Marx's Equalized Rate of Exploitation

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WORKING PAPER 2021-01

DEPARTMENT OF ECONOMICS

UNIVERSITY OF MASSACHUSETTS BOSTON

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April 16, 2021

Abstract

Marx assumes a uniform rate of exploitation throughout *Capital*, yet the theoretical basis for this assumption and its role in his theory of value are not well understood in the existing literature. This paper shows that Marx assumed a tendentially equalized rate of exploitation to be the outcome of labor mobility, and that he viewed this as a general tendency of capitalist economies. Marx draws extensively on Adam Smith to support his views on labor mobility and the equalized rate of exploitation. The close connection between Smith and Marx on notions of labor mobility is examined here. Understanding the role of labor mobility and the equalized rate of exploitation in Marx's work holds implications for contemporary approaches to classical-Marxian price and value theory and supports the view that Marx's theory of value is, in the most general sense, a theory of the allocation of social labor.

Keywords: Adam Smith; Karl Marx; Labor Mobility; Long-Period Method; Rate of Exploitation.

JEL Classification Codes: B14, B24, B51, C67, D46, D51.

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*The author thanks Duncan Foley for invaluable comments and feedback on earlier versions of this article, and for discussions of the topics contained within. Thanks are also owed to Deepankar Basu, Ramaa Vasudevan, Roberto Veneziani, and Naoki Yoshihara.

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1 Introduction

In *Capital* Marx presents the "rate of exploitation", or "rate of surplus value", as an indicator of the degree to which workers are exploited by capitalists (Marx 1976, p.326). Marx's concept of exploitation, in the simplest intuitive sense, rests on the notion that, under capitalist social relations, workers are made to labor for longer than is necessary to meet their needs of social reproduction, and they are not compensated for this additional labor. This extra, uncompensated labor performed means that exploitation exists. The rate of exploitation, in the most general sense, captures how much extra labor workers perform relative to what they require for their social reproduction. Throughout *Capital* Marx assumes that the rate of exploitation is uniform across workers. In volume three of *Capital* he explains how this uniform, or general, rate of exploitation forms as the outcome of labor mobility and competition among workers (Marx 1981, p.275). According to Marx, the equalization of rates of exploitation is tendential and should be viewed as a general tendency of capitalist economies, or to use Marx's terminology, an "economic law" (Marx 1981, p.275).

Marx's equalized rate of exploitation—hereafter abbreviated as EQRE—has received uneven treatment in the literature following the original publication of *Capital*. In many cases Marx's reasons for the EQRE his supporting arguments for it are not clearly understood or accurately captured. This is particularly so in the recent debates around Marx's theory of value and the "transformation problem", where the EQRE is often viewed—arguably incorrectly—as unnecessary or implausible. Marx's treatment of the EQRE as a general tendency raises two primary, and related, questions: (1) if Marx viewed the EQRE as a general tendency, similar to the equalization of the profit rate, how is it not more prominent in the Marxian literature, particularly given the implications it bears for a classical-Marxian understanding of labor mobility; and, more importantly, (2) what implications does accepting Marx's EQRE hold for interpretations of his work, especially Marx's theory of value?

Answering these questions requires a careful look at how Marx's EQRE is received in the existing literature, and unpacking Marx's own rationale for the EQRE. Mention of Marx's EQRE in recent contributions is scarce relative to the broader literature on Marxian economics. A recent discussion between Duménil, Foley, and Lévy (2009) and Rieu (2008, 2009) addresses the formal conditions necessary for the EQRE and empirical issues in estimating rates of exploitation. Earlier contributions by Baumol (1974), Morishima and Seton (1961), Robinson (1950), Samuelson (1957, 1970, 1971, 1974), and Seton (1957) in the transformation problem debates mention Marx's EQRE explicitly, but do not fully address the matter of how and why Marx arrived at the EQRE, or its role in his work.

An understanding of how Marx arrived at the EQRE and why he viewed it as important can be achieved through a close examination of volume three of *Capital* and situating the EQRE within Marx's long-period method (LPM) and by adopting the definitions of the 'New Interpretation' (NI) of Marx (Duménil 1980, 1984; Foley 1982, 1986; Mohun 1994, 2004). If one reads Marx and his classical predecessors, particularly Smith (2000) and Ricardo (1951), as employing a long-period method (Foley 2011b; Garegnani 1970, 1976, 1984; Kurz and Salvadori 1995), it can be shown that Marx's views on the EQRE and its elevation to the level of an economic law flow naturally from the abstract assumptions of his LPM and, particularly, his reading of Smith's *The Wealth of Nations*. Recognizing the importance Marx places on the EQRE holds implications for a classical-Marxian theory of labor mobility, Marx's theory of value as a theory of the allocation of social labor, and conceptualizations of labor values.

The EQRE plays an important role in how Marx approaches the transformation of labor values into prices of production and parts of the literature on the transformation problem are one of the few dialogues in which the EQRE is mentioned. However, it is not the aim of this article to present yet another interpretation of the transformation problem, nor is it the aim to attempt to resolve the lengthy debates around the transformation and the questions of coherence around Marx's theory of value.[1] The salient detail taken from Marx's own presentation of the transformation of values into prices of production for current purposes is that surplus value can be produced in one part of the economy—either sectors or industries—and be realized as profit and/or revenue in very different parts of the economy.[2] The separation between surplus value production and realization implies that rates of exploitation can differ when measured at the point where surplus value is produced and where it is realized. Thus, articulating which rates of exploitation Marx thought would equalize through labor mobility, and the significance for his theoretical framework, can help to frame new questions about the place and role of the rate of exploitation and labor mobility in Marx's theory of value.

The remainder of the article is structured as follows. Section 2 briefly summarizes the treatment of Marx's EQRE in the existing literature. Section 3 establishes terms and definitions used throughout the analysis and discussion in sections 4-6. Section 4 presents the LPM of Marx to elucidate Marx's EQRE and its elevation to the level of an economic law, section 5 closely examines the roots of Marx's EQRE in the work of Smith, and section 6 discusses the implications of the EQRE for understanding the classical-Marxian conception of labor mobility and how the EQRE reframes certain questions about Marx's theory of value and concepts of labor values. Section 7 concludes.

2 Marx's EQRE in the Literature

Much of the literature on Marx's theory of value following the original publication of *Capital*, particularly volume three of *Capital*, focuses on the inconsistencies between labor values and prices, and the coherence of Marx's theory of value. Over the course of this literature the bulk of the attention has been on whether or not it can be shown that labor values measuring the labor time content of commodities are consistent with competitive prices that allow for a uniform profit rate across industries. These are the aforementioned transformation problem debates. The emphasis on labor values and competitive prices in these debates means that the classical-Marxian competitive process where the profit rate equalizes through capital mobility has been a focal point. This has drawn attention away from Marx's views on labor mobility and the EQRE, and the little attention the EQRE does receive reveals misunderstandings about why Marx felt it necessary. The attention on Marx's EQRE in

[1]See Foley (2000) and Mohun and Veneziani (2017) for surveys of the lengthy transformation problem debates.

[2]Recent contributions by Basu and Foley (2013), Cogliano (2018), and Foley (2011a, 2013, 2018) explore the dynamics of surplus value production versus its realization and the broader implications of this phenomenon as an indicator of the allocation of abstract labor across the complex division of labor of modern economies, but the role of the rate of exploitation and labor mobility has not yet been directly addressed.

these debates is highlighted below.

In an early contribution to the literature on the transformation problem, Robinson (1950, p.360) sees Marx's EQRE as a case in which "pure assertion is masquerading as argument, for we have nothing but Marx's bare word for it that the *value* generated per unit of labour is the same in each industry" [emphasis in original]. Similarly, Seton (1957, p.160) concludes that "[t]he assumption of equal 'rates of exploitation'... has never to [his] knowledge been justified". Samuelson (1957, p.890) finds Marx's assumption to be "like a made-up nursery tale, of no particular relevance to the ascertainable facts of the simple competitive model". This view is consistent across Samuelson's interventions in the transformation problem debate, as is seen in a later contribution where he deems the EQRE a "bizarre empirical hypothesis" because he believes it precludes equalization of the profit rate (Samuelson 1971, p.419). This perspective on Marx's EQRE is not necessarily surprising given Samuelson's overall negative impression of Marx's theory of value and the concept of labor values.

Nevertheless, the views summarized here do not give due consideration to the portions of Marx's original work where he provides a detailed explanation for the EQRE. This is puzzling given the close proximity of Marx's discussion of labor mobility and the EQRE to his presentation of the transformation of labor values into prices of production, as is discussed in sections 3 and 4. In an attempt to intervene in the overall negative picture drawn by Samuelson, Baumol (1974, p.55) brings the reasoning for Marx's EQRE—labor mobility—to Samuelson's attention, but this does not change anything, as Samuelson (1974, p.63) pivots by arguing that the focus on surplus value—and implicitly labor values—at all is an unnecessary detour.

Bowles and Gintis (1977, p.176), while holding a much more favorable view of Marx's work, arrive at the conclusion that Marx's EQRE is unnecessary: "the assumption of equal rates of exploitation is in no way required by historical materialism and is inconsistent with a critical Marxian concept: uneven development." The potential complications uneven development poses for Marx's EQRE are beyond the scope of this paper, and it may be the case that Marx's EQRE was viewed as unnecessary for the discussions of the transformation problem that took place at the time. However, given the presentation of section 4 and its implications explored in section 6, it is striking that something Marx viewed as important enough to elevate to the level of an economic law would be rather quickly cast aside.

Marx's EQRE appears in other contributions to the transformation problem debates, i.e. Morishima (1973) and Morishima and Seton (1961), but there is little to no discussion of Marx's rationale for including it in the presentation of the transformation, nor is there full recognition of the theoretical significance of Marx's EQRE in contemporary analysis.

Similar problems appear in early discussions of what is known as the 'inverse transformation problem'. The inverse transformation problem implies that labor values can be estimated from observable data on prices, thus the problem of labor values and prices is not converting from quantities measured in units of labor time to those measured in prices but the other way around. Discussions of the inverse transformation problem happen alongside, or are included in, some of the contributions mentioned above. These discussions recognize that there is some role for Marx's EQRE, but they do not acknowledge its origins or Marx's rationale for it.

The earliest use of the terminology "inverse transformation problem" is by Morishima and Seton (1961, p.203), and the method is discussed even earlier by Robinson (1950). Robinson suggests the method in reaction to Sweezy (1949) not realizing that "the *values* which have to be 'transformed into prices' are arrived at in the first instance by transforming prices into *values*" and that "[t]he *values* of commodities are imputed by crediting each group of workers with the average rate of exploitation of labour as a whole, and the 'transformation of values into prices' consists of breaking the average up again into the separate items from which it was derived" [emphases in original] (Robinson 1950, p.362).

Morishima and Seton (1961, p.206) identify the inverse transformation problem as being "the conversion of prices into 'values'" and provide a detailed method of estimating labor values in an input-output setting. Further, Morishima and Seton acknowledge Marx's EQRE as a necessary part of their method for estimating labor values. However, as far as they are aware:

> ...there is no substantive statement in Marxian literature that could serve to justify this postulate. Indeed, there is no reason at all why the ratio of "unpaid" to "paid" labour should not be higher in some sectors (e.g. capital-intensive industries) than in others, even when both components are expressed in terms of "value" (Morishima and Seton 1961, p.206).

For similar reasons as stated above, this position is somewhat difficult to understand in light of Marx's clear language about labor mobility and the EQRE presented in section 4.

A recent dialogue between Rieu (2008, 2009) and Duménil et al. (2009) does briefly cover parts of Marx's reasoning for the EQRE. Rieu (2008) sets out to provide a framework for estimating "rates of surplus value"—which are rates of exploitation—at the industry level. Rieu (2008, pp.558-561) finds that the NI is underdeveloped in terms of estimating industry- or sectoral-level rates of exploitation and links the EQRE to issues of heterogeneous labor, with the implication that Marx's treatment of the EQRE is part of his reduction of all labor to simple, or average, labor "for the sake of analytical simplicity" (Rieu 2008, p.561). Rieu also points to contemporary treatments of Marx's EQRE and heterogeneous labor, characterizing many of these as relying on some kind of averaging out process to account for any potential observable differences in rates of exploitation (Rieu 2008, p.563). Despite this Rieu does recognize that "there exists an actual tendency of equalizing these conditions of exploitation by free mobility of labour across sectors... [which] might be regarded as one of the Marxian 'perfect competition' conditions for analysing the existence of equilibrium prices" (Rieu 2008, p.564). While the tendency for the EQRE is recognized by Rieu, it is somewhat awkward to read notions of perfect competition back into Marx's original work, nor is it accurate that the EQRE is a necessary condition to analyze prices, as is shown in sections 3 and 6.

Duménil et al. (2009) respond to Rieu by highlighting the necessity of assuming something about the distribution of rates of exploitation to estimate labor values, or to carry out an inverse transformation procedure. The necessity of assuming some distribution of rates of exploitation to estimate labor values is also clearly articulated by Morishima and Seton (1961, p.206) who note that the particular assumption about the distribution of rates of exploitation is "best regarded as a hidden part of the *definition* of 'value,' rather than an independent postulate that could be changed at will [emphasis in original]". This statement by Morishima and Seton (1961) bears relevance for the implications of the EQRE presented in section 6.

More recent contributions by Foley (2011a, 2018) and Cogliano (2018) explicitly discuss the inverse transformation procedure in as far as it appears consistent with Marx's own views about the transformation and the importance of the EQRE. These contributions also recognize the role of Marx's EQRE in attempts to estimate labor values or the surplus value produced by productive industries, but they do not provide a detailed examination of Marx's reasoning for the EQRE or its broader implications for Marxian analyses.

All told, coverage of the EQRE and Marx's rationale in much of the existing literature is uneven, rendering the role of the EQRE in Marx's analysis unclear. Both Marx's rationale for the EQRE and its role in his analysis are clarified in what follows.

3 Concepts and Definitions

Marx's original writings and discussions of his ideas in the existing literature contain problems of terminology and clear conceptual definitions. In an attempt to avoid possible confusions, concepts and terms used throughout the remaining sections are defined and explained below.

The analysis in this article accepts NI.[3] The NI treats the conservation of aggregate value added across the circuit of capital as a basic principle of the labor theory of value (LTV). The NI also recognizes a direct connection between money value added and the expenditure of human labor effort, or labor power (often measured in units of time). The relationship between money value added and labor effort is summarized in the Monetary Expression of Labor Time (MELT). The MELT, denoted by μ, has the units value added per unit of labor time and allows conversion between magnitudes measured in money and those measured in labor time/effort (Foley 2005, 2011b; Mohun 2004). The terms *aggregate value added* and *money value added* refer to value created in commodity production and realized in the money form, which can be converted to units of labor time via μ.

In capitalist economies money is advanced to purchase raw materials and labor power to begin a productive labor process and produce commodities. Raw materials are transformed by labor power into new commodities and new value is created. The new value created at the site of production is composed of wages and surplus value. Wages, denoted by w, reflect what workers need to reproduce themselves. In the NI, wages are the money form of the *value of labor power* and can be converted to units of labor time via μ. *Surplus value* is the value created by labor power beyond wages—surplus value can also be thought of as surplus labor effort.[4] Surplus value can be measured in money or units of labor time, with the latter being more commonly associated with the term. Surplus value is the object of competition between capitalists, where many of the activities undertaken by capitalists are aimed at establishing claims on surplus value created throughout the economy. Some of the activities undertaken by capitalists establish ownership of surplus value by handling the distribution and sale of commodities or by extending credit and charging interest. These

[3]Foley (1982, 1986, 2000) and Mohun (1994, 2004) provide detailed expositions of the NI. For critiques of the NI see Shaikh and Tonak (1994) and Shaikh (2016).

[4]An interpretation of surplus value as overall surplus labor effort, measured either in money terms or units of labor time, is made by Foley (2016).

types of activities do not create value or surplus value since no new commodities are produced and, thus, are considered *unproductive*, whereas those activities associated with the creation of new commodities and value are considered *productive*.

In the course of capitalist competition surplus value is realized by capitalists in the money form of profit and/or revenue by unproductive activities. Profit across the entire economy plus the revenue of unproductive activities can be referred to as *realized surplus value*, or *money surplus value*.[5] The ratio of surplus value to the value of labor power is hereafter referred to as the *rate of exploitation*, denoted by e, and the ratio of realized surplus value to wages is referred to as the *rate of surplus value*, denoted by ε. Because aggregate value added is conserved in the NI, one can convert between realized surplus value and surplus value using μ. Thus, in the aggregate, $e \equiv \varepsilon$.[6] Marx uses the terms "rate of exploitation" and "rate of surplus value" interchangeably throughout *Capital*, which can create confusion about whether he is referring to rates at the point of value creation or realization. The conceptual and terminological distinction adopted here is meant to avoid this possible confusion.[7]

All of the categories of value, wages, and surplus value can be measured in money or units of labor time and converted from one to the other via μ. However, using μ to move between magnitudes measured in money and those in labor time does not account for differences that can occur between the points of surplus value creation and realization. To help illustrate the EQRE and the importance of creation versus realization—and to contextualize the reception of Marx's EQRE in existing literature in Section 2—table 1 below is adapted from Marx's tableaux in volume three of *Capital*.[8]

Table 1 supposes there are only productive industries in the economy and that industries align with lines of work.[9] Column (iv) of table 1 shows the rate of exploitation e. At the industry level, for any industry j, e_j can be calculated as the ratio of the appropriate entry in column (v) to the corresponding entry in column (iii). At the aggregate level e is the ratio of total surplus value, the entry in the bottom row of column (v), to total wages (or variable capital), the entry in the bottom row of column (iii). Column (iv) shows Marx's assumption of a uniform rate of exploitation across industries and that these equalized rates are equal to the aggregate rate of exploitation, $e_j = e$ for all j. The rate of surplus value ε can be

[5]Wages will be the same at the point where value is created and realized since wages do not need to undergo realization.

[6]Note that the definition of e used herein relies on the approach to the LTV found in the NI, and Marx's own definition of exploitation is built on his LTV. There are open questions as to the coherence a definition of exploitation based on the LTV. Such questions were initially raised by Roemer (1982), and recent examples in this vein include Cogliano, Veneziani, and Yoshihara (2016, 2019), Galanis, Veneziani, and Yoshihara (2019), Skillman (1995, 2014, 2017), Veneziani (2007, 2013), Veneziani and Yoshihara (2013, 2015, 2017), and Yoshihara (2010). Notably, Veneziani and Yoshihara (2013) show that a coherent definition of exploitation is consistent with the NI. Contributions in this area are surveyed by Yoshihara (2017).

[7]The current definition of ε is consistent with treatments in recent empirical literature. See for example Cogliano (2018), Mohun (2013, 2014), Moseley (1986, 1988, 1990, 1991), and Paitaridis and Tsoulfidis (2012). See also contributions surveyed by Basu (2017).

[8]Marx's tableaux are part of his presentation of the inconsistency between labor values—the sum of constant and variable capital and surplus value—and prices, but for current purposes, table 1 is illustrative of Marx's EQRE and the issues posed by the separation of surplus value creation and realization.

[9]All results in this paper can be generalized to the case of both productive and unproductive industries. For discussion of the implications of the EQRE to the further general case of the global economy and imperialism see Vasudevan (2019).

Table 1: Adaptation of Marx's (1981, Ch.9) Tableaux

(i) Industry	(ii) Constant Capital	(iii) Variable Capital	(iv) Rate of Exploitation	(v) Surplus Value	(vi) Labor Value	(vii) Profit	(viii) Price of Production	(ix) Rate of Profit
1	80	20	100%	20	120	22	122	22%
2	70	30	100%	30	130	22	122	22%
3	60	40	100%	40	140	22	122	22%
4	85	15	100%	15	115	22	122	22%
5	95	5	100%	5	105	22	122	22%
Total	390	110		110	610	110	610	

Note: This table adapts Marx's (1981, Ch.9) tables illustrating the relationship between labor values and prices of production into a single table for ease of presentation. Modification to some information is made by the author for clarity.

calculated as the ratio of the bottom entry of column (vii) to that of column (iii), and ε will be equal to e due to the conservation of aggregate value and the equivalence of total surplus value and total realized surplus value (profit in table 1). Note that Marx did not 'transform' variable capital from value terms to money terms, but the equivalence of e and ε holds if one moves between value and money magnitudes under the definitions of the NI using μ.

Rates of surplus value at the industry level ε_j will not be uniform, nor will they be equal to ε, except by chance. This is evident by calculating the ratios of appropriate entries in column (vii) to the corresponding entries in column (iii). Table 1 shows that rates of exploitation are equalized, not rates of surplus value. This is what Marx's EQRE posits. Marx's reasons for assuming the EQRE become clear when he is read as adopting a LPM similar to that of Smith and Ricardo. As Foley (2011b), Garegnani (1970, 1976, 1984), Kurz and Salvadori (1995), and others note, there is support in the text of *Capital* for reading Marx as employing a LPM, with strong similarities to Smith and Ricardo in overarching methodological approach.

4 Marx's Long-Period Method

This section presents a close reading of relevant parts of Marx's original writings to capture his rationale for the EQRE and its importance for his theory of value. As previously mentioned, Marx's original work struggles for consistent terminology. Given the definitions established in section 3, and to avoid potential confusion of concepts, usage of "rate of surplus value" in excerpted passages and quotations from Marx's original work below is replaced with "rate of exploitation", where appropriate, with all replacements clearly noted in brackets. This does not change the meaning of any of the passages quoted here, since in these passages Marx is clearly referring to surplus value and exploitation at the point where value is created. Usage of consistent terminology helps to bring the overall picture of the EQRE into clear focus as a logical outcome of Marx's views on labor mobility and his LPM.

4.1 Structure of Marx's Long-Period Method

The LPM of the Classicals—Smith and Ricardo in particular—and Marx is probably best known through the example of Smith's thought-experiment of the "early and rude state of society" (Smith 2000, pp.53-54). In this thought-experiment there are beaver and deer hunters with free access to (or very low cost) implements necessary for hunting. Beaver and deer hunters expend labor time in one line of production at a time (beaver or deer) and then exchange with one another. Through exchange, prices emerge and, if prices do not correspondence to the labor time necessary to produce either beaver or deer, hunters will migrate across lines of production until prices are once again consistent with the labor time required to produce each commodity. This migration is viewed as ongoing and causes prices to continuously gravitate around the labor time required to produce beaver and deer. Smith's presentation of the early and rude state introduces the well known classical distinction between prices and labor values, and what is often taken as the key tenet of the classical LTV, that long-period prices are proportional to labor values.[10]

The early and rude state captures the type of abstract thinking that is characteristic of the classical-Marxian LPM. The assumptions of mobile beaver and deer producers and free access to necessary implements abstract from any impedances or costs to movement across lines of production. These abstract assumptions allow one to theorize the LTV and the relationship between labor values and long-period prices in the absence of any obfuscating short-term or temporary factors. Smith's early and rude state can be seen as the basis for Marx's LPM, while also demonstrating parts of Smith's own long-period thinking.

Marx's LPM does not focus on commodity producers operating in a world with freely available means of production. Instead, his LPM focuses on classes of workers and capitalists, where capitalists control access to means of production and workers need to sell their labor-power in exchange for a wage. Yet, the notion of *mobility* found in Smith's early and rude state plays an important role in Marx's LPM, and his theory of value. Rather than assuming free mobility of commodity producers, Marx assumes mobility of labor and capital. The abstract assumptions of labor and capital mobility set aside temporary impedances, market frictions, and/or historical aberrations that may exist in reality. This is done in order to best represent what Marx considers capitalism's pure, or ideal, form. By examining capitalism's pure form it is possible to reveal and analyze the inner laws and tendencies of capitalist economies so that they may be studied independent of superficial or coincidental phenomena:

> The real inner laws of capitalist production clearly cannot be explained in terms of the interaction of demand and supply (not to mention the deeper analysis of these two social driving forces which we do not intend to give here), since these laws are realized in their pure form only when demand and supply cease to operate, i.e. when they coincide. In actual fact, demand and supply never coincide, or, if they do so, it is only by chance and not to be taken into account for scientific purposes; it should be considered as not having happened. Why then does political economy assume that

[10]See Weber (2019) for a detailed discussion of how the type of exchange economies theorized by Smith and Marx necessarily imply the existence and use of money, thereby providing further support for the NI's emphasis on money in interpreting the Classicals and Marx.

> they do coincide? In order to treat the phenomena it deals with in their law-like form, the form that corresponds to their concept, i.e. to consider them independently of the appearance produced by the movement of demand and supply. And, in addition, in order to discover the real tendency of their movement and to define it to a certain extent (Marx 1981, p.291).

Marx consistently relies on the abstract approach described in the above passage because "microscopes" and "chemical reagents" are unavailable when confronting economic topics, and the "power of abstraction" is the necessary tool to tackle the complex motions of capitalist society (Marx 1976, p.90). Further outlining of this approach is provided in the introduction to the *Grundrisse*:

> It seems to be correct to begin with the real and the concrete, with the real precondition, thus to begin, in economics, with e.g. the population, which is the foundation and the subject of the entire social act of production. However, on close examination this proves false. The population is an abstraction if I leave out, for example, the classes of which it is composed. These classes in turn are an empty phrase if I am not familiar with the elements on which they rest. E.g. wage labour, capital, etc. For example, capital is nothing without wage labour, without value, money, price, etc. Thus, if I were to begin with the population, this would be a chaotic conception of the whole, and I would then, by means of further determination, move analytically towards ever more simple concepts, from the imagined concrete towards ever thinner abstractions until I had arrived at the simplest determinations. From there the journey would have to be retraced until I had finally arrived at the population again, but this time not as the chaotic conception of a whole, but as a rich totality of many determinations and relations (Marx 1973, p.100).

The LPM's assumption of mobile labor and capital is the type of abstraction Marx describes in the above passages, and the abstraction Marx himself makes. This is made clear in volume three of *Capital* (1981) where Marx states the two following conditions needed for his economic laws of the EQRE and profit rate equalization to hold:

> ... (1) the more mobile capital is, i.e. the more easily it can be transferred from one sphere and one place to others; (2) the more rapidly labour-power can be moved from one sphere to another and from one local point of production to another (Marx 1981, p.298).

Condition (1) is the mobility of capital, and condition (2) is the mobility of labor. The more labor and capital approach perfect mobility, the more closely capitalism resembles its ideal form, which corresponds to its "concept" in Marx's view (Marx 1981, p.291).

The mobility of capital requires "completely free trade within the society in question and the abolition of all monopolies other than natural ones, i.e. those arising from the capitalist mode of production itself" (Marx 1981, p.298). Going hand-in-hand with completely free trade (meaning exchange), capital mobility implies that capital is indifferent to the types of commodities it produces, and "[a]ll that matters in any sphere of production is to produce surplus-value, to appropriate a definite quantity of unpaid labour in labour's product" (Marx

1981, p.297). Capital mobility and competition among capitalists lead to the tendency for profit rate equalization:

> If commodities were sold at their values, however, this would mean very different rates of profit in the different spheres of production, as we have already explained, according to the differing organic composition of the masses of capital applied. Capital withdraws from a sphere with a low rate of profit and wends its way to others that yield higher profit. This constant migration, the distribution of capital between the different spheres according to where the profit rate is rising and where it is falling, is what produces a relationship between supply and demand such that the average profit is the same in the various different spheres, and values are therefore transformed into prices of production. Capital arrives at this equalization to a greater or lesser extent, according to how advanced capitalist development is in a given national society: i.e. the more the conditions in the country in question are adapted to the capitalist mode of production. As capitalist production advances, so also do its requirements become more extensive, and it subjects all the social preconditions that frame the production process to its specific character and immanent laws (Marx 1981, pp.297-298).

Hence, the tendency for the profit rate to equalize across sectors is an expression of capital mobility, which rests on abstracting from historical and institutional impedances to capital movement.

Marx's notion of labor mobility has similar requirements:

> ...the abolition of all laws that prevent workers from moving from one sphere of production to another or from one local seat of production to any other. Indifference of the worker to the content of his work. Greatest possible reduction of work in all spheres of production to simple labour. Disappearance of all prejudices of trade and craft among the workers. Finally and especially, the subjection of the worker to the capitalist mode of production (Marx 1981, p.298).

These conditions implicitly make abstract assumptions similar to those made for capital mobility. In particular, these conditions abstract from similar cultural, institutional, and historical restrictions on the movement of labor across lines of work. Labor mobility of this kind produces the tendency for the rate of exploitation to equalize across sectors:

> If capitals that set in motion unequal quantities of living labour produce unequal amounts of surplus-value, this assumes that the level of exploitation of labour, or the rate of [exploitation], is the same, at least to a certain extent, or that the distinctions that exist here are balanced out by real or imaginary (conventional) grounds of compensation. This assumes competition among the workers, and an equalization that takes place by their constant migration between one sphere of production and another. We assume a general rate of [exploitation] of this kind, as a tendency, like all economic laws, and as a theoretical simplification; but in any case this is in practice an actual presupposition of the capitalist mode of production, even if inhibited to a greater or lesser extent by practical frictions that produce more or less significant local differences, such as the settlement laws for agricultural labourers in England, for example. In theory, we

> assume that the laws of the capitalist mode of production develop in their pure form. In reality, this is only an approximation; but the approximation is all the more exact, the more the capitalist mode of production is developed and the less it is adulterated by survivals of earlier economic conditions with which it is amalgamated (Marx 1981, p.275).

The mobility of capital and labor, as outlined by Marx, follow the need to abstract from everyday frictions to consider the real, or underlying, movements of capitalism. The abstract assumptions of Marx's LPM also include consideration of a sufficient length of time such that the laws of capitalism can be seen as the "outcome of a whole series of protracted oscillations, which require a good deal of time before they are consolidated and balanced out" (Marx 1981, p.266). This is an important aspect of Marx's LPM to set aside dealing with any vestiges of earlier modes of production that may interfere with the workings of capitalist social relations and the mobility of labor and capital.

Consideration of a sufficiently long period of time and the mobility of labor and capital are the key elements of Marx's LPM. Through his method, Marx reveals the tendency for the rates of profit and exploitation to equalize across sectors as two separate and distinct tendencies. Situating the EQRE within Marx's LPM is helpful for a detailed examination of the argument behind the EQRE and its origin in Marx's reading of Smith.

4.2 Equalization of the Rate of Exploitation

The basic argument behind labor mobility producing the EQRE is that, if labor is mobile across sectors, then it is able to adapt and adjust to changes in professions over long periods of time, or it is "fungible" (Foley 2005, p.40)(Foley 2011b, pp.16-18, 24-28). As the conditions of workplaces undergo constant change, and as demand for labor fluctuates in the different sectors of the economy, the movement of workers across sectors and their adaptation to different lines of work turbulently balances out the wages paid to workers of different skill-levels and the surplus value they produce. In Marx's own words:

> Other distinctions, for instance in the level of wages, depend to a large measure on the distinction between simple and complex labour that was mentioned already in the first chapter of Volume 1, p.135, and although they make the lot of the workers in different spheres of production very unequal, they in no way affect the degree of exploitation of labour in these various spheres. If the work of a goldsmith is paid at a higher rate than that of a day-labourer, for example, the former's surplus labour also produces a correspondingly greater surplus-value than does that of the latter. And even though the equalization of wages and working hours between one sphere of production and another, or between different capitals invested in the same sphere of production, comes up against all kinds of local obstacles, the advance of capitalist production and the progressive subordination of all economic relations to this mode of production tends nevertheless to bring this process to fruition. Important as the study of frictions of this kind is for any specialist work on wages, they are still accidental and inessential as far as the general investigation of capitalist production is concerned and can therefore be ignored. In a general analysis of the present kind, it is assumed throughout that actual conditions correspond to their concept, or, and this amounts to the same thing, actual

> conditions are depicted only in so far as they express their own general type (Marx 1981, pp.241-242).

The passage above demonstrates that Marx saw the EQRE as part of the "general investigation of capitalist production," and differences in the complexity (productivity) of workers are not immediately important to his analysis (Marx 1981, p.242). While he acknowledges that workers of varying skills, or labor of differing complexity, may receive different wages, he asserts that the rate of exploitation still equalizes. The complexity of the labor makes no difference in the rate of exploitation. If the labor performed by a particular worker is far more complex than the social average and the worker receives a relatively high wage accordingly, the surplus value created through the expenditure of this worker's labor-power is "correspondingly greater" than the surplus value produced by the social average (Marx 1981, p.241).[11] Despite any observable differences in the complexity of labor, Marx deems it necessary to employ the EQRE because it pertains to the general conditions of capitalism that are his primary concern.

To explain the origin of assuming equalization of the rate of exploitation, and his views on labor market dynamics more generally, Marx briefly refers to a lengthy explanation from Smith:

> As far as the many variations in the exploitation of labour between different spheres of production are concerned, Adam Smith has already shown fully enough how they cancel one another out through all kinds of compensations, either real or accepted by prejudice, and how therefore they need not be taken into account in investigating the general conditions, as they are only apparent and evanescent (Marx 1981, p.241).

Marx sees no need to go into full detail regarding the factors that account for all observed differences in wages, and how these are not inconsistent with his use of the EQRE. He feels that Smith's treatment of these factors is complete enough and can be used as support for the EQRE. The close connection between Smith and Marx on this particular point stems from their similar views on labor mobility and their adoption of a LPM. These similarities can be seen through a careful examination of Chapter Ten of *The Wealth of Nations*.

[11] This view is consistent throughout Marx's writing in *Capital*: "We stated on a previous page that in the valorization process it does not in the least matter whether the labour appropriated by the capitalist is simple labour of average social quality, or more complex labour, labour with a higher specific gravity as it were. All labour of a higher, or more complicated, character than average labour is expenditure of labour-power of a more costly kind, labour-power whose production has cost more time and labour than unskilled or simple labour-power, and which therefore has a higher value. This power being of higher value, it expresses itself in labour of a higher sort, and therefore becomes objectified during an equal amount of time, in proportionally higher values. Whatever difference in skill there may be between the labour of a spinner and that of a jeweller, the portion of his labour by which the jeweller merely replaces the value of his own labour-power does not in any way differ in quality from the additional portion by which he creates surplus-value. In both cases, the surplus-value results only from a quantitative excess of labour, from the lengthening of one and the same labour-process: in the one case, the process of making jewels, in the other, the process of making yarn...But, on the other hand, in every process of creating value the reduction of the higher type of labour to average social labour, for instance one day of the former to x days of the latter, is unavoidable" (Marx 1976, pp.304-306).

5 Roots of the Equalizing Rate of Exploitation

In *The Wealth of Nations* Smith is careful to frame what he views as important features of the economy as central tendencies or emergent patterns. His descriptions of the LTV in his thought-experiment of beaver and deer hunters (Smith 2000, Ch.6), the relationship between natural and market prices (Smith 2000, Ch.7), and the dynamics of wages and profit rates (Smith 2000, Ch.10) are all framed in this way. Thinking in terms of tendencies and emergent patterns—like the EQRE and equalization of the profit rate outlined above in section 4—is a consistent thread in the political economy of Smith, Ricardo, and Marx. It is also characteristic of their LPMs.[12] Chapter Ten of *The Wealth of Nations*, in particular, provides a clear picture of Smith's long-period thinking, especially his views on labor mobility. Reading the chapter in this way shows the clear connections between Smith and Marx in terms of long-period thinking and helps to explain how Marx arrived at the EQRE.

5.1 The Advantages and Disadvantages of Labor

Chapter Ten of *The Wealth of Nations* begins:

> The whole of the advantages and disadvantages of the different employments of labour and stock must, in the same neighbourhood, be either perfectly equal or continually tending to equality. If in the same neighbourhood, there was any employment evidently either more or less advantageous than the rest, so many people would crowd into it in the one case, and so many would desert it in the other, that its advantages would soon return to the level of other employments. This at least would be the case in a society where things were left to follow their natural course, where there was perfect liberty, and where every man was perfectly free both to chuse what occupation he thought proper, and to change it as often as he thought proper. Every man's interest would prompt him to seek the advantageous, and to shun the disadvantageous employment (Smith 2000, p.114).

The above passage provides one example of language in Smith's writing that, presumably, led Marx to arrive at the EQRE. While the concepts and terminology differ between Smith and Marx, it is possible to argue, based on textual evidence, that Smith provided Marx with a complete enough description of labor market dynamics and labor mobility to develop the EQRE.

Continuing from the quoted passage above, Smith cites five causes to explain wage differentials that may be observed at any moment while the equalization of all of the advantages and disadvantages of labor is taking place. The first cause is "the ease or hardship, the cleanliness or dirtiness, the honourableness or dishonourableness of the employment" (Smith 2000, p.115).[13] The second is "the easiness and cheapness, or the difficulty and expence of learning the business" (Smith 2000, p.116). This second cause parallels Marx's notion of

[12] Given the current focus on the connection between Smith and Marx on labor mobility, Ricardo's writings implying an LPM are not discussed here. See Ricardo (1951, Ch. 4) for examples of his writing that speaks to a long-period approach

[13] "Thus in most places, take the year round, a journeyman taylor earns less than a journeyman weaver. His work is much easier. A journeyman weaver earns less than a journeyman smith. His work is not always

complex labor that can exist at any given moment in time; whereby simple labor can be worked on so that more simple labor is worked up in it to create complex labor (Marx 1976, pp.135, 304-305). Smith likens this complex labor to the machinery used in production and compares any highly educated or trained worker to an expensive machine.[14] The third cause for wage variations is the varying "constancy or inconstancy of employment" (Smith 2000, p.119). An example of this could be a house painter who primarily works during warm months, or the wait staff of a country club or golf course that is only open during certain times of the year. "Fourthly, [t]he wages of labour vary according to the small or great trust which must be reposed in the workmen" (Smith 2000, p.121). Smith cites examples of doctors or attorneys, whom one may have to entrust with his or her life. The fifth factor acting on wages in different employments is "the probability or improbability of success in them" (Smith 2000, p.122). By this logic, the high salaries of professional musicians and athletes can be explained, "In a perfectly fair lottery, those who draw the prizes ought to gain all that is lost by those who draw the blanks" (Smith 2000, p.122).

The combination of these five factors working simultaneously across sectors lead to the differences in wages that one can observe at any given moment in time, but labor mobility—or the "perfect liberty" that Smith uses to broadly characterize his long-period thinking—exercises an equalizing force on the differences in the advantages and disadvantages of labor, and, over time, induces their erosion. An explanation of this kind renders differences in wages less important than the overall movements of the total advantages and disadvantages of labor. As Smith explains:

> The five circumstances above mentioned, though they occasion considerable inequalities in the wages of labour and profits of stock, occasion none in the whole of the advantages and disadvantages, real or imaginary, of the different employments of either. The nature of those circumstances is such, that they make up for a small pecuniary gain in some, and counter-balance a great one in others.
>
> In order, however, that this equality may take place in the whole of their advantages or disadvantages, three things are requisite even where there is the most perfect freedom. First the employments must be well known and long established in the neighbourhood; secondly, they must be in their ordinary, or what may be called their natural state; and, thirdly, they must be the sole or principal employments of those who occupy them (Smith 2000, pp.131-132).

The quoted passages from Smith, particularly the beginning of chapter ten and the above, demonstrate Smith's long-period thinking, especially when he attaches the conditions of "perfect liberty", or "where there is the most perfect freedom" to his arguments. In fact, the notion of perfect liberty is often emphasized by Smith in his description of the movements

easier, but it is much cleanlier. A journeyman blacksmith, though an artificer, seldom earns so much in twelve hours as a collier, who is only a labourer, does in eight...The most detestable of all employments, that of public executioner, is, in proportion to the quantity of work done, better paid than any common trade whatever" (Smith 2000, pp.115-116).

[14]"When any expensive machine is erected, the extraordinary work to be performed by it before it is worn out, it must be expected, will replace the capital laid out upon it, with at least the ordinary profits. A man educated at the expence of much labour and time to any of those employments which requires extraordinary dexterity and skill, may be compared one of those expensive machines" (Smith 2000, pp.116-117).

of wages, profits, and the equalization of the whole of the advantages and disadvantages of labor and capital: "This at least would be the case in a society where things were left to follow their natural course where there was perfect liberty" (Smith 2000, p.114).[15]

As Smith explains, given the free mobility of labor, the five factors explaining any apparent wage differentials balance out until there is equality across the advantages and disadvantages of different employments of labor. Smith's own LPM is also evident through his frequent reference to conditions of perfect liberty, and these conditions are clearly meant to be inclusive of labor and capital mobility. Smith is also careful to attach the necessity of a sufficiently long period of time as a necessary part of the equality across advantages and disadvantages of labor, "the employments must be well known and long established" (Smith 2000, p.131). This condition implies that some significant length of time is necessary for the turbulent dynamics induced by labor mobility to run their course. The abstract assumptions Smith makes in explaining the balancing of advantages and disadvantages bear resemblance to those made by Marx in explaining the equalizations of the rate of exploitation and the profit rate, showing the closeness of Smith and Marx's abstract approaches.

Additional examples of Smith's own long-period approach and the similarity to Marx's are seen in Smith's continued discussion of assuming equalized advantages and disadvantages of labor. Smith explains that the wages in new professions tend to be higher than in older ones, but that designations of "new" and "old" are not meaningful for long due to the "continually changing" nature of industry (Smith 2000, p.132). The higher wages in new industries are a result of the increase in demand for labor of a certain complexity, but this increase in the wage is just a perturbation around the "natural" price of labor; given enough time, labor will adapt itself to any new skill requisites and the movements of wages around their average is not disrupted. Smith's explanation further reinforces the importance of the "fungibility" of labor in the LPM (Foley 2011b, p.19). The unimportance of wage differentials due to the peculiarity of certain lines of work in Smith's exposition is what leads Marx to also view these wage differentials as unimportant, or not contributing to any real differences in workers.

Smith's language about the equalization of the advantages and disadvantages of labor shows how Marx, presumably, could have viewed this in terms of the exploitation of labor and his theory of surplus value. The advantage of labor from Marx's perspective is the wage, whereas the disadvantage is the fact that workers produce surplus value and are exploited. Workers then move across lines of work in response to changes in the ratio of effort they expend to their income—a point noted by Cogliano (2013) and Foley (2016, 2018). In light of the above presentation, it is not a huge leap from Smith's description of equalizing advantages and disadvantages of labor to Marx's EQRE, particularly given the methodological similarities of their respective LPMs.

[15] Smith also attaches the conditions of perfect liberty to the formation of natural prices and their place as centers of gravity for market prices: "The market price of any particular commodity, though it may continue long above, can seldom continue long below, its natural price. Whatever part of it was paid below the natural rate, the persons whose interest it affected would immediately feel the loss, and would immediately withdraw either so much land, or so much labour, or so much stock, from being employed about it, that the quantity brought to market would soon be no more than sufficient to supply the effectual demand. Its market price, therefore, would soon rise to the natural price. This at least would be the case where there was perfect liberty" (Smith 2000, p.70).

5.2 Marx on Smith

As shown by Marx's approving citation of Smith, he accepts Smith's description of the movements of the advantages and disadvantage of labor in *The Wealth of Nations* and views it as suitable support for the EQRE. However, in *Theories of Surplus Value* Marx also describes what he views as certain errors in Smith's work. Marx's commentary on Smith in *Theories of Surplus Value* is illuminating when considering how he might have read and interpreted Smith's work while developing the relevant parts of volume three of *Capital* quoted in section 4. Throughout the presentation of what Marx views as Smith's missteps, he uses language that directly implies, or alludes to, the LPM being the necessary framing for the theory of value and understanding capitalist economies. The attention to abstraction and ordering of concepts in the LPM is necessary because the construction of value in Smith changes, and is upset, as capital is introduced to Smith's 'early and rude state state of society' summarized in section 4. Marx portrays Smith's errors as inhibiting the investigation of labor values as the highest-ordered regulator of capitalist societies, taking up the task of correcting Smith (Marx 1988, pp.376-411).

In *Theories of Surplus Value* Marx remarks approvingly on Smith's early and rude state, especially taking the production and exchange of commodities by producers with access to any necessary means of production and mobility across lines of production as the starting point for analysis. To Marx, it seems that Smith is correct up to the point where a class distinction between labor and capital, or ownership of means of production, is introduced:

> But as Adam Smith quite correctly takes as his starting-point the commodity and the exchange of commodities, and thus the producers initially confront each other only as possessors of commodities, sellers of commodities and buyers of commodities, he therefore discovers (so it seems to him) that in the exchange between capital and wage labour, objectified labour and living labour, the general law at once ceases to apply, and commodities (for labour too is a commodity in so far as it is bought and sold) do not exchange in proportion to the quantities of labour which they represent. *Hence* he concludes that labour time is no longer the immanent measure which regulates the exchange value of commodities, from the moment when the conditions of labour confront the wage labourer in the form of landed property and capital...
>
> ...Adam Smith feels the difficulty of deducing the exchange between capital and labour from the law that determines the exchange of commodities, since the former apparently rests on quite opposite and contradictory principles [emphasis in original] (Marx 1988, pp.379-380).

Starting from an abstract thought-experiment in which the expenditure of human labor and the allocation of labor across activities is the primary focus not only fits well with Marx's theory of exploitation, it emphasizes mobility as a fundamental aspect of the LPM. Yet, as soon as exchange is no longer simply producers directly exchanging commodities and, instead, involves exchange between a class of capitalists and workers, it is no longer possible for prices to be proportional to labor values, or "labour time is no longer the immanent measure which regulates the exchange value of commodities" (Marx 1988, p.379). This problem, as Marx recounts it, is the well-known inconsistency in Smith between the 'labor commanded' and 'adding up' theories of price, where labor commanded prices do not fully take into account the existence of profit.

The lack of proportionality between prices and labor values also lies at the heart of the transformation problem debates. While the transformation problem is not the immediate focus of this article, Marx's attempts to grapple with the relationship between labor values and prices yields insight on his thinking about labor mobility and the connections between Smith's work and his own.

As Marx continues his discussion of the merits and shortcomings of Smith's work, one can further see the importance of their shared abstract approach and how the abstraction of Smith's early and rude state needs to expand and evolve to consider capital, yet the main conclusion of the early and rude state—that labor is the source of value—does not change:

> It is Adam Smith's great merit that it is just in the chapters of Book I (chapters VI, VII, VIII) where he passes from simple commodity exchange and its law of value to exchange between objectified and living labour, to exchange between capital and wage labour, to the consideration of profit and rent in general—in short, to the origin of surplus value—that he feels some flaw has emerged. He senses that somehow—whatever the cause may be, and he does not grasp what it is—in the actual result the law is suspended: more labour is exchanged for less labour (from the labourer's standpoint), less labour is exchanged for more labour (from the capitalist's standpoint). His merit is that he emphasises—and it obviously perplexes him—that with the *accumulation of capital* and the *appearance of property in land*—that is, when the conditions of labour assume and independent existence over against labour itself—something new occurs, apparently (and actually, in the result) the law of value changes into its opposite. It is his theoretical strength that he feels and stresses this contradiction just as it is his theoretical weakness that the contradiction shakes his confidence in the general law, even for simple commodity exchange; that he does not perceive how this contradiction arises, through labour capacity itself becoming a commodity, and that in the case of this specific commodity its use value—which therefore has nothing to do with its exchange value—is precisely the energy which creates exchange value. (Marx 1988, pp.393-394).

In the above passage Marx points out that Smith understands the expenditure of human labor effort as the source of value when operating within the abstraction of the early and rude state, but then encounters difficulty when considering the exchange between labor and capital, or when labor does not receive the whole of the value it creates. It seems clear that, to Marx, Smith is grasping at the concept of surplus value when encountering this difficulty but he does not fully arrive at it. This is what Marx views as the main shortcoming of Smith's LTV, and given Marx's view, it does not seem unreasonable to conclude that Marx could have viewed Smith's description of the disadvantages of work as an instance where Smith's lack of articulation of a concept of surplus value poses issues.

Marx's views on Smith's lack of articulation of a concept of surplus value are further clarified in the following passage:

> Thus Adam Smith conceives *surplus value*—that is, surplus labour, the excess of labour performed and realised in the commodity *over and above* the paid labour, the labour which has received its equivalent in the wages—as the *general category*, of which profit

> proper and rent of land are merely branches. Nevertheless, he does not distinguish surplus value as such as a category on its own, distinct from the specific forms it assumes in profit and rent. This is the source of much error and inadequacy in his inquiry, and of even more in the work of Ricardo (Marx 1988, pp.388-389).

For Marx, it seems clear that Smith does not have an adequate notion of surplus value that would allow him to arrive at exploitation as the source of profit, rent, and other forms of surplus value. This problem in Smith extends to having a clear conceptual distinction between value and price, particularly the fact that the latter takes on the money form in capitalist societies (Marx 1976, pp.187-188):

> By the natural price of commodities Adam Smith understands nothing but their value expressed in money. (The market price of the commodity, of course, stands either above or below its value. Indeed, as I shall show later, even the average price of commodities is *always different* from their value. Adam Smith, however, does not deal with this in his discussion of natural price. Moreover, neither the market price nor still less the fluctuations in the average price of commodities can be comprehended except on the basis of an understanding of the nature of value) (Marx 1988, p.400).

Reading Smith with an understanding of surplus value, Marx moves beyond Smith's view of labor in terms of the equalization of advantages and disadvantages and sees Smith's argument in terms of exploitation. This adjusted focus is key to Marx's LPM because it is precisely this adjustment that leads Marx to consider the equalization of the rate of exploitation as an outcome of labor mobility. In the *Grundrisse*, Marx emphasizes just how important the mobility of labor found in Smith's work is to the development of political economy:

> It was an immense step forward for Adam Smith to throw out every limiting specification of wealth-creating activity—not only manufacturing, or commercial or agricultural labour, but one as well as the others, labour in general. With the abstract universality of wealth-creating activity we now have the universality of the object defined as wealth, the product as such or again labour as such, but labour past, objectified labour. How difficult and great was this transition may be seen from how Adam Smith himself from time to time still falls back into the Physiocratic system. Now, it might seem that all that had been achieved thereby was to discover the abstract expression for the simplest and most ancient relation in which human beings—in whatever form of society—play the role of producers. This is correct in one respect. Not in another. Indifference towards any specific kind of labour presupposes a very developed totality of real kinds of labour, of which no single one is any longer predominant. As a rule, the most general abstractions arise only in the midst of the richest possible concrete development, where one thing appears as common to many, to all. Then it ceases to be thinkable in a particular form alone. On the other side, this abstraction of labour as such is not merely the mental product of a concrete totality of labours. Indifference towards specific labours corresponds to a form of society in which individuals can with ease transfer from one labour to another, and where the specific kind is a matter of chance for them, hence of indifference. Not only the category, labour, but labour in

reality has here become the means of creating wealth in general, and has ceased to be organically linked with particular individuals in any specific form (Marx 1973, p.104).

In the above passage Marx points to the importance of Smith's abstraction of the early and rude state, particularly the mobility of labor, or "indifference towards any specific kind of labour" and "individuals can with ease transfer from one labour to another," contained within the abstraction. This emphasizes the overall importance of labor mobility to Marx and how he draws upon Smith to inform his views.

It is also important to note that Marx views Smith's early and rude state as holding valuable insight about the nature of value creation even if it does not include certain characteristic features of capitalist economies. Marx's consideration of classes of labor and capitalists and profit rate equalization in his LPM introduces the issues of the transformation problem, along with the shortcomings of interpreting the LTV strictly as proportionality between prices and labor values. The presence of capital (means of production owned by capitalists) and the necessity for capitalist competition to equalize profit rates in Marx's LPM entails prices cannot be proportional to labor values, in general, and the classical LTV of Smith's early and rude state does not hold. However, it is still worth maintaining the insights of Smith's early and rude state when considering Marx's treatment of capitalist economies. An argument along these lines is made by Foley (2011b), and is implied in the quoted passages in this section.

Under the conditions of Smith's early and rude state, what Foley (2011b) calls the "commodity law of exchange" holds, where the allocation of social labor is such that exchange prices are consistent with labor values. Under the type of capitalist social relations examined by Marx, the "capitalist law of exchange" (Foley 2011b) holds, where prices are no longer proportional to labor values due profit rates equalizing through competition. The commodity and capitalist laws of exchange can be taken as different levels of abstraction in the broader classical-Marxian theory of value. With the commodity law of exchange, and Smith's early and rude state, it is clear that labor is the source of value and social labor is allocated such that proportionality between prices and labor values holds. Labor as the source of value is less clear under the capitalist law of exchange due to the lack of proportionality between prices and labor values, but labor does not cease to be the source of value just because this proportionality no longer holds. Labor remains the source of value under capitalist social relations, and the commodity law of exchange, as well as Smith's early and rude state, provide a theory of what guides the allocation of social labor. Illuminating the allocation of social labor is one of the functions of Marx's EQRE, as is discussed in detail in Section 6.

Smith's use of the balance of the advantages and disadvantages of different employments leaves room for Marx to envision this balancing movement in terms of exploitation. The creation of surplus value (or exploitation) can be taken as the disadvantage of work that is weighted against the wages workers receive (the advantage of work), and it is the whole of these advantages and disadvantages which balances across the spheres of production. This argument can be phrased in Marx's own terminology to say that the mobility of workers balancing out the advantages and disadvantages of different employments turbulently equates the ratio of unpaid to paid labor-time across sectors, or $e_j = e$, all j. Linking this discussion back to table 1, the uniformity of e_j also implies a particular allocation of labor. Thus, highlighting the place of the EQRE within Marx's LPM, and understanding how he might have interpreted Smith on labor mobility, arguably casts Marx's theory of value as a theory of the allocation of social labor. This and other implications are discussed in Section 6.

6 Implications of the Equalized Rate of Exploitation

While understanding how Marx could have found a path from Smith's equalizing advantages and disadvantages of labor to the EQRE is helpful for tracing out the intellectual roots of an idea, recognizing the EQRE and its place within Marx's original work holds implications for modern interpretations of his broader theory of value.

6.1 Knowledge of Exploitation

One implication of the view put forward in sections 4 and 5 is that Marx fully adopts Smith's theory of the turbulent equalization of the whole of the advantages and disadvantages and re-purposes it into a turbulently equalizing rate of exploitation is that workers then know the degree to which they are exploited and move between sectors accordingly. Marx discusses how workers understand that they are exploited in his discussion of the struggle over the length of the working day, but he does not state explicitly that workers know their rate of exploitation (Marx 1976, pp.342-344). However, the wholesale adoption of Smith's balancing whole of the advantages and disadvantages of labor implies that workers do know the degree to which they are exploited and migrate across sectors in response to changes or differentials across sectors.

Workers making decisions of how to allocate their labor across industries in this way does not require that workers base the decision on magnitudes measured in labor values—i.e. basing the decision on surplus value and the value of labor power. Workers' movement across sectors as informed by money prices still induces the EQRE. As Foley (2016, pp.378-380) discusses, surplus value captures overall surplus labor effort in the money form and if workers base their mobility decisions on the effort they expend and the wage they are paid then these movement decisions will tendentially induce the EQRE. This rests on some notion of a connection between labor effort and money value added, which is akin to the NI's connection between labor time and money value added.

Foley (2016, pp.379-380) illustrates the transparent connection between labor effort and money value added in a simple framework linking labor effort, labor time, and money value added, which, overall, is consistent with the NI. The close connection between labor effort and money value added implies that labor effort and surplus value are connected. Thus, it is possible to view surplus value as surplus labor effort, and as long as workers base mobility decisions on the ratio of effort expended to their wage, then the EQRE will hold.

6.2 Creation and Realization of Surplus Value

Table 1 in section 3 shows how e_j and ε_j can differ due to the redistribution and realization of surplus value that takes place to equalize the profit rate. The potential divergence between rates of exploitation and rates of surplus value is further complicated in the more general case of economies with unproductive activities. Suppose there are m industries in an economy, denoted by $k = 1, \ldots, m$, with $n < m$ productive industries, denoted by $j = 1, \ldots, n$, and $m - n$ unproductive industries. e_j tend to equalize across all j because of labor mobility, and all e_j should be equal to the aggregate $e \equiv \varepsilon$. ε_j will not tend to equalize from the mobility of labor, nor will they necessarily be equal to e or ε. The surplus value realized by an individual capitalist or in an industry can be very different from the surplus value created in said industry due to the redistribution of surplus value taking place through capitalist competition.[16] Furthermore, labor migrations across lines of employment and industries will have little impact on capitalists' abilities to establish claims on surplus value and the amount of surplus value that is realized in a particular industry.

ε_k (inclusive of ε_j) will then be closer to conventional profit-wage ratios. Given that the m industries include $m - n$ unproductive industries, ε_k over the unproductive industries is unclear in Marxian terms since, by definition, all of the revenue of these industries, including the wage payments to workers, is surplus value produced by the n productive industries.

The issues associated with ε_k point to a further implication of the illustration in table 1: *realization of surplus value need not bear any specific connection to the creation of surplus value.* This conclusion is consistent with Marx's own:

> At a given level of exploitation of labour, the mass of surplus-value that is created in a particular sphere of production is now more important for the overall average profit of the social capital, and thus for the capitalist class in general, than it is directly for the capitalist within each particular branch of production. It is important for him only in so far as the quantity of surplus-value created in his own branch intervenes as a codeterminant in regulating the average profit. *But this process takes place behind his back. He does not see it, he does not understand it, and it does not in fact interest him.* The actual difference in magnitude between profit and surplus-value in the various spheres of production (and not merely between rate of profit and rate of surplus-value) now completely conceals the true nature and origin of profit, not only for the capitalist, who has here a particular interest in deceiving himself, but also for the worker [emphasis added] (Marx 1981, p.268).

Connecting this passage back to the presentation in table 1, the surplus value realized as profit by any particular industry could come from within that industry or from any of the others, thus the surplus value realized in a particular industry does not necessarily have anything to do with the exploitation of labor in that industry. Extending this to unproductive activities means that the realization of surplus value does not require that an individual capitalist directly exploits workers at all. What is required is that exploitation exists somewhere in the economy, but the realized surplus value for any particular capitalist does not necessarily correspond to the exploitative labor process they activate, if they activate one at all.

Thus, having a clear conceptualization of e and its dynamics across the n productive industries provides insight on certain dimensions of the exploitative social relations of capitalism and helps to clearly frame Marx's theory of value as a theory of the allocation of social labor, rather than viewing it as a theory of price determination. Marx's EQRE helps

[16] See Cogliano (2018) for a detailed analysis of the differences between surplus value production and realization for the U.S. economy.

to locate the source of surplus value creation, which is a reflection of how abstract labor is arranged across the social division of labor.

6.3 Exploitation and Value Theory

A third implication of Marx's EQRE—particularly given the emphasis he places on it in presenting the relationship between labor values and prices—is that the EQRE is something that should be given greater consideration by modern approaches to the transformation problem. As summarized by Cogliano, Flaschel, Franke, Fröhlich, and Veneziani (2018), Foley (2000), and Mohun and Veneziani (2017), many approaches to the transformation problem have focused on whether or not certain aggregate identities—often referred to as 'Marx's identities'—can hold when calculated in term of labor values and prices of production. These identities are: (1) total price is equal to total value; (2) total profit equals total surplus value; and (3) the profit rate in price terms is equal to the profit rate in terms of labor values. Thus, far no interpretation of Marx, or approach to labor values and prices, is able to show that all three identities can hold simultaneously. Given the proximity of the presentation of Marx's EQRE to his discussion of the formation of prices of production and equalization of the profit rate, it is surprising that the EQRE is not considered to be one of 'Marx's identities'.

Table 1, and the original examples in volume three of *Capital* from which it is adapted, show how Marx implies the equality of total price and total value, total profit and total surplus value, and the equality of profit rates calculated as Surplus Value/(Constant Capital + Variable Capital) or Profit/(Constant Capital + Variable Capital). However, table 1 also shows the EQRE, and the equivalence of the aggregate rate of exploitation and aggregate rate of surplus value, i.e. Surplus Value/Variable Capital equals Profit/Variable Capital. Marx elevates the EQRE to a high level of importance, thus it is striking that it is mostly left out of contemporary interpretations of Marx's work and approaches to the transformation problem. Thus, it makes sense to give the EQRE greater consideration.

Two points in particular, which already appear in section 3, emerge from this consideration: (1) the aggregate rate of exploitation should be equivalent when calculated in terms of labor values or prices, or stated differently, the aggregate rate of exploitation e should be equal to the aggregate rate of surplus value ε; and (2) rates of exploitation across productive industries e_j should be uniform. These points are briefly formalized and discussed here in hopes of prompting further exploration.

If one takes Marx's EQRE to be as important at his other 'identities' then approaches to classical-Marxian price and value theory should be able to replicate arguments (1) and (2). It is possible to examine the degree to which these arguments hold in the NI and the standard "dual-system" (Foley 2000) approach often attributed to Morishima (1973) and Steedman (1977), among others. Consider a linear circulating capital economy composed only of n productive industries. Let A represent the $n \times n$ matrix of capital requirements for production, with element a_{ij} denoting the quantity of commodity i necessary to produce one unit of commodity j and column $A_{\star j}$ denoting the capital requirements of industry j, let I denote the n-dimensional identity matrix, and let l be the $1 \times n$ row vector of direct labor requirements with element l_j. Wage and profit rates are respectively denoted by w and r. If x is the $n \times 1$ vector of gross output of the economy, $y = (I - A)x$ is the vector of net output. Taking the MELT as $\mu = py/lx$ and defining the value of labor power as w/μ, as is typical in the NI, arguments (1) and (2) can be examined more closely.

First, looking at whether or not e is equivalent to ε. Total profit is $\Pi = p(I-A)x - wlx$ and total surplus value is $S = (p(I-A)x - wlx)/\mu$. With $V = wlx/\mu$ as aggregate variable capital under the NI, the aggregate rate of exploitation is $e = S/V$. The aggregate rate of surplus value is $\varepsilon = \Pi/wlx$. Under the definitions of the NI, e will be equivalent to ε. This equivalence is formalized as the *Exploitation Equivalence Principle* in Proposition 1.

Proposition 1 (Exploitation Equivalence Principle (EEP)). *Under the assumptions of the NI the aggregate rate of exploitation e will be equivalent to the aggregate rate of surplus value ε:*

$$\varepsilon \equiv e,$$

$$\frac{p(I-A)x - wlx}{wlx} \equiv \frac{(p(I-A)x - wlx)/\mu}{wlx/\mu}.$$

Proof. By the definition of the MELT, $\mu = py/lx$, $e = S/V$ reduces to

$$\frac{p(I-A)x}{wlx} - 1,$$

which is the same as ε. ■

Second, considering the uniformity of e_j, it would be consistent with Marx's presentation of labor values and prices if approaches to the transformation problem could also show that e_j are uniform. This is a complicated idea in light of different approaches to Marx's theory of value. In the dual-system approach uniform e_j hold. Letting $\lambda = \lambda A + l = l(I-A)^{-1}$ denote the standard labor values and letting b be the $n \times 1$ subsistence bundle, e_j are given by $\frac{\lambda(I-A-bl)}{\lambda bl}$. Given $\lambda = l(I-A)^{-1}$, rates of exploitation across industries reduce to $d\left(\frac{1}{\lambda b} - 1\right)$, where $d = (1, \ldots, 1)$ is of length n and simply provides dimensionality across industries. Thus, e_j can be uniform.[17]

However, due to the well-known lack of proportionality between prices and labor values, i.e. $p = (1+r)(pA + wl) \neq \phi\lambda$, or $p = (1+r)pA + wl \neq \phi\lambda$, for any scalar $\phi > 0$ so long as $r > 0$ or $A_{\star j}/l_j$ are different for at least some j, ε_j will not be uniform, nor will e be equal to ε. Thus, while a uniform e_j can hold under the dual-system, Proposition 1 cannot and Marx's EQRE is not fully captured.

While the EEP holds under the NI there is an apparent inconsistency with Marx's uniform e_j. Given the NI's definition of the value of labor power, e_j will not be uniform if one converts money magnitudes using μ. However, based on Robinson's (1950) discussion of the inverse transformation described in section 2 and arguments made by Cogliano (2018), rather than expect a uniform e_j to hold, it may be, arguably, more correct to treat the uniform e_j as a condition used to estimate labor values from available national income and production data denominated in prices (or monetary terms).

[17] Cogliano et al. (2018, Chs.9, 11) discuss a similar result in the context of Flaschel's (1983) concept of "actual labor values" and show that uniform e_j at the sectoral level also hold in the more general cases of joint production and multiple activities.

As Cogliano (2013, 2018) and Foley (2011a, 2018) explain, any estimate of labor values from data gathered in monetary terms requires some assumption about the distribution of e_j to impute the surplus value created in productive industries. This highlights a subtle aspect of table 1, where industry-level surplus value production is proportional to the living labor engaged in said industry. Setting aside the complete estimation of labor values and focusing on the imputation of surplus value, it is possible briefly sketch out the connection between surplus value production and the assumption of uniform e_j.[18]

Let s denote the vector of surplus value produced by the j productive industries. Given the uniformity of e_j and Proposition 1, $e_j \equiv e$ for all j, $s = l\left(1 - \frac{1}{1+e}\right)$, since $w = \mu\left(\frac{1}{1+e}\right)$, and s_j is proportional to l_j. Thus, estimating surplus value production at the industry level requires knowing something about the distribution of e_j.[19] It need not be the case that e_j are assumed to be uniform. At any given moment in time there may exist a variety of historical and institutional features that subvert labor mobility and undermine the assumption of uniform e_j. This, however, does not negate the need to make some assumption about e_j to estimate surplus value production across productive industries and labor values.

The line of argument introduced by the inverse transformation implies that the uniform e_j aspect of Marx's EQRE is not something that should be regarded as a result needed to obtain in formal treatments of prices and labor values. Instead, the uniform e_j is something that should be taken as a logical conclusion of Marx's LPM, and labor values—particularly the surplus value as a component of labor values—should be constructed such that $e_j \equiv e$, all j. Given this potentially critical role played by e_j in investigations of surplus value and labor values, Marx's views on labor mobility and the EQRE should be treated as central components of his theory of value. In particular, Proposition 1 should, arguably, be given the same level of importance as Marx's identities. Furthermore, the fact that $e \equiv \varepsilon$ holds under the assumptions of the NI facilitates estimation of e and estimates of surplus value production across productive industries, if not also allowing construction of labor values via a uniform e, assuming a suitable treatment of constant and fixed capital used in production. Emphasizing the distribution of e_j in empirical investigations along these lines further supports the view that Marx's theory of value is also a theory of the allocation of social labor, since calculations of s and/or labor values inherently imply something about how social labor is distributed across the economy.

[18] Estimating the surplus value produced by productive industries is relatively straightforward compared to the full estimation of labor values. Estimating labor values would also require a treatment of constant capital and/or the portion of fixed capital used up in the production process, which introduces further complications. See Foley (2018, p.560) for a discussion of the complications posed by constant capital (i.e. "a flow of value whose measurement depends on the organization of production between capitalist firms and the accounting time period"), and Cogliano et al. (2018) for proposed treatments of constant and fixed capital in estimating labor values that are conceptually consistent with the NI and the arguments of this article.

[19] Implementing this empirically requires that calculating aggregate e treat the $m-n$ unproductive industries (and possibly unproductive labor in general) as part of surplus value. An example of this is carried out by Cogliano (2018). For a theoretical framework extending the EQRE to the further general case of the global economy and themes in imperialism, see Vasudevan (2019).

7 Conclusion

This article presents the intellectual roots of Marx's EQRE to better understand its role in his theory of value. It is found that Marx drew heavily upon the work of Adam Smith and the abstraction of the early and rude state of society to formulate his views on labor mobility and how this translates into the EQRE when considering the long-period tendencies of capitalist economies. Given Marx's clear statements of the reasoning for the EQRE, including its roots in Smith, the uneven treatment the idea receives in recent literature is somewhat surprising. A clear articulation of the principles implied by the EQRE helps to locate the importance of labor mobility in Marx's work, and recasts some of the issues at the heart of the transformation problem debates. Most importantly, the EQRE helps to frame Marx's theory of value as a theory of the allocation of social labor and the sources of value creation in capitalist economies.

There are multiple questions and avenues for further research opened by the current presentation. Chief among these are the implications identified in section 6. In addition to these, it would be beneficial to fully study the EQRE in more general cases of joint production, multiple activities, and general convex economies. Lastly, the assumption of labor mobility at the level of abstraction here raises empirical questions about institutional structures and historical determinants that inevitably inhibit the free movement of workers. Further study of these factors as checks against the tendency of the EQRE would shed light on a contemporary understanding of labor mobility from a classical-Marxian perspective. The analysis presented here does not address these questions, but it provides guidance for further inquiry.

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