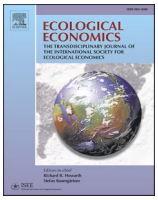
Ecological Economics 204 (2023) 107679

Contents lists available at ScienceDirect

Ecological Economics

journal homepage: www.elsevier.com/locate/ecolecon



How to reconcile actual climate change mitigation with prosperity? A proposal

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ARTICLE INFO

Keywords:
Climate change
Dividends
Climatism
Post-growth

ABSTRACT

Rephrasing Keynes, we could say we are capable of irreversibly warming the planet because it does not pay a dividend. The aim of this article is to propose a novel policy to decouple the economic system from greenhouse gas emissions by legally redefining the way dividends are computed, thus changing corporations' main objective. The basic idea is to make the pursuit of self-interest by shareholders compatible with the common good, i.e. actual climate change mitigation. In order to distribute income to their shareholders, corporations should curb their greenhouse gas emissions. Such income should be proportional to the companies' achievements, providing a powerful incentive to change production and delivery schemes. Although it implies that the system would no longer revolve around the accumulation of profits, shareholders' income would also depend on economic prosperity and less unequal distribution of resources. Profits would have a secondary role to play, only to the extent of avoiding bankruptcy in the long run. This novel policy, that we propose to call "climatism", as opposed to "capitalism", could be a way to move towards a post-growth or wellbeing economy.

"We are capable of shutting off the sun and the stars because they do not pay a dividend" (Keynes, 1933: 242). Indeed, we were so capable of warming the planet because it did not pay a dividend that climate change is under way, albeit we have the resources and the technology to mitigate it. It is a matter of objectives upon which the economic system is built: there is no mandatory environmental goal; firms primarily aim at maximizing profits (in order to distribute dividends). As a result, there has been no decoupling wealth creation from greenhouse gas emissions so far. The purpose of this article is to propose an original way to move towards this decoupling by making actual climate change mitigation pay, so that individual economic interests may be aligned with environmental goals. In a nutshell, we propose to change by law the way dividends are computed so as to change corporations' main objectives, which would no longer be maximization of profits but actual climate change mitigation. This simple change entails such an overhaul that we would like to call this new economic system "climatism".

Capitalism can be defined as a production and trade system of goods and services revolving around the accumulation of capital (i.e., profits), implying free enterprise, private property rights and public companies (Hodgson, 2016). Likewise, "climatism" could be defined as a production and trade system of goods and services revolving around the fight against climate change, implying to reconcile it with prosperity and social equity. It would still be based on private property and private initiative, but with a radically different objective. The purpose here is to redefine self-interest so as to make it compatible with the common good, and especially the success in the most urgent of all ecological issues, namely the fight against climate change. In other words, in such a system, the only way to pursue his/her own self-interest is to achieve actual climate change mitigation (alongside with prosperity and equity). Instead of aiming at profits, companies would aim at curbing their greenhouse gas emissions and promoting sustainable prosperity. Put differently, in "climatism", shareholders' income would stem from their actual achievements when it comes to greenhouse gas emissions and the macroeconomic long-term consequences of their corporations' strategies. Importantly, of these two objectives, the fight against climate change would be the prominent one. Therefore, should corporations be unsuccessful in regard to curbing greenhouse gas emissions while triggering macroeconomic prosperity they would not be allowed to distribute the slightest dividend.

We contend "climatism" is a pragmatic way to achieve degrowth or post-growth, defined as the "deprioritizing of growth" (Buch-Hansen and Koch, 2019). "The goal [of degrowth] is not to reduce GDP, but rather to reduce material throughput and energy demand (with the understanding that this may result in a reduction of GDP as currently

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https://doi.org/10.1016/j.ecolecon.2022.107679
Received 20 April 2022; Received in revised form 7 November 2022; Accepted 9 November 2022
Available online 17 November 2022

measured)" (Hickel, 2019: 7). Consistently, the scope of our proposal is to reduce greenhouse gas emissions with the understanding that it may result in a GDP fall. One of the interests of our proposal is that the fulfillment of actual climate change mitigation would not necessarily imply an economic recession; rather, it would devise a powerful incentive to reconcile climate change mitigation with prosperity and equity as much as possible. Another main interest of our proposal lies in its pragmatism. Indeed, it would "only" necessitate to change one law in order to implement it (which would modify the legal definition of dividends), without having to touch property rights, raise taxes or imply a large-scale intervention of the government. Thus, the public endorsement of such a reform could be high. To avoid confusion, let's call this new way of calculating the maximum amount of incomes distributable to shareholders "emends", from the latin root "emendo", to remedy, to amend.

A few more precisions are in order so as to dispel possible misconceptions and confusions. First, "climatism" is not about reducing the material throughput. Our focus here is on the fight against global warming. Second, our proposal should not be confused with "environmental-related management accounting" or what has sometimes been called "the green bottom line" (Bennett and James, 2017), which could be defined as the "processing of both financial and non-financial information, and the calculation and use of monetized damage costs as well as those that are internal to the firm" (Bennett and James, 2017: 30). Since these measures do not alter the very concept of profits and are not compulsory, they are unable to change corporations' main objective, which remains maximization of profits. Most of the time, they merely consist of making "financial impacts" of environmental issues "apparent" (Ibid.: 35), in the hope that consequently companies would alter their behavior. Contrary to "environmental-related management accounting", the very purpose of "climatism" is to compel companies to change their main objective, so as to avoid inconsequential environmental commitments. Third, although we endorse pleas for "purpose-driven corporations" (e.g. British Academy, 2019, Kevin and Segrestin, 2019, Henderson, 2021), we do not believe such reforms could be efficient, for the same reasons, namely they are not mandatory. Furthermore, there is considerable debate in the international law literature as to whether current corporate legal forms could enable managers to pursue climate change mitigation (e.g. Reinhardt et al., 2008; Fisch and Solomon, 2021). Even in the US, it would seem that there is much room for maneuver to do so. Consequently, it would not be a question of legal forms, but rather of prevailing social conventions, which are still deep-rooted in shareholder value maximization. In this regard, "climatism" could be seen as a way to actually give companies a purpose, by redefining shareholder's income, thus making it as much compatible as possible with the common, environmental good. Fourth, "climatism" may be a positive, efficient catchphrase to convince people, whereas "degrowth" may sound synonymous with "recession", and thus poverty and unemployment (Fioramonti et al., 2022; Drews and Miklos, 2016). But it should be made clear that the objectives of "climatism" and "degrowth" are broadly aligned, the former being a pragmatic way to achieve the latter when it comes to climate change.

The paper will be organized around a discussion of how "climatism" could reach its objectives. First, we will define "emends". Then, we will proceed by showing how "climatism" could result in an actual pursuit of climate change mitigation. Third, we will analyze the social acceptability of this reform. Four, we will turn to its macroeconomic consequences. Five, we will examine the implications in terms of economic policy, and see how it could enable the design of an adjustable, new policy tool. Six, we will reflect on the funding of investments and the role of profits under "climatism". Seven, we will stave off concerns about a possible capital flight, and the survival of corporations. A final discussion will close the paper.

1. The computation of *emends*

Dividends would be replaced by *emends*. Consequently, shareholders' income would not be paid out of profits, but on the basis of three indicators, each reflecting a specific objective. The main indicator, thus the main objective, would be the reduction of greenhouse gas emissions. The second indicator would be net investments, with a view to increasing them. The third indicator, would be the reduction of inequalities, with a view to raising the labor share. The following formula gives the maximum amount of shareholders' income, the actual amount being voted during the annual general meeting.

$$E = 30 \times \left(-2 \times \frac{\Delta GWP}{GWP} + \frac{\Delta\left(\frac{W}{Y}\right)}{\frac{W}{Y}} \right) \times I \; iff \; \frac{\Delta GWP}{GWP} < 0 \quad (1)$$

E stands for emends, GWP stands for "global warming potential", i.e., the common metrics to measure the greenhouse effects of gases emitted by the economic activity (in terms of carbon dioxide equivalent), I stands for net investment, W for wages (social security contributions included) of all workers except top executives, and Y for value-added.

A few precisions are in order, before the general discussion. When it comes to greenhouse gas emissions, we should take into account all emissions, thus including emissions by providers. Therefore, all companies would have to assess their emissions and carefully consider the consequences of what they are purchasing. One may wonder how they would do this. In this regard, there exists many standards and guidelines, for instance the "Greenhouse gas protocol" (https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf), already adopted by 92% of Fortune 500 corporations, or the DEFRA guidelines, issued by the British government in order to help companies convert their purchases into an evaluation of greenhouse gas emissions, thus enabling them to keep track of their impact on global warming. While direct emissions (by fuel combustion, chemical processing, transportation, etc.) may seem easy to assess (they fall within the "scope 1" of the GHG protocol standard), as well as indirect emissions by the electricity purchased ("scope 2" of the GHG protocol), other kinds of indirect emissions ("scope 3"), such as outsourced activities, employees' business travels, waste disposal, may appear tricky to evaluate. In fact, all governments should issue guidelines so that companies may convert the goods and services bought to their suppliers into GWP, like the DEFRA did. As a matter of fact, to this end, the DEFRA issued a very user-friendly template of "conversion factors" (https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2021). For example, per night one employee stayed in a hotel in Germany, you should count 17 kg of CO_2e, while the figure would be 56 for hotel stays in Argentina and 7.5 in Costa Rica. In the appendix of their annual financial statements, corporations would have to disclose the main details of their calculations with regard to *emends*.

Furthermore, GWP would be computed as an average of the greenhouse effects of emissions at a 20-year scale and at a 100-year scale, since both horizons matter when it comes to climate change. Indeed, due to the role of methane in global warming, whose lifespan is shorter than carbon dioxide, we should not downplay its importance (Balcombe et al., 2018). Were we to include only the climatic consequences in 100 years, methane would account for merely 20% of anthropic global warming, while it accounts for 42% of it by 20 years (IPCC, 2014).

The successful implementation of "climatism" requires that *emends* could be defined with "legal certainty", viz. they are not subject to questionable interpretation. That's why we need to ascertain that each indicator of the *emend* formula could be objectively computed. As a result, the compliance with government guidelines or the GHG protocol in order to calculate GWP would be compulsory, since it would provide this "legal certainty" (they are transparent, unambiguous, comprehensive and consistent documents). Maybe we could calibrate "climatism" by leaving very small businesses (<10 employees) and independent

workers outside its scope, since it could be too cumbersome for them to compute their GWP, despite the guidance of government guidelines.

The individual contribution of each company to the reduction of inequalities is encapsulated in the "labor share" part of the *emend* formula: $\frac{\Delta\left(\frac{W}{Y}\right)}{\frac{W}{Y}}$

First, one major source of inequalities stems from the inequal distribution of wealth between capitalists and workers. Thus, as it provides an incentive to raise the part accruing to workers, it should help reduce inequalities. Second, wages and compensations of top executives are not included in *W*. Therefore, each company would be encouraged to raise their simple employees' wages with regard to their top executives'. However, our formula does not differentiate between skilled and unskilled workers, which may be another source of inequalities. Again, there is "legal certainty" with regard to this indicator, since companies already regularly compute *W* so as to determine their social security contributions. Likewise, as to *Y*, "value added" is already computed in order to elaborate the annual "profit and loss statement". Therefore, this indicator could be objectively measured.

As to net investments, again this is common, regular accountant practice to calculate them, by subtracting amortizations and depreciations from gross investments. They are not subject to questionable interpretation. Therefore, this indicator could also be established with "legal certainty".

It should be made clear from the start that there is no offsetting greenhouse gas emissions with investment and/or the labor share of value added. In other words, anytime greenhouse gas emissions would be on the rise, corporations should not be allowed to distribute *emends*. Hence, the formula should be understood with the important caveat "provided that greenhouse gas emissions are waning". This caveat is crucial, since "investments" refer mostly to physical capital (but also to R&D and immaterial forms of capital, with the exceptions of "goodwill" and "brands", which are financial conventions) which all have a negative impact on the climate, like every economic activity. Consequently, it drives corporations to implement the investment project which releases the least greenhouse gases, or at the very least which enables them to release less gases than they previously did. That's the very purpose of "climatism": to constantly drive companies to reduce the greenhouse gas emitted by their activity. Even renewable energy releases greenhouse gas over its life cycle, since wind or solar panels need to be built and dismantled. However, they release by far fewer greenhouse gases over their lifecycle. Changing the production process by relying on them would imply a heavy investment, hence allowing companies to pay considerable *emends*.

Here, the importance of the investment part of the *emend* formula is twofold. First, it gives a metric that translates an ecological objective into a monetary income. Indeed, "monetised metrics [are] often regarded as the most effective" (Unerman et al., 2018: 507). Second, it ensures that this objective is not fulfilled at the expense of economic prosperity whenever it is possible to reconcile the two, since a firm's production capabilities or effectiveness depends on investments. Furthermore, it is all the more sensible as one cannot hope to decrease greenhouse gas emissions without investing.

2. Setting climate change mitigation as a compulsory objective for corporations

Modern economies revolve around maximizing shareholder value (Lazonick and O'Sullivan, 2000; Lazonick, 2011; Stockhammer, 2004; Lavoie, 2012). The aim of corporate governance is not to grow or be merely profitable but to overshoot shareholders' expectations. Any investment project which falls short of their expectations is said to destroy value, while in fact it may be profitable and environmentally-friendly (e.g. Vernimmen, 2022). Consequently, through monetary incentives like bonuses and stock options, managers' objectives have been made compatible with shareholders' ones (Clarke, 2014). Maximizing shareholder value is the reason why corporations aim at maximizing profits to the point of causing or amplifying anthropic global warming. Since shareholders take center stage and wield the actual economic power, the burden of adjustment should lay on their shoulders. If we change shareholders' objectives, it should also change managers' and thus corporations' objectives. Indeed, shareholders appoint and dismiss managers. If a manager would fail to comply with their new objectives, he/she could lose his/her position. Furthermore, in the same way as they designed monetary incentives to incite managers to increase dividend payments, shareholders could design monetary incentives to increase *emend* payments, so that ultimately managers' objectives would align with theirs.

So as to dispel possible misconceptions, there is no overemphasizing that "climatism" does not consist in a shift in measurement, *emends* being the key indicator of performance, but in a shift in corporations' objectives, which would no longer be the maximization of profits. In fact, profits would become a secondary, though important, indicator (see section "The funding of investments and the role of profits" below). Since we change the objectives of capitalists, who wield the actual economic power, we change the objectives of corporations. As such, it is bound to influence corporate behaviors. The main drawback of the sustainability or environmental indicators which exist today, like CSR, lies in that they do not touch corporations' objectives. Because their adoption rests on a voluntary basis, there is a hierarchy of objectives: most of the time, profit maximization remains on top. Thus, even if corporations who abode by corporate social responsibility indicators early on outperformed comparable companies in the long run (Eccles et al., 2014; Godschalk, 2008), this example failed to convert most corporations. In stock markets, it is commonplace to believe that there is a trade-off between profitability and environmental-friendly management (Ricart and Rey, 2022).

The rationale of "climatism" is to align shareholders' objectives with an actual mitigation of climate change. Basically, any time there would be an increase in greenhouse gas emissions by a given company, it would not be allowed to distribute any income to its shareholders. Conversely, if it succeeds in curbing emissions, the maximum amount payable to shareholders would be proportional to the reduction in greenhouse gas emissions times the amount of investment projects undertaken and the reduction of inequalities inside the company (see above). All activities of the company which give rise to greenhouse gas emissions should be included, and not just production per se, from the shipping of supplies to the delivery of goods to the clients. As a result, "climatism" introduces a powerful incentive to actually tackle climate change. Furthermore, because companies need to cut greenhouse gas emissions year after year if they wish to satisfy shareholders, they should implement a continuous, relentless strategy with regard to it. Thus, the reduction in such emissions should come from the production side. Almost all activities releasing greenhouse gases in the atmosphere fall within the scope of this policy. Indeed, are included all emissions due to electricity generation (since electricity is produced whenever it is demanded), freight, mass transport, aviation, agriculture, farming, deforestation, waste processing, manufactured goods and all services delivered by corporations (since services are consumed when they are produced, for they cannot be stored). Are excluded greenhouse gas emitted by private individuals, namely mainly through passenger car exhaust and agricultural production for own consumption. This leaves out for instance around 10.4% of EU's total CO_2 emissions (European Environment Agency, 2019). However, there is no abandoning existing carbon taxes, paid by users of passenger cars, which could be complementary to the introduction of *emends*.

Thus, corporations would be compelled to constantly imagine ways to reduce their emissions. In this regard, it is tantamount to a "result-oriented" scheme, where the administration sets corporations' objectives while letting them an entire flexibility as to how to achieve them. For instance, they would have to reconsider the delivery of their goods or of their supplies. Using railway freight instead of road transportation by

7.5-ton trucks enables a division of carbon dioxide emissions by 80, all else equal. (We divide these emissions by 11 if the alternative is 40-ton trucks. See Ademe, 2019) Companies would be incentivized to use renewable energy (since the GWP of wind power over its lifecycle is e.g., 30 times less than that of gas-generated electricity), to pay attention to their chemicals and revamp their industrial processes, etc. There would be no point in importing from far away goods that could be produced nearby. Farmers would be strongly incentivized to use fewer chemical fertilizers, and restaurants less red meat, etc.

As a matter of fact, not only are economic incentives more efficient than "command-and-control" regulations in changing corporations' behaviors as regards environmental issues (EPA, 2004; Metcalf, 2009), but this change in objectives could perhaps be the most efficient way to alter corporations' behaviors. First, the existing literature tends to support the idea that result-oriented schemes, when objectives are changed while companies are free to imagine the ways to achieve them, perform better than action-oriented ones (when companies are compelled to act in a specific manner, e.g. Dörschner and Musshoff, 2015, Sabatier et al., 2012). "Technological improvement and innovation will be stimulated, resulting in greater opportunities to reduce pollution at low cost" (EPA, 2004: 4). Second, according to goal-framing theory, companies which pursue higher order purposes, like mitigating climate change, may boost the commitment of their employees and thus their productivity, provided that this purpose is encapsulated into indicators, incentives and day-to-day management (Birkinshaw et al., 2014; Lindenberg and Steg, 2013). Since "climatism" changes corporate objectives into a higher order purpose, it would drive them to do so. In fact, "climatism" may be seen as a way to bridge the gap between the private and social returns on low-carbon investments (Krogstrup and Oman, 2019) by directly incorporating the social consequences of global warming in the definition of private interests. Since it consists of replacing the "profit-driven way of organizing business [which] generates … environmental damage" by "not-for-profit forms of business" (Hinton, 2021: 2) it is very much compatible with the dimensions of post-growth business identified in much of the literature (Hinton, 2021; Cyron and Zoellick, 2018; Kropfeld and Reichel, 2021).

3. Social acceptance

Not only does climate change mitigation in general receive widespread support from the public, and especially among the youngest, but "climatism" in particular would not entail any tax hike (which can prove to be rather unpopular), nor any interference from the government in companies' management (managers would remain free to set their strategy and decide which investment projects to undertake). In fact, corporations would be free to choose the best way to achieve their new objective. This should help them to accept "climatism".

Nevertheless, social acceptance of this reform requires that we set realistic objectives. In other words, companies should proportionate the distribution of *emends* to a sufficient reduction in greenhouse gas emissions; they should also be able to pay considerable income to shareholders whenever (but if and only if) they achieved great successes. There should have been, in the past, occurrences when *emends*, if applied, would have been higher than dividends in years of great reductions of greenhouse gas emissions, so as to show shareholders and constituents that "climatism" would not imply to bar people from getting rich. This is a matter of political pragmatism. Of course, these occurrences should be very rare, since the vicissitudes of the past led us to our dismal present. Yet, this does not imply that there was absolutely no good year as regards climate change. This is a question of calibration. As such, it is open to discussion. Tables 1 & 2 show the maximum amounts of *emends* that could have been distributed if applied compared to the actual amounts of dividends distributed in the past as regards one of the key polluters, the United States, and an advanced economy engaged in

Table 1
Hypothetical emends in the USA.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Dividends	192,67	201,29	206,29	221,31	256,44	282,34	323,61	360,11	383,63	373,48
W/Y	67,70%	67,60%	61,80%	67,20%	66,10%	65,80%	65,90%	66,20%	66,80%	66,80%
ΔW/Y		−0,15%	−8,58%	8,74%	−1,64%	−0,45%	0,15%	0,46%	0,91%	0,00%
I	190,54	123,15	141,57	183,51	263,66	284,10	322,52	411,54	446,37	494,59
GWP	7,119,858	7,064,719	7,171,585	7,280,057	7,369,879	7,425,705	7,612,968	7,646,825	7,662,082	7,688,851
ΔGWP		−55,138	106,866	108,471	89,822	55,826	187,264	33,856	15,257	26,770
ΔGWP/GWP		−0,78%	1,49%	1,49%	1,22%	0,75%	2,46%	0,44%	0,20%	0,35%
Emends		52,21	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Dividends	410,21	397,86	424,85	456,00	582,17	602,00	755,06	853,51	840,30	622,06
W/Y	67,80%	68,10%	66,60%	65,40%	64,90%	63,40%	63,50%	63,50%	62,80%	62,30%
ΔW/Y	1,50%	0,44%	−2,20%	−1,80%	−0,76%	−2,31%	0,16%	0,00%	−1,10%	−0,80%
I	536,89	341,37	256,81	253,60	347,99	415,63	490,11	506,33	376,76	−69,11
GWP	7,870,286	7,764,886	7,791,263	7,857,063	7,957,877	7,962,587	7,885,752	7,982,332	7,762,676	7,303,142
ΔGWP	181,434	−105,399	26,377	65,800	100,814	4709	−76,835	96,580	−219,656	−459,534
ΔGWP/GWP	2,31%	−1,36%	0,34%	0,84%	1,27%	0,06%	−0,97%	1,21%	−2,83%	−6,29%
Emends	0,00	323,34	0,00	0,00	0,00	0,00	309,72	0,00	515,05	0,00

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Dividends	643,22	779,10	948,68	1008,99	1096,07	1164,89	1189,42	1264,11	1338,39	1386,42
W/Y	61,00%	60,90%	61,20%	60,60%	60,90%	61,70%	61,80%	62,10%	61,90%	62,00%
ΔW/Y	−2,09%	−0,16%	0,49%	−0,98%	0,50%	1,31%	0,16%	0,49%	−0,32%	0,16%
I	171,73	269,33	426,62	495,27	579,44	627,47	485,98	518,47	636,85	690,87
GWP	7,515,036	7,318,094	7,071,782	7,246,928	7,298,850	7,143,084	6,983,595	6,950,787	7,146,575	7,032,383
ΔGWP	211,894	−196,942	−246,311	175,146	51,922	−155,767	−159,489	−32,808	195,787	−114,192
ΔGWP/GWP	2,82%	−2,69%	−3,48%	2,42%	0,71%	−2,18%	−2,28%	−0,47%	2,74%	−1,62%
Emends	0,00	421,64	954,60	0,00	0,00	1068,26	689,55	222,34	0,00	706,58

Sources: OECD, Fred St-Louis, own computations, domain: private businesses, units: billion $, tons of CO_2 equivalent

Table 2
Hypothetical emends in France.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Dividends	21,68	26,75	26,73	28,60	30,31	34,01	33,02	34,36	37,71	38,34
W/Y	62,80%	63,20%	63,19%	63,34%	63,19%	63,29%	63,91%	63,19%	62,38%	62,96%
ΔW/Y		0,64%	−0,01%	0,24%	−0,25%	0,16%	0,99%	−1,13%	−1,28%	0,93%
I	37,3	36,3	30,2	18,8	17,2	19,0	19,5	19,1	26,9	34,3
GWP	607,298	634,875	623,596	603,996	598,834	608,839	624,166	614,880	627,979	618,359
ΔGWP		27,578	−11,280	−19,600	−5161	10,005	15,327	−9285	13,099	−9620
ΔGWP/GWP		4,34%	−1,81%	−3,25%	−0,86%	1,64%	2,46%	−1,51%	2,09%	−1,56%
Emends		0,00	32,71	38,04	7,60	0,00	0,00	10,85	0,00	41,57

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Dividends	40,53	47,91	50,25	51,01	59,58	66,55	77,53	87,43	94,24	89,48
W/Y	62,47%	62,99%	63,51%	63,76%	63,30%	63,46%	63,70%	62,82%	63,27%	64,90%
ΔW/Y	−0,78%	0,83%	0,82%	0,39%	−0,72%	0,25%	0,39%	−1,39%	0,72%	2,58%
I	41,1	41,4	30,2	26,4	28,8	30,0	36,1	48,3	52,7	20,4
GWP	612,644	616,922	606,170	608,766	604,876	605,276	592,091	581,977	575,208	551,357
ΔGWP	−5715	4277	−10,752	2596	−3890	399	−13,184	−10,114	−6770	−23,851
ΔGWP/GWP	−0,93%	0,69%	−1,77%	0,43%	−0,64%	0,07%	−2,23%	−1,74%	−1,18%	−4,33%
Emends	13,39	0,00	39,64	0,00	4,85	0,00	52,43	30,27	48,54	68,84

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Dividends	88,66	99,81	97,11	96,78	100,25	91,40	91,40	76,20	87,60	97,40
W/Y	64,45%	64,59%	65,45%	65,36%	66,25%	64,66%	65,07%	65,64%	65,70%	63,82%
ΔW/Y	−0,70%	0,22%	1,33%	−0,14%	1,37%	−2,40%	0,62%	0,88%	0,09%	−2,86%
I	26,0	35,8	34,8	30,6	32,7	37,8	43,3	51,1	56,2	61,8
GWP	559,802	530,541	529,355	528,520	499,397	502,282	501,249	509,581	491,980	484,228
ΔGWP	8444	−29,261	−1186	−835	−29,123	2885	−1033	8332	−17,602	−7752
ΔGWP/GWP	1,51%	−5,52%	−0,22%	−0,16%	−5,83%	0,57%	−0,21%	1,64%	−3,58%	−1,60%
Emends	0,00	120,73	18,53	1,63	127,95	0,00	13,47	0,00	122,21	6,38

Sources: OECD, Insee, own computations, domain: private businesses, units: billion €, tons of CO_2 equivalent

greenhouse gas reductions, France.

In fact, over the course of 30 years, there is 1 year (2012) during which *emends* could have been higher than dividends in the US, and 6 such years in France (1992, 1993, 1999, 2011, 2014, 2018). With regard to our objectives, these are exceptional years, which we wish to encourage. As a matter of fact, during the best of these years, which would have allowed the highest amounts of *emends*, that is 2014, French companies reduced their greenhouse gas emissions by 5.83% while investing 33 billion € and increasing the labor share by 1.3%. By contrast, America's best year with regard to greenhouse gas emissions outside of recessions, i.e. 2012, coincides with the sole year when *emends* would have been higher than dividends. Given the poor records of the US over the last three decades, it is hardly surprising that American companies would not have been allowed to distribute *emends* during 20 years. By design, these figures underestimate what would happen if we implement "climatism", since they were obtained under capitalism. The purpose of these computations is twofold: 1) to show that "climatism"-abiding companies could distribute high levels of income to their shareholders; 2) that these levels would correspond to sufficient reduction of greenhouse gas emissions, but presumably corporations would achieve more since they would have strong incentives to do so.

As we can see, with such a calibration, it seems highly likely that *emends* would not be higher than dividends unless the fall in the global warming potential is higher than 3.2%.

4. The macroeconomic consequences of "climatism": overcoming the disjunction between microeconomic and macroeconomic rationales

One cannot reason on a macroeconomic scale as one reasons on a microeconomic scale, an economic feature known as the "fallacy of composition" (Lavoie, 2014). Put differently, one cannot extend the validity of microeconomic thinking to macroeconomic thinking. And yet, macroeconomic outcomes are prompted by individual decisions. Take for instance the "paradox of costs" (Rowthorn, 1981): while it is sensible, on a microeconomic scale, to reduce labor costs so as to increase profits and ultimately dividends, it could have counterproductive macroeconomic effects if followed by all or most corporations, since these costs constitute workers' main sources of income. Therefore, such widespread reduction implies a widespread reduction in demand. In turn, this dwindling demand means that companies sales revenues are on the wane. Thus, profits could also fall, which is paradoxical because labor costs were cut to increase profits in the first place. Likewise, profits could increase in the case of a wage increase.

Maximization of shareholder value implies, in the long run, a rise in inequalities (Piketty, 2014; Rowthorn, 2014) as well as a slump in net investment (Lazonick, 2014; Hecht, 2014). Since rising inequalities in turn implies a fall in the propensity to consume (Summers, 2015), there is a structural lack of the two dimensions of demand, namely consumption and investment. In this regard, "climatism" pushes managers to undertake investment projects, since net investment should be positive so as to allow companies to distribute *emends*, and to tackle inequalities in their companies, since they need to raise the labor share. Because *all* companies would have the same objectives, it could trigger, by aggregation, macroeconomic outcomes. Thus, it seems safe to assert that there will be a rise in macroeconomic investment and a tendency to fight inequalities. Of course, companies may distribute *emends* without touching inequalities, but at least they have an incentive to tackle them.

Effectively fighting inequalities would raise the average propensity to consume, thus demand. So far as investment is concerned, contrary to profit maximization, it is not subject to the fallacy of composition. Even if managers may only think of their companies when they invest, in fact they would increase both macroeconomic supply and demand, that is fostering to some extent (macro-)economic prosperity. Indeed, "the amount of investment undertaken is the major driver of demand, but investment also contributes to the future supply capacity of the

economy" (Fontana and Sawyer, 2016: 187, see also Keynes, 1936). As a matter of fact, macroeconomic profits originate in investment financed by monetary creation and consumption out of retained earnings (Kalecki, 1971; Lavoie, 2014). When one assumes that government budget is balanced and that net exports are nil:

$$Y = I + C \tag{2}$$

given the expenditure definition of GDP

$$Y = W + P \tag{3}$$

given the income definition of GDP

Where P stands for profits, I for investment, W for wages, S for savings and C for consumption. Because $C = C_p + C_w$, it comes

$$I + C_w + C_p - W = P \tag{4}$$

Therefore

$$P = I - S_w + C_p \tag{5}$$

Empirically speaking, in the equation, investments are way higher than consumption out of retained earnings. Therefore, *all else equal*, the higher the investments, the higher the macroeconomic profits. By enticing corporations to invest, *emends* would then raise the overall level of profits. This would be the interesting paradox of "climatism": while companies would no longer strive to maximize profits, the overall level of profits would be higher. Of course, it does not imply that the profits of *all* companies would be higher, even though it is sensible to deem that *most* companies would be better off. Should we expect all else to be equal? In fact, there is no reason to see why the level of savings would change significantly. On the one hand, it may seem reasonable to assume that there could be more precautionary savings, because doubts arise in the public merely as a result of changing the economic system, as with any novelty (but these doubts ought to fade away if "climatism" proves to be successful). On the other hand, some people may also feel enthusiastic because implementing "climatism" could be taken to mean that we finally tackle climate change. To some extent, *emends* help, to overcome the disjunction between the microeconomic and the macroeconomic rationales. It would boost demand and profits as much as possible, hence employment, without boosting global warming. Shareholders would have to bear the climatic and macroeconomic responsibilities of their actions, since their very income would depend on them. Here, there is no free rider issue, for each company would have to increase net investment spending in order to distribute *emends*.

All this raises the vital question: does "climatism" imply a growing economy? Not necessarily: the increase in investment could only stem from climatic investments designed to tackle climate change or from investments made to raise productivity. Thus, "climatism" could facilitate the advent of a post-growth economy. Furthermore, even if "climatism" would not prevent growth, by design it should be growth without global warming, since a climate unfriendly growth would forbid companies to distribute incomes to their shareholders. Again, it seems to us to be compatible with pleas for post-growth economies or wellbeing economies defined as economies where growth has been deprioritized, which is the case here. Indeed, "climatism" does not aim at growth; should growth occur it ensures it would mitigate climate change. It gives a powerful incentive to make climate change mitigation compatible with economic prosperity *as much as possible*. Companies would have to conceive of climate-friendly investments. For the time being, it seems relatively easy to think of economic projects that could significantly deplete greenhouse gas emissions, such as using renewable energy, delivering goods and supplies by railway freight, renovating offices, using fewer chemical fertilizers, etc. Therefore, should companies implement them, it could be possible to increase their sales while dramatically decreasing their greenhouse gas emissions over the course of many years. Whether they could achieve both in the longer run remains questionable, but again even if "climatism" is designed to make climate change mitigation as compatible with economic prosperity as possible, we should not overlook that the primary objective remains the former, not the latter.

5. An adjustable, new policy tool

The formula of *emends* is not fixed once and for all. It offers a new policy tool, to be adjusted according to the wishes of the constituents. As a matter of fact, we could change the coefficients and add new items (objectives) to reflect voters' new or additional priorities. For instance, if the pace of climate change mitigation is too slow, we may alter the coefficient reflecting the importance of greenhouse gas emissions. Furthermore, we may add objectives as to the ecological footprint of the company, its recycling practices, the quantity of fertilizers used, etc. Albeit *emends* was designed to tackle climate change in the first place, it is a flexible tool. It should be used as such. We should not shy away from using it to achieve other ecological objectives, once this reform has borne some fruits and been accepted by constituents.

What about fiscal policy? Since profits are no longer center stage, taxes should no longer be levied on them. Thus, corporate income tax should be repealed and replaced by another tax. It would be counterproductive to tax *emends*, since it would imply to penalize the most successful companies as for reducing greenhouse gas emissions. This is how fiscal reform could support "climatism". But since the administration would still need receipts, we should devise another tax. For instance, as suggested by Fioramonti et al., 2022, we could tax the amounts of waste instead. Of course, civil servants who were previously assigned to checking corporate income taxes should be assigned to checking whether the *emend* calculations are correct. This raises the question of sanctions in case of violation of the new law (i.e. corporations distribute more income than they are allowed to). If the administration realizes it, it could apply fines. If somehow it escapes notice, there could be a trial. Since global warming concerns everybody, the right to sue would be open to anybody, and not just shareholders. The sanctions could be: to return the unlawful sums with a fine, and in case of malevolent intent, banning the managers who proposed to break the law from managing any corporation during 5 or 10 years. However, given that the calculation of *emends* would be transparent and objective, thus easily monitored by the public and the media, there should not be much infringement.

As for the current fiscal policies regarding carbon pricing, emissions trading systems (ETS) would presumably become pointless. Indeed, not only have they failed so far to sufficiently reduce greenhouse gas emissions (especially when we include emissions due to imported goods), but it would be unnecessary and costly to have a second, less efficient, mechanism. Besides, we should probably keep the existing carbon taxes, since passenger car exhaust lie outside the scope of "climatism" (see above section "Setting climate change mitigation as a compulsory objective for corporations").

6. The funding of investments and the role of profits

Since "climatism" entices to invest while profits are no longer center stage, we may wonder how could companies fund their investment projects? First of all, we ought to bear in mind that profit is not a monetary notion. A company may be profitable and yet have no money on its bank account. Conversely, a slightly unprofitable company may have abundant cash at its disposal. It is so not only because of payment terms (corporations rarely pay cash) and debt collection issues, but mainly due to depreciations and amortizations, accounting provisions

and changes in inventories, which are all non-monetary book-keeping entries depleting or increasing the bottom line of the profit and loss statement. Indeed, it is the very purpose of depreciations and amortizations, which deplete profits, to allow a company to keep cash in order to fund future investments, so that corporations making no profits could nonetheless undertake investment projects. Therefore, the purpose of profits is not necessarily to fund investments, and the absence of profits does not imply the impossibility to finance development plans.

More importantly, recall that companies would need to invest in order to pay *emends*, thus raising macroeconomic demand and the overall level of profits, since macroeconomics profits depend solely on investments minus savings plus consumption out of retained earnings (see above). As a whole, then, companies would be more profitable, allowing them to self-finance their plans.

Besides, profits are recorded as liabilities on the balance sheet, since they constitute a potential debt to shareholders. Legally speaking, the company is indebted to its shareholders. Consequently, the accumulation of profits ("retained earnings") offers no guarantee that they would not be distributed in the future. When dividends are paid, there is a decrease in retained earnings on the liability side of the balance sheet and a corresponding decrease in the bank account on the asset side. As a matter of fact, profits are more and more used to buy shares back and distribute dividends. During most of the twenty-first century, American public corporations spent almost all their profits to satisfy their shareholders (Lazonick, 2014). From 2006 to 2020, S&P 500 companies paid 107.04% of their net continuing income in dividends and buybacks (own computation on the basis of the S&P data). Thus, they currently take bank loans or issue bonds in order to finance their long-term projects. Anyway, legally speaking, using retained earnings to fund investment amounts to using a specific form of debt. Using a bank loan instead amounts to using another form of debt. For sure, all else equal, a given company would be better off if it could keep its retained earnings, as it is considered by financial institutions as a sign of a sound financial management. Indirectly, then, since retained earnings enable to run up debt, anyhow they have a role to play in the financing of investment. But, compared to the current situation, where companies do not keep their retained earnings in order to satisfy their shareholders, "climatism" would not imply any use of retained earnings, so companies need not be worse off.

All this raises the questions: on which resources would *emends* be based on? Would they decrease retained earnings? What would be the role of profits? First and foremost, *emends* would not distributed out of profits or retained earnings. They would amount to a specific, variable cost, calculated on the basis of three indicators (see above the appropriate section). Therefore, they would not consist of a limitation on the distribution of profits, but of a different managerial rationale. Although they would eventually deplete profits, they would not originate from them. Unlike dividends, they would not be considered as part of a residue, profits. Rather, *emends* would be considered as shareholders' compensation, in the same way as wages are employees' compensation. They would be due regardless of profits. Like any other form of cost, they would ultimately depend on the company's revenues (sales receipts, increases in inventories, etc.). Of course, there would be an indirect (and rather loose) link to profits, since corporations would have to generate enough resources, as explained below. However, in case of losses, shareholders are more likely to compel managers to cut other types of costs than *emends*. Hence, the change in shareholders' income justification under "climatism", since it would no longer be the compensation for bearing the microeconomic risk.

Second, the usual rules of bankruptcy would continue to apply. As a result, if a given company would be unprofitable for too long a period of time, it could eventually go bankrupt. Profits would remain a signal of management efficiency. What "climatism" would change is that corporations would no longer aim at maximizing them. If a company accumulates enormous losses, it means that it is using more resources than it is creating resources (provided that they are correctly valued). Such an unbalance needs to be corrected. It is also an ecological problem in a world of scarce natural resources, a problem which has to be addressed. Thus, even if corporations would no longer invest or produce so as to maximize profits, they should keep an eye on profits, as a valuable performance indicator among others.

Third, the payment of *emends* would not deplete retained earnings. There would be a special account on the liability side (let's call it "environmental responsibility") which would be depleted each time *emends* are paid concurrently to the depletion of the bank account on the asset side of the balance sheet. It is important to do so, because otherwise if eventually a company would not be entitled to pay more *emends* than its retained earnings, it would imply that accumulated profits limit the capacity to reward shareholders for the completion of climatic objectives, which would be both counterproductive and illogical, given that profits are not supposed to be center stage. Another implication comes into play. A company could pay more *emends* than its retained earnings. First and foremost, whether this would happen often is doubtful. Please bear in mind that macroeconomic profits would be higher, since they heavily depend on the macroeconomic level of investments (see section "The macroeconomic consequences of *emends*"). Even if corporations would no longer aim at maximizing profits they would, in general, be better off. Indeed, it is one of the main interests of "climatism" that climate change mitigation should be made compatible with economic prosperity as much as possible.

Fourth, we may wonder: what would be the point of investing if not to maximize profits? First of all, to deplete greenhouse gas emissions, so that the company may increase its shareholders' income. For non-ecological investments (i.e., purely economic ones), investment would enable to reduce the work load, or expand production capabilities and launch new products. Companies would not be enticed to squander money, since they would still need to survive, and thus not to become too unprofitable in the long run. Profitability would only matter as a financial indicator of a possible bankruptcy. There would not be any legal obligation with regard to it. To summarize this point, profits would still be important, but not *the* defining feature of the whole economic system.

7. Capital flight and corporations' survival

What would happen if a country implements "climatism" while its counterparts remain under capitalism? Should this country also apply capital control in order to prevent capital flight? In other words, could capital flight jeopardize "climatism"?

This question relates to the social acceptability of this new system. Recall that there would be no tax hike nor any nationalization. Property rights would remain. As shown in Tables 1 and 2 (see above), "climatism" would not necessarily imply a reduction in shareholders' incomes. Therefore, there is no reason to expect a massive capital flight. Please also bear in mind that the calculations shown in Tables 1 & 2 concern capitalism, that is a system where companies do not aim at curbing their greenhouse gas emissions. In all likelihood, the actual figures of *emends* would have been higher, were "climatism" to apply. Consequently, faltering investors would be likely to be convinced, if not by argument, then after a few years of practice.

Lazonick famously coined the phrase "profits without prosperity" (2014) to describe modern capitalism. The maximization of shareholder value increased profits, but since these profits were not mainly used to invest but rather to reward shareholders by distributing dividends and

buying shares back, it did not trigger prosperity. A speculative bubble on financial markets is very likely to be under way, as evidenced by the record high levels of PER on the US stock market (in 2021 it was the second highest in history, above the 2008 and 1929 levels), and by the daily volume of transactions on the forex, twice as high as that of 2007, and still 96 times higher than the needs of international trade (Bank of International Settlements, 2022). When the previous bubble busted in 2007–2008, many corporations went bankrupt.

Since "climatism" does not aim at maximizing profits but entices companies to actually invest instead, there is no reason to expect business to be less sustainable. Recall that the government would not meddle in managers' decisions. Managers would remain free to choose the best investment projects, for the sake of their company's survival. Once again, profitability would only matter as an indicator of a possible bankruptcy. "Climatism" helps to overcome the disjunction between the microeconomic rationale, driving companies to cut their labor costs when their objective is to maximize profits, and the macroeconomic rationale, which shows that it results in an unsatisfactory demand and profitability. Here, microeconomic objectives are made compatible with macroeconomic and climatic objectives as much as possible. Therefore, actually fighting climate change would not imply a higher bankruptcy rate of corporations, since the overall level of profits would be higher. Conversely, we have good reasons to expect corporations to be more sustainable, since they could keep their cash during recessions (because recessions usually imply negative net investments), contrary to what happened in 2009, where they had to face shrinking revenues and nonetheless spend important amounts of money to shareholders.

8. By way of conclusion

The urgency of climatic issues requires to be both pragmatic and imaginative. In order to effectively fight global warming, we should make it the primary objective of corporations. In order to avoid making this proposal synonymous with recession and increase its acceptability, we also ought to overcome the disjunction between the microeconomic and the macroeconomic scales. Thus, it won't be achieved at the expense of corporations' survival and employment. The interests of shareholders (high incomes) would then be aligned with the common good as much as possible (fighting global warming and inequalities, promoting actual business sustainability). It seems likely to lead to the paradoxical outcome that by no longer aiming at profit maximization, corporations could nonetheless as a whole enjoy higher profits if and only if (and as a reward of) they effectively mitigate climate change. Will it be enough? The success of this measure partly hinges on the underlying degree of compatibility of a redefined economic system with climate change mitigation, which it is impossible to know with absolute certainty. Anyway, it could be complementary to existing policies and state actions. Furthermore, it could be adjusted in the course of its implementation by changing the relative importance of our three objectives, and by adding other ecological indicators. This flexibility adds to its interest and may open avenues for further action.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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