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# Exchange rate determination, dependency and super-exploitation of labour. Looking for connections through unequal exchange\*

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## Abstract

In Marxist dependency theory, the uneven and combined development of productive forces across core and periphery is a key feature of capitalism. The unity of such systematically differing components of the world economy is defined by the combination of borders and nation-wide productivity and labour remuneration standards. Peripheral value spaces stand in a relationship of dependency with core value spaces, which provides the economic rationale for the political domination of the latter over the former.

The foundation of this dependency lies in the interaction between unequal exchange dynamic and the heightened exploitation of labour. Indeed, super-exploiting labour allows peripheral capitals to partially compensate for the value they are losing as a consequence of unequal exchange. For that reason, peripheral value spaces exhibit a fundamentally heteronomous and extroverted mode of development.

This interaction takes place through the evolution of exchange rates, whose main function is to verify the monetary character of the various currencies. Through the latter's perpetual comparison, they reproduce the general equivalent whose existence is a structural necessity for any market-based economy, such as capitalism. Doing so, exchange rates formally mediate value spaces that nonetheless retain systematically diverging characteristics.

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However, on the one hand, Marxist dependency theory does not offer an unified exchange rate theory. On the other, within Marxist economic literature, while several attempts at expounding a model of exchange rate determination are to be found, they yield differing conclusions and more importantly were not integrated with the debates on dependency. This article proposes to revise differing Marxist understanding of the exchange rate, seeing the latter's determination as key mechanisms leading to the reproduction of dependency. It thus discusses insights from Shaikh, Carchedi, Astarita and Ricci with the dependency tradition originating in Marini's work.

On this basis, we suggest that as they contributes to the verification of the socially acknowledged monetary character of the various currencies, exchange rates determine the magnitude of unequal exchange. Consequently, the latter is best seen not as a transfer of value but as a loss of value, in contrast with the traditional "phlogistic" understanding of unequal exchange that can be found in the literature on unequal exchange, especially in Emmanuel's writings. Finally, the point is to explore how the mediating role of exchange rate necessarily implies the super-exploitation of labour-power.

**Keywords:** exchange rate; dependency; value transfers

**JEL Codes:**

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# Introduction

From a political economy perspective, capitalism sustains itself by establishing uneven connections between core and dependent territories. This relationship relates to “processes that [...] account for the subordination of some economies to others that were characterised by their relatively stronger economic and political position in the international economy” (Marini (1973c) 2022, 19) and has been precisely defined by Ruy Mauro Marini as “a relation of subordination between formally independent nations, in the framework of which the relations of production of the subordinate nations are modified or re-created to ensure the expanded reproduction of dependency” (*ibid.*, 117). The foundation of this dependency lies in the interplay between the unequal exchange of value and the heightened exploitation of labour (*ibid.*). Marini offers to apprehend this latter fact through his concept of super-exploitation. Labour is exploited when it performs more labour during the working day than what he receives as necessary labour, that is, when it performs surplus labour<sup>1</sup>. Labour is super-exploited when the value it receives under the form of wages is insufficient to fully reproduce its ability to work, compelling workers to look for complements beyond the wage relationship. In other words, the super-exploitation of labour refers to a situation in which the exchange-value received by workers falls below the actual value of their labour-power as determined by historical and social conditions<sup>2</sup>.

However, in Marini’s writings, the precise causal links between dependency and super-exploitation of labour remains unclear as he seeks to combine two thesis that may appear

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<sup>1</sup>When the output of the working day is sold, necessary labour appears as wages and surplus labour takes the form of profits. In that case, this exploited labour is productive in the sense of productive of capital. The specifically capitalist exploitation process occurs through the application of a markup. However, it is just a special case of the otherwise more general model of exploitation. In a capitalist society, along productive labour in the capitalist sense of productive of surplus value, there can be unproductive labour, domestic labour or else labour performed in the non-market sector and whose output is consequently not sold, all of which can be exploited as soon as they are compelled to perform surplus labour.

<sup>2</sup>A way to operationalise this notion is to use relative poverty levels as measured by statistical institutes (Féliz 2011) and to look for the proportion of the total labour force living below this line. At any rate, an indirect partial proof for the more widespread nature of super-exploitation is the empirical inverse relationship between total amount of working hours and national income levels : workers in peripheral countries tend to face longer working days (Messenger 2018).

to have contradictory implications. On the one hand, he wants to provide an economic account of the domination of the core over the periphery, as opposed to a political one. His main contribution is to state that dependency caused by backwardness leaves no choice to capitalists in the periphery than resort to labour super-exploitation. Against Emmanuel (1969)'s famous thesis, Marini seeks to ground the political domination of the core over the periphery on an economic basis, namely the uneven development of productive forces across countries leading to the formation of an asymmetric international division of labour assigning to the periphery the role of exporting commodities and raw materials. It is not low wages that causes unequal exchange, as Emmanuel was stating, but dependency which leads to unequal exchange and low wages. The latter thus appear in Marini as a “compensation mechanism” allowing capitalists in the periphery to make up for the loss of value which unequal exchange implies. The extra-economic causes are derivative phenomena and not the original causes of the hierarchy of countries<sup>3</sup>.

On the other hand, Marini holds an internalist explanation of the under-development, in opposition to so-called externalist explanations. The latter are closely related to the thesis of the political origin of under-development, as they attempt to give an account of dependent capitalism in terms of foreign interventions. Hence, he instead writes that the “very foundation of [the] dependence” (*ibid.*, 133) of the dependent economy refers to “the specificity of [its] cycle of capital” (*ibid.*, 133). In other words, to defend his internalist point of view, Marini is brought to portray the super-exploitation of labour as the “foundation of dependency” (Dussel 1988, 312)<sup>4</sup>. Indeed, super-exploited workers are treated merely as

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<sup>3</sup>In Marini's words: “It is not because the non-industrial nations were abused that they have become economically weak; it is because they were weak that they were abused. Nor is it because they produced more than they should have that their trading position deteriorated; rather, it was the deterioration in trade that forced them to produce on a larger scale. To refuse to see things in this way is to mystify the international capitalist economy; it is to make people believe that that economy could be different from what it really is. Ultimately, this leads to a call for equitable trade relations between nations, when what is at issue is the need to abolish international economic relations based on exchange value.” (Marini (1973c) 2022, 126)

<sup>4</sup>For instance: “Having said that, the three mechanisms identified—the intensification of work, the extension of the working day, and the expropriation of part of the labor necessary for the worker to replenish his labour power—give rise to a mode of production based exclusively on the greater exploitation of the worker, and not on the development of his productive capacity” (Marini (1973c) 2022, 128).

a cost reducing capital's profit rate, instead of as a cost and also as a source of aggregate demand as it happens to workers in central countries, whose income fuels a vivid domestic market<sup>5</sup>.

There is a way to combine this economic account of underdevelopment with the internalist explanation which leads to an apparent circular reasoning in Marini. Indeed, by portraying labour super-exploitation as an essential mechanism explaining how this asymmetrical international division of labour is maintained, he comes close to reverting the causal links. Completing this reversion would require two additional steps Marini is careful not to take: first, the notion of “foundation” would need to be confused with that of a “cause”, either historic or efficient; second labour super-exploitation would need to be reduced to simply low wages. Only if these two conditions were fulfilled would Marini's critique of Emmanuel be trapped in a circular reasoning, as low wages would now be seen as the source of dependency, hence of unequal exchange.

While this circular reasoning remains only potential, there is indeed an ambiguity in Marini's writings as to the exact articulation between super-exploitation and the dependent nature of peripheral economies. This article's main argument is that this is because traditional dependency theory sticks to an understanding of unequal exchange pertaining to the “phlogistic” view of value (Félic 2021), in which unequal exchange takes the form of an actual transfer of value from the periphery to the core, as if value was an “thing” that could be traded for instead of an objectified social relationship. Although, Marini states that this transfer is best seen as a loss, he only mentions that it implies the compensation mechanism of labour super-exploitation. In particular, he does not further explore what this loss ex-

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<sup>5</sup>This argument is reminiscent of Lewis (1954)'s dualist model of backward economies, in which coexist a traditional and informal sector geared towards subsistence activities and a smaller modern and export-oriented sector driven by the search for profits. Just as in Emmanuel (1969)'s contribution, Lewis assumes that wages are an exogenous parameters, in contrast to the neoclassical story explaining wage differentials through productivity differentials. Unequal exchange, in this perspective, is caused by exogenously fixed wage differentials. While this is certainly closer to the truth than the apologetic neoclassical view on wage determination, this ultimately remains unsatisfying from a Marxist perspective, since the value of labour-power is economically determined as the value of the goods and services necessary to compensate for the wear and tear of labour-power. It can not strictly be treated as thoroughly exogenous.

actly is, how it is generated and in what precise relationship it enters with the compensation mechanism.<sup>6</sup> Marxist dependency theory thus remains unclear on the channels through which this loss operates and consequently offers no model of exchange rate determination.

Contemporary theories of unequal exchange now share the view that exchange rate movements play a key role in the formation of unequal exchange. Indeed, the international division of labour is established of the articulation of “national value spaces” (Astarita 2004, 321). The unity of such systematically differing components of the world economy is defined by the combination of borders and nation-wide productivity and labour remuneration standards. The value space concept thus designates a sociological reality assuming a spatial form (Simmel 1999): that of a territorialised entity forming a coherent whole thanks to a specific mode of regulation of the accumulation regime, that can be describe along the Regulation School lines of the five institutional areas (Boyer et al. 2023), or as exhibiting a distinct pattern of reproduction of capital (Osorio 2014)

. Core and peripheral value spaces are interconnected by unequal value relations, which operate mainly through the mediation of exchange rates of national currencies. These currencies are essentially a form of value and express value as a social relation at the cross-point between national and international values spaces.

In line with the current renewed editorial interest for dependency theory<sup>7</sup>, this article seeks to further revise the articulation between the Marxist theory of dependency and Marxist theories of the exchange rate (Féliz and Pedrazzi 2019). As Marini himself observed, “the positive relationship between the increase in the productive capacity of labour and the greater exploitation of the worker, which becomes severe in the dependent economy, is not exclusive to the latter, but rather is generated by the capitalist mode of production itself” (Marini (1973b) 2008, 95). Clarifying the causes and implications of labour super-exploitation would

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<sup>6</sup>“We have seen that the problem that unequal exchange poses for Latin America is not precisely that of counteracting the transfer of value it implies, but rather that of compensating for a loss of surplus value; and that, unable to prevent this loss at the level of market relations, the dependent economy reacts by compensating for it at the level of domestic production” (Marini (1973c) 2022, 130).

<sup>7</sup>Besides the 2022 English translation of Marini’s *Dialectics of dependency*, see among others (Osorio and Luce 2023; Katz 2022; Sotelo Valencia 2017).



not only strengthen Marxist dependency theory but would also be relevant for general economic analysis.

The remainder is organised as follows: first we briefly review the broad lines of divide of exchange rate theories, the link between unequal exchange and labour super-exploitation and the role of exchange rate as the formal mediation articulating national value spaces characterised by an uneven development of productive forces. Second, we turn to Shaikh's Classical critique of standard trade theory, which will provide a first step-stone for our main objective of articulating exchange rate determination with labour super-exploitation. Third, we critically discuss Shaikh's perspective from the point of view of contemporary unitary understanding of value which stems from what has been called value-form Marxism. Finally, we articulate the insights of unitary theorists such as Carchedi, Astarita and Ricci to offer a more complete understanding of the link between labour super-exploitation, dependency and exchange rate determination.

## 1 Literature Review

### 1.1 Exchange rate theories

As capital accumulation is essentially global but formally national, nominal and real exchange rate dynamics are key articulations of the world economy. Yet, there is no consensus among economists related to the explaining variables, neither across nor within schools of thought. Mainstream authors “have expressed increasing frustration over their failure to explain exchange rate movements” (J. T. Harvey 1996, 567) as “no single model or theory has tested well” (*ibid.*, 567). Similarly, Post-Keynesians are “just as puzzled as are orthodox economists about the fluctuations and volatility of foreign exchange rates” (Lavoie 2022, 533), not the least because one of their major critical contributions to trade theory attempts to switch focus from prices to quantities in understanding trade and capital flows and their fostering or restricting impacts on domestic variables (Thirlwall 1979, 2012). Finally, Marx-

ist economics offers no unified trade theory but a host of competing frameworks that are yet to be systematically reviewed.

While they share a common opposition to the mainstream view of exchange rate, heterodox theories tend to split across a monetary/real divide. Some favour a model of exchange rate determination through “real” (in the sense of non-financial) variables, such as relative real labour productivity and the non-tradable/tradable price ratio (Carchedi 1991; Astarita 2004; Diamand 1972; Shaikh 2016; Ricci 2021b). Others, notably Post-Keynesians and members of the French Convention School (J. T. Harvey 1998; Di Filippo 2011; Orléan 1989, 2008; Bassi, Ramos, and Lang 2023) oppose this perspective as too close to the mainstream view: the “real” variables remind the “fundamentals” of the economy dear to the mainstream. Instead, they highlight the role of financial variables and the consequent relevance of conventions and agents’ expectations they contribute to form. They however restrict their theoretical efforts to the determination of the nominal exchange rate, casting aside the issue of the real exchange rate and its long-term level, and offering no adequate grounds to unify exchange rate theory with trade theory. Both J. T. Harvey (2019) or else Barbosa, Jayme, and Missio (2021) acknowledge the issue and try to bridge the gap. However, their work remain confined within the post-Keynesian school of thought.

In this article we focus on Marxist theories which stand on the real side of the divide. We review Shaikh (1979, 1980)’s seminal work on real exchange rate determination, but also further competing attempts aiming at developing a more complete understanding of this issue. In particular, Carchedi (1991) and Carchedi and Roberts (2021), Astarita (2004, 2010) and (Ricci 2021b) have provided relevant insights. While none explicitly connect their developments with the dependency theory concept of super-exploitation of labour, reviewing their respective views will help to understand where does the heightened exploitation of labour in peripheral countries fit within the framework of Marxist exchange rate theory, thus hopefully shedding light on the ambiguity identified in Marini.

## 1.2 From unequal exchange to super-exploitation

In Marxist dependency theory, unequal exchange is the main mechanism explaining the uneven and combined development of the world economy and its different components<sup>8</sup>. In its bare form, disparities in economic development (i.e., income gap) are based on the reproduction of a productivity gap. As capitals in underdeveloped territories lag in labour productivity, they lose out as value is formed globally. Values appear under the aspect of prices of production, but values and prices are not identical. Hence, although the law of one price implies that similar commodities must have the same international price under the condition of unhindered global competition of capital (Amin 1971), it does not mean that they necessarily have the same value: different magnitudes of nationally determined socially necessary labour are reduced to a single international price of production.

Therefore, less productive capitalist firms in the periphery tend to see part of their capital “disappear” (Féliz 2023) to reappear as greater value in state-of-the-art capitals based in core economies. Capital in the core can appropriate a surplus profit as the labour under its direct command “operates as intensified labour” (Marx (1887) 1996, 323) in the sense that “it creates in equal periods of time greater values than average social labour of the same kind” (*ibid.*, 323). On the contrary, labour in the periphery appears as less intense labour in terms of its ability to create value (Féliz 2023). There, capital suffers from a loss in surplus value which they will attempt to compensate for (Marini [1973c] 2022).

Since for the most part, these firms cannot get a hold of leading technologies, they have to rely on other means to compensate for the value they lose in international trade. Generally, they can use any of these three tactics—increasing labour intensity, extending the working day, and/or compressing real wages—all of which contribute to driving the exchange-value of labour-power below its value (Marini [1973a] 1981)<sup>9</sup>. In other words, peripheral capitals

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<sup>8</sup>The extensive debate relative to competing notions of unequal exchange outside of Marxian dependency theory will not be reviewed here. See however for more (Brolin 2007).

<sup>9</sup>Shaikh calls it “the low road [to international competitiveness] that seeks to depress real wages and shift the burden of adjustment onto the backs of workers.” (Shaikh 2016, 533), as opposed to the “the high road that operates by continuously improving productivity” (*ibid.*, 533), a road barred by the backwardness

exhibit an extra-impulse to drive wages below the monetary income that would be strictly necessary for workers to properly recover (Félic 2024). A dependent economy is an economy in which at least a significant fraction of the whole working class suffers from such super-exploitation (Marini [1973c] 2022). While in core economies there might be some workers in conditions of super-exploitation or low wages (which is not the same), the massiveness of super-exploitation in the peripheries creates the conditions for the transformation of the cycle of capital into a “dependent cycle” (Marini 1979)

In the dependent economy, the pressure to compensate for the so-called international transfer of value operates with force, determining strict limits to the process of accumulation. Hence, super-exploitation configures dependent capitalism not as “precapitalism” (Marini (1973c) 2022, 114) but as a “*sui generis* capitalism” (*ibid.*, 114) whose specific nature “only makes sense if we examine it from the perspective of the system as a whole, both at the national and, mainly, at the international level” (*ibid.*, 114)<sup>10</sup>.

As we have noted in the first paragraphs of the introduction, this does not mean that wages are low because of the existence of super-exploitation (Katz 2019). The low average exchange-value of labour-power in the dependent economy is a product of the reduced capacity to generate international value, which is a consequence of the low relative productivity of dependent capital (Carchedi 1991). Super-exploitation is the consequence of how dependent capitals are forced to operate to remain an active part of the global market. The low productivity of the workers they exploit leads them to produce little international value. Therefore, in the face of global competition, although the tendency is for the return on investment, a dimensionless figure, to equalise across sectors and countries (Shaikh 2016), even so the absolute value of dependent capitals’ profits in international money is lower than that of capitals in core countries (Astarita 2004; Félic and Haro 2019). Super-exploitation thus classically appears as a compensation mechanism to increase the rate of surplus value

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of the peripheral country.

<sup>10</sup>At the same time, and as a complement, capital exploits the gifts of nature in a way that does not take into account its full cost of reproduction. For the sake of parsimony, we will not enter into this debate here. See however Félic (2021).

and therefore the rate of profit expressed in local currency (Osorio Urbina 2018)<sup>11</sup>.

### 1.3 The exchange rate as mediation between national value spaces

Be as it may, however, the process through which this loss of value and its compensating mechanism operate remains unclear. Although the cycle of capital is a global process, it typically occurs in a world of fractured national contours (Holloway 1994). Hence the need for research into the international expression of the law of value through which prices of production translate into actual local prices. Dependency theory recognises that the exchange rate operates as a formal mediation between national economies. Given the existence of value as multiple national capitals and thus multiple monetary forms, the very process of value formation operates necessarily mediated by the nominal exchange rate (NER). It transforms value from its national money form into the international money form and vice versa.

Marx's concept of value-form is the device through which he attempts to explain how heterogeneous concrete labours can be compared and brought down to a common unit. In a given national economy, the intra and the inter-sectorial cases must be distinguished. A sector is defined by the specific use-value which is the outcome of the labour processes of competing firms. Strictly speaking, as they produce the same use-value, labour hours used up in the latter can be directly compared in terms of physical productivity. This is not the case across sectors. Indeed, it makes no sense to assert that, for example, the physical labour productivity in the car sector is greater or lower than the productivity of workers in the green energy sector. However, a socially necessary labour time (SNLT) can be computed as the average of individual labour costs. This concept thus translates quantities of concrete labour into monetary magnitudes and is the intrinsic measure of value, whose substance is abstract labour (Rodríguez-Herrera 2021, 152).

Precisely, according to Marx, SNLT, the intrinsic measure of value, is nationally deter-

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<sup>11</sup>“We have seen that the problem that unequal exchange poses for Latin America is not precisely that of counteracting the transfer of value it implies, but rather that of compensating for a loss of surplus value; and that, unable to prevent this loss at the level of market relations, the dependent economy reacts by compensating for it at the level of domestic production” (Marini (1973c) 2022, 130).

mined: “in every country there is a certain average intensity of labour, below which the labour for the production of a commodity requires more than the socially necessary time, and therefore does not reckon as labour of normal quality” (Marx (1887) 1996, 558). This intrinsic measure of value necessarily expresses itself under the form of an extrinsic measure. Hence, sectors are unified by the use of a common currency that allows sectorial SNLTs to be compared across sectors, thus giving rise to a nationally determined composite SNLT corresponding to a nationally determined monetary equivalent of labour time (MELT). Formally, in a given country :

$$\sigma = \frac{Y}{H} = \frac{pQ}{H} \quad (1)$$

Where  $\sigma$  is the MELT in this country,  $Y$  the value of its net domestic product,  $p$  the price index and  $Q$  the net physical quantity of the composite commodity produced,  $H$  the amount of labour-time performed, measured for instance in hours. The MELT is thus the ratio of the extrinsic measure of value—monetary quantities—and its intrinsic measure—socially necessary labour time.

However, although the determinations of value equally applies on national and international level, they do not do so in the exact same way: in the crucial chapter of *Capital* Volume 1 on the national differences in wages, Marx writes that the “law of value [undergoes] in its international application” (*ibid.*, 559). What is true in the national economy is no longer valid at the level of the world market. Because the latter’s “integral parts are the individual countries” (*ibid.*, 559), one can not speak of an international MELT. On the contrary, as “the average intensity of labour changes from country to country, [these] national averages form a scale, whose unit of measure is the average unit of universal labour” (*ibid.*, 559). Thus, NERs play at the level of the world economy a role similar to that of MELTs within the national economies in which they are respectively defined: NERs are the mechanisms through which the real abstraction of labour operates at the world level.

The exchange rate [...] links **two equivalents of nationally determined social times of labour.** These nationally determined social labour times are based on different levels of productivity, depending on the country. In other words, there are national spaces of value based on unequal development of productive forces (Astarita 2010).

As dependency theory states that the world economy is characterised by widespread unequal exchange, NERs appears as the mediation through which both unequal exchange and its compensation mechanism, super-exploitation, operate. On the one hand, between countries, a nominal loss of international value of the local currency leads to a reduction of the value of domestic production on the international market. This reduces the international purchasing power of local production, widening the appearance of value losses of local capital. In other words, any nominal loss of international value of peripheral countries' currencies implies a market transfer (through prices) of value from the periphery to the core. Through the interplay of NER, the divorce between value creation and value appropriation across countries is increased.

On the second hand, within countries, the NER plays a key role in the distribution of the nationally appropriated value across and within social classes. When the domestic currency loses international value, domestic value appropriation is reduced. Moreover, the redistribution of the latter tends to shift away from labour for two reasons. The combination of pass-through effects between NER and domestic prices and the ensuing devaluation of domestic variable capital measured in international prices (i.e., the exchange-value or the price of labour-power, that is, wages) may translate into the devaluation of domestic variable capital measured in domestic prices. In other words, if the nominal loss of value of the national currency translates into a real loss of value leads to an increase of the exploitation rate of domestic workers.

If, after a nominal loss of value of the national currency, the working class succeeds in restoring the real (and international) value of variable capital through nominal wage

increases, then this nominal loss of value will have no lasting effect on the valorisation and accumulation capacity of local capital. In any case, the movements of the NER would have operated as a mechanism aimed at forcing down the cost of social reproduction of the local labour force. This means that in general terms the articulation between the nominal and real exchange rate will be mediated by the correlation of social forces internal to the dependent economy.

Although the interplay of NER and RER has an impact on the cycle of capital and its characteristics, Marxian dependency theory surprisingly offers no theory of the way super-exploitation is realised through the mediation of exchange rates. We now turn to Marxist theories of exchange rate in order to look for determinants of the exchange rate and attempt to integrate them within the core of Marxist dependency theory. In the next section, we discuss Shaikh's major contribution to Marxist exchange rate theory and how it allows him to question standard trade theory. In the last section we will remove Shaikh's implicit assumption that international trade can be thought as similar in structure as national trade, which we believe leads him to unrealistic conclusions. As previously stated, the law of value undergoes an essential modification when it articulates countries and not simply firms within a given country: this needs to be accounted for.

## **2 The Classical critique of standard trade theory**

In what follows, we define the NER as the amount of monetary units of the peripheral country (considered as domestic) necessary to buy one monetary unit of the core country (considered as foreign). The direct quotation is the standard way to express the NER outside of the Eurozone, the UK and USA. Note that an increase of the NER corresponds to a nominal loss of value of the peripheral country, as more of the domestic currency is needed in order to buy the same amount of foreign currency.

With  $p^*$  and  $p$  respectively the foreign and domestic price index, the real exchange rate



(RER) is thus expressed as:

$$e_r = \frac{ep^*}{p} \quad (2)$$

Similarly, an increase in the RER corresponds to a real loss of value of the domestic currency: it is losing purchasing power relative to foreign currency.

## 2.1 PPP doctrine, Penn effect and Balassa-Samuelson hypothesis

The law of one price states that under the conditions of global competition, a given commodity can not have multiple systematically different prices, since new investment would attempt to take advantage of the breach, leading to its eventual disappearance. The Purchasing Power Parity (PPP) doctrine, originally due to Cassel (1916), attempts to account for this fact on the basis of neoclassical conflation between price and value. As it is well known, the absolute version of the PPP states that long-run RER must be equal to one. Indeed, in the neoclassical framework, each national currency must have the same purchasing power in order for the law of one price to hold. Increases in domestic prices must be compensated through NER adjustments, to allow the ratio between same-currency local and foreign price levels to remain stable. Formally, the absolute version of PPP doctrine states that:

$$ep^* = p \quad (3)$$

The relative version equally assumes that the RER is stable in the long-run, but it can be equal to any given number  $\alpha$ .

$$ep^* = \alpha p \quad (4)$$

It does not predict any absolute level for the RER, domestic price inflation need not be exactly compensated by nominal exchange rate movements. To hold, it only needs that

inflation rate differentials are the main drivers of the nominal exchange rate; Rewriting equation 4 in growth terms, using dotted symbols to represent growth rates, yields:

$$\dot{e} = \dot{p}^* - \dot{p} \quad (5)$$

Unlike the absolute version, the relative version of the PPP doctrine allows for the possibility of permanent obstacles hindering the perfect equalisation of national currencies' purchasing power. For instance, trade barriers could explain why the latter do not tend to equalise but only to move in the same direction. The key assumption here is that the factors preventing the equalisation are of extra-economic nature: they must be policy outcome to protect the PPP doctrine, that is, to prevent the Neoclassical understanding of the law of one price to be rejected.

Attempting to account for the law of one price, the PPP doctrine thus forms the basis of standard theories of exchange rate. It involves a series of questionable assumptions, in particular the idea that the price indexes of every country must be constructed in the same way and apply the same weights which amounts to assuming identical consumption patterns across countries. Further assumptions include the necessity of homogeneous commodities and the assumption of Walrasian perfectly competitive markets.

But the major issues of either absolute or relative versions of PPP doctrine is that both versions perform famously quite bad in empirical tests. In particular, after an exogenous shock, the convergence towards the equilibrium rate is exceedingly too slow to be accounted for by standard theory. Actually, as it takes data spanning over at least a few decades to distinguish between a unit root and a stationary process, mainstream proponent of the PPP doctrine are led to argue that we simply do not have enough perspective to falsify or verify the PPP (Froot and Rogoff 1995). Combined to the fact that the relative version of the theory performs well in some limited cases, namely hyper-inflationary processes (Barro [1984] 1997, 542), this contributes to the non-rejection of the PPP doctrine which remains at the core of traditional standard trade theory. Or, as Dornbusch, Krugman, and Cooper

(1976) would have it : “Under the skin of any international economist lies a deep-seated belief in some variant of the PPP theory of exchange rates.” (Dornbusch, Krugman, and Cooper 1976, 540)

To account for the gap between what appears to be theoretically self-evident—the PPP doctrine—and actual empirical facts, a wide range of models resort to a variety of *ad hoc* explanations of real exchange rate movements: macroeconomic factors; tradable/non-tradable goods prices; real interest rate differentials; portfolio balance effects; pricing behaviour of exporters; terms of trade fluctuations; transportation costs, tariffs, and taxes; and costs of distribution of goods and services (MacDonald and Ricci 2001, 5–7). Efficiently protecting the core assumption of standard trade theory, that is, the PPP doctrine, these models remains partial and contradictory in nature (Shaikh 2016, 525).

One of these annoying empirical facts is the Penn effect (Summers and Heston 1991). This refers to the fact that price index and national income level are positively correlated. Prices are higher in core countries than in the periphery. In other terms, the periphery GDP compared to that of the core appears smaller when measured using NER than when using PPP, as in the periphery, commodity prices measured in international currency are on average below those expected from the PPP doctrine. There is a systematic depreciation of the RER of the periphery compared to the core.

Balassa (1964) and Samuelson (1964) attempted to provide a neoclassical account for the Penn effect. Through a supply-side approach explain this systematic deviation from the PPP doctrine in terms of the non-tradable/tradable price ratio. If productivity differentials between producers of tradable (i.e. goods) and non-tradable goods (i.e. services) in both core and periphery countries are equal, then the PPP doctrine would hold (Astarita 2010, 121–122). However, since relative tradables/non-tradables productivity in core countries tend to be higher than in dependent countries, the ratio of prices of non-tradables/tradables tends to be higher in the former (i.e. in core countries non-tradables tend to be more expensive). In consequence, and to be consistent with equilibrium in the goods market and the balance

of the current account, the real exchange rate in core countries will be higher; in contrast, dependent economies will have a depreciated real exchange rate in comparison with the absolute PPP.

This account for the Penn effect relies on the typically neoclassical hypothesis that labour remuneration depends on labour productivity, an implication of the neoclassical production function. Additionally, as labour markets are assumed homogeneous in a given country, wages are equalised across both sectors. The PPP doctrine holds, but only for tradable goods. Again, the issue is that even this adjusted version of the PPP doctrine empirically fails:

even in the long run, the PPP condition is not satisfied for traded goods. Moreover, other empirical studies found that relative productivity differentials and relative prices of non-tradable goods are of very limited or null significance on the real exchange rate determination. Finally, the crucial assumption of national wage equalisation across tradable and non-tradable sectors does not seem to apply either in the short or in the long run. (Ricci 2021b, 141)

Balassa-Samuelson hypothesis thus fails to explain the Penn effect. However, the associated RER misalignments are consistent with the aforementioned process of super-exploitation of labour in dependent economies. The real depreciation of RER in dependent economies is concomitant with local prices being lower in terms of international currency. Moving to Marxist views on exchange rate determination allows to release an implicit assumption in Balassa-Samuelson and the PPP doctrine. While Neoclassical economics conflate value and price, the value theory of labour of Marxist economics distinguishes between abstract labour (value, intrinsically measured by SNLT) and its form of appearance (prices, extrinsically measured by monetary units). We will show that recovering the full extent of this distinction allows to account for the Penn effect and provide the basis for an articulation between Marxist exchange rate theory and Marxist dependency theory.

## 2.2 From absolute advantages to the real exchange rate through super-exploitation

Combining the PPP doctrine and the comparative advantage notion, standard trade theory asserts that every nation could in principle benefit from free trade and unhinged capital movements. Non-standard trade theory questions this conclusion. There is a consensus across non-standard economic schools of thoughts that absolute advantages are the rule as there is no actual mechanism automatically turning them into Ricardian comparative advantage. Post-Keynesians, Marxists and other heterodox authors alike recognise relative real unit labour costs arising from technological gaps as key determinants of absolute advantage, of the specific structure of global value chains and thus as an essential foundation for non-standard trade theory (Davidson 2015; Milberg and Winkler 2013; Elmslie and Vieira 2002). The main contribution actually comes from a Classical political economy perspective (Shaikh 1979, 1980), leading a well-established Post-Keynesian trade theorist to argue that “for the purposes of international trade theory the commonalities dominate the differences” (Milberg 1994, 210).

In chapter 11 of his 2016 book, Shaikh (2016) synthesises the perspective<sup>12</sup>.

Using what he calls the Smithian decomposition of price (Shaikh 2016, 69), equation 2 of the RER can be rewritten:

$$e_r = e \frac{w^* L^* (1 + m^*)}{w L (1 + m)} \quad (6)$$

With starred subscript designated foreign (core) parameters,  $w$  the average hourly money wage,  $L$  the unit labour time required to produce one unit of output and  $m$  the mark-up applied by capitalists to transform surplus-labour into surplus value, that is, profits and  $e$

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<sup>12</sup>It has tested well in a variety of empirical studies attempting to understand national trade patterns, for instance: Féliz (2011) and Féliz and Sorokin (2008) on Argentina; Ruiz-Napoles (1996) and Martínez Hernández (2010) on Mexico; Shaikh (2002) on Canada; Poulakis and Tsaliki (2022) and Weber and Shaikh (2022) on China; Rania Antonopoulos (1997), Antonopoulos (1999), and Tsaliki, Paraskevopoulou, and Tsoulfidis (2018) on Greece; Shaikh and Antonopoulos (1999) on Japan; Góchez Sevilla and Tablas (2013) on Guatemala; Poulakis and Tsaliki (2023) and Martínez-Hernández (2017) on multiple countries panels.

the NER.

The real hourly wage is given by  $wr = \frac{w}{p_C}$  with  $p_C$  the price index of the consumption goods entering in the workers' consumption basket. Thus, the RER equation can be further modified as:

$$e_r = \frac{wr^*.L^*(1+m^*)}{wr.L(1+m)} \frac{ep_C^*}{p_C} \quad (7)$$

At this point, Shaikh observes on the one hand that the price index of the consumption basket in each country can be expanded as  $p_C = \frac{p_C}{p_T} p_T$  with  $p_T$  the price index of tradable goods. On the other hand, tradable commodities will tend to have the same price in international money, which means that  $\frac{ep_T^*}{p_T} \approx 1$ . Thus, equation 2 is now:

$$e_r \approx \frac{wr^*.L^*(1+m^*)}{wr.L(1+m)} \frac{\frac{p_C^*}{p_T^*}}{\frac{p_C}{p_T}} \quad (8)$$

Finally, Shaikh notes  $\frac{(1+m^*)}{(1+m)}$  can be dispensed with, as it will normally be close to unity:

Suppose there are two sectors in which the integrated profit–wage ratio in the second (0.40) is 100% higher than in the first (0.20). Given the fact that integrated ratios are themselves averages of direct ratios, such a large dispersion is likely to be an exception, not the rule. Nonetheless, even in this case, the “disturbance term” would be equal to  $\frac{1+0.40}{1+0.20} = 1.167$ . This says that even a 100% difference in integrated profit–wage ratios would induce only a 16.7% difference in relative prices from corresponding relative integrated unit labour costs—a *sixfold damping*. (Shaikh 2016, 388)

The ratio of the consumption price index to the tradable price index, which we can now write  $\theta = \frac{p_C}{p_T}$ , is a function of the tradable/non-tradable price ratio which was central to the Balassa-Samuelson hypothesis. Finally, we will also write  $wrL = v$  to designate real unit

labour costs. Hence, the RER equation in the Classical tradition is given by:

$$e_r \approx \frac{v^* \theta^*}{v \theta} \quad (9)$$

Or, in growth terms:

$$\dot{e}_r \approx (\dot{v}^* - \dot{v}) + (\dot{\theta}^* - \dot{\theta}) \quad (10)$$

As the real exchange rate is pinned down by real unit labour costs and the non-tradable/tradable price ratios, “it is not free to adjust in such a way as to eliminate trade imbalances” (Shaikh 2016, 532). Given that prices of production are determined by average profit, the real exchange rate is oriented to satisfy the condition of profit equalisation implicit in the formation of prices of production (i.e. regulating prices). Thus, as long as there is an uneven development of productive forces across countries, and the RER time-series will be trended instead of stationary and persistent trade imbalances will be the rule instead of a temporary exception. In particular, countries who were able to reduce their real unit labour costs are more likely to run a trade surplus, and this is obtained either by pushing down real unit wage  $wr$  or by increasing labour productivity in order to reduce the unit require labour input  $L$ .

### 3 Critical observations on the Classical critique

#### 3.1 Marxian is something else than just Classical

Most issues with Shaikh’s contribution can be brought back to the fact that it is Classical rather than specifically Marxian (Guerrien 2016). A proof of that is his decision to remove what he calls the relative “disturbance term” (Shaikh 2016, 518),  $\frac{(1+m^*)}{(1+m)}$ , in order to reach equation 9. This term is actually the relative profit-wage ratio, from which the profit share  $\pi$  in national product can be obtained (with  $\Pi$  unit profit,  $p$  unit price):

$$\pi = \frac{\Pi}{p} = \frac{m}{(1+m)} \quad (11)$$

The reason why Shaikh does not make this apparent and resort instead to the less explicit expression of “distortion term” has to do with his overall Classical framework which we hold to differ from the proper Marxist one which would be necessary to fully integrate exchange rate and dependency theories.

For instance, he insists in considering that the relevant variables are those of what he calls “regulating capitals”: state-of-art capitals whose unit real labour cost and markup practices set international standards<sup>13</sup>.

This “regulatory capital” specification presents certain theoretical deficiencies. First, this is not Marx’s view on competition but rather the inversion of the Ricardian-Classical account of rent in agriculture: according to Ricardo, the cost of production of the least productive lands set the price of agricultural products; according to Shaikh, the cost of production of the most productive capitals set the price of commodities; according to Marx, value under the form of price of production, that is the average of production costs of all capitals active within a given sector, set the anchor for the market price, either in agriculture or in industry<sup>14</sup>.

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<sup>13</sup>Non-Marxist heterodox trade theorists have no use of this specification. Interestingly Shaikh himself does not. When it comes to empirical tests, he uses actual costs instead of the vertically integrated costs of regulatory capitals. Of course, he is right to state that, first, calculating vertically integrated unit labour costs require a wealth of data to construct input-output tables that are not even readily available across countries and time-period; second, there is no easy way to systematically identify regulating capitals. By the same token, however, the fact that he is able to empirically validate his formula with actual costs is also an indirect indication that the reference to vertically integrated costs of regulatory capitals is unnecessary and could from this point of view be disposed of altogether.

<sup>14</sup>A rather peculiar anchor indeed, since a differential between value and price can be reduced either by price movements or value movements. For instance, new investment entering in a sector with higher-than-average profit would lead to an increase of supply and a convergence of the market price, which had been temporarily higher than its anchor, towards the latter. But Marx also considers the possibility that individual capitals in such a sector could release the pressure on their production costs since they anyway benefit from higher-than-average profits, leading to an increase in the SNLT, that is to the convergence of value, the anchor, towards the market price. Hence, in Marx’s conception of competition, “the price of production is not the center of gravity of the market price in the Classical sense of the term—since the market price revolves around a price of production which itself is modified during the market process” (Tran 2003, 128).



Second, indeed, a logical implication is that for international trade to be possible (and for the terms of trade, in the RER equation, to be written), each country needs to have at least one absolute advantage in some sector, that is, at least one regulatory capital. Shaikh sidelines this issue by stating that between a situation in which the domestic country has all absolute advantage and that in which it is the foreign who owns all regulatory capital, “the intermediate case in equation is in fact the general one, at a concrete level, [the domestic country] will export and import a multitude of commodities in relation to a multitude of trading partners whom we can lump into [foreign country]” (Shaikh 2016, 516). Astarita (2010) is correct to point out the non-satisfactory nature of this explanation, as it assumes what it needs to explain, namely the permanence of international trade despite its structurally unbalanced nature due to non-correcting absolute advantages. Hence, the assumption that every country has regulating capitals in at least one relevant branch is not proven by Shaikh and can be questioned<sup>15</sup>.

Third, it confuses differing levels of abstraction of the construction of Marxist categories: although brief, Marx’ observations on the “international application” of the law of value are located in Vol.1, while capitalist competition belongs to a lower level of abstraction which consequently comes at a later stage, namely Vol.3. In other terms, to account for unequal exchange, it is necessary to dispense with the competition of capitals, as countries are not firms. Failing to do so, Shaikh is brought to predict some sort of inverted Penn effect, according to which the price level is negatively correlated to the income level. This gives rise to the question as to how international trade is maintained if the less productive country have a permanent absolute disadvantage. A first answer is the tradable/non-tradable price ratio which mitigates the absolute disadvantage in equation 9, but it is clearly unsatisfactory to use the Penn effect as a way to correct the denial of the Penn effect. Thus Shaikh resorts to an even lower level of abstraction, namely that of the credit system. Convoking Harrod (1957), he states “international money flows created by unbalanced payments will lower interest

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<sup>15</sup>Taken at face value, Argentina, for example, would only have regulating capitals in the tubular supply chain through its local firm Tenaris.

rates in the trade surplus country and raise them in the deficit one, and this interest rate differential will induce financial capital flows from the former to the latter until payments are in balance” (Shaikh 2016, 520) so that “countries with absolute cost advantages will recycle their trade surpluses as foreign loans while countries with absolute cost disadvantages will cover their trade deficits through foreign borrowing” (*ibid.*, 522).

But then Post-Keynesian such as Harvey are right to assert that it leaves the door open to the full come back of loanable funds theory and money supply exogeneity, as the central bank does not seem to have any sort of control on the interest rate (J. T. Harvey 2019), not even relative, as structuralists Post-Keynesian authors would have, and of course even less so near absolute, as proponents of Horizontalism argue (Baronian 2022). More decisively, Astarita (2010, 152–153) states that external financing of trade deficit has and will encounter its absolute limit, especially in the periphery. As lenders recuperate their loaned capital with interests, both segments of the peripheral country balance of payments will bear an extra-burden, which might mutates into one of these external debt crisis Global South countries are familiar with.

### 3.2 Super-exploitation remains unexplained

Deriving from these general issues, there is a specific one related to our topic. In Shaikh’s framework, the RER articulating the core and the periphery depend first and foremost on the relative real unit labour costs ( $\frac{v^*}{v}$ , the tradable/non-tradable price ratio, which Shaikh sometimes interpret as “relative degrees of openness” (Shaikh 2016, 533), acting as a mitigation factor. The latter term is indeed meant to capture in Shaikh’s framework the Penn effect: if domestic is the peripheral country and foreign the core, then the Penn effect appears in the formula as  $\frac{p_C}{p_T} < \frac{p_C^*}{p_T^*}$ . In Shaikh’s, the Penn effect appears as a side effect, compensating the higher-than-average real unit labour costs of the periphery  $v > v^*$  and mitigating thus mitigating its absolute disadvantage.

The three tactics Marini identified as leading to labour super-exploitation—increasing

labour intensity, extending the working day, and/or compressing real wages—can be seen, somewhat approximately, in this framework, as pertaining to the “low road” of downward pressures on  $wr$ . Indeed, these three tactics should not be confused with increased labour productivity, which would here correspond to a decrease in  $L$ , the unit required labour input.

If real unit labour costs fall in the dependent economy because it is taking the low road to international competitiveness, that is, a decrease in  $wr$  leading to a decrease in  $v$ , all things being equal, the real exchange rate will move accordingly as the competitiveness of capital in this economy improves (Félic and Sorokin 2008; Félic and Pedrazzi 2019). The same cause could impact the tradable/non-tradable price ratio : with real wages  $wr$  falling, the combination of the decrease in  $v$  it implies, on the supply-side, and that of labour’s income, on the demand-side, would seem to imply that domestic non-tradable price index also fall. Indeed, non-tradables are mostly labour-intensive activities such as services widely bought by the workers themselves. This downward pressure on non-tradable prices leads to a fall in  $p_C$ , thus in  $\theta$ .

Consequently, the RER would increase, which here, as we expressed in 2 the RER using the direct quotation, implies a loss of relative purchasing power of domestic currency. This result would obtain just the same if, instead of the low road, the high road to international competitiveness could have been explored. Thus, in Shaikh’s, intensity and productivity are not the related but essentially different economic phenomena that they are normally in Marxist political economy, which Emmanuel (1972a) adequately summarises as: “more intense labour produces more use values and more value; more productive labour produces more use values but the same value” (*ibid.*, 151). In Shaikh’s, the distinction is made but remains strictly formal as both phenomena lead to the same result: the “competitive depreciation of [the] currency” (Shaikh 2016, 533) of the country whose competitiveness is increased by any of these two symmetric means.

What about a nominal devaluation decided by the authorities? According to direct quotation, this corresponds to an increase in  $e$  (more units of domestic currency are needed

to buy one unit of foreign currency). From equation 9, it is apparent that for the devaluation to be persistent and have an impact on trade deficits, it needs to affect “the real unit costs (via the real wage) and/or the nontradable–tradable price ratio of consumer goods” (Shaikh 2016, 533). Ultimately, it thus depends on the capacity of workers to resist to the degradation of their living conditions.

This is in fact the consequence of a key assumption in Shaikh’s framework. Contrary to the standard theory, the unique point of convergence is not the Neoclassical interpretation of the law of price (i.e. equation 3 or 4). Rather, each country has its own center of gravity, its real unit labour costs, depending on the technological gap, on the one hand, and on the other. Thus, if Shaikh is brought to consider that the outcome of currency devaluation depends on social struggle, it is because he portrays the ultimate determinants of the RER as fully extra-economic in nature.

But this outcome is not well-suited for Marxist dependency theory, since the goal of Marini’s conceptualisation of dependent capitalism was precisely to avoid the temptation to explain the political domination of the core over the periphery through resorting to extra-economic factors <sup>16</sup>. This leads him to suggest that in the case of a nominal devaluation,

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<sup>16</sup>While it may appear at first glance coherent with Marx’ own assumptions, as he indeed speak of the “historical and moral element” (Marx (1887) 1996, 181) that enters into the determination of the value of labour power, this does not mean that Marx considers that the real wage is wholly exogenously fixed. As Saito (2017) notes, to conduct his peculiar analysis of economic form, Marx needs at first to “excludes use value from the object of political economy, treating it simply as something given, in order to systematically develop the pure economic categories, such as ‘commodity’, ‘value’, ‘money’, and ‘capital’ [but his] project does not end there, however, and his analysis proceeds to ask to what extent ‘presupposed matter’ is modified by economic forms, and to what extent it still retains its own independence in reality.” (*ibid.*, 91). This peculiar form of reasoning is meant to allow him to understand how capital affects the material dimensions of the world which however, by remaining up to a certain point external to it, confront it with various limitations. A similar point was also made by Duménil (1978, 44) which distinguishes between internal necessary relationships, the object of the laws of political economy, and the external contingent relationships such as the historical and moral element of the value of labour-power, which does not contradict the law but are instead mirrored into the concept. Indeed, whatever the precise content of this historical and moral elements, Marx himself immediately qualifies his statement and writes that “nevertheless, in a given country, at a given period, the average quantity of the means of subsistence necessary for the labourer is practically known” (Marx (1887) 1996, 181). In other words, although there is something specific with labour-power as use-value, as value it is determined exactly in the same way as other commodities: its value is the socially necessary labour time required to correctly reproduce it, which is an economic necessary determination and not an extra-economic one. This is why, contrary to what heterodox monetary theorists sometimes assume (see for instance Cartelier (2018), labour-power is strictly speaking not a commodity but its appearance as one is not a mere illusion: it is a real appearance whose implications require to be accounted for, not merely

wages would tend to adjust to recover their real value (and thus, relative unit labour costs would not change). However, such an assumption is not warranted, is more Classical in spirit than Marxian (Ferroni 2019) and is especially inadequate when it comes to conceptualise the specificity of the cycle of dependent capital. Indeed, in the latter, exchange rate movements are integral to the reproduction of capital (Féliz and Haro 2019).

Thus, if one postulates that there is super-exploitation, Shaikh's Classical framework provides a first explanation of why in dependent economies RER must be more devalued than expected by the PPP approach: on the one hand, super-exploitation implies downward pressure on real wages in a dependent economy, which causes the RER to depreciate, no matter what the current account result might be; on the other hand, as living standards are lower than in core countries due to super-exploitation of labour, RER will structurally be more depreciated than expected by PPP. However, Shaikh's framework is unable to explain how super-exploitation comes about and how it actually works its way through exchange rate movements: super-exploitation remains exogenous in nature, and explained by extra-economic forces social struggle<sup>17</sup>. Our argument is that it is so because: labour productivity and labour intensity are only formally but not really differentiated; this implies that core and periphery concepts do not really enter Shaikh's contribution; this explains why he reduces the Penn effect to a mere mitigation factor of otherwise nationally and extra-economically determined real unit labour costs; finally, this all boils down to the fact that Shaikh does not make any difference between national trade and international trade, thus does not make any case for the essential modification the law of value goes through "in its international application" (Marx (1887) 1996, 559). Indeed, he writes that:

Just as in the case of competition within a country, in which an industry with relatively falling costs will be able to lower prices, so too in international com-

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disposed of (Bellofiore 2018).

<sup>17</sup>One could further add that it sounds strange to postulate the wholly extra-economic nature of social struggle as Shaikh is implicitly assuming when positing real unit labour cost as exogenous. It somehow contradicts a key point he is making in an earlier part of his book: against theories reducing the firm to a production function, he instead puts forward a vision based on the concept of production relationship (see chapter 4 in Shaikh (2016)).

petition will a country's export prices fall relatively, in common currency, when the corresponding relative real costs of production fall. It should be added that just as a cost-based decline in a commodity price is very different from the fall in its price due to distress in the industry, so too is the competitive depreciation of a currency quite distinct from its depreciation in a crisis. (Shaikh 2016, 533)

As Ricci (2021b) observes, reiterating a similar point made by Astarita (2010) before him, this confusion between national and international trade leads him to the paradoxical conclusion that a country whose competitiveness is increasing should see its currency loses international purchasing power. But this is precisely the contrary to what is actually the case as per the Penn effect: core countries have a stronger currency in real terms than the periphery <sup>18</sup>.

## **4 Exchange rate dynamics as the form of dependency**

### **4.1 Accounting for the Penn effect requires a unitary understanding of value**

Shaikh's approach explains why a lower wage rate might lead to a depreciated real exchange rate in a dependent economy. However, Shaikh's framework does not give a proper explanation of why dependent economies would in general have lower wages and depreciated currencies. In other words, it is thus able to partially assess some of the implications super-exploitation has for the cycle of dependent capital. His theory can be used to understand Marini's observation that labour super-exploitation is the foundation of dependency.

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<sup>18</sup>For instance: "Furthermore, since an improvement in competitiveness is associated with real currency depreciation, the classical approach involves a negative relation between labour productivity and economic efficiency, on the one hand, and domestic price level, on the other, and not the positive one showed by the 'Penn effect'" (Ricci 2021b, 142). And: "Now, if the real exchange rate is fixed according to the prices of the commodities in the production of which the capital of the lagging country is competitive, the real exchange rate will be overvalued [...]. The currency of [the lagging country] will be appreciated relative to the levels determined by purchasing power parity, as usually calculated (i.e. as the ratio of the prices of baskets of commodities)" (Astarita 2010, 156).

However, it fails short at economically explaining how super-exploitation comes about. It does not allow to combine Marini's internalism with his economic explanation of unequal exchange.

Guglielmo Carchedi, Rolando Astarita and Andrea Ricci have provided complementary accounts that move us a step closer to a more integral explanation. Their common basis is to ground their argument in the framework of one of the outcome of the Marxist value-form debate: the so-called unitary understanding of value. This sets them apart from Shaikh, who, while critical of Neo-Ricardianism, keeps holding on to the dualist understanding of value the latter have rejected as redundant (Steedman [1977] 1985).

Dualism holds that price and value refer to two separate measurement systems having each a distinctive measurement unit, here money, there (labour) hours. It fails to overcome both neo-Ricardian redundancy critique (*ibid.*) and monetary institutionalist judgement according to which value and money are incompatible (Orléan 2011). Unitary interpretation instead asserts that there is no pre-monetary existence of value. Value is the social form in which labour appears under capitalism. Labour as value appears as prices, thus as money. This means that money is not just abstract labour, but abstract labour exists in the form of money. According to unitary interpretation of value, the so-called transformation problem is an issue only for Classical readings of Marx, of which Shaikh's account and neo-Ricardian accounts are two competing instances, both disregarding the value-form concept and consequently offering an under-developed monetary theory.

The unitary interpretation clarifies vital concepts. As living labour hours expended in production during a given time-period, say a year, is the sole source of value added, then  $H$  is proportional to net domestic product  $NDP = Y$ . This is the MELT equation 1. With  $W$  the total wage bill, the exchange-value of labour-power measured in abstract labour hours (that is,  $NL$  for necessary labour) is simply:

$$NL = V = \frac{W}{\sigma} \tag{12}$$

With  $\Pi$  the total profits measured in monetary unit, this in turn implies that total surplus-value  $S$  measured in abstract labour hours (that is,  $SL$  for surplus labour) is simply:

$$SL = S = \frac{\Pi}{\sigma} \quad (13)$$

Finally, if no distinction is made between productive and unproductive labour, the exploitation rate  $s$  is simply the ratio of the profit ( $\pi$ ) and wage shares ( $\omega$ ) in net domestic product:

$$s = \frac{\pi}{\omega} \quad (14)$$

Carchedi has a long-standing interest in extending Marxist theory to international trade, which he deems necessary to account for imperialist relations of dependence waged upon peripheral countries by the major powers. He put forward in several articles, especially in his 1991 book, a theory of the nominal exchange rate (Carchedi 1991). The latter resembles much to Shaikh's inasmuch both theories identify "real" factors such as relative labour productivity as a major factor driving exchange rates. Labour productivity is here understood as the outcome of capital-enhancing and labour-saving investment: low productivity comes with low organic composition of capital, that is, with low national product/capital stock ratio<sup>19</sup>. Carchedi attempts to explain how value is transferred from capitals with low productivity and low organic composition (i.e. periphery) towards high productivity/high organic composition

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<sup>19</sup>This translation derives from the unitary interpretation of value which asserts that organic composition is approximated by the value of fixed capital stock and net domestic product. This because is  $\frac{C}{H}$ , with  $C$  constant capital involved in production measured in abstract labour hours and  $H$  total numbers of hours worked in a given country during a given period of time (using our previous symbols,  $L$  being the unit labour time necessary to produce one unit of output and  $Q$  being net output in real terms, then  $L = \frac{H}{Q}$ ). Contrary to a common mistake in the literature, organic composition is thus not  $\frac{C}{V}$ , which is the value composition, a fact recognised by Gill (2010) and Zarembka (2021). On the one hand, as the price of constant capital is treated as its value by capitalists book-keepers (Rodríguez-Herrera 2021; Bryer 2017) and as fixed capital is by virtue of capitalist development itself far greater than circulating constant capital, the stock of fixed capital  $K$  approximates constant capital:  $K = \sigma.C$ . On the other hand, if this given time-period is the year, then  $H = \sigma.Y$ . The proportion factor  $\sigma$  is what is called, in the unitary interpretation of value, the monetary equivalent of labour time (MELT). So the organic composition of capital  $\frac{C}{V+S} = \frac{C}{H}$  can be approximated by  $\frac{K}{Y}$ .



capitals (i.e. core) in each branch. Since core countries tend to concentrate core, they will benefit from a value transfer from dependent countries. As capitals in a core nation increase their relative productivity, the transfer of value from peripheral territories to core territories will increase. This transfer of value would be the driver of an appreciation of the core country's currency. Hence, productivity gains lead to a country's currency appreciation (i.e., reducing the dollar's price in terms of domestic currency), and not, like in Shaikh, to currency depreciation.

The main reason of this difference is that Carchedi allows for international trade to be not only formally but also essentially different from national trade. Unlike competing firms within a country, each country has its own regulations of the labour-market. Taking into account the interplay between the five main institutional areas allows to differentiate between varieties of capitalism yielding country-specific productivity, intensity and labour remuneration standards follow (Amable 2009). Thus, as in subsection 1.3, each country has its own MELT <sup>20</sup>.

Thus, although, unlike Shaikh's, his framework is coherent with the Penn effect, there is however a number of issues with Carchedi's proposal, which explain why we do not present it in its full extent. First, he differs from Shaikh's idea that international prices of production are determined by the production cost of regulatory capital, but he only substitutes the notion of "modal capital" to the regulatory capital concept. Hence, the international price of production of traded commodities would correspond to the cost of production of the modal capital, i.e. that of the capital producing the bulk of commodities in the branch. While this is less Ricardian than Shaikh, it is however not Marx' own definition of value as social in essence. Price of production (social values) is simply the average of the cost of production

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<sup>20</sup>For a supranational currency to correspond to a unified MELT, a convergence of the productive structures of its components would appear necessary, and more generally of its institutional setup. It could be possible to speculate that part of the issues the Eurozone is facing as a monetary union comes from the fact that there is an extrinsic measure of value—the euro—corresponding with a variety of systematically differing intrinsic measurement—the nationally determined MELTs. This would imply conceptualising the Eurozone less as a common currency zone and much more as a fixed nominal exchange rate zone, where all the burden of adjustments across countries is transferred into prices.

(individual values) of all firms involved in a given sector under condition of full adequation of the productive structure to the expressed social needs<sup>21</sup>. Hence, as an average, it is no more identify to the individual value of modal capital than it is to that of regulatory capital. The issue may appear small, but this leads Carchedi to introduce unexplained arbitrary concepts such as the “distributional ratio” (Carchedi 1991, 245) required to bring back value realisation in line with value production. Under a unitary understanding of value, there can’t be any breach between these two quantities at the aggregate level, which are by definition logically identical: since money is but a fetish form of labour, there is not other source for value realisation than labour exploitation.

Second, precisely, another interrelated issue is that Carchedi also confuses levels of abstraction: he attempts to explain the NER and connect it to unequal exchange using concepts pertaining to capitalist competition (Vol.3 of *Capital*). To avoid confusing statement, this should however be done at the level of capital as a whole (Vol.1 of *Capital*)<sup>22</sup>.

Adding this confusion of abstraction levels to the unitary interpretation of value leads him to entertain a phlogistic understanding of unequal exchange (Cleaver 2000). The latter would correspond to actual transfers of monetary quantities from periphery to the core, as opposed to losses, that can only be measured against the counter-factual of a world without uneven development of productive forces across countries. In other words, starting by defining value as individual<sup>23</sup> instead of social, he arrives at a conception of value as a thing that can be moved around. Instead, as an objectified relationship between producers, value is social from the start (Féliz 2023). If so, then the transfer of value in the process of value formation (i.e. formation of prices of production) can only be a metaphorical expression for the process of value positing, that is, of making the product of abstract labour.

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<sup>21</sup>This latter condition simply means that the sector is earning the average rate of profit.

<sup>22</sup>Another issue is that he assumed without justifying it that monetary authorities control the monetary mass through the monetary base, thus entertaining some sort of exogeneity of money supply when money is of no intrinsic value, reflecting echos of past discussions among Marxist monetary theorists (Carchedi 1991, 166). For a major contribution to this debate which avoids resurrecting the quantitative theory of money under Marxist disguise, see De Brunhoff (1973).

<sup>23</sup>Identifying it as the cost of production of the majority of individuals, modal capitals, does not fundamentally alter the definition.

## 4.2 The Penn effect as the measurable expression of unequal exchange

We thus need to move to Rolando Astarita who argues against Carchedi's understanding of unequal exchange. Attempting to account for dependency and under-development without resorting to this latter category, he develops his theory of the nominal exchange rate in several works (Astarita 2004, 2010). In particular, he elaborates a Marxist explanation of the Penn effect through the introduction of the "value space" concept. Although he rejects Carchedi's understanding of unequal exchange, he sides with him when it comes to the conceptualisation of the international division of labour. Contrary to Shaikh, he allows for the essential modification the "law of value [undergoes] in its international application" (Marx (1887) 1996, 559). As a consequences, while the model of the determination of the exchange rate he expounds take as argument relative real labour productivity just as in Shaikh, the prediction goes in the opposite direction: an above-than-average productive country will face appreciation of its currency, not depreciation.

The difference with Carchedi is his value space concept . Built upon the spatial dimension of capitalist accumulation highlighted by radical geographers such as David D. Harvey ([1982] 2018), it accounts for the divorce between the scales of value creation (national GDPs measured in PPP exchange rates) and value realisation (national GDPs measured in nominal exchange rates) as a real appearance that needs to be theoretically accounted for. This divorce takes the form of the Penn effect. On the contrary, in a sense, Carchedi was recognizing the latter affect only to immediately dispose of it through his arbitrary notion of "distribution factor".

According to Astarita, what is at stake is that, instead of reducing them, exchange rate movements reproduce the quantitative inequalities between national labour expressing qualitative differences in productive structures. As value is social, commodities produced by low-productivity firms cannot create more value than those produced in high-productivity ones. Thus, there cannot be a "value transfer" from periphery to core (Astarita 2004, 324)

as there is nothing to transfer <sup>24</sup>. In this sense, unequal exchange expresses as real exchange rate movement which increases the international purchasing power of core currencies in line with their higher-than-average productivity. Unequal exchange thus makes labour in core countries appears as “intensified labour” (Astarita 2004, 324) while labour in the periphery stands as less intense labour. This is precisely what Marx states when referring to the international application of the law of value: contrary to what happens in a given country, “on the world market the more productive national labour reckons also as the more intense, so long as the more productive nation is not compelled by competition to lower the selling price of its commodities to the level of their value” (Marx (1887) 1996, 559).

Carchedi’s interpretation of unequal exchange as actual value transfers leads to the statement that workers in core countries live off labour produced in dependent economies. In this sense, the former exploits the latter, as Emmanuel suggested in his seminal work (Emmanuel 1972b). On the contrary, Astarita allows us to understand how commodities produced in the periphery are the result of labour that appears as “less intense”. For these commodities to be sold in the global markets, the NER needs to account for this differential in productivity, because this cannot occur through an actual transfer of value. As labour is being posited as value in different national value spaces, the periphery currency needs to appear depreciated in comparison with the expected PPP level. The Penn effect is the observable manifestation of unequal exchange, which is a loss of value instead of a value transfer. Global South losses can be measured against a counter-factual: that of ruling international prices if uneven development was extinguished (Hickel, Sullivan, and Zoomkawala 2021) <sup>25</sup> .

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<sup>24</sup>Thus, the so-called ecologically unequal exchange is somewhat of a misnomer since biophysical resources are actually transferred along global value chains. An integration of this understanding of unequal exchange in ecological economics might prove to be fruitful as the question of the causes of ecologically unequal exchange remains unclear (see however Olk (2024) for a related attempt).

<sup>25</sup>In particular, it means that unequal exchange is unrelated to imperfect competition (Emmanuel) and/or double factorial terms of trade. It is entirely related to the duality of measures of value and the essential modifications that the law of value undergoes on the international level, which implies that more productive labour appears as more intense labour while it really is not : hence, more productive labour is labour that attract more international price than it provides of international value (whereas more intense is more price, and more value).

### 4.3 From unequal exchange to super-exploitation through the exchange rate

A renowned scholar of unequal exchange, Andrea Ricci synthesises his views in a recent book (Ricci 2021b). While acknowledging Shaikh’s crucial contribution to the development of non-standard trade theory, he expands further on the critiques by Carchedi and Astarita of Shaikh’s sidelining of monetary phenomena. Like the previous three authors, relative real labour productivity are key to his framework which, like the last two of them predicts the appreciation of the currencies of more productive economies. Finally, along with Astarita, he rejects the idea that unequal exchange implies actual value transfers and assumes the Penn effect as the observable manifestation of unequal exchange. The main difference with Astarita is merely formal: while not citing him, the structure of his theory is virtually identical.

In what follows, we summarise Ricci (2021b) development in chapter 5 of his 2021 book. Let’s assume that both the core and the periphery produce the same composite commodity  $Q$ . Here, because we assume free mobility of capitals, the law of one price for the composite commodity can be written as:

$$ep^*L^* = pL \tag{15}$$

$L$  and  $L^*$  represent each one unit of the composite commodity in physical terms. However, in value terms,  $L = \frac{H}{Q}$  and  $L^* = \frac{H^*}{Q^*}$  are the quantity of labour necessary to produce one unit of the composite commodity respectively in the periphery and in the core. This intrinsic measure of value, abstract labour, is nationally determined, and logically expresses in a given nationally based currency, the extrinsic measure of value, here the price indexes  $p$  and  $p^*$ . Because Marxist economics has a dual measure of value, the law of one price is different from the PPP doctrine of Neoclassical economics which only uses the market price category <sup>26</sup>.

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<sup>26</sup>See for instance: “The international price equivalence of the two composite commodities does not imply that the respective national unit values are also identical, as the neoclassical theory postulates. The

The law of one price is not a seriously contested issue across theoretical schools, his interpretation is. Rogoff holds that it is the “basic building block for any variation of purchasing power parity” (Rogoff 1996, 649). Keynes and his followers deem it a “truism” the idea that foreign traded goods tend to have equal prices (Keynes [1936] 2013, 77–78). Shaikh’s framework begins with the assertion that similar commodities must tend to have the same price regardless of the currencies in which their prices are set when they are internationally traded, what he calls the “law of correlated prices” (Shaikh 2016, 261).

However, Ricci’s formulation make the issue explicit, while Shaikh, owing to his dualist understanding of value, does not. This is also why the real exchange rate equation Ricci reaches is exactly the reverse than that of Shaikh (equation 9). From the previous equation it indeed follows that:

$$e_r = \frac{ep^*}{p} = \frac{L}{L^*} \quad (16)$$

The exchange rate level that should the case if PPP would hold, that is, if there were no Penn effect, no divorce between value creation and value realisation, is:

$$e_p = \frac{p}{p^*} \quad (17)$$

Thus, with  $\phi = \frac{Q}{H}$  the real labour productivity in the periphery, it can finally be rewritten:

$$e = \frac{\phi^*}{\phi} e_p \quad (18)$$

Finally, from equation 1 it follows that the MELTs of each country expressed in the currency of the core are respectively:  $\sigma = \frac{eY}{H} = ep\phi$  for the periphery and  $\sigma^* = \frac{Y^*}{H^*} = p^*\phi^*$  for the core. Hence the law of one price equation 15 can be rewritten:

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equivalence of commodities in the sphere of circulation, which is expressed by the same international market price, does not mean that they are also equivalent in the sphere of national production” (Ricci 2021b, 167).

$$\frac{\sigma^*}{\phi^*}L^* = \frac{\sigma}{\phi}L \quad (19)$$

From a physical point of view  $L = L^*$  as they both represent one physical unit of the composite commodity. Hence, equation can be rewritten as:

$$e = \frac{\sigma^*}{\sigma}e_p \quad (20)$$

As Ricci summarises:

1. for each country, the algorithm of value determines a relationship of equivalence between the national unit price and unit value of commodities;
2. the perfectly competitive world market determines that the price of commodities expressed in a common currency is identical;
3. if labour productivity is different in the two countries, the national unit prices will be equivalent to different quantities of universal labour;
4. in order to guarantee the same international price of the commodity, the nominal exchange rate must differ from that of PPP.

Therefore, far from being an exception or an oddity, on the basis of the international law of value, the “Penn effect” is the product of the ordinary functioning of the world market in a regime of free competition in the presence of different labour productivities between countries. (Ricci 2021b, 168)

The causal sequence can be rendered as follows Let us start from a situation where NER are equal to there PPP level. As per equation 4.3, it implies an even development of productive forces since  $\phi = \phi^*$ . Suppose that the core somehow obtain a technological advance. The trade surplus it triggers along with the inflows of new capitals looking to take advantage of the higher-than-average profit rate obtained in the core both put pressure either on the nominal exchange rate and/or on the core price index, depending on the

specific exchange rate arrangement (fixed, flexible, floating etc). The result is at least a real appreciation of the core's currency and maybe also a nominal appreciation if the nominal exchange rate is either floating or flexible.

Unlike in Shaikh, where the real exchange rate was adjusting to exogenously fixed real unit labour costs, it reacts instead to the differential between nationally determined value of the traded commodities and international ruling price. In other words, what is fixed is the latter, and real exchange rate move to compensate for labour productivity gap. The anchor is not national, it is international. The distinctive feature of this account is two-fold: unlike standard trade theory, when real exchange rate adjustments succeed in restoring current account equilibrium, this price equilibrium does not correspond to a value equilibrium; this is because, unlike Shaikh, the condition for persistent international trade is that the periphery must accept structurally unfavourable terms of trade. If international trade is not permanently on the verge of collapsing, it is precisely because of unequal exchange. Exchange rates do balance something, namely current accounts. What they do not necessarily do, something which is already in Shaikh but only clearly worked out in Ricci and Astarita, is balancing the terms of trade. In fact, the possibility for countries with uneven development of productive forces to trade is that real exchange rate adjust to permanently freeze labour productivity gaps. Free trade is necessarily unequal trade <sup>27</sup>.

The measure of unequal exchange is what has been otherwise called the Exchange Rate Deviation Index (ERDI) (Köhler and Tausch 2002). While this measure had been used by

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<sup>27</sup>For instance: “the real exchange rate adjustment required for trade balance equilibrium may be of a different magnitude from that required for terms of trade equilibrium. [...] In the absence of factors preventing adjustment on the money and exchange markets, such as the unique role of the dollar as the international reserve currency, in the long run, the real exchange rate will tend to move in the direction of restoring the equilibrium of the trade balance. By contrast, no automatic trend towards rebalancing the terms of trade exists in real and financial world markets. In this second case, only the narrowing of the gaps in economic development between countries can be effective in reducing unfavourable terms of trade and unequal exchange” (Ricci 2021a, 156). Or else: “Even in the case where the competitive exchange rate is equal to the purchasing power parity exchange rate [in the condition of productivity differentials], there is no equilibrium in a deep sense, from the labour-value perspective. It is that [the periphery]’s hour of labour generates value equivalent to only half an hour of labour of [the core]. Therefore, if [the periphery] must import the means of production from [the core], and for that he needs to export [goods] to [the core], it will have to use more labour time against less labour time” (Astarita 2010, 126).



a variety of heterodox authors, not restricted to Marxists, Carchedi and Roberts (2021) observe that this empirical indicator was not theoretically justified. Ricci-Astarita theory fill in this gap. The ERDI (for instance here of the periphery) was empirically measured as the ratio of net domestic product in PPP terms over net domestic product in NER terms:

$$ERDI = \frac{Y_{PPP}}{Y_{NER}} \quad (21)$$

Ricci-Astarita show that it is theoretically explained by labour productivity differentials:

$$ERDI = \frac{\phi^*}{\phi} \quad (22)$$

ERDI can be used to assess the size of unequal exchange: in the periphery, ERDI will be higher than one while the reverse would be true for core countries. Hence, with  $X$  the exports from the periphery to the core, the value loss through unequal exchange ( $UE$ ) by the periphery is:

$$UE = \frac{ERDI}{ERDI^*} X - X \quad (23)$$

This is “the value of commodities that the South transfers uncompensated to the North in terms of the Northern price level” (Hickel, Sullivan, and Zoomkawala 2021, 4). Hence, the chosen counter-factual here is the situation that would prevail if, given an world-wide equalisation of productive structure, the ensuring price level was given by the current Northern price level. The interesting point is that as unequal exchange is understood as value loss rather than value transfers, several counter-factual can be constructed<sup>28</sup>. The extra-resources the core save in not paying the full theoretical price for periphery’s exports feed into its geopolitical power. We are back to Marini’s thesis that political domination must be economically founded.

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<sup>28</sup>See Hickel, Sullivan, and Zoomkawala (2021) for a comparison.

# Conclusion

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