

Profit in zero-growth capitalism: the role and design of the dividend channel

Laurent Cordonnier

Laurent.cordonnier@univ-lille.fr

UMR 8019 CNRS – Université de Lille

Juillet 2023

Abstract : The starting point of this note is the observation that in a certain number of important post-Keynesian contributions, dealing with the viability of a zero-growth capitalism (for example: Binswanger, 2009, Rosenbaum, 2015, Cahen-Fourot and Lavoie 2016, Monserand 2019), the payment of dividends is linked to the net profits of companies. It proceeds from a “sharing” of net profits between profits retained for self-financing, on the one hand, and profits distributed to shareholders, on the other. This way of doing things seems questionable. It is likely to explain the difficulty experienced at the theoretical level in exhibiting positive profits in an economy without growth. We defend the idea that dividends can be linked to other quantities (such as gross profits, gross investment, the capital stock, or the creation of shareholder value). By examining seven different ways of designing the feeding of the dividend channel, our intention is to show and understand the implications of these different options on the formation of profits themselves. It thus appears that a capitalism without growth can be profitable, and well. To contribute positively to the formation of net profit, the dividend channel must be pegged to a magnitude autonomous with respect to current profits.¹

Mots clés : capitalisme, croissance-zéro, profit, dividendes, Kalecki, valeur actionnariale.

Key words : capitalism, zero-growth, profit, dividendes, Kalecki, shareholder-value.

1. I'm grateful to Franck Vandeveld, Henri Sterdiniak, Jacques Mazier and Eckhard Hein for their helpful comments on the first draft of this paper.

1. Introduction

There are enough arguments today to convince us that continued economic growth (in the most standard sense of the term: GDP growth) is incompatible with the ecological transition that is urgently needed (Haberl et al., 2020). *Volens-nolens*, the reasonable horizon for modern developed economies is, at the very least, a regime of zero-growth (Parrique, 2022). One of the most interesting questions of the moment is therefore whether capitalism can "survive" or accommodate such a regime. By tightening the dramaturgy: is profit still possible in these circumstances? The post-Keynesian economists who have been grappling with this question for some time answer, roughly speaking, that it's not impossible, but that the conditions for doing so are quite strict and, we might add, may rest on rather precarious pillars (precarious demand factors). This answer comes in the first instance from the fact that the constraint of zero-growth is in parallel a constraint of zero-accumulation of productive capital, which amounts to limiting capacity investment (gross) to the scrapping of old capacity (depreciation). Net investment is therefore zero *a priori*. However, according to Kalecki's relation, which explains the formation of profits through social spending, the main determinant of profits is investment. This leads one to think (and sometimes conclude) that, under these conditions, net profit must be singularly depressed, or even zero. The aim of this article is to discuss this conclusion (or inclination). We show that this is due to the analytical articulation of the "dividend channel" (i.e. the payment of dividends to shareholders and their expenditure on consumption) with net profit. If, a contrario, one thinks that dividend payments can be linked to other quantities - such as gross profit, gross investment, the capital stock or the creation of shareholder-value - the curse of disappearing or depressed profits is significantly attenuated. This is what we intend to show... and defend. Even if actors, commentators and prospectuses distributed at shareholders' meetings sometimes reason in terms of net profit distribution, this does not necessarily tell the whole story about the economic process involved in profit distribution. As we shall see, if we allow for other anchoring modalities, the dividend channel can very well generate positive net profits even when net accumulation is zero. This is not to say that capitalism is compatible with the ecological transition; it only means that its viability in a zero-growth regime is not threatened *prima facie* by the exhaustion of the macroeconomic loop determining profit (*via* Kalecki's relation).

The viability of capitalism without growth raises other questions than the existence or persistence of profit. In particular, it raises the question of the macroeconomic stability of such a regime (Padalkina, 2012 ; Montserand, 2019 ; Hein and Jiminez, 2022) and the issue of financial imbalances between institutional sectors (Cahen-Fourot and Lavoie, 2016). Beyond these questions, it also poses difficulties for post-Keynesian economic theory, since reconciling in a long-term equilibrium model (of the Kaleckian type) the zero-growth requirement, the existence of positive net profits, the attainment of a plausible equipment utilization rate and equilibrium stability, does not appear to be an easy matter. For our part, we'll stay ahead of these difficulties, since we're not trying to produce an equilibrium model (Kalecki's relation, on which our reasoning is based, is valid in equilibrium as well as outside) and we make very few assumptions about behavior. In particular, we make no attempt to specify an investment function. The results presented here are therefore more "general", in a sense, than in modeled formulations. They may help to shed light on possible options for modeling the dividend channel, but the drawback is that they say nothing about the dynamics likely to guarantee (or not) the existence of an equilibrium path when net capital accumulation is zero.

To get straight to the heart of the matter, the starting point for this article is the observation that in a number of important post-Keynesian contributions on the viability of zero-growth capitalism

(e.g. Binswanger 2009, Rosenbaum 2015, Cahen-Fourot and Lavoie 2016, Monserand 2019), dividend payments are tied to companies' net profits. Dividends are "split" between retained profits and distributed profits. This approach, which leads to a gloomy prophecy for capitalism (the disappearance, more or less, of net profit), seems questionable to us. There are, in fact, other ways of conceiving the feeding of the dividend channel, which do not lead to the same conclusion. Our first intention is to show and explain the impact of these other ways of conceiving the anchoring of the dividend channel on profit formation. This overview, which we do not claim to be exhaustive, is intended to underline the central role played by the conception of the dividend channel in the opinion one seek to form concerning the viability of a capitalism without growth.

In section 2, we present seven different ways of conceiving the dividend channel, corresponding to seven different ways of anchoring their distribution to key corporate variables, criteria or indicators. As we'll see, when dividends are tied to net profit or free-cash-flow, net profit tends to become zero. But this is not the case when dividends are linked to gross profit, gross investment, capital stock or shareholder value. In section 3, we will summarize these results and set out a guideline for understanding them: net profit tends to disappear when the dividend channel is not tied to a quantity that sufficiently exceeds net profit. When the dividend channel draws on a source more profuse than net profit, or when it proceeds from an autonomous magnitude (not in relation to realized profits), shareholder consumption generates positive net profits. In the last section, we will conclude that a capitalism without growth can meet a viable profitability regime, but that this alone does not guarantee the viability of a zero-growth regime. A stagnant monetary economy may well remain profitable, in fact, thanks to the "Widow's Jar" mechanism, to use Keynes's metaphor (Keynes, 1930 ; Béraud, 2010). Its main Achilles' heel would therefore not be in this area, as others have pointed out, but in the growing imbalances of debts and receivables between institutional sectors.

2. Seven scenarios, distinguished by the way they feed the dividend channel

In this section, we present seven different ways of looking at dividend payments, by modifying the basis on which they are made. Initially (section 2.1.), we present a capitalist system without distributed profits, to provide a useful point of comparison for understanding the role of the dividend channel in profit formation, when we add this channel to the picture later. In this model, subject to a zero-growth regime, gross profit equals gross investment, and net profit is zero. In section 2.2, we introduce dividend distribution and link it to net profit, as many authors do today. It turns out that by proceeding in this way (without any additional booster to capitalist consumption), net profit is always zero. The dividend channel, while present at the outset, is bound to dry up. We show in section 2.3. that the same would apply if dividends were paid on the basis of free-cash-flow. In section 2.4. we study the case where dividend payouts are pegged to gross profit. This time, net profit is positive and, as we shall see, can reach a significant level. In section 2.5, we present the case where dividend payout is linked to gross investment; in section 2.6, to the capital stock; and in section 2.7, to the objective of creating shareholder value. In these last three cases, we will see that companies' net profit is positive, and can reach an attractive level.

2.1. Profit generation in an economy where companies do not pay dividends to shareholders

In a model representing a capitalistic economy reduced to its simplest expression, with no room for dividend payments, the conclusions to be drawn would be fairly clear-cut and at the same time very simple. This is the point of examining the first scenario. In the "simplest model of a pure capitalist economy", as Joan Robinson (1970) called it, companies would produce and sell this production (Q) at the best price allowed by overall expenditure (pQ). They would pay the wages required for this production (W), take investment decisions (I), and retain all profits (Π) to self-finance the investment. They would finance the investment out of profits alone (so there would be no loans, bank or otherwise, and no capital increases through share issues). While retaining all profits, companies would pay no dividends to shareholders ($DIV=0$). Households would consequently receive only wages (W), and we assume for the sake of simplicity that they would spend all these wages on consumption ($C = W$). There would be no state (or it would have a balanced budget) and no trade relations with the rest of the world (or they would be balanced). In such a minimalist institutional framework, as recalled here, profits would be equal to (and determined by) current investment expenditure in the period under consideration. Indeed, the profits of all companies are by definition equal to their revenues minus their production costs. If we start by thinking in terms of gross profit (gross operating surplus, in national accounts), we don't take into account the depreciation of existing productive capital (Δt). The only cost of production is therefore the labor cost (W). At the macroeconomic level, we have :

$$\Pi_{gross} = PQ - W \quad (1)$$

This means that in a monetary economy, monetary profits are generated by the difference between social expenditure (PQ), and the costs required to produce the goods that capture or excite this social expenditure (here: W).

Given that there are only two components of social expenditure, consumption (C) and investment (I_{gross}), we can rewrite (1) as follows:

$$\Pi_{gross} = (I_{gross} + C) - W \quad (2)$$

Since we have assumed that there are no dividends and that wages are spent entirely on consumption ($C = W$), we end up with :

$$\Pi_{gross} = I_{gross} \quad (3)$$

This result is the form taken by Kalecki's relation in the minimalist framework we have chosen for the moment (Kalecki, 1933, 1939, 1943). Although minimalist, this framework nevertheless says something profound about the nature of capitalism, the primary source of profit and its nature. It is through today's capital expenditure that companies, taken as a whole, mutually feed today's profits of all companies. If, for a particular company, today's investment is undoubtedly experienced and understood as the construction of a well from which it can draw water (profit) in the years to come, actually the construction of its well is already feeding - through the social expenditure it generates - the profits of all companies. This is because capital expenditure feeds social spending beyond the simple flow-back of production costs (wages) into corporate revenues.

Capital expenditure does constitute income for the companies that sell it, without constituting in the current period a production cost for those who buy it.²

This clearly dramatizes the prospect of zero-growth. Profit (gross) comes in the first instance from accumulation (gross). What then would happen in a world where there is no longer any net accumulation of productive capital, since this is one of the conditions for achieving the objective of zero-growth?

In such a world, all of today's capital expenditure would be earmarked for replacing existing equipment, so as to keep production capacity constant, while replacing outdated equipment with "greener" investments. Real depreciation of productive capital (At) would therefore be equal to gross investment. Hence :

$$I_{gross} = At \quad (4)$$

As we can quickly see, net profit would be zero. Indeed, by definition of net profit :

$$\Pi_{net} = \Pi_{gross} - At \quad (5)$$

By replacing gross profit with the Kalecki's relation (equation 3), we deduce that theoretically :

$$\Pi_{net} = I_{gross} - At \quad (6)$$

We conclude from (4) :

$$\Pi_{net} = 0 \quad (7)$$

Beneath its highly reductive appearance, the model of "pure capitalism" provides a clear-cut conclusion to the question of the possibility of profit in a world without growth. In such a world, gross profit does not disappear. It is equal to gross investment. But since all gross investment is destined to scrap old productive capital, there is no net accumulation, and net profit disappears. To leave it at that, capitalism would be incompatible with zero-growth.

This conclusion, which provides a useful point of reference, can only be drawn from the highly purified nature of what has been called, with Joan Robinson, "pure capitalism". It's even questionable whether such a purification captures the essence of its object. For it assumes that capitalists devote all their profits to (gross) investment, and pay themselves no income. This is something that would already seem incongruous in a world of growth, where net capital accumulation is positive: capitalists would contemplate their fortune accumulating in the form of productive capital, without enjoying it in the slightest. This "contemplative" capitalism would be even less understandable in a world where productive capital no longer accumulates (there would be nothing left to contemplate). So, at the very least, we need to introduce dividend payments and their expenditure on consumer goods into our reasoning.

We can immediately point out that the payment of dividends and their consumption is the necessary and sufficient condition for the existence of a positive net profit, in a world without growth. Assuming, from now on, that firms pay dividends (noted DIV) to shareholder households,

² The wear and tear and obsolescence of the existing capital stock must, of course, be taken into account (on the row "depreciation of capital") in the production costs of the current period, but this is not the case for investment, which for the time being represents a new asset acquisition, affecting only the balance sheet, and not the income statement (acquired at a recent date, perhaps not yet implemented, the investment of the current period has not yet had time to wear out or become obsolete).

consumption expenditure becomes: $C = W + c_{\Pi}DIV$, where c_{Π} is the propensity to consume dividends. Starting again from equation (2), we obtain :

$$\Pi_{gross} = (I_{gross} + W + c_{\Pi}DIV) - W \quad (8)$$

Hence :

$$\Pi_{gross} = I_{gross} + c_{\Pi}DIV \quad (9)$$

Finally :

$$\Pi_{net} = c_{\Pi}DIV \quad (10)$$

This is an important conclusion. The only condition for (net) profit to remain in a zero-growth regime (under the assumptions of a zero public finance balance and balanced foreign trade) is that companies continue to distribute dividends, and that these are partly consumed ($c_{\Pi} > 0$). On the face of it, this is a weak requirement, which leaves every chance for the economic viability of "capitalism without capital accumulation". However, it's not a condition that's guaranteed in all circumstances (i.e. it has its own conditions, institutional to put it succinctly here).

We can already point out that everything depends on how dividends are paid out. Another look at equation (9) shows that if dividends are fed by a fraction of net profits (from the previous period), their consumption will be lower than these, and net profits in the current period will be lower than in the previous period. And so on from period to period, until dividends and net profits disappear. We'll take a closer look at this in the next section.

2.2. When dividends result from the distribution of a portion of net profit to shareholders.

In this hypothesis, the conclusion reinforces, as we shall see, the one obtained with the « model of a pure capitalism » presented above : net profit is zero because the dividend channel vanishes.

We suppose now that the amount of dividends paid to shareholders is :

$$DIV = d. \Pi_{net} \quad (11)$$

Where d is the rate of distribution of net profits to shareholders. En remplaçant dans (10) les dividendes par leur valeur dans (11), il vient :

$$\Pi_{net} = c_{\Pi} d. \Pi_{net} \quad (12)$$

From where it comes immediatly that the only net profit level solution to (12) is :

$$\Pi_{net} = 0 \quad (13)$$

This result is in line with the conclusion of the first model, that of "pure capitalism". This is result is rather intriguing, as it means that adding dividend consumption to the corporate revenue stream does not improve profits. The dividend channel, though apparently active (see equation 11), disappears. The "widow's jar", as Keynes called it, is leaking just as fast as the danaid's barrel. The

only level of net profits that generates, through the consumption of dividends (and in conjunction with investment) a social expenditure validating this level of profits is zero. This, however, is easy to understand. In zero-growth capitalism, when we reason in terms of net profits, investment can no longer be the source of (net) profit, since (net) accumulation is zero. Everything depends on the consumption of profits. However, as equation (12) makes clear, if the consumption of profits is fed by only part of the net profits (only part: d), and part of this part is still saved ($c_{\Pi} < 1$), the expenditure of net profits will always be lower than the net profits (of the previous period), and will constantly reduce the realized net profit from period to period. It can already be inferred from the above that for positive net profit to appear when net accumulation is zero, the payment of dividends must be based on a more solid and broader foundation than net profit.

2.3 When dividends are based on free-cash flow

Taking free-cash-flow (FCF) as the basis for dividend payments wouldn't help matters, since in a zero-growth context, this would in practice bring us back to net profit. Let's define free-cash-flow as Gross Operating Surplus minus changes in working capital required, minus corporate taxes, minus investments net of divestments. Although there are other ways of defining and calculating FCF, the one proposed here could meet with fairly broad approval.³ In this sense, FCF aims to capture the amount of cash flow that the company can use "as it sees fit". This is the "cash" available to the company, once it has paid its corporate taxes and taken into account its working capital requirements and recurrent investments, to maintain its production facilities unchanged (without internal or external growth). This cash is therefore available to finance net investments, or to pay dividends. If we transpose this definition to the institutional framework used here (in which there is no working capital, no corporate taxes, no divestments, and where Gross Operating Surplus is equivalent to our notion of gross profit), free-cash-flow would simply be :

$$FCF = \Pi_{gross} - I_{gross} \quad (14)$$

Assuming that dividend payments represent a constant fraction of FCF (denoted d_1), we have :

$$DIV = d_1 FCF \quad (15)$$

Gross profit, still determined by Kalecki's relation, is now :

$$\Pi_{gross} = I_{gross} + c_{\Pi} d_1 (\Pi_{gross} - I_{gross}) \quad (16)$$

After a quick calculation, we get :

$$\Pi_{gross} = I_{gross} \quad (17)$$

³ This is the definition proposed by a French association specialized in financial analysis: https://www.vernimmen.net/Pratiquer/FAQ/analyse_financiere/definition_du_free_cash_flow_et_dividendes.htm

Consequently :

$$\Pi_{net} = 0 \quad (18)$$

The conclusion is of the same order as above (point 2.2.). The dividend channel, although a component of aggregate demand contributing to the formation of gross profit, as explained by equation (16), ends up being inert. This channel is in fact fed, through the payment of dividends, by the difference between gross profit and gross investment. Designed in this way, it "restores" to aggregate demand - through dividend consumption - only a fraction of this difference... thus contributing to progressively reduce it, until it is cancelled out. As a result, FCF eventually becomes zero.

From this we can infer that, to be truly profit-generating, the dividend channel must be fed by a sufficiently powerful source (clearly superior to net profit) to ensure that shareholder consumption is not less than net profit.

2.4. When dividends result from the distribution of a portion of gross profit to shareholders.

A good candidate for this would be gross profit, since it is theoretically higher than net profit. Assuming that dividends are paid on the basis of gross profit (rather than net profit) might offend the common sense of the business world, and no doubt also that of some economists. Dividends can only be paid out - right? - only to the extent that the company has actually become richer, and that means taking depreciation into account when assessing annual profit. But it's reasonable to argue, against all appearances and against what the players may think, that dividends are in fact "deducted" from gross profits. Strictly speaking, distributed profits (dividends) are in fact the distribution of primary income, i.e. a portion of the gross value added produced by companies. The reasoning must therefore be based on gross values. To simplify, this "sharing" of primary income from gross value added is made up of three parts: wages, dividends and retained profits. Together, these shares form a partition of the newly-created gross wealth. Just as wages are a fraction of gross value added, so are retained profits, and so are distributed. Once wages have been paid, the remaining income to be distributed is therefore equivalent to gross profit (gross operating surplus in national accounting), of which dividends represent one of the two parts. If we accept this new way of looking at things, we have :

$$DIV = d_2 \Pi_{gross} \quad (19)$$

Where d_2 is now the gross profit distribution rate (it has no reason to be equal to d or d_1 used previously).

Kalecki's equation, expressing gross profit formation, becomes :

$$\Pi_{gross} = I_{gross} + c_{\Pi} d_2 \Pi_{gross} \quad (20)$$

This gives, when rearranged :

$$\Pi_{gross} = \frac{I_{gross}}{1 - c_{\Pi} d_2} \quad (21)$$

We deduce net profit by subtracting depreciation from gross profit, remembering that $At = I_{gross}$. After a little calculation, we arrive at :

$$\Pi_{net} = \frac{c_{\Pi} d_2}{1 - c_{\Pi} d_2} I_{gross} \quad (22)$$

In this version, which is supposed to respect the way in which primary income is distributed - dividends are conceived analytically as a fraction of gross profit - the dividend channel, by feeding aggregate demand with an expenditure higher than net profit, recovers its multiplier effect on investment expenditure. Gross profit is correspondingly improved (compared to scenarios 2.2 and 2.3), and net profit is clearly positive ($0 < c_{\Pi} d_2 < 1$).⁴

This explains why the dividend channel continues to remain active, here, guaranteeing the persistence of profit. As dividends are linked to gross profit, they are indirectly linked to gross investment. Equation (21), which is the familiar Cambridge equation, reflects the idea that gross profits are fundamentally generated by gross investment expenditure, the effect of which is amplified by the propensity to spend dividends. The necessary condition for profit to exist in a capitalism without growth is therefore that the payment of dividends is linked to an "autonomous" quantity: in other words, a quantity that does not depend on current profits.

By virtue of which net profit is quite conceivable in a regime of zero accumulation. This conclusion should come as no surprise, considering what contemporary capitalism has become in practice. By dint of rigorously and consistently applying the "downsize and distribute" maxim (Lazonick and O' Sullivan, 2000), the net accumulation of productive capital and the growth of economic activity have tended to lend credence to the conjecture of secular stagnation (Summers, 2013, 2014, 2015). Proof if it were needed that financial capitalism was able to put into practice "the recipe for profit without accumulation" (Cordonnier, 2006; Hein and van Teeck, 2010), before this became an issue in the perspective of degrowth. Zero-growth is almost here, and profits have never been better.

2.5. When dividends depend on gross investment

Considering what has just been said, it's worth asking what would happen to profits if dividends were directly linked to gross investment (and no longer indirectly, *via* gross profit). This hypothesis is easily justified by the fact that there are basically two possible uses for gross profits at company level: either to self-finance part of investment, or to pay dividends to shareholders. There is a third possibility, financial accumulation, about which we'll say a few words below. From the shareholders' point of view, since profit is, in law, "their money", the decision to pay dividends (taken at the Annual General Meeting) is supposed to represent their "relative preference" for spending this money on supposedly profitable (but illiquid) new projects, or paying themselves a share of their earnings up front. From the point of view of the firm's managers, this can also be understood as a need to remunerate shareholders appropriately, when the company calls on "their money" to invest. At the crossroads of these two points of view, dividends paid to shareholders must therefore be in a good proportion (noted d_3) of gross investment. In other words :

$$DIV = d_3 I_{gross} \quad (23)$$

⁴ To give an idea, with $c_{\Pi} = 0,7$ and $d_2 = 0,5$, net profit would be 53,8% of gross investment.

In this case, the amount of gross profit generated by the expenditure is :

$$\Pi_{gross} = I_{gross} + c_{\Pi} d_3 I_{gross} \quad (24)$$

After putting in factor :

$$\Pi_{gross} = (1 + c_{\Pi} d_3) I_{gross} \quad (25)$$

If we subtract depreciation (equal to gross profit) from gross profit, we end up with :

$$\Pi_{net} = c_{\Pi} d_3 I_{gross} \quad (26)$$

Within this very simple hypothesis framework, the result is itself very simple and can provide a new point of reference for reasoning. The realization of gross profits (equation 25) here depends only on the intensity of the flow of (gross) investment expenditure, since the dividend channel is itself tied to gross investment. Dividend consumption thus appears as a (proportional and faithful) adjunct to investment expenditure, in the formation of profits... which adjunct enables gross profit to surpass gross investment. And, as a result, net profit remains positive. Net profit also has a very simple expression: it is strictly equal to the consumption of dividends. The source of this consumption is elsewhere than in net profit, which secures its supply. There's probably no clearer way of demonstrating that profit generation in a zero-growth regime is dependent on the dividend channel, and that it's better if this channel is not itself too dependent on endogenous variables.

2.6. If the dividends are a function of the capital stock

We'd reach exactly the same kind of conclusion (in substance, but not in value), if we were to argue that, in reality, dividend distribution is not based on today's investment, but on the entire stock of capital accumulated by companies in the past - capital accumulated and not yet scrapped (K). In this version, companies aim to provide shareholders, through the payment of dividends (or interest on loans), with an average rate of return (r) on capital employed (valued at historical cost) that is just sufficient to guarantee that they will always be able to refinance themselves in the future, should the need arise. Following this:

$$DIV = rK \quad (27)$$

Gross profits realized become:

$$\Pi_{gross} = I_{gross} + c_{\Pi} rK \quad (28)$$

And profits net of depreciation (with $A_t = I_{gross}$) become :

$$\Pi_{net} = c_{\Pi} rK \quad (29)$$

As in the previous case, net profit is firmly anchored to a source that does not depend on itself, and which is capable of generating gross profit in excess of gross investment (28). It is also strictly determined by the strength of the dividend channel.

2.7. When dividends are designed to create shareholder value

At this stage in the exploration of possibilities, it's worth asking what would happen to profits in a zero-growth economy that would remain governed, as it is today, by financial structures and rationale, giving priority to "creating shareholder-value".

With this in mind, we need to start by asking how the dividend channel is fed, if we assume that the amount of dividends paid out by companies is governed by the obligation to create shareholder value. According to this criterion, the flow of dividends paid must ensure that the firm's market value (V) is greater than, or equal to, the value of its book equity (BE). Let:

$$DIV \text{ such as } V \geq BE \quad (30)$$

To fix and keep things relatively simple, we can assume that in order to comply with this constraint, managers aim to guarantee a given Tobbin coefficient, representing the prevailing financial norm (\vec{q}). We can then write:

$$DIV \text{ such as : } V = \vec{q} \cdot BE \quad \vec{q} \geq 1 \quad (31)$$

Assuming that the market value of firms is established spontaneously on the stock market in such a way as to reflect the return demanded by shareholders (r_{ex}), given the anticipated prospects for profit growth (\vec{g}), the value of V that balances the supply and demand for shares on the secondary market is:

$$V = \frac{DIV}{r_{ex} - \vec{g}} \quad (32)$$

As, by definition, in a zero-growth capitalism, $\vec{g} = 0$, it comes :

$$V = \frac{DIV}{r_{ex}} \quad (33)$$

Since the objective of firms' managers is to secure condition (31), the amount of dividends required to do so, by replacing V with its value in (33), is therefore:

$$DIV = \vec{q} \cdot r_{ex} \cdot BE \quad (34)$$

Once we know the dividend policy which is consistent with the objective of creating shareholder-value (34), and maintaining the dividend consumption behavior used up to now, we can rewrite Kalecki's relation as follows:

$$\Pi_{gross} = I_{gross} + c_{\Pi} \cdot \vec{q} \cdot r_{ex} \cdot BE \quad (35)$$

In the following, it will be convenient to express this relationship in terms of return on capital rather than mass profits. By dividing the previous formula by pK (pK is the value of the capital stock recorded at historical cost), and noting σ the ratio of shareholders' equity to total assets ($\sigma = BE/pK$)⁵, we obtain the same Kalecki's relation, this time expressed in terms of the return on capital and the rate of accumulation:

$$r_{gross} = g_{gross} + c_{\Pi} \cdot \vec{q} \cdot r_{ex} \cdot \sigma \quad (36)$$

It is therefore easy to imagine that companies will continue to record substantial gross profits in a capitalism without growth, given that gross profits depend *prima facie* on gross investment expenditure, and will always do so - since the depreciating stock of productive capital will always have to be renewed, and the pace of this renewal will certainly have to be accelerated, in order to substitute more environmentally-friendly production processes for those we currently use. As before, gross profit is supercharged by the consumption of dividends, which is now tied to the objective of creating shareholder-value.

To calculate net profit, we simply subtract the depreciation of productive capital from gross profit in equation (36). As a result:

$$r_{net} = g_{gross} + c_{\Pi} \cdot \vec{q} \cdot r_{ex} \cdot \sigma - At \quad (37)$$

As in a zero-growth capitalisme, $At/K = g_{gross}$, we finally obtain :

$$r_{net} = c_{\Pi} \cdot \vec{q} \cdot r_{ex} \cdot \sigma \quad (38)$$

As a result, net return on capital is also likely to be positive. What's most interesting, once again, is that its level depends entirely on the power of the dividend channel. This is because dividend consumption acts here as a kind of "autonomous component" of profit formation through expenditure. In fact, the dividend channel is not dependent on current income or current profits. It depends on the equity accumulated in the past, and on the yield that must be guaranteed to shareholders at secondary market equilibrium, so that stock market prices exceed the value of the capital invested in companies (valued at historical cost).

3. synthesis of the seven scenarios

Table 1 summarizes the results obtained for the seven cases studied. For each hypothesis concerning the anchoring of the dividend channel ($DIV=$), it shows the amount of gross profits resulting from overall expenditure (following the principle "capitalists earn what they spend") and the amount of net profits, obtained by subtracting depreciation ($At = I_{gross}$) from gross profit.

⁵ We assume here that the ratio (σ) is given and constant, which is not a very satisfactory assumption, given that companies' balance sheets could tend to distort dynamically, since dividends not consumed (saved) will increase companies' financing requirements to the same extent, and possibly their debt-to-equity ratio.

For the seven cases studied, we also calculated companies' financing requirement (φ). This is obtained by subtracting gross investment and dividends paid from gross profit..

	Sans canal des dividendes	Dividendes comme part des profits nets	Dividendes comme part du free-cash-flow	Dividendes comme part des profits bruts	Dividende fonction de l'investissement brut	Dividendes fonction du stock de capital	Dividendes ancrés sur l'objectif de MVA
$DIV =$	0	$d\Pi_{net}$	$d_1 FCF$	$d_2 \Pi_{brut}$	$d_3 I_{brut}$	rK	<i>tels que</i> : $V = \bar{q} \cdot \overline{BE}$
$\Pi_{brut} =$	I_{brut}	I_{brut}	I_{brut}	$\frac{I_{brut}}{1 - c_{\Pi} d_2}$	$(1 + c_{\Pi} d_3) I_{brut}$	$I_{brut} + c_{\Pi} rK$	$r_{brut} = g_{brut} + c_{\Pi} \cdot \bar{q} \cdot r_{ex} \cdot \sigma$
$\Pi_{net} =$	0	0	0	$\frac{c_{\Pi} d_2}{1 - c_{\Pi} d_2} I_{brut}$	$c_{\Pi} d_3 I_{brut}$	$c_{\Pi} rK$	$r_{net} = c_{\Pi} \cdot \bar{q} \cdot r_{ex} \cdot \sigma$
φ	0	0	0	$\frac{-d_2(1 - c_{\Pi})}{1 - c_{\Pi} d_2} I_{brut}$	$-d_3(1 - c_{\Pi}) I_{brut}$	$-(1 - c_{\Pi}) rK$	$-(1 - c_{\Pi}) \bar{q} \cdot r_{ex} \cdot \sigma$

Table 1: Summary of gross profit, net profit and financing capacity resulting from the different dividends payment assumptions

The first three cases show the same results... but not quite for the same reasons. In the first case, net profits are zero because there is no dividend channel (i.e. no consumption of profits). Gross profits are therefore equal to gross investment, since the latter is the only component of capitalist expenditure. Net profit is therefore zero, once depreciation has been deducted. This creates no need for financing, because gross profit generated by gross investment is exactly the same amount as is needed to finance investment expenditure (gross investment generates the gross profits that serve to fully finance it). In the next two cases, net profit is zero, because the dividend channel, even if active at the outset, is inevitably exhausted (eventually returning to case 2.1.). This is because the dividend channel is tied to a variable (net profit or free-cash-flow) of which it is itself the determinant. The consumption of dividends, fed by a share of net profit or FCF, cannot generate expenditure - and therefore equivalent revenue for companies - sufficient to reproduce this net profit or free-cash-flow. One by one, both diminish, reducing in proportion the consumption of profits and, ultimately, the profits themselves. For net profit to persist in a zero-growth regime, the dividend channel must be anchored to a variable that is not depend to the one it determines - this is the case with the gross profit anchor, which is in fact indirectly tied to gross investment. In the last three cases, net profit is strictly equal to dividend consumption. In other words, this channel plays a decisive role in perpetuating profit, when the expenditure effect of the investment is cancelled out by its destination (depreciation). In the intermediate case (dividends linked to gross profits), dividend consumption is given a multiplier effect, as there is a positive feedback loop between gross profits, dividend payments, dividend consumption and gross profit formation. This takes the familiar form of the Cambridge equation.⁶

The last line of Table 1 shows that in the four cases where net profits are positive, companies have a positive financing need. In the three cases where net profit is zero, the need for financing is zero. This may seem paradoxical: more profit means a greater need for financing! But the paradox is only apparent: it's the fact of paying dividends in excess of net profits that increases corporate deficits (on the one hand) and enables them (on the other hand) to feed demand... in excess of production

⁶ Kalecki's relation takes the form of the Cambridge equation when the consumption of rentiers in the current period is "closely related" to profits in the current period. (Lavoie, 1992).

costs (in this case, wages). Dividends paid, even if they increase the financial imbalance, do not constitute a cost (they represent a cash outflow which impacts the balance sheet), while their consumption constitutes an additional revenue which boosts profits.

It should also be noted that the financing need of companies is strictly equal to the amount of dividends not consumed (saved) by shareholders. In other words, the payment of dividends does not increase the financing need of companies by the same amount. It's only the part that shareholders don't spend on consumption that puts their accounts out of balance. But this is enough to fuel another fear. The fear that corporate debt will grow steadily as the savings of shareholder households accumulate (we have assumed here that wage-earners do not save). This fear is justified, since in a capitalism without growth, as Cahen-Fourot and Lavoie (2016) explain, the increase in real capital being zero, the financial wealth of some can only continue to increase if that of others decreases.

3. Conclusion

The synthesis of the results we have just presented above clearly shows that (even if these results are obtained within an extremely simplified framework) profit is not doomed to disappear in a capitalism without growth. Everything depends on how dividends are decided, and on the propensity to consume them. The degree of autonomy of the dividend channel relative to net profit is cardinal from this point of view. To put it rather provocatively, if profit is to persist in a zero-growth regime, it would be better if dividends paid to shareholders did not depend too much on profits. It would be better, like a boat, if profits were tied to a pontoon firmly anchored to the ground, rather than to a pontoon that is itself tied to the boat (supposed to hold up), at the risk of the boat and the pontoon drifting together. Taking this seriously, we should add a useful clarification to Joan Robinson's famous formula (1966): "in capitalism, wage-earners spend what they earn, and capitalists earn what they spend". The codicil would be: as long as capitalists don't spend according to what they earn.

The fact still remains that the dividend channel, when operating and sufficiently powerful, necessarily generates a positive, permanent need for financing on the corporate side, equal to the dividends saved on the shareholder side. The most serious difficulties for capitalism could rather come from here (Cahen-Fourot and Lavoie, 2016), due to the growing imbalance, from period to period, between corporate debt and household receivables.

This is why it would be tempting to include in the very definition of zero-growth capitalism, beyond the constraints of zero net capital accumulation and zero output growth, the fact that each institutional sector must respect a zero financial balance (Hein and Jimenez, 2022). If these financial constraints could be transposed into reality, firms would distribute all net profits to shareholder households - which would be consistent with the fact that firms no need to self-finance net investment - and shareholder households would consume all of these distributed profits ($c_{\Pi} = 1$). Net profits, fully distributed and consumed, would automatically reproduce themselves through the "widow's crue" mechanism. This would certainly guarantee the profitability of the system. But doing so would be assuming that the main problem of a capitalism without growth has already been solved. It would be better to concede that there's a whole chapter of economic theory still to be written: what to do with households' willingness to save, when net (real) wealth is no longer growing? A most Keynesian question, if ever there was one.

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