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General Equilibrium in a Capitalist Economy

Angelos Angelopoulos[1]

Abstract

By synthesising core ideas of Marx, Kalecki and Keynes this paper introduces a Marxian-Kaleckian-Keynesian (MKK) model and deploys it to construct a *capitalist* (macro) *economy*, and then to pin down the existence of a *general equilibrium* for this economy. As expected, this general equilibrium concept does not fulfil any normative general equilibrium allocative property. No wonder therefore that this capitalist economy and its (unstable) capitalist general equilibrium are shattered from within.

Key Words: Marx, Kalecki, Keynes, Capitalist Economy, Capitalist, Worker, Battle of Classes, Market Struggle, Monopoly, Monopsony, Prices-Distributional Conflict, General Equilibrium, Macroeconomic Balance, Minimax Criterion, Payoffs, Labor Theory of Surplus Value, Transformation Problem, Organic Composition of Capital, Fundamental Marxian Theorem, Simple versus Expansionary Reproduction of the Capitalist System, Non Sustainable Capitalist Economy and General Equilibrium.

Classification: B1, B2, B5, D3, D4, D5, D6, D7, E1, E2, E3, P0, R0.

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1. Introduction

The current trends of the constantly rising and sharpened economic inequality across the globe, and especially within the prosperous countries, has invigorated the research interest into the models with market struggle and (priced) distributional conflict. This paper crafts a Marxian (1867, 1885, 1894) - Kaleckian (1938, 1942) - Keynesian (1936) (MKK) general equilibrium model of that ilk, on the basis and the logic of the Kaleckian synthesis between Marxism and Keynesianism.

Kalecki, same as with a fistful of other legendary economists at Kalecki's era, believed that the mainstream and elitist neoclassical spinoff is not convincing[1]. In fact, he was one of the league of those (leftist) political economists who promoted the displacement of market capitalism by market socialism (socialisation of production), or even market communism (socialisation of both production and consumption).

Heterodox or orthodox, what matters is that the legacy of Kalecki's written work proves that he is an admirable economist.

With Kalecki, in particular, the *class theory* of Marx experienced a revival. In the aftermath, Kalecki's greatest achievement in economic theory was that he created a synthesis between Marxian theory and the theory of imperfectly competitive markets in a macroeconomic scale. Ultimately, by cultivating and broadening his inclination towards the Keynesian analysis, Kalecki established a synthesis amongst Marxism and Keynesianism[2], opening in this manner the road wide open for the generation of the vast pool of the neo-Marxian post-Keynesians economists.

Kalecki, in accurate terms, was a neo-Marxian pre-Keynesian Economist. The following two paragraphs exemplify this statement with respect to the analytical agenda and deliverables of this paper.

To a layperson, Kalecki takes over the banner of a Marxian economist just because of his famous saying *capitalists earn what they spend, while workers spend what they earn.* This paper provides a precise mathematical context to this conjecture, by rigorously exposing the deep Marxian roots of Kalecki's (1938, 1942) profits and distribution (macroeconomic) theory.

The 'Essay on the Theory of the Business Cycle' of Kalecki (1933, originally written in Polish, later translated in English; see in Kalecki, 1935, 1937) was the antecedent of Keynes' (1936) *effective demand* theory[3]. After Keynes launched his *general theory*, (the Marxian economist) Kalecki conceded to Keynesianism, and the two of them went hand in hand, with different, nevertheless, intentions. In a fully decentralised macroeconomic

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[1]For a rigorous excerpt of this school of economic thought, see in Blecker and Setterfield (2019).

[2]Something that Keynes did not feel the need to do. Keynes was classifying Marx to the (Ricardian) classicals, against whom he generally opposed.

[3]Smith (1776) and Malthus (1820), none the less, were also prompting the conceptualisation of the 'effectual demand'. Smith in a quite dissimilar, but Malthus in a quite similar, way to the one of Keynes.

landscape, this paper formally uncovers several tight bonds between the Kaleckian and the Keynesian analysis.

Aside from all the aforementioned, it is pure-theoretically intriguing, to the mind of the author of this paper at least, to examine (and answer to) the following question: how does a market economy, stripped from the neoclassical market laws of demand and supply, gets self-regulated and allows for its market clearance to occur, so that the endogenous general equilibrium prices of markets, which accompany or price the (endogenous) aggregatively allocated quantities of markets, are delivered?

This paper answers back to the previously posed query as follow: it constructs a MMK capitalist economy and then equips this economy with a viable MMK capitalist general equilibrium. This is a complete general equilibrium notion in all respects. Namely, it addresses and settles all the central in economics topics: (i) how the pie is created, or simply initially exists, (ii) how the cake is cut and shared to those who rightfully claim a piece of it and (iii) how the divided slices of the cake are priced, when (iv) money (either essentially or inessentially) encircles instrumentally the conduct of the previous three procedures.

The capitalist economy and general equilibrium of this paper, however, lack the elemental social optimality, equability and morality. So this is why proponents of de-capitalisation of the market economy declare that the capitalist systems fail in all aspects, and repeatedly self-orient themselves to economic crisis (also dubbed trade or business cycles).

2. The MKK Capitalist Economy

As usual, to reach the final analytical destination and accomplish the objectives of this paper, several stylisations and regularities need to be imposed. The intention is to make the proposed economic backdrop the least complicated possible, but, at the same time, the most inclusive one. Hitherto, such normalisations of mathematical economic nature are vindicated in the literature of economics insofar the model that is associated with them approaches (and hence accounts for) a real life economy, one which can be testable or experimental by empiricism. This is intended to be the case for the model that is thrusted in this paper as well.

In account of the previous admissions and ambitions, consider the (macro like) economy of two agents and two markets

$$\mathcal{E} = \{\Re; C, L; \mathcal{W}, \bar{Y}, u_C, u_L\}.$$

To start familiarising ourselves with $\mathcal{E}$, $\Re$ is a (tractable) finite subset of $\mathbb{Q}_+ \subset \mathbb{R}_+$, representing both the *action set* and the *outcome set* of $\mathcal{E}$. In advance, it is assumed that $|\Re|$ is sufficiently big so as to include all the possible actions and outcomes in $\mathcal{E}$. It is more fluent and compatible with logic to assume that $\Re = \mathbb{Q}_+$, in which case $\Re$ is countable and $Card(\Re) = \aleph_0$, but $\Re$ being a finite set is a technical prerequisite for the existence of the next section's capitalist general equilibrium. In one way or the other, this type of

acknowledgements concludes in rendering any variable parameter of the model a discrete variable, which will be also recognised right after as static and deterministic variables.

$\mathcal{E}$, then, is a sufficiently closed (to its inner geographical vicinity) economy. That is to say, $\mathcal{E}$ nearly operates under autarky within some (physically or not) specified borders that surround some designated land or soil for its premises. As a matter of fact, $\mathcal{E}$ can be better visualised under a small or medium spatial or regional scale. For instance, $\mathcal{E}$ can be a city, a big town or a large village, a neighbourhood of a massive urban area, a wide and remote rural area, or even an isolated but densely populated island. More broadly speaking, $\mathcal{E}$ is a community or a society of people that have clustered together in the name of (i.e., by having taking advantage of) the economies of spatial agglomeration. Moreover, within the territorial periphery that $\mathcal{E}$ is eventually set in motion, the overlying government to $\mathcal{E}$ shall be being gradually hampered and ultimately expelled as needless. In practical terms, think of the national government of some sovereign country or commonwealth as being weakly influential at this provincial (but fairly spacious) area of its domestic grounds. Imagine, essentially, a central authority that manages to exercise null (ineffectual or inconsequential) local administration to $\mathcal{E}$, that is, place-based economic policies, regulatory or not. To make the analysis more tenable in technical terms, $\mathcal{E}$ is to be viewed atemporally, while luck or danger (i.e., risk or uncertainty) and (probabilistic) randomness will not be playing any role in $\mathcal{E}$. The socio-political *status quo* in $\mathcal{E}$ is stagnant.

Then, in the spotlight of $\mathcal{E}$, there are two heavily non-cooperating agents in $\mathcal{E}$. Or else, two highly contra-positioned opponent parties, or adversary socio-economic classes, which weaponise, to the extent each of them can, each other's actions. On the one side, C denotes one distinguished and whoppingly powerful *capitalist*, who displays all the following roles or economic activities in $\mathcal{E}$: entrepreneur, business man, firm proprietor and manager, self employed, employer, producer, seller, profit seeker, renter, investor, speculator, interest returner, saver, wealth owner and, of course, consumer. On the other side, L represents a non-moderate number of uniform in all respects, power-less (and effectively decision-less) labourers, who just exhibit two identities in $\mathcal{E}$: they are workers and consumers. Let L work $T_L \in \Re$ units of labor time, which is endogenously retrieved and settled for him by C. To become attractive, L is willing to (practically, has no other option than): (i) keep increasing the available T_L that he offers for rent to C, irrespectively of much of this time C decides to rent in the end, and (ii) keep raising his effort or productivity in his job (to be defined infra).

In $\mathcal{E}$ therefore, inexplicably for the time being (but look for a reliable excuse in section 4), the leader C is inherently granted with full (nearly all the) power, while L is left as a follower, in a derelict position. Scilicet, C is the local authority in $\mathcal{E}$. In particular, C holds and manages all the (exogenously given him) initial endowment or bequest of $\mathcal{E}$'s wealth, $\mathcal{W} \in \Re$. Having her profit maximisation as her unique decisional guide or scope, C optimally splits her $\mathcal{W}$ between herself and L, when L is exploitable by C, because L is put into a tight spot and is left out of drastic options. What literally happens is that C possesses and arranges the wherewithals of $\mathcal{E}$ to his convenience, and L struggles, using exclusively his over-exploitable availability and toil as a means of pressure or persuasion,

to extract (from C) the largest possible share of $\mathcal{W}$, when C is trying to pay to L the smallest possible cut of $\mathcal{W}$ (and keep the largest possible for herself).

Ultimately, the money fund $\mathcal{W}$ is translated into realised (monetised) consumption, and subsequently into the monetary payoff that is drawn from it. This payoff is measured by $u_C, u_L : \Re \to \Re$, which are two discrete functions, both of them increasing on consumption. In the sequel, u_L will be equivalently found to be an increasing (totally discontinuous) function on w and T_L. The positive parametrisation of L's payoff with respect to w is obvious, whilst with respect to his labor-time is also imperative, because, according to the scenario of the capitalist economy, the more of the working-time of L gets used up or exploited by C, as L voluntarily succumbs to C, the more payoff is accrued for L (even if, in reality, a worker dis-likes to work and likes to rest).

To paint a clearer picture, let the following static and deterministic positive real variables of $\mathcal{E}$: $P_C \in \Re$ is C's totally gained (monetary) profit, $(\Re \ni)W_L = wT_L$ is L's totally earned (monetary) salary (with $w \in \Re$ being the price of the labor market), $I_C = I = K \in \Re$ is C's or $\mathcal{E}$'s (monetary) investment in physical capital, $(\Re \ni)c = c_C + c_L$ is $\mathcal{E}$'s money spent in aggregate consumption, which is divided into the capitalist's expenditure in consumption $c_C \in \Re$ and the labourer's spending in consumption $c_L \in \Re$, and $PY(\in \Re))$ (with $P \in \Re$ being the price of the commodities' market) is $\mathcal{E}$'s aggregate composite product or output (goods and services, durables and non-durables) in monetary terms, or interchangeably $\mathcal{E}$'s aggregate (monetary) income, which is generally a (positive or increasing) function of/on C's (monetary) production cost, i.e., of C's: financial investment in physical capital (fixed cost or fixed assets) and monetary investment in human capital (variable cost or current assets). All the previous parameters, which are aggregative quantities of nominal or pecuniary nature, are to be determined endogenously in $\mathcal{E}$. And all of them can plausibly take finitely many rational positive values.

Now, control of $\mathcal{W}$ means that C optimally decides how much of her wealth will she invest in $I = K$ (physical capital, in money) and/or W_L (human capital, in money) when exercising her entrepreneurial activity. C is not naive (or insane) but an expert (or sane) when optimally fulfilling her interests, and spares her financial resources that are headed towards L, by abstaining from supporting either the paid w and/or the demanded T_L for the sake of L. The irony is that this occurs in spite of L's genuine attempts to convince C that he deserves higher marginal financial compensation or reward, w, for his devoted labor time, via his willingness and hard-working, namely, by offering (for rent) more available working time than the ordinary one and/or by self-increasing his productivity. So L is caught up into a vicious circle or a trap, and the more L develops this line of labouring, the more L gets exploited by C. This is the case, in turn, because C is enabled to attain the exogenously given upper threshold of $PY \in \Re$, $\bar{Y} \in \Re$, which is either favourable or unfavourable for $\mathcal{E}$ altogether. More precisely, C can endogenously and step-by-step arrive to the output $PY^\star = \bar{Y}$ (for some P) by his bootstrapping investment activity (see right after). So C does not have to make the sales-revenues, which are positively dependable on L's salary, accountable for his entrepreneurial profit.

Define the quotient or proportion $\frac{PY}{T_L} \in \Re$ as the measure of L's productivity, or effort that is put (or invested) into his occupation. L is more (less, respectively) productive iff L manages to produce more (less, respectively) output per a specified (kept constant) working time T_L for L.

With respect to $\mathcal{E}$'s labour market, C has monopsonistic power and, as C is maximising her monopolistic profits P_C, she will buy and employ as much manpower (i.e., T_L) as she optimally decides, trying to run down T_L, in accordance with her personal pursuits and only, and directly against the ones of L. By adhering to his profit maximisation process, C will also end up paying a low general equilibrium wage $w \in \Re$, below the productivity of L (this is formally derived further ahead), on top of ending up creating unemployment in $\mathcal{E}$'s work-force (see also in Robinson, 1933, who initiated the modern labor-market exploitation literature). Recall and mark at this point that w and T_L are discrete variables, which means that choices or decisions upon them can be made upon finite sets of alternatives that represent their values; and that W_L takes over a finite set of prospective rational positive values. Noteworthy is also the fact that both w and T_L are endogenously determined in general equilibrium by forces that act exteriorly to $\mathcal{E}$'s human capital market.

With respect to $\mathcal{E}$'s product market, C has monopolistic power and, by transcribing the process of maximising his monopolistic profits P_C so as to serve again his own intents and only (directly against the ones L), he will appropriate and charge a suitable general equilibrium price level $P \in \Re$. In fact, commodities will be priced outside their market-places, in alignment with Marx's *labor theory of surplus value* (see in the sequel), and afterwards these general equilibrium prices will be transformed into market prices[4].

There does not exist a market for physical capital. C will decide how much of his wealth (i.e., monetary funds) $\mathcal{W}$ will he invest in $I = K \in \Re$ via the following optimal procedure. First, C will find the 'economy's iff his' *marginal efficiency of capital* (see in Keynes, 1936), an interest rate (i.e., a marginal return to financial investment) $(\Re \ni)i > 1$, as C gets to decide which amount of financial investment (money capital) $I = K$ will be paying-back to him the maximum (net of investment costs) interest $iK = iI \in \Re$. So essentially $I(= I_C) = K$ is a (positive) function of i, and the values of it should be more accurately notated as $I(i) = K(i)$, but preference will be shown from now on to the (freed form the rate of interest) shorthand notation of this variable, without this meaning that the analysis is oblivious to the existence the man-made (and not market-made) price i. $iK = iI$ become then the (monetary) savings $S \in \Re$ of C, so track is faithfully kept with the Keynesian (1936) line, which has it that investment creates or becomes savings, and not the converse. C will then re-invest $S = iK = iI$ and a new round of the aforementioned processes will take place, generating an $S' = iS > S$. C will continue this drill until the maximum (investment driven) $\bar{Y} \in \Re$ is reached. In congruence with the analysis so far,

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[4]This is the so called (and heated debatable in the literature) Marx's *transformation of prices problem*. For formal overviews, see in Samuelson (1967, 1971, 1974), Baumol (1974a,b), Foley (1982, 2000), Dumenil (1984), Campbell (1997), and Dumenil and Foley (2008), in-between numerous other works.

the general equilibrium level of the price i and the aggregate optimal quantities of S and PY, $S^\star$ and $PY^\star = \bar{Y}$, for some P, respectively, are also determined endogenously in $\mathcal{E}$'s general equilibrium, and also by extra-market general equilibrium conditions or processes. In agreement with the traceable (computational) mathematical-economic spirit heretofore, all of them take up to finitely many rational positive values.

Negligence herein should not be shown to the following three facts of crucial importance.

The first is twofold. Specifically, it needs to be emphasised that (i) all the parameters of the model, even the $u_C(c_C), u_L(c_L) \in \Re$, for any value of c_C and c_L, are by design of monetary nature[5], while concurrently that (ii) for analytical consistency, it has been silently assumed that all of them are expressed and measured in a common and unique currency that circulates into the non-barter economy $\mathcal{E}$, which can be fiat or backed by a commodity.

The second is that, as $\mathcal{E}$ will be eventually found to be a capitalist economy with many layers of Marxian foundations, all markets of $\mathcal{E}$, which have been already diagnosed as not clearing with market competition, perfect or imperfect, will be discovered to clear with market struggle or market conflict.

The third is that, by searching back into the prequel analysis, reference has not been made at all into how c_L and c_C [hence, $u_L(c_L)$ and $u_C(c_C)$] are optimally determined in $\mathcal{E}$. This is the bliss-point of the analysis because, after everything is said and done by any model, people always remain ephemeral beings and fore-mostly live for the moment, so it all boils down to how much, and at what cost, someone will be able to consume. Basically, this is why consumption-purchases together with the price level of $\mathcal{E}$'s product market are the two key ingredients of any general equilibrium recipe.

To make headway towards the critical third fact supra, one should look into the basic macro-economic identity of $\mathcal{E}$ through different lenses, by first laying out two separate sub-identities. In particular:

(1) $P_C = I + c_C$, which translates as: the capitalist's profits are what C spends for physical capital (which expenses return profitably back to C, i.e., topped or premiumed with interest) and what C spends for consumption (which is the profit that is reaped from L, and stems from the labouring surplus value that L breeds; see in a bit); this then means that *capitalists earn what they spend.*

(2) $W_L = c_L$, which translates as: the worker just spends all his salary to consumption; or that *workers spend what they earn.*

Now, combine and consolidate (1) and (2) above now to get the familiar basic macroeconomic identity

$$PY = P_C + W_L = c + I.$$

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[5]Except, of course, from the *numeraire* or common factor T_L of the model, which is measured in working hours.

Since PY certainly attains its pre-defined potential level and is stabilised to the value $\bar{Y} = PY^\star$, for some P, normalise above $Y = 1 \in \Re$ w.l.o.g. Then what remains is

$$P = I + c_L + c_C = I + W_L + c_C,$$

which is simply Marx's theory of surplus value, to wit, the idea that each commodity in $\mathcal{E}$ is (objectively) (over)priced by three pillars: (i) the money spent by C into the fixed production cost or fixed assets, I (ii) the money spent by C into the variable production cost or current assets, $W_L = c_L$ and (iii) C's surplus monetary value, c_C, which is milked out of the exploited L.

To wrap things up so far, C consumes her gained surplus value, which is consumption that originally belongs and then is actually taken from L. Down this line of argumentation, L produces $c = c_C + c_L$, as far as the consumption good of $\mathcal{E}$ is concerned, when he should have produced only c_L[6]. Put it differently, L is exploited and produces more product than what she is paid for. In addition, P, which is defined in the hereabout Marxian style, is transformed into the price level of the product market through consumption, so the transformation problem is immediately resolved.

Furthermore, by the implied expression $w = \frac{c_L}{T_L} \in \Re$, in which everything is endogenous, it is understood that w is the consumption rate or ratio of L, an index measuring the (socio) economic status of L. This metric measures how much money can L spent in consumption, per a specified (kept constant) working time for L. For some P, observe now that

$$w = \frac{c_L}{T_L} \leq \frac{PY}{T_L},$$

in which: the strict inequality holds, that is, L is paid a wage (from C) strictly below his productivity iff C realises strictly positive profits $[\Re \ni (I + c_C) > 0]$ iff the capitalist (economy) is sustainable.

To conclude with some more enlightenment with respect to the Marxian substructure that underpins $\mathcal{E}$, since it holds by construction that $I_C = I \geq W_L = c_L$, i.e., C distributes his wealth $\mathcal{W}$ in favour of I and in expense of W_L, then the ratio $\frac{I_C}{W_L}$ (aka the Marxian *organic composition of capital*, OCK) is a rational number in $\Re$ greater that 1, which condition binds the capitalist's savings, which are sourced by the capitalist's investment, into getting always re-invested in her enterprise, according to the procedure that was described previously, since this incessantly constitutes a profitable tactic. In other words, the capitalist economy is (self-evidently) a capital intensive (production) economy, since its capital labor ratio (which is the analogue of the OCK) is greater than 1.

Finally, to rebound on the crucial issue of the 'consumption (and then on the immediately induced from consumption) payoff' endogenous determination for C and L in a general

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[6]Recall that I, the capital good of $\mathcal{E}$, is not produced by L. C produces it with her own monetary resources.

equilibrium of $\mathcal{E}$, along of course with the endogenous determination of the price level $P^\star$, it is transparent that the algorithm that this section has put forward is executed as follow:

Provided that an arbitrarily large and inclusive finite set of positive rational numbers captures all the actions and outcomes in $\mathcal{E}$, and given (for C) (i) a spendable initial endowment of (a monetary quantity) $\mathcal{W}$, towards (ii) some for-sure attainable upper bound $\bar{Y}$ (also a monetary quantity), once $w^\star$ and $T_L^\star$ (i.e., $W_L^\star$) are endogenously determined, the (first) general equilibrium allocative quantity $c_L^\star$ is endogenously determined as well. Then, for already endogenously determined or attained (by C) $i^\star \Rightarrow I^\star = K^\star \Rightarrow S^\star \Rightarrow PY^\star = \bar{Y}$, the (second) general equilibrium allocative quantity $c_C^\star$ is also endogenously determined, which circumstance, in turn, implies the endogenous determination of the general equilibrium price level $P^\star$.

Wherever it is propitious in the preceding process, an endogenously determined general equilibrium value shall be, specifically, optimally determined.

3. The MKK Capitalist General Equilibrium

To pick up exactly from where section 2 had left it, all we need to find for the full (endogenous and optimal) determinacy of a general equilibrium for $\mathcal{E}$ are: the optimal general equilibrium value of T_L and the general equilibrium wage w.

Evidently now, given some exogenous $\mathcal{W}$:
{C maximises (the value of) her profit P_C iff C maximises her $I_C(i)$, for some endogenously computable i iff C minimises (the value of) her W_L iff C minimises L's consumption c_L}

$$\Rightarrow C \text{ minimises the payoff (from consumption) of } L,$$

which will be, ultimately, the target of C out of which C's victory over L can be measured.

Note, next, the following optimal choice rule for C: if C pays the minimum possible w and employs the minimum possible T_L from the beginning, then the previous equivalence is true, so C's ultimate target is immediately hit. However, in reality, C may be finding it difficult to apply directly this extreme rule, because she will be facing opposition and resistance from L.

But then how can L practically react to this definite and irreversible (biased towards C) positioning of $\mathcal{E}$? Clearly, this is not a 'win-lose' situation for L, rather just a lost case for him. So the real question is: how can L minimise his loss of this clear-cut defeat from C?

When C is trying to minimise the payoff (from consumption) of L, L has to guarantee for himself the maximum payoff (from consumption). L's sole weapons are the expansion of: his available for rent labor time and/or his productivity or effort. If L is either ignorant of or in denial of (and thus deviates from) this maximin line of activity, which is, actually, a counter-effective policy, attitude, stance or maneuverer of L against C, then C can inflict the maximum penalty or punishment on L, in general equilibrium. That is to say, pay zero w to L, effectively enslave him, or do not rent any offered labouring time T_L of/by L at all. So L has to be nimble, not a passive receiver of C's actions. L needs to counter-balance C's

activity, using the means at his disposal, so as to come up with the best possible terminal outcome for himself.

The paper reaches its climax with the following definition, and then with the theorem right afterwards.

Definition. Upon a $I^\star(i^\star)$, the pair $(w^\star, T_L^\star) \in \Re^2$

$$[\Rightarrow \text{ the triplet } (c_L^\star, c_C^\star, P^\star) \in \Re^3 \Rightarrow \text{ the triplet } (u_L^\star(c_L^\star), u_C^\star(c_C^\star), P^\star) \in \Re^3,\ c_L^\star = w^\star T_L^\star]$$

which is the outcome of the counter (or offsetting) actions of C-versus-L:

$$\max_{(w,T_L)} \left\{ (w, T_L) \in \Re^2 : u_L(w'T_L') \geq u_L(wT_L), \forall (w', T_L') \in \Re^2 \right\} =$$

$$\max_{(w,T_L)} [\arg \min_{(w,T_L)\in\Re^2} u_L(wT_L)]$$

subject to their (or $\mathcal{E}$'s) budget (or resources) constraint $(P^\star Y^\star =)\bar{Y} = c_L + c_C + I_C^\star(i^\star)$

is called a *MKK capitalist general equilibrium* of $\mathcal{E}$.

Theorem. A MMK capitalist general equilibrium for $\mathcal{E}$ exists.

Proof. The proof follows fluently by combining all the arguments that have been presented in the analysis so far.

Remark. Can $\mathcal{E}$ be illustrated as a simple simultaneous moves game, or as one of repeated or sequential moves, of perfect information, and of course without dynamism and without probabilistic randomness? The gamification of $\mathcal{E}$, even in such a rudimental fashion, is a very tough project. Cooperative (market) games, strategic or not, are ruled out by default. Non-cooperative (market) games, which are customarily strategic, meaning that (in them) the players' (re)actions are strategies of interrelated choices or interdependent decisions, are also hard to be conceptualised. This is because by $\mathcal{E}$'s contextualisation, the agent (or player) L would start playing any such game by being entirely deprived of the right, privilege or opportunity to retaliate to C with exactly the same in nature (best response) strategies that C plays or makes her moves with: w and T_L. For example, $\mathcal{E}$ could not possibly be a zero-sum game of that specifications, and of strategically interacting players, who are playing with the minimax and maximin (best response) strategies.

4. Conclusions

There are two fundamental issues that need to be attended to and cleared out.

The first theme has to do with whether the story of this paper is self-reliant with regard to the real world, or is just a fabrication.

The answer is that $\mathcal{E}$ can be, within reasonable and acceptable limits of simplifications, resembling to a pragmatic economic environment. Indeed, as already prologued in section 2, $\mathcal{E}$ may be referring to an economy in which localities forcefully allow for the emergence and maintenance of a monopsonistic and monopolistic C, especially when additional restrictions are imposed to L, who may be not finding it beneficial for economic rationales (as, for example, distances, travel costs, transportation and delivery of commodities costs), or for miscelaneous extra-economic reasons as well, to relocate and commute.

The second is the topic of whether $\mathcal{E}$ and its self-attained (*à la Smithian invisible hand*) general equilibrium can be perpetuated.

Inside the capitalist economy $\mathcal{E}$, C could not survive without, first of all, exploiting L. This result ensues by virtue of the (highly controversial) *fundamental Marxian theorem*, which was first asserted and elicited in the fashion Okishio (1963) and Morishima (1973). The latter, as a matter of fact, states in words this theorem as 'the exploitation of laborers by capitalists is necessary and sufficient for the existence of a price-wage set yielding positive profits or, in other words, for the possibility of conserving the capitalist economy' (Morishima 1973, p. 53). Ever since then, his theorem acquired other interpretations as well [see in Dumenil (1980), Foley (1982) and Kliman (2001)].

Albeit, can this conclusive outcome guarantee the sustainability of $\mathcal{E}$ and its general equilibrium, that is, can this upshot for sure secure that the 'possibility of conserving the capitalist economy' is actually realised and becomes a permanent fact? In this paper's case, for instance, the MKK capitalist general equilibrium is bluntly not Pareto optimal, simply because C can pump out from L more labour value or surplus, i.e., more consumption, without harming the consumption of L. At the same time, this general equilibrium conceptualisation is glaringly non-equitable and unethical, under any sensibly conceived definition. So how can such general equilibria be socially stable?

The answer is that they cannot. $\mathcal{E}$ embodies an innate self destructive mechanism of the capitalist system, the capitalist's impatience (with respect to consumption). Indeed, since the generated surplus value is consumed and not re-invested and capitalised by C, or else, since $\mathcal{E}$ is a *simply reproductive capitalist system* of agents and markets, $\mathcal{E}$ is doomed, as time progresses, to an eventual collapse. But even if $\mathcal{E}$ were an *expansionary reproductive capitalist system* and the surplus were saved, stored and re-invested to accumulated capital, then, by putting back the analysis into Keynesian (1936) tracks, the *paradox of savings* (or *paradox of thrift*) would kick in, which is a central component of the Keynesian theory, making sure that the unstoppable increase in the capitalist's autonomous (or extra) savings, when the capitalist indulges into the Marxian money hoarding, would decrease more and more the aggregate demand, thus, drop more and more the aggregate output, which circumstance is leading closer and closer to $\mathcal{E}$'s demolition.

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