

Brazilian industrialization: notes on the historiographical debate

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Abstract: During the second half of the twentieth century the industrialization of the Brazilian economy took center stage in the debate among analysts from different areas of the social sciences. Here it is aimed to present an understanding of the proposals of Celso Furtado and Manuel Peláez, which have been qualified by contemporary researchers. This article aims to analyze and systematize the main aspects related to the historiographical debate about Brazilian industrialization.

Keywords: industrialization; Celso Furtado; Manuel Peláez; ISI.

Industrialização brasileira: notas sobre o debate historiográfico

Resumo: O processo de industrialização da economia brasileira protagonizou o debate entre analistas de diversas áreas das ciências sociais a partir da segunda metade do século XX. As análises elaboradas perfilaram-se, principalmente, com as interpretações originais de Celso Furtado e Manuel Peláez, as quais foram, elas próprias, posteriormente qualificadas por pesquisadores contemporâneos. Este trabalho busca resgatar e sistematizar os principais aspectos que circunscreveram o debate historiográfico sobre o fenômeno da industrialização no Brasil.

Palavras-chave: industrialização; Celso Furtado; Manuel Peláez; PSI.

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Introduction

Important controversies marked the historiography of Brazilian industrialization – and indeed continue to do so. The aim of this article is to look at central elements in two of the most important of these, respectively about: (a) the origin of industry; and (b) the constitution of the capital goods sector and the end of import substitution industrialization (ISI).

To a certain extent, these controversies cover different periods following a chronological order. The former is related to the decades between the Proclamation of the Republic and the beginning of the Second World War, in other words, the first five decades of the republic, and the possibilities and the limits of industrial growth within the framework of the ‘agro-export model’ and its replacement by ISI, which had already started by the 1930s. The second runs from the end of the First World War until the middle of the 1970s: the Geisel administration (1974-1979) can be considered the last government of the ‘Developmentalist Era’ and with a project to increase the accelerated substitution of capital goods.

The article is divided into three sections, in addition to this brief introduction. In the second part, the debate about the origins of the industrial sector in Brazil is looked at, in which the original controversy and its developments are discussed. In the third section, the ISI theoretical model is discussed, looking at its limitations and one of its most polemical points, the question of the capital goods sector. Finally, the conclusions are presented.

The origin of industry

The bitterest debate about the history of Brazilian industry occurred at the end of the 1960s, reached its peak in the 1970s, and gradually petered out in the last two decades of the twentieth century (Saes, 1989). Generally speaking, the controversy began with Carlos Manuel Peláez’ criticism of Celso Furtado, starting in 1968, and afterwards systematized in two books in the 1970s (Peláez, 1968, 1969, 1971). Following this, given the polarity of the two interpretations, various authors sought to mediate the debate and, to a certain extent, assumedly or not, tried to decide towards which of the two the pendulum of reason and empiricism was more inclined.

‘Adverse shocks’ versus ‘export induced industrialization’

Peláez’s criticism is centered on Furtado’s argument developed in *Formação econômica do Brasil* (1977 [1959]), especially in Chapters 30 - 32, in which he covered the crisis of the coffee economy and the role of the Great Depression in the 1930s as important variables for explaining the strong industrial growth of this decade. However, his criticism also covered works such as “Auge e declínio do processo de substituição de importações no Brasil,” published

in 1963 by Tavares (1972). The starting point of Furtado's argument was no novelty in itself: it had already been formulated in at least two 'classics,' Caio Prado Jr. (1970 [1945], p. 258) and Roberto Simonsen (1939, pp. 34-41). It involves the empirical finding that the crises of the coffee economy led to the depreciation of the *mil-réis* (as the currency was known at the time), which made imports dearer, opening space for the domestic production of manufactured goods — and 'import substitution.' The thesis was based on a trivial formulation of economic theory; nevertheless, in the hands of Furtado, the argument gained heterodox contours by being strengthened with structuralist and Keynesian elements, the former a tributary of the time when he had worked in Cepal, between 1949 and 1957, and the second in Cambridge, between 1957 and 1958, where he wrote the work which now became an obligatory reference in studies of the Brazilian economy — until the present the most translated book in the area.

Furtado's argument begins with the impact of the crisis and the subsequent currency devaluation as a measure to confront it. Nevertheless, it goes beyond showing that if industrial growth was propelled by external strangulation, it was not reduced to a mere consequence of this, since it counted on governmental economic policy in its favor: interventionism anticipated the measures of sustaining aggregated demand suggested by Keynes, which would only come to light in 1936, upon the publication of *General Theory*. Even *without having an explicit industrialization project*, the government, in addition to devaluing the currency, resolved to purchase part of the stock of coffee and destroy it, in order to sustain its price, at the same time that it expanded the offer of money and credit.³ As a result, economic recovery began in 1933, before other countries whose governments had opted for orthodoxy (such as Argentina under the rule of General Uriburu). Moreover, Furtado explores the contradictions of the agro-export model in force before the 1930s, in line with Prebisch's thesis of the deterioration of the terms of exchange: Vargas' policy contributed to 'dislocating the dynamic center' of the economy to the internal market — an unprecedented fact in Brazilian history, since, until then it had been inserted in a subordinated form in the international division of labor, specializing in a few primary products aimed at the international market. The new model, based on import substitution, opened a historic opportunity, which pointed to greater national autonomy and better distribution of income — strengthened

³ Cardoso's work (1979) makes a relevant contribution by formalizing the description of the impact of some macro-economic variables — notably, the exchange rate and fiscal policy — about Brazilian industry during the period. Based on a simple Keynesian model, she corroborates Furtado's thesis that the recovery of the Brazilian economy at the beginning of the 1930s, headed by the industrial sector, was due more to the defense of the coffee sector than to a conscious industrialization. According to her, "it is difficult to argue that currency depreciations started from a conscious government policy," which reflected, in her opinion, "an adaptation of the economic structure, and thus a consequence of the coffee policy" (p. 393). Nevertheless, she allows qualifications of her own hypothesis by asserting that "the generation of demand by the coffee sustentation program was more complex than Furtado highlighted" (Cardoso, 1979, p. 374).

with historic arguments, values of the national developmentalist ideology in force at the time when *Formação econômica do Brasil* was published.

Peláez' analyses can be read as a liberal reaction to this type of interpretation. It arose during the period of the 'Brazilian miracle' (1968-1973), the high point of the military regime, when the theses of Cepal were already in reflux, and Furtado, with his political rights removed, had become, following a decree of General De Gaulle, the first foreigner appointed to a chair in a French university. Peláez' work was supported by a research program which, to counterpoise Furtado, needed to minimize the impact of the economic policy of the 1930s on the growth of industry and GDP, in order to weaken CEPAL's periodization in which this year represented a point of inflection for Latin American countries which came to follow an import substitution model, such as Brazil. If robust evidence was found, the dualities present in Furtado's interpretation would vanish (which, in a looser reading, can remind us of the contradictions of the Marxist dialectic): 'central' versus 'peripheral' countries, production 'for abroad' versus 'internally,' agro-exports versus import substitution. For this, Peláez perceived that it would be necessary to attack on two fronts: analyzing economic policies before and after 1930, seeking to show that industry existed before this year and it was not negligible; and, after this, that industrial growth in the 1930s had not been so significant. In other words: Furtado had made the mistake of underestimating industrial growth before 1930 and overestimating it afterwards; there was more continuity than rupture in the historic process, in such a way that neither a change of 'dynamic center' nor of different opposing or contradictory 'models' of development. The implicit message is that the 1930s growth, as well as the super-dimensioning of Furtado, would still have occurred without state intervention; industry grew due to the dynamism of the export sector, and not as a result of the economic stimulation policies.

The part of Peláez's work with greatest impact was about the period before the Great Depression, since he found evidence of industrial growth in the first three decades of the twentieth century, which allowed him argue that there was complementarity — and not contradiction — between industry and agro-exports. The latter was capable of creating an income or wealth effect impacting the economy as a whole, irradiating from the principal export center: São Paulo.⁴ In this way, his work helped to label Furtado's interpretation as 'adverse shock theory,' ironizing the thesis that industry flourishes in crises: by looking for data from the period before the First World War, Peláez made it difficult to contest that factories had appeared in a period at the peak of the coffee

⁴ There is a certain tendency in the literature, to focus in analyzing the origin of industry in Brazil principally on São Paulo, often bypassing regional heterogeneity. However, the same important substitution process is found, although with smaller dimensions, but with a not inconsiderable intensity, in other states, principally Rio de Janeiro, Rio Grande do Sul, and Minas Gerais. The classical work about regional imbalances and industrial concentration in São Paulo is Cano (1985). On the other hand, researchers such as Lobo (1978) and Levy (1994) argue that Brazilian industry emerged in the old imperial capital, and not in São Paulo, a thesis which was explored in the debate of this author with Cano (1985).

economy.⁵ His analysis of the period after 1930 are much less robust. Peláez argues, on the one hand, that the policy was not as Keynesian as Furtado postulates, because the government funded its expenditure not only with monetary expansion, but with new taxes including on coffee — which is true, but not exclusively so, as the work of Silber would show later, for whom in econometric testing, expansionist monetary policy weighed more (Silber, 1977). Nevertheless, what is least convincing is, in the attempt to oppose Furtado, seeking to diminish the magnitude of industrial growth in the 1930s: 11.2% between 1933 and 1939, also covering non-traditional sector, such as paper and cardboard, metallurgic and non-metallic minerals; in addition, between 1932 and 1937, the physical production of pig iron increased 240%, steel ingots 123%, and laminates 142% (Villela and Suzigan, 1973, p. 216). This is data whose magnitude cannot be neglected.

The unfolding of the controversy

The impact of Peláez' criticism was significant. Furtado never answered him, but various subsequent works, directly or indirectly, became part of the debate. Among those in the 1970s and 1980s which tended to support the interpretation of *Formação econômica do Brasil*, we can cite: Castro (1971), Fishlow (1972), Singer (1977; 1984), Silber (1977), Diniz (1978), Oliveira (1981), Aureliano (1976), Mello (1982), Fonseca (1984; 1987a), Draibe (1985), Cano (1985), and Abreu (1992). While the works of Dean (1971), Villela and Suzigan (1973), Nicol (1974), and Leff (1982 [1964]) are more favorably inclined to the thesis of 'export induced industrialization,' as Peláez' conception would come to be known later. Also worthy of mention are the more recent analysis of Suzigan (1986, p. 66), which is based on Watkins' (1963) "theory of economic growth induced by basic products," and Hirschman's (1981) "approach to the generalized linkages of development" showing that the expansion of exports induces the growth of the activities of the domestic economy. These production chains, both 'frontwards' and 'backwards,' impact on industrial investments in the same form as consumption (domestic market) and fiscal (when the tax levied on the export sector is used to finance investments in other sectors, including industry itself) linkages. To a certain extent, this interpretation can be considered a more sophisticated form of defending the same central thesis as Peláez, since it corroborates the conception according to which industry grew in the period aimed at 'abroad' and was propelled by exports. In a parallel research program, historians sought to show that Brazilian industrialization had a trajectory going back to the empire, such as Luz (1975), Carone (1977), and Pesavento (1983), though without directly questioning the role of the 1930s as the decisive period, or 'point of inflection' in the process.

⁵ Szmercsányi (2002) criticizes with propriety Furtado for having ignored or underestimated industrial growth before 1930, which to a certain extent makes it inappropriate to label his interpretation as 'adverse shocks theory.'

We will now turn to addressing three aspects of the controversy: (a) mediation attempts; (b) Marxist approaches; and (c) the question of intentionality. Each will be looked at briefly.

Mediations

Although Versiani and Versiani (1975) argue that with Fishlow (1972) Peláez' revisionism of Cepal's theses itself began "to be revised" (p. 122), the most representative work of this type is by the authors themselves (Versiani and Versiani, 1975). Analyzing the performance of the cotton textile industry, and later, the beer industry (Versiani and Versiani, 1982), the authors ponder the existence of distinct phases of the expansion of productive capacity and industrial production in the 'agro-export' model period. The coffee/industry relationship becomes complex, since these phases are intertwined and with them exchange policy, since in an export economy the exchange rate is the essential price to defines the profits and losses of the various sectors. In the periods of agro-export crisis, with the devaluation of the *mil-réis*, such as in the *Encilhamento* and its consequences (1895-1905), the First World War, and the Great Depression, industrial production increased, which reinforces Furtado's analysis. However, investments grew in the peak periods of the coffee economy, between 1885 - 1895 and 1906 - 1914. In these, industrial production capacity expanded, counting on foreign exchange generated by the export sector, which allowed the importing of the capital goods and raw materials necessary for production, as well as the 'income effect,' which expanded the internal market and sources of funding necessary for inversions in infrastructure (ports, roads, electricity). Therefore, rather than being contradictory Furtado and Peláez' theses can be seen as a type of 'synthesis.'

The empirical data they use corroborates this interpretative line, as well as the theoretical frameworks which Furtado and Peláez supported themselves with, is not explored by Versiani and Versiani. The question is: how to measure the 'growth of industry?' Furtado, under Keynesian influence, whenever he defended that industry grew in the 1930s, focused on industrial production and the growth of GDP based on the multiplier effect, in a typical demand side analysis. The question of where machinery and equipment would have come from was really left aside, while even less questioned was the need for savings to make these investments feasible (which is consistent with his Keynesian formation, whose theoretical approach privileges credit, and not savings). Peláez is more consistent with the neoclassical paradigm and with growth models such as that of Solow: seeking the origins of savings to explain investment cycles and finding it in the flow of income coming from the coffee economy. Unlike Furtado, the data which supports him is predominantly about the expansion of productive capacity. The analysis was found to be robust enough to break away from the polarity of the debate, though the question remains, to be answered with more acuity, of what led industrialists to invest in periods of scarce domestic demand, when relative

prices favor cheap imports. The hypothesis mooted — that industrialists had foreseen that the economy went through export favorable phases followed by crises with a devalued currency, and thus invested having a perception of the cyclic nature of the economy in a type of adaptive rationality — really assumes a degree of clairvoyance on the part of the business sector that the time, which demands greater empirical proof to strengthen the analysis.

Marxist approaches

Another form, more subtle and less explicit, of mediating the controversy was carried out under the aegis of the Marxist instrumental. These analyses approached the appearance of industry with the reference framework of the emergence of capitalism as a mode of production. A distinction is made between slave-based coffee and the transition occurring in São Paulo, from 1850 onwards, in the sense of introducing free labor, including immigrant labor. This approach, which also recognizes in immigrants the embryo of the newly born industrialists — sometimes called ‘immigrant bourgeoisie’ —, as well as in the São Paulo coffee plantations (in contrast with the slaveholding ‘coffee barons’ from Rio de Janeiro), principally emerged out of the School of Sociology of USP, such as G. Cohn (1969, p. 288), F. H. Cardoso (Cardoso and Faletto, 1970, p. 64) and F. Fernandes (1981 [1975], p. 103).

As a consequence, notwithstanding the greater approximation of these approaches with Furtado’s approach, and their distance from that of Peláez, they recognize industrial growth before 1930, a phenomenon resulting from the accumulation of capital whose epicenter was coffee. Mello (1982) and Tavares (1986), admit industrial growth before 1930 in their *livre-docência* theses, both defended in 1975, despite drawing on the Cepal tradition,⁶ although they argue that industrialization cannot be mentioned in that period, since it occurred as a result of the accumulation of capital, whose hegemony rested on agro-exports. Only in 1933 — and, thus, with the impact of the Great Depression — was a new standard of accumulation inaugurated, whose dynamics were based on industry, in other words, only from then on did there “exist an endogenous movement of accumulation, in which was jointly reproduced the labor force and a growing part of constant industrial capital” (Mello, 1982, p. 110). As can be observed, this interpretation makes a distinction between ‘industrial growth,’ verifiable before 1933, and ‘industrialization’ — understood as a continuous process and with its ‘own dynamic’—, only defensible from this year onwards

⁶ The evolution of Tavares’ interpretation of Brazilian ISI has to be qualified. A clear influence of Cepal’s theoretical framework can be observed in his first article on the theme — “Auge e declínio do processo de substituição de importações no Brasil,” originally published in 1963 —, in which external strangulation, as a variable which propelled the process, permeated her analysis, in accordance with the Cepal tradition. In later works, however, she gradually moved away from Cepal by incorporating Kaleckian concepts, such as the tri-departmental scheme, and Marxist ones, such as the proposal of reconstituting the history of Brazilian industrialization inserted in the process of the formation of capitalism in Brazil, focused on the configuration of productive forces capable of assuring what was called the ‘endogenous cycle’ of industrialization, which would only occur through the Targets Plan, when industrialization advanced to the formation of capital goods department (DI).

when industry substituted coffee as the principal determinant of capitalist development in the country. Thus, resorting to another theoretical instrument, the existence and relative importance of industrial activities before 1930 was recognized, and at the same time Cepal and Furtado's periodization was recognized.

Still in the Marxist tradition,⁷ also relevant is the work of Silva (1976),⁸ fruit of a thesis defended in *École Pratique des Hautes Études* (Paris, 1973). Although the Furtado versus Peláez controversy is not mentioned, Silva was the pioneer in producing a Marxist reading which would go towards a synthesis of the debate between these authors. His principal thesis, supported by the dialectic epistemology, proposes the understanding of the relationship between coffee and industry, as one of unity and contradiction at the same time. Unity, because coffee and industry are part of the same process of capitalist development, emerging in Brazil with the crisis of slave labor; the expansion of exports was capable of generating a 'coffee complex,' not only reduced to the planting of coffee, but which expanded and propelled other sectors which gained increased importance, such as trade, import firms, banks, services, the public sector, roads, electrification – and also industrial activities (this expansionist effect of coffee accumulation brings to mind, *cum grano salis*, Peláez' 'income effect'). The contradiction emerges with "the limits imposed on the development of industry due to the dominant position of the coffee economy in capital accumulation" (Silva, 1976, p. 103). Among the most creative parts of this interpretation is the relationship of the Brazilian economy with the international one, in such a way that the expansion of coffee during the first four decades of the republic, came to demand growing interventionism, whose consequences were manifested in the rise of the external debt, currency devaluation, and the growth in public debt, leading to new taxes, also on imports. The export economy, like Marx's capitalism, generated the seeds of its own overcoming through its expansion. Gradually, its support became unfeasible, made only possible by strong interventionism, denominated by Furtado as the 'socialization of losses,' since it led the government to adopt measures, such as those mentioned, whose consequences were to make imports more expensive and to create an environment for the domestic production of previously imported items (Furtado, 1977 [1959], p. 165). The 'denial of denial,' dear to the Hegelian dialectic, is exposed as the fact that the industry was born as a result of the expansion and the contradictions of the coffee economy, whose place it would take in its final crisis, accelerated by the Great Depression.

⁷ Although it does not deal directly with the debate about the origin of Brazilian industrialization, the work of Francisco de Oliveira (1977, 1981) about the formation of capitalism in Brazil and the social classes involved in the process should be mentioned here. He emphasizes the financial intermediation of the process of the inter-sectorial transference of income: "It can be verified that far from having a transference of resources of income from the export sector to the other sectors, the contrary occurred, which reaffirms the fact that the external commercial and financial intermediation of the agro-exporting economy represented a restriction on the advance of the internal social division of labor at the same time that this was denied" (Oliveira, 1977, p. 34).

⁸ In opposition to one of Silva's principal theses, the contribution of Martins (2010) should be mentioned, as he defends the predominance of Brazilian industry born in competing markets, in small and mid-sized companies, to the contrary of the former's thesis that Brazilian industry was born already in an oligopoly.

The question of intentionality

As has been mentioned, Furtado argued that the economic policy of the government in the 1930s was a decisive variable for the industrial growth of the period and for the resulting beginning of ISI. However, this policy was not intentional: “the recovery of the Brazilian economy, manifested from 1933 onwards, was not due to any external factor but rather to the stimulation policy followed *unconsciously* in the country and which was the *sub-product* of the defense of coffee interests” (Furtado, 1977 [1959], p. 193; emphasis added). Furtado’s conclusion is to a large extent due to the fact that he treated the growth of industry as a result of monetary and exchange policies, in other words, macro-economic policies aimed at confronting the crisis in the coffee economy, and not exactly to stimulate industry. Other authors follow the same line of denying intentionality, such as Hirschman (1968), Dean (1971, p. 17), Villela and Suzigan (1973, p. 78), Lessa (1982, p. 15), Peláez (1987, p. 92), and Rodríguez (2009, p. 82). This shows that even authors closer to the mainstream did not diverge in this aspect from Cepal’s tradition of considering the period before the end of the Second World War as the ‘spontaneous phase’ of import substitution. This denomination points to a dual meaning: one is relevant, by associating it with the non-existence of economic planning, a phenomenon which would only clearly appear in Latin America after the Second World War, partially due to the influence of Cepal; and the other, more difficult to accept in the Brazilian case, that the government was neither aware of it nor had an industrializing project, which contradicts the sense of change and the increased complexity of the Brazilian state apparatus in the 1930 (Draibe, 1985) and Vargas’ pronouncements in speeches, reports, and interviews, as well as laws and institutions whose creations began in this decade and deepened during the New State (Fonseca, 1987a, 1987b).⁹

By making the scope of state action as wide-ranging as the instrumental measures of stabilization, with the inclusion of institutional policies of greater size and depth, the evidence becomes clearer for the thesis that an industrializing conscience was present during the 1930s (Fonseca, 2003). Amongst these initiatives there can be mentioned labor legislation, the educational reform of Francisco Campos, the 1934 tax reform, the creation of institutes (such as for Sugar and Alcohol, *Mate*, etc.), councils (such as the Federal Council of Foreign

⁹ The inclusion of Versiani and Versiani as defenders of the “optics of industrialization intentionally promoted by government policies,” as Suzigan advocates (1986, p. 39), appears inappropriate to us. It should be clear that those authors deal with the period before the 1930s, in which the acceptance of a deliberate pro-import substitution policy, inserted in a project aimed at dislocating the ‘dynamic center’ of the economy, to use Furtado’s expression (1977 [1959], p. 195), is even more polemical. Moreover, their defense of the protectionism of specific industrial sectors is insufficient to show a conscious industrialization project, since measures of this content could be undertaken for other motives, such as the search for equilibrium in the balance of payments or to meet the demands of private business. Suzigan appears, during the text, to contradict the title given to his own taxonomy by considering that ‘intentionally’ does not signify a ‘wide-ranging deliberate development policy,’ but only that the state had played a “positive role” through customs protection, incentives, and subsidies to specific interests.

Trade and the National Oil Council), commissions and departments (such as the *Comissão de Similares* (a government commission responsible for authorizing imports after checking if similar goods were produced in Brazil, hence the name), the Executive Commission for the National Steel Plan, and the Administrative Department of Public Service [Dasp]), new codes (such as Mines and Water), and the first Brazilian state companies, opened at the beginning of the 1940s, aimed at an explicit industrialization project, such as the National Motor Factory and the National Steel Company (CSN). All these initiatives — which gave the official pro-industry discourse a concrete aspect, that could not be reduced to mere rhetorical declarations — contributed to create a material, judicial, and institutional structure to make accelerated industrial growth feasible. In other words, there was no reason for a deliberate project not to exist, and this is what it gave sense to the above. It should be mentioned that even the most detailed study of exchange and monetary policies (of ‘instrumental’ macroeconomic policies) allows the same intentionality to be foreseen in them, as well as the defense of exports of primary products (Van Der Lan et al., 2012).

Although these analyses share a critique of Furtado as a starting point, by pointing to this absence they actually reinforce — and to a certain extent radicalize — his central thesis that the 1930s was crucial for the industrialization process in Brazil.

The conclusion of ISI and the problematic of capital goods

The controversy about the end of ISI and creation of the capital goods sector as the peak of this process differ from the one referring to the origin of industry in at least two aspects. First: the polemic did not occur directly; most often contrasting interpretations of the same fact were made without direct confrontation. Second, and this perhaps helps to clarify the reasons of the former: the analytical differences basically involved economists from the same approach, from the Cepal heterodox tradition, which to a certain extent reduced radicalization. The figure of Maria da Conceição Tavares was central in the controversy, whose initial point of reference is the previously mentioned 1963 article “Auge e declínio do processo de substituição de importações no Brasil.”

The exhaustion of ISI and stagnation

Tavares’ article was written at a particularly serious moment for the principal Latin American countries, such as Brazil and Argentina, with a fall in the rate of economic growth after the administrations of Juscelino Kubitschek and Arturo Frondizi, both with a clearly developmentalist character. Tavares summarizes her thesis in her own title: after its peak, ISI exhausted itself. It became necessary to find a new development model. There is a certain tone of pessimism in the text because it contrasts the successes obtained in previous

decades, from the 1930s to the 1950s, with the ‘stagnation’ then experienced, whose diagnosis pointed to the contradictions of the import substitute ‘model.’

Various motives are listed by Tavares for explaining why the industrial growth of the period ran out of steam. Her basilar understanding is that import substitution was a process stimulated by external strangulation, a domestic response of some Latin American countries to the recurrent balance of payments, aggravated in crises. Nevertheless, as this process advanced, external strangulation became more of a barrier than a variable inducing industrial growth, since the import agenda became increasingly more rigid and needed broader markets in order to sustain more complex investments with greater capital/product relationships. There was thus an ‘easier’ phase of import substitution in the first decades after the Great Depression, centered on the non-durable consumer goods industry, such as textile, clothing, food, and drink, more intensive in labor and with less complex technology (Tavares, 1972, pp. 43 and 116). However, in the middle of the 1950s, the process came to demand new imports of raw materials and capital goods, which were barred by a declining import capacity. In this understanding, strangulation was an inductive variable only when there was repressed internal demand; and to the extent that this was met, a *derivative demand* of intermediate and capital goods was created — a new “*wave of substitutions*” (Tavares, 1972, p. 117). However, in the advanced phase, the substitution of traditional consumer goods industries is completed, and as a result new investment stops being induced.

Tavares raises questions about the possible alternatives to increase growth from then on, since the so-called ISI waves could no longer be counted on. According to her logic, since external strangulation and the demand from the consumer goods sector would no longer be sufficient to induce the growth of the capital goods sector, it was necessary to “move to a self-sustaining model of growth” (Tavares, 1972, p. 118). This would depend more on the autonomous demand for capital goods, in which the public sector would be relevant, since only it had the conditions to exercise this role. Tavares also emphasizes in some passages the challenge of expanding the market, since in advancing to more complex branches, the intensity of capital comes to demand production scales that are much higher than the relative size of the market (Tavares, 1972, p. 49). The expansion of the market in her opinion ran into a barrier in the structure of land ownership, which had remained practically unaltered during ISI. Agrarian reform could be an alternative to retain labor in the countryside, at the same time that it would increase the productivity of labor and would be a “strictly economic justification to lay the foundations of future mass consumption, the basic characteristic of a developed capitalist society” (Tavares, 1972, p. 113).

In her 1975 *livre-docência* thesis, Tavares presents some significant differences in relation to her 1963 interpretation. As well as what has already been mentioned in relation to pre-1930 industrial growth, she comes to share with Cardoso de Mello a new periodization for

the Brazilian economy, which relativizes the role of external strangulation and the actual ‘import substitution’ category, dear to the thought of Cepal. The ‘external-internal’ dynamic, in the form adopted in this approach, needed to be revised, and it was necessary to draw on a theoretical framework whose emphasis resided in the formation process of the departments of capital goods and consumption in the Brazilian economy (Marx’s DI and DII), which, once concluded, would constitute an endogenous standard of capital accumulation. Cardoso de Mello’s work, written at practically the same time as Tavares, became an obligatory reference in this aspect, by highlighting that the 1930s are relevant not because of the polarity between the ‘agro-export model’ and ‘import substitution,’ as was previously thought, but because industrialization can only be thought about from then on:

There is *industrialization*, because the dynamic of accumulation came to be based on industrial expansion, or better, because there existed an endogenous movement for the accumulation of capital in which were jointly reproduced the labor force and a growing part of capital constant industries; but industrialization is restricted because the technical and financial bases of accumulation are not sufficient for the implementation of, **in one go**, the fundamental core of the production goods industry, which would permit productive capacity to grow ahead of demand, self-determining the industrial development process. (Mello, 1982, p. 110; original emphasis)

Following this, Cardoso de Mello argues that it is with Kubitschek’s Targets plan, commencing in 1956, that this phase of ‘restricted industrialization’ ended. Decisive for this was the investment bloc led by the state and international capital, which led to “more than proportional growth of the department of production goods” (Mello, 1982, p. 111). In Marxist categories, industrialization was until then restricted to Department II, which reproduces variable capital (or the consumption goods necessary to reproduce the labor force); afterwards, Department I was internalized by producing constant capital in an ‘investment bloc’ which lead productive capacity to rise more than preexisting demand (Tavares, 1986, p. 113). Tavares then emphasizes that the import substitution process ended much before the period she had defended in the 1963 work (Tavares, 1986, p. 115). After 1947, external strangulation had stopped being responsible for industrial growth: “The central point is that this increase in production allows, for the first time in the history of industry, the joint reproduction of the labor force and part of industrial constant capital, in an *endogenous* accumulation movement” (Tavares, 1986, p. 104; original emphasis). Only after this moment, can a “specific capitalist mode of production” be talked of, in which the relationship between the two departments of production manages to jointly reproduce both the urban proletariat and the accumulation of capital (Tavares, 1986, p. 105).

This change of paradigm altered the thought of authors in relation to Cepal’s theses previous defended in various aspects, but it is of interest here to highlight at least three:

- a) The causes of stagnation stopped being underconsumption or capital/product and capital/labor relations in new investments of the import substitution phase. What was involved now was emphasizing the investment side, which, due to the characteristics of production techniques and plans, went beyond current demand, in other words, causing idle capacity (a fact explored later by Ignácio Rangel [1980]);
- b) External strangulation stopped having the importance attributed to it in the Cepal paradigm, whether as an inductor in the initial phase of ISI, or as a hindrance or limit in the ‘advanced phase,’ after the Targets plan. This interpretation was made more robust by the understanding that the cycles afterwards came to be ‘endogenous,’ in other words, not due to problems of balance of payments resulting from subordinate insertion in the international division of labor or the deterioration of the terms of exchange, but rather determined by the expansion and diversification of the industrial sector. According to Tavares: “Our central analysis continues to be that the flows of foreign capital and commerce do not determine exogenously the dynamic of accumulation, only connecting with them and *modified them from within*” (Tavares, 1986, p. 104; original emphasis). The cycles, strictly speaking, no longer resulted from the situation of underdevelopment or the contradictions of ISI, since from then on the economy was “subject to cycles of expansion and problems of achievement which could develop during a crisis, *as in any capitalist economy*” (Tavares, 1986, p. 117; emphasis added);
- c) The understanding that with the Targets plan the capital goods industry was implemented in ‘one go’ will be the object of the following section.

The problematic of capital goods

In the article “Auge e declínio...”, there is a famous passage in which Tavares resorts to the metaphor of the construction of a building to illustrate her understanding of the ISI periodization and the construction of the consumer and capital goods sectors. What is unusual is that the metaphor illustrates not what is, but what is not, by emphasizing the difference between construction engineering and the economy. Thus, while a building can be gradually constructed from the foundations to the top floors, or from the ground up, in the economy this could not occur, since it did not contain watertight compartments: it is as if all these floors had to be simultaneously constructed, “changing only the degree of concentration of each one from time to time” (Tavares, 1972, p. 46). Her perspective does not signify that there were no ‘waves of substitution’ centered on determined sectors — as has been mentioned, this expression is used in the article itself —, but it highlights the sectorial inter-dependence of the economy (it reminds us of Leontief’s matrix). Although in the 1930s and 1940s import substitution was concentrated, in terms of added value, in the areas of non-durable consumer goods or salary-goods, this did not signify that it was restricted to them, since the domestic production of these goods opened opportunities for industrialists who wanted to

advance to intermediate and even capital goods, in vertical integration with other sectors. When private industrialists were not willing or able to make these investments, it was up to the state to fulfill this task, as in the case of the steel plant, when the first Brazilian state company directly concerned with industrial production was created (CSN, 1941). The need to expand to more complex branches arises out of the dynamics of industrialization, in such a way that the predominance of a sector in a determined 'substitute wave' does not negate the fact that complementary and connected investments in other sectors are also necessary.

On the other hand, Tavares also states in the 1963 article that the import substitution of capital goods was not concluded. The fact that import substitution had become exhausted as a development model does not signify that the industrial base had been completed with the internalization of the two departments, but that it now depended on economic policy decisions — the autonomous investment of the government —, and no longer on the induction caused by external strangulation, as happened with ISI: "the public sector alone, with its relative weight within the economy, has the capacity to exercise an autonomous demand, capable of opposing the negative tendencies which emerge from the exhaustion of the external impulse" (Tavares, 1972, p. 118).

The later interpretation shared by Tavares and Cardoso de Mello, by endorsing the thesis that the capital goods industry was implemented 'in one go,' heads in the direction opposition to that defended in the article "Auge e declínio..." Although these words could be interpreted as a force of expression, it appears that there is no doubt about the understanding of the authors in relation to two aspects: (a) 'import substitution' no longer made sense, either as an analytical category, as it no longer resulted from external strangulation, or because it had reached capital goods and with this internalized two departments in the economy; and (b) the concentration in time of the implementation of the capital goods industry, which to the same extent could have occurred in the second half of the 1950s, as a result of the investments of the Targets plan. The periodization reinforces the authors' understanding, according to which the phase of 'restricted industrialization' in relation to consumption goods had ended in 1955, using to qualify it the latter adjective, *per se* strong and incisive.

In relation to the thesis that the substitution of capital goods was completed in the 1950s as a consequence of the Targets plan, it can be affirmed that it contradicted not only what Tavares thought in "Auge e declínio...", but at least two relevant papers which point in the opposite direction. The first is by Furtado, in the Three-Year Plan, prepared in the second half of 1962 for the Goulart administration and put into practice in 1963, when he assumed the position of Minister of Planning. The Plan defended that import substitution was a process that was not exhausted: to the contrary, it had to be expanded with the entry of the capital goods sector (Fonseca, 2004, p. 609). The second is by Castro and Souza (1984), in which there appeared an explicit criticism of Tavares' vision of import

substitution and understands that only with the investment of the II PND, during the Geisel administration (1974-1979), did the Brazilian economy complete the import substitution of capital goods and the ISI which began in the 1930s ended (Castro and Souza, 1984, p. 70). Castro and Souza's criticisms of Tavares constitute one of the few moments of debate when the controversy adopt a more direct dimension. Their understanding is that the principal sector privileged in the second half of the 1950, until the 'Brazilian miracle' (1968-1973), in other words until the 'oil crisis,' was not capital goods, but rather durable consumer goods, such as the automobile and electro-electronic industry. It cannot be denied that the Targets plan contributed to the implementation of capital goods sector and intermediaries, but it was insufficient to complete the substitution of imports from the sector. When the 'miracle' ended, the country had a super-dimensioned consumer goods sector, alongside the capital goods, intermediate, and infrastructure sectors needing investment and modernization. The II PND proposed a 'change of direction,' aimed at overcoming the "atrophy of the sectors that produced basic raw materials and capital goods" (Castro and Souza, 1984, p. 33).

Similarly, various works, principally carried out in the Post-Graduate Program of the Federal University of Rio Grande do Sul, have argued that 'restricted industrialization' is inappropriate to characterize the period between 1933 and 1955, as appeared in the already mentioned theses of Tavares and Cardoso de Mello, (Fonseca, 1984, 1989).

According to Aldworth (1988), the internalization of the capital goods sector could not signify autonomy in relation to the international system, since the epicenter of technological progress was the central countries. Even if the Brazilian economy had managed to implement the capital goods sector, this situation would not have been assured in permanent terms: "technology did not impede the constitution of a department that produced capital goods, but did not permit its reproduction" (p. 188). Arend (2009), with an analysis supported by the Schumpeterian instrumental, questions the interpretation according to which, through the introduction of the capital goods sector, the cycles were determined endogenously. The main problem of economies such as the Brazilian was maintaining themselves on the technological frontier, since they tended to accompany with a time lag the technological paradigms emerging in the central countries. Moreover, he defends that "there is an apparent confusion between 'internal' and 'endogenous' factors in late capitalism, since the dynamizing agent promoting technical progress is fundamentally foreign capital" (p. 91). Finally, Guerrero (2013), in the history of the machinery-tools sector in Brazil, emphasizes that in the 1930s a variety of "small and universal use" machinery was produced, while in the 1940s industrial scale production began, including larger models. He also draws on Versiani and Bastos (1982, p. 13) to note that in 1955, therefore before the Targets Plan, "the production of Brazilian machinery-tools was 4500 units, and imports corresponded to only 34.7% (in units) of internal demand and 53.9% in weight."

It should be emphasized that, before Versiani and Bastos, Fishlow had already argued that between 1919 and 1939, the capital goods sector had increased its participation in added value by more than three times (Fishlow, 1972, p. 35). In this sense, Leff, by working with data about the consumption of iron and steel, demonstrated that the growth of the production of equipment was especially high in the 1930s (Leff, 1968, p. 12). However, criticism with more robust empirical foundations than the thesis that the sector had been implemented ‘in one go’ can be found in Marson (2012). Notwithstanding the restricted availability of data about the evolution of the capital goods industry at the beginning of the twentieth century, this paper is testimony to the diversification of Brazilian industry during the 1930s in favor of more dynamic sectors, especially intermediate capital goods. Accompanying the agricultural development of the province of São Paulo, the significant number of non-craftwork plants established in this region contradicts the thesis that the capital goods industry was due to the Targets Plan, since its history shows gradual and constant growth in the preceding decades, accompanying the industrial growth of the period.

Final considerations

This article sketched in general terms three important controversies which divided scholars about the history of Brazilian industrialization. The latter, which began at the end of the twentieth century — initially as a spontaneous process, but one which was the fruit of a conscious and deliberate process on the part of the federal government, starting in the 1930s —, made the Brazilian economy abandon the agro-export model and start to develop based on the industrial sector and the internal market. ISI managed to give the country one of the largest and most diversified industrial bases in the capitalist world in the twentieth century.

The first controversy starts with the work of Celso Furtado, who laid the foundations for the historiographic debate about this phenomenon. Using heterodox theoretical instruments to interpret the reality observed after the 1930 Revolution, Furtado emphasized the role of public policy as an instrument for stimulating industrialization. By revealing aspects dear to the factory sector, such as prior savings and factors which led to the increase in productive capacity, Furtado’s analysis came to be contested by an orthodox perspective, of which Peláez was the principal representative from the 1970s onwards.

Advances in research brought new elements, which competed to deepen the understanding of industry. As demonstrated in the first part of this work, attempts at mediation contributed not only to attenuating the original dichotomy, but principally to qualify the impact of central episodes for the development of the process, such as the two World Wars, the Great Depression, and the intentionality of the economic policy of the Brazilian government.

The exhaustion of the model of industrialization through import substitution represents another great controversy in the literature. What stands out here is Tavares' classic thesis, which delegated external strangulation to the centrality of ISI. To the extent that industrialization advanced, however, the external variable became a greater impediment than inducer to the process, with the result that at the beginning of the 1960s, the Brazilian economy entered its first period of stagnation in more than two decades.

Directly related to this debate, the controversy focused on the consolidation of the capital goods sector, which also provoked divergences among analysts. The interpretation that in the second half of the 1950s the Brazilian economy overcame the phase of 'restricted industrialization' has been qualified by recent research. By demonstrating that the machinery and equipment industry, notably metal and mechanical, had already been established in São Paulo at least since the second decade of the twentieth century, the interpretation which delegated to the Targets plan the implementation of the referred sector in the country was attenuated.

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