Capital Composition and Rate of Surplus Value: Empirical Evidence for Rethinking the Value Transfers in International Trade

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Abstract: This article aims at advancing an explanation, still to be completed, of the paradox of productivity differences and surplus value rate at an international level. New empirical evidence is presented, and it is suggested that an explanation should be developed based on the analysis of the problem of value transfers in international trade. According to the findings of Martínez and Valle (2011), there is empirical evidence that suggests a pattern in which underdeveloped countries with low productivity have a high value composition of capital and a high rate of surplus value, the former being as high as or higher than the corresponding one in a developed country. This work is a contribution to the development of the state of the empirical analysis. Said contribution is made based on econometric and statistical evidence of the relationship between rate of surplus value and value composition of capital of a selection of countries and a sample of 70 countries. Data from Penn World (PWT) v.10, v.9 or Extended Penn World Table (EPWT), v.4 are used.

Key words: composition of capital; surplus value; productivity; transfers; fixed effects panel

1. Introduction

This work considers mainly the relationship between capital composition and the rate of surplus value at an international level. Martínez and Valle (2011) showed

empirical evidence with a pattern in which the underdeveloped countries with low productivity, which import means of production, have a high value composition of capital, and a higher rate of surplus value with respect to the corresponding rate of developed countries. These authors (Valle and Martínez 2013) stated that the existence of an industrial reserve army efficiently contributes to raising that rate. Thus, they helped to answer the question: If among the developed countries there is a positive correlation between productivity and rate of surplus value, why do underdeveloped countries have a higher rate of surplus value than developed countries? They established that underdeveloped countries have a high value composition of capital.

This paper provides empirical evidence that: 1) temporarily and spatially expands the one provided in previous works, according to which underdeveloped countries have lower productivity and a value composition of capital similar to, and in some cases higher than the one corresponding to developed countries; 2) proves for a sample of 72 countries in the world that the rate of surplus value is positively related to the value composition of capital; and 3) based on the analysis of said relationship, supports previous findings since it proves for a sample of 72 countries that the rate of surplus value in underdeveloped countries is higher than the one corresponding to developed countries.

The first part succinctly explains the development of what has been called the paradox of the differences of productivity and rate of surplus value at an international level.[1] That exposition includes previous analyses whose results have been considered the most relevant, which are updated or extended to a representative number of countries in the world.

In the second part, the relationship between composition of capital and rate of surplus value at an international level is analyzed, and the results are compared with the state of the theory on that relationship. The answer to the aforementioned paradox is empirically developed based on econometric and statistical evidence of the relationship between rate of surplus value and value composition of capital in a selection of countries and a sample of 70 or 72 countries. These are: 1) a global graphic correlation, with data from the Extended Penn World Table (EPWT), of the relationship between the profit/wage ratio (w), approximate variable of the rate of surplus value and composition of capital (k), and a chart of global dispersion divided into developed and underdeveloped countries;[2] 2) analysis of the data based on probability density functions (PDF) of global data and by the type of countries; and 3) analysis of panel data with fixed effects between the approximate variable of the rate of surplus value and the value composition of capital during the period 1950–2008.

The final part of this article succinctly sets forth how to advance in the construction of a complete explanation of what establishes the national differences in

rates of surplus value between countries with different degrees of development, by reviewing ideas on international transfers of value. Some of these ideas are mistaken, as are some ideas about transfers of value within an economy. The argument as to why the latter ones are wrong is developed in another work[3] and on the former ones, problems and questions are left established, which must be addressed in a following article.

2. Paradox of the Relation between Rate of Surplus Value, Productivity and Composition of Capital at an International Level

2.1. The Paradox

According to the general law of accumulation, in capitalism there is a dominant trend: the increase of the organic composition of capital, and consequently, the creation of an excess population with respect to the needs of capital valorization. Such growth of the organic composition of capital becomes an obstacle to accumulation, while there are subordinate counteracting tendencies that favor it: the increase of salaried labor and therefore of variable capital, the absolute increase in constant capital, the increase in productivity, the devaluation of labor force, and the increase of the rate of surplus value, despite the growth of real wage.

It has been found that, among the literature inspired by Marx, on the general law of accumulation, as in Shaikh (1990), Guerrero (2006), Cockshott, Cottrell, and Michaelson (1995), and Valle (2005), the idea of a growing organic composition of capital prevails, although with an emphasis on different aspects of the law: the generation of a surplus population, the mechanization, the concentration and centralization of capital, etcetera.

The interpretation of Valle (2005) holds the need for capitalism to separate accumulation of population growth from the increase of productivity in such a way as to increase the composition of capital. According to Marx, the rational choice of techniques is only that which maximizes profits and increases the organic composition of capital. Therefore, the technical change that makes the rhythm of accumulation independent from the growth of the working population requires the technical composition of capital to grow more than the labor force, and the rate of surplus value to increase, provided that it makes possible raising or at least maintaining the rate of profit.

Based on the interpretations of the general law of accumulation mentioned previously, here we state the one that has been called Marx's conjecture on the relationship between the rate of surplus value and productivity between countries: capital accumulation involves the growth of productivity, of the organic composition of capital and of the rate of surplus value.

The development of capitalism requires an increase of the organic composition of capital, which entails a rise in the rate of surplus value to counteract the negative effect of the increase of the former on the rate of profit.

It is reasonable to expect a direct correspondence between the rate of surplus value and productivity because it is perfectly plausible to assume that the most productive countries have a greater volume of means of production in value with respect to living labor, and this requires a surplus value rate higher than the prevailing one in countries that are less productive and that have a lower organic composition of capital. In addition, a greater organic composition of capital generally means a higher productivity, and this allows for higher wages as well as greater exploitation.

Martínez, Valle, and Sánchez Pérez (2018) gather the evidence and provide a new one. Based on statistical and econometric models, *they corroborate the positive relationship between productivity and surplus value rate according to the Marxist theory of accumulation, but they do not corroborate the conjecture resulting from that same theory, according to which less productive underdeveloped countries have a surplus value rate lower than that of the advanced more productive countries; they corroborate that underdeveloped countries with low productivity have a surplus value rate higher than that of developed countries with high productivity.*[4]

An alternative way to show the paradox of the rate of surplus value and development is shown in Figures 1, 2 and 3, through the probability density functions of productivity, capital composition, and the rate of surplus value in developed countries versus underdeveloped countries using a large sample of 70 or 72 countries, from the Penn World Table (PWT), v.10 or the Extended Penn World Table (EPWT), v.4. The units of the variables are on the horizontal axis.

Out of 72 countries 28 are developed, according to their productivity with respect to the world average. Martínez and Valle (2011), in their analysis of the relationship between national differences in rate of surplus value and in productivity, thoroughly explain the theoretical, statistical and practical rationale on: 1) the validity of classifying countries into developed and underdeveloped, based on their productivity level, and 2) the convenience of using the wage share as a proxy variable for the rate of surplus value. In this paper we use a variable that is closer to the rate of surplus value, i.e., the profit/wage ratio.

Among the authors' findings is that, according to the relation between rate of surplus value and productivity, countries are grouped, with great similarity through ergonometric cluster analysis or through a classification into developed and underdeveloped countries, as the one used in this paper. In 1995, for example, the average productivity of a sample of 72 countries in the world was $33,244.2 dollars in purchasing power parity (PPP) (see Appendix 1), while the country whose productivity was less than that average was classified as underdeveloped. (A classification of the countries can be seen in Appendix 1).
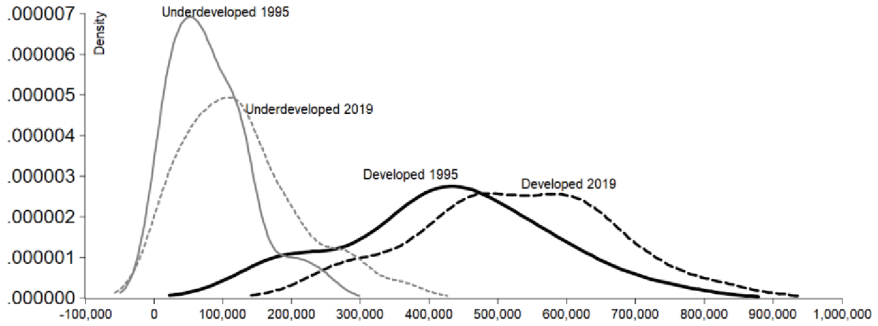
Figure 1.   Capital/Labor (PPP Dollars/Worker) of 70 Selected Countries (1995 and 2019)

Source: Own elaboration based on PWT, v.10 (Feenstra, Inklaar, and Timmer 2015), 2017 dollars PPP.
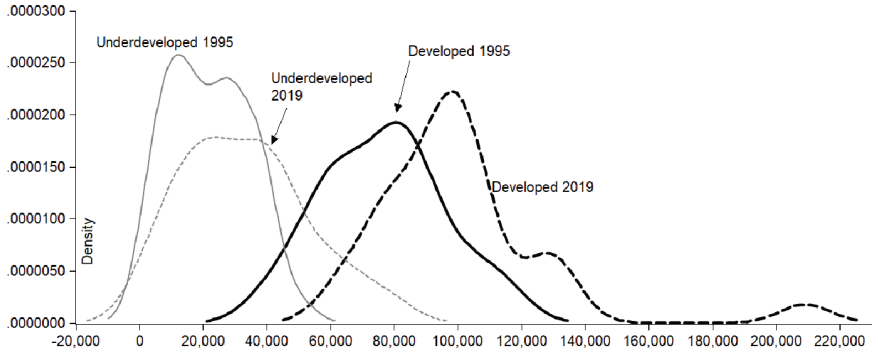

Figure 2.   Productivity (PPP Dollars /Worker) of 70 Selected Countries (1995 and 2019)

Source: Own elaboration based on PWT, v.10 (Feenstra, Inklaar, and Timmer 2015),[5] 2017 dollars PPP.

The paradox is then stated. In 2019, while the capital composition is 4 to 1 between developed and underdeveloped countries (approximately 550/125), productivity is around 3 to 1 (100/30). Those ratios are the same as the ones of 2008. That year, while the capital composition is 4 to 1 between developed and underdeveloped countries (approximately 120/30), productivity is around 3 to 1, but in contrast, the rate of exploitation is 1 to 1.80. Furthermore, the trend of the variables coincides with the theory's predictions. Next, it will be shown econometrically that the idea put forward by Marx, on a direct relationship between productivity and surplus value rate, is fulfilled anyway, despite the different levels of surplus value rates within the subsets of countries.
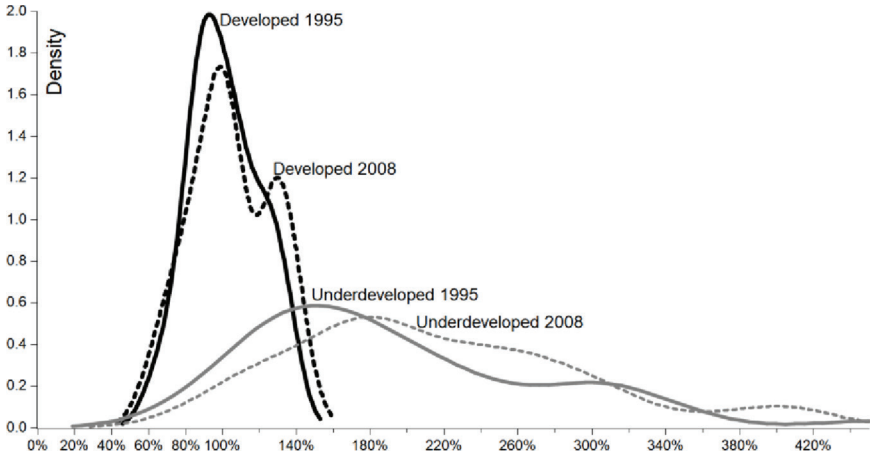
Figure 3.   Surplus-Value Rate. Profits/Wages of 72 Selected Countries (1995 and 2008)[6]
Source: Taken from Martínez, Valle, and Sánchez Pérez (2018, 40).

2.2. Surplus Value Rate and Capital Composition in Price and Value: The Developed Paradox

In Valle and Martínez (2013) empirical evidence on the magnitude of the industrial reserve army and its increasing precariousness in underdeveloped countries is provided. Based on the theory of value, it was held that it is plausible that the capital composition in an underdeveloped country is higher than the one corresponding to a developed country, that it is more expensive to exploit a worker in the former than in the latter. It was argued that generally capitalism faces difficulties to exploit all the available labor force, and that accumulation in underdeveloped countries is different from that in developed countries in that its capital composition is higher, which increases the difficulties to absorb labor force. Such a difference results from lower productivity and the need to import means of production by underdeveloped countries.

To demonstrate the above theoretical and empirical aspects of the difference between values and prices of products imported by underdeveloped countries were examined. These products have a world value to which an imputed national value corresponds. This value is also partially established by the exchange rate if this is at purchasing power parity (PPP). It happens that the lower the productivity of the underdeveloped country the higher is the imputed value in relation to the national value of the products that this country trades. The imported good "is worth" more, since the price system estimates the value of an imported good according to the national values and therefore more labor value is required to

acquire it. The result is that capital composition increases in those countries when the means of production are imported, and that decreases their ability to exploit the labor force.

The imputed value of a commodity imported by a country is established, as has been said, by the difference between its national "value" and its value in the world market. So, the price system estimates the value of an imported product according to the national values. Imported means of production cost more labor value than in producing countries, and thus the incorporation of the new technology is more expensive the greater the difference in productivity. Following a numerical illustration is exposed of the national imputed value of a means of production imported from a country with higher productivity to a country with lower productivity.

3. Numerical Illustration of the Imputed National Value of the Imported Means of Production

Definitions:

K: capital stock in price ($)

MEV: the monetary expression of value expressed in $\dfrac{\$}{Y}$

where

Y: working year

In Country A: The United States

There is a capital stock of $6000

$K_{EUA} = \$6000$

If there are 150 workers, k, the capital stock per worker,

$k_{EUA}: 40\left(\dfrac{\$}{Y}\right)$

It can be shown that the monetary expression of value (MEV) is equal to value added per worker when prices are equivalent prices. Both magnitudes will be different with market prices, but not very different, so the value added per capita can be used as a good approximation to MEV.

Value of the capital stock (mK) can be calculated by dividing K, the capital stock in price, by the MEV

$mK_{EUA} = \dfrac{K_{EUA}}{MEV}$

Assuming MEV is $100\left(\dfrac{\$}{Y}\right)$ for the US.

$mK_{US} = \dfrac{6000\$}{100\left(\dfrac{\$}{Y}\right)} = 60Y$

In country B: The United Kingdom

Assuming that the UK imports all the means of production that make up its capital stock from the US and that capital per worker is the same in the two countries, the output per worker in the UK might be 75% of that of the US. For example, a product per worker of $100/$Y$ in the US and $75/$Y$ in the UK. What does that mean?

At first, it seems meaningless as the products from both countries are qualitatively different as the UK does not produce means of production. But if when comparing both magnitudes the PPP is used then this means that the productivity for the basket of goods with which the PPP was obtained is, in the UK, 75% of that of the United States, as demonstrated by Valle and Martínez (2020, 383–384). Since we are assuming that the UK only produces means of consumption, how do we calculate the value of the means of production that it does not produce? It imputes values to imported merchandise. That is what the world market does when it approximates the prices of merchandise to international levels through the flexible exchange rates that operate between countries.

This implies that even if the capital per worker is equal in monetary terms between the UK and the US, labor value is one by hypothesis, the labor value ratio would be 4/3 higher in the UK than in the US.

4. An Analysis of the Differences in the Composition of Capital between Developed and Underdeveloped Countries

To estimate the value composition of capital (*VCC*), Valle and Martínez's work (2013) was based on the definition of the relationship between market price and value expressed in Equation (1):

$$\lambda_i = \varepsilon_i \frac{P_i}{\mu} \tag{1}$$

where λ_i is the value of the commodity i, μ is the monetary expression of value (*MEV*) and ε_i is the discrepancy or error. Following that definition, and as it was illustrated in the previous section, dividing a price by the monetary expression of value results in the approximate value of a commodity. Thus, the authors were able to estimate the value composition of capital based on the composition of capital in price, divided by the monetary expression of value. In this article, estimates for a longer period of time (1950–2019) are presented. Data come from PWT, v.10: the series real GDP per worker (*rgdpw*) and capital stock per worker (*kpw*).

$$VCC = \left(\frac{kpw_t}{rgdpw_t} \right) \tag{2}$$

That is to say, in terms of the theory of value, we have a ratio of dead labor/total living labor.

It was found that value compositions of capital of Argentina and Bolivia in 2019 were significantly higher than in terms of prices; they represented 104% and 66% of that corresponding to the United States, while in terms of prices they barely represented 38% and 9%, respectively, as can be seen in Table 1. In the following section the results of a larger analysis are shown.

According to the results of a comparative analysis, the magnitude of the differences in compositions of capital between underdeveloped and developed countries is reduced or even the differences are reversed, when these compositions are considered in terms of value.

In Figure 4 it can be seen that the compositions of capital in terms of price (in dashed lines) in Mexico, Argentina, and Chile represented between 40% and 80% of that corresponding to the United States between 1950 and 2019, while that of Venezuela was between 10% and 70% of the United States before the 1980s. In contrast, the compositions in terms of value of the former represented between 40% and almost 140% of that of the United States, while the Venezuelan one remarkably multiplies the American one.[7] Such a magnitude, as will be seen later, does not entail a problem in a statistical analysis, which spatially and temporarily expands the universe of study.

Even more relevant is that *the pattern of differences in the value composition of capital between these Latin American countries and the United States is confirmed for a larger sample of countries*.

Based on the evidence analyzed so far, the compositions of capital in terms of prices of the underdeveloped countries are mainly lower than those of the developed countries, and the gap between them is growing, as shown in Figure 5.

Table 1.   Assessment of the Value Composition of Capital

Selected Countries (international dollars per worker)

Country	Year	Real GDP per worker (1)	Capital per worker (2)	VCC = (2)/(1)	Ratio K/L in value with respect to US %	Ratio K/L in price with respect to US %
US	2019	129,903.0	436,255.5	3.36	100.0	100.0
Argentina	2019	47,258.6	164,661.8	3.48	103.8	37.7
Bolivia	2019	17,587.6	39,082.1	2.22	66.2	9.0

Source: Own elaboration based on PWT, v.10 (Feenstra, Inklaar, and Timmer 2015), 2017 dollars PPP.
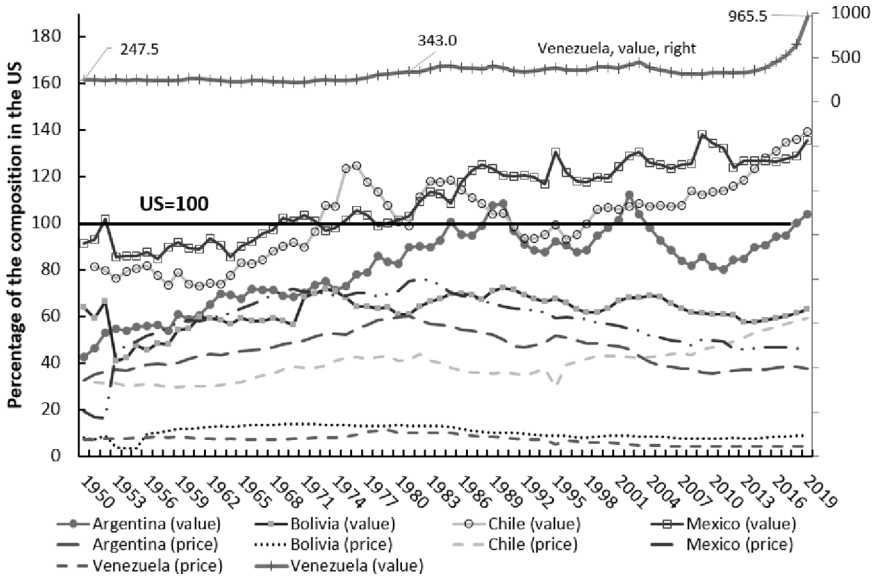
Figure 4.   Relative Value or Price Compositions of Capital of Selected Latin American Countries (1950–2019)

Source: Own elaboration based on PWT, v.10 (Feenstra, Inklaar, and Timmer 2015).
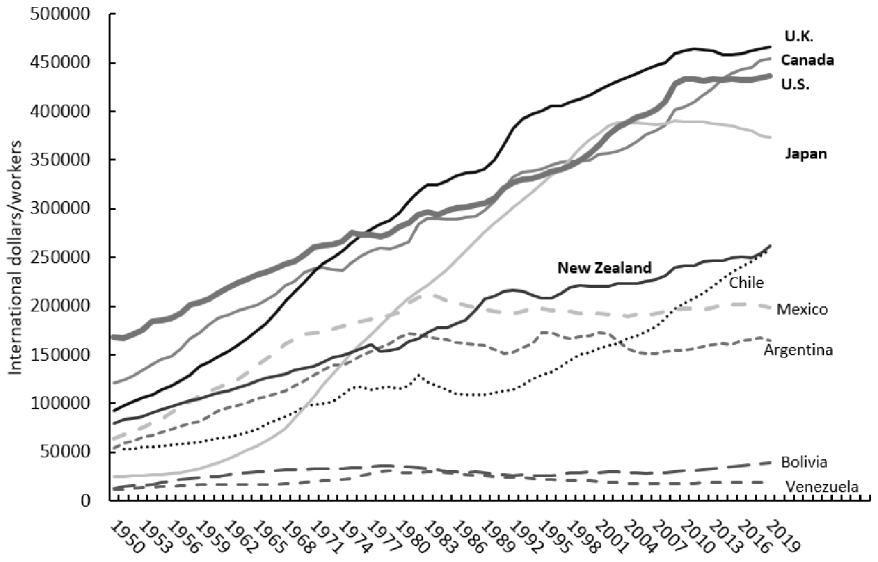

Figure 5.   Price Composition of Capital of Selected Countries (1950–2019)

Source: Own elaboration based on PWT, v.10 (Feenstra, Inklaar, and Timmer 2015).
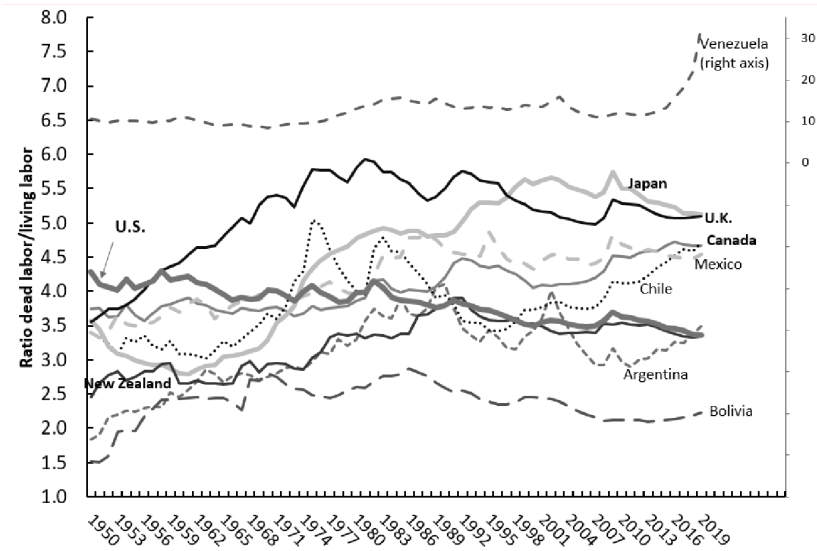
Figure 6.   Value Composition of Capital of Selected Countries (1950–2019)
Source: Own elaboration based on PWT, v.10 (Feenstra, Inklaar, and Timmer 2015).

Conversely, the compositions of capital in terms of value in the underdeveloped countries are extremely similar to, or, as in the case of Venezuela, even greater than those of developed countries, as can be seen in Figure 6.

The findings on national differences in value composition of capital in the period of time in which they were estimated served as the basis for Valle and Martínez (2011) to develop the paradox by showing empirical evidence of a pattern of underdeveloped countries with low productivity, and because of this and their need to import means of production, with a high value composition of capital, elements that oblige a high rate of surplus value. The magnitude of its industrial reserve army contributes effectively to it. That is, they have the need for a higher surplus value rate, and at the same time this is impelled because the greater difficulty to absorb labor force produces a larger industrial reserve army. In this article, the empirical evidence of such a pattern of underdeveloped countries with low productivity and high composition of capital is expanded temporally and spatially.

As can be seen in Figure 7, in a sample of 70 countries, the value compositions of capital are very similar among countries with unequal development. Such compositions of the underdeveloped countries are very close to those corresponding to developed countries, which is even more noticeable when Figure 7 is compared with Figure 1 (*supra*). In 2019, based on PWT, v.10, the mode of the *VCC* of the former is approximately 0.7 of the one corresponding to the latter and it is 0.8
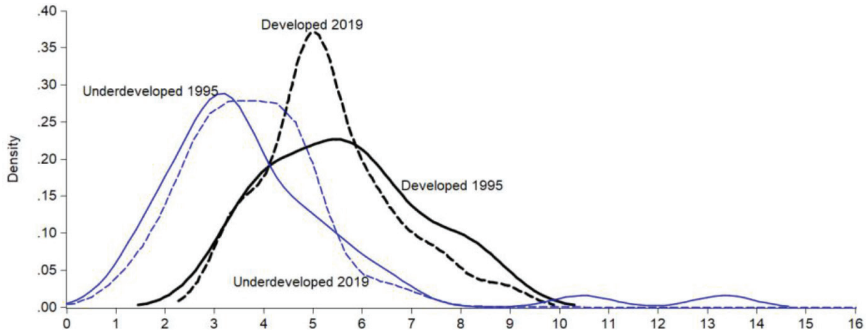
Figure 7.   Value Composition of Capital of 70 Selected Countries (1995–2019)
Source: Own elaboration based on PWT, v.10 (Feenstra, Inklaar, and Timmer 2015).

based on PWT, v.9.1. Both data contrast significantly with the analogous ratio of their price capital compositions (*K/L*), which is approximately 0.2.

Following our own findings will be presented based on a panel analysis of fixed effects between the rate of surplus value and value composition of capital.

5. Statistical Analysis, Development of Empirical Evidence

With panel analysis of fixed effects between the rate of surplus value and value com-position of capital, it is intended to prove: 1) that the rate of surplus value is positively related to the value composition of capital; 2) that the effect of the growth of the value composition of capital on the rate of surplus value is greater in underdeveloped coun-tries; and 3) that, in accordance with previous findings (Martínez and Valle 2011), the rate of surplus value is higher in underdeveloped countries.[8]

5.1. Selected Countries

For the nine selected countries, namely, Argentina, Chile, Mexico, Venezuela, Canada, Great Britain, the United States, Japan, and New Zealand, it was found:

A statistically positive relationship between the rate of surplus value and the value composition of capital (*VCC*), both for the group of countries and for the developed or underdeveloped countries, according to their level of productivity (see Figure 7, Table 2 and Tables A1, A2 and A3 in the Appendix). That is, the greater the value composition of capital, the higher the rate of surplus value.

An effect of the *VCC* on the surplus value rate that is statistically higher in developed countries than in underdeveloped countries. The slope of the regression for the former is equal to 0.61, while the one corresponding to the latter is 0.27 (see Figure 7, Tables 2, A2 and A3).

The above, in another way is an effect of the *VCC* on the surplus value rate that is statistically lower in the underdeveloped countries than in the developed ones.

The existence of a typical effect of underdeveloped countries that results in a higher rate of surplus value in relation to that corresponding to the developed
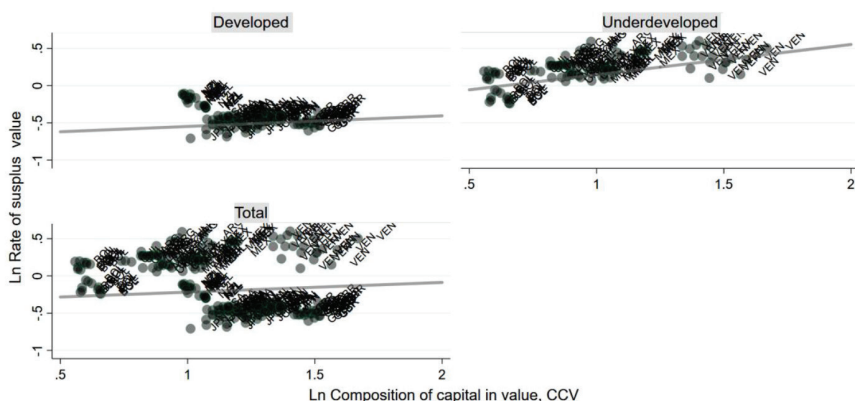

Figure 8.   Trend of Association between the Rate of Surplus Value and the Value Composition of Capital (VCC) of Selected Countries. Natural Logarithms: Total and by Type of Countries

Source: Own elaboration based on EPWT, v.4 (Marquetti 2012) and PWT, v.9.1 (Feenstra, Inklaar, and Timmer 2015) and data for rate of surplus value taken from Martínez and Valle (2011).

Table 2.   Panel Data Models with Fixed Effects between the Rate of Surplus Value and the Value Composition of Capital (VCC) of Selected Countries: Total and by Type of Countries

Total: Equation (3)	$\ln\left(p'\right)_{it} = -0.5265 + 0.3661\,ln\left(CCV\right)_{it} + u_{it}$
	t-estad. (–4.16) (3.39) $F = 823.62$, $R^2 ajustada = 98.3\%$, $i = 72$, $t = 14$, $N = 1008$
Underdeveloped countries: Equation (4)	$\ln\left(p'\right)_{it} = -0.03443 + 0.2680\,ln\left(CCV\right)_{it} + u_{it}$
	t-estad. (–0.20) (1.51)
Developed countries: Equation (5)	$\ln\left(p'\right)_{it} = -1.1814 + 0.6138\,ln\left(CCV\right)_{it} + u_{it}$
	t-estad. (–7.93) (5.07)

Notes: The rate of surplus value (*p'*) and the value composition of capital (*VCC*) both in logarithms.

Source: Own elaboration based on EPWT, v.4 (Marquetti 2012) and PWT, v.9.1 (Feenstra, Inklaar, and Timmer 2015) and data for rate of surplus value taken from Martínez and Valle (2011).

countries. The ordinate to the origin of the regression for the former is equal to –0.034, while that corresponding to the latter is –1.18 (see Figure 8, Tables 2, A2 and A3).

The following equation is evaluated:

$$\ln\left(p'\right)_{it} = \beta_1 ln\,(VCC)_{it} + \alpha_i + u_{it}$$

where: p' = profits/wages is a proxy variable of the rate of surplus value; VCC = (capital/employment)/(monetary expression of value), quotient that corresponds to the estimate of the value composition of capital; i refers to a country and t refers to time. Thus, we have $N = i \times t = 10 \times 20 = 200$ observations.

For every 10% increase in the value composition of capital of all countries, the surplus value rate grows by 3.8%; the one corresponding to developed countries would grow by 6.1%, a very elastic situation. The results suggest that the composition in value makes the rate of surplus value grow, and that this growth is more than double in developed countries.

The differences in ordinate to the origin between underdeveloped and developed countries, $-0.03443 \succ -1.1814$, contribute to the higher levels of the rate of surplus value in the former. Based on the antilogarithms of the ordinate to the origin, the rate of surplus value of the underdeveloped countries starts from 0.97 while the one corresponding to developed countries starts from 0.31.

5.2. Sample of 72 Countries of the World

The relationship between a proxy variable of the rate of surplus value, the profit/wage ratio, and the value composition of capital is examined. The results of the analysis of this large sample of countries support the previous findings:

A statistically positive relationship between the rate of surplus value and the value composition of capital (VCC), both for the group of countries and for the developed countries or the underdeveloped countries (see Figure 8 and Table 3).

An effect of the VCC on the rate of surplus value that is statistically higher in developed countries than in underdeveloped ones. The slope of the regression for the former is equal to 0.25, while the one corresponding to the latter is 0.08 (see Figure 8 and Table 3).

Or an effect of the VCC on the rate of surplus value that is statistically lower in underdeveloped countries than in developed ones.

A typical effect of underdeveloped countries that results in a higher rate of surplus value with respect to the one corresponding to developed countries. The ordinate to the origin of the regression for the former is equal to 0.83 (antilog –0.183) while the one corresponding to the latter is 0.43 (antilog –0.833) (see Figure 8 and Table 4).
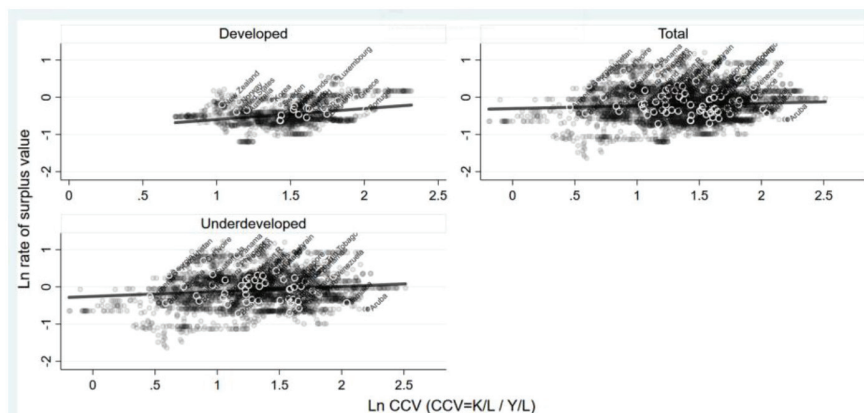
Figure 9. Relationship between Rate of Surplus Value and VCC from Sample of 72 Countries (1950–2008): Natural Logarithms

Source: Own elaboration based on EPWT, v.4 (Marquetti 2012) and PWT, v.9.1 (Feenstra, Inklaar, and Timmer 2015).

Table 3. Panel Data Models with Fixed Effects between the Rate of Surplus Value and Value Composition of Capital (*VCC*) from Sample of 72 Countries. Total and by Type of Countries PWT, v.9

Model data from fixed effects panel. Variable to be explained *ln* rate of surplus value.

	Value composition of capital			*Capital/Labor*		
Variable	*Total*	*Underdeveloped*	*Developed*	*Total*	*Underdeveloped*	*Developed*
Ln VCC	**0.109**	**0.0772**	**0.254**			
	6.55	*3.84*	*8.5*			
Ln K/L				**0.137**	**0.12**	**0.162**
				24.5	*14.6*	*28*
cons	−0.353	−0.183	−0.833	−1.79	−1.43	−2.45
	15.6	−6.94	−19.1	−27.7	−15.5	−34.5
N	4401	2977	1424	4401	2977	1424
Akaike inf. Criter.	−1807	−690	−1358	−2337	−885	−1920
F stat.	42.9	14.8	72.2	602	213	784

Source: Own elaboration based on EPWT, v.4 (Marquetti 2012) and PWT, v.9.1 (Feenstra, Inklaar, and Timmer 2015).

Table 4.   Fixed Effects Panel Estimators of the Relationship between the Rate of Surplus Value and the Value Composition of Capital: Selected Countries

	US	Argentina	Bolivia	Brazil	Chile	Guatemala	Indonesia	Oman	Philippines	Venezuela
α	0.18	0.97	0.64	0.54	0.82	0.87	0.85	1.50	0.99	0.97
α_i/α_{US}	1.00	5.39	5.39	3.00	4.56	4.83	4.72	8.33	5.50	5.39

Note: α: ordinate to the origin.

Source: Own elaboration based on EPWT, v.4 (Marquetti 2012) and PWT, v.9.1 (Feenstra, Inklaar, and Timmer 2015) for the proxy variable of the rate of surplus value.

Increases in the rate of surplus value facing growths in the value composition of capital are greater in developed countries than in underdeveloped ones. The intention was to demonstrate the opposite through the panel analysis of fixed effects of said relationship. However, the rate of surplus value continues to be higher in the latter, a result consistent with previous findings. In a joint analysis, the ordinates to the origin of the latter are greater than those of the former and lead to their higher rates of surplus value. The ordinate to the origin, in the regression equation of the group of underdeveloped countries is 70%, while that of the group of developed countries is 30%.

6. Conclusions and Foresight for Analysis of Value Transfers in International Trade

6.1. Conclusions

According to the theoretical conjecture of the differences in rates of surplus value between countries, higher productivity is achieved through a higher value of the means of production employed. Consequently, to maintain the rate of profit, capital requires a higher rate of surplus value, so that higher productivity should correspond to a higher rate of surplus value.

Throughout its course, this long-term research has contributed to developing an answer to the following question: If within developed countries there is a positive correspondence between productivity and the rate of surplus value, why do underdeveloped countries have higher rates of surplus value than developed countries? The answer advanced was because underdeveloped countries have a high value composition of capital due to the need to import means of production under conditions of low national productivity. Such an answer finds a development in this work.

Previous analyses were spatially and temporarily extended. Empirical evidence has shown that, in a representative sample of the countries in the world, there is a

pattern according to which underdeveloped countries with low productivity, importing means of production, have a high value composition of capital and a high rate of surplus value.

Based on a panel analysis with fixed effects of the relationship between the rate of surplus value and the value composition of capital on 9 selected countries, as well as of a sample of 72 countries, a positive statistically significant relationship is found between the rate of surplus value and the value composition of capital. It was expected to find that the effect of the growth of the value composition of capital on the rate of surplus value in underdeveloped countries would be greater than that corresponding to developed ones, but it was higher in the latter. That is to say, it is evident that the composition of capital in value of the underdeveloped countries is as high as and, in some cases, higher than that corresponding to developed countries. Nevertheless, that does not seem to sufficiently explain the rate of surplus value being higher in the former than that in the latter.

It is necessary to keep on developing an explanation of what in particular causes that fact. Whatever that may be, it more than compensates the fact that the effect of growth in the value composition of capital on the rate of surplus value is higher in developed countries.

What follows outlines questions to be answered and problems to be solved in a further phase of the development of the explanation, that will be the subject of another article.

6.2. On Surplus Value Transfers

In the controversy over surplus value transfers in the international arena, Mandel (1978) pointed out that underdeveloped countries have a smaller capital mass, a lower organic composition of capital and a lower rate of surplus value than those of developed countries. This is a theoretical hypothesis whose empirical testing has led to a complex paradox.

The countries of the world have a positive relationship between the rate of surplus value and productivity, as well as between the rate of surplus value and the value composition of capital. The effect of productivity in underdeveloped countries is twice that of developed countries,[9] while the effect of the value composition of capital in the latter is twice that of the former. The underdeveloped countries have a specific characteristic that raises their rate of surplus value above the one corresponding to the developed countries. The underdeveloped countries import means of production with an imputed national value greater than the value of said means in the country of origin, which makes their value compositions of capital similar to those corresponding to the developed countries. The question (*supra* 6.1) becomes more complex: What reinforces a higher rate of surplus value in underdeveloped countries? Does a transfer of surplus value take place behind the

fact that the imputed national value of the means of production imported by a dependent country is higher than their value in the developed country that produced them? How could a surplus value transfer process explain the higher rate of surplus value in underdeveloped countries?

The time has come in which it seems necessary to rethink ideas on surplus value transfers between countries. Surely there are less debatable transferences such as those linked to productive investment. These transfers take the form of repatriation of profits and royalties from foreign direct investment or the form of payments of loans or interests to banks. *But there is another kind of transfers, the ones linked to unequal exchange, which are highly controversial, and whose discussion would allow to make progress in the construction of a theory that explains how the law of value works at an international scale and explains how national differences in surplus value rates are formed.*

In, Valle and Martínez (2022) it is stated that, for several Marxist economics theorists, surplus value transfers occur at three levels: 1) within industries, when there are different producers with different productivities; 2) between industries, due to: a) differences in the composition of capital or renter production, that is, production based on the use of non-producible, monopolizable means of production of diverse quality, or b) discrepancies between market prices and prices of production; and 3) between countries, originated from differences in productivity or in composition of capital.

It is implied that in order to explain 2) and 3) it is necessary to first explain why there are no transfers of value between producers, due to differences in productivity within industries, within a country. To achieve this, an answer to the question about how productivity differences should be considered is developed. It is argued that within a country, within industries, the determination of value through socially necessary labor time is solved without considering transfers. It is claimed that only after discussing transfers within an economy will it be possible to examine transfers in the world market.

Regarding 1), in the same work, it is claimed that the idea according to which any exchange of non-equivalent should be understood as a transfer of value and surplus value is debatable. The basis of such claim is the conception of value, which implies the consideration of the existence of several productivities, the concept of replacement cost of constant capital, and the impossibility of an analysis in terms of physical units, due to the diversity of production techniques. It is a wrong way to understand sanctions imposed by the capitalist market upon the least efficient producers as a surplus value transfer to the most efficient. It is also not convenient to explain extraordinary surplus value as "generation of more value" by the workers of the most efficient processes. For the less efficient to

transfer value to the more efficient, it is necessary for the capitalist market to recognize as value the individual work of the less efficient, and that does not happen. If differences in productivity implied transfers of surplus value from the less efficient producers to the more efficient ones, an increasing participation of the former would absurdly lead to an increase in the average surplus value. Said growing participation of the former actually leads to the growth of the unit value of the merchandise and to the labor per unit of merchandise of the most efficient producer moving away from the average, making the extraordinary surplus value appropriated by this producer grow, but the fact does not consist in the generation of more value by the most efficient producer.

When it comes to the role of agricultural or mining production or any other that involves means of production which are non-producible and liable to be monopolized, differences in productivity can lead to the issue of an extraordinary profit called rent. The process of formation and appropriation of rent involves the concurrence of producers with different productive conditions due to different natural characteristics, considering equal rates of surplus value. The market treats those producers as equals when the price of the rentier product is established according to the value. This results in, for example, a producer with more productive land than the average and with a higher product per worker appropriating more surplus value. It is not a question of the workers of less productive land than the average producing a surplus value that is appropriated by the producer with the most productive land.

Rent is a part of the surplus value to accumulate in an economy therefore it is very important to know the amount and source of any rent to understand its effects on the accumulation. On a world scale, rent will negatively affect accumulation, but when it involves an external transfer it will benefit some nations to the detriment of others. The existence of rent is a permanent distortion in the process of market adjustment. But if the rent comes from outside, the negative effects are transferred to other countries.

If the products that cause the existence of rent are sold domestically then generally rent implies to no rentier sectors a lower rate than the average rate of profit according to the current organic composition of capital and the current rate of surplus value. We must distinguish between rentier sectors that produce means of production and those who produce wage goods.

In the case that products manufactured in rentier conditions were entirely exported the extraordinary profit would come from surplus value transferred from other countries. Such a case will cause a rise in the average rate of profit on the benefited economy and a corresponding decline in profitability in the importing countries. Clearly, there will be intermediate situations between the two.

The problem on transfers between nations, linked to unequal exchange, is much more complicated than that corresponding to transfers within a national economy and it has not been fully analyzed.

Marini is a Latin American theorist who put forward the relationship between dependency, unequal exchange, and super exploitation. For the author (Marini 1989, 1979a, 1979b) the dependence of an economy has to do with the competition in the world market where there is an unequal exchange that entails a transfer of value. Dependent countries, claims the author, do not produce the same or do so with low productivity, so that it turns out that the central countries can sell above their value. Apparently, the author was envisioning cases such as the one considered in this article, an imputed national value of the means of production imported by a dependent country, an imputed national value that is greater than the value of said means in the country that originally produced them. For Marini, the basis of dependency is super exploitation. The super exploitation of the labor force is a regime that involves three mechanisms: relative surplus value, absolute surplus value and *emphatically the increase in the exploitation of the labor force without correspondence to an increase in productivity, a fact that appears as a payment to the labor-power commodity below its value*. In later works, for example, "Process and Trends of Capitalist Globalization," the author considers the super exploitation of the labor force as an essential factor in the production of extraordinary profits (Marini 2008).

As part of the rest of the controversy about transfers of value linked to unequal exchange between countries, Emmanuel (1972) and Mandel (1978) propose transfers due to competition within industries from less efficient producers to more efficient producers. Samir Amin (1974) confuses the two types of value transfers due to the two levels of competition between industries and within industries. In the controversy, the transfers due to competition between industries are related to the formation of prices of production and therefore to differences in the composition of capital. Emmanuel confounds the equalization of the rate of profit between industries with the equalization of the rate of profit between countries. Mandel (1978) finds that a source of unequal exchange is that there is no equalization of the rate of profit in the world market, that there are conditions that limit this tendency to equalization although they might not eliminate it, and that such restrictions allow only for different national prices of production to exist.[10]

The debaters, on the one hand, make the errors previously indicated: believing that, within branches, the least efficient producers transfer surplus value to the most efficient ones or that the unit of labor of the most efficient produces more value than that corresponding to the least efficient. On the other hand, they wrongly conceptualize the formation of prices of production in the world market.

The analysis of Emmanuel (1972), for example, is erroneous. He assumes that there are prices of production and that prices of production are formed internationally in the same way as they are formed within a national economy. That is, prices are supposed to be formed within a national economy under conditions in which there is free mobility of capital and labor, wages are equalized between branches as an expression of the same rate of exploitation and the rate of profit is equalized between branches, but not within branches. The only reasonable way to interpret this phenomenon in the international arena is as a redistribution of surplus value analogously to what Marx did at the national level.

Although the work of Nakajima and Izumi (1994) or that of Pinto et al. (2022) uses a different methodology from the one used in this article, they match the object of study that is proposed here as the object of the next phase of the investigation and of another article.

In Pinto et al. (2022), e.g., several estimates of value transfers are made for some developed and underdeveloped countries based on world input-output tables. Based on various methodological proposals for the reduction of concrete labor to simple labor, the price-value vectors of each country are established considering the distinction between productive and unproductive activities. Although this work is methodologically not comparable to the present article, it makes it clear that transfers between countries depend on the definition of value in the world market. According to their estimates (Table 6, alternatives 1 and 2) Mexico transfers value to Brazil and to a greater extent to the United States and Japan.

The problem of transfers between national economies must be analyzed understanding that value requires prices. This analysis within a national economy is achieved with prices, not directly with values. It is only achieved with prices that are those that allow value transfer between branches to achieve an average rate of profit. At an international level, this is more complex because we will have different currencies and prices cannot be equal when we have different currencies. If we have different currencies, there is an exchange rate or there could even be several exchange rates. In many cases a country has more than one exchange rate; that can be seen easily in contemporary economic history. When there is a single exchange rate for simplicity, only one, prices cannot be equalized unless the differences in productivity between the countries were uniform.

Based on the labor theory of value, Valle (2000) develops the ideas according to which:

1) The understanding of prices depends on the understanding of values.
2) Theoretically, on an international scale, productivities are not uniform and prices are not equal.

3) The empirical evidence shows that price variability in the world market is qualitatively lower than that of productivities and that this is the form that price uniformity takes and the empirical basis for formulating the law of a uniform price.

4) The relationship between productivities and prices is found in the world market as in national markets. For this reason, it is expected to find the same consequences: the penalty for inefficient producers and the award for the most efficient.

5) In the world market there is no mobility of the labor force, therefore the rates of surplus value are not equalized and neither are the rates of profit.

6) Within a nation, differences in productivity determine differences in profitability. Differences in productivity between nations are not reflected necessarily in differences in profitability. Even the profitability of an underdeveloped country can be higher than that of a developed country.[11]

Following the author, in international competition, uniform prices would be obtained through exchange rates. The uniformity of some prices would restrict the uniformity corresponding to other prices.

If the relative prices of two countries (*a* or *b*) are ordered as

$$p_0 < p_1 < p_2 < \ldots < p_n$$

where $p_i = p_{ia}/p_{ib}$ and if the exchange rate is such that $p_{ka}/p_{kb} = 1$, the result is as following:

$$p_j < 1 \text{ for } \forall\, j < k$$
$$p_j > 1 \text{ for } \forall\, j > k$$

So, it is impossible to homogenize all prices simultaneously. The so-called strong version of the law of unique price could be fulfilled only if the price vectors of two countries are collinear. Only the weak version of the law of unique price would be fulfilled. In practice, only price disparities are regularly found.

And yet, the essential aspect of the law of value, according to which, inefficient producers are penalized and the most efficient are rewarded, is valid in the world market. It is necessary to develop its explanation and its link with the establishment of national differences in rates of surplus value among countries with different levels of development.

Appendix 1

Table A1.   Developed or Underdeveloped Countries according to Their Productivity Compared to the Average Productivity in 1995

Number	Country	D	Productivity 1995 (international dollars/worker)
1	Argentina	1	$20,734.4
2	Australia	0	$57,516.6
3	Austria	0	$60,857.9
4	Bahamas	0	$41,864.2
5	Belgium	0	$64,995.4
6	Bolivia	1	$7,288.6
7	Botswana	1	$12,953.7
8	Brazil	1	$16,500.0
9	Bulgaria	1	$14,123.4
10	Cameroon	1	$4,219.7
11	Canada	0	$56,474.6
12	Chad	1	$2,049.4
13	Chile	1	$20,651.7
14	China	1	$3,727.3
15	Colombia	1	$14,815.2
16	Costa Rica	1	$20,828.6
17	Cuba	1	$17,088.5
18	Cyprus	0	$35,044.8
19	Denmark	0	$54,372.5
20	Egypt	1	$11,399.7
21	El Salvador	1	$13,365.2
22	Finland	0	$45,940.1
23	France	0	$58,479.9
24	Germany	0	$58,667.8
25	Guatemala	1	$14,531.8
26	Honduras	1	$8,127.3
27	Hong Kong	0	$54,641.1
28	Hungary	1	$27,394.8
29	Iceland	0	$48,431.3

(continued)

Table A1. *(continued)*

Number	Country	D	Productivity 1995 (international dollars/worker)
30	India	1	$4,145.4
31	Iran	1	$22,325.0
32	Ireland	0	$51,294.0
33	Israel	0	$54,541.2
34	Italy	0	$65,817.3
35	Jamaica	1	$16,912.1
36	Japan	0	$56,456.6
37	Jordan	1	$13,776.1
38	Kenya	1	$2,570.5
39	Korea Republic of	0	$34,175.5
40	Luxembourg	0	$93,079.2
41	Malta	0	$44,811.7
42	Mauritius	1	$13,690.9
43	Mexico	1	$22,889.0
44	Mongolia	1	$4,217.2
45	Morocco	1	$6,759.9
46	Namibia	1	$11,660.4
47	Netherlands	0	$63,768.2
48	New Zealand	0	$43,300.7
49	Nicaragua	1	$5,561.3
50	Norway	0	$75,950.3
51	Panama	1	$15,182.6
52	Peru	1	$11,880.9
53	Philippines	1	$5,165.8
54	Poland	1	$19,693.9
55	Portugal	0	$33,692.2
56	Romania	1	$11,686.2
57	Senegal	1	$2,874.9
58	Sierra Leone	1	$2,247.8
59	South Africa	1	$16,616.1
60	Spain	0	$51,023.7
61	Sri Lanka	1	$5,884.7
62	Sweden	0	$53,292.0

Number	Country	D	Productivity 1995 (international dollars/worker)
63	Switzerland	0	$57,790.9
64	Thailand	1	$11,358.1
65	Trinidad &Tobago	1	$24,370.8
66	Tunisia	1	$11,586.3
67	Turkey	1	$19,293.7
68	United Kingdom	0	$54,115.1
69	United States	0	$67,118.9
70	Uruguay	1	$17,108.4
71	Vanuatu	1	$11,651.6
72	Venezuela	1	$22,159.8

Notes: $D = 1$ indicates underdeveloped country and $D = 0$ developed country.

Appendix 2. Regressions of Panel Analysis of Fixed Effects of the Relationship between Rate of Surplus Value and Value Composition of Capital

Table A2. Analysis of Fixed Effects Panel Data for the Value Composition of Capital (VCC) and the Rate of Surplus Value of Selected Countries

```
. xtreg ltp lccv, fe

Fixed-effects (within) regression              Number of obs    =       200
Group variable: id                             Number of groups =        10

R-sq:                                          Obs per group:
     within  = 0.0575                                        min =        20
     between = 0.1012                                        avg =      20.0
     overall = 0.0764                                        max =        20

                                               F(1,189)         =     11.52
corr(u_i, Xb)  = -0.5148                        Prob > F         =    0.0008


         ltp |      Coef.    Std. Err.      t     P>|t|     [95% Conf. Interval]

        lccv |    .3861397   .1137512     3.39    0.001      .1617547    .6105247
       _cons |   -.5265527   .1264574    -4.16    0.000     -.7760019   -.2771034

     sigma_u |   .41644122
     sigma_e |   .10744429
         rho |   .93758757   (fraction of variance due to u_i)

F test that all u_i=0: F(9, 189) = 220.83                  Prob > F = 0.0000
```

Source: Own elaboration with data from PWT, v.9.1 (Feenstra, Inklaar, and Timmer 2015).

Table A2.1. Analysis of Fixed Effects Panel Data for *VCC* and Rate of Surplus Value: Selected Underdeveloped Countries

```
-> dum = 0

Fixed-effects (within) regression            Number of obs    =       100
Group variable: id                           Number of groups =         5

R-sq:                                        Obs per group:
    within  = 0.0237                                     min =        20
    between = 0.7654                                     avg =      20.0
    overall = 0.4026                                     max =        20

                                             F(1,94)          =      2.28
corr(u_i, Xb)  = 0.5481                       Prob > F         =    0.1340
```

ltp	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
lccv	.268066	.1773637	1.51	0.134	-.0840937	.6202257
_cons	-.0344338	.17623	-0.20	0.846	-.3843425	.3154749

```
sigma_u | .09072717
sigma_e | .13594754
    rho | .30814108   (fraction of variance due to u_i)

F test that all u_i=0: F(4, 94) = 6.23                Prob > F = 0.0002
```

Source: Own elaboration with data from PWT, v.9.1 (Feenstra, Inklaar, and Timmer 2015).

Table A2.2. Analysis of Fixed Effects Panel Data for *VCC* and Rate of Surplus Value. Selected Developed Countries

```
-> dum = 1

Fixed-effects (within) regression            Number of obs    =       100
Group variable: id                           Number of groups =         5

R-sq:                                        Obs per group:
    within  = 0.2144                                     min =        20
    between = 0.4714                                     avg =      20.0
    overall = 0.2123                                     max =        20

                                             F(1,94)          =     25.66
corr(u_i, Xb)  = -0.8476                      Prob > F         =    0.0000
```

ltp	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
lccv	.6138205	.1211856	5.07	0.000	.3732038	.8544373
_cons	-1.181463	.1490557	-7.93	0.000	-1.477416	-.8855091

```
sigma_u | .21487616
sigma_e | .06689149
    rho | .91165243   (fraction of variance due to u_i)

F test that all u i=0: F(4, 94) = 58.09               Prob > F = 0.0000
```

Source: Own elaboration with data from PWT, v.9.1 (Feenstra, Inklaar, and Timmer 2015).

Notes

1. Among other works, the following can be consulted: The first findings related to the differences in surplus value rates between Mexico and the United States, their relationship with the differences in productivity and the problem of unproductive labor (Martínez 1996); a similar analysis of a sample of Latin American countries (Martínez 1999); the incorporation of the discussion of the problem of self-employment to said analysis (Martínez 2005); the development of the analysis through econometric tests as well as an initial analysis of the relationship between the latter and the composition of capital (Martínez and Valle 2011); the development of the econometric analysis elevated to a representative sample of countries of the world (Martínez, Valle, and Sánchez Pérez 2018).

2. The most updated version of the Penn World Table, version 10, shows data to estimate the profit/wage variable (approximate variable of the rate of surplus value), but unfortunately, such data do not have the same quality, or they are not available in every country. That version, for example, should include 12,810 records corresponding to 183 countries in a period of 70 years, but it only contains 7,970. The availability of the information is only 62%. Additionally, most of the information is projected or repeated. These issues are in EPWT version 5. For this reason, we were forced to use the estimates based on EPWT, version 4 which does provide information of a homogeneous quality in 72 countries in the 1995–2008 period of time.

3. It is a contribution to the discussion on surplus value transfers within an economy (Valle and Martínez 2022).

4. No previous work by other authors on the aforementioned paradox can be found. There is a pioneering work that compares the rate of surplus value in manufacturing between 20 countries, but it does so in relation to per capita GDP (Amsden 1981). There are works on comparisons of rates of surplus value between two or 3 countries, for example, between the United States and Japan (Kalmans 1992) or between Spain and the United States (Guerrero and Díaz 1999). The review of said works was done in Martínez (1999) and Martínez (2006).

5. The graph corresponding to the analogous analysis of the years 1995 and 2008 was published in Martínez, Valle, and Sánchez Pérez (2018, 40). In this paper, the analysis is updated to 2017. The result is, qualitatively and essentially, the same.

6. Cuba and Vanuatu are added to the sample of 70 countries because the availability and quality of their information allow for it.

7. According to the estimates of Valle and Martínez (2013), the value composition of capital in Venezuela (with data from PWT Mark 5.6) exceeded that of the United States by up to 20% since the late 1970s. An exhaustive explanation of this particular and apparent anomaly in the Venezuelan case (with data from PWT 10) is a pending issue. It seems that it is due to the causes of the fall in the monetary expression of value.

8. In previous works (Martínez and Valle 2011; Martínez, Valle, and Sánchez Pérez 2018), statistical and econometric tests of the relationship between productivity and rate of surplus value were presented as well as an initial analysis of the relationship between the latter and the composition of capital.

9. See Martínez, Valle, and Sánchez Pérez (2018).

10. A review of the debate can be found in Cooney (2004).

11. See Mariña and Moseley (2000) and Moseley (1991).

References

Amin, S. 1974. *Accumulation on a World Scale*. New York: Monthly Review Press.

Amsden, A. 1981. "An International Comparison of the Rate of Surplus Value in Manufacturing Industry." *Cambridge Journal of Economics* 5 (3): 229–249.

Cockshott, P., A. Cottrell, and G. Michaelson. 1995. "Testing Marx: Some New Results from UK Data." *Capital and Class* 19 (1): 103–130.

Cooney, P. 2004. "Towards an Empirical Measurement of International Transfers of Value." In *Controversy and the Foundations of Economics*, edited by A. Freeman, A. Kliman and J. Wells, 241–260. Cheltenham, UK: Edward Elgar.

Emmanuel, A. 1972. *Unequal Exchange*. New York: Monthly Review Press.

Feenstra, R. C., R. Inklaar, and M. Timmer. 2015. "The Next Generation of the Penn World Table." *American Economic Review* 105 (10): 3150–3182.

Guerrero, D. 2006. *La explotación. Trabajo y capital en España* [The Exploitation: Labor and Capital in Spain]. Spain: Maia.

Guerrero, D., and E. Díaz. 1999. "The Welfare State in the Distribution of National Income in Spain since the Transition." *International Journal of Political Economy* 27 (4): 80–95.

Kalmans, R. 1992. "The Political Economy of Exploitation: A Comparative Study of the Rate of Surplus Value in Japan and the United States, 1950–1980." PhD Diss., New School for Social Research.

Mandel, E. 1978. *Late Capitalism*. London: Verso.

Marini, R. M. 1979a. "El ciclo del capital en la economía dependiente" [The Cycle of Capital in the Dependent Economy]. In *Mercado y dependencia* [Market and Dependency], edited by U. Oswald, 37–55. Mexico: Nueva Imagen.

Marini, R. M. 1979b. "Plusvalía extraordinaria y acumulación de capital" [Extraordinary Surplus Value and Capital Accumulation]. *Cuadernos Políticos* 20 (abril-junio): 18–39.

Marini, R. M. 1989. *Dialéctica de la Dependencia* [Dialectic of Dependency]. Mexico: Era.

Marini, R. M. 2008. "Proceso y tendencias de la globalización capitalista" [Process and Trends of Capitalist Globalization]. In *América Latina, dependencia y globalización* [Latin America, Dependency and Globalization], edited by S. Hombre, 247–271. Buenos Aires/Bogotá: CLACSO.

Mariña, A., and F. Mosley. 2000. "The Rate of Profit in the Postwar Mexican Economy 1950–1993." In *Political Economy and Contemporary Capitalism: Radical Perspectives on Economic Theory and Policy*, edited by R. P. Baiman, H. Boushey and D. Saunders, 184–192. New York: M.E. Sharpe.

Marquetti, A. 2012. "Extended Penn World Table v. 4 (EPWT v.4)." Accessed December 15, 2022. https://sites.google.com/a/newschool.edu/duncan-foley-homepage/home/EPWT.

Martínez, B. G. 1996. "Una comparación del salario relative entre México y Estados Unidos. 1960–1990" [Comparison of Relative Wages between Mexico and the United States, 1960–1990]. *Economía: Teoría y Práctica* 6: 77–86.

Martínez, B. G. 1999. "Algunas evidencias de la superexplotación en los países subdesarrollados. Actualidad del pensamiento de Marini" [Some Evidence of Super-Exploitation in Underdeveloped Countries: Validity of Marini's Thought]. *Investigación Económica* LIX (230): 83–98.

Martínez, B. G. 2005. "Plusvalor, ingreso de trabajadores autónomos y diferencias nacionales de tasas de plusvalor" [Surplus Value, Income of Self-Employed Workers and National Differences in Surplus Value Rates]. *Problemas del Desarrollo Revista Latinoamericana de Economía* 36 (142): 101–125.

Martínez, B. G. 2006. "Diferencias de tasas de plusvalor entre países. Su relación con las diferencias de productividad" [Differences in Rates of Surplus Value between Countries: Its Relationship with Productivity Differences]. PhD Diss., Universidad Autónoma Metropolitna.

Martínez, B. G., and A. Valle. 2011. "Differences in Surplus Value Rates between Developed and Underdeveloped Countries: An Analysis Based on Differences in Productivity and Capital Composition." *Marxism 21* 21 (Spring): 175–204.

Martínez, B. G., A. Valle, and C. Sánchez Pérez. 2018. "Productividad y tasa de plusvalor a nivel internacional: evaluación empírica" [Productivity and Rate of Surplus Value at the International Level: An Empirical Evaluation]. *Revista Problemas del Desarrollo* 196 (50): 27–53.

Moseley, F. 1991. *The Falling Rate of Profit in the Postwar United States Economy*. New York: Macmillan.

Nakajima, A., and H. Izumi. 1994. "Economic Development and Unequal Exchange among Nations, Analysis of the USA, Japanese and South Korean Economies for the Years 1960–1985 Using Total Labor Inputs." *Kyoto University Economic Review* 64 (October): 33–48.

Pinto, R., R. Santana, C. Sánchez, and E. Montibeler. 2022. "Skilled Labour and the Reduction Problem: Questioning the Exploitation Rate Equalization Hypothesis." *World Review of Political Economy* 13 (3): 362–390.

Shaikh, A. 1990. *Valor, acumulación y crisis* [Value, Accumulation and Crisis]. Bogotá: Tercer Mundo Editores.

Valle, A. 2000. "Desarrollo desigual y competitividad" [Inequal Development and Competitiveness]. In *La Nueva Economía Política de la Globalización* [The New Political Economy of Globalization], edited by J. Arriola and G. Diego, 193–208. País Vasco: Servicio editorial de la Universidad del País Vasco.

Valle, A. 2005. "Por qué debe aumentar la composición de capital" [Why It Should Increase the Composition of Capital]. *V Coloquio Latinoamericano de Economistas Políticos, Universidad Nacional Autónoma de México* [V Latin American Colloquium of Political Economists, National Autonomous University of Mexico], Mexico City, October 27–29.

Valle, A., and B. G. Martínez. 2013. "The Problem of Absorbing All Available Labor Force and Capital Composition." *World Review of Political Economy* 3 (2): 178–191.

Valle, A., and B. G. Martínez. 2020. "Labor Productivity and Marxist Theory of Labor Value." *World Review of Political Economy* 11 (3): 377–387.

Valle, A., and B. G. Martínez. 2022. "Surplus Value Transfers and Productivity." *Marxism 21* 19 (3): 164–176.