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The General Law of Capitalist Accumulation and a Labor-Shortage Theory of Cycles

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Abstract

The general law of capitalist accumulation is an indispensable theoretical foundation for the analysis of the capitalist macrodynamics in Marxist economic theory. A fundamental postulate of this law is that the availability of labor power does not imply a limit to capital accumulation, given the existence and reproduction of an industrial reserve army available to join the ranks of the exploited labor force. Nonetheless, the chapter of volume I of Marx's *Capital* dedicated to the law, specially its first section, has been widely used by several strands of the Marxist literature to conceptualize and model the short-term macrodynamics, linking the recurrence of business cycles with the relative exhaustion of the available labor force. In this paper, we argue that the apparent contradiction between this line of research and the fundamental postulate of the law is not such when the different time horizons in which the capital accumulation unfolds are incorporated into the analysis. From this hypothesis, a rereading of the first four sections of the chapter on the general law of capital accumulation is offered. Concretely, Marx's analysis of the forms of the surplus population was helpful to derive a short-term fraction and a long-term fraction of the industrial reserve army. When this differentiation is applied to the development of a theory of labor-shortage business cycles, the apparent contradiction between this theory and the fundamental postulate of the general law of capitalist accumulation vanishes.

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Introduction

Marx developed the *general law of capitalist accumulation* in the lengthy chapter 25 of the first volume of *Capital*, titled by the same name, of Part Seven, dedicated to the "The Process of Capitalist Accumulation" (Marx 1867, 762–870)[1]. As explicitly stated by Marx, the purpose of chapter 25 is to "consider the influence of the growth of capital on the fate of the working class" (Marx 1867, 762). To this aim, Marx divides the chapter into 5 sections. The first section analyses the growing demand for labor-power in the course of accumulation. The second section deals with the repulsion of labor force due to the technical change accompanying accumulation. The third section analyses the production and reproduction of an industrial reserve army, and the fourth section describes its forms. Lastly, the long fifth section illustrates the law through diverse historical and empirical explorations.

The general law of capitalist accumulation is an indispensable theoretical foundation for the analysis of the macrodynamics of capitalist accumulation in Marxist economic theory.[2] A fundamental postulate of this law is that the availability of labor power does not imply a limit to capital accumulation, given the existence and reproduction of an industrial reserve army available to join the ranks of the exploited labor force. In this respect, the concept of industrial reserve army relates to and confronts with the neoclassical concept of full employment. While aggregate supply is postulated to be rigid in the vicinity of full employment by neoclassical economics, the level of employment is not hypothesized as a limit to capital accumulation in Marxian theory and the rigidities in the aggregate supply arise from different economic factors.

Nonetheless, the chapter 25 has been widely used by several strands of the Marxist literature, reviewed in the first section of this chapter, to conceptualize and model the short-term macrodynamics, linking the recurrence of cyclical crises with the relative exhaustion of the available labor force. The apparent contradiction between this literature and the fundamental postulate of the general law is analyzed in the second section; it is argued that a theory of labor-shortage business cycles cannot be straightforwardly derived from chapter 25, let alone from its first section. Even so, the third section of the present chapter supports the case for a theory of labor-shortage business cycles by reviewing the main empirical advancements in their identification in the post-World War II United States, using previous

[1] The chapter 25 of the English edition corresponds to the chapter 23 of the German edition of *Capital*.

[2] Reuten observes that in Part Seven of *Capital* "the analysis leans, and sometimes explicitly, towards a macroeconomic treatment" (Reuten 2004, 276–277).

investigations (Cámara 2012, 2013, 2020). Given the empirical support, the fourth section argues that section 4 of chapter 25 can be used to build this theory, with no contradiction with the fundamental postulate if the different time frames in which the capital accumulation unfolds are incorporated into the analysis. Lastly, conclusions are drawn.

Labor-Shortage Business Cycles in the Marxist Literature

This section presents in chronological order a critical review of relevant examples in the literature of mathematical models, theoretical and analytical frameworks, and empirical analyses of business cycles related to the availability of labor force. A significant aspect of the postulation of Marxist labor-shortage business cycles in the literature is that their existence is essentially supported by textual evidence that comes mostly from chapter 25, "The General Law of Capitalist Accumulation", and, to a great extent, from the first section of this chapter. We will show in the next section that this textual support is problematic.

The pioneer in the field Goodwin model represents an imperfect example of this situation. Although the model is said to be presented in a Marxian form (Goodwin 1967, 55, 58), there is no reference to Marx's work, not to mention chapter 25 of volume I of *Capital*.[3] Goodwin elaborates an economic version of the Lotka-Volterra prey-predator system of two first-order nonlinear differential equations, in which profits are the prey and wages are the predator. Although the model behaves identically independently of the initial situation, for the sake of argument we can start assuming a high level of profitability which translates into a high level of investment and, consequently, an employment growth above the constant rate of growth of the working population, thus reducing unemployment and pushing up the real wage rate. The consequent reduction in profits and then investment, under the assumption of a constant investment rate, gives pace to a cyclical crisis characterized by a lower rate of employment growth (even stagnant or negative), below the growth of the working population, which reduces in turn the real wage growth. The continuity of this process results in an uninterrupted endogenously generated cyclical growth.

In contrast to Goodwin (1967), Eagly (1972) represents a clearer example of the exegetic use of chapter 25. He proposes a more elaborated "model of Marx's macroeconomy" that analyzes "an equilibrium solution that determines the unemployment level" and "the dynamic cyclical pattern of the system", that is, "the Marxist business cycle" (Eagly 1972, 523). Also in contrast with Goodwin (1967), Eagly (1972) endogenizes the technical change and the investment rate beyond the real wage. It is precisely to substantiate the endogenization of the investment rate when Eagly quotes a relevant passage of Marx's first section of chapter 25:

> "the relation between capital accumulation and the rate of wages is nothing other than the relation between the unpaid labour which has been transformed into capital and the additional paid labour necessary to set in motion this additional capital. […] If the quantity of unpaid labour supplied by the working class and accumulated by the capitalist class increases so rapidly that its transformation into capital requires an extraordinary addition of paid labour, then wages rise and, all other circumstances remaining equal, the unpaid labour diminishes in proportion. But as soon as this

[3] Actually, there is not a single reference in the 6-page chapter.

> diminution touches the point at which the surplus labour that nourishes capital is no longer supplied in normal quantity, a reaction sets in: a smaller part of revenue is capitalized, accumulation slows down, and the rising movement of wages comes up against an obstacle. The rise of wages is therefore confined within limits that not only leave intact the foundations of the capitalist system, but also secure its reproduction on an increasing scale" (Marx 1867, 771)[4]

In accordance with the previous paragraph, Eagly (1972, 533–536) posits an investment rate equal to the unity (capitalists invest all the surplus value) during the expansive phase of the cycle, when the rate of profit is high and the unemployment rate is decreasing, pushing real wages up. This investment rate switches to zero when the rate of profit, squeezed by the increasing real wages, reaches a minimum acceptable profit rate. During the consequent contractive phase of the cycle, with null net investment, technological change due to the replacement of capital decreases the demand of labor and increases the rate of unemployment until it reaches a maximum point in which the investment rate switches to unity again and a new expansive phase of the cycle initiates, completing the business cycle.[5]

The rest of the textual evidence from chapter 25 provided by Eagly (1972, 526*n*) comes from two passages of section 3 and is used to support that the "determinant of labor's bargain position is the unemployment level" (Eagly 1972, 526). In these paragraphs, Marx (1867, 790, 792) establishes that the fluctuation of the wages along the business cycle, that is, the recurrence of periods of stagnation and average prosperity, are mediated by the magnitude of the industrial reserve army. Two observations are to be made. First, Marx's reference to cyclical fluctuations can be found repeatedly in section 3 of chapter 25. Second, the referenced text does not mention explicitly labor shortages, but labor's relative availability as the determinant of wage cyclical fluctuations. Both elements will be discussed further in the next sections.

Boddy and Crotty (1975) aim to develop a theory of the class conflict behind the formulation of macroeconomic policies and to test it empirically for the US state during the post-World War II period. Their line of argument resembles Goodwin's and Eagly's regarding the relation of the bargaining power of the working class with the unemployment level:

> "During economic expansions, the reduction of the reserve army of the unemployed strengthens the bargaining position of the working class in its labor market confrontation with capital. Workers can then struggle successfully for higher real wages and a greater share of the rising national income. Correspondingly, profits are squeezed toward the top of the boom. Relaxation of this profit squeeze requires the

[4] While Eagly (1972) employs New York's Modern Library edition of *Capital*, we use hereafter the Penguin edition.

[5] Laibman (1978), which is reviewed below, is critical of Eagly's (1972, 532, 534) explicit assumption of the fulfillment of Say's Law; according to him, "this strict Say's Law position makes it impossible to explain the crucial turning points in the cycle" (Laibman 1978, 119).

> termination of the expansionary phase of the cycle and the rebuilding of the reserve army" (Boddy and Crotty 1975, 2)

In order to substantiate this argument, Boddy and Crotty (1975, 2) choose to quote the above relevant passage of Marx's first section of chapter 25, except for omitting the first sentence, instead of passages from section 3 as Eagly does. However, their argument is not centered in an explosive investment rate as the trigger of the crisis. In its place, Laibman (1978) replicates Eagly's exegetic exercise; he quotes the same first section passage (Laibman 1978, 123*n*), except for the additional omission of the last sentence, as a reference for modelling accumulation and he references the whole chapter 25 to support the direct relation between unemployment and the exploitation rate, equivalent to the inverse relation between the unemployment rate and real wages described in previous cases due to the working class's bargaining power. Similarly to Eagly, Laibman (1978, 122–124) proposes a non-linear investment function which takes a positive constant rate if the unemployment rate is decreasing or is stagnant after an increasing period and zero if the unemployment rate is increasing or is stagnant after a decreasing period.

A last example of the exegetic use of chapter 25 in the prolific 1970s is found in the works of Weisskopf (1978, 1979), though more nuanced given that there are no textual quotes. In both works, Weisskopf developed a formal analytical framework "to evaluate the current relevance of various Marxian theories of capitalist economic crisis" (Weisskopf 1979, 341) by analyzing the driving forces of the cyclical fluctuations of the profit rate (r) throughout the business cycle (Weisskopf 1979, 342). One of these theories of crisis is the rising strength of labor (RSL) variant, explained by the decline of the profit rate caused by a shrinking profit share (Weisskopf 1978, 244–245, 247–250; 1979, 344–346, 354–357). According to Weisskopf, "[t]his variant has been developed in recent years by several Marxian political economists pursuing a line of argument presented by Marx (in *Capital*, Volume I, Chapter 25)" (Weisskopf 1979, 345; see also Weisskopf 1978, 258*n*). Although Weisskopf does not support his framework in chapter 25 directly, but with an indirect reference to the literature, he certainly confirms the hypothesis advanced in this section. His line of argument is alike the previous works reviewed:

> "As a cyclical expansion, develops the demand for labor grows more rapidly than the supply, the reserve army is depleted, and labor markets tighten. The growing scarcity of labor is then hypothesized to increase its political-economic power and improve the bargaining position of workers vis-a-vis capitalists" (Weisskopf 1979, 345)

To be sure, there is an ample literature in the Marxist domain that has developed the analysis of labor-shortage business cycles since the fruitful 1970s. The main characteristic of this literature is that the emphasis has been placed on empirical assessments rather than on theoretical analysis and developments. Consequently, these works have as their theoretical references mainly the works published in the 1960s and 1970s, and have not developed further the foundation of their analysis in Marx's work, with insignificant explicit mentions to chapter 25 of volume I. Therefore, they share an acritical stance towards the exegetic foundation of the theoretical framework in Marx's work. Additionally, the studies have been overwhelmingly based on Weisskopf's framework and centered in the United States (Henley 1986; Goldstein 1996, 1999; Bakir 2006; Bakir and Campbell 2006,

2009; Cámara 2012, 2013; Goodfellow 2016), though a virtuous exception can be found in the recent work of Martins and Rugitsky (2021), who analyze the Brazilian economy.

An abundant literature has also developed an empirical application of Goodwin's model; a profuse review of this literature can be found in Grasselli and Maheshwari (2018). Two works should be highlighted. Desai (1984) is a breakthrough contribution, "where the foundation on how to estimate such dynamic models was laid" (Grasselli and Maheshwari 2018, 620). Harvie (2000) was the first continuation of this empirical approach, extended to 10 OECD countries; nevertheless, "there were several problems with the data construction in this paper, in addition to the mistake described in detail in Section 2.2, that compromised the validity of most of its results" (Grasselli and Maheshwari 2018, 620).[6] Two additional works not encompassed in the previous literature review should be mentioned; Marquetti and Miebach (2015) and Mendoza (2015) empirically test Goodwin's cycles in Brazil and in a sample of 82 countries, respectively. Lastly, Tapia's (2017) stimulating analysis of the United States economy cannot be placed in any of the previous two frameworks.

A notable exception to the previous characterization is the work of Sherman (1991).[7] The exception is twofold. First, Sherman develops an insightful theoretical analysis of business cycles, including those related to labor-shortage triggers, which is based on a profound discussion of the global works of Marx, Mitchel, Keynes and Kalecki. Second, while Sherman (1991, 223) also quotes the above-mentioned recurring passage from section 1 of chapter 25, yet cutting another sentence in relation to Laibman (1978), he is skeptical of the possibilities of grounding a theory of labor-shortage business cycles in Marx's work. This is the topic of the next section, where Sherman's line of argument would be further elaborated.

Labor-Shortage Business Cycles in Chapter 25 of *capital*?

This section analyzes the first three sections of chapter 25 of volume I of *Capital* to conclude that it is does not portray a theory of labor-shortage business cycles. This conclusion might appear rather critical of the literature reviewed in the previous section; nevertheless, we support empirically the case for theory of labor-shortage business cycles in the next section. Therefore, the matter relates more to an accurate exegetical reading to ground the theory than to the pertinence of the theory itself. In this respect, we definitely share the position manifested by Reuten:

> "Marx does not introduce a 'labour-shortage' theory of the cycle. In fact he does not present a theory of the cycle at all: in Capital I cyclical accumulation is introduced by way of an empirical reference. (I do not argue that the later Marxian theory of cyclical labour-shortage makes no sense; I argue that Marx does not introduce it in this book…)" (Reuten 2004, 274)

Despite being a part of the completed and published work of Marx, and having been redrafted by Marx himself for the 3rd and 4th editions of *Capital*, chapter 25 about the

[6] Harvie (2000, 351–352) presents a brief digression on the "Marxian basis of Goodwin's model" referring to "a simple model Marx presents in the first section of Chapter 25".

[7] This book contains parts of works previously published by the author in the 1970s and 1980s.

general law of capital accumulation is not straightforward to grasp.[8] A first major difficulty arises from the structure of the presentation of the law in the first three sections of the chapter. Marx introduces the chapter with the following hint: "The most important factor in this investigation is the composition of capital, and the changes it undergoes in the course of the process of accumulation" (Marx 1867, 762). Nonetheless, the first section of the chapter sets out that "a growing demand for labour-power accompanies accumulation if the composition of capital remains the same" (Marx 1867, 762). If the analysis of the section 1 of the chapter disregards the *most important factor in the investigation*, which is then its status and role in the chapter? The question is of most importance for our purposes, given that this section has been widely used exegetically for grounding a theory of labor-shortage business cycles in the literature as shown in the previous section.

Two possible interpretations of the role of section 1 can be examined and confronted. The first one refers to a historical interpretation, where the section corresponds to the historical stage of capital accumulation relating to the formal subsumption to capital. In *Chapter Six. Results of the Direct Production Process*, Marx (1864, 424–428, 430–438) defines formal subsumption as the historical development by which precapitalist production processes are converted into capitalist ones, where the labor process is intensified and prolonged, but no other change in the material real process, that is, in the composition of capital, takes place. Once the labor processes are formally subsumed to capital, the real subsumption is the consequent historical development that consists in the revolutionizing of its material content by way of the application of science and machinery, changing the composition of capital (Marx 1864, 428–430, 438–442)[9]. Consequently, section 2 of chapter 25 would be interpreted as corresponding to the historical stage of the real subsumption to capital.[10]

Sherman's rejection of a theory of labor-shortage business cycles based on chapter 25 is related to this historical interpretation. According to him, the validity of Marx's arguments in section 1 is limited to "some extraordinary historical episodes in very rapid

[8] The present chapter analyses this latter version of chapter 25 of volume I of *Capital* and abstracts from its differences with previous versions.

[9] The logical definitions of formal and real subsumption to capital complement these historical definitions. Unlike other concepts in Marx's work, the historical and logical definitions of formal and real subsumption to capital are coincident. On the contrary, in *Chapter Six*, Marx (1864, 427–428) exemplifies the formal subsumption of labor to capital by analyzing usurers' capital and merchants' capital, whose historical existence precede their formal development.

[10] This historical interpretation of chapter 25 does not necessarily endorse Engels' interpretation of Marx's method as a logical-historical one, which has been widely rejected in the literature. As a matter of fact, historical parts in the analysis of *Capital* are well delineated and the historical and logical analyses are not interspersed. For instance, in chapter 25, the historical analysis is clearly delimited into section 5. Also, the historical analysis of capital accumulation is delimited in Part Eight in the English edition of *Capital*, corresponding to chapters 24 and 25 of Part Seven in the original German edition, given that Engels broke up Part Seven into two Parts, and the seven sections of chapter 24 were converted into 7 chapters, from 26 to 32, while chapter 25 passed to be chapter 33.

capitalist expansions that may lead to a depletion of the reserve army and a shortage of labor, resulting in higher wages". He continues that such "unusual periods, such as the late nineteenth century railway building boom in the United States", are to be understood "in the context of long-run changes resulting in a very unusual situation, but some Marxists have interpreted it as support for a short-run theory alleging higher wages in every expansion" (Sherman 1991, 223). Therefore, Sherman concludes that such anomalous structural situations cannot be extended to a recurrent cyclical phenomenon. A circumspect reading of chapter 25 seems to support Sherman's position. For instance, the most explicit reference to labor shortages in section 1 is accompanied with a historical reference:

> "the requirements of accumulating capital may exceed the growth in labour-power or in the number of workers; the demand for workers may outstrip the supply, and thus wages may rise. This must indeed ultimately be the case if the conditions assumed above continue to prevail. For since in each year more workers are employed than in the preceding year, sooner or later a point must be reached at which the requirements of accumulation begin to outgrow the customary supply of labour, and a rise of wages therefore takes place. Complaints were to be heard about this in England during the whole of the fifteenth century, and the first half of the eighteenth" (Marx 1867, 763)

Two other passages from chapter 25 can be highlighted in support of this historical interpretation. First, Marx introduces section 2 with the following caveat:

> "So far, we have considered only one special *phase* of this process, that in which the increase of capital occurs while the technical composition of capital remains constant. But the process goes beyond this *phas*e. Given the general basis of the capitalist system, *a point is reached in the course of accumulation* at which the development of the productivity of social labour becomes the most powerful lever of accumulation" (Marx 1867, 772; emphasis added).

Although the reference to *phase* cannot be unambiguously interpreted as a historical period, the last sentence decidedly establishes a historical timeline in the process of capital accumulation. Second, in section 3, Marx retakes the line of reasoning of section 1 with another explicit reference to labor shortages historically delimited to the advent of capitalism:

> "This peculiar cyclical path of modern industry, which occurs in no earlier period of human history, was also impossible when capitalist production was in its infancy. The composition of capital at that time underwent only very gradual changes. By and large, therefore, the proportional growth in the demand for labour has corresponded to the accumulation of capital. Even though the advance of accumulation was slow in comparison with that of the modern epoch, it came up against a natural barrier in the shape of the exploitable working population" (Marx 1867, 785)

In conclusion, the content of section 1 could not be devoted to positing a theory of labor-shortage business cycles in contemporary capitalism from the perspective of the historical interpretation, given that the description of labor shortages is historically delimited to the specific phase of the early days of capitalism.

The second possible interpretation of section 1 is a logical one. Marx might have used in chapter 25 his method of departing from abstract-simple categories in order to

arrive to more concrete-complex categories by means of dialectical logic. In this process, the unity of the simple-abstract categories is found to be contradictory, then deriving new more concrete-complex categories that supersede the contradiction; therefore, categories acquire a mediated existence through conflicting relations. This dialectical progression can be represented by the dialectical triad of thesis, antithesis, synthesis, which can be argued to shape chapter 25. Thus, section 1 would represent the thesis of an increasing demand for labor power accompanying accumulation, section 2 would represent the antithesis of a relatively diminishing demand for labor power as a consequence of technical change, and section 3 would represent the synthesis of the generation and reproduction of industrial reserve army given the joint action of the thesis and the antithesis.

A simpler version of the logical interpretation would be that Marx analyzes separately the two effects affecting the working class in the process of capital accumulation –the attraction of labor power (section 1) and the repulsion of labor power (section 2)–, before examining their joint action (section 3). Anyhow, whatever logic (formal or dialectical) is behind the structure of chapter 25,[11] the arguments drawn from section 1 cannot be considered as a definitive account of capitalist macrodynamics, but a rather partial account based on a counterfactual assumption: the absence of technical change. Consequently, the content of section 1 cannot be exegetically used to substantiate a theory of labor-shortage business cycles from the perspective of the logical interpretation of chapter 25.

After the introduction of technical change and the consequent changes in the composition of capital in the course of accumulation in section 2, along with the acceleration of this process through the centralization of capital, section 3 is dedicated to the production of industrial reserve army: "it is capitalist accumulation itself that constantly produces … a relatively redundant working population, i.e. a population which is superfluous to capital's average requirements for its own valorization, and is therefore a surplus population" (Marx 1867, 782). Instead of labor shortages, capitalism creates a surplus working population that "becomes, conversely, the lever of capitalist accumulation, indeed it becomes a condition for the existence of the capitalist mode of production" (Marx 1867, 782). In spite of this, the references to industrial cycles in section 3 are numerous.[12] Do these references constitute a theory of business cycles? For Marx, capital accumulation and the formation and reproduction of the industrial reserve army take the form of an industrial cycle:

> "The path characteristically described by modern industry, which takes the form of a decennial cycle (interrupted by smaller oscillations) of periods of average activity, production at high pressure, crisis, and stagnation, *depends on* the constant formation, the greater or less absorption, and the re-formation of the industrial reserve army or

[11] A more substantial methodological reading of *Capital* and, in particular, chapter 25 is beyond the scope of the present chapter; it is neither needed to develop the arguments presented. The interested reader is referred to the vast and diverse literature on Marx's method of political economy.

[12] Prior to section 3, there is only one reference to the industrial cycle in section 1, which is not significative for the line of argument of the section (Marx 1867, 770–1). In the present chapter, Marx's industrial or decennial cycle is deemed synonymous with business cycle.

surplus population. *In their turn*, the varying phases of the industrial cycle recruit the surplus population, and become one of the most energetic agencies for its reproduction" (Marx 1867, 785; emphasis added)

However, Marx does not establish a causal link between the availability of surplus population and the fluctuations of capital accumulation; quite the contrary, Marx emphasizes the inverse causal relationship, that is, the needs of the process of accumulation determine the fluctuations in the industrial reserve army. This is evident in two of the most cited passages of section 3:

> "Taking them as a whole, the general movements of wages are exclusively regulated by the expansion and contraction of the industrial reserve army, and this in turn corresponds to the periodic alternations of the industrial cycle. […] The appropriate law for modern industry, with its decennial cycles and periodic phases … is the law of the regulation of the demand and supply of labour by the alternate expansion and contraction of capital, i.e. by the level of capital's valorization requirements at the relevant moment, the labour-market sometimes appearing relatively under-supplied because capital is expanding, and sometimes relatively over-supplied because it is contracting" (Marx 1867, 790)
>
> "The industrial reserve army, during the periods of stagnation and average prosperity, weighs down the active army of workers; during the periods of over-production and feverish activity, it puts a curb on their pretensions. The relative surplus population is therefore the background against which the law of the demand and supply of labour does its work. It confines the field of action of this law to the limits absolutely convenient to capital's drive to exploit and dominate the workers" (Marx 1867, 792)

Reuten stresses the lack of such casual links; first, he asserts that Marx "does not explain cyclical turning points" (Reuten 2004, 292*n*); second, in his analysis of the previous paragraphs, he states that "Marx does not posit the wage rate mechanism to *explain* the cycle; the wage movements correspond to it (and if, instead, he believed wage movements to be causative he would certainly have said so)" (Reuten 2004, 293). According to Reuten, Marx's references to the cycle are rather empirical than theoretical: "in fact Marx appends an empirical phenomenon to the theory without explaining it, i.e. without theory" (Reuten 2004, 292). In the same vein, Reuten asserts that "Marx knows that empirically the development is cyclical. Thus his theory is incomplete... This theoretical problem might have been overcome by combining his theory with, what was later called, a 'labour-shortage' theory of the cycle. He seems to have the material before him to posit such a theory, but he does not do it. Instead he makes an empirical reference to the cycle" (Reuten 2004: 294–5) For Reuten, Marx's choice is justified: "a theory of the cycle cannot be developed at this level of abstraction" (Reuten 2004, 296).

The Empirical Case for a Theory of Labor-Shortage Business Cycles

In the previous section, we concluded that a theory of labor-shortage business cycles cannot be substantiated in an exegetic reading of chapter 25 of volume I of *Capital*, neither from a historical nor from a logical interpretation. Nevertheless, this conclusion does not preclude the pertinence of such a theory. In the next section, we will extract elements from the fourth section of chapter 25 that are helpful to build a theory of labor-shortage business cycles. Erstwhile, the present section reviews some empirical advancements in the identification of

labor-shortage business cycles in post-World War II United States. For reasons of space, the section limits to the exposition of main results of our previous investigations; nonetheless, the majority of the empirical research reviewed in the first section reaches similar conclusions.

From 1947 to 2018 the US economy completed 10 business cycles. Cámara (2012, 2013, 2020) applied the methodology developed by Weisskopf (1978, 1979) to analyze the role of cyclical declines in the profit rate as the cause of crises. The analysis shows that a cyclical decline of the rate of profit in the last part of the expansion prior to the onset of the crisis took place in 9 out of the 10 business cycles; the only exception is the short expansion phase (from the third quarter of 1981 to the fourth quarter of 1982) that followed the crisis of 1980. This finding was first signaled by Boddy and Crotty (1975, 1, 5), who observed that the "labor share typically rises in the latter half of an expansion", and was retaken by Weiskopf (1979, 351) to propose an analytical division of the expansion phase of the cycle between an early stage when both the profit rate and the product grow, and a late stage when the profit rate starts to decline while the product still grows. Our analysis shows that, on average, almost two thirds of the cyclical decline of the rate of profit takes places in the late expansion phase, while the decline is completed during the cyclical contraction.

The previous finding is robust enough to postulate that a cyclical decline of the profit rate may trigger cyclical crises and thus shape the business cycles. However, the casual relationship between the cyclical behavior of the profit rate and the business cycles must be carefully established. We have argued that this causality rests on both a temporal lag and the absolute intensity of the profit rate decline prior to the contraction. The fulfillment of the two previous strong criteria led us to discard the cyclical decline of the profit rate as the cause of crisis in three additional business cycles. In two of these cycles the cyclical decline is short-lived and not too deep, while in another cycle the cyclical decline is negligible. Nevertheless, there is strong evidence of 6 out of 10 postwar cyclical crises to be caused by a cyclical decline of the rate of profit.

In order to evaluate the causes of the cyclical declines in the profit rate prior to the output contraction, the profit rate is decomposed among the potential productivity of capital, the profit share, and the capacity utilization rate; the cyclical decline of each of the previous determinants generates, respectively, the rising organic composition of capital (ROC), the rising strength of labor (RSL), and the realization failure (RF) types of cyclical crisis. The evidence shows that more than three quarters of the decline in the profit rate, on average, is explained by the decline in the profit share. The profit share is the main contributor to the profitability drop in all the cycles, while the capacity utilization rate contribution is only meaningful, though certainly minor, in three cycles. In conclusion, the empirical evidence suggests that 6 out of 10 cyclical crises in the US post-World War II period are caused by a cyclical decline of the profit rate caused by the dynamics of the profit share.

Lastly, in 4 of the 6 previously identified labor-shortage business cycles the declines in the profit share in the late expansion phases are mainly explained by positive increases in the real wages above the increases in productivity; in one additional cycle, the late expansion phase took place in a period of high inflation and the decline of the profit share is explained by a real wage decline but with a deeper productivity drop. This situation has

been identified as the offensive rising strength of labor variant of crisis, when workers exert their increased power as a consequence of a decline of the unemployment rate to obtain higher real wage gains. In the other cycle, the cyclical decline in the profit share in the late expansion phase is explained by an increase of the relative price of wage goods and output. This situation has been identified as the defensive rising strength of labor variant of crisis, in which the workers are able to transfer to the capitalist class the effects of an adverse relative price change.

To sum up, a significant decline in the profit rate prior to the cyclical contraction cannot be postulated as a stylized fact of business cycles in post-World War II United States, but it is an event happening in most of the business cycles, 6 out of 10. In all these 6, the cyclical decline of the profit rate is explained by a cyclical decline in the profit share, giving rise to the possibility of business cycles driven by labor-shortage pressures. As a matter of fact, there is evidence for an offensive rising strength of labor in 5 of the cycles and for a defensive rising strength of labor in the other cycle, that is, the most common case is that workers are able to obtain real wage increases above productivity growth in the late expansion phase of the business cycle. In conclusion, there is enough empirical evidence to substantiate the recurrence of labor-shortage business cycles in the post-World War II United States; a further scrutiny of chapter 25 of volume I of *Capital* to identify foundations to build a theory of labor-shortage business cycles is worth.

A Rereading of Section 4 of Chapter 25 Incorporating Time Frames

As stated above, chapter 25 cannot be used to exegetically ground a theory of labor-shortage business cycles. However, the chapter offers propositions that are helpful to develop such a theory. The literature reviewed in the first section has mainly hinged on the first three sections of the chapter; instead, we contend that section 4 of chapter 25 provides relevant insights to cope with the apparent contradiction between the fundamental postulate of the general law of capitalist accumulation and postulation of labor-shortage business cycles remarked in the introduction. For this, we propose a rereading of this section introducing the role of the different time frames in which the process of capital accumulation takes place. Concretely, we argue that short-term labor shortages do not contradict the fact that the availability of labor power does not imply a limit to capital accumulation given the existence and reproduction of an industrial reserve army available in a longer term.

Section 4 of chapter 25 of volume I of *Capital* has been profoundly neglected in the literature on labor-shortage business cycles. Although in most cases it is simply ignored, Reuten (2004, 294) explicitly states that "[t]he final two sections of Chapter 25 contain no new theoretical analysis. Section 4 begins with a number of 'surplus population' distinctions (floating, latent and stagnant). Then Marx summarizes the 'general law'". On the contrary, we consider that these distinctions of the surplus population are useful to elaborate a theory of labor-shortage short-term cycles. Most probably, Reuten's disregard of the theoretical contribution of these distinctions is related with a narrow conceptualization of the industrial reserve army:

> "Readers of *Capital* may wonder why Marx when addressing 'unemployment' apparently uses such bombastic terminology: 'reserve army of labour', 'surplus population', or 'redundant working population'. He may have had his reasons for the

particular choice, but the simple point is that in his day the term 'unemployment' (or its German equivalent) just did not exist" (Reuten 2004, 290)

However, a careful reading of the different forms of the industrial reserve army will let us conclude that the industrial reserve army available to be exploited by capital is not necessarily unemployed; the Marxian concept of industrial reserve army is richer than that of unemployment. Despite this, this narrow conceptualization of surplus population as unemployment is extended in the literature on labor-shortage business cycles. For instance, Eagly (1972, 523), Boddy and Crotty (1975, 2, 8) and Laibman (1978, 122) refer to the "reserve army of (the) unemployed".

The Marxist analysis of capitalist accumulation has usually distinguished between the different time frames involved in the process. Following the traditional approaches in economic modelling, a distinction is made between fast and slow variables that give rise to the short-term and long-term time frames in the process of capital accumulation. This is certainly the case with the macroeconomic models of capital accumulation developed by Shaikh (1989) and Duménil and Lévy (1999):

> "An important aspect of the approach is the distinction between fast and slow variables. Slow variables are assumed to have decision periods longer than those of corresponding faster variables (e.g., years instead of months), so slow decisions are effectively cast in terms of moving averages of the faster variables. Although one can conceive of many different sets of variables with each set operating at its own intrinsic speed, the present analysis is confined to just two speeds. The basic fast variable will be … the rate of accumulation in circulating capital, and it regulates the relation between supply and demand. The corresponding slow variable will be the rate of accumulation in fixed capital, which regulates the relation between supply and capacity" (Shaikh 1989, 72)
>
> "[W]e discuss the relationship between Keynesian and classical equilibria emphasizing the distinction between two time frames, short term and long term [...] [T]he convergence to a classical equilibrium follows from specific assumptions concerning the dynamics of a number of variables (capital stocks, prices etc.), called long-term variables. These variables are treated as constant parameters within short-term equilibria, and are slowly modified between two short-term equilibria" (Duménil and Lévy 1989, 684–685, 686)

In section 4 of chapter 25, Marx states that "[t]he relative surplus population exists in all kinds of forms…[W]e can identify three forms which it always possesses: the floating, the latent, and the stagnant" (Marx 1867, 794). These different forms or components of the industrial reserve army can be analyzed and classified in terms of the different time frames of capital accumulation, distinguishing between the fast components that give rise to short-term fluctuations and the slow components that give rise to long-term tendencies. Such an approach would be helpful to distinguish the fragment of the industrial reserve army that determines business cycle fluctuations and the fragment of the industrial

reserve army that is available to join the ranks of the exploited labor force in a longer term.[13]

Marx describes the floating surplus population as "the workers … sometimes repelled, sometimes attracted again in greater masses… [i]n the centres of modern industry –factories, workshops, ironworks, mines, etc.–" (Marx 1867, 794). Therefore, this component of the industrial reserve army is characterized by its fast adjustment along with the business cycle. It is also the component of the industrial reserve army that is mostly unemployed, though it can also be also under-employed, especially if workers can enjoy unemployment benefits for a long enough period to reproduce themselves until they are hired again, probably in a new cyclical expansion. This situation is common in developed or central countries, but it is not the standard case in developing or peripheral countries. On the other extreme, Marx defines the latent surplus population:

> "Part of the agricultural population is therefore constantly on the point of passing over into an urban or manufacturing proletariat… There is thus a constant flow from this source of the relative surplus population. But the constant movement towards the towns presupposes, in the countryside itself, a constant latent surplus population" (Marx 1867, 796)

Thus, the latent component of the industrial reserve army can be considered to adjust slowly along the long-term tendencies. Marx confines this component to the rural population, but the latent surplus population is nowadays also composed by urban population. It is formed by self-employed workers, who own the means of production, and their subordinated employees in processes of production that employ below-average technological capabilities, normally in small establishments; they conform a non-capitalist sphere within the capitalist mode of production. Consequently, the velocity of adjustment of the latent population depends heavily on the gap between the average technological capabilities and the particular ones that they employ. The narrower the gap, the slower they are forced (or eager) to be employed capitalistically, and vice versa. This component of the industrial reserve army tends to be more quantitatively relevant in developing or peripheral countries, where the informal part of this surplus population dominates.[14] Additionally, most of the immigrant flows can also be considered part of the latent surplus population. The third component of the industrial reserve army is also the hardest to assess in terms of the short and long-term time frames. Marx defines

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[13] This analysis is enlightened by my academic exchange with Abelardo Mariña. He has researched about both the time frames in capital accumulation (for instance, see Mariña 2020) and the components of the industrial reserve army (for instance, see Legaria, Barrios, and Mariña 2004). The remaining errors and omissions, needless to say, are mine.

[14] One may wonder if the narrow definition of the industrial reserve army exposed above is related to a Western-centric analysis of the labor market. In developed or central countries, the unemployed composition of the industrial reserve army is surely relatively higher than in developing or peripheral countries, where the presence of self-employed with below-average technological conditions of production is extended. In any case, we either do not find the narrow definition of the industrial reserve army to be useful for developed or central countries.

> "the stagnant population [as] a part of the active labour army, but with extremely irregular employment… Its conditions of life sink below the average normal level of the working class, and it is precisely this which makes it a broad foundation for special branches of capitalist exploitation. It is characterized by a maximum of working time and a minimum of wages" (Marx 1867, 796)

Given this description, the stagnant surplus population can be classified into both the fast and the slow adjustment surplus population. The population that is employed in longer than usual workdays in a regular basis, even if obtaining a below average remuneration, would be less (or more slowly) compelled to be employed under normal capitalist conditions. In contrast, the population that is irregularly employed or that is under-employed in a normal basis, given that it is unable to enjoy even the below average life conditions, would be more (or more rapidly) compelled to be employed under normal capitalist conditions. This would be especially true if the short-term needs for labor power cannot be adequately met with the floating surplus population. Hence, the stagnant population adjusts not so fast as the floating population and not so slowly than the latent population. Nonetheless, for the simplicity of modelling, it can be split into the short-term and the long-term time frames.

The previous characterization of the industrial reserve army is rather simplistic. An empirical application to a concrete economy would require a deeper analysis of the inactive, active, employed, under-employed, unemployed, etc., working population. Nonetheless, it is satisfactory for the purpose of the present chapter, that is, distinguishing between the fraction of the industrial reserve army that determines the short-term fluctuations (the floating and part of the stagnant surplus population) and the fraction of the industrial reserve army that is available to be employed capitalistically in a longer-term (the latent and another part of the stagnant surplus population). Significantly, the previous classification of the industrial reserve army into a short-term fraction and a long-term fraction is highly relevant for a reconceptualization of a theory of labor-shortage business cycles in capitalism.

Particularly, labor shortages should be confined to the short-term fraction of the surplus population, while the long-term fraction of the surplus population is continually reproduced to provide a slower source of labor force supply for capital accumulation. Contrary to Sherman's (1991, 223) previously referred assertion, labor shortages cannot be conceptualized as a long-term phenomenon, but as a potential short-term occurrence that might shape capitalist macrodynamics. Potential labor-shortages might trigger a cyclical crisis, activating the cyclical mechanisms that replenish the short-term fraction of the surplus population; additionally, the generation, reproduction and use of the long-term fraction of the industrial reserve army is also reinforced by these potential cyclical episodes. Therefore, a theory of labor-shortage cycles does not contradict the fundamental postulate of the general law of capitalist accumulation: short-term labor shortages are perfectly compatible with the reproduction of an ever-greater industrial reserve army; in Marx's words:

> "The greater the social wealth, the functioning capital, the extent and energy of its growth, and therefore also the greater the absolute mass of the proletariat and the productivity of its labour, the greater is the industrial reserve army." (Marx 1867, 798)

Conclusions

The present paper has contributed to develop a theory of labor-shortage business cycles from a Marxian perspective. First, it provides an exegetic reading of chapter 25 of volume I of *Capital* to identify insights to ground this theory. In a first step, it is concluded that Marx does not provide a theory of labor-shortage business cycles in this chapter. The Marxist literature proposals of such a theory based on exegetic readings of chapter 25 are ill-founded. Either from a historical or logical interpretation, the presence of a theory of labor-shortage business cycles in chapter 25 can be discarded. This conclusion does not preclude that such a theory can be built on insights found in this same chapter. In a second step, we have identified these insights in the normally neglected section 4 of chapter 25. Concretely, Marx's analysis of the forms of the surplus population was helpful to derive a short-term fraction and a long-term fraction of the industrial reserve army. Second, when this differentiation is applied to the development of a theory of labor-shortage business cycles, the apparent contradiction between this theory and the fundamental postulate of the general law of capitalist accumulation vanishes.

The present chapter can also serve as the basis to develop further theoretical expansions of a theory of labor-shortage business cycles. Specifically, the theoretical models and frameworks of labor-shortage business cycles can be enlightened by the distinction between the short-term and long-term fractions of the surplus population. Additionally, the chapter can also be helpful to develop a further-reaching theory of business cycles that encompasses labor shortages only as one of the potential causes of cyclical crises. Finally, the chapter can also be illuminating for the empirical applications of the theoretical models and frameworks of labor-shortage business cycles; empirical estimations of the short-term and long-term fractions of the surplus population would be useful to adequately test the theory in concrete cases.

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