

The connection between growth imperative of monetary production economies, the realization problem and Kornai's surplus economy

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Received: May 16, 2023 • Revised manuscript received: August 13, 2023 • Accepted: August 26, 2023

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ABSTRACT

Kornai challenged not only the dominant economic views of the socialist system, but also those of market economies. The former brought him fame, and the latter remained, so to speak, his scientific testament. He studied the systemic properties of different economic systems through the analytical grid of the sign of aggregate excess supply, which defined three categories: shortage economies, equilibrium economies and surplus economies. In this paper, we show that business plans postulated with the aim of realizing strictly positive net retained profits in nominal terms exclude equilibrium economies; these business plans imply a surplus economy. This definition of the business plan makes it possible to combine seemingly disparate results from different parts of the economic literature. An economy in which business plans are the rule and no economic agent can run a permanent negative budget is a surplus economy, which manifests itself in the phenomena of both growth imperative and realization problem. In short, all these phenomena are the manifestations of the same essence: the working of the business plans.

KEYWORDS

realization problem, nominal growth imperative, surplus economy, monetary production economy, business plan, Kornai

JEL CLASSIFICATION INDICES

E12, O42

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1. INTRODUCTION

The issue of sustainability has recently reignited the debate on growth, with the pivotal question being whether growth is an intrinsic feature of market economies. If growth is not an inherent systemic attribute of market economies, then both growth and a zero-growth equilibrium are possible states. Nevertheless, if growth is an inherent characteristic of market economies, then a zero-growth equilibrium is not a possible state of this economic system. The alternative of growth is a situation where at least one economic agent necessarily cannot realize their plans. Rosier (1991) calls this situation a crisis. Economic literature uses the term ‘growth imperative’ to refer to this inherent need for growth where the alternative to growth is crisis (as understood by Rosier).

Another way of expressing the same idea is that in a zero-growth steady state there is at least one economic agent who necessarily cannot realize his plans: there is a realization problem of business plans¹ (Smithin 2016).

From the point of view of pure theory, the existence of the growth imperative implies that the models that incorporate the possibility of a zero-growth equilibrium are inadequate to represent market economies, which means goodbye to the mainstream macroeconomics.

Kornai, the eternal rebel, always went against the prevailing views, both in socialism and in capitalism: “*Just as the shortage economy is a characteristic attribute of the socialist system, so is the surplus economy of the capitalist system.*” (2013: 51) “...What I am proposing is backed by a million facts of everyday life. It is almost as an extra that I try to justify them logically as well.” (op. cit.: 119) Few economists share Kornai’s views. Neither empirical facts nor logical arguments convince the profession. As to the empirical facts, “*though the phenomena before their eyes and mine are identical, we read different things into them because our outlooks differ.*” (op. cit.: 52). Kornai’s extra logical justification is centred around the concept of competition: “*It can easily be discerned logically that where there is no surplus there is no competition among sellers—the drive deriving from the presence of a saleable surplus is absent. Why should the vehicle industry or the telephone service under socialism bother itself with innovation if there are waiting lists for their obsolete models or for telephone lines?*” (op. cit.: 126)

Kornai had never given up his ambition to convince the profession that “*a surplus economy is an immanent attribute of capitalism*” (op. cit.: 118) as his last English-language book *Dynamism, Rivalry, and the Surplus Economy* showed.

In this paper, we prove that the phenomena of the growth imperative, the realization problem and the surplus economy are the manifestations of the same essence. This essence is the working of business plans defined with the goal of realizing strictly positive net retained profits in nominal terms. In short, an economy in which business plans are the rule and no economic agent can run a permanent negative budget balance is a surplus economy, which manifests itself in the phenomena of the growth imperative and the realization problem.

This limited aim clearly short-circuits any debate on the connection between real capitalist systems and theoretical models of surplus economies, that Kornai couldn’t pass by without saying: “*The war economy proves that the “capitalist system → surplus economy” causal connection cannot be applied mechanically or ubiquitously. War temporarily brings conditions that*

¹Smithin (2016) also refers to the realization problem as the widget problem.



restrict or stop the operation of the mechanism that generates the surplus economy and starts the mechanism that generates the shortage economy” (op. cit.: 150)

It also short-circuits the problem of identifying the conditions that ensure the operation of the mechanism that the business plans are the rule – a major concern of Kornai.

The method used in this paper is the opposite of that used by Kornai in *Dynamism, Rivalry and the Surplus Economy*. In this book he “... examines only ... the real sphere of the economy. I do not deal in detail with the monetary sphere ...” (op. cit.: 55) Instead, we focus exclusively on money flows. This allows us to avoid many of the difficulties raised by Kornai; in particular, we avoid the problems of identifying aggregate excess supply in real terms. As a result, despite Kornai’s warnings, the notion of an excess supply economy seems to be a valid notion to represent the concept of a surplus economy.

2. LOCATING THE GROWTH IMPERATIVE AND THE REALIZATION PROBLEM IN AN ACCOUNTING FRAMEWORK

To situate the concept of growth imperative in its most general form, let us consider a closed economy and start from the banal identity drawn from national accounting, which states that in any period t , gross domestic product Y_t can be split up into consumption C_t plus gross investment I_t , where the bold typing refers to aggregates:

$$Y_t = C_t + I_t \quad (1)$$

If net aggregate investments in period t are strictly positive, gross investments are:

$$I_t > A_t \quad (2)$$

where A_t is the depreciation in period t in the economy.

As depreciation is the result of past investments, equation (2) holds for all periods if and only if gross investment is increasing. As the lower bound on consumption is zero, strictly positive net investment implies a tendency for gross domestic product to grow. In fact, gross domestic product Y may temporally decrease because a drop in consumption C may counterbalance the increase of gross investments I , but this drop cannot perpetuate because consumption cannot fall below the lower bound zero.

In the aggregate, investments are always equal to savings; hence investments net of depreciation I_t^N in period t always equal net savings:

$$I_t^N = S_t^N \quad (3)$$

All put together, if aggregate net saving in period t , S_t^N , is strictly positive, aggregate net investment, I_t^N , is also strictly positive. Hence, aggregate gross investment is increasing and by force of identity (1), gross domestic product abides the same property. No growth is equivalent with zero aggregate net saving, $S_t^N = 0$; growth means strictly positive aggregate net saving $S_t^N > 0$.

Thus, a necessary and sufficient condition for growth in nominal or real terms is the existence of strictly positive aggregate net savings in nominal or in real terms regardless of the specific model with or without phony mathematics. The specific models are required to make the link between nominal and real growth. To avoid digressions, let us comply with the custom



by considering the exclusively proportional steady states (i.e.: cyclical paths excluded) and by supposing that none of the economic agents can run constant negative budget. These hypotheses make the link between strictly positive net retained earnings of one single economic agent and strictly positive aggregate net savings.

This said, all models of the growth imperative must come to the same conclusion in one way or another: if aggregate net saving is strictly positive, it is possible to make plans that are consistent for all the economic agents i.e., all agents are in principle able to realize their plans. In the opposite case when aggregate net saving is not strictly positive, there are no plans that are compatible for all the economic agents i.e., there is necessarily at least one economic agent who is unable to realize his plan. To put it another way, in a non-growing state, there is a realization problem of business plans.

To sum up, if none of the economic agents can run a permanently negative budget, then business plans defined with the goal of realizing strictly positive net retained earnings in nominal terms imply a nominal growth imperative for the economy. This means that in a non-growing state, there is a realization problem of the business plans.

3. LOCATING KORNAI'S SURPLUS ECONOMY IN TERMS OF THE COMMON NOTION OF AGGREGATE EXCESS SUPPLY

Kornai intentionally avoids using the term 'excess supply system' as he believes that, upon closer analysis, the concept of aggregate excess supply is void of real meaning: *"I could list more statistical and observation difficulties and anomalies, but these objections may suffice to explain why I prefer the 'shortage economy – surplus economy' pair of concepts for describing the general market state of a particular country, and shrink from using the 'excess-demand economy– excess-supply economy' pair of concepts that many find easier to grasp."* (op. cit.: 85)

Nevertheless, we will deliberately use the pair *"excess demand economy – excess supply economy"*, not only because *"many find it easier to grasp"*, but also because we believe we can avoid Kornai's legitimate concerns. To do this, we give the following definition of the excess supply economy: an excess supply economy is one in which the total aggregate excess supply² in nominal terms is always positive.

Aggregate supply in nominal terms is the value of planned nominal sales; aggregate demand in nominal terms is the value of planned nominal purchases. In other words, positive aggregate excess supply is simply the intention to realize more income than expenditures in the aggregate. Leaving aside the problems of observing *ex ante* plans, the aggregation of income plans (supply) and expenditure plans (demand) in monetary terms escapes the criticism of being as meaningless as the aggregation of supply and demand is in real terms.

Clearly, in an excess supply economy, the total nominal aggregate excess supply can be neither zero, nor negative. By comparison, in an equilibrium economy, total nominal aggregate excess supply may always be zero, even if, for example, a positive sign is observed in a particular state. Also, zero total nominal aggregate excess supply does not mean that there is an

²It will soon become clear that "total" is not a redundancy in the definition.



equilibrium on each market. For economists accustomed to the mainstream model settings, the definition of an excess supply economy does not say that there can be no equilibrium or even excess demand in any given period in a multi-period model; it says that there can never be full equilibrium. Having said that, Kornai's message, as we understand it, is precisely that not just any economic system can be in a situation of equilibrium, total surplus or total shortage depending on the business cycle and other factors. A socialist system is always in a situation of total excess demand, just as a capitalist system is always in a situation of total excess supply in nominal terms,³ even if in a particular period one observes the opposite.

According to the custom, the term "aggregate excess supply" refers to an aggregation in a single period. The term "total" refers to an aggregation of all plans in execution; thus, the aggregation implies the current and future periods related to the business plans.⁴

Fortunately, the problems of such aggregation can be avoided in a monetary economy if we wish only to determine the possible sign of the total aggregate excess supply in nominal terms. In this case, the aggregation is simply unnecessary. This is because the possible upper and lower bounds on money flows determine the possible sign of this nominal excess supply. So, all we must do, is find those limits before the money flows. This is what we will do in the next section.

4. THE CONNECTION BETWEEN THE GROWTH IMPERATIVE, THE AGGREGATE EXCESS SUPPLY SYSTEM AND THE REALIZATION PROBLEM

In the first section, we have seen that business plans defined with the goal of realizing profits do not imply a growth imperative, while business plans defined with the goal of realizing strictly positive net retained earnings in nominal terms do imply a nominal growth imperative and a realization problem of the business plans. This latter understanding of business plans can be represented in Marx's scheme as: $M-(C-C')-M'$, where $M < M'$ ⁵ and all variables refer to the same period.

In the monetary circuit, these business plans are puzzling in the aggregate since it is impossible to withdraw M' money from circulation (supply) during the model period t if only M money is put into circulation (demand) during the same period. Therefore, the additional $(M'-M)$ money must also be put into circulation. Specifically, this extra money cannot be put into circulation by entrepreneurs for the purpose of consumption, because fully distributed profit is a profit "literally drunk" (Smithin 2016: 4). In other words, $M'-(C-C'')-M'$ is not a business plan.⁶

³For us, the war economy is not a capitalist economy, because the premise that business plans are the rule does not hold.

⁴For example, a dealer buys two cars for \$2000 to sell them at a profit. If he sells them minimum at least at a profit as planned, his business plan is realized, regardless of the number of cars sold. If this dealer only intends to buy the two cars, but has not yet done so, then his plan is not in progress. In short, there is no business plan in progress until there is an initial expenditure to make a profit, and business plans are in progress until there is an intention to make a profit on the initial expenditure.

⁵ C' is another commodity than C , as well as M' is different amount of money than M .

⁶ C'' includes the consumption of the entrepreneur. In the Kaleckian understanding of the entrepreneur, this consumption is directly the consumption of the entrepreneur. In the modern term, when the Kaleckian entrepreneur is divided into two analytical economic agents, the one who seeks to realize business plans (called entrepreneur) and the one who seeks consumption (called consumer or household), this consumption appears as distribution of dividends to households and household consumption.



Thus, the additional ($M'-M$) money is put into circulation to realize business plans. If this is the case, the plans that started with an outflow of M money in period t can now be completed with a backflow of M' money in the same period t . But the business plans that started with an outflow of ($M'-M$) money in period t , are not and cannot be completed in period t . For the business plans that started with ($M'-M$) outflows to possibly be realized, new business plans must be started in subsequent periods and so on. The possibility of perpetual realization of business plans is a Ponzi game, i.e., always new business plans must be started in subsequent periods.

That is, there is never enough money in circulation in any period to complete *all* the ongoing business plans defined with the goal of realizing strictly positive net retained earnings in nominal terms if none of the economic agents can run a permanently negative budget. This means that total supply (planned current and future income aggregated in nominal terms) is always greater than total demand (possible current and future expenditures aggregated in nominal terms). In short, the realization problem of business plans is another expression to say excess supply economy, which manifests itself in the nominal growth imperative.

Economists immersed in stock-flow consistent modelling who have quickly skimmed the above argument may miss the point and object that there is not necessarily “missing money” in the system, since the net retained earnings do not necessarily imply the accumulation of money; rather, they generally imply the accumulation of other assets - financial or real - paid for with money. Therefore, the “missing money” flows back into the economy. These economists are right that money is generally not accumulated but spent. However, at least one dollar of every retained profit is necessarily spent with the aim of making net profits, otherwise the business plan ceases to be a business plan. If this is the case, any net profit will generate expenses that will be part of new business plans. Net retained earnings are money earned from completed business plans; part of the accumulated assets - real⁷ or financial - financed from net retained earnings are necessarily part of new business plans to be realized in subsequent periods. The “missing money” is available precisely because not all business plans have been completed, but new plans are being implemented.

This dynamism makes the static setting inaccurate to represent excess supply economies. Kornai warns that this dynamism is a primordial feature as the first word of his last book shows.

5. CONCLUDING REMARKS

Kornai challenged not only the mainstream economic views in the socialist system, but also those prevailing in the market economies. The first brought him fame, and the second remained, so to speak, his scientific testament. He studied the systemic properties of the different economic systems. His analytical grid was to classify the economic systems according to the systemic property of the sign of the aggregate excess supply, which defined three categories: excess demand economies, equilibrium economies and excess supply economies:

⁷The purchase of real assets as part of a business plan is called investment.



Classification of economies in Kornai's own modelling framework			
Sign of the excess supply	Systemic property	Core	Discussion
Negative	Shortage economy/Excess demand economy	Soft budget constraints	Kornai (1980): <i>Economics of Shortage</i> Kornai (1992): <i>The socialist system</i>
Zero	Equilibrium economy	Criticism of profit maximization	Kornai (1971): <i>Anti-equilibrium</i>
Positive	Surplus economy/Excess supply economy	Competition	Kornai (2013): <i>Dynamism, rivalry, and the surplus economy</i>

In his monumental books Kornai (1980, 1992) showed that socialist production plans imply shortage economies. Mainstream economics showed that in the market economies, business plans postulated with the aim of realizing profits imply the property of an equilibrium system. In the *Anti-Equilibrium*, Kornai has argued that the profit maximization rule has more drawbacks than advantages for economic theorizing and that the mainstream view is untenable. Later, he went further and shortly before his death he summarized his arguments in *Dynamism, Rivalry, and the Surplus Economy*, for the market economy as a surplus economy.

He refrained from using the pair excess supply economy – excess demand economy, because he maintained that the aggregation of ex-ante plans in real terms is void of real meaning.

We have argued that in the context of an excess supply – excess demand economy, when only the possible sign of the total aggregate excess supply in nominal terms is at issue, the concerns raised by Kornai can be avoided. Namely, the lower bound of this total aggregate excess supply in nominal terms is the difference between the lower bound of total aggregate supply in nominal terms and the upper bound of total aggregate demand in nominal terms. The first item is simply the planned total income – present and future – in nominal terms; the second is the possible total expenditures.

We have defined business plans not with the goal of profit maximization, but with the net retained profit rule, which implies that business plans always aim to realize more income than expenses in nominal terms. Consequently, this difference between planned income and expenses is necessarily always strictly positive for an aggregation of all ongoing business plans. Thus, a surplus economy is an economy in which there is a realization problem of business plans in the sense that new business plans must always be started to allow the completion of ongoing business plans. That is, there is a need for growth in nominal terms.

These phenomena are absent in the equilibrium economies. Therefore, the static setting is inappropriate to fully understand the functioning of the surplus economies: “*Dynamism*” is a primordial element of the analytical framework.



We cannot neglect the usual question of what is new in this work. If Kornai was so modest as to say in *Dynamism, Rivalry, and the Surplus Economy* that “*There is hardly a sentence in the essay that has no antecedent in the literature.*” (2013: 54), then we are really in a difficult situation. Our core hypothesis, which implies a surplus economy with the realization problem and the property of the growth imperative, goes back at least to Aristotle’s concept of chrematistics; the realization problem is already a central problem for Marx (1867), although for him it is a problem of the realization of intrinsic value. In recent literature, as we have already referred to, Smithin (2016) discusses it in detail. The growth imperative has a relatively recent but rich literature related to the over-indebtedness (e.g., Rosier 1991, 1992) on the one hand and sustainability (e.g., Binswanger H. C. 2006; Binswanger, M. 2009; Gilányi 2015; Richters – Siemoneit 2017) on the other.

The restriction of the analysis of excess supply economies to monetary production economies allowed us to define the excess supply exclusively in nominal terms. This restriction made it possible to use the post-Keynesian tools (the logic of the monetary circuit and accounting) and to combine the seemingly disparate results from different areas of the economic literature. To our knowledge, these concepts, namely surplus/excess supply economy – nominal growth imperative – realization problem have never been linked.

ACKNOWLEDGEMENT

The author is grateful for comments on an earlier version of this paper presented at the Kornai 95 Conference, Corvinus University of Budapest, May 2023.

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