National Systems of Innovation and Political Economy: towards a theoretical assessment based on François Chesnais and Maria da Conceição Tavares

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1) Contextualization and Objectives

Despite the contemporaneous effort to better understand the relations between finance and technology, they were not always understood as different disciplines in the economic thought. At the beginning of the XIX century, both were understood as a broader investigation on political economy. They started to split apart during the second half of the XIX century, due both to the lack of importance attributed to technology by the economists of the time and to the separation of micro and macro economics at the beginning of the XX century. The American and financial order crisis of the 70s led to important changes in the economic thinking. The way it was done shaped decisively the particular way that the recent efforts to approach this relation. Despite some of its merits, unfortunately they still ignore most of the questions raised by the political economy, which, as Chesnais (1992) said, imposes them many problems regarding public policies. A brief understanding of the evolution process of the most important approaches in orthodox and heterodox economics will shed light on the original aspects of the contributions both of François Chesnais and Maria da Conceição Tavares to the understanding of the relations between finance, innovation, technology, political economy and power relations.

The contemporaneous mainstream economics proposition to the theme is highly influenced by the famous articles of Solow (Mazzucato, 2011), published in 1956.

1 All the Portuguese-English translation of the text was made by the author. We welcome any comment and suggestion to the present paper through the mail joaomht@gmail.com.
When Solow found out, in 1957, that the 89% raising of capacity of production between 1909 and 1949 could be explained by the technical progress, technology started to recover its space in the economic thinking (Pasinetti, 1999, p. 8–11). Nevertheless, the “law of diminishing returns”, the “neutrality” attributed to the technical progress, the “Say’s law” and the understanding of technology as a regular commodity impose astonishing difficulties to the research program of the mainstream economics. In fact, at the core of this understanding, we will step with the utilitarianism. Through different ways, this antique philosophy shapes the specific comprehension of the neoclassical paradigm when it comes to rationality, value, price, distribution, productivity, normative economics and concurrence.

Based on the idea that the human being know how to measure all kinds of its subjective pains and pleasures and it is able to calculate its actions based on their perceived outcomes, the neoclassical paradigm understands the concurrence as the process where the prices are shaped accordingly to the criteria of efficiency and well-being. Even productivity could be measured based on utilitarianism, since the marginal productivity of the labor depends on the “efficient and fair” concurrence of the labor market. The direction of the technical progress is either neutral or regulated by the “rational” market choice. In the absence of “market failures”, the financial market would operate also accordingly to the utilitarian hypothesis of human rationality and market efficiency.

The neo-schumpeterian paradigm advanced decisively on some of the most important bases of the neoclassical paradigm. The first of the critics aims directly on the core of the neoclassical paradigm, the utilitarianism. It advocates for the substitution of the substantive rationality hypothesis by the one of limited rationality and/or procedural rationality (Nelson e Winter, 1982, p. 8). It’s intended to logically falsify all the
utilitarian conclusions by questioning its assumptions. One of the most important implications is denying the possibility to understand concurrence strictly based on price signals and equilibrium – it’s emphasized the innovation (differentiation) process is *actively searched* by the firm (Possas, 2002). This innovation is greatly related to the firms strategies and could not be understood as determined by the exogenous investment in *human capital*, as proposed be Solow’s followers. This comprehension embraces different perspectives in this new paradigm. Some of them prefer to understand the innovation strategies analytically in micro-level analysis, while others, like the ones based on National Systems of Innovation approach, focus their research on the broader context in which they are shaped (Cassiolato e Lastres, 2005).

Among the later, Mazzucato (2011) is becoming one of the currently lead voices to investigate the relations between finance and innovation. Pushing what inadvertently became known as the “Schumpeterian Teorem” even further, she argues that due to the financial capacity of the state and the innovation characteristics (uncertainty and based on cumulative assets), the State is historically the lead agent in the innovation process. Mazzucato proposes to understand her research mostly as subsidiary to two related questions: the risk/return nexus related to financial investments in innovation and the relations between structural change, growth and innovation. The ongoing theoretical research that the author is undertaking is a tentative synthesis of Schumpeter, Keynes and Minsky, conducted together with Randall Wray². Finally, to understand the research

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² Randall Wray, representing the post-keynesianism, and the neo-schumpeterian Mariana Mazzucato are advancing their research supported by the Institute of New Economic Thinking (INET). As two of the leading figures of the post-keynesians and neoschumpeterian research paradigms, their research may be understood as one of the “frontiers” of the current thinking towards the theme. We quote from their page at INET (http://ineteconomics.org/grants/financing-innovation) the nature of their research: “This project integrates two research paradigms. The first is the Keynes-Minsky vision that puts effective demand front and center of economic analysis, and the second is the Schumpeter-Minsky vision that focuses on innovation and competition. We will bring the two visions together to provide rigorous and critical analysis of competition in the financial sphere and how it interacts with competition in the
trajectory from which depart the authors, it seems useful to remember literature review elaborated by Christopher Freeman. He argues that the neo-schumpeterian agenda focused its research on (1994, p. 466–469): i) the concept of innovation; ii) the nature of the concurrence; iii) the ‘schumpeterian theorem’; iv) economic rationality; v) limits and possibilities of the darwinism as methodology; vi) determinants of the intensity and direction of the technical progress.

We are now able to comprehend the objective of this work, which could be understood through an analogy with what Dosi (1982) called “technological trajectories”. By studying systematically François Chesnais and Maria da Conceição Tavares we will argue that the relations between finance and innovation could be better understood in terms of the political economy approach that the authors depart from and that this choice is very promising. The “positive heuristic” and the “negative heuristic” (Dosi, 1982, p. 152) on which is based the work of Tavares and Chesnais is substantially different from the two other “research programs” presented. The ultimate goal of this work is to clarify Tavares’ and Chesnais’ research agendas and to build a comparison with the other two which are more established. This will allow us to move them forward by pressing its limits and highlighting the astonishing possibilities to understand the relations of finance and innovation in terms of political economy - which will mostly be done in the PhD thesis related to this work. We also argue that, despite some disconnections, many of the conclusions of the neo-schumpeterian paradigm, industrial sphere. This will enable us to make policy recommendations to reform finance to promote the capital development of the economy. Finance which helps to create value rather than just extract it: finance for creative destruction, not destructive creation.”. The author also coordinated an important investigation on finance and innovation, known as “FINNOV” (http://www.finnov-fp7.eu/).

3 We should note that in Freeman (1994, p. 464) the neo-schumpeterian research program is understood as an agenda that embraces different economic theories – including neoclassic -, defined by “the scope of the subject”.

especially the ones based on the National System of Innovation approach (Freeman, 1995; Lundvall, 1992, 2007), fits surprisingly well in this research agenda.

In the following section we present a brief summary of Chesnais’ and Tavares’ approach on finance and technology. We then expose, in the third section, a small synthesis of their approach on political economy and we highlight its relations with finance and technology. In the last section we present some preliminary comparisons of their contributions with the contemporary approaches on innovation, with a particular emphasis on their relations with the NSI approach.
2) Chesnais’ and Tavares’ approach on Finance and Technology

In as much there is no such thing as a “neutral” technological trajectory, the academic investigation on any subject is not independent of the socio-political framework in which they are shaped. The same applies to Maria da Conceição Tavares and François Chesnais. In this section, we begin with a small summary of some of the key elements of their life and its influence on their academic background. This will help us clarifying the nature of their research agenda⁴.

a) Biography and Research Trajectory

The academic background of Maria da Conceição Tavares and François Chesnais share a common ground. Both are profoundly marked by a meticulous attention to the knowledge accumulated by all critical branches of the history of economic thought. They never separated their theoretical assessment on finance, money and technology with the broader economic and political aspects of the society. Following Marx, their primary object of investigation was the socio-economic system as a whole and they dedicated a great amount of effort in order to critically understand the different theories that would help them to propose some causal relations among variables and socio-economic phenomenon.

Maria da Conceição (de Almeida) Tavares (Anadia, Portugal - 1930) is deeply influenced both by Marx and by the Latin American structuralism. Her family had always had a leftist bias, which imposed them several challenges in a society ruled by the dictatorship of Salazar. Tavares (2010, p. 84) says her mother (Maria Augusta de Almeida Tavares) was a strong political activist, who where “characterized by their

⁴ We use the methodological framework utilized by Freeman (1994, p. 464), who understand “research agenda” in terms of the “scope of the subject”.

militancy on the women’s rights, including the right to live, which wasn’t guaranteed when it comes to prostitutes”. This was decisive to shape in Tavares her strong and critical posture regarding the injustices that she faced. Her father, Fausto Tavares, was an anarchist and used to provide shelter to war refugees from the Spanish civil war. Besides their familiar figures, her math teacher (Bento de Jesus Caraça, a “leftist mathematician”) was also of great influence to her. He taught “workers that were organizing the journal ‘A Voz Operária’ (the worker’s voice)” (Tavares, 2010, p. 84) and shaped Tavares both her mathematical expertise and her interest on Marxist theory.

After moving to Brazil, in 1954 (she became Brazilian in 1957), Tavares was one of the lead voices of Latin American structuralism. This was mainly due to her attendance in CEPAL courses on economy, in 1960, and to her historical friendship and debates with Celso Furtado, Anibal Pinto and Ignacio Rangel where also of great influence to her and both suggested her to read Marx. The later argued that she needed to complete her economic formation by studying Hilferding’s Finance Capital. According to Tavares (2010, p. 87–88), he was the “first great author that deals with the ‘Finance Capital’, which then was used by Lênin in his book on imperialism”. She was also one of the lead economists in building the Brazilian post-graduation courses on economics in many public universities during the Brazilian dictatorship (1964-1985). The debates she led on these centers shaped profoundly the Brazilian critical and leftist appraisal on the country’s political economy. She became a relative popular figure and was elected a congresswoman for the “work’s party” (PT) during the 90s. Nowadays she’s an emeritus professor of the Federal University of Rio de Janeiro (UFRJ) and occasionally writes and gives speeches on Brazilian economy.  

Many of her students became important politicians, both from right and leftist parties. One of them, Luiz Inácio “Lula” da Silva, became president of Brazil in 2003.
François Chesnais (France, 1934) first got in touch with Marx at Dijon University (Burgundy, France) (Sauviat, 2014, p. 29). His professor, Jean Domarchi, made him read some Classic authors in the original – this included Adam Smith, David Ricardo, Keynes and Marx. His PhD thesis investigated the England’s and Scottish’s political economist from the XVIII and XIX centuries that where studied by Marx. After serving in Algeria, Chesnais was recruited by OECD, which sent him to Madrid, at the Spanish National Science Council between 1966 and 1967. For his wife, Sauviat (2014, p. 29), “this was the beginning to his interest on the relationships between technology, innovation and long term capital accumulation (a term he prefers to development)”. This is the period he started his “parallel life” as political activist, especially in Latin American countries. He would stay at OECD until 1992, as one stakeholder at the “Directorate for Science, Technology and Innovation”. There he got a lot of expertise on the theme of technology and also had important connections with Brazilian economists (such as Cassiolato, Belluzzo, Erber, Coutinho), economists from Sussex (Chris Freeman) and others that would become known figures in the contemporaneous debate on innovation (Lundvall, Giovanni Dosi, Richard Nelson, Luke Soete, among others). His critical bias would not fit the new agenda of OECD in the 90s, which would became clear when the report “Technology and the Economy: The Key Relationships” was published under his coordination. He was then offered a premature retirement and he went to Paris XIII. With a wide different set of influences, he expressed his Marxist view also through the organization of the French journal “Carré Rouge” (Sauviat, 2014), in 1996, and in all his further publications. When it comes to his influences from the French universities, Chesnais remembers the importance of one of the main authors of the regulationist school, Michel Aglietta, which was central to his understanding on the relations between history and macroeconomics.
In the following subsection we will start presenting a tentative synthesis on their main theoretical bases on technology and finance (and money). We chose to separate as much as we could the specific theories that may be understood independently\(^6\). This will help us to understand the theoretical framework they use to analyze the systemic relation on economics and society in general.

b) Technology and Finance in Chesnais and Tavares

i) Technology

François Chesnais

- The “first” importance from the technology on the economy is that Chesnais uses the Marxist interpretation of the Ricardo’s labor-value (Carcanholo, 2008). So, the technical progress of an economy is the main determinant factor to the rate of “surplus”.

- Technological inputs are in the core of the conflict in the capitalism after Bretton Woods. The National Systems of Innovations (NSI) dispute both among themselves and between them and the Multinational Enterprises who will appropriate their “value” and what research agenda they will be subsidiary to (CASSIOLATO, 2013; Cassiolato, Zucoloto e Tavares, 2014; Chesnais, 1992).

- The technological trajectories are mainly determined by the power from those who own instruments to command and control the research and developmental agendas (Chesnais, 1992). Consumption pattern is an important factor on inducing the form the technology assumes. (Cassiolato, Zucoloto e Tavares, 2014).

\(^6\) A similar methodology is used by Serrano and by many classical analysts (Serrano, 1988).
The velocity and intensity that the technology is developed is mainly determined by: the factors that diffuse the technology intra and extra NSI (Chesnais e Sauviat, 2005); the political will constituted in the NSI to bargain against other economic entities the distribution of intangible assets (Chesnais, 1992); the political power constituted in the NSI to bargain against other economic entities the distribution of intangible assets (Chesnais, 1992); the level of investments in correlated areas; and the previous accumulation in a NSI of intangible assets (Chesnais, 1992; Chesnais e Sauviat, 2005).

Technology influences decisively in other specific parts of political economy theories, which will be highlighted in the next sections and subsections of the present paper.

Maria da Conceição Tavares

As is the case of Chesnais, the “technical progress” is the main factor to explain the rate of “surplus” in a labour-value framework.

Following the concerns of the Latin American structuralism, she places the technology as a main factor to explain the position of a country in the international division of labour (Tavares, 1973) and the sustainability of the balance of payment accounts (Bielschowsky 2010, 10-11).

Diffusion of technology take place within the oligopolic capitalistic concurrence. Besides the concurrencial factor, some characteristics of some specific technologies influences how difficult is to really diffuse the technology in the economical space. The technologies of “easy” diffusion are treated as fully embodied in the equipment, while the
technologies of “hard” diffusion are treated as partially embodied in the equipment and partially embodied in the knowledges of specialized work-force. (Tavares, 1963) (TAVARES; SERRA, 1970).

- The technology is also part of many other theories of the political economy agenda, as will be explained in other sections and subsections of this paper. We will highlight the centrality of technology in Tavares’ approach to the theory of product and the theory of distribution (Tavares, 1974).

ii) Finance and Money

François Chesnais

- His theory on financial crises is rooted in the Marxist approach of the theme. It’s supposed that financial crisis may take place if there’s no “real” value appropriated by its assets (Chesnais, 2002). There’s no complete “autonomy” from finance in relation to the production sphere. In the long run, an over appreciation of the financial assets press institutions (including the State) to extract real value from other social groups. This may validate the “fictitious” financial appreciation at the expense of groups which do not own a significant amount of financial assets. Since the 70s, the intangible assets have been also utilized to “validate” the over-appreciation of the financial assets. Despite its importance, the astonishing growth of the financial sphere since the 70 is not the main characteristic of “Financialization”, but the fact that the
states themselves are being increasingly governed by financial interests (Chesnais 2002).

- Chesnais does not uses the Say’s terminology to discuss financing problems. So, the financial resources that are used in the investments do not “come” from aggregate “savings”. The problem is faced by “centralization” of resources and other Keynesian and Marxist approaches.

Maria da Conceição Tavares

- After Bretton Woods, the functions of Money are split (Tavares 1985, 1997). The store of value function is mainly attributed to the US’ treasuries, whose state operates the monopoly of force when, at extremes cases, it’s necessary to validate it. That is why she says the international financial system, after the pos-Bretton Woods consolidation of American hegemony, is both a financial and a monetary system (Tavares e Melin, 1997). The dollar would be better understood not as store of value, but rather as an unit of account. Many different assets function as medium of exchange, including the dollar and the national currencies.

- Since the 70s, it is very central to Brazilian financial system, according to Tavares, the self-reliance capacity some Brazilian and multinational firms have to access outside funding sources (Lemos, 2010, p. 69). Nevertheless, the problems of financing of national expenses in national currencies are analytically separable of the ones concerning the balance of payments.
- When it comes to balance of payment constraints, she uses Keynes and Kalecki to argue that the external financial cycle depends greatly on endogenous movements of Brazilian economy (Tavares, 1978). Since big enterprises in Brazil have own sources of funding and international risk capital was abundant during the 70s, Brazilian growth would determine the influx of financial resources through the capital account. Medeiros and Serrano (2001) also propose to understand her contribution as an advance in relation to Prebisch thesis of long term balance of payment’s constraints. The Argentinian economist’s thesis relates it to tendencies related to balance of trade, while Tavares would be adding the financial dimension to discuss its long term tendencies.7

- As Chesnais, the funding in national currencies is not a problem of “aggregate savings”. She rather uses the concept of centralization of financial resources, whose assets and obligations are not rooted in any necessity of under-consumption (Possas, 2001, p. 395).

- The historical and structural problems regarding centralization of financial resources to the investment in the Brazilian economy is observed in her whole intellectual production (Bielschowsky, 2010, p. 17; Tavares, 1973).

- As does Chesnais, one of Tavares’ big concerns on “financialization” regards to the allocation of private financial assets into the states’ balance sheets (Tavares, 2000, p. 135–141). This would have major consequences regarding the subordination of governments and states to financial interests.

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7 Medeiros and Serrano (2001) advanced on Tavares’ thesis. They propose that, in the long run, there is a balance of payments constraint if the trade balance surplus is not systematically greater than the external flows given by the international interest rates.
3) The importance of the political economy framework to Chesnais’ and Tavares’ approaches on Finance and Technology

Category: “Capital”

François Chesnais

- Chesnais is influenced by Hilferding in his understanding of the meaning of the category “capital”. So, there are two basic meanings of the term. First, it may be understood as an object of accumulation. The value of surplus is understood within the labour-value framework. Second, it could also be understood as a social subject. The interest of the later is the transformation of M in M’. The specificity of the financial capital is that it tries to do this directly, without circulating through the production sphere. “Financial overaccumulation” is fictitious if it has no roots on production. These contradictions may generate financial crisis.

- Chesnais is very caution when referring to any historical tendency of concentration and centralization of capital. It does so by linking this phenomenon to an historical and political construction, not as a “deterministic law” as sometimes is referred in the Marxist literature.

- Financial accumulation may assume different forms and the most important in contemporaneous capitalism are the public debts and the shares in the stock market(2005, p. 35–37). Chesnais argues that, after the 70s, their holders should be understood as economic agents that have

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8 “The interest-bearing capital (financial capital) has not achieved its contemporaneous centrality due to its own movements. Before this could take place, it was necessary that the most powerful states decided to liberalize the capital movements and deregulate their financial systems” (Chesnais, 2005, p. 35)
no relations with production – their function of financing the investments is diminishing and the surplus they earned is not rooted in these investments (Chesnais, 2005, p. 48). So, the direct transformation of \( M \) into \( M' \) would be firmly established today, mostly grounded on the American financial system (Chesnais, 2002).

*Maria da Conceição Tavares*

- Tavares is very influenced by other important Brazilian economist when it comes to the theme of “Capital”. Luiz Gonzaga Belluzo is a very important reference to her when discussing the theme (Bielschowsky, 2011), which she states explicitly in some of her most known texts (Tavares, 1978, p. 49). It’s also close the interpretation of Tavares and Aloísio Teixeira (Tavares e Teixeira, 1980), and the same applies to Teixeira and Beluzzo (Messentier, 2014, p. 48–51). “Capital”, as an object of accumulation, could be understood as the money crystallization of labour value (“Money Capital”). Even though “Commodity capital” and “Productive Capital” may also be accumulated, since they are not realized, they could not assume the form \( M' \). The states monopoly of force it’s the money’s last resort to keep its function as store of value.

- Capital may also be understood as an social actor, which have an specific interest structure and worldview (Tavares e Belluzzo, 1980; Tavares e Teixeira, 1980). The objective of the “financial capital”, a *Hilferding’s* category that she uses, is the direct transformation of \( M \) into \( M' \) - without circulating through the production sphere (which is similar to Chesnais’ approach).
- Historically, different fractions of capital are disputing themselves both at the national and at the international level. Dialectically, the concurrence between these fractions of capital leads to the internationalization, concentration and centralization of capital⁹.

Value and Distribution

François Chesnais:

- Chesnais uses the marxist framework to discuss value and distribution (Carcanholo, 2008). The dispute of surplus, after the fall of Bretton Woods, also regards the intangible assets. The “work” and “value” do not refer only to concrete commodities, but also to knowledge production and network building (Chesnais, 1992, 1996; Chesnais e Sauviat, 2005).

- The multinational corporations and the big American financial companies are the leading actors of the contemporaneous global value dispute, but the American state and the other national states are important allies (Chesnais, 2002). The distributive process is also heavily influenced by financial and industrial oligopolies, while the dispute of influence in national states are decisive to the relative success different actors have in this process, especially due to the importance that state institutions have in National Systems of Innovation. The political power

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⁹ “It is implicit at the general law of capitalist accumulation the centralization and concentration of capitals, mainly through the amplification and externalization of interest-bearing capitals. The credit system is becoming predominant in relation to the productive and mercantile orbits. The interest-bearing capital is, then, rooted on the never-ending need of its own expansion and valorization to beyond the limits of its greater and most elementary process of circulation and reproduction.” (Tavares e Belluzzo, 1980, p. 1–2)
and propriety on knowledge and intangible assets are to be considered the new classical barriers to entry (Chesnais, 1992).

- The “financialization” refers mainly to the political and economical power that financial capitals have to induce state’s and governments’ initiatives. The problems Chesnais discusses relating the astonishing rise of value of financial assets since the 70’s are to be understood together with the subordination of state to the interest-bearing capital.

- The rise of transnational corporations in post Bretton Woods capitalism creates an international competition among the national’s work force, which places a strong pressure to lower wages at the international level. Distribution is also influenced by the making of work force as a liquid and heavily fragmented commodity, which is influenced by the unique organizational power of the transnational corporations (Cassiolato, Zucoloto e Tavares, 2014).

*Maria da Conceição Tavares:*

- Ricardo’s historical contribution on the labour theory of value is recognized by her and she accepts Marxist advances regarding the theme\(^{10}\) (Tavares, 1978, p. 53–54). She shares the understanding that Sraffa’s contribution regarding the theme is strictly formal, by sometimes fixing wage and other profits (Tavares, 1974, p. 31). In her approach, “distribution” is independent of macroeconomic variables (excepting interest rates). Following Belluzzo, “profits” do not correspond directly neither to “surplus value” nor to interest rates (Tavares, 1978, p. 58).

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\(^{10}\) Bielschowsky (2010, p.11): “When it comes to economic theory, we should note her admiration for Marx and the other classical economists. Especially when discussing technical progress and its implications on the division of labour, capital accumulation and distribution.”
- Tavares doesn’t follow Ricardo’s, Smith’s or the Sraffian tradition’s utilization of the long term equilibrium approach. Tavares uses an alternative framework when discussing the transformation of value to prices\textsuperscript{11} (Tavares, 1974, p. 31–32). The state representations is in Tavares very important to discuss distribution, which is determined by socio-political factors (Tavares, 2000). She searches distribution mechanisms also at the emerging industrial literature, referring to Schumpeter, Steindl, Sylos-Labini and Bain (Tavares, 1974) (Bielschowsky, 2010, p. 19–20).

- Regarding the state’s role as mediator of class conflicts, she uses some Marxist categories to discuss the state in the contemporaneous capitalism. She also uses some Hilferding’s categories to illustrate the importance of international flows of value through the financial capital (Tavares, 1985; Tavares e Melin, 1997).

- Theory of Accumulation

\textit{François Chesnais:}

- Chesnais’s approach on accumulation is not strictly related to the theory of production. Since accumulation is not strictly related to investments on physical assets and knowledge may also be accumulated, there is not a direct relation between production and accumulation. Intangible assets and networks are also part of what Chesnais calls “National System of Innovation” and its accumulation dynamics does not depend solely on internal determinants of effective demand.

\textsuperscript{11} The same applies to Belluzzo and Teixeira (Messenier, 2014, p. 52).
Maria da Conceição Tavares:

- Accumulation is also logically distinct of the theory of production. Nevertheless, the theme is presented in distinct ways in Brazilian economy. Before the Civilian and Militarian coup (1964), it’s still supposed that Brazilian economy have both capitalist and non-capitalist modes of production. The accumulation processes in non capitalist spaces during this period have no relations with the production theories. However, Brazilian economic model after 1964 is analytically distinct. Brazilian economy is supposed a “normal” capitalist economy after 64, and the theory of accumulation is relates to the theory of product and to the theories of concurrences.

Effective Demand and Production Theory

François Chesnais

- Chesnais uses a Keynesian framework when discussing current production (Chesnais, 1996, p. 307–309). His view of Keynesian economics is influenced by his connection with the Michel Aglietta’s interpretation on French regulation school. Following Keynes, he remembers that the worsening of the income distribution may undermine effective demand. After the collapse of Bretton Woods, the generalization of austerity policies is also avoiding growth. The new era provides an unsatisfactory compensation: the Foreign Direct Investment is a source of effective demand, but it is restricted to some specific countries and times.
Maria da Conceição Tavares

- She adapts from Kalecki (1990) her main theoretical instrument to analyze the Brazilian capitalism before the 80s (Tavares, 1974, 1978) (Bielschowsky, 2010, p. 19–21). For Serrano (2001, p. 148–155), there’s a change at her theoretical instruments after the 80s, when she would start using a Keynesian and Schumpeterian framework to discuss production and investments. At this framework, “investments” are supposed to be autonomous to the current income. Bielschowsky (2010, p. 11-12; p.24) highlights her changing theoretical framework between Keynes and Kalecki. The later would become less important at her analysis, after Brazilian debt’s crisis in the beginning of the 80s.

- Tavares’ approach on effective demand is very influenced by technological features (1974, p. 34). The diversification of consumption patterns in a modern capitalist society poses an “additional challenge” to the realization of production – since its problems would not only refer to a “quantity” problem, but also to the demand’s composition.
4) Some preliminary comparisons of Tavares’ and Chesnais’ political economy with the National System of Innovation’s and the broader debates on innovation.

Contemporaneous mainstream economics is completely misleading to address the most important challenges economies and societies face today. Nevertheless, this does not means that the whole economic thinking needs to be reinvented from the beginning. A critical assessment of economic thinking should not ignore the great contributions many economist made during the previous centuries, but to critically choose which of their contributions are effectively valid. Neither are technological trajectories and paradigms independent from broader socio-economic movements, nor is economic thinking progress autonomous from class interests. Tavares’ and Chesnais’ brilliant economic analysis on technology and finance show that the researches agendas that departs from political economy are very promising. Despite some disconnections, there’s a huge space for interactive learning between National Systems of Innovation approach and the political economy.

Both of the authors depart from a specific interpretation of the Ricardian and Marxist “labour-theory of value” to understand the relations between accumulation, price, distribution and technical progress. We may say that the starting point of their investigation is the understanding of the economic system as a whole, so that productivity and price formation could only be understood in the systemic relations in which they are part. This is quite different from most of the neoschumpeterian research agenda that uses to think price as strictly related to enterprise strategies and it’s also dispenses the utilitarian neoclassical perspective. However, this does not necessarily means that there would be no place to the industrial strategies in some micro-analitic questions, but rather that they are immersed in a series of price relations and systemic
productivity that shape their costs and distribution possibilities. This is especially observable in Tavares (1974, 1978) and has similarities with the way that the National System of Innovation approach understands production and the shaping of technological trajectories and paradigms.

Regarding to the distribution process, both of the authors consider it not determined by productivity or macroeconomic variables (as do many of neoclassic and Keynesian economists). Their research agenda drives attention to the many ways power relations shape distribution (Chesnais, 1992, 2001, 2002; Chesnais e Sauviat, 2005; Tavares, 1974, 1978, 1985; Tavares e Melin, 1997). Especially, what is inadvertently absent in Mazzucato (2011), the State itself is not independent of class formation and their research agenda focus great attention in understanding the social and economic forces that drives the State movements and in ways to intervene into the State to better achieve social goals (not only through the State into the economy). Contemporary, both authors consider the financialization process the departing point to understand the movements of the States. Especially in Chesnais (Cassiolato, Zucoloto e Tavares, 2014; Chesnais, 1992; Chesnais e Sauviat, 2005), it is observable how the intensity and direction of the innovation process is influenced by the interests of financial markets and transnational corporations strategies. Both of the authors consider the balance of payment constraints central do understand how power relations and the distribution process takes place in the world economic system.

The conflict of interests was explicitly present in Smith’s, Ricardo’s and Marx’s work based on labour theory of value, but it was hidden with the utilitarian approach on value. Taken an amount of production as given, there’s an inverse relationship between
wages and profits\textsuperscript{12}. In spite of the fact that there might have some convergent goals between different kinds of social actors, there’s a conflict regarding distribution. Different agents will act accordingly to their interests and this included the transnational stakeholders on finance and technology. This also means that actors from National Systems of Innovation of underdeveloped countries should first actively bargain to keep and access technological assets, instead of hoping that any technological or sectoral characteristic will lead automatically to the international diffusion of knowledge. No international actor will altruistically share its technological assets with underdeveloped economies. Despite the importance to NSI to hold “absorptive capacities” to benefit from channels of international diffusion of knowledge, its first condition is the political will and power to act accordingly with it. This means acting against or in spite of some specific economic interests and this is especially important when discussing transnational corporations and global value chains.

National Systems of Innovation approach wants to better understand some political and economic factors that are influenced by or influence innovation. Paying greater attention on political economists like Chesnais and Tavares would help it to avoid supposing causal relations that are not grounded on theory or reality. Innovation does not lead automatically to growth. When economists want to measure the effect of innovation on growth, they are neglecting effective demand approaches and getting closer to neoclassical economists\textsuperscript{13}. In order to keep an open dialogue with Keynesians and Kaleckian contributions, any causal relation from innovation to growth needs to be mediated through its influence in effective demand. Chesnais is one of the leading

\textsuperscript{12} Both Chesnais and Tavares are economists that do not use to make their theoretical contributions based on formal models. For a mathematic formulation of the problem, see Sraffa (1997): $\frac{R(1-w)}{1+Rw}$ (Kurz e Salvadori, 2010, p. 28).

\textsuperscript{13} Fortunately, this not happens often. Mazzucato and François Chesnais are two important economists that use NSI approach and explicit refer to the problem of effective demand.
authors that discusses NSI and always kept Keynesians contributions in mind when discussing growth. Tavares brilliantly show how Kaleckian insights may lead to critically address the problem of growth and she also shows how technology may influence effective demand. Economically, technology and innovation refers especially to the position of a region in the (international) division of labour.

There are many ways that the NSI approach could benefit with an open dialogue with the political economy research agenda (and vice-versa). This is not easy, though. Fortunately, some important economists, like François Chesnais, already showed that this is possible and fruitful. The objective of the ongoing research of the PHD thesis related to this paper is to go deep on the relations between finance, innovation and political economy in order to understand how this could benefit from lessons of the NSI approach (and vice-versa). The hypothesis we defend is that some of the core questions of NSI agenda and the political economy are not exactly the same and there are fruitful possibilities to one complement each other. Some of the questions, however, are the same and there may be some divergences between the approaches. The social role of the academic investigation is to critically address the debate and not to defend any hypothesis based on any sort of political, academic or economic convenience. This is not to supposable build a neutral academic investigation, but to address the social, political and democratic issues with all the responsibility they demand. Tavares’ and Chesnais’ contributions on finance, technology and political economy are of great help to critically face these issues.
5) References


LUNDVALL, B.-Å. National Systems of Innovation. Towards a Theory of Innovation and Interactions. [s.l: s.n.].


SERRANO, F. Teoria dos Preços de Produção e o Princípio da Demanda Efetiva. [s.l: s.n.].


TAVARES, M. DA C. Alimento hoje as mesmas esperanças pelo amor que desenvolvi em relação ao povo brasileiro, 2010.


TAVARES, M. DA C. Lições Contemporâneas de uma Economista Popular. Rio de Janeiro: [s.n.].

