

A Macroeconomic Analysis of the Role of Trans-national Corporations in a Monetary Theory of Production

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This paper aims to put forward an original conceptual framework and a renewed perspective on monetary analysis applied to trans-national corporations based on some of the views of Bernard Schmitt developed over the last forty years. After reviewing the terminological principles of the theory of money emissions, we show that Bernard Schmitt's theoretical insights have enabled the successful integration of money and output at the conceptual level along the lines of a Keynesian monetary theory of production. We then examine the issue of the definition of the trans-national corporation and its exponential rise in the world economy with regard to the globalisation process. Finally, the inclusion of trans-national corporations in the theory of money emissions allows us to redefine transnational production as an additional conceptual level in monetary macroeconomics, with far-reaching implications as far as the monetisation of trans-national production and the subsequent reform of international

“Trans-national: Reaching beyond or transcending national boundaries”
The American Heritage- Dictionary of the English Language (2000)

Introduction

The trans-national corporation (hereafter TNC) has obviously become a major actor in the global economy of the twenty-first century. Commentators usually agree on the decisive nature of its socio-economic contribution to the globalisation process. However, the increasingly important role of TNCs is not easily apprehended by economic science, which is generally not at ease with those gigantic, multi-dimensional and stateless institutions. As a consequence, they are very often stereotyped: “[TNCs] *stand at the heart of the debate over the merits of global economic integration. Their critics portray them as bullies, using their heft to exploit workers and natural resources with no regard for the economic well-being of any country or community. Their advocates see [TNCs] as a triumph for global capitalism, bringing advanced technology to poorer countries and low-cost products to the wealthier ones* (The Economist, 1997)”. Therefore, analytical discussions involving TNCs are often blurred in a discourse determined by the underlying assumptions concerning their perceived benefits or their negative effects on the world economy. Surprisingly, no convincing attempt has been made to analyse TNCs thoroughly within the theoretical framework of a monetary theory of production advocated by Keynes (1933). In this article, we attempt to adopt such a perspective in order to analyse the role of TNCs in a global economy. Let us remind our readers that a monetary theory of production is one that takes money into account, from the outset, in the economic process (Barrère, 1990, p.28) and which refuses the neoclassical dichotomical approach assuming the neutrality of money (Schmitt, 1975, pp. 9-10). An interesting heterodox approach, which might help us avoid the aforementioned shortcomings of classical monetary economics, is the theory of money emissions (hereafter TME), whose theoretical framework will be widely referred to in this article.

Money having been defined as the numerical form of output in the TME (Schmitt, 1975, p.15, Cencini, 2001, p.76), we are interested in some of the determinants of world economic output that might account for the deep and complex transformations of the economic system at the global level. In fact, in the light of the recent evolution of the world economy, characterised by the exponential rise of TNCs, we argue that the aforementioned integration of money and output, as established by the TME, needs to be pushed one step further, by taking into consideration the trans-national nature of production. We are therefore interested in this paper by the recent evolution of world output and the identification of the main actors in the global economy. We will particularly insist on one actor who seems of utmost importance namely the trans-national corporation. The TNC (along, of course, with the workers it employs) is arguably, in a global economy, the main creator and transferor of newly created and often intangible assets (Dunning, 1997). Those assets may be considered to be the essential drivers shaping world economic output¹: “*more than any other single institution, it is the trans-national corporation which has come to be regarded as the primary shaper of the contemporary global economy*” (Dicken, 2003, p. 198). Without being exhaustive, in the first

¹ The following quote illustrates the current weight of TNCs, which have become the new major players in the global economy: “*Today, 47 of the top 100 economies in the world are actually TNCs, 70% of global trade is controlled just by 500 corporations* (Clarke, 2003, p.70)”. The sheer concentration of economic power within TNCs is another key characteristic of the new global economy: “*a mere 1% of the TNCs on this planet own half the total stock of FDI* (ibid.)”. The acknowledgement of the paramount importance of the TNC as the primary shaper of the global economy is the object of a consensus among economists and is to be found in mainstream as well as heterodox circles such as in Post-Keynesian literature (Arestis, 1992, p. 89).

section we will survey the main theoretical contributions of the TME as far as the integration of money and production is concerned. Before we address the macroeconomic consequences of the “*global shift*”² entailed by the rise of TNCs, it might be useful to provide a more rigorous definition of the trans-national corporation, in order to apprehend its role and analyse its evolution over the last decades. This will be the object of section two. The third section will deal with the consequences of the inclusion of trans-national corporations in the TME (one of the theoretical frameworks that best captures the essence of a monetary theory of production, according to us), with the subsequent definition of the concept of “*trans-national production*” and its possible impact on the study of the world economy. We will conclude by sketching out possible theoretical evolutions of the TME, fully taking into consideration the increasingly dominant position of TNCs in the world economy.

The Integration of Money and Production in the Theory of Money Emissions

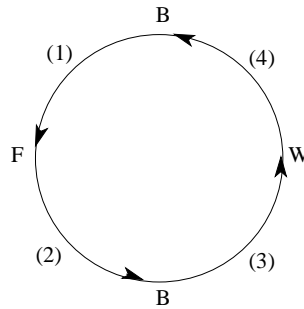
It is impossible to go, exhaustively, through forty years of conceptual progress in the understanding of bank money as achieved by the TME, which is the cornerstone of the so-called Schmitt school (or Dijon school), owing to the decisive influence of Bernard Schmitt (1966, 1975, 1984, 1996) in the development of the TME. Nevertheless, it might be possible to sum up the key features of the TME without distorting its fundamental insights as far as the definition of bank money as well as the integration of money and production are concerned. Firstly, the TME is based on a renewed conception of money viewed as an instantaneous event, that is to say a circular flow that does not survive the payment occurring during a transaction between two economic agents in a capitalist economy (Cencini, 2001, p.76, Rossi, 2006). The fact that money does not survive the payment is precisely linked to the idea that “*money and payments are one and the same thing*” (Schmitt, 1996, p.88). As Rossi (1998a, p.37) points out, “*the distinguishing feature of modern banking - in contrast to non-bank financial intermediation - is to issue payments within the economy. Precisely, the monetary aspect of any payment is a wave-like emission; it is a flux-reflux occurring instantaneously.*” Hence, the emission of money (which is viewed here as a flow) occurs only within payments and can therefore be considered as an instantaneous event (Rossi, 2006, p.124). Rossi (ibid.) argues that, “*strictly speaking, money never leaves the bank issuing it. The payment order that the payer (say client I) addresses to the bank in favour of the payee (say, client II) is carried out by this bank through a simple double-entry in its books, by means of which money can be viewed as a flow from and to its source (money hoarding is impossible)*”. As Cencini (1995, p.18) points out, the instantaneous reflux of money to its point of origin cannot be identified with an equilibrium condition that might be satisfied (or not). It is, in fact, a fundamental law of bank money that will always be logically true, regardless of the behaviour of economic agents. Between payments, bank deposits do not cease to exist but it is preferable here to talk about money balances (here viewed as a stock) rather than money *per se*. It is crucial to stress the accounting nature of money in the TME. The role of double-entry book-keeping in the recording of monetary transactions and the financing of production had already been stressed by Keynes (1937a) in his articles on the finance motive published after the *General Theory* (1936): “*‘Finance’ and ‘commitments to finance’ are mere credit and debit book entries, which allow entrepreneurs to go ahead with assurance*” (Keynes, 1937a, p.209). But while double-entry bookkeeping is the activity that consists in recording payments, the actual visible accounts only show the resulting money balances (whether positive or negative), which are the mere outcome of payments (and therefore of the wave-like emission of money) and not money *per se*. Bank entries may therefore be viewed as the result of instantaneous

² To borrow the title of Peter Dicken’s book (2003)

events corresponding to payments in modern capitalist economies³. “As Bernard Schmitt put it [...], ‘double-entry accounting records the result of monetary flows and not the flows themselves’ (Rossi, 1998, p.36)”. We now need to investigate the wave-like emission of money, which occurs and is defined simultaneously on three different poles, namely firms, wage earners and banks (Gnos & Rasera, 1985).

The circular flow of money in the TME

Figure 1



The circular flow depicted in Figure 1 can be broken down into four simultaneous and instantaneous flows (F and W stand respectively for the payer (say, a firm) and the payee (say, wage earners)). The payment is aborted if the circular flow is not simultaneously defined on B, F and W. The result of the whole operation is nil if the emission is not complete (and therefore not circular). Hence if flows (1) and (2) are emitted, this is the typical situation of a line of credit opened by a bank for a firm. However, as long as no payment has been made, one cannot talk about the existence of money *per se*. If flow (3) is now emitted but if the corresponding deposit is not immediately deposited in B, that is to say if flow (4) is left out, or if it is issued later than flows (1), (2) and (3), then the payee (W in the case at hand) receives a mere promise to pay. If (4) is not emitted, the bank acknowledges its debt towards W but without the possibility of an actual payment, since a promise to pay cannot be identified with a payment. In order to be paid, the payee must obtain a claim over a bank deposit, certifying that (s)he has received a drawing right on a fraction of output in a numerical (or monetary) form. In fact, flow (4) represents the completion of the payment when the payee is credited with the deposit that demonstrates the restitution to the bank of the means of payment (the money here has flown from and to its source but without leaving the bank).

The concept of production in the TME

Intuitively, it seems that any production process has a positive duration in time. In economic terms, however, Schmitt (1984, p.51) has shown that production is a very specific action that defines a real emission that comes into existence and can only be captured at the very moment the production process is fully completed. This means that production (in economic terms) is nil until the production process has been totally completed when it becomes a positive action. Considering the set of firms as a whole, a product can only be defined by the social relationship between labour and output. This relationship enables the conceptual integration of money and output through the payment of production costs, which are identical to wages

³ “It takes no more than an instant to enter a payment in a bank’s ledger” (Rossi, 2006, p.124).

from a macroeconomic point of view owing to the fact that intra-firm purchases cancel out (Rossi, 2006, p.124). At the very instant wages are paid, production is defined by its end-result namely the physical product itself (ibid.). Furthermore, production ceases to exist in continuous time at the very instant following the end of the production process. The nature of the real emission hence defined by production is therefore instantaneous. Now that we have described the sequence leading to the conceptual definition of the product in the TME and outlined the instantaneous nature of production, we can infer that the payment of wages enables the integration of money and output, which fuse in a single macroeconomic object, namely money-income, wherein money has acquired a real content and output a numerical form (Cencini, 1995, p.15).

The instantaneous nature of production also raises the question of the integration of time in macroeconomic theory. As a matter of fact, the previous analysis of production requires a conception of time which is specific to economics and which differs from the intuitive and observable continuous (or historical) time in which the production process takes place. Since production cannot be defined in any finite and indivisible interval of continuous time – owing to its aforementioned instantaneous nature -, it can only be defined on a quantum of time. As Cencini (1985, p.74) puts it, quanta of time are a logical necessity, which stems from the fact that production does not *take place in time* but rather *is* an indivisible and finite period of time, that is to say a quantum of matter and energy moulded by human beings (Schmitt, 1984, p.54). This logical necessity enables economists to define a conception of time that allows them to define production in purely economic terms by transforming a continuum of time (a given interval $[t_0, t_n]$ in continuous time) into a quantum of time. Every production defines a quantum, a real and instantaneous emission, which ‘quantises’ time (ibid.). That means that economic reasoning requires continuous time to be withheld in order to put forward an economic conception of time that captures the very instant at which production becomes a positive action in economic terms. The product is the end-result of the production process that takes place in continuous time $[t_0, t_n]$ but only comes into existence, as an economic event, in t_n . The instantaneous existence of production in t_n absorbs the whole period $[t_0, t_n]$, which leads to this fascinating and logical conclusion: on a quantum of time, production does not *take place in time* but it actually *is* time (ibid.). We now consider how this definition of a quantum of time perfectly fits into the framework of a monetary theory of production advocated by Keynes (1933) in order to study capitalist economies (Barrère, 1990, p.28) since production may be considered as the primary economic operation that necessarily precedes any exchange (Schmitt, 1975, p.11). As soon as the production process is completed in t_n , it becomes a positive action and it is instantaneously deposited in continuous time where it can be defined as a product (Schmitt, 1984, p.54). However, the fundamental feature of the stock of products deposited in continuous time is its heterogeneous nature (and its “conversion” into a measurable whole is probably one of the fundamental questions in monetary economics). In the TME, a fundamental proposition is that each emission of money is necessarily coupled with a real emission – that is to say production (Gnos & Rasera, 1985). As pointed out by Rossi (2001, p.5), “*money can be seen as the organic result of two intimately related actions (or flows): (1) creation, on the monetary side, of the numerical form of payment (2) production, on the real side, of physical output [...] by firms and workers taken together*”. The content of a real emission defines physical output, which, however, has no intrinsic value-substance, which was wrongly assumed by neoclassical economists (Cencini, 1985, p.91). The misleading concept of utility was probably the biggest error of classical economics along with the false idea of the neutrality of money (Schmitt, 1975, pp. 9-10). The object of a real emission is merely the social form of the stock of products (Cencini, 1985, p.216) that have been primarily conceptualised and physically brought about by human labour. We can see

why labour is conceptually the sole source of economic value (the only factor of production in the economic process). The etymology of the word “factor” is “creation”⁴ (The American Heritage Dictionary of the English Language, 2000), which is precisely what labour is: an intellectual and physical endeavour that gives its social form to any physical output with the help of money units. Keynes (1936, p.38) had already stressed the nature of economic output, which is a “*non homogeneous complex, which cannot be measured*”. Labour being the endeavour of human beings that gives its shape to economic output, money can be considered as the incorporeal standard (Rossi, 2006, p.124) that gives birth to the numerical homogeneity of all produced goods and services (Rossi, 2001, p.122-7).

[i]t is preferable to regard labour, including, of course, the personal services of the entrepreneur and his assistants, as the sole factor of production, operating in a given environment of technique, natural resources, capital equipment and effective demand. This partly explains why we have been able to take the unit of labour as the sole physical unit, which we require in our economic system, apart from units of money and of time (Keynes, 1936, pp. 213-214).

This exclusive role given to labour in the formation of economic value is certainly not “*a denial of the actual role that capital and land play in the production process*” (Gnos, 2005, p.90) but is rather explained by the theoretical distinction between the formation of new incomes (brought about by the payment of wages) and the spending of existing incomes when entrepreneurs pay for the capital goods that will contribute to the production process (ibid.). The fact that labour is the sole factor of production in the production process allows us to identify the payment of wages as a conceptual justification for the existence of money. From a macroeconomic point of view, this is confirmed by the fact that “*if there were no workers to remunerate, money could not circulate and hence exist*” (Rochon, 1999, p.31). In the TME, money is defined as the numerical form of output whose appropriation by income holders has only been made possible through the mediation of labour (and therefore the payment of wages) regardless of the existence of other physical inputs that might have accounted for the production process. Labour is viewed as the conceptual tool that enables economists to define production. The physical nature of production is not questioned but its holistic and social expression requires a fundamental element that is derived primarily from human effort - that is to say labour - and expressed in money units (Pilkington, 2005). Money in the TME is thus the holistic tool by which the economy becomes endowed with a social expression of output that enables the measurement of the otherwise heterogeneous mass of physical goods and services⁵. The TME states that banks do not create any monetary object that would be made independent from the productive sphere: as Rossi (1998, p.29) points out, any net creation (whether tangible or not) results from the intellectual and/or physical endeavour of human beings. This collective effort can be seen as an abstract productive project whose implementation in the real world requires the moulding of matter and energy through the production process. The role performed by banks consists in the monetisation of production as well as the creation of money units (which are both positive and negative numbers). The existence of negative units of money might surprise the reader but was nevertheless confirmed by Bernard Schmitt (1996a, p.134) with the help of double entry bookkeeping. Cencini (1997, pp. 273-4) has stressed the accounting nature of money and the paramount importance of double-entry bookkeeping: “*In simple words, the creation of money is nothing other than the*

⁴ Middle English *factour, perpetrator, agent*, from Old French *facteur*, from Latin *factor, maker*, from *facere, to make*

⁵ Goods and services remain heterogeneous and continue to lack any homogeneous *value-substance* (Cencini, 1985, p.91) despite the existence of money. Money does not quantify the intrinsic (and hypothetical) value-substance of goods and services. Instead, money provides the economy with numbers enabling the social and holistic measure of economic output (Schmitt, 1975, p.15).

use of double-entry bookkeeping to provide the economy with numbers". We might add that the emphasis in the TME is mainly on the macroeconomic structure of the economic system in which "*the monetary sector and the real sector operate concomitantly to determine the macroeconomic magnitude par excellence: money-income*" (ibid.). The role of banks, firms and wage earners are therefore clearly analysed in the theoretical framework of the TME in the light of a holistic macroeconomic structure (Cencini, 1997, p.276). After this brief exposition of the TME, we now turn our attention to the trans-national corporation (its definition, evolution and role in the global economy).

The Evolution and the Role of Trans-national Corporations

In the previous section, we showed how the TME can be considered as a powerful elaboration upon the nature of bank money enabling the full integration of money and production at the conceptual level. The starting point of this section is the previously established theoretical result of the TME, namely the fact that money (viewed as a circular flow enabling income-formation through the payment of wages) can in fact be interpreted as the "*numerical form of output*" (Schmitt, 1975, p.15, Cencini, 2001, p.76). However, in the light of the recent evolution of the world economy characterised by the exponential rise of TNCs, we argue that the aforementioned integration of money and output needs to be pushed one step further by taking into consideration the trans-national nature of production in a globalised economy. Therefore, we would now like to move temporarily away from the TME in order to consider what is probably the major contributor and determinant of economic output in the global economy of the twenty-first century namely the trans-national corporation (TNC).

Definition of the trans-national corporation

A transnational corporation is an enterprise that controls assets of other entities in economies other than its home economy, usually by owning a certain equity capital stake. An equity capital stake of 10%⁶ or more of the ordinary shares or voting power for an incorporated enterprise, or the equivalent for an unincorporated enterprise, is normally considered a threshold for the control of assets (UNCTAD, 2004). The definition of a TNC put forward by Ietto Gillies (2005) shows how its existence is derived from the globalisation of production:

The TNC is a company that operates direct business activities in at least two countries. [...] it is not enough for the company to engage in general international business activities abroad to be classified as trans-national or multinational. A company that engages in international business via exports/or import of goods and services or via non equity collaborative investment – i.e investment undertaken for purely financial reasons – does not become a TNC by virtue of these business activities [...] To be a transnational, the company must operate directly in the foreign country via the setting up of affiliates, and therefore through the ownership of assets located abroad (Ietto-Gillies, 2005, pp.11-2).

However, Dicken (2003, p.198) underlines the existence of numerous forms of collaborative ventures that account for alternative means of control and coordination of international production activities. He therefore suggests a broader definition of TNCs, which goes beyond the mere criterion of ownership of productive assets located abroad: "*A trans-national corporation is a firm which has the power to co-ordinate and control operations in more than one country, even if it does not own them* (ibid.)".

⁶ This threshold is rather conventional and arbitrary. In some countries, an equity stake of other than 10% is still used. In the United Kingdom, for example, a stake of 20% or more was the threshold used until 1997.

At a more conceptual level, the difficulty to apprehend the essence of TNCs lies in the fact that corporations (whether trans-national or not) are by definition very abstract entities, which do not have any concrete or material form in reality:

Though human beings work inside corporations, a corporation itself is not a person [...]. A corporation is not even a thing. [...] If a corporation is not a person or thing, what is it? It is basically a concept that is given a name, and a legal existence, on paper. We think of corporations as having concrete forms, but their true existence is only on paper and in our minds (Clarke, 2003, pp.84-85).

Another key characteristic of corporations is that they very often outlive the people who work for them⁷ (Sawyer, 1995, p. 61): “*a corporation usually outlives the human beings who have been a part of it, even these who own it. A corporation actually has the possibility of immortality*” (Clarke, 2003, p.85). Paradoxically, in the real world in which we live, those abstract and immaterial entities have arguably become the dominant institutions of the global economy⁸ and have acquired considerable economic power often at the expense of nation-states and more democratically elected governments:

TNCs [...] can move their capital, technology, goods and services freely throughout the world, unfettered by the regulation of nation states or democratically elected governments. In effect, what has taken place is a massive shift in power out of the hands of nation states and democratic governments and into the hands of TNCs [...] (ibid., p.71).

Genesis and historical evolution of trans-national corporations

Let's trace back very briefly the genesis and the evolution of TNCs:

The historical origins of TNCs could be traced to the major colonizing and imperialist countries of Western Europe, notably England and Holland. The process began in the 16th century and continued for the next several hundred years. During this period, firms such as the British East India Trading Company were formed to promote the trading activities and territorial acquisitions in the Far East, Africa, and the Americas (Singh, 2001, p.1)

However, the meaning of TNCs as provided in the present paper is probably more recent:

The transnational corporation as it is known today, however, did not really come into being until the 19th century. With the advent of industrial capitalism in the 19th and early 20th century, the search for resources including minerals, petroleum, and agricultural commodities as well as pressure to protect and enlarge markets propelled transnational expansion by companies exclusively from the United States and a handful of Western European nations (ibid).

We argue here that the TNC, whose existence is the outcome of a long historical evolution, is the condition as well as the outcome of the globalisation process. In a description of the world economic system before the first World War, Keynes (1920) reminds us that the internationalisation of the economy is not a new phenomenon:

⁷ Or the people who created them... Japanese artist Takashi Murakami has emphasised this aspect of corporations in his works: “*Louis Vuitton is dead but people still buy 'his' luggage* (Siegel & Mattick, 2004, p. 63)”

⁸ An institution can be seen as a group of people organised and united for specific purposes. The TNC is an example of institution. In the real world, human beings work for TNCs, which are nevertheless not human and not even material. We argue that it is perfectly logical and coherent with the rest of the argumentation to state that those economic institutions are extremely powerful (in economic terms) despite their mere conceptual and legal existence.

The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in such quantity as he might see fit, and reasonably expect their early delivery upon his doorstep; he could adventure his wealth in the natural resources and new enterprises of any quarter of the world. The projects and politics of militarism and imperialism, of racial and cultural rivalries appeared to exercise almost no influence at all on the ordinary course of social and economic life, the internationalisation of which was nearly complete in practice (Keynes, 1920, pp.11-12)

However, since World War II, Dicken (1999) argues that the world has witnessed a qualitative and quantitative change in the process of internationalisation of production with the exponential rise of TNCs that has given rise to an unprecedented form of evolution of world economic output, namely the globalisation process. According to the World Investment Report (UNCTAD, 2004), there were, in 2003, at least 61,000 TNCs in the world⁹ with over 900,000 affiliates accounting for one tenth of world GDP and one third of world exports¹⁰.

A very important (and relatively recent) phenomenon is now taking place within TNCs; it is the rise of intra-firm trade that is to say cross-border trade taking place within TNCs and their affiliates: *“Intra-firm trade accounts for around one-third of goods exports from Japan and the United States, and a similar proportion of all US goods imports and one-quarter of all Japanese goods imports (OECD, 2002)”*. This phenomenon is arguably reshaping the physical production process at the international level in a dramatic way:

Interestingly, the national economies are not simply selling each other goods and services, but producing together. A large share of US trade with Canada and Mexico occurs within the same or an affiliated firm [...] A car made in North America may, in its separate pieces, cross the borders dozens of time before it is finally sold. As a report [...] concluded: *“Americans do not buy Canadian cars and they do not sell American cars to Canada. Americans and Canadians (and Mexicans) make North American cars together in the same companies, in cross-border continental production networks” (Faux, 2006, p.208)*.

⁹ In 1970, there were only some 7,000 parent TNCs (Singh, 2001)

¹⁰ These figures are only estimates of the share of the world GDP and world exports accounted by TNCs but they do not reflect the true weight of TNCs in the world economy. It would be interesting to design further comprehensive indicators in order to measure the interaction between TNCs and domestic firms (collaborative ventures, strategic alliances, other forms of partnerships...). A much higher percentage of all world economic output, trade and investment would very likely prove to be influenced by TNCs.

Table 1: The world's top 100 non-financial TNCs, ranked by foreign assets, 2003^a
(Millions of dollars and number of employees)

Ranking by:						Assets		Sales		Employment		TNI ^b
Foreign assets	TNI ^b	II ^e	Corporation	Home economy	Industry ^d	Foreign	Total	Foreign ^e	Total	Foreign	Total	(%)
1	77	37	General Electric	United States	Electrical & electronic equipment	258 900	647 483	54086	134 187	150 000	305 000	43.2
2	7	95	Vodafone Group	United Kingdom	Télécommunications	243 839 [']	262 581	50070	59893	47473	60 109	85.1
3	72	12	Ford Motor	United States	Motor vehicles	173 882 [']	304 594	60761	164 196	138 663	327 531	45.5
4	90	65	General Motors	United States	Motor vehicles	15 4466 ^f	448 507	51 627	185 524	104000	294 000	32.5
5	10	78	British Petroleum	United Kingdom	Petroleum	141 551	177 572	192 875	232 571	86 650	103 700	82.1
6	31	41	Exxonmobil	United States	Petroleum	11 6853 [']	174 278	166926	237054	53 748	88 300	66.1
7	22	80	Royal Dutch/Shell	United Kingdom/ Netherlands	Petroleum	11 2587 [']	168 091	129 864	201 728	100 000	119000	71.8
8	68	94	Toyota Motor	Japan	Motor vehicles	94 164 [']	189 503	87 353	149 179	89 314	26441	47.3
9	16	48	Total	France	Petroleum	87 840 [']	100 989	94710	118 117	60 931	110783	74.1
10	62	69	France Telecom	France	Télécommunications	81 370 [']	126 083	21 574	52 202	88 626	218 523	48.8
11	14	58	Suez	France	Electricity, gas and	74 147 [']	88 343	33715	44 720	111 445	172 291	74.7
12	89	34	Electricité De France	France	Electricity, gas and water	67069	185 527	16062	50 699	51 847	167 309	32.9
13	80	63	E.ON	Germany	Electricity, gas and	64 033 [']	141 260	18 659	52330	29 651	69383	41.2
14	85	74	Deutsche Telekom	Germany	Télécommunications	62 624	146 601	23 868	63 023	75 241	248 519	37.0
15		67	RWE Group	Germany	Electricity, gas and	60 345	98592	23 729	49 061	53 554	127028	50.6
16	23	23	Hutchison	Hong Kong, China	Diversifiée!	59141	80340	10800	18699	104 529	126 250	71.4
17	32	40	Siemens AG	Germany	Electrical & electronic	58 463 [']	98 011	64484	83 784	247000	417 000	65.3
18	53	46	Volkswagen	Germany	Motor vehicles	57 853 ^f	150 462	71 190	98367	160299	334 873	52.9
19	21	35	Honda Motor Co	Japan	Motor vehicles	53 113 [']	77 766	54 199	70408	93 006	131 600	72.0
20	34	89	Vivendi Universal	France	Diversified	52 421 [']	69360	15764	28 761	32 348	49 617	65.2
21	42	83	ChevronTexaco	United States	Petroleum	50806	81 470	72227	12003	33843	61 533	59.2
22	3	30	News Corporation	Australie	Média	50803	55317	17 772	19086	35 604	38500	92.5
23	65	29	Pfizer Inc	United States	Pharmaceuticals	48 960 [']	116 775	18 344	45 188	73 200	122 000	47.5
24	93	85	Telecom Italia Spa	Italy	Télécommunications	46047	101 172	6816	34 819	14910	93187	27.0
25	50	18	BMWAG	Germany	Motor vehicles	44 948	71 958	35 014	47 000	26086	104 342	54.0
26	60	53	Eni Group	Italy	Petroleum	43 967 ^f	85 042	29341	58 112	36658	76521	50.0
27	4	9	Roche Group	Switzerland	Pharmaceuticals	42926	48089	22790	23 183	57 317	65357	91.8
28	95	79	DaimlerChrysler	German/American	Motor vehicles	41 696 [']	225 143	55195	153 992	76993	362 063	25.2
29	44	32	Fiat Sna	Italy	Motor vehicles	41 552	79160	36078	53353	88684	16223	58.3
30	15	3	Nestlé SA	Switzerland	Food & beverages	41 078 [']	72402	44308	65329	247506	253 000	74.1
31	55	5	IBM	United States	Electrical & electronic	40 987 [']	10 4457	55369	89 131	180515	31927	52.6
32	83	47	ConocoPhillips	United States	Petroleum	36510 [']	82402	29428	90491	14982	39 000	38.4
33	46	31	Sony Corporation	Japan	Electrical & electronic	35 257 [']	84 880	44366	64661	96400	162 000	56.6
34	58	71	Carrefour SA	France	Retail	34 323 [']	49 335	39368	79780	13828	41904	50.6
35	96	24	Wal-Mart Stores	United States	Retail	34018	104 912	47572	256329	361765	1500	25.0
36	69	54	Telefonica SA	Spain	Télécommunications	33 466 ⁿ	66825	10508	32054	85 765	148 288	46.9
37	36	70	Veolia	France	Water Supply	33 399 [']	49 154	17578	32283	205694	309 563	62.9
38	43	21	Procter & Gamble	United States	Diversified	33 361	57048	27719	51 407	68 694	110000	58.3
39	41	10	Sanofi-Aventis	France	Pharmaceuticals	33 024 [']	44484	12291	22247	36576	75567	59.3
40	57	16	Hewlett-Packard	United States	Electrical & electronic	32 144 [']	74708	43843	73061	73 158	142 000	51.5
41	92	77	Mitsubishi	Japan	Wholesale trade	31 258 [']	78 342	20054	13091	142000	49219	28.4
42	87	13	Deutsche Post AG	Germany	Transport and storage	29524	195748	19714	45 166	175 775	383 173	34.9

Ranking by:				Assets		Sales		Employment		TNI ^b		
Foreign				Foreign		Total		Foreign		(%)		
assets	TNI ^b	II ^c	Corporation	Home economy	Industry ^d	Foreign	Total	Foreign	Total			
43	35	62	Unilever ⁹	United Kingdom/ Netherlands	Diversified	28 654 ^f	47 952	27 635	48 186	179000	234 000	64.5
44	6	49	Philips Electronics	Netherlands	Electrical & electronic	28 524	36626	31 594	32 773	136 750	164 438	85.8
45	63	91	Nissan Motor Co	Japan	Motor vehicles	28 517	73 388	42 002	64 082	50 836 i	123 748	48.5
46	11	27	Lafarge SA	France	Non-metallic products	28 127	31 365	13 117	15 415	50 524	75 338	80.6
47	66	56	Repsol YPF SA	Spain	Petroleum expl./ref./distr.	27 933	48 034	14 515	40 710	14 924	30 644	47.5
48	48	28	BASF AG	Germany	Chemicals	27 099	42 437	21 999	37 653	37 054	87 159	54.9
49	25	33	Compagnie De	France	Non-metallic minéral	27 056	38 008	2 3834	33 967	122 696	172 811	70.8
50	45	6	Novartis	Switzerland	Pharmaceuticals	26 748 ^f	49 317	16 076	24 864	41 031	78 541	57.0
51	84	75	Mitsui & Co Ltd	Japan	Wholesale trade	26 262 ^f	62 709	47 508	105 936	108 260	39 735	38.0
52	86	14	Altria Group Inc	United States	Tobacco	25 711 ^f	96 175	34 371	60 704	40 557 ^o	165 000	36.0
53	78	81	Endesa	Spain	Electric services	25 488	58 155	6 228	18 328	129 39	26 777	42.0
54	8	4	Alcan Inc.	Canada	Métal and métal products	25 275 ^f	31 957	13 172	13 640	38 000	49 000	84.4
55	26	90	BHP Billiton	Australie	Mining & quarrying	24 254	36 675	17 673	24 943	25 294	35 070	69.7
56	28	50	Glaxosmithkline	United Kingdom	Pharmaceuticals	23 893	42 813	32 296	35 006	56 360 9	100 919	68.0
57	82	55	Renault SA	France	Motor vehicles	22 342 ^f	71 283	27 330	42 353	34 921 p	130 740	40.9
58	37	93	Anglo American	United Kingdom	Mining & quarrying	21 623	43 105	10 872	18 562	151 000	193 000	62.3
59	19	87	Koninklijke Ahold	Netherlands	Retail	20 884	29 552	4 7744	63 282	18 994 59	257 140	73.3
60	20	64	AES Corporation	United States	Electricity, gas and water	20 871 ^f	29 904	6 257	84 15	21 622 j	30 000	72.1
61	54	22	Dow Chemical	United States	Chemicals	20 039	41 891	19 810	32 623	22 964 p	46 400	52.7
62	18	43	Volvo AB	Sweden	Motor vehicles	19 451	31 787	23 160	24 023	47 603	75 740	73.5
63	47	57	Pinault-Printemps	France	Wholesale trade	19 254 ^f	30 649	1 6828	30 767	51 847	100 779	56.3
64	74	42	Bayer AG	Germany	Pharmaceuticals/chemicals	18 892	47 020	17 033	32 334	48 700	115 400	45.0
65	1	1	Thomson	Canada	Média	18 418	18 732	7 943	8 159	38 350	39 000	98.0
66	33	36	Singtel Ltd.	Singapore	Télécommunications	17 911	21 668	4 672	6 884	8 642 J	19 081	65.3
67	30	52	British American	United Kingdom	Tobacco	17 871 ^f	33 891	27 972	41 832	68 702	86 941	66.2
68	81	99	National Grid	United Kingdom	Energy	17 563	41 780	7 673	15 848	9 029	27 308	41.2
69	24	2	Nokia	Finland	Télécommunications	17 050	29 273	3 6763	37 202	28 979	51 359	71.2
70	99	84	Hitachi Ltd	Japan	Electrical & electronic	16 296	89 545	21 177	80 602	80 226	326 344	23.0
71	49	20	United	United States	Transport equipment	16 212	34 648	14 257	31 034	143 000	203 300	54.4
72	94	68	Petronas - Petrolim	Malaysia	Petroleum expl./ref./distr.	16 114	53 457	8 981	25 661	3 625	30 634	25.7
73	38	92	McDonald's	United States	Retail	15 913	25 525	11 101	17 140	240 142	418 000	61.5
74	27	25	Stora Enso OYJ	Finland	Paper	15 910	22 646	10 382	15 373	29 156	42 814	68.6
75	61	44	Du Pont (E.I.) De	United States	Chemicals	15 840	37 039	14 888 ^f	26 996	39 657 j	81 000	49.0
76	12	82	Rio Tinto Pic	United Kingdom	Mining & quarrying	15 419	24 015	9 773	10 009	26 000	36 016	78.0
77	98	86	Duke Energy	United States	Electricity, gas and water	15 41	56 203	5 537	22 529	4 652 J	23 800	23.8
78	40	38	Lvmh Moët-									
			Louis Vuitton SA	France	Textile and leather	15 386 ^h	24 356	8 285	15 063	35 360	56 241	60.4
79	73	66	Thyssenkrupp AG	Germany	Métal and métal products	15 237	36 641	20 074	45 641	92 179 J	184 358	45.2
80	67	15	Abbott	United States	Pharmaceuticals	15 214	26 715	7 703	19 681	33 166 J	72 181	47.3
81	70	76	Matsushita									
			Industrial Co.,	Japan	Electrical & electronic	14 739 ^f	69 449	42 025	69 839	170 965	290 493	46.8
82	100	100	Verizon	United States	Télécommunications	13 831 ^f	165 968	24 49	67 752	172 690	203 100	6.8
83	76	88	Métro AG	Germany	Retail	13 600	33 571	32 104	67 690	107 210	242 010	44.1
84	29	39	Norsk Hydro Asa	Norway	Diversifié(e)	13 429	32 729	23 158	25 716	30 866	44 602	66.8
85	52	97	Christian Dior SA	France	Textiles	13 388	31 895	8 461	15 745	36 391	56 815	53.3
86	2	8	CRH Pic	Ireland	lumber and other building materials dealers	13 184 ^f	13 976	13 070	13 608	51 694	54 239	95.2
87	64	61	Scottish Power	United Kingdom	Electric Utilities	12 991	24 665	4 753	10 352	6 663	14 339	48.4
88	71	72	Alcoa	United States	Métal and métal products	12 931 ^f	31 711	8 319	21 504	70 700	120 000	46.1
89	9	11	Publicis Groupe	France	Business services	12 919 ^f	13 400	4 367	4 879	21 451	35 166	82.3
90	97	73	Marubeni	Japan	Wholesale trade	12 814 ^f	39 722	25 175	73 815	1 723 i	24 417	24.5
91	13	60	Holcim AG	Switzerland	Non-metallic minéral	12 808	20 091	6 596	10 187	46 946	48 200	75.3
92	5	17	Cadbury	United Kingdom	Food & beverages	12 804	14 209	8 862	10 525	48 390	55 799	87.0
93	79	26	Wveth	United States	Pharmaceuticals	12 776	29 727	6 269	15 851	21 617*	52 385	41.3
94	88	96	Statoil Asa	Norway	Petroleum expl./ref./distr.	12 721	33 174	9 684	37 239	7 491	19 326	34.4
95	17	98	BAE Systems Pic	United Kingdom	Transport equipment	12 695	16 802	17 530	22 450	48 900	72 300	73.8
96	56	19	Robert Bosch	Germany	Machinery and equipment	12 683 ^m	40 410	32 761 ^m	45 919	123 000	232 000	51.9
97	51	45	Motorola Inc	United States	Télécommunications	12 618	32 098	17 983	27 058	48 400 i	88 000	53.6
98	39	51	Bertelsmann	Germany	Média	12 498	25 466	14 694	21 219	46 157	73 221	60.5
99	75	7	Samsung	Republic of Korea	Electrical & electronic	12 387 ^h	56 524	41 362	54 349	190 261	55 397	44.1
100	91	59	International Paper	United States	Paper	12 088	35 525	6 992	25 179	28 980	82 800	32.3

Source: UNCTAD/Erasmus University database.

a All data are based on the companies' annual reports unless otherwise stated.

b TNI is the abbreviation for "Transnationality Index". The Transnationality Index is calculated as the average of the following three ratios: foreign assets to total assets, foreign sales to total sales and foreign employment to total employment.

c II is the abbreviation for "Internationalization Index". The Index is calculated as the number of foreign affiliates divided by number of all affiliates (Note: Affiliates counted in this table refer to only majority-owned affiliates).

- d Industry classification for companies follows the United States Standard Industrial Classification as used by the United States Securities and Exchange Commission (SEC).
- e Foreign sales are based on the origin of the sales unless otherwise stated.
- f In a number of cases companies reported only partial foreign assets. In these cases, the ratio of the partial foreign assets to the partial (total) assets was applied to total assets to calculate the total foreign assets. In all cases, the resulting figures have been sent for confirmation to the companies.
- g Data for outside Europe.
- h Foreign assets data are calculated by applying the share of both foreign sales in total sales and foreign employment in total employment to total assets.
- i Data were obtained from the company as a response to an UNCTAD survey.
- j Foreign employment data are calculated by applying the share of both foreign assets in total assets and foreign sales in total sales to total employment.
- k In a number of cases companies reported only partial region-specified sales. In these cases, the ratio of the partial foreign sales to the partial (total) sales was applied to total sales to calculate the total foreign sales. In all cases, the resulting figures have been sent for confirmation to the companies.
- l Foreign sales are based on customer location.
- m Data for outside Western Europe.
- n Foreign assets data are calculated by applying the share of foreign assets in total assets of the previous year to total assets this year.
- o Foreign employment data are calculated by applying the share of foreign employment in total employment of Philip Morris in the previous year to total employment of Altria Group this year.
- p Foreign employment data are calculated by applying the share of foreign employment in total employment of the previous year to total employment this year.
- q Foreign employment data are calculated by applying the average of the shares of foreign employment in total employment of all companies in the same industry to total employment.

Note: The list includes non-financial TNCs only. In some companies, foreign investors may hold a minority share of more than 10 per cent.

TNCs and the globalisation process

The International Monetary Fund (2000) defines the globalisation process as follows:

In both academic and popular discourses, globalisation has become one of the catchwords for the new millennium. In fact, globalisation is a short form for a cluster of inter-related changes: economic, ideological, technological, and cultural. Economic changes include the increasing integration of economies around the world, particularly through trade and financial flows. This takes place through the internationalisation of production, the greatly increased mobility of capital and of trans-national corporations, and the deepening and intensification of economic interdependence (IMF, 2000, p.304)

For Dicken (1999, p.1), globalisation is an umbrella term “*that implies a degree of functional integration between internationally dispersed economic activities*”. We can therefore identify some of the converging features of the globalisation process: the globalisation of the production process, a multidimensional interdependence between the national economies of the world and the resulting higher degree of functional integration of those economies. Aware of the abstract nature of the aforementioned definitions of globalisation, we suggest that such an unprecedented multifaceted phenomenon in economic history is better illustrated by the following description of the globalisation of research and development (R&D) by TNCs:

Since 1993, Motorola established the first foreign-owned R&D lab in China, the number of foreign R&D units in that country has reached some 700. The Indian R&D activities of General Electric – the largest TNC in the world – employ 2,400 people in areas as diverse as aircraft engines, consumer durables and medical equipment. Pharmaceutical companies such as Astra-Zeneca, Eli Lilly, GlaxoSmithKline, Novartis, Pfizer and Sanofi Aventis all run clinical research activities in India. From practically nothing in the mid 1990s, the contribution by South East Asia and East Asia to global semiconductor design reached almost 30% in 2002. STMicroelectronics has some of its semiconductor design done in Rabat, Morocco. General Motors (GM) in Brazil competes with other GM affiliates in the United States, Europe and Asia for the right to design and build new vehicles and carry out other core activities for the global company. There are many such examples (UNCTAD, 2005, p.120).

This quote seems to reinforce the analysis of TNCs viewed as stateless corporations despite their apparent national and cultural rootedness (Faux, 2006, pp.168-9). Stateless TNCs possess the sheer ability to adapt to numerous country environments in order to pursue their global competitive interests:

No matter where they operate in the world, these trans-national conglomerates can use their overseas subsidiaries, joint ventures, licensing agreements and strategic alliances to assume foreign identities whenever it suits their purposes. In so doing, they develop chameleon-like abilities to change their identities to resemble insiders wherever they are operating (Clarke, 2003, p.71).

The stateless nature of TNCs is sometimes emphasised by a statement of the chief executive:

Ford isn't even an *American* company, strictly speaking. We're global. We're investing all over the world. Forty percent of our employees already live and work outside the United States and that's rising. Our managers are multinational. We teach them to think *globally* (Alex Trotman – CEO of Ford in Reich, 1997, p.275, italics in the text)

However, the hypothesis of the stateless TNC is often questioned by economists who argue that embeddedness is still a key factor of national differentiation: “*TNCs continue to reflect many of the basic characteristics of the home country environments, in which they remain strongly embedded, despite the growing extent of their trans-national operations* (Dicken, 2003, p.199)”. Whether TNCs are viewed as truly global and stateless entities or not, their widespread influence throughout the world has made their study a fundamental task for economists since “*there are very few parts in the world in which TNC influence, whether direct or indirect, is not important. In some cases, TNC influence on an area's economic fortunes can be overwhelming* (ibid.)”

Labour saving evolutions and the global fragmentation of the labour force

The trans-national nature of production achieved by TNCs has arguably become a major determinant of the bargaining power of wage earners in developed countries and might account for the evolution of the subsequent levels of effective demand and employment in developed countries. The globalisation process was defined above as an unprecedented level of functional integration of economic units across the world. However, in spite of the increased level of functional integration of the global economy, it is possible to show that the globalisation process is paradoxically accompanied by an important phenomenon of fragmentation. Grazia Ietto Gillies (2005, p.206) distinguishes between several types of fragmentation, “*which are not incompatible and indeed reinforce each other. They are specific: organisational fragmentation, geographical (by nation-states) fragmentation; and fragmentation of the production process which results in the international location of different components of manufacturing or services products in different countries*”. Those different forms of fragmentation remain compatible with higher functional integration, since the “*production and production processes become vertically integrated across nation-states. National economies become more interlinked by working on the same final product; by the movement of international managers who organize and monitor the process; and by the imports and exports that this international location strategy generates. Industries also become more internationally integrated as a result of this strategy by TNCs*” (ibid., p.207). However, a fundamental consequence of this dynamic process is the fragmentation of the labour force itself (ibid.). This “*divide and rule strategy*” (Cowling and Sugden, 1987) is the mere by-product of international competition. In fact, according to Sugden (1991, 2000), attacks by rivals in the international arena are prevented by the search for cheaper labour and for a divided labour force, that is to say with less bargaining power.

For workers in the US and other developed countries, TNCs' increased willingness to move operations to low wage areas along with their greater usage of automation, subcontracting, and employment of part-time labor has rendered the strike [...] relatively ineffective. As a result, trade unions' collective bargaining power has been substantially undermined. In the US, there were one-tenth the number of strikes in 1993 as in 1970, and only 12 per cent of the US workforce is currently unionized, a lower proportion as compared to 1936. The TNCs, which are attracted by lesser costs and fewer regulations, offer little promise to workers in terms of decent working conditions, sufficient pay, or job security in the developing world (Singh, 2001).

This phenomenon has had a dramatic impact on the organisation of labour in many developed countries. In *The End of Work*, Rifkin (2004) shows how the evolution of the world economic system in the second half of the twentieth century has weakened the American labour force owing to the globalisation process and the subsequent emergence of a global labour pool.

Some of the blame for the current plight of American workers can be traced to the emergence of a single global marketplace in the 1970s and 80s. The postwar recovery of Japan and Western Europe presented American companies with formidable trade competitors in the international arena. New developments in information and telecommunication technology made it increasingly easier to do business everywhere in the world. The emergence of a common global market and labor pool served as a prod and incentive for American companies to undermine the uneasy truce they had made with organized labor since the 1950s (Rifkin, 2004, p.169).

According to Rifkin (ibid, p. xxii), this fragmentation of production at the global level resulting in an increasingly unorganised labour force is the by-product of a deeper and more "*radical change in the nature of work, with profound consequences on the future of society*" characterised by the development of "*intelligent machines, in the form of computer software, robotics, nanotechnology, increasingly [replacing] human labor in the agriculture, manufacturing and service sectors*" (ibid.). These transformations in the very nature and quantity of employment may be analysed as the outcome of the dramatic rise of TNCs and their increasingly efficient cost-minimisation strategy¹¹. This strategy conducted at the global level is accompanied by the development of new technologies and organisational methods as well as a considerable decrease in transportation costs (Ietto-Gillies, 2005) and results in the sheer fragmentation of the production process and the labour force¹². Gnos (2005, p.100) sees in this cost-minimisation strategy a "*possible cause of present-day unemployment, especially in Europe [...] mainly because of production costs, essentially of wages that are notoriously higher in Western European countries than in Eastern Europe, in South East Asia or in China. These lower production costs prompt Western companies to relocate their plants*". Furthermore, TNCs tend to conquer markets where previously existing firms were more labour intensive. TNCs' ratio between sales and potential job creation tends to be much higher

¹¹ As Serge Halimi (2006) points out, there is a clear relationship between the cost-minimisation strategy of TNCs, their quest for ever lower prices and the resulting drop in the bargaining power of wage earners: "*Critics cite less favourable figures. The low prices are not an act of providence. They are partly the result of the 2.5% to 4.8% drop in the average paypacket of workers in each of the US areas where Wal-Mart does business. Wherever it goes wages drop, creating the conditions necessary for everyday low prices*".

¹² Taking the example of Walmart, Halimi (ibid) points out that its key asset is "*the 100 million US consumers who weekly go in search of its "everyday low prices". Low they certainly are, averaging 14% less than the competition. The big question is: what is the real cost of these low prices? The answer depends on whether you are concerned with individual buyers looking for the best deal, or with the employees of thousands of suppliers that are in thrall to a company powerful enough to oblige each supplier to hold down, and even reduce, its costs*". *Workers suffer for the good of Wal-Mart customers. To keep prices rock-bottom in the stores and at the subcontractors, working conditions can only deteriorate. It is consequently easier for suppliers with no unions or for goods manufactured in China*".

than domestic firms'.¹³ The example of Wal-Mart shows how TNCs add to unemployment in regions where they decide to invest "for every US\$10 million in sales in a typical [American] county, 106 people are employed. For every US\$10 million at Wal-Mart, 70 people are employed (Muller & Humston, 1993)". This trend is reinforced by the difficulties of small businesses in the regions where TNCs (such as Walmart) operate: *When Wal-Mart moves into a town the local small shops soon close. The firm started operating in Iowa in the mid-1980s; since then Iowa has lost 50% of its grocers, 45% of its hardware stores and 70% of its menswear shops* (Halimi, 2006). Those complex socio-economic phenomena are arguably feeding the previously mentioned fragmentation of the global labour force through the cost-minimisation strategies of TNCs. This fragmentation has an evident impact on effective demand in developed countries (Gnos, 2005) in which more and more jobs are being displaced and/or outsourced (Palley, 2006). The consequence of this fragmentation is a decreasing bargaining power of wage earners who can only claim a reduced share of the national income (Gnos, 2005, p.100):

For example, while in France, from the early 1960s to the early 1980s, the share of wages (including insurance contributions paid by employers and which benefit wage-earners and their families) rose from 60% to nearly 68% in value added, it fell dramatically to 59% in the late 1980s, that is, within a very few years. It then further dipped to the 57,9% figure recorded in 2000, and [...] stands at about 58% [in 2004].

Let us address, in the next section, the question of the definition of the concept of trans-national production and its possible inclusion in the TME with the identification of the far-reaching implications as far as the necessary reform of the system of international payments is concerned.

TNCs in the TME: Towards the Concept of 'Trans-national Production'

We have seen in the first section how the TME had successfully performed the integration of money and production at the conceptual level. An extensive part of Bernard Schmitt's work deals with the process of capital accumulation and the resulting pathologies such as inflation and unemployment that are bound to arise in a capitalist economy without an orderly system of payments. It is not our intention here to review the numerous issues addressed by Bernard Schmitt. We decided instead to focus on the theoretical core of the TME that is to say the integration of money and production. We now consider the trans-national nature of production and its possible inclusion in the study of the world economy.

The inclusion of the trans-national nature of production in the TME

After defining money as the numerical form of output, we are now considering its transnational dimension. We have established in section 2 that a brief study of TNCs shows that these economic institutions have become the dominant force in the global economy. We argue that our understanding of production cannot be taken in isolation from its international (or more accurately transnational) nature in the shaping of world economic output. The various examples in section 2 have illustrated the globalisation process of research and development (R&D) within TNCs. An in-depth study of the functional divisions of a TNC (human resources, marketing, strategy, customer care, manufacturing, and so on) would

¹³ And therefore much less jobs will be created by TNCs than by local firms.

probably cast light on an even more complex mapping of the production process on the international scale.

In an era of declining constraints on their mobility and the attraction of low wages in the developing countries eager to draw foreign investments, TNCs are eliminating jobs in their home countries and shifting production abroad. It needs to be emphasized here that only low value, labor-intensive activities are being shifted to the developing world while strategic operations such as R&D and headquarters continue to be located in the developed world (Singh, 2001).

Moreover, this detailed mapping of trans-national production would possibly demonstrate the existence of outsourcing and offshoring dynamics (Palley, 2006) in the framework of the cost-minimisation strategy of the firm, thereby resulting in an increasingly threatening fragmentation of the global labour force despite the astonishing functional integration achieved by TNCs on a global scale. The inclusion of the trans-national nature of production in the study of the world economy seems to be a conceptual necessity. We continue to adopt here the conceptual framework of the TME in order to achieve the conceptual integration of TNCs in a monetary theory of production.

TNCs and further developments in the TME

We showed in section 1 how production in the TME is a very specific action, which defines a real emission that comes into existence at the very instant the production process is fully completed. Real emissions continue to be instantaneous events in the global economy. However, Section 2 showed that the production process of TNCs over the period $[t_0, t_n]$ that leads to the end-product (which will more than likely be further marketed on a global scale) seemingly takes place in continuous time in numerous country environments, according to the functional divisions of the TNC pursuing a global cost-minimisation strategy. However, the TME states that production (regardless of its geographical location) defines a real emission of a quantum of time, in which the production process does not *take place in*, but rather *is* time. If we were to incorporate TNCs in the TME, what would be the meaning of the trans-national nature of production if the corresponding quantum of time (i.e the moulding of matter and energy by TNCs) is still an instantaneous emission corresponding to an interval $[t_0, t_n]$ having being withheld from continuous time? It seems correct at this stage to argue that the trans-national nature of production does not change its conceptual definition because the dispatching of the production process on different national territories was never included in the premises of the conceptual definition of bank money in the TME. However, we argue that this might now be a conceptual necessity in the global economy of the twenty-first century. If we follow Rossi (1998b, p.5) who rightly points out that “*money can be seen as the organic result of two intimately related actions (or flows): (1) creation, on the monetary side, of the numerical form of payment (2) production, on the real side, of physical output [...] by firms and workers taken together*”, the fact that action (2) takes place on the real side of the economy (whose nature is increasingly trans-national owing to the role of TNCs) certainly calls for a further reflection on the monetary side of the numerical form of payment and the country (currency area) where this numerical form is issued. We are concerned with a possible solution to the crisis of international payments and the potential benefits of the introduction of a world currency with regard to the theoretical framework of the TME.

The rationale behind a world currency to finance trans-national production

According to Sadigh (2001) following Schmitt (1977, p.122), domestic economies are monetary economies of production (and therefore require the conceptual integration of money

and output *at the national level* as established by the TME), whereas the international economy is a mere exchange-economy. According to Schmitt (1977, p.122), the purchasing power of money originates in domestic production; therefore, the purchasing power of a world currency cannot be explained by production, which is, according to Schmitt, an ill-defined concept in the international arena. However, after our analysis of the TNC and its key role in the globalisation process, we can argue that international (or more accurately trans-national) production might not necessarily be an ill-defined concept and moreover, we are now in a position to question the characterisation of the international economy as a mere exchange-economy as well as the postulated absence of any potential intrinsic purchasing power for a world currency. We argue that the increasingly transnational nature of production achieved by TNCs can possibly provide the future world currency *from the outset* with a purchasing power beyond the boundaries of nation-states, thereby providing a rationale behind the introduction of a world currency in order to monetise trans-national production. The difficulty to integrate such a proposal in the framework of a monetary theory of production lies in the fact that Keynesian economics is traditionally linked with the conceptual existence of nation-states as the sole politically delimited basis upon which economic policy can be designed and implemented.

Keynes's economics required that the government's influence extend to, and be limited by, roughly the same space as the national economy. Just as locks in a canal need walls in order for the boats to be lifted and lowered by changing the level of the water, economies must have walls if the government is to be able to pump up or drop the level of economic activity. Borders to the economy are necessary to keep government-induced from drawing in imports, instead of expanding domestic employment (Faux, 2006, p.88).

However, not only do we believe that it is indeed possible to reconcile Keynesian economics with the concept of trans-national production but we also argue that the latter concept does not dismiss the limitation of the sphere of influence of monetary policy by the same space as the national economy. Indeed, what is needed is not a full re-shaping of national boundaries in order to conceptualize monetary matters anew under the impulse of TNCs. We do believe that the traditional national level remains fully relevant in the twenty first century. It simply needs to be complemented by another level, which could possibly take the existence of trans-national production into account. The additional conceptual level in monetary analysis that we are propounding stems directly from the observation of the real world and is entailed by the overwhelming emergence of transnational production, characterised by the exponential rise of TNCs, as we have attempted to show in section 2. The solutions advocated in this paper call for a major breakthrough in the reflection on global governance as well as the design of some major insitutional innovations¹⁴ partly inspired by Keynes's ideas at the end of his intellectual career. In the new scheme we put forward, trans-national production would be financed by a global wage fund denominated in a new world currency issued by a world central bank also working as an international clearing union inspired by Keynes' bancor plan (Keynes, 1980). Keynes (ibid., p.189) had hoped¹⁵ that this new institution would pave the way for further economic policies sustaining higher levels of world employment and would also work as a stepping stone for global governance: "*The Clearing Union might become the instrument and the support of international policies in addition to those which it is its primary purpose to*

¹⁴ See Pilkington (2005, chapter 8) for the importance of the institutional component of economic policy.

¹⁵ The Bretton Woods conference in 1944 eventually witnessed the triumph of the American White plan aimed at the expansion of free trade in order to promote the interests of the United States as the first world trade power at the end of World-War II (Figuera, 2003) over Keynes's bancor plan. This was interpreted by some economists (Guttman, 1994, pp. 389-390, Hobswawm, 1996) as the sign of the dominance of the American influence, at the time, in the international political arena.

promote. This deserves the greatest possible emphasis. The Union might become the pivot of the future economic government in the world (Keynes, 1980, p.189)". Keynes's failure to convince the world political leaders at the end of World-War II to adopt the bancor plan should not mean the end of our hopes for the introduction of a new world currency, which is now strongly needed in order to monetise trans-national production. Interestingly, the International Monetary Fund (2000, p.37) - whose creation followed the adoption of the American plan designed by White (1942) at the end of World-War II (and therefore following the rejection of Keynes' proposals for an international clearing union) - has recently expressed some concerns as far as the sustainability of the current international system of payments is concerned. Davidson (1992) has already put forward a proposal for a new world currency, called the International Money Clearing Union (IMCU), aimed at solving the structural problem of macroeconomic imbalances in the world economy in order to favour global employment. Along those lines, a new world currency could hence be implemented without jeopardizing the existence of domestic currencies, which would continue to exist along with a more orderly system of international payments. Now, another fundamental justification of the establishment of a world currency is provided by the existence of TNCs and the trans-national nature of production. The official definition of a TNC can be the one put forward in section 2 (ownership of at least 10% of the productive assets of a foreign affiliate). The mission of the new world central bank would be to distinguish between 'standard' and 'transnational' money emissions; the world currency would only be issued in the latter case. For technical and conceptual reasons, it is not necessary to narrow down the scope of transnational production. The latter concept is simply *all* the value added generated by TNCs.¹⁶ Trans-national money emissions would be designed to monetise all the income-generating activities of TNCs regardless of their location. This new scheme would imply the design and the introduction of a world currency in order to finance a global fund that TNCs would draw on in order to pay for their wage bill (including the personal services of entrepreneurs¹⁷). According to the TME, the payment of wages within TNCs is the measure of the macroeconomic income and thus of all the economic value that they generate. This wage-fund would be *exclusively* denominated in the new world currency and shall not create any domestic inflationary pressures. Domestic currencies and exchange rates would continue to exist¹⁸ and nation-states would retain their monetary sovereignty. A reference can possibly be made here to State-money. Chartalism (Wray, 2000, 2003) is a school of thought which has attempted to show how "*History reveals the role of the public authority in establishing a universal equivalent for measuring debts and in determining what 'thing' will be used to correspond to this accounting measure* (Tcherneva, p.2005, p.6)". The prevailing role of the State in the definition of money (through the choice of the unit of account and the enforcement of its legal acceptability) is the fundamental proposition of Chartalism. We partially agree here¹⁹ with the idea of "*money as a creature of the state*" (Lerner, 1947) insofar as it seems to be confirmed by historical data. With the exception of currency boards (mainly through dollarisation) and the EMU experiment, the State is arguably the institution, which has always had "*the right not only to enforce the dictionary but also to write the dictionary* (Keynes, 1930, p. 5)". Retaining this linguistic metaphor, we may suggest that, in the light of the rise of TNCs and the subsequent

¹⁶ We include here all the economic activities of the TNC in the home country. The transnational nature of production stems from the 'transnationality' of its production chain. The status of TNCs is not legal but conceptual. Its statistical definition is given by the ownership of at least 10% of the productive assets of a foreign affiliate.

¹⁷ We might add «and the remuneration of the board members ».

¹⁸ The operational management of this exchange rate system is beyond the scope of the present article

¹⁹ The neo-chartalist approach has been criticised by Rochon and Vernengo (2003) who argue that credit-money (and not state-money) is the essence of modern money whose origin is to be found in the credits granted by banks.

evolution of the world economy towards transnational production, the world economic system now needs a sort of monetary Esperanto along with a ‘transnational dictionary’²⁰. Other benefits of the introduction of a world currency in order to finance trans-national production are to be found; a world currency could be a powerful way to offset the recurrent macroeconomic imbalances (Davidson, 1997) in the current anarchic system of payments that favours international speculation with its potential adverse effects on domestic economies (Arestis, 2004-2005, *The Economist*, 2007). The integration of money and output as established by the TME would also find a theoretical justification and an empirical confirmation on a global scale. This solution could be politically feasible since domestic currencies would continue to exist. The monetisation of trans-national production by a world currency would possibly limit (though not suppress) speculation on all financial assets denominated in domestic currencies roaming free on international financial markets (Sadigh, 2001, p.207, *The Economist*, 2007). This need to limit financial speculation is made even more pressing with the fantastic rise of e-money in world economic transactions:

The trillions sloshing back and forth between countries *within and between corporations*, and between large investors and entrepreneurs, are transferred from one account to another through an electronic network [...] The number of electronic transfers amounts to only 2 % of the total transfers; yet these transactions involve US\$5 out of every US\$6 that move in the world economy (Barnet & Cavanagh, 2003, p.60, italics added).

The previously mentioned international clearing union would be a powerful instrument of global governance in order to control the enormous flows of e-money²¹ occurring “*in the blink of an eye*” (*The Economist*, 2007) in cross-border transactions:

When cybercash reaches maturity [...] nation-states alone will no longer be able to control money. They can only do so collectively. At that point, they may create a monetary payments-system superstructure that routs all cybercash transactions in the internet through a canal controlled by an international clearing union. The central banks may enforce such a rerouting by introducing collectively a new international medium of exchange for all cross-border transactions involving an exchange of one currency with another. In other words, they take control over capital flows by introducing a supranational form of money routed through an official payments system operated by a global monetary authority, which replaces the Euromarket and Foreign exchange. Only then will we finally have the missing link for the institutional grounding of a new monetary regime based on stateless electronic money (Guttman 1998, pp. 433-434).

Whether Keynes’s original terminology is retained or not (the *bancor* was the name given by Keynes in his plan for a new world currency), it is important to distinguish between the different functions performed by money that would possibly apply to a world currency:

According to the spirit and the logic of the Keynes’s Proposals for an International Currency Union, the clearing union creates the monetary *bancor* and manages the financial *bancor*. The two *bancors* are literally heterogeneous: they do not have the same origin. The monetary *bancor* is issued *ex nihilo* within every external payment between member-countries. The financial *bancor* is lent by surplus countries and borrowed by deficit-spending countries (Schmitt, 1985, p.208, our translation).

Whereas the monetary *bancor* is simply the numerical form of output (conceptualised by Schmitt in his quantum theory of money) extended to the international arena in order to issue

²⁰ Without replacing the older and more traditional national dictionaries (i.e domestic currencies).

²¹ “*Perhaps in a few years’ time, one will be able to trade in a fraction of a millisecond*” (‘To infinity and beyond’, *The Economist*, 2007).

payments made by trans-national corporations, the financial bancor shall act as an intermediary along the principle advocated by Keynes himself:

We need a method by which the surplus credit balances arising from international trade, which the recipient does not wish to employ for the time being, can be set to work in the interest of international planning and relief and economic health, without detriment to the liquidity of these balances to their holder's faculty to employ them himself when he desires to do so Keynes (1980, p.169).

The financial bancor would become the principal means for an expansionist world trade policy (Keynes, 1980, p.176) favouring high levels of effective demand along Keynesian principles (ibid., p.270): "*The principal object can be explained in a single sentence: to provide that money earned by selling goods to one country can be spent on purchasing the products of any other country*". It would therefore be important to distinguish between those two functions (financial and monetary) of the future world currency. Schmitt (1977, pp. 111-2) suggests that the future world central bank be divided into a monetary and a financial department. The latter would literally be an international financial institution *per se* (i.e working at the interface *between* member countries) supervising international financial intermediation between debtor and creditor countries (through the newly designed international clearing union). In the new system of international payments, the former would be the first *trans-national economic institution*²² responsible for transnational money emissions in order to finance the wage bill of TNCs by *monetising* all trans-national production. It is noteworthy to mention that when Keynes's (1980) proposals for an international clearing union were put forward in 1941, it was probably correct, at the time, to refer to the international economy as a mere exchange-economy (Schmitt, 1977a, p.122). However, the rise of TNCs and the globalisation process have deeply altered the structure of the world economy and the financing of transnational production is now taking place *from the outset* in a global monetary economy of production (despite the existence of numerous country environments and domestic currencies). The globalisation process and the subsequent trans-national nature of production carried out by TNCs are arguably subordinating the internationalisation of trade to the trans-nationalisation of production. Keynes's plan was aimed at favouring expansionist trade policy and sustaining high levels of effective demand throughout the world (Keynes, 1980, p.176). Those objectives are still extremely relevant in the twenty-first century. We hence argue that the rise of TNCs and the subsequent shift towards trans-national production do not weaken the rationale behind a world currency. On the contrary, they reinforce it.

An additional conceptual level in monetary macroeconomics

It seems that we have witnessed an historical evolution in the capitalist system, which has now put TNCs at the centre stage. The concept of production has been transformed and partly been revolutionised by the "global shift" towards trans-national production and globalisation. It is not possible yet to talk about a complete shift towards trans-national production (local producers employing local workers working on a domestic production chain and serving local markets still account for a significant fraction of world employment). Despite the claim of hyper-globalists (Ohmae, 1995, p.94) who argue that TNCs are converging towards a universal global (and stateless) corporation, this scenario has probably been largely exaggerated. As Dicken (2003, p.221-7) pointed out, the myth of the place-less corporation

²² Operating on a huge geographical scope defined by nothing less than all the countries that actively and passively engage in trans-national production.

can be challenged by a series of quantitative tools such the Trans-nationality Index²³ demonstrating that “TNCs [...] remain distinctively connected with their home base (ibid., p.225)”. However, it is impossible to neglect the observation that the weight of TNCs has been rising exponentially and is evidently re-shaping world economic output in a dramatic way. TNCs are often quickly stereotyped but these gigantic economic institutions are rarely conceptualised satisfactorily by monetary macroeconomists in their theoretical frameworks. This is partly due to their multi-faceted, multi-dimensional and merely conceptual nature. However, we have argued, in this paper, that TNCs could possibly be incorporated into a monetary theory of production, and more particularly within the framework of the TME. As a consequence, we have suggested that real emissions in the TME be broken into (and coupled with) “standard” and “trans-national” money emissions. The corresponding money would be issued either at the domestic or at the international level respectively in the domestic or in the future world currency. This distinction will not affect the instantaneous nature of production nor will it change the fact that along the lines of the TME, production *is* time the same way trans-national production *is* also time. Interestingly, it is not meaningful, of course, to refer to the nationality of time; however, this is not the case for money whose emission is still largely a prerogative of nation-states in the current international system of payments (with the interesting exceptions of currency boards, dollarisation experiments and also the EMU). It now seems difficult to ignore completely the trans-national nature of production given the current weight of TNCs in the world economy. We argued that the rationale behind a new world currency, in order to monetise trans-national production, stems precisely from TNCs’ sheer importance in the new global economy. Some might argue that it seems excessively ambitious to redefine the world economy as a global monetary economy of production thereby shaping anew the boundaries of monetary economies of production independently of the traditional boundaries of nation-states and/or existing currency areas (which have always been intricately. It is essential to state that national boundaries and/or existing currency areas have not become ill-founded with the exponential rise of TNCs and we are not putting forward here a new version of the demise of the state (Navari, 1991), which would inexorably be forced to surrender its monetary sovereignty to a supranational institution under the impulse of TNCs.

There is no denying that TNCs pose a serious challenge to national autonomy and sovereignty on economic matters but it would be inappropriate to conclude that they control the political domain. Political power still remains in the arena of nation-state. In spite of the growing domination of TNCs in the economic realm in the last two decades, it would be wishful thinking that the nation-state is going to wither away or become irrelevant (Singh, 2001).

Nonetheless, we agree with Ponsot (2002) who argues that the identity “one currency area = one production area” is no longer *systematically* achieved within the geopolitical framework of the nation-state:

The way economic areas are determined is not fortuitous. Since the advent of organised political areas around the nation-states, the correlation of monetary and production areas tends to underpin the one currency/one nation notion, as described by Helleiner (1999) and Cohen (2001). If today the nation-state still constitutes the main framework for the fusion of monetary and production areas, it does not however represent the sole framework of this relationship. It has been preceded by other modes of fusion (communities, primitive societies....) and will no doubt be followed by others. The one currency /one nation principle is being challenged more and more. Several factors are contributing to the collapse

²³ The Transnationality index (TNI) is calculated as the average of the following three ratios: foreign assets to total assets, foreign sales to total sales and foreign employment to total employment (see table 1 supra).

of this principle: globalisation, the creation of the euro zone, the development of parallel currencies and (...) dollarisation (Ponsot, 2004).

We believe, firstly, that the inclusion of trans-national production needs to be performed at the conceptual level in a monetary theory of production, within a renewed framework of global governance, in order for monetary theory to catch up with the tremendous changes the world economy has been witnessing over the last decades under the sheer impulse of TNCs. Secondly, in the new scheme that we have put forward, nations-states and the corresponding currency areas will continue to define the boundaries of domestic monetary economies of production (which are certainly *not* made irrelevant by the rise of TNCs). However, one might wonder how the purchasing power of money can be satisfactorily explained anew when trans-national production is getting increasingly coordinated and integrated owing to TNCs, when it is taking place simultaneously across numerous country environments and accounts for an increasingly large share of world output.

Conclusion

An interesting question addressed in this article was thus the incorporation of TNCs in a monetary theory of production and, more particularly, the potential impact of the introduction of the concept of trans-national production on the very nature of money in the TME, which potentially calls for the elaboration of an additional conceptual level in monetary analysis with a further reflection on the possibility of the financing of trans-national production (and therefore of the wage bill of TNCs) through the introduction of a new world currency. The other major institutional innovation would be the creation of a sustainable global wage fund. This global wage fund would exclusively monetise trans-national production by trans-national money emissions in the new world currency. Given the current embryonic stages of the reflection on global governance, this idea is very likely to be a remote reality. Hopefully, it is not a utopian one. Finally, to quote Paul Davidson (1997),

If we start with the defeatist attitude that it is too difficult to change the awkward system in which we are enmeshed, then no progress will be made [...]. We must reject such defeatism at this exploratory stage and merely inquire whether particular proposals for improving the operations of the international payments system to promote global growth will be effective without creating more difficulties than those inherent in the current system (Davidson, 1997, p.686).

Therefore, new ideas should not be entrenched in a defeatist culture if we are to design the pathologies our economies are currently suffering from.

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