysis is conducted on the basis of a confusion between two different conceptions of BC both as a behavioural regularity and an equilibrium condition. The formalized versions of Kornai effects remove this contradiction, since it assumes a maximizing (optimizing) behaviour for firms. This assumption is in tune with Kornai's efficiency analysis, but it completely violates the original sense which Kornai initially attributed to this concept as an **empirical behavioural regularity**. The logical result of this revision is to interpret the BC as a strategic behaviour of maximizer agents. In this way, the SBC may be **endogenized** as a rational choice by maximizing agents. The SBC is no longer considered as an **exogenous** behavioural regularity depending on specific institutional setups, but as an **endogenous** strategic behaviour followed by maximizer agents.

3 The budget constraint as a matter of choice

Kornai's theory of the SBC is an **exogenous** one, since "(A) strong, even a key part is played by the relation of the actor performing the softening with the surrounding political and social environment and the external economic factors." (Kornai (1998b) p. 13). In other words, the softness is not explained by the internal interests of the softening institution (state), and thus it cannot be regarded as a strategic behaviour by a maximizing agent. As Bardhan (1993) justly notes, there are at least two conceptually separable elements in the essential SBC problem: one is an information or agency problem, the other is a political problem largely involving the problem of credible commitment on the part of the state. During the nineties, both informational and political elements of the SBC problem have been treated by several formalized versions of **endogenous** explanations of the SBC particularly by Complete (optimal) Contracts Theory and Public Choice Theory.

3.1 The asymmetrical information problem and the SBC

By endogenous explanations, we mean the analysis of the SBC as an outcome of the internal interests of the softening institution (be it state or other organization playing the role of Principal). In this perspective, the degree of budget constraint is also a matter of rational choice by maximizing agents. The pioneering work in this field belongs to Dewatripont and Maskin (1995). According to the authors, the SBC syndrome pertains wherever a funding source, for example, a bank or government finds it impossible to keep an enterprise to a fiscal budget, i.e., whenever the enterprise can extract *ex post* a bigger subsidy or loan than would have been considered efficient *ex ante*. In

this sense, the SBC problem extends well beyond socialist economies, since the extent to which loss-making firms or projects are terminated or refinanced is also very relevant in capitalist (both developed or undeveloped) economies.

3.1.1 The adverse selection and gambling bank models

In Dewatripont and Maskin's model, **time inconsistency** of the Center lies at the heart of the SBC syndrome: if the Center were able to **credibly commit** itself to not subsidize the firm *ex post*, the firm would make more efficient *ex ante* decisions. The SBC is accordingly treated as a more general dynamic commitment problem where an agent can fail to take an efficient action, or can undertake an inefficient action, because he knows that he will receive additional finance. Hardening of budget constraint then means creating conditions for a credible commitment not to refinance an agent¹⁹. Their model describes a situation in which a superior organization (for instance, a bank) is deciding whether to finance investment projects of certain enterprises. There exist two kinds of projects: the fast and the slow ones. The fast projects are "good" investments and can be completed in one period. The slow projects are "bad" investments, since their completion will be delayed and cost more than "good" ones. Banks cannot distinguish between these two different types of projects, whereas managers know the quality of projects. Managers can hide their information concerning the quality of projects and banks are prone to approve some bad projects that are *ex ante* unprofitable. However, banks have all the negotiating power in negotiating financing and may propose take-it-or-leave offers. The model bases the SBC on creditors' **adverse selection** and **lack of commitment** not to refinance bad projects. The authors argue that for large creditors, it is worthwhile and feasible to refinance a project after the initial investment is sunk. It is so because the marginal benefit of refinancing may exceed the marginal cost, although the total sum invested in the project may end up being higher than its proceeds. Small creditors would not have the liquidity to continue these projects and would be more likely to terminate them. The model shows that the decentralization of credit leads to several small creditors who cannot afford to refinance bad projects and thus may commit themselves to refuse refinancing. The decentralization can thus contribute to hardening budget constraint. Bai and Wang (1995) suggest that the creditors who rely on managers to screen projects may force the managers to refinance some *ex post* unprofitable projects. By continuing such bad projects, the creditors pass on losses to the managers and, therefore, the managers are more careful in screening projects. In both models, the difference between the *ex ante* inefficiency of future refinancing and the *ex post* benefit of refinancing

¹⁹ Schaffer (1989), and Huang and Xu (1998) present game theoretic models in which the SBC results from the inability of the Center to commit credibly not to rescue a firm that fails. In Schaffer (1989), the addition of imperfect information on the part of the firm about whether the state is "weak" (paternalistic) or "tough" enables to build a reputation for toughness and impose HBC on firms.

due to sunk costs is crucial to characterizing SBC. Without *ex ante* inefficiency, refinancing would not be wasteful; without the *ex post* benefit to refinancing, the rationale for the SBC would be missing. However, while in Dewatripont and Maskin's model the *ex ante* inefficiencies and the *ex post* benefits all accrue only to the bank, in Bai and Wang's model the inefficiencies are shared by managers and banks. In both models, SBC results from adverse selection. The adverse selection models of the SBC are also developed by Qian (1994), Berglof and Roland (1997), and Bai and Wang (1998).

In the adverse selection models, the creditors invest in a "bad" project due to their lack of information about the quality of projects. However in the gambling bank model (Stiglitz (1994)), an insolvent bank may be willing to invest in a risky project with an expected payoff that is low or even negative, because if the gamble pays off, the bank will become solvent, whereas if the gamble does not pay off, the bank will become "more insolvent", i.e. no worse off than it was before it made the risky loan. This type of model extends the SBC concept to include the situation in which an insolvent bank may be willing to invest in a project that is expected *ex ante* to be loss-making, albeit not with certainty. Thus the creditor has no motive to credibly commit itself not to finance a probably very "bad" project. However as Schaffer notes: "In both the gambling bank model and the adverse selection models, **the financing decision is profit-maximizing for the creditor.** In the former, the bank can return itself to solvency only by taking on projects that have some small probability of generating a very high payoff, even if *ex ante* the expected payoff is negative. In the latter, prior to the first period, the project is not known to be bad and prior to the second period, the project is actually good." (1998, p. 84, emphasized by me). There exist a fundamental difference between these endogenized versions of the SBC and Kornai's exogenous version of the SBC as the *ex post* bailouts of loser firms by a paternalistic state. For understanding the difference, it suffices to ask what would happen if, *ex ante*, the creditor would know with certainty that the firm will be a loss-maker? Schaffer contends: "In both the gambling bank model and the adverse selection models, if a creditor learns *ex ante* that the firm is definitely a "bad" firm, it will refuse to finance it since to do so would be throwing money away. This is in sharp contrast to a model of *ex post* bailouts due to paternalism because in such a model the likelihood of obtaining financing is unaffected by *ex ante* revelation to the creditors that the firm is expected to be loss-making. If the firm is loss-making *ex post*, it is subsidized as a result of its situation and, consequently, the firm has a soft budget constraint." (1998, p. 84). In other words, Kornai's theory of the SBC is not based on a profit-maximizing behaviour, whereas both the gambling bank model and the adverse selection models are founded on this assumption.

3.1.2 The moral hazard models

Another strand of endogenous explanations of the SBC has been developed on the basis of **moral hazard problem** at the level of the firm and the **absence of a credible commitment** at the level of the center. Qian and Roland (1994, 1998) and Berglof and Roland (1998) present models of this type. In fact, Berglof and Roland's basic model (1998) is a modified version of the Dewatripont and Maskin's (1995) model. The authors study the SBC problem in the context of firms-state relationships under socialism, in a two-period setting. Their model also describes a situation in which a superior organization (in this case, the state) is deciding whether to finance investment projects of certain enterprises. At the beginning of period 1, firms draw n projects (normalized to 1) and submit them to government. There exist two kinds of projects: either fast in proportion α or slow in proportion $(1 - \alpha)$. The fast projects are "good" investments and can be completed in one period. The slow projects are "bad" investments, since their completion will be delayed and cost more than "good" ones. The state is prone to approve some bad projects (in proportion $1 - \alpha$) that are *ex ante* unprofitable. All project costs have start-up (sunk) cost of 1 monetary unit. At the end of period 1, good projects yield a gross monetary, and taxable return of R_f and deliver private benefits $B_f > 0$ to the firm's management. Bad projects yield the same outcome only if the firm exerts high effort so that B_f is the private benefit net of effort. Herein lies the crucial difference between Dewatripont and Maskin's adverse selection model and Berglof and Roland's moral hazard model. In the former, there is no effort decision in firms, while in the latter firms can decide whether or not to submit a project. If the firm exerts low effort, then the project yields zero return after one period. The state can then decide whether to liquidate the firm's assets, in which case it earns a liquidation value L while the manager would have a net private benefit of 0. The state may refinance the loan in order to earn a gross return R_s at the end of period 2, while the firm would earn a private benefit of B_s . The authors assume that the state maximizes the net returns to investment plus the private benefits of firms. All monetary returns are assumed to go back to the government as repayment for the initial loan. Firms are thus solely interested in maximizing their total net private benefits. If the prospect of refinancing encourages the managers not to exert high effort in case of bad projects, then there exists a SBC due to an incentive problem. To put it differently, the lack of credible commitment to not refinance the *ex ante* unprofitable investments can provoke a moral hazard problem at the level of the firm. The moral hazard problem may also occur in the relationship between financial institutions and the state. Financial institutions know that because of the existence of deposit insurance and the too-big-to-fail doctrine that the government has an incentive to prevent them from failing and thus already have a moral hazard motivation to believe that a government rescue of some sort will be forthcoming. Discussing different aspects of an international lender of last resort, Fischer (1999) underlines the moral hazard problem in the relationship between such an institution (like IMF) and na-

tional states. In the Mitchell model (cited in Berglof and Roland (1998)), SBC arises because bank incentives are distorted due to limited liability and to imperfect monitoring of bank behaviour by the state. The moral hazard version of the SBC seems to fit better the reality of post-socialist transition in which firms must undertake restructuring efforts.

It is noteworthy that Kornai also tries to reinterpret his exogenous SBC theory in the context of contractual approach as a moral hazard problem. "Under the old contract that ran under pre-reform socialism, the insurance company (i.e., the state) covered the **losses in full**. If an enterprise found itself in financial trouble, the state bailed it out **unconditionally**... This is the groups of phenomena that I termed softness of the budget constraint in my earlier works. Also apparent was a side-effect well known in insurance theory: the so-called moral hazard. If policy-holders know that the insurer will pay for all damage, it is not worth them making efforts to avoid damage, which in this context means that enterprises are insufficiently motivated to avoid losses by raising efficiency." (1997, p. 142, emphasized by me). In our opinion, Kornai's reference to the insurance theory for describing the behaviour of a paternalistic state is not relevant, since an insurance company can never unconditionally cover the losses of an enterprise in full. In fact, an insurance company tries to **maximize its profits**. Herein lies the fundamental difference between the endogenized versions of the SBC as moral hazard and Kornai's exogenous version of the SBC as the *ex post* bailouts of loser firms by a paternalistic state. The **unconditional** coverage of all the losses of a firm by a creditor whosoever systematically provokes the low level effort. In such circumstances, the only way to curb the low level effort is the use of supra-economic force like the execution, imprisoning, or other severe punishments of managers. That was in fact the way Stalin ruled and imposed his discipline during the classical (pre-reform) socialism.

3.1.3 The complete and incomplete contracts theory and the SBC

The endogenous explanations of the SBC either as an adverse selection or a moral hazard problem try to capture the asymmetrical information problem inherent in the SBC problem. In all these models, the SBC is treated as a strategic behaviour by profit-maximizing agents in the presence of market failures due to imperfect information. The solution is explored in devising an optimal incentive scheme (Dewatripont and Tirole, 1996) in order to assure a credible commitment through a self-enforcing contract. However, the optimal contract theory is not an appropriate theoretical framework for treating the vertical power relationships. Borrowing Max Weber's (1968, p. 215) distinction between real authority and formal authority²⁰, Tirole (1994) argues that someone with superior information may have effective

²⁰ Although Weber's distinction is very useful conceptually, we may insist that in practice the exercise of power is usually related to a combination of both types of authority. A notable example is the *eminence grise* phenomenon who usurps both real authority in relation with his superior and formal authority in relation with his subordinates.

power, even though he does not have legal power, because those with legal power may follow his suggestions. The optimal contract theory can capture a real authority relationship, since it is consistent with a **horizontal** relationship between agents. This power stems from an informational (economical) superiority that can be concentrated indifferently in the hands of Principal or Agents. Contrarily to the real authority, the formal authority cannot be integrated in the optimal contract theory since it presupposes the existence of **hierarchical** relationships between superiors and subordinates. This legal or political sense of authority is essential in Kornai's theory of SBC, since "The SBC syndrome can occur when a vertical relation of superiority and subordination replaces or imposes itself on the horizontal relation. This clearly occurs under the socialist system... However, researchers recognized from the outset that it is much more widespread, and appears under other systems, if only sporadically." (1998b, p. 5). As O. Williamson (1985) rightly underlines the hierarchy cannot be reduced to a "nexus of contracts"²¹. Hierarchy involves transaction costs of different sorts especially those related to the implementation of contracts, namely the costs of going to courts, lawyers, etc. It thus involves a third party verifying the execution of the contract's terms by parties to a contract. Maskin and Tirole (1999) show that the postulation of significant transaction costs and the use of dynamic programming cannot be reconciled. The rationality needed to perform dynamic optimization in standard models is strong enough to ensure that transaction costs are irrelevant. The complete (optimal) contract theory builds upon hyper-rational agents and dynamic programming and ignores significant transaction costs²², whereas the Transaction Costs and Property Rights theories introduce significant transaction costs and call for bounded rationality of agents or judges²³. According to the Transaction Costs theory,

²¹ Analysing the firm as hierarchy, Williamson states: "The efficacy of fiat turns critically on the fact that hierarchy is its own court of ultimate appeal" (Williamson O. (1992) p. 340). According to "classical" contractual approach, the firm is considered as a "nexus of treaties" (Williamson O., 1989, pp. 1-26). However, Williamson suggests that the market contracts have to be distinguished from the intra-firm contracts. This distinction is justified according to the existence or the absence of confidence. The firm should necessarily establish confidence between its members, since in case of disputes, resorting to a legal authority will be costly in terms of efficiency. It is even sometimes impossible because of courts refusal to hear some intrafirm disputes over identical technical issues. It would be convenient to call for an internal arbitration in order to resolve such intrafirm disputes. Accordingly, hierarchy is its own court of ultimate appeal.

²² Maskin and Tirole (1999) do not reject the bounded rationality assumption in principle. They even regret that for the time being our profession has made little progress toward modelling bounded rationality in a satisfactory way. "If we are to explain "simple institutions" such as property rights, authority (or more generally, decision processes), short-term contracts, and so forth, a theory of bounded rationality is certainly an important, perhaps ultimately essential ingredient. But for now, it is not the only reasonable approach as we argue below. In the short run there are really two options: to focus on simple institutions by assumptions, or to reject the conventional wisdom that complete contract theory is incapable of explaining simple institutions." (Maskin and Tirole (1999) p. 106). In our viewpoint, the partisans of the Property Rights theory as well as Transaction costs economics are right in arguing that the complete contract theory cannot explain institutions (see Vahabi (1999)).

²³ It is noteworthy that while transaction costs economics assumes boundedly rational agents, the property rights theory maintains the hyper-rationality assumption for the parties to a contract. However, the latter theory distinguishes between the hyper-rationality of agents and bounded rationality of judges (Hart (1990)). The property rights theory holds that while the terms of a contract may be **observable** for the parties of a

bounded rationality implies that all complex contracts (like most of the contracts between the state and firms) are unavoidably incomplete and many are maladaptive. The reasons are two: many contingencies are unforeseen (and even unforeseeable); and the adaptations to those contingencies that have been recognized and for which adjustments have been agreed to are often mistaken. The incompleteness of complex contracts has both practical and theoretical significance. The practical lesson is that all the relevant contracting action cannot be concentrated in the *ex ante* incentive alignment but some spills over into the *ex post* governance. The theoretical lesson is that differences among organization forms lose economic significance under a comprehensive contracting setup because any form of organization can then replicate any other. The Transaction Costs theory combines incompleteness with farsighted contracting by describing the contracting process as one of “incomplete contracting in its entirety” (Williamson (1996) pp. 9, 26, 46-47, 236). “Plausible farsightedness”, as against hyper-rationality is considered to be a sufficient theoretical assumption. In our opinion, the treatment of the SBC as an outcome of a particular institutional setup, i.e. the vertical hierarchical relationship, is more consistent with the assumption of contractual **incompleteness** and **bounded rationality**.

Bös and Lülfsmann (1996) explore the problem of the SBC in government contracting within the theoretical framework of incomplete contracts. They first underline the differences between two branches of incomplete contracts, namely the **unverifiable** and the **verifiable** incomplete contracts. The first branch (Hart and Moore (1988)) follows the assumption that in case of legal disputes between the parties to a contract, the court can observe whether the project has been cancelled, but it cannot assign the responsibility for that event to any one party. Accordingly, the inclusion of breach penalties into the initial contract is not feasible; the completion of the project after the initial phase is a voluntary decision of both agents. Hence the renegotiation of the terms of contract becomes appealing. In contrast to Hart and Moore, the second branch (Cheung, 1991; Aghion, Dewatripont and Rey (1994)) shares the assumption that a court can verify who is guilty for not trading in the case of an *ex post* cancellation of the project. Implicitly, this approach expresses the view that the exact nature of the goods at stake is known and verifiable at the beginning of the relationship. The Hart-Moore voluntary trade assumption, however, fits into a setting where the precise design of the project is not quite clear at the starting date. In their paper, Bös and Lülfsmann stick to the Hart-Moore assumption as they try to investigate the nature of the government contracting when it buys specific goods from private enterprises whose technology is (at least partly) unknown at the date the project is started. Their model includes two periods: the first period is the innovation phase and the second period

contract, in case of legal disputes a third party (for example, a judge) cannot verify which party is responsible for an eventual breach of the initial contract. In this sense, the theory stresses the “incompleteness” of contracts due to the **unverifiable** character of contracts by a third party (see Hart and Moore, 1988; Hart, 1995).

is the production and trade phase. The authors show that in the presence of uncertainty regarding the nature of the goods, there is a rationale in upward renegotiation of contracted prices in public procurement. Hence, contrary to what is commonly believed, the post-contractual price adjustments do not necessarily result from commitment failures and cannot be considered as inefficiencies inherent in government procurement. "(I)n a public-procurement model there exist incomplete contracts which implement the first best. Renegotiation takes place if trade is efficient but the private contractor is not willing to complete the project because *ex ante* contracted trade price is too low. In such a case the welfare-optimizing procurement agency will (and should) offer renegotiation which leads to a higher trade price. This is a rational justification of soft budget constraints...If there is no uncertainty, the result changes drastically. In this case the optimal contract requires that the supplier become residual claimant to his cost savings in all states of nature. Hence, renegotiation never occurs." (Bös and Lülfsmann (1996) p. 71). This result is very important since it makes it clear that the Kornai effect regarding the inefficiency of the SBC should be limited to the case of standard goods, whereas in case of innovative activities the SBC may be the source of efficiency. It should be noted that the Bös and Lülfsmann model is also based upon the assumption of profit-maximizing agents and in this respect the model maintains the efficiency analysis. However, the peculiar feature of the model is that it is an **unverifiable** incomplete contract and hence the third party or the judge is supposed to be **boundedly rational**. This "slight" modification allows us to mitigate the results concerning the inefficiency of the SBC. In our opinion, while Kornai's efficiency analysis is more consistent with a complete contracts theory, his theory of the SBC as a survival behaviour is inconsistent with the hyper-rationality assumption and fits better into a theoretical setting where the rationality assumption is relaxed in one way or another such as unverifiable incomplete contracts.

Finally, one of the reasons for which Kornai draws upon the contract theory in his recent writings is to provide the **credibility** condition for "no bail-out" commitment by the state (Kornai (1997) p. 149). In fact, one means of generating commitment to policies that have short run costs is to build a reputation for toughness in a repeated game. Even a player for whom toughness is very costly may wish to invest in a demonstration that it is following a rule such as "tit-for-tat", or to imitate the behaviour of a genuinely tough player. However, models in which reputations can be created often have multiple equilibria, several of which may seem intuitively plausible. Therefore, after a history of concessions, a mere announcement of a new policy of toughness without institutional changes may not be granted much credence, and defending a reputation for not subsidizing loss makers relies on a degree of coordination of expectations that is implausible in a complex economy²⁴. A reputational mechanism alone, as advocated, for example by Schaffer (1989), is allegedly unlikely to provide a reliable re-

²⁴ For a summary of these criticisms, see Persson and Tabellini, 1990. For the effect of the SBC on coordination problem in developing economies, see Aizenman, 1993.

medy for the government's tendency to bail out loss makers. That explains why Hardy (1992) proposes the institutionalization of a social safety net in order to create such a reputation for the government not to bail out: "Once enterprises see that the government has provided a cushion against unemployment, they will recognize that the government has less motive to cover their losses, and they will plan accordingly." (1992, p. 312). Although the social safety net proposition is completely justified, as Stiglitz (1999, pp. 6-8) argues, the drastic fall in production and massive unemployment in Russia and many other post-socialist countries discredits any policy of hardening budget constraint (especially the institution of bankruptcy) by building a credibility for toughness of the government.

3.2 The asymmetrical objective functions and the SBC

The asymmetrical information is not the only problem leading to the SBC. The second problem, or the political one, which is at the heart of the SBC syndrome resides in the differences in goals between the government and firms. These two problems cannot be completely separated and thus in many models the SBC is defined both in relation with the asymmetrical information structure and the asymmetrical objective functions. However they may be conceptually separated. When considering the asymmetrical objective functions, the nature of the government becomes crucial. Two different assumptions may be distinguished. The first one is to consider a **benevolent** government. In that case, the softness cannot be explained by the internal interests of the government and accordingly the softness explanation would be **exogenous**. Three types of models may be grouped in this category: 1) the Kornai and Weibull (1983) model of the SBC as *ex post* bailouts; 2) the externality models (Segal, 1998; Daveri and Panunzi, 1997; Wildasin (1997)); and 3) the insiders control model (Li (1998)). Some studies of state subsidies have rejected the paradigm of benevolent government in favor of a positive theory of government or a "malevolent" government. The most notable study of this kind is Becker's (1983), which develops a theory of competition for subsidies among self-interested pressure groups. These groups choose the levels of rent-seeking activity, which determine transfers through an exogenously given ("black-boxed") political influence function. This second assumption leads to an **endogenous** explanation of the political aspect of the SBC syndrome. The Public Choice Theory develops this **endogenous** explanation of the SBC.

3.2.1 The benevolent government assumption and the SBC

As we have already substantiated the Kornai and Weibull model, we focus here on the externality and the insider control models. In Segal (1998), the divergence between the firm's profit-maximizing outcome and the social objective is attributed to monopoly power. If the firm in trouble has

a monopoly power, then its liquidation may engender important negative externalities. The collapse of the firm will cause not only supply problems in the sector in which the firm enjoys a monopoly position, but also a drastic fall in the demand for the products of its suppliers. Hence the government that wishes to maximize social surplus will attempt to induce the monopolist to produce and in case of problem would provide a subsidy. This subsidy could well exceed the profit that the monopolist foregoes by not investing. In other words, the monopolist may take advantage of deliberately putting itself in a position of weakness in order to exploit the government. In this model, the softness of the BC is defined as the willingness of the government to bail out an unprofitable monopoly in order to avoid negative externalities. The presence of such externalities indicates that if a benevolent government wants to correct the *ex post* laissez-faire outcome, it is due to some market imperfections that makes this outcome socially inefficient. In this model, the SBC leads to two possible kinds of inefficiency. First, there is an allocative loss due to the failure of the monopolist to invest; second, if the subsidy is financed by distortionary taxation or inflation, an additional dead weight loss is sustained. In our opinion, the major result of this analysis is that "(P)rivatization need not harden budget constraints in concentrated industries, and that the resulting welfare loss provides a stronger case for demonopolization than the traditional concern for competitive pricing." (Segal (1998) p. 606). This result is very close to Kornai's criticism of the widely believed idea at the outset of the post-socialist transition that the 'Holy Trinity' of liberalization, privatization and stabilization would suffice to produce an efficient market. "Hardening the budget constraint is a task of equal rank with them, as experience in Russia has shown." (see Kornai (1999b) p. 13). However, decentralization is not a sufficient condition to overcome the SBC. As Daveri and Panunzi (1997) highlight the beneficial effect of decentralization on the hardness of the firm's budget constraint depends on having positive spillovers among the decentralized parties. Decentralization softens the budget constraint in case of negative spillovers among the decentralized parties. In fact, Segal does not compare the softness and hardness of BC in case of monopolized and demonopolized firms in the presence of positive or negative spillovers among decentralized firms. Moreover, a non-monopolized firm may also be subject to a SBC if its behaviour is not one of profit-maximizing, but simply a satisficing one which tries to survive and avoid organizational death. Li's model of insiders' control (Li (1998)) provides a good example of this type.

The model emphasizes insiders', or managers' control rights as a cause of the SBC. Suppose that the insiders are *de facto* decision makers of the enterprise even though they are not *de jure* proprietors. For instance, managers borrow from creditors but still hold key control rights. Imagine further that insiders have significant stakes in controlling the enterprise. Then in case of major financial losses, insiders may well oppose the liquidation of the plant in order to maintain their control benefit. Subsequently, many bankrupt firms survive because of insiders' control. Nonetheless, this result

may be *ex post* socially efficient if we take into account the insiders' control benefits. However, it should be noted that the outcome is *ex ante* inefficient, since insiders may abuse their control rights to promote their own benefit. Besides, rational creditors may anticipate such an outcome and refuse to consent loans to insider-controlled firms. This hypothetical situation is very close to the post-socialist Russia (see Aoki, 1995; Stiglitz (1999)).

3.2.2 The “malevolent” government assumption and the SBC

Political considerations such as the prestige of a superior authority, or personal connections between the heads of different governments may be the cause of the SBC. As Anderson (1995) underlines, because of the political importance of non-market, concessional or politically motivated external financing in the Middle East after the second World War, the regimes of the region came to participate in the international system in much the same way as managers of state-owned enterprises operate in command or socialist economies. “Like the firm managers who are accustomed to the authoritative allocation of command economies, the rulers of the developing world are subject to soft budget constraints.” (Anderson (1995) p. 31). The importance of these political considerations regarding the relationship between states notwithstanding, economists try to capture the political element of the SBC in the particular relation between the state and firms. Boycko, Shleifer and Vishny (1996) deals with this aspect of the SBC problem. The authors define privatisation as the reallocation of control rights over employment from politicians to managers and the increase in cash flow ownership of managers and private sectors (Boycko *et al.* (1996) p. 316). This definition captures both aspects of property rights, namely the residual control rights and residual income. In their model of privatization, Boycko *et al.* describe politicians as giving subsidies to induce firms to maintain higher level of employment. Hence, the subsidies are regarded as the outcome of “paternalistic” preferences of politicians and soften the budget constraint. Nevertheless, it should be noted that the authors broaden the concept of SBC, since it covers the subsidies targeting higher level of employment in general and not only those subsidies destined to rescue the loss-making firms.

Analysing the relationship between politicians and managers, Shleifer and Vishny (1993 (1994)) and Boycko, Shleifer and Vishny (1996) illustrate the Coase theorem by stressing the role of **corruption** in raising efficiency. When side-payments in the form of bribes are allowed, the manager and the politician choose the outcome that, from their joint viewpoint, is the most efficient. The bribe divides the surplus between the manager and the politician according to the Nash or some other bargaining solution. In this sense, corruption can be compared to **reputation** in providing a mechanism of contract enforcement. However, as Shleifer (1994) argues, in transition economies the horizons of politicians are often too short to develop a reputation for efficient bribe taking. It should be noted that the corruption

case is to some extent exempt from **renegotiation**. Since in most societies corruption is illegal, both the giver and the receiver of a bribe risk going to jail. This type of analysis of property rights as both control and cash flow rights has largely contributed to the understanding of some informal institutions such as corruption. This approach **endogenizes** the political aspect of the SBC and tries to show that the inefficiency of public firms is due to the agency problem with politicians rather than with managers. "We believe that managerial discretion problems are usually minor relative to political discretion problems. Privatisation works because it controls political discretion." (Boycko *et al.* (1996) p.318). Hence, the softness of the BC is a strategic choice of politicians who maximize a particular kind of "political function", whereas managers as profit-maximizers are more prone to maintain a HBC.

In both the Complete (optimal) Contracts Theory and the Public Choice Theory, the degree of budget **constraint** is more a matter of **choice**, and results from the strategic behaviour of Agents (managers) or Principals (politicians). As long as all economic and political actors are supposed to be hyper-rational and optimizers under all circumstances, constraints do not pose any serious problem²⁵.

Hence, this recent literature has adopted a position which is in direct opposition to Clower's conception of the budget constraint, since the BC is treated as equivalent to equilibrium and optimality conditions. While for Clower the application of rationality postulate (Say's Principle or BC) as a behavioural regularity is entirely consistent with a disequilibrium state of market economy (non application of the Walras Law), the recent literature contends that the realization of the BC as a rational choice satisfies the optimality condition and corresponds to an equilibrium state. It should be noted that the maximizing (optimizing) condition is also contradictory with Kornai's original analysis of the SBC as a behavioural regularity in accordance with the satisficing criterion. Nonetheless, Kornai's efficiency analysis, based upon the comparison of socialist system as a SBC economy with reference to an ideal market economy as a HBC economy, may be regarded as theoretical background for this recent literature.

²⁵ In defining "economic imperialism", Lazear (1999) draws a particular line of demarcation between economists and sociologists: "Economists, almost without exception, make constrained maximization the basic building block of any theory...the theoretical revisions almost never drop the assumption that individuals are maximizing something, even if the something is unorthodox...we do not model behavior as being determined by forces beyond the control of individual. Most sociologists, by contrast, argue that understanding the constraints is more important than understanding the behavior that results from optimization, given the constraints." (1999, p. 2).

Conclusion

In this paper, we have distinguished three different conceptions of the BC. The first one, introduced by Clower, regards the BC as a universal (unconditional) rational planning postulate. This does not imply market equilibrium or optimality, since what may be expected or planned by individual agents or even all agents would not necessarily be realized. Consequently, the rational behaviour of agents does not exclude market disequilibrium. The market equilibrium requires a particular kind of coordination which cannot automatically be satisfied by assuming rational individual choices.

The second one, advocated by Kornai, considers the BC as a conditional empirical fact regarding the specific behavioural regularity of agents that is determined by particular institutional setups. In this perspective, the BC is related to the survival behaviour of boundedly rational (satisficing) agents. It neither implies market equilibrium nor optimality. In fact, the normal state of any economic system is regarded to be a specific kind of disequilibrium.

The third one is implicitly held by a number of endogenous explanations of the SBC notably by the Complete (optimal) Contracts Theory and the Public Choice Theory. It regards the BC as a matter of choice by rational agents. The BC is defined as a strategic behaviour of (hyper)rational agents. This implies market equilibrium and optimality. As rational dynamic optimization suffices to assure intertemporal equilibrium, the coordination problem between individuals is assumed to be resolved and disequilibrium is disregarded.

While Clower and Kornai try to understand the BC in the context of disequilibrium or at least independently of equilibrium or optimality conditions, the partisans of the third approach integrate the BC in the process of dynamic optimization. Clower reduces the BC to a fundamental convention of standard microeconomics, whereas Kornai stresses the importance of particular institutional setups in determining the behavioural regularity of agents. Although Kornai's conception of the BC is irreconcilable with the third approach, it should be noted that Kornai's standpoint is contradictory. In his appraisal of the HBC in case of competitive market economy, Kornai contends that the application of the BC is equivalent to the realization of Walras' Law. He, then, uses this ideal HBC as a normative reference in order to measure the inefficiencies of the SBC. In fact, Kornai's standpoint with regard to the HBC and his efficiency analysis are in tune with the third approach.

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