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Tokens make the world go round: socialist tokens as an alternative to money

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Abstract

The paper argues that non-circulating tokens should be used as an alternative to money in a socialist economy. These tokens would be used to distribute consumer products out of socialised production to individual consumers. Like modern fiat money, these tokens are a kind of IOU. But unlike money, these tokens are not intended to facilitate the private exchange of commodities. Marx's proposal to eventually abolish a token-based lower phase of communism in favour of a distinct higher phase is rejected because the 'needs principle' of the higher phase can be sufficiently realised within the token system. It is further shown that the prices of items should not be tied to the socially necessary labour time needed to produce them. Instead, prices should be regulated towards market clearing rates.

Keywords Money · Labour tokens · Socialism · Communism · Marx

JEL classification B14 · B24 · B51 · B52 · D3 · D4 · D61 · D63 · E31 · E4 · E5

In this paper, I argue that non-circulating tokens should be used as an alternative to money for distributing consumer products to the population in a socialist economy. In a socialist economy, the means of production are under social control, and market principles are replaced with general planning of production. While machinery and raw materials remain under social control, there must be some mechanism for distributing finished consumer products to consumers. Any proposal for a socialist economic system must include a specification of how it is determined how many and what kinds of consumer products individuals will be able to appropriate for their own use out of the general supply of goods.

Socialist labour token proposals suggest that this be done through vouchers or tokens denominated in labour time that can be redeemed for consumer goods of

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equivalent value. The most influential discussion of this is found in Marx's *Critique of the Gotha Programme* (Marx 1999, part 1). After outlining socialist approaches to the organisation of production in the first section, the second section will discuss the similarities and differences between such tokens and modern *fiat money*. In the third section, I defend the token system against Marx's proposal of eventually abolishing it in favour of a *higher stage of communism*, in accordance with the *needs principle*. I argue that the needs principle can be sufficiently realised with a token system and that no distinct higher stage of communism is necessary for this. In the third section, I argue that the token prices of consumer products should not be linked to *labour values* but should instead be responsive to supply and demand.

1 Socialist production

What differentiates socialism or communism (I use the terms interchangeably) from other economic systems is that the means of production are publicly owned. Rather than being controlled by private owners of capital, production firms are collectively administered by the people or by institutions accountable on their behalf. Since all firms would share the same owner, there is no need for firms to exchange goods, as the general public would remain the owner of those goods either way. Engels suggested that instead production should be organised according to a 'definite plan, according to the needs of the community and each individual' (Engels 2003, part III). We can understand this to mean that production units would simply receive raw materials and pass on their finished products, as specified by the plan without paying or receiving payment. There would thus be no need for money as a medium of exchange within the realm of production.

Marx compared such a socialist economy with the economy of Robinson Crusoe (Marx 2008, pp. 91–92). Crusoe, alone on an island, needs to decide how to apportion his time between various activities. Whether he spends more time fishing or hunting depends on the 'greater or lesser difficulties that have to be overcome in order to attain the intended useful effect' (Marx 2008, p. 91). The only difference for Marx is that in a socialist society, these decisions become 'social, instead of individual' (Marx 2008, p. 92). Engels further elaborated that a production plan will be established 'in accordance with the means of production, including in particular the labour force' (Engels 1962, p. 288). This means planning decisions will be taken directly based on the available productive resources and not some measure of 'value'. The availability of the means of production and labour power constraints a feasible plan. The plan must thus not use productive resources which are not actually available. Engels goes on to say that '[t]he useful effect of the different objects of utility weight against each other and against the amount of labour necessary for their production will in the end determine the plan' (Engels 1962, p. 288). Given the constraints of the available productive resources the collective producers will choose a plan based on a comparison of the useful effect of the products produced thereby and the labour burden that is required to produce them. Labour is both a constraint, because there is a limited workforce, and a potential burden that is to be avoided. Notably, Engels did not think that 'value' would play any role in planning. We can

thus understand Marx and Engels to have proposed some form of in-kind planning (c.f. Neurath 2004). The constraints, benefits and costs of production are to be evaluated in purely physical terms.

In-kind planning was later criticised as infeasible in what has become known as the socialist calculation debate. Ludwig von Mises (von Mises 2008, pp. 8–15) argued that, unlike the one-person economy of Robinson Crusoe, a modern industrial economy is too complex to be planned without some system of computation. But without monetary prices formed through the free exchange of goods, there would be no adequate unit of calculation that such computation could be based on. Hayek (1945, 1981, 2002) later emphasized the importance that the market price mechanism has in conveying economic information, which is dispersed and cannot easily be communicated to a central planning agency (Hayek 2002, p. 13). The market mechanism leads to a state of affairs in which ‘prices correspond to costs’ (Hayek 1981, p. 63), without requiring a centralisation of information. Socialism is to be rejected, or so the argument goes, because it lacks a comparable mechanism for dealing with dispersed information.

A number of models of socialism have been proposed since these arguments have been put forward and there is ongoing disagreement about the extent to which these models are able to address objections to socialism (e.g. Boettke and Leeson 2004, 2005; Cockshott 2010). We can differentiate between at least three different kinds of models with different approaches to the organisation of production. Market socialist models (e.g. Lange 1936; Dickinson 1930, 1939; Roemer 1994) attempt to combine the rationalising character of markets with some form of public or collective ownership. Participatory planning models (e.g. Albert 2003; Devine 2002) allow workers and other stakeholders to participate in the planning process and thereby attempt to draw on their locally situated knowledge. Cybersocialist models (e.g. Cockshott and Cottrell 1993; Dapprich 2022) instead rely on computer networks and algorithms to derive an optimal production plan.

The discussion throughout the rest of this paper does not depend on a particular model for planning production. I simply assume that socialised production yields some mix of consumer products. For our purposes it does not matter how it was decided which products should be produced or in which way they ought to be produced. Instead, I will be considering how the collectively produced consumer goods should subsequently be distributed to individual citizens. This discussion is in principle relevant for all three kinds of models mentioned, though the starting point will be the socialism of Marx and Engels outlined at the beginning of this section. Crucially, their idea of economic planning does not rely on monetary payment or exchange.

2 Tokens and money

While Marx’s socialism does not involve money or exchange, Marx suggests in several passages that vouchers or tokens might be used to distribute consumer goods to workers in a socialist economy:

In the case of socialised production the money-capital is eliminated. Society distributes labour-power and means of production to the different branches of production. The producers may, for all it matters, receive paper vouchers entitling them to withdraw from the social supplies of consumer goods a quantity corresponding to their labour-time. (Marx 2007, Chapter 18)

The idea is simple enough. There is some sort of collective administration of production which results in a certain stock of consumer goods being produced. Workers receive vouchers corresponding to their labour time. These vouchers can then be redeemed for products which take, on average, an equivalent amount of labour time to produce. According to Marx, the “same amount of labor which he [the worker] has given to society in one form, he receives back in another” (Marx 1999, part 1). This is clearly reminiscent of the labour theory of value which Marx thought governs the capitalist economy. However, unlike under capitalism, there would be no capitalist class to appropriate the surplus value produced by workers. Significant deductions from the vouchers paid out to workers would still have to be made for the “common funds” (Marx 1999, part 1) that I will discuss in Section 3, but not for capitalist profit.

The labour tokens received by the workers differ from money in a significant way. Marx proclaims:

These vouchers are not money. They do not circulate. (Marx 2007, Chapter 18)

Since the only or primary source of consumer products is the socialised production of goods, there is very little need for the private exchange of goods which is normally facilitated by money. Tokens are issued to individuals by society or the socialist state and then redeemed for products out of socialised production. But they do not circulate in any private economy to settle payments for goods and services, as these goods and services are provided by the socialised economy, not private enterprise. We can, perhaps, imagine that an exception to this be made for second-hand goods which are no longer needed by their original owners. But since there would be no or very little private production, socialist production would be the primary source of all goods.

The interaction between socialist society-at-large and individuals also differs from the exchange people regularly engage in under capitalism and that is normally facilitated by money. In an exchange relationship, both parties have something the other wants. My local bakery wants to make money, while I want bread. We agree to exchange £1 for a loaf of bread. The bakery receives money that previously belonged to me, and I receive bread that previously belonged to the bakery. But a socialist society or state does not have tokens or vouchers before they are issued, and it does not need them back. While the bakery and me are mere users of money, the socialist society is the issuer of labour tokens. In this regard, socialist labour tokens are more like a theatre ticket (an analogy made by Cockshott and Cottrell 2002, p. 54). The ticket itself is worthless to the theatre. It does not, for example, need the ticket back in order to pay its staff. Instead, the ticket is simply deleted as I enter to see a show, and new tickets are printed as demanded. Similarly, socialist society can

issue as many tokens as necessary and delete them as they are redeemed for consumer products.

There are still significant parallels between socialist tokens and modern fiat money, as described by Modern Monetary Theory (MMT) (Wray 2015). MMT is a heterodox theory of economics that is heavily influenced by Chartalism (Knapp 1921) and Functional Finance (Lerner 1943). According to MMT, money is essentially an IOU that the issuer of the currency (a state) promises to accept as payment for taxes or fees (Wray 2015, pp. 48–50). The reason that money is valued (even when not backed by gold) is that people and corporations need to pay taxes demanded by the state. The state that issues the currency can create new money by spending it into existence. This means that a state can afford to buy anything that is offered in the state's own currency. It cannot run out of money, as the state itself issues the money. This does not mean that states should spend money at will, since anything that the state buys will not be available for the private sector to buy, and this could push up prices. The spending budget of a capitalist state has to consider what resources should be mobilized for the public sector, and what resources should better be left for the private sector.

According to MMT, the purpose of taxes is not to generate monetary income for the state, as monetarily sovereign states, i.e. states which issue their own currency, can spend in that currency at will. Instead, taxes are primarily needed in order to create demand for the currency, so that the private sector is willing to accept the currency as payment. Progressive income taxation also has a redistributive character, as it takes resources away from the rich. Additionally, taxes might be used to create disincentives, as is the case with so-called sin taxes. Carbon taxes, for example, are meant to disincentivise the emission of greenhouse gases in order to encourage a shift towards alternative products or production methods.

From an accounting perspective, there are two fiscal operations that the state can make. First, it can spend money into existence. This would involve the central bank typing in a number designating a certain amount of money into a computer so that it appears either on the government's account at first or directly on the account of a payment recipient. This is simply a matter of changing the numbers on the central bank's digital record sheet. Secondly, the government can tax money out of existence by having the central bank delete money from the accounts of taxpayers, which is again a matter of keystroke. In reality, these operations are somewhat more complicated, with private banks playing an intermediary role between the central bank and their customers and a complicated, legally constructed relationship between the treasury and the federal reserve in the case of the USA (Wray 2015, pp. 71–81). Modern monetary theorists nonetheless believe that public spending and taxing are for a monetarily sovereign government's essential operations of creating and deleting money by keystroke. As the issuer of currency, the state has a different relationship to money than a mere user of that currency. It is not dependent on income or borrowing in order to spend. Interactions between individual users can nonetheless be seen as exchanges, where money passes from one hand to the other. Money is thus a kind of IOU issued by the state which circulates in the economy, as it is being used for exchange between private agents and for settling of payments in the private sector.

MMT is a matter of significant controversy in economics and far from a mainstream view (Fiebigler 2012; Lavoie 2013). But whether or not MMT accurately describes modern monetary systems, we can certainly use the perspective of MMT to shine light on the proposed socialist token system. Like money in the MMT view, tokens can be created at will by the institution charged with keeping the record of the tokens, which we can call the central bank after its real-world equivalent. When private individuals use tokens to acquire items out of the social supply of goods, the according number of tokens is deleted from their accounts, as modern monetary theorists say is being done when taxes are paid to the government.

MMT claims that demand for money is created because people have to pay taxes and dues to the government. In the proposed socialist system, individuals would need tokens in order to acquire consumer goods. Wray discusses a similar scenario as an alternative way for the government to create demand for its IOUs:

[L]et us say government monopolizes the water supply (or energy supply, or access to the gods for salvation, etc.); it can then name what you need to deliver to obtain water (or energy, religious dispensation, etc.). In that case, if it says you must obtain a government IOU, then you need government IOUs – currency – to obtain water in order to avoid death by dehydration. (Wray 2015, p. 140)

In a socialist society, all or most production is monopolised under public control. This does not just include water or energy but most consumer products that people cannot simply gather or create individually. Socialist society is thus in a perfect condition to issue IOUs (tokens) and to demand that individuals use these in order to acquire a share of the social product. Individuals would thus have an interest in acquiring these IOUs and would be willing to contribute to social production. This way labour could be mobilised for the production of industrial goods and consumer products or for other fields of public interest, like education or healthcare.

Both money and socialist tokens are a kind of IOU issued by the state/society. Money, however, circulates in the private sector. It is used to settle payments between private individuals or enterprises before it is returned to the state through tax payment. Tokens on the other hand, are only or primarily used to mobilise labour for socialised production and to distribute consumer goods out of the social supply of goods to individual consumers. The promise behind them is not that they are accepted as tax payment, but that they can be redeemed for consumer products. Tokens are non-circulating IOUs.

Since citizens require tokens to obtain consumer products, there is no need to create demand for these tokens through a tax burden. Taxes are also not needed to issue new tokens, as the number of tokens given out is not constraint by previously taking in tokens. This is analogous to a monetarily sovereign state, which is not fiscally constraint by its tax income, as it can issue new money at will. This does not mean that there would not be public projects. Section 3 will discuss the importance of what Marx referred to as ‘common funds’ (Marx 1999, part 1). These are necessary to address inequalities and for investments in public infrastructure and the expansion of production. However, taxes are not needed to fund these projects. Instead,

socialised society simply directs resources towards these ends and issues tokens, for example as compensation for workers, as needed.

3 The needs principle

One challenge faced by a token-based proposal for distribution comes from Marx himself. Marx argued that an initial stage of communism based on labour tokens should eventually be abolished in favour of a higher stage of communism based on the needs principle ‘From each according to his ability, to each according to his needs!’ (Marx 1999, part 1). The reasoning Marx gives for this is that the labour token system applies an equal standard to unequal people, thus perpetuating inequality. In this section, I will argue that this objection is misled and that such inequality can be adequately addressed within a token system.

Workers differ, Marx observes, in their ability to perform labour: ‘one man is superior to another physically, or mentally’ (Marx 1999, [art 1). Having a physical or mental advantage, these workers would be able to earn more tokens, either through a higher work intensity or by working longer. Similarly, workers also differ in terms of their needs: ‘one has more children than another, and so on and so forth’ (Marx 1999, part 1). With equal labour contributions, workers with more children would nonetheless end up being poorer. Marx considers these problems to be so grave that he argues the lower stage of communism and its token system eventually have to be abolished altogether and be replaced with a higher stage of communism in which distribution of labour burden and consumption is based solely on the needs principle.

Lenin understood the needs principle to imply that ‘each will take freely “according to his needs”’ (Lenin 1999, Chapter 5, Section 4). By freely, he really does seem to imply that there would be no limits on how many consumption goods an individual might claim for herself and even suggests that each could receive, ‘without any control over the labor of the individual citizen, any quantity of truffles, cars, pianos, etc.’ (Lenin 1999, Chapter 5, Section 4). The claim that this is possible seems far-fetched, and Lenin does not do enough to address this. He implies that significant development would have to precede any phase of communism that realises this and even recognises that it would require a certain degree of voluntary restraint on the part of consumers (Lenin 1999, Chapter 5, Section 4).

However, my main concern with Lenin’s interpretation of the needs principle is not that it seems pie in the sky — which it does — but that it implies that distribution in accordance with needs cannot be taken into account prior to the significant economic development and changes in individual attitudes which Lenin has to assume. How long should sick people have to wait before their need for medical treatment is recognised? Even if we can expect socialism to lead to the changes promised by Lenin, it seems prudent to realise a version of the needs principle even before this.

The problem with Lenin’s interpretation is that he understands distribution according to needs to mean that anyone can take what they want and as much of it as they like. That is not what distribution according to needs implies at all. In fact, each

receiving goods appropriate to their individual needs implies a significant degree of control over who gets which goods to ensure precisely this outcome. A limit that ensures one does not take more than one needs or that one does not take what is more urgently needed by someone else is not a violation of the needs principle but its realisation.

While Marx's concern about unequal abilities and needs is justified, he is mistaken in assuming that these issues cannot be dealt with within a token-based system. In his own description of the lower stage of communism, which is based on labour tokens, Marx already includes arrangements which would address unequal abilities and needs. Workers would not receive the full proceeds of their labour, instead parts have to be deducted for both provisions for those unable to work and what Marx calls the 'common satisfaction of needs', under which he explicitly includes health services and schools. This demonstrates that the lower stage already takes into account differential ability and needs. Those unable to work are provided for without having to work, and those with special health needs will get treatment without having to use their tokens for this. Clearly the lower stage as outlined by Marx is not blind to differences in ability and needs. A similar point is made by Carens (2003), who notes:

[T]he principle of distribution according to needs could most closely be approximated in practice by combining an egalitarian distribution of income with societal provision for differentially incurred basic needs. (Carens 2003, p. 148)

An egalitarian distribution of (token) income with significant common funds to provide for differential needs may be the best way to realise the needs principle.

Can the specific issues that Marx raises in his case for the higher stage of communism be taken into account in a similar way? In terms of ability, Marx argues that some workers might not be as productive as others. People with a disability, for example, might be able to participate in the workforce, but be unable to fulfil the same quotas that other workers can. Should this inability be apparent, it would be quite straightforward to reduce quotas for these workers or reduce the number of hours they are expected to work (while not reducing the tokens issued to them). If this differential ability is not apparent, perhaps because impaired ability cannot be distinguished from laziness, then the higher stage of communism would be just as unable to take this difference in ability into account. There is thus no case for the overcoming of the 'lower stage' based on such differences in ability.

In terms of differences in needs, Marx argues that some workers have more children than others and would thus be poorer if given the same number of tokens. The assumption here is that parents would have to use their own tokens to provide for their children. This does not have to be the case, as provision for children could either be encompassed by the 'common satisfaction of needs' (Marx 1999, part 1) or by the funds for those unable to work. Schools for children certainly fall under education, which Marx considers to be part of the common satisfaction of needs. Very young children are clearly unable to work, and their subsistence should thus be taken care of through communal funds as well. Older children might technically be able to work — during Marx's time child labour was quite normal — but the idea that they

should not be expected to work and instead have access to education, should not be controversial. They should thus also be provided for through communal funds. One way to do this that is perfectly consistent with the token system and Marx's lower stage of communism, is to provide tokens to children or their carers, similar to the child benefits paid in many modern capitalist welfare states. As long as these child benefits and common provisions for children are sufficient for the upbringing of new generations, the cost of raising children would not be a source of inequality.

Besides the cost of raising a child, there is also a concern that the care work involved might be a source of inequality. Müller (2021) contests that the socialist ideals of equality and freedom can only be realised by a form of socialism that 'adequately distributes and values social reproductive work' (Müller 2021, pp. 454–455). Carers of children might also have less time available for other work and could thus lose out on tokens if no measures are put in place to address this. This matter is of particular concern to feminists because in contemporary society that work is often done by women. Müller (2021, p. 471) argues that the response is to socialise large parts of this work, and my suggestion is that this could also be done through Marx's common funds. This could for example be done through communal children's facilities, such as kindergartens, which relieve some of the burden from primary carers. The people working in these facilities would be professionals that would be compensated for their work with tokens just as any other workers is. Another possibility is to recognise the work done by carers at home as worthy of the same compensation through tokens. If care work is adequately compensated in this way, then it would no longer be a source of inequality.

Besides children, the most obvious example of differential need concerns the provision of healthcare. Those who are sick may require significant medical resources to treat their condition, while those who are healthy do not. However, Marx assumes healthcare, like schools, to be resourced through common funds, even in the lower stage of communism (Marx 1999, Part 1). We should have in mind a kind of socialised healthcare system which provides treatment to those requiring it free at the point of use. While tokens may have to be redeemed for many other goods and services, the provision of healthcare would not require any tokens at all. The National Health Service (NHS) of the UK is a close real-world equivalent of this.

It may be tempting to apply the same principles to other sectors. Why should not food, for example, be distributed directly in accordance with need? However, there are important differences between food and healthcare that we have to keep in mind. Food is not a unique need of a select group of hungry people. Everyone requires food, so there is no significant benefit in terms of equality in taking individual circumstances into account. Tokens, on the other hand, would allow consumers to choose freely what kind of food items they want to consume, which flavour of yogurt they prefer. While in health matters one is well-advised to consult the opinion of medical experts, preferences for food cannot be diagnosed by any expert. In the token system, consumers would also be free to decide whether they want to use their tokens for more costly food items, or dining out, or something else entirely, like skiing trips or a new pair of shoes. Consumers can, in other words, in most cases decide for themselves which of their needs and desires they consider the greatest and how they want to use their share of public resources.

The justification for replacing the lower stage of communism loses its force once we have seen that differences in ability and needs can very well be taken into account within the framework of the lower stage. But what about the social and economic changes that Marx thought would precede the transition to the higher stage? According to Marx,

[i]n a higher phase of communist society, [...] after the productive forces have also increased with the all-around development of the individual, and all the springs of co-operative wealth flow more abundantly – only then can the narrow horizon of bourgeois right be crossed in its entirety and society inscribe on its banners: From each according to his ability, to each according to his needs! (Marx 1999, Part 1)

Marx does not seem to suggest that these changes necessitate a transition to the higher stage, instead these changes are described as a precondition to it. Without sufficiently developed productive forces and wealth, socialist society simply has no choice other than to accept the inequality Marx falsely associates with the lower stage. But while this is clearly not Marx's argument, one might also suggest that significant increases in productive capacities somehow invalidate the token system of the lower stage. And since we have seen significant increases in productive capacities since the nineteenth century, during which Marx was writing, perhaps the token system is already outdated. I am not convinced by this line of thought though, since the token system is perfectly capable of adapting to increases in productivity.

As productivity increases one of three things (or any combination of these) can be done. First of all, the increased productivity can be used to produce more goods using the same labour. This means more consumer products could be afforded by consumers with their tokens. Secondly, the same amount of consumer products could be produced while lowering labour time, meaning that workers would have more free time while being able to enjoy the same material standard of living. Thirdly, the resources dedicated to public expenditure could be increased to improve sectors like healthcare, education or provisioning for those unable to work. No matter which of these measures, or combination of measures, is taken, increases in productivity are no problem in the lower stage at all, in fact they would improve people's living conditions without any need to fundamentally overhaul the token system of the lower stage.

The passage from Marx cited above also mentions the 'all-around development of the individual' (Marx 1999, part 1). Lenin (1999, Chapter 5, Section 4) was clear that he thought that the needs principle required voluntary constraint on part of the consumer, which those living under socialism would purportedly engage in. Guevara (2005) perhaps went furthest in postulating a changed motivation for people living under socialism. We might thus ask ourselves what impact living in a socialist economic order will have on citizens' character and what relevance this has for the distributional mechanisms that ought to be used. The claims about changes to human motivation made by Lenin and Guevara are highly speculative. While it is plausible that one's character is formed by the society that one lives in, this does not mean that socialist citizens' character will change in the way assumed. But even if it did, this would not require us to get rid of the token system. Citizens that are

selflessly willing to constrain their own consumption can perfectly well do so by limiting their consumption to what can be bought with their assigned tokens. Even if the tokens would not be necessary to reign in excessive consumption, they would still be useful as an accounting tool. The selfless socialist citizen would rest assured that whatever they can afford with their tokens represents a fair share of the social product. Her changed character is thus no reason to abolish the token system either.

None of what I have said here goes against Marx's needs principle. However, abolishing the token system of the lower stage of communism is neither necessary nor helpful for realising the needs principle. Instead, the needs principle can be sufficiently realised through some sensible distribution of tokens which can be redeemed for most consumer items and services, while the satisfaction of differentially occurred needs is ensured through common funds. This is precisely how Marx describes the lower stage of communism, and I claim that there is thus no need to replace the lower stage with some distinct higher stage of communism.

4 Token pricing

In this section, I will argue that token prices, i.e. the rates at which tokens can be redeemed for various products, should not be fixed at their labour values and should instead be responsive to supply and demand. For Marx, tokens are linked to labour in two ways. They are given out to workers in proportion to their labour contribution, and they can be redeemed for consumer items that take an equivalent amount of labour to produce. I would content that there may well need to be some adjustments to the number of tokens given out, for example due to differences in ability or need, or based on the kind of labour performed. But I will argue that what is particularly problematic is linking the *token price* of items to their labour value. Instead, prices should be regulated towards the *clearing rates*, at which demand matches supply.

Market socialists (Dickinson 1930, 1939; Lange 1936; Lerner 1944), influenced by neo-classical economics, have long argued for the use of market clearing prices on the basis that these lead to a pareto-efficient distribution of goods based on individual preferences. A distribution is pareto-optimal if it is impossible to improve anyone's condition by modifying the distribution of goods without making someone else worse off. While pareto-efficiency is not the only desirable property of a distribution, it is in principle possible to move from one pareto-efficient distribution to another by changing the distribution of income. While income and prices in this perspective usually refer to money, we can equally apply this to non-circulating tokens.

I want to emphasize a somewhat different perspective here, which is influenced by Ronald Dworkin's resource egalitarianism (Dworkin 1981, 2002, Chapter 2, 2011, Chapter 16). Dworkin argues that to distribute a given stock of resources in an equal manner, individuals should be given an equal number of tokens and participate in a hypothetical auction leading to clearing rates. While Dworkin suggests that this resembles a market economy, the tokens used in the auction more properly resemble socialist tokens, as they are not used in exchange and do not circulate. Dworkin's reason for making use of an auction is not that it leads to a pareto-efficient distribution, but that it is necessary for an equal distribution of

tokens to result in an equal distribution of actual resources. That is because the token prices resulting from the auction are thought to accurately reflect the cost that is inferred on others when an item is appropriated out of the general supply of resources.

I will not go into the details of Dworkin's resource egalitarianism, and readers familiar with Dworkin will notice many differences between Dworkin's proposal and the socialist proposal presented here. Where I am in agreement with Dworkin is primarily that clearing rates, rather than for example labour values, ought to be used as token prices for items in order to ensure that a given distribution of tokens translates into an equivalent distribution of physical items. For Dworkin, the pattern that ought to be preserved is equality. Individuals are given an equal number of tokens in the hope that this leads to an equal distribution of resources. Under socialist token proposals, the distribution of tokens is not necessarily equal, as labour contribution and individual abilities and needs may be taken into account in the distribution of tokens. But we nonetheless have to make sure that this translates into an equivalent distribution of physical consumer goods, or else the tokens lose their purpose in prescribing a certain pattern of distribution. To ensure this, it is necessary that token prices accurately reflect the cost or value of items.

There is some sense to using labour values as token prices, if we assume that these accurately reflect the *opportunity cost* of a product. This might be the case in a world where everything is produced by labour, and we can freely proportion this labour to various product types. Labour which is used to produce one product could alternatively be used to produce some other product. The amount of labour necessary for any one product thus represents the lost opportunity when the product is produced and consumed. It is this labour that is no longer available for other purposes. Labour used to grow and harvest apples can no longer be used to grow and harvest oranges and so on. With labour pricing, consumers can freely decide whether their share of the social supply of labour be used to provide them with apples or oranges or something else entirely.

We may object to this perspective on the basis that labour is not the only input required to produce various goods. This means that labour cannot necessarily be freely apportioned to various uses, as other input requirements like land, natural resources, raw materials and machinery are also required. Land in a climate able to grow apples might not be equally suited for growing oranges and so on. While some of these additional inputs, like machinery, can themselves be produced by labour, others cannot. So, we cannot necessarily simply apportion labour in whatever way we like.

This objection still allows for some form of pricing based on production costs though. Labour may not be the only production input, but if we somehow manage to factor in other inputs, we may still come up with some system of valuation based on the conditions of production. A theory of value that considers all production inputs is, for example, presented in Piero Sraffa's *Production of Commodities by Means of Commodities* (Sraffa 1960). However, no such system of valuation based on the conditions of production will be an adequate basis for token prices in a socialist economy. That is, as I will argue now, because the conditions of production are no longer *decision-relevant* at the point of distribution.

When deciding how to allocate or distribute goods, we must consider what alternative uses there are for these resources at the time. This does not include alternatives which are precluded by past choices. Once we have produced a certain number of apples, it is not possible to go back in time and produce oranges instead. The trees on which they grew will have been planted years ahead. But it is precisely at the present moment in time — when consumer items have already been produced — that they have to be distributed to individual consumers. The production costs of apples were relevant when it was decided, at some point in the past, to plant apple trees rather than orange trees. And production costs continue to be relevant when deciding what items to produce for the future. But they should not factor into how we distribute items *after* the fact of production.

The *decision-relevant opportunity cost* of consumer products at the time of distribution is more properly given by the use value or useful effect of these items. If I use my tokens to acquire an apple out of the general supply of goods, then that apple will no longer be available for others to enjoy. It is this opportunity for others to use what I have acquired for myself that is lost and that must be considered when distributing consumer goods.

While the useful effect of an item might itself be unquantifiable (Marx 2008, p. 52), the token prices that individual consumers are willing to pay for items are indicative of the subjective importance that they place on them. If, at a given token price, an individual, let us call her Sandra, is willing to use her tokens to acquire an apple, this indicates that Sandra deems other products, such as oranges, that could be bought with the same tokens instead, to be less suited to the satisfaction of her needs. Things become a little more complicated when we attempt to compare the importance items have to different people, a problem sometimes referred to as the “interpersonal comparison of utility” (c.f. Robbins 2007). Perhaps, Sandra is not willing and able to pay more tokens for an apple than I am because she has a greater hunger for apples, but because she has more dispensable tokens. However, at this point I am assuming that the distribution of tokens has already been settled and the only question remaining is how to transform a distribution of tokens into an equivalent distribution of physical goods. This means that we are assuming that if Sandra has more tokens than I do, this is so because she is supposed to have a greater share of consumer products than me.

Recall that the clearing rate of a product is the token price at which demand for the product corresponds to supply. This means that everyone that is willing to acquire an item at this price is able to do so. It furthermore means that anyone else is not willing to pay the same token price and could only be given one of the limited number of items by denying it to someone that is willing to pay more tokens for it than they are. At minimum, the person that would have to be denied the item would be willing to pay the clearing rate. Under the assumption that willingness to pay is a reasonably reliable indicator of the importance an item has to a person, an assumption I will continue to take for granted, this means that the clearing rate, and not labour value, is the correct measure of opportunity cost at the time of distribution.

The merit of using clearing prices also becomes clear when we consider what happens if we deviate from the clearing price for an item in either direction. Consider the commodity-type apple. If the price of apples is above their clearing price,

as could well be the case if token prices are set to labour values instead of clearing rates, then some apples will be left over. At this higher price, demand for apples remains below their supply, meaning that some apples will not be acquired by consumers. These apples might end up being thrown out, simply because prices were not sufficiently adapted to demand. This is highly wasteful of course and would mean the apples would end up having little or no use. This, in turn, means that there would be little lost opportunity if consumers were simply allowed to acquire the apples at a lower price.

If, on the other hand, the token price is below the clearing rate, then supply will be insufficient to keep up with demand. This means that some consumers willing to acquire an apple at its price will be unable to do so. Which consumers do end up getting the apples will end up being determined by some factor other than tokens. Perhaps those showing up at a distribution centre first might end up getting apples, while those who show up late will go home empty handed. The image of empty supermarket shelves is, fairly or unfairly, closely associated with real-existing socialist countries where prices for many items were rigidly low.

But if other factors, such as who shows up first, end up deciding who gets how many apples and who does not get any at all, then tokens lose their purpose in determining the distribution of goods. A socialist society that rigidly ties the token prices of goods to labour values might as well not issue these tokens at all, as they will not end up being the deciding factor in the bundle of goods any consumer will receive. The problem, which Marx does not seem to have considered, is that the supply of consumer products will not always perfectly correspond to the demand for these products (at labour prices). Inevitably there will be instances where some goods are over- or underproduced. A socialist society will have to distribute the overproduced items, assuming they should not go to waste. It will furthermore have to find some way to ration products which are underproduced. The way to do that without tokens losing their function in determining distribution is by adjusting the token prices so that they, as closely as possible, resemble clearing rates.

Approximation of clearing rates might be achieved in a trial-and-error process, in which token prices are successively adjusted based on the observed deviations between supply and demand. Prices of items for which supply exceeds demand will have to be lowered, while items for which supply falls below demand will have to be raised in price. Experts might make use of feedback controllers, machine learning or artificial intelligence to achieve the best possible convergence of actual prices with clearing prices. They may also, as much as possible, factor in changes in supply or expected changes in consumer demand when setting prices. However, at the point of distribution the conditions of production, such as how much labour was necessary to produce an item, should no longer be relevant in determining the price. The conditions of production are not decision-relevant for distribution.

Some readers might wonder how the socialist distributional mechanism presented here differs from a market-based capitalism. What is important to keep in mind is that only consumer products will be distributed in this way, while the means of production remain under public control. This is important because it means no distinct ruling economic class, which privately owns the means of production, can emerge. Workers will thus not be exploited for private profit. Any surplus that they might

produce will develop the means of production of which they are collective co-owners or go towards the common satisfaction of needs. The resemblance of capitalism is also much weaker than in some market socialist models, because tokens are only assumed to be used in the distribution of consumer goods, not productive resources. That token prices are adapted towards clearing rates does thus not stand in the way of addressing the ills of capitalism, which I think are a result of its class character and the anarchy of production. Instead, flexible token prices are necessary for a sensible and equal distribution of consumer products. Socialists should not shy away from such solutions due to a mere superficial resemblance to the capitalist institutions they seek to overcome.

5 Conclusion

In this paper, I have argued that tokens are a reasonable alternative to money in a socialist society. The tokens share some characteristics of contemporary state fiat money. Both are an IOU issued by society or the state. While the state promises to accept fiat money as tax payment, the promise behind socialist tokens is that they can be redeemed for a share of the social supply of consumer products out of socialised production.

A key difference between tokens and money is that money circulates in a private economy. It might change many hands to settle private payments before it is returned to the state. In a socialist society, however, there is no significant private economy. Socialised production is the primary source of all goods, so tokens will simply be handed out to consumers and will then be immediately used to acquire a share of the social product. Tokens are thus not used in exchange, or at least not primarily in exchange. Society or the state, as the issuer of the tokens, does not need to receive the tokens back. Instead, they are simply deleted, while new tokens are issued as needed.

Marx (1999, part 1) and Lenin (1999, Chapter 5, Section 4) argued that an initial stage of communism based on a token-system should eventually be replaced by a higher stage of communism, in which distribution is based directly on the needs principle. However, I have shown that the needs principle can be sufficiently realised within the framework of Marx's lower stage. Marx himself introduced common funds, which would be used to provide resources for differential needs and for those unable to work. A distinct higher stage of communism, which does not involve tokens at all, is thus not necessary to sufficiently realise the needs principle.

Finally, I have shown that tokens should be detached from labour values. Marx assumed that the token prices of items would correspond to their labour value. However, labour values are an inadequate measure of the opportunity cost of a product at the point of distribution. Instead, token prices should correspond to the clearing rates at which demand corresponds to supply. This also prevents undesirable situations where stocks of consumer items are left over or demand exceeds supply, which means factors other than tokens would end up determining the distribution of goods.

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Declarations

Competing interests The authors declare no competing interests.

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