UNIVERSITY OF PIRAEUS

ESSAYS IN INTERNATIONAL ECONOMICS IN HONOUR OF PROFESSOR NICHOLAS A. YANNACOPOULOS

Edited by
S.N. Brissimis, J. Hassid and A.D. Karayiannis

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Foreword

This volume is published in honour of Professor Emeritus Nicholas A. Yannacopoulos, on the occasion of his retirement, following a relevant decision of the General Assembly of the Department of Economics of the University of Piraeus. To this end, a committee was established, consisting of Professors Sophocles N. Brissimis, Joseph Hassid and Anastassios D. Karayiannis, with the task of editing this volume, which comprises essays related to the scientific area of specialisation of the honoured colleague.

As can be seen in his curriculum vitae that follows, Professor Yannacopoulos carried out research in International Economics, publishing numerous books and papers in academic journals. He taught this subject for many years at the Department of Economics and was highly esteemed by his students, several of whom reached important academic and other positions. In addition to his considerable contribution to the advancement of economics, he worked for many years at the Economic Research Department of the Bank of Greece, providing inputs for the formulation of monetary policy in Greece. He also served at the University of Piraeus as Vice-Rector for Academic Affairs, where he took initiatives that led to a more efficient environment for research and teaching.

This volume, which gathers original papers by researchers from several countries, is a tribute to his scientific work. The committee would like to thank the authors for responding and contributing to the publication of this volume, which deals with issues of international trade, globalisation and European Union economics.

The editors
Professor S.N. Brissimis
Professor J. Hassid
Professor A.D. Karayiannis

Professor Emeritus Nicholas A. Yannacopoulos

Nicholas Yannacopoulos was born in Kalamata, Greece. He studied at the Law School of the University of Athens and completed his Ph.D. degree in Economics at the University of St. Andrews (Scotland). He was Associate Professor of Economics at the University of Athens and then Professor of Economics at the University of Piraeus where he taught monetary economics and international trade theory and policy. He was elected Vice-Rector of the University of Piraeus, and since 2002 he has been Professor Emeritus at the same University. He served as a member of the Economic Research Department of the Bank of Greece from 1966 to 1980, and as a co-editor to the journal *Archion Oikonomikon kai Politicon Epistimon (Archives of Economics and Political Sciences)* until 1967. His current research interests focus on the theory of monetary unions, European economic integration, and the theory of monetary policy.

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PART I

INTERNATIONAL ECONOMICS AND GLOBALISATION

*Anastassios D. Karayiannis**

SIR JAMES STEUART'S IDEAS ON INTERNATIONAL ECONOMICS**

Introduction

A great part of 20th-century international trade was conducted under a semi-mercantilist atmosphere (Robinson, 1966, Johnson, 1974). Sir James Steuart in his *An Inquiry into the Principles of Political Oeconomy* had developed an economic policy along such lines in 1767. Thus, his positive and normative approaches to the subject deserve special analysis.

Steuart, in his analysis of international trade, was undoubtedly influenced by those relevant ideas current throughout Great Britain and the Continent during the mid-18th century; nevertheless, he did make some significantly unique contributions to the economic theories in question. Thus, in the following discussion, Steuart's relevant ideas and arguments regarding international economics are compared with those developed during his era by such eminent thinkers as Montesquieu, Hume, Cantillon, Harris, the Physiocrats, the early Smith (1763), and others.

I. The beginning and evolution of international trade

Steuart was deeply concerned with the causes that regulated the evolution of foreign trade. His main interest was concentrated on "the general principles upon which a system of foreign trade may be established, and preserved as long as possible; and of the methods by which it may be again recovered, when, from the natural advantages and superior ability of administration in rival nations, (not from vices at home), a people may have lost

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** An earlier version of the paper titled "Sir James Steuart on foreign trade and policy" was published in *Storia del Pensiero Economico*, 2004, No 2.

for a time every advantage they used to draw from their foreign commerce" (1.232).[1] He emphasized (1.195-6) the "strategic of recovery" of foreign trade, as he had related the stages of economic growth with the presence or absence of its function; an idea in accordance with his general thesis for the "growth-decay" process in every situation, natural and/or human.[2]

He divided trade into "infant, foreign, and inland" (1.261).[3] He accepted the role of the statesman's intervention as the most effective instrument for the transition of society from the first to the second stage, and for the preservation of this stage under specific economic conditions (see also Urquhart, 1996).

A foreign trade, according to Steuart, begins when "one nation finds another necessarily depending upon her for particular branches of traffic" (1.238). This trade may be categorised as "active" and "passive" (1.162).[4] An active foreign trade is defined as the exportable efficiency of a country, while a passive foreign trade indicates a country's preference for imports (see also Viner, 1937, p. 10). The case of only passive trade is considered to be a temporary situation, while that of being active is viewed as a long-term condition, because as he argued, "there is no nation anyways conversant in trade, which does not exchange some commodities against those of the nations with whom it trades" (1772, p. 62).

The case of active trade, as a more permanent situation, deserves more special analysis. Steuart was the first *economist qua economist* to deeply investigate the various causes and effects of foreign trade on its continuation and on the economic growth of trading nations (see also Skinner, 1963).[5] He began from the behaviour of trading nations and, through a presentation of the various advantageous and disadvantageous effects of foreign trade, proceeded to explain why too often such a trade after reaching its maturity would turn to its decay. He regarded that the behaviour of every trading nation is like that of competitive individuals and firms (Skinner, 1985, p. 13). He noticed that competition "conveys the idea of emulation between two parties striving to compass the same end" (1.247). This behaviour could be distinguished as a competition to retain "a superiority already got", or to acquire "a superiority" (1.248). However, before a competitive process takes action, there must be a "reciprocal demand" (1.164) and dependence between the two trading parties, individuals and/or nations, viz:

> "The very existence of foreign trade, implies a separate interest between those nations who are found on the opposite sides of the mercantile contract, namely the buyers and the sellers, as both endeavour to make the best bargain possible for themselves. These transactions imply a mutual dependence upon one another, which

> may either be necessary or contingent. It is necessary, when one of the nations cannot subsist without the assistance of the other... or contingent, when the wants of a particular nation cannot be supplied by their own inhabitants, from a want of skill and dexterity, only" (1.237-8).[6]

The dependence between nations, as also between individuals, according to Steuart (1. 307-8, 312-3), is advantageous for both trading parties only when their transactions take place on equal terms. In cases where "dependence" between two parties produces a subordination of one to another, he thought that trade must be stopped. Such a case occurs when the foreign trade is based on the necessity of one country for the products of the other, or when it is based on some contingent (but temporary) situations that force a country to subordinate itself to another. For Steuart, the first of these two causes of dependence must be restricted to a minimum, while the second cause must be "deliberately eliminated" (Johnson, 1937, p. 228; Sen, 1957, p. 63).

Steuart regarded that foreign trade begins when there exist various surplus products between the trading nations (1.120,233), as "it is a surplus only of industry which can be exported" (1.235; see also Sen, 1957, pp. 61-2). It is obvious that he was an advocate of the "vent of surplus" principle as an explanation for the initiation of foreign trade.[7] Moreover he argued that the continuation of foreign trade depends on the different consumption preferences of individuals in various countries (1.156), and on their different productive capabilities (1.202).

He stressed (1.154-5, 168) that the increase of foreign trade and its diffusion to various countries produced a feed-back effect on the economic development of those nations through the "aspiration effect" process (see also Eagly, 1961).[8] By the importation of foreign luxury goods (1.43-4, 163, 166-7) and through the imitation of luxury consumption (1.243), individuals, in order to raise their income and their living standard, would increase their work effort (1.67, 156-7).[9] This mechanism - which was also recognized by North (1691, p. 239) and Hume ("Of Commerce", ed. 1970, p. 14; "Of Refinement in the Arts", ed. 1970, p. 31) - for Steuart (1. 43, 46, 60-1, 67-9) is primarily a function for the advancement of economic growth.[10] As he argued:

> "if... a spirit of industry has brought the country to a certain degree of population this spirit will not be stopped by the wants of food; it will be brought from foreign countries, and this new demand, by diminishing among them the quantity usually produced for their own subsistence, will prompt the industrious to improve their lands, in order to supply the new demand without any hurt to themselves. Thus,

trade has an evident tendency toward the improvement of the world in general, by rendering the inhabitants of one country industrious, in order to supply the wants of another, without any prejudice to themselves" (1.119).

Thus, for Steuart, the worldwide benefits of international trade are not derived from the division of labour, as Smith and the classicists stressed, but are the result of an increase of work effort and the extensive production of new luxurious goods.[11]

Steuart argued (1.120) that trade between nations that have different economic productive conditions and consumption preferences would flourish and prove profitable for the underdeveloped nation (see also Brewer, 1995, pp. 626-7). On the other hand, trade between nations with similar economic conditions probably would stagnate as there would exist no cause for exchanging their surpluses. He (1.120) was well aware that the advancement of foreign trade, and more specifically, the increase of exports, could produce an increase in production and employment in the exported country; here he touched upon the Keynesian multiplier effects in foreign trade.[12]

II. The essential elements and effects of foreign trade

As previously mentioned, Steuart realized that apart from the existence of different surplus goods among the trading nations, there exists another precondition for the establishment of foreign trade. This precondition is related to the rate of price of traded goods and could be explained by the principle of absolute advantage. He emphasized (1.247) this principle as a cause of the beginning of foreign trade.[13] Then, he investigated (1.214, 247, 255) three main sources of the absolute advantage in foreign trade: (i) natural endowments;[14] (ii) labour's productivity which is derived by the "superior dexterity of the labourers", by special commercial knowledge and "the invention and introduction of machines";[15] and (iii) advanced economic institutions (e.g. the use of paper money) and efficient economic policy. He regarded that the majority of these advantages, particularly the economic and institutional, could never be held *ad infinitum*. On the contrary, he stressed that it might be a transition "of trade from one nation to another... [which]... never can be sudden or easy" (1.204; brackets added).

After demonstrating the causes of the beginning and evolution of foreign trade, he analysed the meaning and effects of a favourable trade in real terms, viz:

"When this [i.e. the active trade] comes to be the case, we immediately find two trading nations in stead of one; the balance of which

trade will always be in favour of the most industrious and frugal" nation (1.166, brackets added; see also 2.362). And "I shall shew, how a balance may be extremely favourable without augmenting the mass of the precious metals; to wit, by providing subsistence for an additional number of inhabitants; by increasing the quantity of shipping, which is an article of wealth; by constituting all other nations debtors to it; by the importation of many durable commodities, which may be considered also as articles of wealth" (2.365).

Scholarly historians of economics have disagreed as to who was the actual progenitor of the "favourable balance of trade" concept. Viner (1937, p. 10) regarded that Steuart was the first to use such a term, while Fetter argued (1935, p. 622) that "the expression balance of trade appeared in print for the first time in 1623, in a book written by Edward Misselden". Notwithstanding, by examining the literature, it can be determined that the meaning, at least, of this term was in relatively common use during the 17th century. For example, S.Fortrey (1673) explicitly described the meaning and the effects of a positive balance of trade. As he wrote: When "our exportations of commodities would exceed our importations, a very great and signal advantage would accrue...[which] is the profit we should then make of our returning money" (1673, p.29, brackets added). Montesquieu, as well, clearly explains the existence and the effects of a negative balance of trade. He noticed (1734-48, vol. I, p.338) that a "country that constantly exports fewer manufactures, or commodities, than it receives, will soon find the balance sinking; it will receive less and less, until falling into extreme poverty, it will receive nothing at all".

However, Steuart extends rather more scientifically the analysis of the causes and effects of the famous notion of the favourable balance of trade (Doujon, 1994, pp. 512-3). Also, in contrast to the old mercantilists who considered the surplus of foreign trade as consisting in precious metals, he stressed its content in real terms measured mainly by the net labour value added (1.291, 294; see also Johnson, 1937, p. 314; Sen, 1957, p. 76). He presented his idea for the favourable balance of trade, in real terms, with the following words:

"In all trade, two things are to be considered in the commodity sold. The first is the matter; the second is the labour employed to render this matter useful. The matter exported from a country, is what the country loses; the price of the labour exported, is what it gains. If the value of the matter imported be greater than the value of what is exported, the country gains. If a greater value of labour be imported, than exported, the country loses. Why? Because in the

first case, strangers must have paid, *in matter*, the surplus of labour exported; and in the second case, because the country must have paid to strangers, *in matter*, the surplus of labour imported. It is therefore a general maxim, to discourage the importation of work; and to encourage the exportation of it" (1.291; emphasis in the original). Therefore, "the most profitable branches of exportation are those of work, the less profitable those of pure natural produce" (1.295; see also 1772, p.66).

Such a suggestion in behalf of the exportation of manufacture and the importation of agricultural goods, was not a new idea during the mid-18-th century.[16] Except for Quesnay and the Physiocrats who claimed the opposite,[17] other thinkers such as Montesquieu (1734-48, vol. I, p.338), Richardson (1744, p. 158), Cantillon (1755, pp. 231, 233, 235) and Smith (1763, p. 247) shared a view similar to Steuart. Also, such an idea may be found in the writings of Harris (who seems to be very influential on Steuart regarding specific economic subjects), viz:

"That trade is most beneficial, which exports those commodities that are least wanted at home, and upon which most labour hath been bestowed; and which brings in return the reverse sort; that in simple products, either necessary for immediate consumption, in the form they are imported; or as materials to be wrought into commodities, wanted either for home use or exportation. In few words, that trade is best, which tends more to promote industry at home, by finding employment for most hands; and which furnishes the nation with such foreign commodities, as are either useful and necessary for our defense, or more comfortable subsistence. And that trade is the worst, that exports the least of the product of labour; that furnishes materials for manufacturing in other countries"(1757, p.24).

However, Steuart may be considered as the author who extended the above argument in a scientific context for describing one of the main targets of economic policy in relation to foreign trade. Moreover, it seems that his most important contribution concentrates upon his consistency in developing a favourable balance of trade argument in accordance with his real cost theory of value. He held that the most significant factor determining the value of goods, is the labour cost (the other, less important, is the rate of demand; see Karayiannis, 1991). Thus, he maintained that only when a country imports goods with lower labour cost than it exports, could it be in a position to gain a favourable balance of trade. Such a balance would be represented by the net imports of raw materials. Steuart also (1.31, 41, 48, 168) suggested policies for the exportation of manufactured goods and the

importation of agricultural products – as did the mercantilists (see Schmoller, 1884, p. 58) - for two main reasons: firstly, since manufactured goods are more labour-intensive than agricultural products, the country would gain a favourable balance of trade; and, secondly, because Steuart had closely related the amount of population with the volume of agricultural production disposable to a country (see also Gislain, 1999).

Steuart, generally speaking, was an advocate of what is characterized - using the words of J. Robinson (1947)- "beggar-my neighbour" policy of foreign trade. He was well aware that one of the most important benefits that a country could draw from her favourable balance of trade was the increase of employment and, by extension, the increase of real wealth. It must be mentioned here that for Steuart (1.95) "it is the employment alone of the inhabitants which can impress" a state. Thus, "while a favourable balance... is preserved upon foreign trade, a nation grows richer daily; and still prices remain regulated as before, by the complicated operation of demand and competition; and when one nation is growing richer, others must be growing poorer this is an example of a favourable balance of trade" (2.363).

He did not recognize the feedback effects of the income mechanism that fall upon a country that, for an extended period of time, maintains a favourable balance of trade. In other words, he did not acknowledge that if a country, through the favourable balance of trade, becomes more and more wealthy, while its trading partners become poorer and reduce their imports, the exports of the first country would be significantly reduced, thus causing the balance of trade to turn against it.

Steuart, in addition to his contribution to the field of foreign trade, introduced and analysed the notion of "the balance of payments", as a different expression of international economic relations (Viner, 1937, p. 15; Yang, 1994, p. 205). He noted that:

> "there is a great difference between the wrong balance of trade, and the general balance of payments. The first marks the total loss of the nations when her imports exceed the value of her exports; the second comprehends three other articles, viz.
>
> 1. the expense of the natives in foreign countries;
> 2. the payments of all debts, principal and interest, due to foreigners;
> 3. the lending of money to other nations.
>
> These three put together, make what I call the general balance of foreign payments: and these added to the wrong balance of trade may be called the grand balance with the world" (2.489-90).[18]

For Steuart, the expansion of trade produced by the rise of foreign de-

mand is a function of several variables, such as: an increase of per capita income in the imported country (1.233); changes in the consumer's preferences on behalf of foreign goods (2.364); and a change in the level of prices in favour of the exporter country (Ibid.). An increase of foreign demand would result in a favourable balance of trade that would have two main effects: (a) an increase of employment in the exporter country;[19] and (b) if "the supply do not increase in proportion to the demand, a competition will ensue among the demanders" which would increase the rate of prices in the exporter country and reduce its advantage (1.182).[20]

Steuart, having a non-strict mercantilist argument in favour of the benefits of foreign trade,[21] claimed that "it is not by the importation of foreign commodities, and by the exportation of gold and silver, that a nation become poor; it is by consuming these commodities when imported" (2. 359-60).[22] In other words, for Steuart, any importation of commodities reflects the country's "opportunity cost" in terms of labour that could be employed in the production of these commodities.

Steuart, under his growth-decay thesis, argued that the fruits of foreign trade would be lost for the advancing country (Yang, 1994, pp. 130,137). He investigated the following drastic endogenous (1st, 2nd) and exogenous (3rd, 4th) factors that decrease the absolute advantage of a country in foreign trade: "First, The consolidation of high profits with the real value of the manufacture... Secondly, The rise in the price of articles of the first necessity... Thirdly, The natural advantages of other countries... Fourthly, The superior dexterity of other nations in working up their manufactures" and other productive capacities (1.246-7).

In regard to the first, as he maintained (1.185), a mature and developed economy with a positive balance of trade would lose its absolute advantage in terms of relative costs and prices. This would occur when an increase of luxury consumption took place among the citizens of the exporter country. Such changes in consumption preferences would cause an increase in the rate of wages and of the real cost of production which, in turn, would increase the price of exportable goods.[23] In such a case, the increase in the rate of prices would decrease the rate of exports. And, as there did not exist for Steuart any drastic endogenous mechanism for the restoration of the previous situation, the statesman, as we shall see in section IV, must intervene.

Steuart dismissed the old mercantilist doctrine that an increase in the rate of interest would produce a drastic increase in the rate of prices. He makes clear (2.467) that labour's productivity is the most significant factor for the regulation of the real value of commodity (see also Tortajada, 1999, p. 244). And he emphasized that if the increase of labour productivity is higher than

the increase of the rate of interest (which is a small part of the real value of commodity), then the real value of commodity could be reduced.

Such an argument against the increase of luxury consumption in the stage of foreign trade had already been developed by various thinkers of the mercantilist era. For example, Locke (1692, p. 163) turned against the importation of luxury goods. Gee (1729, p. 2) stated that "where foreign Materials are but Superfluities foreign Manufactures should be prohibited; for that will either banish the superfluity, or gain the Manufacture". Thus, "if the increase of our Luxury was equal to this in other Things, the Nation would be reduced to a miserable Condition" (Ibid., p. 47). However, the economist who seems most to have influenced Steuart regarding his position against the importation of luxury goods in the phase of a mature foreign trade, was Harris who maintained that:

> "luxury... so far as it encourages the arts, whets the inventions of men, and finds employments for more of our own people; its influence is benign, and beneficial to the whole society. But if luxury, or fashion, tend to discourage the arts and industry at home; to stock the nation too much with costly trifles from abroad, of no real use; or with consumable commodities, not really wanted; thereby transferring the employments from our own poor, to those of another nations; to nations it may be, not our friends; luxury then, degenerates into evil, and should be suppressed in time" (1757, p. 28).

The second endogenous cause for the increase in the "intrinsic" value of commodities is produced by the unbalanced growth of agriculture and population. In the case where population increases faster than agriculture (1.252) - as agriculture functions under diminishing returns (1.197-8) - then the price of subsistence goods will be increased, thus producing a general rise of prices and the loss of absolute advantage in foreign trade

The above discussion demonstrates that Steuart had clearly incorporated into his analysis of foreign trade certain fundamental notions and mechanisms, such as: the existence of surplus as a basis for foreign trade, the principle of absolute advantage, the notion and function of the favourable balance of trade, and the notion of the balance of payments. Also, we see that for Steuart, the loss of a country's favourable balance of trade is the result of endogenous and exogenous causes that need a special statesman's intervention, as will be described in section IV.

III. Money and the balance of trade adjustments

Steuart emphasized the necessary existence of an invariable worldwide measure of value and medium of exchange. He proposed (2.572-3) the bul-

lion standard as the world-coin for foreign exchanges and he regarded the determination of the rate of exchange, or "the par rate", between coins of different nations to be of paramount importance - ideas and arguments already put forward by Harris (1757, pp. 37, 82-3). Steuart stressed that the exchange rate may be deduced by comparing, through specific measures, the content of coins in terms of "fine gold and silver" (2.578).[24] He did not fully accept the argument developed by Law (1705, p. 21) and Cantillon (1755, p. 259), that the rate of exchange is determined by the difference between exports and imports, namely, between the rate of "influx and outflux" of precious metals.[25] Steuart argued (2.547) that the price of bullion is regulated through the devices that regulate any other price of commodities, that is, by the rate of supply and demand of bullion in the world market.

As was previously mentioned, Steuart revealed the positive balance of trade in real terms and especially in terms of net imports of raw material and (if possible) of agricultural products. Thus, "when there is a balance due by any nation, upon the whole of their mercantile transactions with the rest of the world, such balance must be paid in coin" (2.489). This is the main reason for a country to demand precious metals, that is, in order to be used as a means for international payments (2.466). However, he was open-minded enough to recognize that the influx of precious metals, instead of foreign paper money, adds "to the intrinsic value of a country" [i.e. the Gross National Product in real terms] (2.490; see also Campbell, 1953, pp. 59-60).

In regard to the relationship between the wealth of the nation and the favourable balance of trade, Cantillon had already argued somewhat differently from Steuart. In a rather interesting statement, Cantillon maintained:

> "The Point which seems to determine the comparative greatness of States is their reserve Stock above the yearly consumption... And as Gold and Silver always buy these things [i.e. consumable commodities], even from the Enemies and the State, and the larger or smaller actual quantity of this Stock necessarily determines the comparative greatness of Kingdoms and States. If it is the custom to draw Gold and Silver from abroad by exporting Merchandises and Produce of the State, such as Corn, Wine, Wool, etc. this will not fail to enrich the State at cost of a decrease of the Population; but if Gold and Silver be attracted from abroad in exchange for the Labour of the People, such as Manufactures and articles which contain little of the produce of the soil, this will enrich the State in a useful and essential manner" (1755, pp. 89-91; brackets added).

From the above rather lengthy quotation, the following ideas of Cantillon can be derived: (a) the net wealth of a nation is equal to the positive

difference between the yearly production and consumption; (b) this wealth is represented by a relative volume of precious metals which may be increased through a favourable balance of trade; and (c) such a favourable balance of trade is more beneficial to a country when her exports contain labour- intensive goods. Cantillon and Steuart tended to agree on this last idea, while Cantillon's second argument resembles the relevant mercantilist doctrine that "wealth equals to precious metals"[26] and distinguishes him from Steuart. It is with respect to the first concept, namely that a nation's net wealth is equal to the positive difference between yearly production and consumption, that the two tend to partly disagree. While they both define surplus in the same way (Cantillon, Ibid., Steuart see 2. 678), Steuart measures surplus in terms of precious metals.[27]

Steuart (2. 582-3) shared the mercantilist doctrine that the statesman must intervene in order to prevent the exportation of precious metals, in cases where the country has a long-run negative balance of trade. Such a mercantilist policy suggestion was more strongly proposed by Cantillon (1755, pp. 183-5), while Hume ("Of the Balance of Trade", ed. 1970, p. 77) turned against such intervention in behalf of free trade, justified on the grounds of the "price-specie-flow mechanism".[28] As is known, Hume argued that precious metals would be distributed in various traded countries in "proportional level to the commodities, labour, industry, and skill, which is in the several state" (Ibid., p. 66, ft; see also Ibid., p. 64).[29] Under such a mechanism, there does not exist any long-run positive (or negative) balance of trade for any one country, as some mercantilists had claimed, to serve as a source of wealth (see also Bloomfield, 1938, p. 719; Duke, 1979, p. 573).

This mechanism was widely known and discussed in the mid- 18th century; it had been accepted by some authors and criticized by others. For example, Cantillon (1755, pp. 135, 159, 167-9),[30] Patrick (1755, p. 69) and the early Smith (1763)[31] accepted the function and importance of such a mechanism. Harris (1757, pp. 67-71, 88) and Wallace (1758, pp. 8, 13-4) turned against it, while only a few members of the Physiocrats discussed it (Bloomfield, 1938, p. 726). However, the most scientific and analytical critique against the Humean specie-flow mechanism was formulated by Steuart (2.358, 362).[32]

Steuart's critique on the specie-flow mechanism is, firstly, an extension of his critique against the Humean quantity theory of money (2.342-5, 349-50) and, secondarily, is based upon his theory of the stages of trade (Skinner, 1985, p. 16). Let us discuss in more detail his objections to the Humean arguments explaining the specie-flow mechanism.

First, Steuart observed (2.360) that experience does not verify that a country that has lost a large amount of precious metals, becomes poorer and her imports have been reduced. His objection was based upon two grounds: (a) the imports of a country are rather a function of her balance of payments - which Steuart conceived to be a monetary rather than a real phenomenon (Fausten, 1979, pp. 657,660)- and not a function of the balance of trade (2.491); and (b) there is a possibility of foreign borrowing which could close the gap of the balance of trade, at least temporarily, as Steuart (2. 515-6) was averse to any kind of dependence on foreigners which could result in a form of subordination.[33]

Second, Steuart's opposition to the specie-flow mechanism was based upon his critique of Humean theory regarding the proportional increase of money in circulation and the price level (i.e. the pure quantity theory of money). For Steuart (2.362), such proportionality might not hold as there would always exist the possibility of a country's hoarding part of the increased quantity of money. Relative to this, he noted that "when a favourable balance pours in a superfluity of coin, which at the same time cuts off the demands of trade for sending it abroad, it frequently falls into coffers; where it becomes as useless as if it were in the mine; and this clumsy circulation, as I may call it, prevents coin from coming into the hands of those who would have occasion for it, did they but know where to come at it" (2.489). This may be happen because "it is the wealth only which is found in circulation, which can change its balance; the remainder must be found locked up, made into plate, or employed in foreign trade" (2.356).

Nevertheless, Hume was well aware of the hoarding problem. In a letter to J. Oswald (1st November, 1750; ed. 1932, p. 143), he wrote: "I agree with you, that the increase of money, if not too sudden, naturally increases people and industry, and by that means may retain; but if it do not produce such an increase, nothing will retain it except hoarding" (ed. 1932, p. 143).[34] It seems here that Hume developed an argument shared also by Steuart (2.344), that a gradually increase in the volume of money, especially in an underdeveloped country, would increase its real economic magnitudes.

Third, Steuart criticized the Humean specie-flow mechanism on the ground that there was a possibility that a part of the imported new precious metals would be transferred as capital invested to other countries (Viner, 1937, 16, ft 4; Schumpeter, 1954, p. 350). His relevant critique is based upon the importance he gave to the balance of payment rather than the balance of trade as the most important magnitude in foreign trade- a decidedly modern approach (see e.g. Haberler, 1961, pp. 30-1). As Steuart mentioned:

"While there is found a sufficient quantity of money for carrying

on reciprocal alienations; those money gatherers will not be able to employ their stagnated wealth within the nation; but so soon as this gathering has had the effect of diminishing the specie, below the proportion found necessary to carry on the circulation, it will begin to be lent out, and so it will return to circulate for a time" (2.362). And, "all nations will endeavour to throw their ready money, not necessary for their own circulation, into that country where the interest of money is high with respect to their own" (2.367).

On the contrary, nobody is going to lend or invest in a country that is not "paying away the interest of the money borrowed, and... [has] a heavy balance of trade against her" (2. 367; brackets added). In other words, for Steuart - a truly pioneering economist in the theory of international capital transfer - investment abroad would be a function of: (a) the intra-nations' comparative rate of interest; and (b) the economic conditions and trustfulness of each nation.

The above arguments of Steuart against the Humean specie-flow mechanism are correct in so far as Hume had not taken notice of the role of *ceteris paribus* assumptions. However, as happened in the case of the Humean quantity of money, and specifically in this case of the specie-flow mechanism, Hume had modeled such mechanisms under the *ceteris paribus* assumptions (see Hont, 1983, p. 296; Karayiannis, 1988a). Although, to some extent, these critiques of Steuart against the specie-flow mechanism may be due to a misunderstanding, he emphasized another argument that may be of greater importance. Namely, he argued that there is no justification to explain why a country that has a long-lived favourable balance of trade would wait until the emergence of the negative effects described by Hume. As Steuart noticed: "it is the interest of a rich nation, to cut off the communications of hurtful trade, by such impediments as restrictions, duties, and prohibitions, upon importation; in order that, as by dykes, its wealth may be kept above the level of the surrounding element" (2.364). An argument in line with mercantilist protectionism and a solution that Steuart suggested only as a last resort.

From the above, it may be deduced that Steuart was against the Humean specie-flow mechanism, mainly because he had not found enough logical verification and empirical justification that under free trade, as Hume argued[35], "wealth will naturally come to a balance, in all countries" (2.363).

Nonetheless, Steuart recognized some drastic real and monetary effects produced by an increased volume of precious metals. He regarded (2. 497-8) that either of the following two effects would take place after the increased importation of precious metals (coins): (a) the volume of money

in circulation inside the country would increase and, if the economy produced at a non-full employment level, the rate of production and employment would be augmented; or (b) the rate of wealth of individuals would be increased by a readjustment of "melted down properties" and this would, in turn, increase the rate of interest - a purely monetary phenomenon for Steuart (see Karayiannis, 1988b).[36]

IV. Foreign trade and economic policy

From the previous analysis, we may conclude that Steuart was in favour of free trade when all participating countries had reached an equal degree of economic development (see also, Davie, 1967, p. 295), and when "industry and frugality were found to prevail equally in every country" (Johnson, 1937, p. 231). All other cases, for Steuart, would necessitate intervention by the statesman, because "laying... trade quite open would have this effect; it would destroy, at first at least, all the luxurious arts; consequently, it would diminish consumption; consequently, it would promote hoarding; and consequently, would bring on poverty in all the states of Europe" (2.365). He claimed (Ibid.) that an absolute free trade for countries with different economic conditions may be beneficial to all only when there existed a "general government" imposing specific economic norms for all.[37] However, such freedom may be regulated somewhat by the statesman intervention, namely "although the nature and the prosperity of trade require freedom on all hands; still this freedom is not incompatible with... regulation" (1772, p. 92).

During the mid-18th century, two different concepts regarding free and regulated international trade were developed. Montesquieu, for example, was an advocate of free trade (Devletoglou, 1963, pp. 15-6). The same line of thinking was followed by Hume ("Of the Balance of Trade", ed. 1970, pp. 75-6). Similarly, the early Smith enumerated the following obstacles to foreign trade as detrimental to economic development: (i) "the imperfection of the law with regard to contrast" (1763, p. 233); (ii) "the difficulty of conveyance from one place to another" (Ibid., p. 234); and (iii) "all taxes upon exportation and importation of goods also hinder commerce... All monopolies and exclusive privileges of corporations... have the same bad effect" (Ibid., p. 236).

On the other hand, Steuart believed that there must be some regulation regarding foreign trade by the statesman, who "must act, as well as permit and protect" (2.365). Although his approach has been called by Sen (1957) an "economics of control", it may better be characterized mainly as an "economics of direction and stimulation" and, if such policies proved inadequate, as an "economics of prohibition and permission" (Karayiannis, 1994, p. 42). As Steuart relevantly noted:

"Trade, therefore, and foreign communications, form a new kind of a society among nations; and consequently render the occupation of statesman more complex. He must, as before, be attentive to provide food, other necessaries and employment for all his people; but as the foreign connections make these very circumstances depend upon the entertaining a good correspondence with neighbouring nations, he must acquire a proper knowledge of their domestic situation, so as to reconcile, as much as may be, the interests of both parties, by engaging the strangers to furnish articles of the first necessity, when the precious metals cannot be procured; and to accept, in return, the most consumable superfluities which industry can invent. And, last of all, he must inspire his own people with a spirit of emulation in the exercise of frugality, temperance, oeconomy, and an application to labour and ingenuity" (1.231).

Let us now analyse the latter characterizations of Steuart's economic policy suggestions in the field of international trade (see also Karayiannis, 1994).

Steuart (1.302, 345) held that a country could re-establish a favourable foreign trade only if it could "suffer" a temporary decline in the living standard without any reduction in its productivity while, at the same time, the consumption pattern of other countries was becoming more luxurious. For Steuart, as well as for Hume,[38] the stage of foreign trade is temporarily maintained in the overall evolution of society. This process is a natural one and is attributed to the specific interrelationship of economic variables.[39]

In those cases where the statesman must help the economy to obtain a favourable balance of trade, Steuart endows him with the opportunity for many energetic and complicated interventions (1.262; see also Kobayashi, 1992, pp. 61-63): (i) "He must, as before, be attentive to provide food, other necessaries and employment for all his people" (1.231); ii) to engage "the strangers to furnish articles of the first necessity, when the precious metals cannot be procured" (Ibid); iii) "to accept, in return, the most consumable superfluities which industry can invent" (Ibid); (iv) "to establish the lowest standard possible as to prices; and to confine profits within the narrower bounds" (1.264);[40] and (v) "he must inspire his own people with a spirit of emulation in the exercise of frugality, temperance, oeconomy, and an application to labour and ingenuity" (1.231-2).[41]

In justifying the intervention of the statesman in helping an underdeveloped country to gain an absolute advantage in foreign trade, Steuart developed the infant industry argument (Hutchison, 1988, p. 349).[42] He rationalized this argument because of the small profits at the beginning of some branches of production that discourage its development (1.204). Thus, he

stated that the statesman must permit a short-run, higher-than-normal rate of profit in the infant and protected branches of industry in order to gain dexterity and knowledge in this kind of production (1.106,199, 236, 240, 262). In order for those profits to be gained by the protected branches of industry, the statesman must prohibit, or place duties on, importation of such commodities produced at lower prices abroad (1.262).[43] He explained that it might be necessary "to allow such commodities to be imported, with a duty which may raise their price to so just a height as neither to suffer them to be sold so cheap as to discourage the domestic fabrication, nor so dear, as to raise the profits of manufactures above a reasonable standard, in case of an augmentation of demand" (1.285). Nevertheless, he recognized that this kind of protection must not continue for any extended length of time. On the contrary, the statesman "must keep constantly an eye upon the profits made in every branch of industry; and so soon as he finds that the real value of the manufacture comes so low as to render it exportable, he must... put an end to these profits he had permitted as the means only of bringing the manufactures to its perfection" (1.263).[44]

When a country has an absolute advantage in certain manufactured goods, the statesman must do what he can in order to sustain such an advantage. The statesman's "ruling principles" are "to banish luxury; to encourage frugality; to fix the lowest standard of prices possible; and to watch, with the greatest attention, over the vibrations of the balance between work and demand" (1.263). Moreover, he must encourage the exportation of manufactured goods (labour-intensive goods) and the importation of raw produce (1.291).

As was noticed in section II, four factors cause the stage of decay in foreign trade to emerge, that is, where an absolute advantage is lost. The main factor was a result of the increased per capita income and the increased level of luxury consumption that would increase the real value of commodities (1. 239-40, 286). Steuart suggested two policies to prevent the emergence of such a deleterious situation:

The first is that the statesman (2.298) by his example, and not by drastic measures, has to change the consumption pattern of individuals. Steuart was averse to any sudden and direct consumption prohibitions by the statesman (see also, Ohmori, 1983, p. 190), because, as he stated:

> "It will prove very discouraging to any statesman to attempt a sudden reform of this abuse of consolidated profits, and to attack the luxury of his own people. The best way therefore is to prevent matters from coming to such a pass, as to demand so dangerous and difficult a remedy" (1.251).

The second is attained (1.236) through indirect measures by which the statesman seeks to prevent the "consolidation" of higher wages into the real value of goods.[45] One such indirect measure is through the adoption of a proper taxation policy. Such a policy would increase the tax rates of luxury goods in order to discourage their consumption by the labourer (2.637, 652, 679, 711).[46] Another measure would be to reinforce the competition within the economy by "reducing consolidated profits... upon articles of exportation", the effect being "to increase the number of hands employed in supplying them" (1.250). In other words, the statesman, by encouraging competition in his economy, would prevent the consolidation of above-normal rate of wages and profits in the real cost of production.[47]

In the second endogenous cause of the weakness in a favourable balance of trade, namely when the price of subsistence goods is increased, according to Steuart, the statesman must encourage the importation of subsistence goods (1.198), or assist "agriculture with his purse" (1.200).[48] Indeed, "These appear to be the most rational temporary expedients to diminish the price of grain in years of scarcity" (1.255). The statesman may also exercise some regulatory activities in order to "keep the prices of grain in as just a proportion as possible to the plenty of the year" (1.254). Steuart also mentioned that placing premiums upon exportation is a good measure for the decrease of the agricultural surplus "when prices fall too low" (1.233).

When a country has lost its absolute advantage because of an unavoidable decline, Steuart (2.637, 700) called upon the statesman to intervene with policies scheduled according to the relative circumstances that prevail in any economy. However, he warned that the statesman's intervention and his remedies for the re-establishment of foreign trade are "difficult, and sometimes dangerous" (1.259); thus, he suggested that the statesman must do what he can to "preserve" a beneficial balance of trade (1.260).[49]

Further discussion elaborated upon the other two exogenous causes for the loss of a favourable balance of trade. "Against the first cause of decline," Steuart observed, "I see no better remedy than patience... and a perseverance in frugality and economy, until the unwary beginners shall fall into the inconveniences generally attending upon wealth and ease" (1.243). "The second cause of decline it is far more difficult to remove.... But even for this great evil, the very nature of man points out a remedy. It is the business of the statesman to lay hold of it" (Ibid.). More specifically, the statesman must encourage exportation - when the country is competing in foreign trade with more advanced countries - even by giving premiums (1.258).

When a country has already lost its absolute advantage in foreign trade by trading with a superior country, the statesman can intervene by introduc-

ing the following three measures:

> "First, To renounce this branch of commerce entirely, and to take the commodities wanted from foreigners, as they can furnish them cheaper. Secondly, To prohibit the importation of such commodities altogether. Thirdly, To impose a duty upon importation, in order to raise the price of them so high as to make them dearer than the same kind of commodity produced at home" (1.284).

Steuart disputed the second measure because he considered it to be "too violent a remedy ever to be applied with success." (1.290). Instead of that, the statesman must impose duties on the importation of goods that will be gradually augmented (1.292). What then will be the optimum rate of duties imposed on importations? Steuart argues that this rate must be such as "to allow such commodities to be imported, with a duty which may raise their price to so just a height as neither to suffer them to be sold so cheap as to discourage the domestic fabrication, nor so dear, as to raise the profits of manufactures above a reasonable standard, in case of an augmentation of demand" (1.285).

Steuart (1.291) turned against the sudden prohibition of imported goods because it would increase the price of those goods in domestic industry. Thus, he suggested that the statesman first do what he could by examining the causes and the remedies for regaining a profitable foreign trade and not to eliminate such trade altogether (1.293). However, he was well aware that international trade would stagnate if the same policies on foreign trade were followed by all countries (1.296).[50]

The establishment of free trade, according to Steuart (1.296), can prove beneficial to the trading countries only if they have the same level of development and if individuals share the same consumption preferences.

He was not a supporter of unrestricted and unregulated foreign trade, particularly when a country was in the stage of "decay".[51] However, he did not suggest direct prohibitions to exports and imports as the most effective economic policy in foreign trade - a view also shared by Hume and Smith.[52] If we have to characterize Steuart's approach to international economics, it is better to say that he did not analyse the function of a "cosmopolitical economy" - to use the term of List (1841-44, p. 119) – a concept which was followed by Hume and Smith. Steuart worked rather upon an international economic policy that, as List (Ibid., p. 120) later on describes, "each separate nation had to obey in order to make progress in its economical conditions".

The above policy suggestion of Steuart regarding international trade generated some rather harsh critiques by later commentators. For example, J.S. Mill commented that "according to Sir James system by which

nothing is to be left to itself, but everything done by regulation, the corn trade must be put under management... The author it is evident, had never reflected with any accuracy upon the operation of free trade and therefore sees not the equalizing results which it is calculated to produce" (ed. 1966, p. 83). In this statement, J.S.Mill is not far from the truth. Steuart, in his essay *Considerations on the Interest of the Country of Lanark in Scotland* (1769, pp. 339-345), had tried to influence the citizens of Glasgow in favour of a protectionist policy of corn trade (see also Rae, 1895, p. 61; Taylor, 1957, p. 301; Augier, There, 1999). J.S.Mill, however, in his magnum opus *Principles of Political Economy*, did not correctly criticize Steuart for not having recognized the operation of free trade. We must not forget that Steuart was a creature of his time, in which the doctrine of free trade was not widely accepted and that, in the mid-18th century, as Meek aptly observes (1958, p. 292), "economics... usually rested on the assumption that an economy could not possibly work if left to itself".

Conclusions

Steuart, by applying a scientific approach to his investigations — namely, by proceeding from simpler to more complex issues and by using both inductive and deductive reasoning (Karayiannis, 1992; Kobayashi, 1999), — was able to incorporate into his analysis of international trade more specific economic principles and notions, such as: the existence of surplus as a basis for foreign trade, the principle of absolute advantage, the notion and function of the favourable balance of trade, and the notion of the balance of payments. He also analysed specific endogenous and exogenous causes for the loss of a country's favourable balance of trade and advanced a theory of international capital transfer for investment purposes. Then, by adopting normative analysis, he proceeded to investigate and suggest policy measures for the sustenance and/or regaining of a favourable balance of trade. Within such an analysis, he offered an economic program that aimed at the development of an underdeveloped country. He was primarily interested in showing how an underdeveloped country, by its own power, could establish and increase its manufacturing production, not by placing prohibitions on imports, but by encouraging, through the statesman's intervention, the advance of manufacture. Thus, we may claim that he was a "believer" in the managed market and developed ideas concerning "economics of direction and stimulation," but when the conditions of the economy still proved unfavorable, only then was he in favor of the "economics of prevention and control".

Notes

1. The references cited as volume and page (i.e. 1. 217) are to Skinner's edition of Steuart's *Principles* (1767).
2. Steuart strengthens his growth-decay thesis by considering history (1.195; see also Low, 1952, pp. 323-4; Skinner, 1981, pp. 32-3). David Hume had already developed such a thesis in his letter to Lord Kames (4th March, 1758, ed. 1932, p. 272) where he mentioned: "The growth of all bodies, artificial as well as natural, is stopped by internal causes, great cities, great commerce, all of them receive a check not from accidental events, but necessary principles". For the growth-decay thesis as developed by various scholars in the mid-18th century, see Kleer (1996).
3. Skinner noticed (1981, p. 32, 1985, p. 13) that these "three broad classifications.... are to be found in Mirabeau". Stark (1968, p. 265) characterized as pessimistic this trade classification of Steuart. For an analytical presentation of the trade stages classification of Steuart, see Skinner (1993), Yang (1994, pp. 133-140).
4. Steuart, as Johnson (1937, p. 225) noticed, followed Postlethwayt regarding this distinction of foreign trade.
5. Perelman (1983, p. 469) noticed that "In fact, Steuart was the most important economist of his day".
6. The argument that foreign trade is established because the mutual interest of trading nations usually increases their economic dependence had already been developed by Montesquieu (1734-48,vol.I.,p.324; vol. II., p. 45) and Harris (1757, p.23).
7. Such a principle for the beginning of trade can be found quite early in the literature. We find it in the writings of Aristotle (*Politics*, 1257a, 9, 4-5), prior to Steuart in North (1691, pp. 2-3) and, during Steuart's time, in Montesquieu (1734-48, vol. I., p.338), Hume ("Of the Jealousy of Trade", ed. 1970, p. 79), Harris (1757, p.17), and Young (1774, p. 31).
8. Such a process is described fairly well by Steuart who noticed:
   "We now suppose the arrival of traders, all in one interest, with instruments of luxury and refinement, at a port in a country of great simplicity of manners, abundantly provided by nature with great advantages for commerce, and peopled by a nation capable of adopting a taste for superfluities... What are the first consequences of this revolution? Is it not evident, that, in order to supply an equivalent for this new want, more hands must be set to work than formerly? And it is evident also, that this augmentation of industry will not essentially increase numbers; as was supposed to be the effect of it" (1.66-7).
   Steuart's concept of the role of "aspiration effect" in economic growth has been analysed by Akhtar (1978) through the use of a formal model.
9. Such an argument was analysed later on by Malthus who stated that: "One of the greatest benefits which foreign commerce confers, and the reason why it has always appeared an almost necessary ingredient in the progress of wealth, is, its tendency to inspire new wants, to form new tastes, and to furnish fresh motives for industry" (1836, p. 403).
10. Doujon (1994, p. 498) and Brewer (1997, pp. 17-8) noticed the influence of Mandeville on Steuart in regard to the various effects of consumption of luxury goods.
11. Hume, prior to Smith, had attributed the benefits from foreign trade of "rich and poor" nations to the specialization of production that resulted from the existence of different surpluses. In a letter to J.Oswald (1th November, 1750), he wrote: "Your enumeration of the advantages of rich countries above poor, in point of trade, is very just and curious; but I cannot agree with you that barring ill policy or accidents, the former might proceed gaining upon the latter for ever. The growth of every thing, both in arts and nature, at last checks itself. The rich country would acquire and retain all the manufactures, that require great stock or great skill; but the poor country would gain from it all the simpler and more laborious" (ed. 1932, p. 143).

12. For Steuart, the degree of unemployment is considered to be the final target of economic policy (see Karayiannis, 1994); a concern as well of the new-mercantilist policy of the early phases of the 20th century (Robinson, 1947, pp. 229-30).
13. Petty (see Roncaglia, 1985, p. 37) and Law (1705, p. 23), had already recognized and stressed the principle of absolute advantage. In the time of Steuart, in addition to Montesquieu, some eminent scholars had analysed such a principle as a justification and explanation of foreign trade. See, for example, Hume ("Of the Jealousy of Trade", ed. 1970, pp. 79-80) and Quesnay (*Tableu Economique*, ed. 1972, p. 14, ft.116). Such a principle, also recognized by the early Smith (1763, pp. 204-5), was primarily analysed later on in his *Wealth of Nations*. For an extensive analysis of Smith's relevant principle, see Staley (1973, p.440); Bloomfield (1975, pp. 460-3).
14. Steuart (1.238; see also Skinner, 1999, p. 145), while attributing the origin of this idea to Montesquieu (1734-48, vol. I, pp. 328-331), enumerated the following sources of such an advantage: "situation, mines, rivers, sea-ports, fishing, timber, and certain productions proper to the soil".
15. Angell (1925, p. 30) comments that Steuart also "has some faint idea of the principle of comparative advantage, basing it primarily on the industriousness and sobriety of the population"
16. The proponent of such a doctrine in the 19th century was F. List who claimed that "nations are richer and more powerful the more they export manufactured goods, and import the means of subsistence and raw materials" (1841-44, p. 218). As Sen mentions (1957, p. 77, ft. 74), List was familiar with Steuart's work. For an excellent analysis of List's protectionist arguments and policy suggestions, see Schmidt (1999, pp. 29-54).
17. From Meek's *Economics of Physiocracy*, the 1963 edition, we may quote some rather interesting passages regarding the relevant arguments of Quesnay and the Physiocrats. It is stated that: "a nation... gains much more from the sale of a million livres worth of manufactured commodities, because in the case of the latter it gains only the value of the artisan's labour, whereas in the case of the former it gains the value of the labour of cultivation and also the value of the materials produced by the land" (ed. 1963, p.74). Also: "In mutual trade, the nations which sell the most necessary or most useful commodities have an advantage over those which sell luxury goods... (thus)... the advantage always lies with the nation which sells the most useful and necessary commodities" (Ibid., pp. 78-9).
18. Cantillon had also recognised the balance of payments where he included expenses for "secret services and political aims, for subsidies to allies, for the upkeep of troops, ambassadors, noblemen who travel, etc., capital which the inhabitants of one state sent to another to invest in public or private funds" (1755, p. 263).
19. An argument in favour of the positive balance of trade in the mercantilist tradition (see e.g. Defoe, 1728, p.32).
20. Yang (1994, pp. 148-152), based on such arguments, formed a simple model of economic growth through foreign trade that clarifies many of Steuart's ambiguities. Perrotta presented three different mercantilist "explanations" of the favourable balance of trade and regarded Steuart to be a follower of the theory based upon the "exchange of goods with different productive potentials" (1991, pp. 320-1).
21. The economic thinkers of the 18th century also recognized some non-economic benefits produced by the increase of foreign trade. For example, Wallace (1758, pp. 14-5) observed: "Foreign trade is like-wise an advantage in other respects. It opens an easy communication with all parts of the globe. It gives us the means of enlarging our knowledge of nature and of mankind, and of acquiring a share of the riches of every nation". Hirschman (1977, pp. 70-87) shows how Montesquieu and Steuart argued for the political and cultural effects of foreign trade.
22. On the other hand, those accepting a relevant mercantilist explanation (see e.g. Mandeville, 1714, pp. 138, 141; Gee, 1729, pp. 116-7) believed that the most important result of the reduction of imports was the saving of precious metals.

23. As Steuart wrote:
"as a kind of general rule, that while luxury tends only to keep up demand to the reasonable proportion of the power and inclination in the industrious part of a people to supply it, then it is advantageous to any nation; and that so soon as it begins to make the scale of home-demand preponderate, by forming a competition among the natives, to consume what strangers seek for, then it is harmful, and has an evident tendency to rot our foreign trade" (2.357).
24. For such a reason, he wrote the treatise (see *Works*, vol. V) titled *Plan for Introducing an Uniformity of Weights and Measures over the World*. However, Harris (1757, pp. 37-8) had already stressed the serious problems that accompany various measures of the value for bullion.
25. Cantillon (1755, pp. 259, 261) clearly showed that a positive or negative balance of trade, results from an alteration of the exchange rate between the traded countries. He argued that if a country has a positive balance of trade with the rest of the world [i.e. the "general balance" as he called it (Ibid., p. 261)], then the price of bullion in that country is reduced - as its influx has been increased - compared with its cost of production, and vice versa. Thus, when a country's price of bullion is higher than its cost of production, it can be deduced that that country has a negative balance of trade, and vice versa.
26. Heckscher commented that as the mercantilists believed "that consumption in itself was of no value they came by easy stripes to the conclusion that only an excess of income over expenditure increased the riches of a country and that such an excess could consist only in an inflow of precious metals from abroad" (1957, p. 336).
27. As Groenewegen (1999) has shown, Cantillon's economic ideas were indirectly transmitted to Steuart.
28. Hume had first described such a mechanism in a letter to Montesquieu in April 10, 1749 (Fausten, 1979, p. 664) who implicitly accepted this mechanism (see Devletoglou, 1963, p. 17). For a detailed analysis of Hume's thesis in behalf of free trade in relation to his thoughts on the effects of technological change and the specie-flow mechanism, see Berdell (1996).
29. As Hume explained ("Of the Balance of Trade", ed. 1970, p. 63), if an amount of coin-money "be annihilated in one night" from a country, then "the price of all labour and commodities sink in proportion, and everything be sold as cheap as they were", thus the advantage of that country in terms of price level is increased and its exports would be augmented. He used such a mechanism to argue against the substitution of coin with paper money ("Of Public Credit", ed. 1970, pp. 95-6,ft). For a modern explanation of this mechanism, see Staley (1976, pp. 252-3); Duke (1979, p. 572, ft1); Fausten (1979, p. 663, ft 1).
30. Cantillon (1755, p. 235) explained the growth-decay thesis in foreign trade through the function of the specie-flow mechanism and the gradual deterioration of the balance of trade against the country that had, for an extended period of time, a positive balance of trade.
31. Adam Smith had accepted the function of the Humean specie-flow mechanism early in his *Lectures* (1763), but he did not ever mention it in his magnum opus *Wealth of Nations* (1776). Such a "mystery of the history of economic thought", as Viner (1937, p. 87) characterized it, has recently been explained under some specific "hypothesis" by Petrella (1968).
32. See also Angell (1925, p. 30); Viner (1937, p. 86); Campbell (1953, pp. 73-4); Skinner (1985, p. 16); Eltis (1986, pp. 49-50); Doujon (1994, p. 515).
33. Cantillon (1755, pp. 171, 193) had analytically distinguished between these two measures of a state's economic situation in foreign trade, and warned against the borrowing from foreigners.
34. Duke (1979, p. 578) formed a model analysing Hume's monetary adjustments in foreign trade.
35. In the words of Hume: "The money always finds its way back again, by a hundred canals, of which we have no notion or suspicion" ("Of The Balance of Trade", ed. 1970, p. 77; see also ("Of the Jealousy of Trade", ed. 1970, pp. 78, 81).

36. Yang (1994, pp. 211-216) formed a model based upon Steuart's specific arguments on the relationship between the balance of payments and the level of prices and output.
37. Such an idea was later developed by F. List who emphasized that "only with the gradual formation of this union [i.e. a universal republic] can free trade be developed, only as a result of this union can it confer on all nations the same great advantages" (1841-4, p. 127; brackets added).
38. Hume, by emphasizing the various advantages of foreign trade to an exported country, questioned "whether these advantages can go on, increasing trade in infinitum, or whether they do not at last come to a net plus ultra, and check themselves, by begetting disadvantages, which at forts retard, and at last finally stop their progress" (*Letter to Lord Kames*, 4th March, 1758, ed. 1932, p. 271).
39. As Steuart comments elsewhere, his main purpose in analysing economic phenomena is "to point out how naturally one alteration brings on another, as in a chain, insensibly altering the whole system of the sentiments and employment of the greatest part of the inhabitants" (1772, p. 284).
40. To explain such a policy, Steuart devoted an entire chapter (Chapter XVIII) entitled "Methods of lowering the Price of Manufactures, in order to make them vendible in foreign Markets". He specified two such methods: "The first, such as proceed from a good administration, and which bring down prices within the country, in consequence of natural causes. The second, such as operate upon that part only which comes to be exported in consequence of a proper application of public money" (1.246).
41. Khalil (1987, P. 121) rightly comments that "Steuart introduces the concept of the spirit of the people as a constraint which the statesman has to attend to in the implementation of his plan".
42. Some hints in behalf of the infant-industry argument are found in Gee (1729, p. 79) who thought "it worthy the Care of the Government, to endeavour by all possible Means to encourage them [i.e. manufacturers]... By giving them competent Bounties in the Beginning". Such an argument, as is known, was developed later on, primarily by F.List, J.S.Mill and C.Bastable (see, e.g. Kemp, 1960).
43. Hume had already recognized the protectionist character of tariffs noticing: "A tax on German linen encourages home manufactures, and thereby multiplies our people and industry. A tax on brandy encreases the sale of rum, and supports our southern colonies" ("On the Balance of Trade", ed. 1970, p. 76).
44. Steuart (1. 241, 257, 299) also stressed that the statesman is able to support and encourage some branches of production by subsidizing and giving premiums.
45. Steuart's theory of value is analysed in Karayiannis (1991).
46. Many authors of the mid-18th century argued in behalf of taxes on luxury goods, as Hume ("Of Taxes", ed. 1970, p. 85), Richardson (1744, pp. 149, 169, 179), etc.
47. Cantillon suggested another strategy for the prevention of a favourable balance of trade, that of withdrawing money from circulation. As he noticed:
"Thus it would seem that when a state expands by trade and the abundance of money raises the price of land and labour, the Prince or the Legislator ought to withdraw money from circulation, keep it for emergencies, and try to retard its circulation by every means except compulsion and bad faith, so as to forestall the too great dearness of its articles and prevent the drawbacks of luxury" (1755, p. 185).
48. Steuart proposed also the establishment of a granary scheme by which the real wage rate and the level of production of grain would be secured (Campbell, 1953, pp. 50-1; Skinner, 1985, p. 12; Eltis, 1986, p. 56).
49. For the policies suggested by Steuart for dealing with disequilibrium in the balance of payments and capital mobility, see Perlman (1990).
50. For a modern explanation of such an effect, see Robinson (1947, p. 229).
51. Steuart titled his chapter XXIII: "When a Nation, which has enriched herself by a reciprocal

Commerce in Manufactures with other Nations, finds the Balance of Trade turn against her, it is her Interest to put a stop to it altogether".

52. Hume argued, ("Of Balance of Trade", ed. 1970, p. 60), that by the prohibition of exports, the nations "act directly contrary to their intention; and that the more is exported of any commodity, the more will be raised at home". Similarly, Smith (1763, p. 205) declared that "by prohibiting the exportation of goods to foreign markets, the industry of the country is greatly discouraged".

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*Louis BAECK**

THE SAGA OF DEVELOPMENT AND GLOBALISATION

Introduction

The summits of the World Economic Forum and of the Social World Forum confronted public opinion with two different visions of development and global governance. In New York the powerful business lobby assembled 2000 CEOs of giant firms to hear conferences and participate in workshops on the merits of market democracy and its globalisation. In this public relations stunt the Davos-men were joined by political leaders, scholars and artists to raise the intellectual and moral profile of the happening. In Porto Alegre around 45.000 activists of social movements, advocates of worldwide NGOs and other campaigners for a better world, brainstormed for equitable norms and fair rules in global governance. With the exuberant flavor and political lyrics characteristic of the Brazilian context, the assembled megaphones of the moral base clamoured that equitable rule-giving offers a better guarantee against social conflict and violence than arms races. Both the WEF-jamboree and the SWF-teach-in enjoyed ample media coverage. This signals the emergence of direct democracy stimulated by organized civil society in a vital domain of international relations.

Our essay moves upstream to the roots of these issues and follows their historical trajectory. This genealogy is conceived to be an encounter with lived reality. History matters; it illustrates the relation between the uniqueness and repetitiveness of reality. Historia magistra vitae.

I. History of the present

The discourse on development is a product of the ideological rivalry of the Cold War and of decolonisation. Thus, there are different angles of vi-

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sion for the analysis of development theorising and practice. My interest in the subject was aroused by a summer course in 1952 at the University of Guadalajara (Mexico). I see development not so much as *a process* than as a project, contingently shaped by the actors and ideologies of succeeding historical blocs, each having their own conditions of possibility. The political emancipation of colonies, catalysed by two rival superpowers of the early postwar period, cannot be compared to the current context of globalisation under the aegis of western core actors. And the neoliberal creed of today is an ideological sea change in comparison with the statist mentality nurtured by former charismatic nation builders.

The focus of our essay is fixed on the historical unfolding of the post-war discourses on development in relation with dynamics in the real world and with *Zeitgeist* or the prevailing mindset of the time. Indeed, scholars and policy makers from rival schools of thought produced succeeding paradigm-shifts in the concepts, methods and goals of development. Since the end of World War2 the course of history accelerated with intensity and on a scale never seen before. Successive waves of change in the fabric of society, in the functioning of the economy, in the cultural values and in the symbolic sphere of religion, transformed the way of life and the historical consciousness of people all over the world. The breaks with tradition were felt by some as a loss of roots and gave rise to identity problems. Others welcomed the widening of the horizon and the promise of new opportunities. In the international domain also the geopolitical grid was several times disrupted by shocks and outflanked by drifting forces with unforeseen consequences. Among the most significant we mention: the ideological confrontation of the Cold War, the watershed of decolonisation ushering about fifty new nations on the world scene, the resurgence of Islam, the ascendancy of the Far East, the collapse and the transformation of the Soviet empire. With the opening of the Chinese economy to market forces, the western model of development is reaching global span. Its ever widening range of social and cultural forms is a salient feature of today's international relations. The story of development is one of the most fascinating sagas of the last fifty years.

In the 1990s globalisation became the vogue-word. The inherent logic of globalisation is the compressing of historical time and the homogenisation of geographical and cultural space. Its drive towards homogenisation and standardisation maximises profit accumulation in the centre of the system; but it also disturbs local initiatives and hurts indigenous cultures. Cultural leaders in other parts of the world perceive globalisation as the flagship of westernisation. Furthermore, its neoliberal inspiration with emphasis

on marketisation, produces besides positive effects, asymmetric results: between the countries of the centre and the periphery, between national and transnational agents and agencies, between powerful winners and marginalised losers who remain without voice or entitlements. Up to now, the extant institutions of global governance are unable to deliver economic and financial stability and still less social justice. Reform of their organisation and functioning is needed and urgent.

In his pioneering book on the process of development, Joseph Schumpeter coined the telling metaphor *"schöpferische Zerstörung"* or creative destruction.[1] The post-WW2 era generated several cycles of creative destruction in which "old" was replaced by "new", or on the contrary, where "new" was contested by "old", like with the fundamentalist revivals. Our generation lived through the rise, the flourishing and the decline of ideologies and of theoretical constructs that mobilise and shape the unfolding of historical forces. The processes of legitimisation, followed by deconstruction and re-interpretation of these grand narratives gave rise to novel thematisations and divergent discourses on development. The concept itself was profiled by different catchwords like modernisation, industrialisation, cultural revival, promotion of democracy, empowerment of civil society, global governance. Conceptual frames of reference like the aforementioned vogue words are historical markers, helping us to grasp the essence of an epoch. However, looked at from the facts, these constructs cover a multi-dimensional complex of significants with differently motivated actors and strategies at work. And each of these has its own logic of social incorporation and exclusion, or of winners and losers. While these conceptual markers carry and cover different values, they mean different things to different people. Consequently, the contemporary buzzwords globalisation and global governance also convey different meanings and divergent options for the concerned actors and agencies. The issue-agenda of intergovernmental organisations (like the United Nations, the World Bank and the IMF), the aspirations of non-western civil society as well as the strategies of transnational firms, of non-governmental organisations (NGOs) and of academic think-tanks are all very different. It is a sign of our time that even leading globalisers, who originally were blind to questions of equity, now sense the need of a justice-based dialogue in order to achieve more satisfactory results for all.

In keeping with our focus to historicise and contextualise, we constantly cross borders between text and context, between theory and practice, between factual analysis and prescriptive norm. In my view, the technical and material issues of development studies and strategies are entwined with socio-political choices and ethical valuations. Thus, they are explicitly norma-

tive. The basic question is not only to know how the world functions but also how the ordering of world society "ought to be". In my opinion, a more explicit reference to ethical values like social justice and human dignity is a promising project. In our pluri-cultural world with its multiple identities and societal layers, development, in order to be morally sustainable, requires the social inclusion of people now too far removed from the centre, and an approach with more respect for the values nurtured by non-western "others".

II. The blooming of developmentism

In the aftermath of WW2 a new historical awareness in relation with the dramatic shift in the geopolitical context produced an explosion of thematisations on international security and on development. Since the decolonisation waves of Asia, the Middle East and Africa unfolded in a situation of bipolar conflict, the discourses on development were from the very start coloured by ideology. The two antagonists of the Cold War opined that the old-style colonisation by Europeans had become an historical nuisance and that the times were ripe for a change of alliances and strategies. For the American hegemon the ideal path of development for latecomers was *westernisation*, with the United States in the driver's seat. For the Soviet Union on the contrary, the ideal for a speedy and planned catch-up towards modernisation consisted in *sovietisation*.

These projects went away. The intense nationalism, cherished by the elites of the new states, proved to be a disturbing hindrance. With the international law of nations at their side, the new governing elites insisted on recognition of the freshly acquired statehood for their regimes. This meant independence free from foreign intervention in internal affairs. National sovereignty and the free choice of international alliances was their geopolitical bedrock. In this context the leaders of the new states ambitioned to go their own way and profiled themselves as the Third World. In the beginning a great number of developing countries had charismatic leaders as helmsmen. They were masters in the art of bolstering the morale of their people with populist welfare policies and flamboyant campaigns for nation building and national self-reliance. This was the era of Nehru, Sukarno, Mao Zedong, Nasser and Nkrumah in the Afro-Asiatic world. And in Latin America general Peron and Getulio Vargas embodied a Latin form of developmental populism. They mobilised the masses with campaigns of socio-political conscientisation which aroused millions of people. The touting generated rising expectations for material progress and betterment. History warmed up and the project of development became the rallying cry of the Third World. In the

international community this call was heard and reform minded scholars, political parties, church leaders and staff members of the United Nations sensed the urgent needs of the time. In a minimum of time their combined endeavours created a new construct, namely third-world-centred developmentism. Online with the ideological overtones and the intellectual mood of the early postwar period, the state was profiled as its prime mover and dominant actor. For a speedy catch-up of latecomers, the active steering by the state authorities was deemed necessary. Nation building became the staple of developmentism. With a masterly paraphrase from the bible, Kwame Nkrumah sloganeered: "Seek you first the political kingdom and all other things shall be added unto it".

However, a series of failures in state formation and of breakdowns in nation building elicited radical shifts in thought and practice of postcolonial politics. Indeed, the transplant of a modern democratic state to new nations who were neither historically or culturally prepared, created problems. Colonial rule is by nature authoritarian and the expectation that the political elite of the new nations would make a quantum jump to democratic government was naïve. In many cases the new leaders had to do with panoply of different languages, cultures, religions and ethnic groups. Once the fireworks and the spell of independence were past, the emancipated citizens met with an imported state. The transformation of this *Fremdkörper* into an authentic nation was a herculean task in which very few succeeded.

In a great many new states the alien origin and historico-cultural irrelevance of the incumbent institutions caused instability, ethnic conflict, religious strife and other centrifugal trends. In order to cool off the political heat of the new nations in turmoil, armed men took over. The military juntas had more clout to keep the nation together and were professionally schooled for the disciplining of populations. Thus democratic rule was one of the first victims of developmentism. A new canon, with a higher priority than political emancipation became operative by the name of "national security". Only authoritarian regimes and preferentially military juntas were deemed capable to keep order efficiently. In the domino theory prevalent at that time, military rulers of the new nations were bestowed with an aura of trustful stabilisers. With the successes of communists in Indo-China and forebodes of other domino's to fall in Asia, possibly also in Latin America, order and stability became top priority. In the United States, the political establishment under the presidency of Eisenhower, himself a general, took a conservative turn; shouldered in this by a paradigm-shift of political scientists and modernisation theorists. The emphasis on nation building was dropped. Instead, the monopolisation of power by military hardliners was legitimised as the most

reliable safeguard against communism. The military juntas were hailed as potential allies in the Cold War. For this loyal co-operation the armed men received generous financial aid and weapons. The Soviet Union had only half-hearted critique and did not miss an opportunity to seduce some of the hardliners to change camp.

The thematisation on the material and social aspects of development pushed economics and sociology centre stage. These two were called in to "discipline" the ideas of the latecomers in the purposeful economisation of society and culture. Its sociological underpinning consisted in an adapted version, in this case a *thirdworldisation*, of the modernity-paradigm. The focal points of modernisation theory prevalent in American sociology were the following: a break with the past, assisted by the downgrading of the premodern inheritance in order to create room for the enhancement of western value systems and organisations. Indeed, the term de-velopment literally means: *"stepping out of the (traditional) envelope"*. Consequently, modernisation included detribalisation and the phasing out of ethnic bonds. Its basic trend was secularisation of society. This meant the unpacking of religious loyalties and symbols from the political domain to the private sphere. Modern education was called in to prepare and deliver the professionals for the running of the new society. Education was a cultural lever in the transmission of values and norms from the West to the developing world. Modernisation theorists valued the urban populations as vanguards of progress, while the rural masses were considered to be backward and conservative. Consequently, modernisers advocated to skim off the economic surplus produced by the population of the countryside for investment in industrial and urban expansion.

The development studies produced by European scholars, especially those familiarised by fieldwork in local context, steered away from high flying theoretical templates. They preferred a more problem-oriented approach and concentrated their attention on area studies informed by anthropological findings. By the end of the 1950s the two schools of thought met in cross-fertilisation, and the synergy between European and American scholarship resulted in a synthesis. In this more sober view, the ambivalence of modernisation and the seamy side of the dualism between old and imported new was fathomed in more detail. The Latin American scholars epitomised the situation in very clear terms: *"dos mundos superpuestos"*: with the imported system on the top of the indigenous.[2] The message from the field-workers was that traditional economies are embedded in a social and cultural web whose cohesive networks and loyalties cannot be forced to change at once. However, a great number of modernisers more system-

atically than colonial administrators, bulldozed the indigenous communities and their values with imported concepts and methods. In their hurry they were prone to overlook the multifaceted nature of the development process. In several cases, the hurly-burly of disembedding the indigenous heritage triggered cultural resistance. And in some parts of the developing world messianic movements and millenaristic rebellions voiced disenchantment with westernising modernisation. These outbursts were forebodes of the cultural resurgence of the 1980s.

In some respects however, the project of "late" development departed from the historical model of the West; more particularly in its state-centric and planned approach. In the early postwar period even the most fervent adherents of liberalism accepted the "late-development-paradigm", with state managers as prime movers of industrialisation. The giant strides of Japan and Russia fascinated the elites of the Third World and western reformists joined the chorus in favour of government planning. In contrast with the communist formula, the western variant was called "mixed" planning, or economic planning combined with market flexibility. In the past, the western economies had started up colonial plantations of tropical crops and also mine industries for their procurement in basic commodities. Mainstream economic theory advocated this international division of labour as a combination with optimum results for both parties. According to this theory, the producers of primary products as well as the manufacturing centre profited from a comparative advantage. However, the leaders of the primary produce countries, dubbed the theory of comparative advantage as an economic justification of colonialism. Thus, in the nationalist climate of early thirdworldism, planned industrial expansion was a means of economic decolonisation and the industry-centred strategy had pride of place. Reformist economists from the West produced a spate of blueprints for industrial catch-up of latecomers. Yet, the big push came from a Latin American think tank that elevated import substitution industrialisation (ISI) to top priority.

At the end of the 1940s the *United Nations Commissión Economica para America Latina* (CEPAL) seated in Santiago, had assembled a group of inspired economists working under the charismatic leadership of Raul Prebisch. With a keen eye on the international exchange relations they elaborated one of the most influential constructs of the pioneer period, to wit: the centre-periphery structure. CEPAL profiled itself as the herald of economic thirdworldism with ISI as mantra.[3] On the basis of wide ranging empirical studies the Cepalists demonstrated that the international terms of trade functioned in favour of the centre countries, and thus had been dis-advantageous to the periphery for a long time. Furthermore, the prices in the international commodity

markets were subject to cyclical fluctuations. While the prices of industrial products rarely fell, since powerful interest corporations of the centre guaranteed their stability, the unprotected prices of basic commodities regularly spiralled up and down. The substitution of industrial imports from the centre with the start-up of manufacturing industries in the periphery would redress this structural imbalance in the terms of trade. The institutional promotion of the ISI-canon by a prestigious think tank of the United Nations helped to broaden its radius of influence. The UN headquarters in New York absorbed CEPAL's guidelines and served as a transmission belt to the state managers and planning offices of the Third World at large. There, the strategy of ISI acquired the status of fetish whose magic would once and for all solve the predicament of economic underdevelopment. However, industry-centrism itself created social and economic disequilibria resulting from the neglect of agriculture and of the populations living in the rural areas. Consequently, the deterioration of the domestic terms of trade between industry and agriculture, with growing disparity between rural and urban income, caused a generalised rural exodus to the towns. A growing number of these urban nuclei mushroomed into megacities with tantamount social problems. The misdevelopment caused by the urban bias generated peasant protest. And the pressure for a more equitable balance between urban and rural development created sociopolitical agitation and theoretical questioning. The mounting waves of anger and frustration fostered the rise and blooming of discourses on alternatives.

III. The profilation of alternative trajectories

1. Maoïsm

The fascination with Mao Zedong's discovery and mobilisation of the peasants as potent actors and his strategy of walking on two legs, in his case industry and agriculture, stirred things up. Russian communism had started with a combination of Marxism and Leninism, in which the centralised leadership of the party top proceeded to coercive collectivisation of agriculture; with rapid expansion of basic industry on top of all priorities. In Stalin's view, the correct line of the revolution ought to proceed from an omnipotent top, steering and disciplining a submissive mass of comrades. Only the industrial proletariat was thought to have an interest in communism. Thus the backward peasants had to be transformed into salaried workers of big scale industrialised kolkhozes. Mao's revisionism consisted in a strategy more attuned to the context of China. There, like in the rest of the developing nations, the peasants formed the majority of the population. In Mao's view also the peasants could be mobilised and in his strategy the industrial proletariat did not get

the pivotal role. Mao mobilised the peasants and collectivised the villages in a radical way; with methods that defied every known theory. When his leap forward failed, he invited indoctrinated young intellectuals to join the fray of permanent revolution with the storming of party headquarters. In a second move Mao directed the young radicals to the countryside for work in rural animation. Where Soviet rulers from Stalin onward made strenuous efforts to transfer rural population from the countryside to the city and from agriculture to industry, the Chinese strategy consisted in keeping the rural population in the collectivised villages. Its rural bias pushed millions of urban residents to the countryside. This demographic pattern was unique to Mao's China.

With messianic zeal and plain slogans empowered with Chinese metaphors, he promised to slay the dragon of the bureaucratic command structure and to avert social dualism between towns and villages. His ambition was the promotion and the extension of development to the most remote corners of the land. Mao's promethean concept, in which ideas and motivations more than material interests inspired human action, made him proclaim that: *"by the combined effort of mind and will, even poor peasants were capable to move mountains"*. Driven by revolutionary passion, the idolised helmsman embarked upon too much too fast. The material results of the turbulent mobilisation campaigns were less spectacular than the expectations aroused by his charisma. Before he died, his revolution was burnt out and in the road to normalcy, the icon disappeared from the walls. His successors were pragmatists who opted for a post-revolutionary project of export-oriented industrialisation in combination with a change of regime towards market socialism.

In spite of several failures, maoïsm had given birth to a novel catch-up strategy in the biggest developing nation on earth. There, hundreds of millions in the rural areas were moved by Mao's messianism and anti-elitism. The strategy elicited the participation of the masses and rested on a minimum of institutional intermediation by the party bureaucracy. In the 1960s the shockwave of maoïsm fascinated the progressive intellectuals of the West, and more significant still, developmentism took a turn with more emphasis on rural development. In the periphery, guerilleros and revolutionary movements were inspired by the strategy of the Chinese idol. Online with experiments in Vietnam, they transferred their basic activity from the urban centres to the potential zones of social rebellion in the rural areas.

2. *The discourse on dependencia*

In the 1960s the military juntas of Latin America swept aside the populist regimes and their socially progressive platforms. The new rulers opted for

a conservative line in sociopolitics and for insertion of their economies in the international industrial network. In fact, they were paving a domestic threshold for the forthcoming wave of globalisation. In reaction to this break with national self-reliance embodied in the ISI-strategy of CEPAL, a group of social scientists vehemently denounced the resumed dependence on the industrial centres of the West. The re-insertion in the transnational circuit was clamoured to be the surest road to asymmetric exchange relations and thus to misdevelopment. On the basis of a new construct by the name of *dependencia* they thematised that the voluntary association of their national bourgeoisie with the multinational firms would lead to a damaging loss of control over domestic initiatives and projects. This new type of *dependencia* would cripple the national initiatives of expansion because the external growth impulses were operational derivatives of global strategies elaborated in the headquarters of multinational firms. The most radical *dependentistas* stood for a de-linking of their economies from the capitalist centre. And with characteristic Latin verve they clamoured for a more self-reliant model of development, politically shepherded by a socialist regime. The calls for de-linking and socialism echoed persistently in intellectual and leftist political constituencies, but it had not a broad enough social base in support of the desired switch of regime. For the military hardliners all this intellectual effervescence was excessive and the most vocal *dependentistas* were forced into exile.

At the time when the dependency theorists published their treatises, a North American sociologist of the new left, André Gunder Frank, was working in the field. He was fascinated by *dependencia's* most radical theses and decided to spread his own variant to a wider audience, under the label *"the development of underdevelopment"*.[4] His thesis was simple and iconoclastic: reformist developmentism *creates and maintains* underdevelopment. The new left of North America and Europe sloganeered Frank's reformulation into an ideological template. Rebellious youth and progressive intellectuals who became frustrated by the neo-imperialist tendencies and by the militarisation of thinking in the leading academic and policy making circles of the US, were in need of a critical stance. Frank's reformulation of the dependency thesis, in cross-fertilisation with neomarxist treatises on imperialism, hammered the idea online that the domination of the West's industrial centre generated a process of 'increasing underdevelopment' in the dependent and thus subordinated periphery. Given the social sterility and economic satellite status of the economic establishment in the periphery, its *Lumpenbourgeoisie* was reviled and castigated to be noting more than a greedy collaborator with the imperialists in the exploitation of the masses.

3. The neomarxist discourse on the world system

In 1974 Immanual Wallerstein published his pioneering book *The Modern World System*, followed by a second volume in 1980. His thesis would become a trendsetter for neomarxist thematisations on global governance. In the view of Wallerstein, "the texture" of the emerging world system constitutes the only pertinent unit of analysis. Thus, his focus of study is fixed on the structuring and normative effects of the relational web at the global level. Wallerstein claims that from the sixteenth century on the commercial and financial markets have connected the different parts of the world into a system of "unequal" exchange relations. With broad brushes he profiles a comparative sociology of empires and of their economies from a global and systemic perspective. His focus is fixed on the network of rule giving and governance. The system of exploitative relations between core and periphery is sustained by the power of the centre states. They not only manipulate the commercial and financial exchanges but also the transfer of technology in order to maintain their supremacy. These structural constraints preclude the periphery from pursuing an autonomous path of development. The centre protects its own markets and imposes a policy of free trade on the periphery. Its aim is to "perpetuate" the periphery into a subordinate place in the global network. By this way the dominant system can reproduce itself in the future.

Wallerstein's focus on the global web is a pertinent vantage point, but his exclusive emphasis on the relational links between centre and periphery loses sight of the internal development capacity and the local particularities of the different trajectories. With the neglect of historical and geographical differentiation, the neomarxists fall in the same trap of contexless and universalistic theorising as had been the case of the modernisation school. The pitfalls of such an approach are that in the broadly brushed strokes on the predatory nature of the capitalist centre, the rich variety of the different cases of development is lost. Moreover, the picture is highly skewed and ideologically biased. The neomarxist canon provided the new left with radical critique of the imperialist politics in Vietnam and elsewhere. But, in their biased schemes of the world system, the closely-knit network of the Soviet Union with its satellites, replete with dominance and unequal exchange, was left out of the picture. Notwithstanding its shortcomings, Wallerstein's world system was a theoretical primer on "global governance".

4. The moral base of development

In our bird's eye survey on alternative views we like to mention the contribution of the churches and of religiously inspired lay people. With world-

wide networks extending to the local level and animated by a spate of theologians, lay scholars, institution builders and field workers, the churches have been very active and influential in theory and in practice. The ecumenical think tank *"Economie et Humanisme"* founded by father Louis Lebret in 1950, with seat in Paris and with institutional spin-offs in Latin America and Africa, merits the label of pioneer. The name of the centre epitomises its doctrine and guidelines for policy. The use of the term *humanisme*, signifies that in the institution's view, development is a comprehensive project in which social, cultural and political aspects and not only considerations of material welfare are important issues.

In the 1960s the Catholic church had sensed the signs of the time and proceeded to an *aggiornamento* of doctrine and of pastoral work. According to the new line of thought, the church viewed the developing nations not only as promising lands of missionary activity but also as partners for development. After hot theological dispute and ideological controversy between conservatives and progressive activists, the Catholic church published its doctrine on *Justitia et Pax*. The guidelines emphasise social emancipation, community development and offer hints for the care of marginalised groups in society. In a minimum of time its canon on "integral" development unfolded in multiple institutions. In Brazil, an impressive network of *communidades ecclesial de base* (CEB) was launched for alphabetisation, for agrarian reform and more specifically for institution building at the local level.[5] In a couple of years similar movements and projects sprang up in many other countries. These initiatives at the grassroots level emphasised the role of local participation and conscientisation (*conscientização*) in order to avert the paternalistic practices and elitist tendencies of the past. The CEB-networks were oriented towards valorisation of the untapped and thus dormant potential of marginal groups. The pedagogy of conscientisation deliberately steered away from the paternalism of external experts who in many cases ignore indigenous practices and thus stifle local initiatives. In fact some conservative church leaders dubbed the most enthusiastic teams of rural animation to be christian maoïsts. They were also freedom fighters. Working in countries where human rights were regularly violated, the grassrooters as well as the hierarchy engaged in critical stances against the social exploitation practised by local caciques. Their initiatives in defence of human rights at the grassroots level were not to the taste of the oligarchy. Several projects that met with official opposition were not devoid from risk.

In a second phase the original CEB-scepticism regarding expert assistance faded. The legitimisation of expert consultancy by the upcoming *"theology of liberation"* gave the community movement more doctrinal depth

According to this new line of thought the pioneering phase was criticised as "naïve messianism". The advocates of the new approach argued that in order to influence official policies, the local and small-scale projects were in need of expertise and institutional shouldering at the macro-level of society. This requires the active co-operation of trade unions, political parties and think tanks of expertise. Furthermore, the voices of renewal held a brief for the diffusion of policies to larger publics by the press, radio and TV. They opined that without the diffusion of issues by the media and public pressure on the centres of power, a good deal of the energy deployed by the local people is spoiled. The question of the link between local work and advocacy at the top of society remained a matter of intense debate. In the second half of the 1980s, civil society and its active spearheads joined the moral base with novel vistas on the sociopolitics and ethics of development. And scholars with a bent for political philosophy and its moral agenda joined the chorus. The value-neutral methodologies of the social sciences are able to describe and explain what was, what is and can be. What *ought* to be, however, belongs to the domain of practical philosophy and ethics. By its very nature development implies that basic choices have to be made between final goals and the means to achieve them. Economics and sociology are apt to clarify the *instrumental* choices between ends and means; but the hierarchical ranking of preferences belongs to the normative domain of cultural values and ethics.

IV. The statist battle for NIEO

The oilshocks instigated by OPEC had given the impression that well organised states in possession of basic commodities indispensable for the West, were able to change to their advantage the exchange relations between centre and periphery. The moment seemed favourable for a major geopolitical push. Radical plans circulated for the replacement of the international markets for basic commodities by an intergovernmental organisation run by state officials. The function of this international planning office would be the administration of prices, of quantities produced and sold, and the regulation of a non-capitalist transfer of technology. For the industrial centre this vital issues gave rise to an ideological battle against the protagonists: the communist countries and the Third World. The major objective was geopolitical, to wit: a change in the power base of the world system. In the mid-1970s the global negotiations started. The heads of state and their diplomats engaged into bitter summit bickering for and against a new international economic order. The United Nations chaired the conferences,

more particularly its specialised ramifications, like UNCTAD and UNIDO. For NIEO politically negotiated price-fixings under the guidance of governments assembled in multilateral conferences would replace the market mechanism. In spite of some positive aspects, this internationally planned vision of development was anathema for the western countries. Taken by surprise the West had reluctantly accepted the oil shocks, but after a couple of years even OPEC lost its grip on the prices of crude oil. The power balance between the West and the rest was such that a generalisation of state-organised pricing had no chance of success. The western lobby rejected NIEO with the following arguments:

1. The project is one-sided: it places only economic and technical factors on the agenda; with the relative neglect of other aspects such as education, agriculture, food production, health and housing.
2. The NIEO approach is silent on the social equity problems in relation with the domestic income distribution of Third World countries. There, the very unequal income distribution is the result of misguided and unjust policies designed by the national elites. International administration of prices would not solve this problem. On the contrary especially the elite groups would profit by this regulation.

The controversial debates in the NIEO-summits had the merit to shift the attention of reformist policymakers and researchers to the issue of income distribution in the developing countries. Empirical findings demonstrated great inequalities due to domestic policies to the benefit of a relatively tiny group of privileged at the top of society. The socially biased policies had only a slight trickle-down effect to groups at the bottom. These findings had a shocking effect and development studies started up the new theme of "economic growth with equity". According to this school of thought only policy measures with an explicit trickle-down effect would benefit the poor. The new orientation was called the basic needs approach. Here, the emphasis was put on the supply of public goods at subsidised prices and raising the productivity of the poor in combination with social mobilisation. The controversy landed NIEO in a diplomatic deadlock. While the bickering dragged on, the traditional defenders of thirdworldism like the Soviet Union, China and the Comecon countries lessened the pressure. In the concluding phase of negotiation they paid only lipservice to the NIEO-approach; by then they preferred peaceful coexistence with the West. Thus isolated, the Group of 77 lost the battle and after this failure, state-centred thirdworldism went into rapid decline. By the end of the 1970s, both text and context of development changed. New actors like transnational firms, the Bretton Woods institutions and civil society entered the geopolitical scene. In the period that followed

state-promoted developmentism lost its spell, even in the Communist bloc. Western trendsetters of the new right launched the neoliberal canon with *marketisation and privatisation* as chapter and verse.

V. Market fundamentalism and widening gaps

The 1980s betokened an epochal trendbreak for the core countries. The oil-shocks had disrupted their long growth cycle, with in its wake stagflation and a stubborn upward track of structural unemployment. More active interventionism by the welfare states was of no avail and political support for state-promoted welfarism eroded. Influential public figures like Reagan and Thatcher spawned new ideas and suggested solutions inspired by an assertive new brand of rightwing liberalism. Government was declared to be the problem, not the solution. These ideas won the support of decision-makers in the private sector and they gradually influenced a growing number of political constituencies and agencies of society. According to the neoliberal creed the free market mechanism and the entrepreneurial spirit of private enterprise offered a better guarantee for economic growth and welfare than the bureaucracy of states. In the communist world also, the lukewarm support for NIEO had demonstrated that even there the belief in the magic of state-promoted development had past its peak. Furthermore, statistical research in international longterm trends indicated that the growth potential of the new industrial nations would spiral higher up than those of the mature economies in the centre. The statistical findings strengthened the impulse of the most dynamic firms to start up an industrial network in the "emerging" markets of Asia and Latin America. In this expansionary drive their domestic capital markets and banks actively shouldered the transnational corporations (TNCs).

A great number of developing countries were eager candidates for joint ventures in industrial enterprise with TNCs and the initial spurts of transnational growth were spectacular. Financial capital provided by western banks at low interest rates and direct investment by multinational firms streamed freely in. During the exuberant phase of the joint lending and spending spree, liberalism was hailed to be a universal panacea for development. In the first phase of this expansionary cycle, the conventional wisdom that bank credits must be repaid at a not too distant date, was almost forgotten. And when the core countries embarked upon a by monetarism inspired bridling of inflation, with sudden hikes towards higher interest rates to make capital dearer, the optimistic prospects of the debtors started to unravel. The tap of easy credit was turned off and their economy was unexpectedly

struck by capital squeeze causing a huge debt hangover. When some of the pivotal axes of the transnational network like Mexico and Brazil glided towards bankruptcy, the International Monetary Fund and the World Bank were called in. These twin institutions moved to the central position of major and forceful intermediary between creditors and debtors, with *conditional* aid to disentangle the financial disarray. The IMF elaborated schemes of rescheduling and management of debt, while the WB devised the since then famous structural adjustment programmes (SAP). In consultation with the banking community of Wall Street a comprehensive package of policies was put in action to correct the faulting debtors. In order to avert their insolvency, hard to swallow medicine was prescribed under the label of *Washington Consensus* (WC). Its major guidelines were the following:

1. Retrenchment of the state by a drastic liberalisation and deregulation of the economy in general; with emphasis on the privatisation of state-enterprises and public monopolies.
2. Reduction of public expenditure and stricter budget discipline.
3. Monetary policy online with IMF guidelines: exchange rate stability and bridling of the inflationary spiral by a tightening of money and credit.
4. Incentives in favour of domestic saving, combined with tax relief.
5. Vigorous promotion of exports in order to create an external surplus for repayment of international debt.

Many observers consented that the guidelines for macroeconomic adjustment were pertinent and relevant measures for countries with international debt faults. The *political* conditionality of assistance imposing the liberalisation, privatisation and retrenchment of the state, however, caused acute resentment in the leading circles of the debtor countries. This undermined the sacred rule of national self-determination in internal matters. Indeed, with the proselytising in favour of private sector solutions, the IMF and WB plunged deep in the ideological and political waters of sovereign states. Since the Washingtonian twins as intergovernmental institutions had no statutory capacity to do so, their political tutelage triggered hot debate and bitter controversy. In 1984, the national conference of Brazilian economists rejected the SAP-amalgam and castigated its guidelines as a damaging mismatch, as a bridle on development and a mousetrap to recession: *armadilha da recessaõ*.[6] The political leaders of most debtor countries took umbrage and also large sectors of public opinion criticised the unpopular measures, especially the subsidy cuts in education, public utilities and welfare programmes. The implementation of the SAP-measures had the effect that the poor were the hardest hit by its social ill effects. This aroused widespread indignation and the violent protest of the moral base. In due

course, the opposition from both poor and middle class groups, shouldered by the valuable advocacy of the moral base and its NGOs, induced the WB to amend the standard SAP-package with the insertion of social safety nets. Hemmed in from different sides, the leading staff of the WB took the moral concern of poverty alleviation and the urgent need of more social equity into account. In the first phase the design of SAP was improved by the introduction of project-based social funding to finance anti-poverty programmes. A following step of improvement followed with the streamlining and strengthening of the debtor's institutional capacity. And by the end of the 1980s the World Bank propagated the new theme of "good governance"; this is government sanctioned by technical surveillance and democratic control. The WB-staff constitutes by far the largest group of highly qualified economists in the world and the institution is with the IMF one of the most influential providers of *conditional* funds. From this power position, the Washingtonian twins never tired of preaching their cherished canon of adjustment. On account of their position, thematisation and policy guidelines were supported by institutional power. In due time their discourse on development became dominant.

By the end of 1980s, when the Soviet Union and its Comecon allies dropped out as ideological challengers, the western leaders and the providers of funds amplified the register of *political conditionality* for aid; with the promotion of democracy as prime mover. The progressive wing of WB's staff seized the opportunity and pushed for the publication of two influential reports: *Sub-Saharan Africa: from Crisis to Sustainable Growth* (1989) and *Governance and Development* (1992). In these publications the powerful donor-institution warned the African potentates that the time of the prebendial regimes, of mismanagement and geopolitical rent neared to its end. By the end of the 1980s many observers vilified the African state interchangeably as parasitical, predatory, prebendial or patrimonial. Some were able to instrumentalise the enforced democratisation; others were fraught with civil war and ethnic conflict. Marketisation and democratisation were canonised as the new bible. In WB-parlance this meant: more efficient and accountable government, more external surveillance and auditing of aid projects, empowerment of the people, the fostering of community participation, more influence of civil society and its NGOs. The populist overtones of this rhetoric suggest that some of its staff members had absorbed the vocabulary of the progressive scholars and NGO-advocates. The reformist-minded ones were engaged in a conceptual struggle with two other groups: the staunch believers in the WC-rules and the admirers of the Asiatic development state with toleration for its deficit in democracy and neglect of human rights. Tak-

en under fire by Joseph Stiglitz, the chief economist of the Bank, unflinching defence of the WC-ideology lost support and the institution had more attention for the emancipatory ideas of social scientists, civil society and NGOs.

In addition to the paradigm-shift towards liberalism in the centre, astounding changes outside the western world pushed development thematisation into culturalist avenues. The industrial deployment of Japan, with at its tails a spate of emergent south-east Asian tigers, propelled the role of culture centre stage. And the revival of Islam set religion in focus. The economic miracles of Asia challenged the modernity-monopoly of the West, while the assertivity of Islam questioned the thesis of secularisation. Adherents to the *samurai* tradition proclaimed that Japan's cultural and institutional inheritance was the major catalyst of success, not the market mechanism nor globalisation. In a more balanced way, however, authoritative thematisers like Michio Morishima and Yasasuke Murakami opined that the economic successes were due to the synergy between western technology and Japanese values.[7] Their thesis on Asian modernity fascinated business managers and experts in development all over the world. Some western observers were amazed that Japan had become a model for late developers. Others were shocked that the most prestigious management schools became converts of the Japanese style in business administration. The *"learn from Japan wave"* evolved into an intoxicating fad.

On the crest of this wave the Japanese developmental state (in which public authorities, business leaders and other social forces moulded a new Asian identity) was hailed as a more harmonious construct than western capitalism and individualism. In an upsurge of cultural pride against the inroads of globalisation, the mass media spread the slogan of *nihonjin-ron*, or the distinctiveness of Japan's modernity in worldview, in socio-political organisation and in work ethic.[8] According to the culturalist thesis, Confucianism, Buddhism and Taoism offer a more harmonious bundle of attitudes and motivations for sustainable development than western individualism, while they value the subordination of the individual to family and to collective interests. Their communitarian ethos emphasises the human concern with social order, balance and harmony. The Asian model was a state whose mission it is to pursue economic development with high rates of accumulation and upgrading industrialisation. In this project the key actors of the nation co-operate voluntarily and act unencumbered by untimely claims of social forces. The awakened tigers (Thailand, Malaysia and Indonesia) shared this culturalist élan and organised their own "development states" with a solid dose of local values, in tandem-combination with the industrial and financial networks of the global economy. These tandems, in fact un-

easy mixtures of authoritarian practices and invading global forces, proved to be unstable and full of risk. Critics called these tandems *"ersatz"* and in the financial crisis of 1997 the south-east Asian miracles turned sour. In the wake of the financial crash, the local globalisers suffered a loss of face and cultural nationalists mustered forces for the re-asiatisation of Asia.

In the lands of Islam the cultural divide with the West has widened. In the course of the last quarter century, the islamist upsurge got entangled in geopolitics. Islam is more than a religion, it provides a cultural frame of reference for collective identity, a symbol of self-assertion and historical roots of pride. The reformers aspire to a modernisation of Islam but radical islamists are engaged in a cultural *jihad* for the re-islamisation of society and politics. From the 1970s onward the *jihadists* put their governments under pressure to re-incorporate religion into lawmaking, into education and into all other sociocultural institutions. Radical islamists preach a return to the roots (*salafiya*); this is to the pristine purity of Islam. The salafists get financial and ideological backing from Saudi Arabia and its wahabiti inspired NGOs are very influential in the sociocultural positioning of the *umma* as a vital force. In Iran, the heartland of Shi'ism, the ayatollah's and the traditional lay elite perceived the cultural and economic inroads of the West as *gharbzadegi (gharb: west, zadegi:* poison) or westoxication.[9] There, the megalomaniac course of the Shah's westernisation set in motion a revolutionary backlash of the masses under the spiritual guidance of ayatollah Khomeini. After this revolution in the name of Allah, the lands of Islam from Indonesia to the frontiers of Central-Africa, live in a permanent state of religious and cultural ebullience; with in its wake a remarkable *indigenisation* of the discourse on development. The islamist inspired social scientists rail against the slavish copying of western models of thought that lead to *bedouinisation* of indigenous creativity. And, in the centres of Islamic learning like Cairo, Jeddah, Lahore and Qom, young scholars elaborate blueprints for development, reflecting their own worldview in combination with local potential and cultural context.[10] The special attention given to the *mustadafin* or the marginalised in society signals its social outlook. For the young generation uprooted by globalisation, the renewed loyalty to Islam is sensed to be a return to *asala*, this is to cultural authenticity.

In the western part of the world an *avant garde* of philosophers and artists earned fame with the downgrading of universalist *"isms"*, like marxism and modernism. With the postmodern outburst of disenchantment, the utopia of progress was debunked as a misleading grand narrative of modernity. In opposition to all the universalisms, the postmoderns create niches for particularism, for historical roots, for cultural revival, for identity politics,

for ethnic loyalties and for *"le droit à la différence"*. They create a space in which it is possible to think difference or otherness. The postmoderns welcome a multiplicity of viewpoints based on a variety of cultural aspirations and historical bearers of meaning. In the domain of development, the right to be different offers a philosophical underpinning against the standardisation and cultural uniformity of globalisation. Its thematisations resonate with postcolonial and feminist critiques of mainstream development thought as a highly gendered and ethnocentric construct that implicitly idealises a white, masculine perspective and denigrates anything associated with a feminine or non-western position. Postmodernism conveys a deep aversion to any global project or cosmopolitan claim on the sole basis of technology, science and reason. Adherents celebrate cultural relativism, also in ethics. Postmodern globalisers elicit tolerance for the particularism and authenticity of non-western "others". In open dialogue with the voices of otherness, they explore the dynamics of development in terms of history, institutions and culture.

VI. The marketisation of the centrally planned economies

The ideological watershed dismantling communism in Central Europe and the Soviet Union ended bipolarity and cleared the way for western defined alternatives. Soviet-style institutions were incapable to respond to the domestic demands and to the global competition of the late twentieth century. For the Russian elite, the West was both: the "alien other" and the foreign model. Gorbatchev's *perestroika* came too late with too little. The top-heavy bureaucracy had grown into moloch size and it was hard to see how it could be reformed without being destroyed altogether. When the regime imploded and the empire collapsed, the transformation of the Soviet system into liberal democracy with market-based economy, was an experiment that had never been attempted before. With the panache of neophytes, the new power elite freshly converted to liberalism, decided for a simultaneous overhaul of the political regime and of the planned economy. Enthralled by the reigning euphoria, local fervency stimulated in this by western libertarians, begot "shock therapy". This consisted in rapid liberalisation, deregulation, marketisation and privatisation of what had previously been planned and regulated by the political command structure. The West was willing to provide generous financial aid to Russia and its former satellites. This implied IMF-surveillance of the surgical operation. In Russia, the standard suppository was applied more gently than in developing nations, but the feelings of sovereignty and national pride were badly hurt. For its lack of vi-

sion and technical blunders the IMF got blistering critique from Harvard star Jeffrey Sachs, from Wall Street guru George Soros and from many other economists. After several misguided impulses it became clear to most observers that shock therapy delivered more shock than therapy. The average living standard declined in a great number of postcommunist republics. The widening gap between a small group of profiteers at the top and a disillusioned mass of nostalgic comrades, generated electoral support for the party of the *nomenkltura* under a new name. Other groups who opposed the liberal ideas and policies turned increasingly towards cultural nationalism and ethnicity as an identity of last resort. In the context of growing social inequality, the exclusive focus on the construction of liberal market economy cannot muster or inspire enough loyalty.[11] With the result that nationalism is called upon to decide issues of power.

Deng Xiaoping's transformation of the Chinese party-state into market socialism followed a different and at first sight more successful trajectory. The first wave of economic revitalisation started from below; when family farms were given the opportunity to take over plots of land from the collectivised villages. The peasants pushed for more privatisation and in its wake agricultural production spiralled up. The marketing of the surplus supplied the capital for the start-up of millions of small industries. Under pressure of these local entrepreneurs the authorities gradually decentralised and privatised a great number of big state industries as well. In a minimum of time, the privatised firms outpaced the state industries; due to entrepreneurship, discipline and sheer hard work. In fact, some privatised factories were dirty sweatshops. For the liberalisation of the export industry, *Special Economic Zones* (SEZ) were created in the coastal area of Guandong, Fujian, Shanghai and the Yangzi Delta. The opening of these maritime zones to the outside world functioned as a catalyst. The export boom of the SEZs is to a large extent due to the cross-fertilisation of its manufacturing base with the growth poles of south-east Asia. The Chinese business elite living in the diaspora (Hong Kong, Taiwan, Singapore, Thailand, Indonesia, Philippines, Malaysia) responded to the opening of the mainland, not only with voluminous flows of investment but also with valuable transfers of technology and management know-how. As a result of liberalisation and privatisation, economic growth spread unequally and the regional and social income gaps widened. Industrial and urban employment boomed, but the exploitation of women and migrant rurals intensified. Yet, the political leadership kept it all under firm control. In 1997, at its 15th congress, the party unfolded the chronology of future development with a slogan: in the first phase economic efficacy, in the second social justice and in the last democratisation. Adroitly

whipped and given enough leeway by pragmatists, the biggest tiger of Asia is leaping forward for almost a decade; with the speed of the highest growth rate in the world. For the inflow of foreign investment (multiplied by 2,5 after 1995) and financial capital quoted at the stock market (multiplied by 8 after 1995) the champion China now outstrips by far all other developing nations. With benign neglect of the urban squalor, of the social dislocation and of the increasing inequality, the ideologues of the regime and western sympathisers exult in triumphant discourses of Chinese exceptionalism. Neutral observers, however, perceive China as one of the strongest Asian development states; in which socialism is receding, with market capitalism in the ascendancy and the authoritarian leadership still firmly in charge.[12]

In spite of important differences, the basic change of the communist regimes also shows points of convergence. A common trend is that society asserts itself as separate from the state; a dichotomy with a widening distance between the two. Second, the rapid adoption of western consumption patterns is striking. Economic history informs us that rising stimuli of consumption have an almost irresistible power to distract people from social concerns. Marketisation and privatisation change the mindset of people as well as the norms of society. Economic objectives and values tend to become prevalent. With the transformation of the communist societies, the nature and scale of analysis changed. In the 1990s the perspective of development departed from its thirdworld-base and was remoulded by the new world ordering under way. Constrained by the rules of global governance, the options of development are narrowing into cultural variations of transnational capitalism. In the wake of the geopolitical supremacy and cultural assertiveness of the United States, the ideological streamlining of the social sciences (political theory, economics, business administration and the theorising of international relations) shifted to the American centre of gravity. The intellectual climate and the social imageries of the West, as well as the transnational elite of the rest, americanises.

VII. Actors and agendas of global governance

Globalisation is a cover concept for a heterogeneity of processes, with the worldwide linkages of trade, of transnational production and financial markets in the frontline. Transnational corporations and culture industries foster the spread of western consumption patterns and styles of organisation. More important still, they cultivate the worldwide development of economism in mind and society. Other catalysts are the planetary radiation of immaterial flows, like electronic communication, internet, music, TV-pro-

grammes and cultural imageries. Also rogue activities, such as organised crime and terrorism function now in global networks. The increasing globalisation of economic production, of capital movements and of foreign investment, spins cloth for scale aggrandisement of firms and for the ever-wider diffusion of innovation. The organised spread of new products, organisation patterns and management styles is a global transplant which entails novel opportunities. However, the transnationalisation has beside the sunny also a shadowy side, because it disrupts and replaces the indigenous fabric of society. The creative destruction disempowers the traditional craftsmen and impoverishes the poor, while they are less protected than before by the community values and networks. The asymmetric effects of economic globalisation offer considerable advantages for middle class and elite groups, but these benefits do not trickle down to the lower strata of society.

The worldwide diffusion of ideas and of moral sentiment is as crucial as the expanded flows of material goods, technology and management. The widening of the horizon opens new cultural perspectives and globalises the benchmark of ethics. The media coverage and the shift in the social concern for global crises in a humanitarian sense (to include famine, poverty, repression and natural disasters) have been fuelled by the moral base and its activists. Political philosophers reformulate Immanuel Kant's enlightenment principle that there is a morality embracing the whole of mankind, or a global ethics that transcends the national boundaries of states. Thus, globalisation is not only an ongoing process, it furthermore is a *project* promoted by an historical bloc of motivated and forceful actors. Transnational corporations, intergovernmental organisations (like the UN, WB, IMF and WTO), organised global civil society, new social movements, NGOs, and last but not in the least a handful of strong states, are engaged in competitive drive to put into shape the world they want. This kaleidoscopic ensemble of the different strategies lacks coherence and compatibility. Moreover, the extant texture of global governance has no centralised superstructure with consecrated sovereignty over or responsibility of the whole. Consequently, the global actors are obliged to engage in uncharted forms of public debate and in open bargaining. In a deliberative perspective, all parties should take the premises of the other actors into account for the building of a broad polity of shared rules and humane goals. Among the major promoters who shape the coming global order, we select the following: transnational corporations, globalised authority networks (UN, WB, IMF, WTO), novel forms of UN-legitimated international policing and military intervention by core nations, the increasing impact of worldwide mass communication, the assertive rise of civil society and its social movements.

The 63.000 transnational corporations (TNCs) with around 690.000 foreign affiliates are the most resourceful and influential among the non-state actors of globalisation. In 1999, the worldwide sales of the foreign affiliates amounted to 14.000 billion dollars. This amount equals twice the value of world exports. In the coming years the local production and sales of foreign affiliates will surpass international trade in a still higher degree, since globalisation prioritises the transnationalisation of production as the favourite conqueror of local markets. With the flourishing of big firms, material interests enter in conflict with ideology, since the free market mechanism is gradually disempowered by the oligopoly of giant trusts. Around 78% of the TNCs have their headquarter in the US, EU and Japan; with 75% of world production, trade and investment taking place in the same triad. This explains why some analysts prefer the term triadisation above globalisation. The other one third is concentrated for 80% in ten of the most dynamic emerging markets. Black Africa and other unpromising backwaters are marginalised. The statistics illustrate clearly the economic dominance of the triad.

A significant side effect of globalisation is the flourishing of transborder mergers and acquisitions. This wave of transborder mergers creates an unprecedented *world market of firms*. The change of firm ownership offers ample opportunities to TNCs for global and regional restructuring of production networks and markets. In some sensitive consumer markets, the transfer of ownership and control from domestic to foreign hands, transcends the economic domain and touches the political and cultural realm. In industries like mass media, music and entertainment the dominance of foreign firms is often resisted, while it upsets national culture and identity. In sectors like pharmaceuticals, electronics, chemicals and food, fierce legal battles dress local consumer interests against TNC-policies, more particularly in the domains of intellectual property rights and commercial licences. Militants of the ant-globalisation movement fight transnationalisation; ignoring its positive aspects, they demonise the spearheading TNCs. In a less spectacular fashion, trade union leaders together with consumer associations prefer the conference table in order to bargain for harmonious rules of transnational trade, production and investment.

The liberalisation of financial markets resulted in system change; with the shift from bank intermediation (credit system) for capital formation to a mechanism in which the stock exchange plays the pivotal role. This had a far-reaching effect not only on corporate governance and financial speculation, but also on the position and influence of stakeholders. Recent experience illustrates that in a stock-exchange system, coupled with the neoliberal enterprise culture by which power is identified with ownership of capital,

stakeholders play second fiddle to shareholders. The strategy of firms for the maximalisation of capital or of shareholders value has absolute priority over other considerations. The maximalisation of shareholders value, in a context of liberalisation and worldwide deregulation of the financial markets, generated a spate of speculative bubbles. The scenario of boom and bust is everywhere the same: driven by irrational speculation, the financial boom spirals up, followed by sudden collapse which causes economic recession. The first financial bubble-crisis hit Japan in 1991; followed by Mexico in 1994; thereafter the south-east Asian tigers in July 1997, Russia in August 1998 and Brazil in January 1999. Half March 2000 the stock prices in Wall Street plummeted and by contagion a similar crash followed in European markets. The stockprices of blue chips and stars of the new economy (internet, telecommunication, electronics) dived deepest down. In today's system, speculative bubbles are the major fount of economic recessions. Thus, the stabilisation of the global economy requires more effective regulation of the excessive gyrations caused by financial speculation. For this the core nations, member of the G7-group are key power players. They have the clout and dispose over the required leverage in IMF, WB, OECD and the Bank of International Settlements to curb the purely speculative or short term "hot" capital movements. The core states however, prefer to intervene in other areas. This brings our analysis to the shifting role and position of the nation states.

Scholars of the political economy school presage the demise and eclipse of the nation state because its economic impact is increasingly undermined by the dynamics of global markets and TNC-power.[13] In fact, the situation is more complex and for casual onlookers it may appear a trifle baffling. Indeed, in the wake of decolonisation the nation state universally spread around the globe; but in a second move its power base is surrounded and narrowed by actors and institutions above and below the state level.

1. In the early postwar period a series of international institutions (United Nations, IMF, WB, Unesco, ILO) enter the international scene with a specific register of global governance. On account of misguided development with faulting debts, a great number of debtor nations are taken under financial and economic tutelage. Thus, the new form of global governance widens the divide between weak and strong states. The strong ones wield a majority of votes in IMF and WB who hold the tap of aid.
2. In order to shield themselves off from borderless market forces, several blocs of states voluntarily cohere in supranational organisations for economic co-operation: European Community, NAFTA, ASEAN and

MERCOSUR. And the twelve nations of Euroland decided to abandon the privilege of seigniorage in money matters and deterritorialised their currency and monetary policy.

3. The promotion of global human rights transcending the boundaries of nation states supports the development of a worldwide public sphere with more possibilities of representation and voice for people everywhere. However, this globalisation of political rights entails moral legitimation for international interference.
4. International relations enter a new phase of militarisation. Military clout and the disparity of economic resources stay decisive criteria in the hierarchy of power. And there is only one superpower left. According to the changing complexion of interests, the United States mobilise the UN and Nato *à la carte*; but in vital matters they go it alone.
5. With the end of bipolarity the geopolitical motivation for long-term development aid declined in favour of short-term relief and crisis monitoring.

In today's context, the classical notions of sovereignty and non-intervention suffered decline and the hold of nation states on economic matters slackened. But, when bipolarity ended, the core countries of the West got more leeway for global initiatives, some of which were inconceivable before. The advocates of absolute sovereignty and non-intervention lowered flags and were forced to yield to the higher valued right of intervention. We gradually glide into a novel structure of world society and politics, taken in charge by American-centred hegemony, coloured by the trilateral relations between Japanese, European and American power. Development aid and programmes in a social and humanitarian sense are in a growing proportion delegated to NGOs and other non-state actors. For the monitoring of global crises like civil war, genocide, repression of human rights, international terrorism and other forms of violence, the core powers of the West are inclined to intervene more freely across the world: in the Gulf, Bosnia, Sudan, Somalia and recently in Afghanistan. In the 1990s a US-led bloc of states started up wide-ranging interventions with UN-legitimation (requiring the acquiescence of Russia and China) to regulate political and military conflicts around the globe. Intervention became the norm; with a variety of means in proportion to the extent that western interests were involved. This practice wises up to the emergence of a geopolitical core in world society, claiming moral legitimacy for the management of new forms of repression and violence. *According to the mindset of today, the postcolonial period has ended.* Under American leadership, a group of core nations profile themselves as ultimate arbiter and as global manager. The rest of the world evaluates this assertiveness of undue unilateralism with growing distrust.

In this context, mass communication and transnational image building is vital. The media messages, with the conveyed political and moral contextualisation and legitimation of policies, play a more important role than the real happenings. New in today's governance is the growing influence of media coverage and response of civil society's activists on official policies. More than in the past, the western communication industries directly reach and affect public opinion. They have become the principal arena of exchange and representation in the political and ideological market. Mass communication reaches citizens instantaneously, without intermediation of parliaments and elected representatives. This process comes near to direct democracy between decision makers and public opinion. Media coverage and the societal responses of active groups have a greater impact on the "global" initiatives of states in comparison with local ones. And it is fascinating to see how media, public opinion and policy makers interact and influence each other in public.

The thesis that civil society, assisted by transborder NGO-networks, ambitions to recast the world polity of states, of intergovernmental organisations and of markets, reverberates as a refrain in current theorising. The idea of civil society and liberal individualism originated in eighteenth century political thought. The new ideology emphasised the individual's freedom of conscience against the then almost absolute powers of state and religion. The symbiosis of the intellectual youth rebellion in the 1960s and the ant-statism of neoliberalism in the 1980s, engendered a revival of civil society in the West and in Eastern Europe. In the new orthodoxy, civil society is hailed as the chivalry of global democracy. Political anthropologists question the ideological exportation to non-western societies. The rural communities of the developing nations function on different principles than our mass societies who are composed of discrete individuals detached from their communal environment. And, the narrowing of NGO-platforms to discursive and textual discourses, informed by western intellectuals and activists, earned sharp critique of indigenous community workers. A growing number shunted these imported ideological templates.

In the neoliberal climate, western donor agencies increasingly shifted their aid flows towards NGO-networks who were considered to represent the people. During the Cold War the donors of aid had created a niche of "geopolitical rent" for the political elite; the liberal aid strategy opened the NGO-handled tap of "democratic" rent. This rent is now flowing to the local leaders who become adepts of the transnational NGO-platforms. The worldwide flourishing of these networks went hand in hand with image-building; NGO-isation became the fetish of liberal development strategy. In the late

twentieth century around 30.000 civil associations sprang up. In this universe we first mention the stalwarts of the global market and its TNCs: business lobbies, professional associations, private think tanks and issue-foundations. The World Economic Forum (Davos) and the International Finance Institute, representing around thousand of the biggest TNCs, are among the most influential. Then come the civil groups and reformist NGOs whose activity is oriented towards the correction of flaws in the social system, yet leave its basic structures intact. A third series is more radical and ambitions to transform the social order.

In the initial phase of NGO-activity, the reformist agenda concentrated on poverty alleviation, relief work, organisation building, capacity training, local participation, environmental issues, gender problems and material welfare. In association with academic institutes, the NGOs became an appreciated partner of donor agencies in the implementation of local aid projects. The quality of management and the motivation of field workers impressed the donors and the media. And more sponsoring followed. The biggest NGOs dispose of more budget resources than some poor states. In the second phase, the programmes entered the ideological arena with a swathe of political issues: human rights, building citizenship, autonomisation of civil society, empowerment of people and democratisation. In this sensitive domains, with at times arbitrary intervention in the domestic affairs of other states or the siding up with questionable local allies, some NGOs went a bridge too far. In tragedies like Rwanda, Congo and other quagmires, some of the white knights of humanitarian relief lost virginity and innocence. Some human rights advocates and development oriented NGOs suffer from cultural illiteracy and are disparaged by local critics as secular missionaries of the West's ethical imperialism in a seductive new garb. Notwithstanding shortcomings, the worldwide deployment of a more humane approach to world development is positive and promissing. In today's context, where states are ideologically reluctant to intervene in the workings of the market, the NGOs are highly motivated promoters of humane and justice-based global governance. Their moral and political pressure on core institutions comes in supplement to the initial local-project approach.

The managers of transnational NGOs are now engaged in value-based advocacy, in the fuelling of the governance debate with political correct ideas and agenda-setting in the international fora: United Nations, WTO, IMF, WB and the G8-meetings. These ambassadors of values and norms express a growing commitment to the formation of a global ethical network. In this quality they ambition to be more than a pipeline and profile themselves as promoters of a moral, non-market approach for development and

democracy. The transnational NGOs exert an unquestionable impact on the other actors of global governance. However, since the most resourceful NGO-networks are rooted in Washington and other capitals of northern core countries, official leaders and also indigenous NGOs from southern countries argue that the current asymmetry of NGO-hierarchy, magnifies the already powerfully represented worldviews of the North in the international fora. Since the top managers of the transnational advocacy-network are predominantly western, Judeo-Christian, urban-based and university-educated professionals, their universal claims are contested by non-western moral voices.[14] With the NGO- channelling of funds, the sources of finance have changed; the instrumentalisation of foreign aid has not. The local people and the poor still feel they are excluded from the decision making that affects them. Community workers and indigenous NGOs ask more voice for themselves, with representation at the top for their ideas and aspirations. The most active want a break with the top-down system of governance and work for a bottom-up approach: from the grassroots to the corridors of power. The current struggle, waged between northern and southern NGOs, concerns local ownership of projects. The assistance of transnational NGOs is welcome on the condition that their actors are accountable to the indigenous communities and not only to their organisation.

In the second half of the 1990s the general clamour for democracy, transparancy and accountability focused the attention on the most exposed intergovernmental institutions. In the front-page news on the tragedies in Rwanda, Congo, Sudan, Somalia and Bosnia, the failures of the United Nations were denunciated. The policy blunders of the IMF and WB in the handling of the financial crises in Asia, Mexico, Russia and Brazil, put these two powerful institutions under fire. A critical chorus of officials, scholars and activists of civil society accused the two of being unduly dogmatic, secretive, unaccountable and inefficient. In *Wall Street Journal* of 18 January 1999, Harvard pundit Jeffrey Sachs who is also a celebrated neoliberal economist, opened the critiques with a blast: *"The debt of the poorest countries should be cancelled and the IMF sent home"*. This catch cry epitomised the opinion of reformists all over the world.

In Washington this call was heard and the twins organised a series of internal brainstorms. Under the enlightened leadership of President James Wolfensohn, the WB-staff in consultation with academic study groups and advocacy managers of civil society, inaugurated a series of seminars in search of a more promising development policy. After this exercise in soul seeking, the prestigious institution published a series of texts revealing the new orientation. In *Partnerships for Development* (2001) the key principles

are clearly outlined: comprehensive development, sharpening the attack on poverty, country ownership of development projects, more representation and voice for the grassroots workers of local communities, partnership instead of tutelage. These principles announce a clear break with the former top-down system in favour of a bottom-up approach. The report insists on the challenge of inclusion. This requires that southern governments and local people are in the driver's seat; with government at the macro-level and community leaders at the grassroots. Many donor-driven projects of the past failed because they were not owned by "local stakeholders". Being kept out of the play they did not feel responsible for donor-driven supposotories. Local people are more familiar with the *modus operandi* of indigenous networks: kinship, gender, age, ethnicity, and religion. They are by custom prepared to mediate between the individual and society. And are in the thick of the socially embedded relationships that underpin the functioning of both: the local power relations and markets. The Bank's emphasis on the bottom-up approach matured in the course of its controversy with the NGO-universe. Besides the activities of local projects and advocacy at the top, the NGO-networks of northern countries also extract and use information of the grassroots to strengthen their own position as interlocutors with states, TNCs and intergovernmental institutions. According to the new agenda, the Bank intends to reach the grassroots level directly for information and guidance. The local communities, more than NGOs, have intimate knowledge of poverty and of indigenous aspirations. In contact with these new partners the Bank's staff expects to get insight how the day-to-day problems evolve at the local level. However, after decades of rhetoric on poverty the staff should know that neoliberal globalisation increases social inequality all over the world and multiplies the already one billion poor people in the developing countries. If the Bank aspires to redeem itself, there is no other way than to deploy with more vigour its institutional power for more equitable norms and rules at the global level.

Since respect for values forms a cornerstone of global governance it is encouraging that the United Nations started up a special commission on the subject, and in co-operation with UNESCO works on *Our Creative Diversity*.

Conclusions

Our story informs us how influential thematisers and policy makers broadened the perspective of development by adding one dimension after another: politics, culture, ethics, religion, ecology. With the end of bipolar rivalry and the shift toward global governance under leadership from the West, the promotion of human rights and democracy were put on the agenda. However, the western urge for human rights and democratisation only focuses on the domestic situation of states. It leaves out of the picture the texture of global governance which continues to suffer from inequality and democratic deficit. The majority of the world population has been incorporated within global economic and social relations, but they are excluded from adequate representation and voice in the international rule-making machinery. Since a decade the internationally organised actors of civil society function as pressure-groups on states and intergovernmental organisations. In the first week of February 2002, they confronted public opinion in a direct way. In Porto Alegre 45.000 campaigners for a better world were assembled for a five day teach-in on justice-based rules for global governance and more attention for non-western ideas and aspirations in international law.

In the first twenty five years after 1945 the world was moved by emancipatory ideas and reformist policy-making. Then came a turn of the tide towards a more conservative approach. The flags of development were lowered and globalisation narrowed the choice of alternatives. Local wars, ethnic strife and new forms of global violence illustrate the fragility of our time. The core states of the West hardened their position. And, in reaction to the new forms of violence they put national security and the military defence of their geopolitical interests on top of the agenda. However, the history of the present has shown that even the most ingenious of protective shields cannot guarantee safety and stability if global governance is felt by the majority, to be a factor of social inequality and exclusion. New and militant actors are on the stage who keep the saga of development alive.

Notes

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*Demetrius Yannelis**

LONG-RUN DYNAMICS IN A DISEQUILIBRIUM MACRO MODEL

Introduction

Macroeconomic disequilibrium theory is a much developed field after the seminal works of Glower (1965), Patinkin (1965) and Leijonhufvud (1968). Recent works in the area have attempted either to give a choice theoretic approach in disequilibrium models (see Barro and Grossman (1971), (1976), Mueullbauer and Fortes (1978) and Neary and Stiglitz (1983)) or to determine the role of monetary and fiscal policy under different disequilibrium states (see Barro and Grossman (1976), Malinvaud (1977) and Hool (1980)).

However, all of the above works examine the short run behaviour of static models in which prices and wages are temporarily fixed and trading takes place through quantity adjustments and rationing. Dynamic analysis of fix price models has been a rather developing field in the late 70's. A pioneer in this area was Hansen (1951), whose work has been extended in several directions by Solow and Stiglitz (1968) and Korliras (1975). Other important developments in the field include Bohm (1978) and Honkapohja (1979). All of these works are concerned with the short run dynamics of disequilibrium models in which the capital stock is constant and the rate of change of real wages and real money balances or employment provide the necessary adjustments in the economy. Only very recently have economists started to explore the long-run dynamics of disequilibrium models. Malinvaud (1980), Ito (1980), Picard (1983) and Azam (1983) have given new interest in long run models with disequilibrium in the goods market or the labour market or both.

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Disequilibrium growth models are not actually new. Some early attempts were made by Hahn (1960), Williamson (1970) and Newbery and Atkinson (1972). Furthermore, the so-called Keynes-Wicksell models as developed mainly by Rose (1966) and Stein (1966), were in fact disequilibrium growth models which permitted excess supply or demand in the goods or labour market to persist even in a long-run steady state (see also Nagatani (1969)). However, unemployment in these models was not due to deficient demand, but due to the existence of some sort of Phillips curve equation (see Rose (1966)). Furthermore, such Keynesian concepts as effective demands and spillover effects were not taken into account and these authors did not examine the stability of all possible long run disequilibrium steady states. The same comments also apply to the model by Ito (1980). Ito, using the neoclassical growth model with different propensities to save, shows that his model generates disequilibrium paths if the wage rate adjusts slowly in disequilibrium. In this case the only long-run steady state that he gets is that of full employment equilibrium without inflation or deflation.

Malinvaud (1980) on the other hand is concerned with an economy in a stationary state in which the investment function is linear and the technology is of the fixed coefficients type. Some other assumptions make his model restrictive and in some way unrealistic; one of them is that the real wage is constant in the region of Keynesian unemployment. Picard's (1983) paper is much in the spirit of Malinvaud's with a fixed coefficients technology and Azam (1983) studies the dynamics of real money balances and capital under the undesirable assumption that prices and wages are fixed even in the long run.

In view of the above comments, we present a model with the following features. Effective demands and supplies as well as spillover effects are explicitly taken into account. Prices and wages adjust according to effective excess demands and capital accumulation is determined either from savings and/or investment decisions depending on the particular disequilibrium region. In the long run, the steady state of full employment is one of four possibilities, the other three being the steady state with Keynesian unemployment, the steady state with repressed inflation and the steady state with zero effective excess demands. The possibility of having a steady state with Classical unemployment is ruled out. The stability properties of the different steady states are also examined taking into account the role of the spillover effects and the adjustment coefficients in the labour and output markets.

The model turns out to be a combination of the Keynes-Wicksell growth models and the recent disequilibriun macro models.

I. The model

We consider an economy with a production sector and a consumption sector. Output Y can be produced by a constant returns to scale production function having all the usual properties. So we can write $Y = F(K,L)$ where K and L are the levels of capital and labour respectively. In the case where firms can hire as much labour as they want and can supply as much output as they want, their notional demands for labour and capital are given by the usual first order conditions of profit maximization and are functions of their respective factor prices. Such a maximization procedure in the case of firms and households is given in Barro and Grossman (1976, Ch. 3) and we will only state here the main assumptions used.

We are going to postulate an investment function for the firms which depends negatively on the.rental rate of capital. Then, by capital labour substitution, investment is positively related to the real wage $w \equiv \frac{W}{P}$, where W is the nominal wage and P is the price of output. Furthermore investment is assumed to depend negatively on the current level of capital. This can be justified by assuming that a capital stock adjustment equation governs the rate of investment demand. Hence, we may write an investment function $I = I(w,K)$ with $I_w > 0$, $I_K < 0$. For simplicity, we assume that the monetary authorities adjust the money supply to maintain a constant rate of interest- which therefore, does not influence the rate of investment (see also Newbery and Atkinson (1972). The reason for this assumption is that we want at the present stage to avoid an explicit introduction of the monetary sector. Furthermore, we assume that both firms and households hold static price expectations so that nominal and real rates of return are equal.

As far as the consumption sector if concerned, we assume that consumption demand C is a positive function of the real wage w. Consumers can accumulate wealth in the form of capital, so that consumption is a positive function of capital. For the sake of simplicity, we assume that there is no real balance effect. Therefore, we can write the consumption function $C = C(w,K)$ with $C_w > 0$ and $C_K > 0$. Consumption units, on the other hand, supply their labour L^S inelastically.[1]

Since trade takes place at non-equilibrium prices and prices may not adjust fast enough to clear the markets at any moment of time, the above specified investment and consumption demands will not be realized. These demands, which we will call notional according to Glower (1965), are relevant only if markets clear at all times. Otherwise, effective demands, which are defined in the next section, will be those which the two sectors formulate in the absence of market clearing.

II. Producer and consumer behaviour in disequilibrium

In this section we examine the behaviour of the production and consumption sectors in disequilibrium. More details can be found in Barro and Grossman (1976) or Bohm (1978). When prices do not move fast enough to clear the markets, consumers and producers will be frustrated in their plans. If the production sector is unable to sell all of its planned output because it is constrained by the existing level of aggregate demand $Y^d = C + I$, its effective demand for labour will be a function of the demand determined level of rationing in the output market; i.e., $\bar{L}^d = \bar{L}^d(Y^d)$. We assume that $\bar{L}^d_{Y^d} > 0$, so that increases in aggregate demand have a positive effect on employment. On the other hand, the rationing of the production sector in the output market will affect investment decisions. Certainly, no one would be willing to invest more when he faces an excess supply of his output. Therefore, the investment must have as an argument the constraint that firms face in the goods market. This constraint is best represented by the existing level of consumption demand C. Hence, we may write the effective investment function $\bar{I} = \bar{I}(w,K,C)$ with $\bar{I}_C > 0$, meaning that increases in demand for output have a positive effect on investment.[2] If the production sector cannot hire as much labour as it wants, its effective output supply will be affected. The production function in this case is $\bar{Y} = \bar{F}(K,L^S)$ where $L^S < L^d$.

Consumers on the other hand react somehow symmetrically in disequilibrium situations. If they cannot sell all of their planned or notional labour supply, their effective consumption demand will contain as an argument the demand constraint that consumers face in the labour market: $\bar{C} = \bar{C}(w,K,L^d)$. We assume that $\bar{C}_L d > 0$ which indicates that if employment increases, consumption will increase. If consumers cannot buy as much output as they want, their supply of labour will not be affected as it is supplied inelastically. Therefore, the notional labour supply coincides with the effective one. We can now proceed by defining the three well-known disequilibrium states of Repressed Inflation (RI) Keynesian Unemployment (K) and Classical Unemployment (C).

(a) Repressed inflation

In this region there is excess demand for both output and labour so that both producers and consumers' demands are rationed. Producers face the constraint L^S in the labour market, so that their effective supply is given by the production function $\bar{Y}^S = \bar{F}(K,L^S)$. Consumers on the other hand face the constraint $\bar{Y}^S$ in the goods market, which, however, does not affect their labour supply function. Furthermore, consumption and investment deci-

sions are unaffected and given by $C = C(w,K)$ and $I = I(w,K)$ respectively.

Dividing all of the above functions by L^S we get the following functions.

$$\bar{y}^S = \bar{f}(k), \bar{f}_k > 0 \tag{1}$$

$$\bar{\ell}^S = 1 \tag{2}$$

$$c = c(w,k),\ c_w > 0,\ c_k > 0 \tag{3}$$

$$i = i(w,k),\ i_w > 0,\ i_k < 0 \tag{4}$$

where $\bar{y}^S \equiv \frac{\bar{Y}^S}{L^S}, c \equiv \frac{C}{L^S}, i \equiv \frac{I}{L^S}, k \equiv \frac{K}{L^S}$

Assuming that L^S is equal to the current population level N, equations (1) to (4) describe the decisions of both sectors in per capita terms. It will be clear from the specification of the effective supply function (and the effective demand functions which will be defined below) that we follow the procedure suggested by Leijonhufvud (1968) which was later on used by Grossman (1971), Veendorp (1975) and Barro and Grossman (1976). According to it, actual transactions and effective demands and supplies are determined simultaneously through an instantaneous interaction process, before any change in prices and wages. Excess demands in both markets in per capita terms are then defined as $y^d - \bar{y}^S$ and $\bar{\ell}^d - \bar{\ell}^S$ where $y^d > \bar{y}^S$ and $\bar{\ell}^d > \bar{\ell}^S$.

(b) Keynesian unemployment

Consumers are rationed in the labour market and producers are rationed in the goods market. Therefore, consumption decisions are given by $\bar{C} = \bar{C}(w,K,\bar{L}^d)$ where $\bar{L}^d = \bar{L}^d(\bar{Y}^d)$. However, the constraint that producers face in the goods market affects their investment decisions so that their effective investment function is $\bar{I} = \bar{I}(w,K,\bar{C})$. The excess supplies in both markets are defined as $Y^S - \bar{Y}^d$ and $L^S - \bar{L}^d$ where $Y^S = F(K,L^d)$, and $\bar{Y}^d \equiv \bar{C} + \bar{I}$.

Dividing all of these functions by L^S we get the following per capita functions:

$$\bar{c} = \bar{c}(w,k,\bar{\ell}^d),\ \bar{c}_w > 0, \bar{c}_k > 0, \bar{c}_{\ell^d} > 0 \tag{5}$$

$$\bar{i} = \bar{i}(w,k,\bar{c}),\ \bar{i}_w > 0, \bar{i}_k > 0, \bar{i}_c > 0 \tag{6}$$

$$\ell^S \equiv \frac{L^S}{\bar{L}^S} = 1 \tag{7}$$

$$\bar{\ell}^d = \bar{\ell}^d(\bar{y}^d), \bar{\ell}^d_{\bar{y}^d} > 0 \tag{8}$$

$$y^S = f(k, \ell^d), f_k > 0, f_\ell d > 0 \tag{9}$$

where $\ell^d \equiv \frac{L^d(w)}{\bar{L}^S}$ and $\ell^d_w < 0$

The excess supply functions in per capita terms are defined as $y^S - \bar{y}^d$ and $\ell^S - \bar{\ell}^d$ where $y^S > \bar{y}^d$ and $\ell^S > \bar{\ell}^d$

(c) Classical unemployment

Producers are not constrained at all and their decisions are given by the production function $y^S = f(k, \ell^d)$ and the per capita investment function $i = i(w,k)$. Consumers on the other hand are constrained in both markets and therefore their demand for output is affected as follows:

$\bar{c} = \bar{c}(w,k,\ell^d)$ with $\bar{c}_k > 0, \bar{c}_{\ell^d} > 0$. The excess demand in the goods market and the excess supply in the labour market in per capita terms are defined as: $\bar{c} + i - y^S$ and $\ell^S - \ell^d$ where $\bar{c} + i > y^S$ and $\ell^S > \ell^d$.

We not state the following assumptions which will be needed throughout this paper.

A.1 $c_k + i_k - f_k < 0$

A.2 $0 < \bar{c}_{\ell^d} < f_{\ell^d}$

The first assumption implies that increases in k affect the production and investment decisions more than consumption demand. It also shows that the supply side is affected more than the demand side when k increases.[3] The second assumption guarantees a demand multiplier greater than unity (see also Barro and Grossman (1976)). Of course there is no supply multiplier since the supply of labour is constant.

We will now specify in the (w,k) space, the three different regions of (RI), (K) and (C). First we find the boundaries of the three regions (see also Barro and Grossman (1976) or Bohm (1978)).

(i) Boundary between (K) and (RI).

There is effective market clearing in both markets:

$c(w,k) + i(w,k) = \bar{f}(k)$ and $\ell^S = \bar{\ell}^d < \ell^d$.

Therefore, the slope of this boundary is:

$$\frac{dw}{dk} = \frac{c_k + i_k - \bar{f}_k}{c_w + i_w} > 0$$

(ii) Boundary between (K) and (C).
There is rationing of consumers in the labour market:
$\bar{c}\,(w,k,\ell^d) + i(w,k) = f(k,\ell^d)$ and $\ell^d < \ell^S$.
The slope of this boundary is given by:

$$\frac{dw}{dk} = -\frac{c_k + i_k - \bar{f}_k}{\bar{c}_w + i_w + \ell^d_w(\bar{c}_{\ell^d} - f_{\ell^d})} > 0$$

which is smaller than the slope of the boundary between (K) and (RI).[4]

(iii) Boundary between (C) and (RI).
There is rationing of the consumers in the goods market so that $\ell^S = \ell^d$ (w) and $c+i>y^S$
Since labour is supplied inelastically this boundary is a horizontal line.

We can now divide the (w,k) space in three regions represented in Figure 1. The point of intersection of the three lines (W) is the full employment Walrasian equilibrium. The location and slopes of the three boundaries can be justified as follows. Consider first a point on the boundary between (C) and (K). At such a point the output market is in equilibrium. If we increase the wage rate keeping k constant, there will be excess demand in the output market.

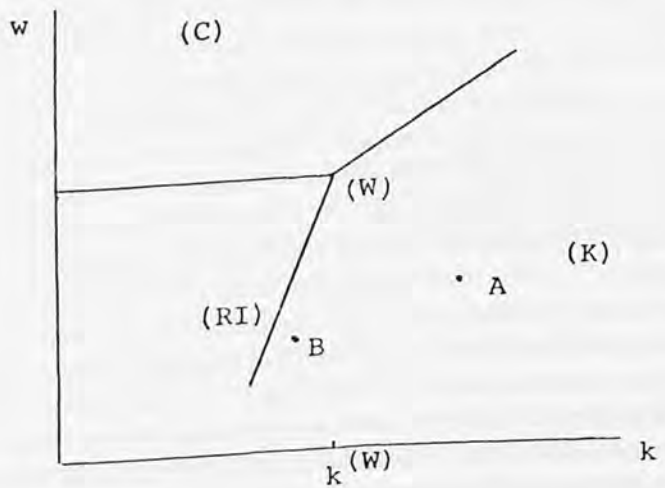

Figure 1

To restore equilibrium we must increase the supply and thus k. Hence, the slope of this boundary is positive and above it there is excess demand in the goods market and below it there is excess supply. Similarly consider a point on the boundary between (K) and (RI). A point on this curve represents equilibrium in both markets since effective excess demands are zero. Making the same experiment as before we can see that this boundary has also a positive slope. Finally, consider a point on the boundary between (C) and (RI). At such a point there is equilibrium in the labour market. A fall in w keeping k constant, creates excess demand for labour since the demand for labour will increase. To restore equilibrium in the labour market we have to reduce the labour demand (since the labour supply cannot be affected) and hence increase the wage rate. Therefore, this boundary is a horizontal line. Below this boundary there is excess demand for labour, and above it there is excess supply. Thus Figure 1 indicates that Keynesian Unemployment occurs at relatively high levels of k relative to the region of Repressed Inflation. This demonstrates the fact that Keynesian Unemployment may result from high levels of capital accumulation or from deficient demand or both. Malinvaud (1982) also considers a high capital intensity as a cause of Keynesian Unemployment. Specifically, we can assume that at $k^{(w)}$ firms have invested the "right" amount but there is deficient demand. To the right of $k^{(w)}$, however, there is more capital accumulation than is appropriate for the existing level of aggregate demand. To the left of k, firms may have underinvested, but there is enough deficient demand so that their output can not be sold.

Repressed Inflation, on the other hand, occurs for exactly the opposite reasons; i.e., there is a high demand for output and a low capital accumulation. The location of the three boundaries can be justified as follows. Consider a point like A on Figure 1 and keep increasing the wage rate by keeping k constant. As w increases, the excess supply in the goods market will be falling, so that eventually there will be excess demand in this market. Thus we reach the (C) region. Note that in this case the increase in the demand for goods does not have any significant effect on the labour market which remains in excess supply. The reason for this is that the unemployment in the (K) region to the right of $k^{(w)}$, is the result of the reluctance of firms to employ more labour due to overproduction and not so much to deficient demand. Hence, the increased demand has only a negligible effect on employment. Consider now point B where unemployment is mainly due to deficient demand and make the same experiment. The increase in w, eventually creates excess demand in the goods market, which in turn encourages producers to increase their production and hence their demand for labour. Such an increase creates for a while excess demand in the labour market and thus the region of (RI) is

reached. However, this can be only temporary, as further increases in the real wage eventually decrease labour demand and thus unemployment results. At this stage the (C) region is reached.

III. Growth with repressed inflation

Solow and Stiglitz (1968) have analyzed the short-run dynamics of a disequilibrium macro model. Although they do not work with effective demands and supplies our adjustments in nominal wages and prices follow theirs closely. However, the adjustments in the real wage and the capital-labour ratio, which will constitute the two state variables of our system, depend on the prevailing market conditions or the particular disequilibrium state. We will first analyse the Repressed Inflation region. The nominal wage rate adjusts according to the per capita excess demand in the labour market in this region and is also influenced by changes in the price level (see also Solow and Stiglitz (1968)):

$$\frac{\dot{W}}{W} = \lambda_W (l^d - l^S) + b\frac{\dot{P}}{P} \qquad \begin{matrix} 0 < b < 1 \\ 0 < \lambda_W < \infty \end{matrix} \tag{10}$$

where λ_W represents the speed of adjustment of the nominal wage and b represents a money illusion parameter. b may also denote the power of workers in negotiating in real terms.

On the other hand, the nominal price level adjusts according to the per capita excess demand in the output market and is influenced by changes in the nominal wage rate:

$$\frac{\dot{P}}{P} = \lambda_p (y^d - \bar{y}^S) + a\frac{\dot{W}}{W} \qquad 0<a<1, \quad 0<\lambda_p<\infty \tag{11}$$

where λ_p represents the speed of adjustment of the nominal price level and a can be thought of as a cost inflation parameter. Both equations (10) and (11) are linear for convenience. Combining them we get the equation describing the adjustment in the real wage:

$$\frac{\dot{w}}{w} = \frac{\dot{W}}{W} - \frac{\dot{P}}{P} = \frac{1}{1-ab}[(1-a)\lambda_W (l^d - l^S) - (1-b)\lambda_p (y^d - \bar{y}^S)] \tag{12}$$

The adjustment in the real wage together with, either the adjustment in output or employment is all that is needed for the specification of the short run dynamics with the given capital stock. Since the short-run dynamics of such a model have been explored, we come to the analysis of long run dy-

namics where the capital stock is variable. Therefore, we must specify how the capital labour ratio k changes over time in the (RI) region. Since there is excess demand for output, the actual rate of capital accumulation $\dot{k}$ is less than what firms have planned. On the other hand, consumers can not buy as much output as they want so that their extra purchasing power becomes unnecessary or forced savings.

Therefore, $S \leq \dot{k} \leq I$ (only one equality can be binding), where S denotes savings. We assume that S is a negative function of both the real wage and capital, indicating a lower propensity to save out of wages and a negative wealth effect on savings. We may, therefore, write the per capita savings function,

$$\frac{S}{L^S} \equiv s = s(w,k) \quad s_w < 0, s_k < 0 \tag{13}$$

Following the literature of the Keynes-Wicksell models, we assume that neither savings nor investment decisions are satisfied. Hence, the actual rate of capital accumulation is a linear combination of planned investment and planned savings:

$$\dot{K} = a\, I + (1 - a)\, S \tag{14}$$

where a is determined by institutional factors and $0 < a < 1$. In per capita terms (14) becomes

$$\frac{\dot{K}}{L^S} = a\, i + (1-a)s \tag{15}$$

We know that $\dot{k} = \frac{\dot{K}}{L^S} - nk$ where n is the exogenously given rate of growth of population, $\frac{\dot{N}}{N} = n$ Substituting in (15) we get the equation describing the adjustment in the capital-labour ratio:

$$\dot{k} = a\, i + (1 - a)\, s - nk \tag{16}$$

We have now a system of differential equations consisting of (12) and (16). A steady state is defined as a solution (if it exists) to the system $\dot{w} = \dot{k} = 0$. From equation (12) it is easily seen that $\dot{w} = 0$ only when either the output market and the labour market clear or both of them have the same sign; i.e., either both markets are in excess demand or both are in excess supply. This, however, is sufficient to rule out any steady state from taking place in the region of Classical Unemployment.

To find the stability properties of the system in the region of (RI) we linearize it around a steady state point (w*, k*).

$$\dot{w} = \frac{1}{1-ab}[(1-a)\lambda_w f_w^d - (1-b)\lambda_p(c_w + i_w)]w^*(w-w^*) + \frac{1}{1-ab}[-(1-b)\lambda_p(c_k + i_k - \bar{f}_k)]w^*(k-k^*) \quad (12')$$

$$\dot{k} = [\alpha i_w + (1-\alpha)s_w](w-w^*) + [\alpha i_k + (1-\alpha)s_k - n](k-k^*) \quad (16')$$

We now define

$$A_1 = \frac{1}{1-ab}[(1-a)\lambda_w f_w^d - (1-b)\lambda_p(c_w + i_w)]w^*$$

$$A_2 = \frac{1}{1-ab}[-(1-b)\lambda_p(c_k + i_k - \bar{f}_k)]w^*$$

$$A_3 = \alpha i_w + (1-\alpha)s_w$$

$$A_4 = \alpha i_k + (1-\alpha)s_k - n$$

For local stability the following conditions must hold:

(i) $A_1 + A_4 < 0$

(ii) $A_1 A_4 - A_2 A_3 > 0$

Checking the signs of these terms we know that $A_1 < 0$, $A_2 > 0$, $A_4 < 0$. The sign of A_3, is ambiguous depending on α. Let us for the moment assume that consumers are rationed more than producers, so that $\alpha = 1$ and therefore $A_3 > 0$. Since (i) is satisfied and (ii) is ambiguous, we examine the behaviour of the system in the (w,k) plane. The slope of the $\dot{w} = 0$ curve is,

$$\left.\frac{dw}{dk}\right|_{\dot{w}=0} = -\frac{A_2}{A_1} > 0$$

The slope of the $\dot{k} = 0$ curve is,

$$\left.\frac{dw}{dk}\right|_{\dot{k}=0} = -\frac{A_4}{A_3} > 0$$

Since both curves have positive slopes, stability depends on the relative steepness of these curves. If the $\dot{k} = 0$ curve is steeper, then Figure 2 shows that this steady state is stable. If the $\dot{w} = 0$ curve is steeper, then Figure 3 shows that the steady state is a saddle point.

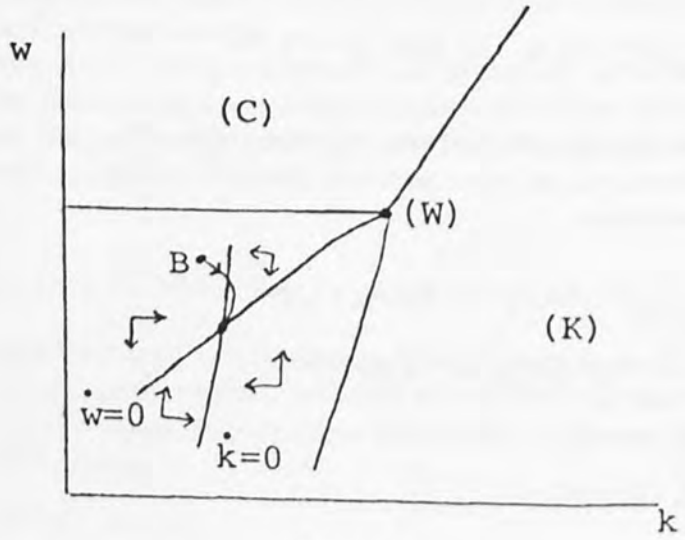

Figure 2

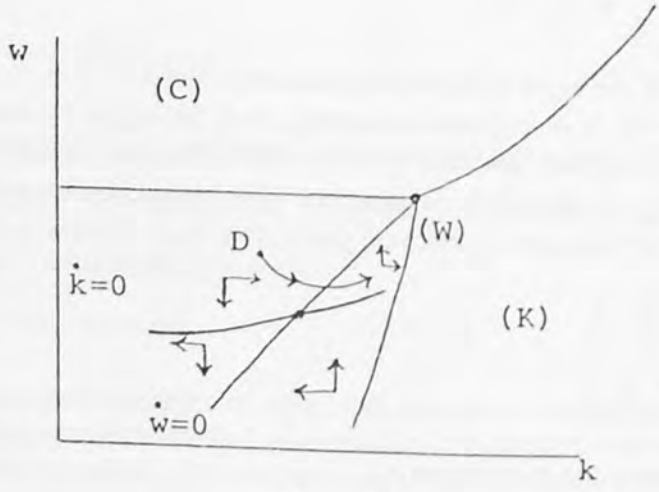

Figure 3

Note that the $\dot{w} = 0$ curve passes through the Walras-ian equilibrium point since at this point both markets clear and the real wage rate is constant. The $\dot{k} = 0$ curve may or may not pass through (W) and this depends on the parameters of the model; i.e., the population growth, etc. If it passes through (W) then it is clear that there can be no steady state in the (RI) region and the only steady state would be the Walrasian one. We will examine this case in section 6.

In Figure 2, the system behaves as we should expect on intuitive grounds. For example, at point B, k is small and w is high. A high w and -a small k are favourable to investment so that capital accumulation is positive. On the other hand, w is falling since prices rise faster than nominal wages. However, a point is reached (on the $\dot{k} = 0$ curve) where k has increased so much and w has fallen so much that further increases in k and decreases in w have a negative effect on investment. Hence, capital decumulation takes place and the system tends to the steady state. However, in Figure 3, the fall in w has the effect of increasing the labour demand more than the demand for output so that w will be increasing before such an initial reduction in w has any negative effect on capital accumulation. However, further increases in w will eventually lower the demand for labour. On the other hand, increases in k will lead to overproduction or oversupply. Thus, the system, tends towards the region of Keynesian Unemployment.

However, it is not known in advance whether a trajectory reaching the boundary between (RI) and (K) will enter the (K) region. On this boundary effective excess demands are zero so that $\dot{w} = 0$ Since the behaviour of k depends also on the dynamics in the (K) region, we will come back to this point in section 6.

The above results were based on the assumption that consumers are rationed more than producers. However, if producers are rationed more so that $\alpha \approx 0$ then $A_3 < 0$ and the slope of the $\dot{k} = 0$ curve becomes negative. Figure 4 shows that any steady state will now be stable.

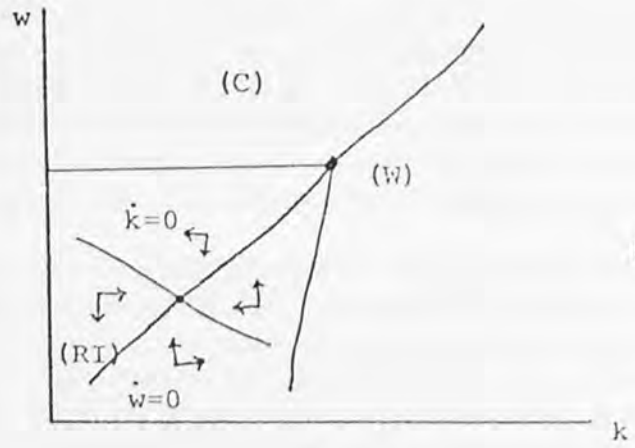

Figure 4

IV. Growth with Keynesian unemployment

We now turn to the region of Keynesian Unemployment and examine the stability of the system in this region. The equation describing the adjustment in the real wage is the same as (12) although the concepts of aggregate demand and supply in both markets are different. This equation now becomes,

$$\frac{\dot{w}}{w}=\frac{1}{1-ab}[(1-a)\lambda_w(\bar{\ell}^d-\ell^S)-(1-b)\lambda_p(\bar{y}^d-y^S)] \tag{17}$$

where $\bar{\ell}^d$, ℓ^S, $\bar{y}^d$ and y^s are given by equations (5) - (9).

The equation describing the adjustment in the capital stock is now simpler. Since there is excess supply in the output market, this implies that consumers realize their plans in this market, but producers are constrained by the existing level of aggregate demand. Therefore, the actual rate of capital accumulation $\dot{K}$, is greater than planned effective investment $\bar{I}$. On the other hand, excess supply in the output market implies that $\bar{S}>\bar{I}$, where $\bar{S}=\bar{S}(w,K,\bar{L}^d)$ denotes the effective savings function. Since consumers realize their consumption plans, this means that the actual change in capital is equal to savings; i.e., $\dot{K}=\bar{S}$ or in per capita terms,

$$\dot{k}=\bar{s}-nk \tag{18}$$

where $\frac{\bar{S}}{L^S} \equiv \bar{s} = \bar{s}(w,k,\bar{l}^d)$ and $\bar{s}_{\bar{l}^d} < 0$.

To find the stability properties of the system we linearize (17) and (18) around a steady state point (w^O,k^O).

$$\dot{w} = \frac{1}{1-ab}[(1-a)\lambda_w(\bar{l}^d_{\bar{y}^d}\bar{y}^d_w) - (1-b)\lambda_p(\bar{c}_w + \bar{i}_w + i_{\bar{c}}\bar{c}_w + \bar{c}_{\bar{l}^d}\bar{l}^d_{\bar{y}}\bar{y}^d_w)]w^O(w-w^O) + \tag{17'}$$
$$\frac{1}{1-ab}[(1-a)\lambda_p(\bar{l}^d_{\bar{y}^d}\bar{y}^d_k) - (1-b)\lambda_p(\bar{c}_k + \bar{i}_k + \bar{i}_{\bar{c}}\bar{c}_k + \bar{c}_{\bar{l}^d}\bar{l}^d_{\bar{y}^d}\bar{y}^d_k - f_k)]w^O(k-k^O)$$

$$\dot{k} = (\bar{s}_w + \bar{s}_{\bar{l}^d}\bar{l}^d_{\bar{y}^d}\bar{y}^d_w)(w-w^O) + (\bar{s}_k + \bar{s}_{\bar{l}^d}\bar{l}^d_{\bar{y}^d}\bar{y}^d_k - n)(k-k^O) \tag{18'}$$

Defining the coefficients of the linearized system and checking their signs,

$$B_1 \equiv \frac{1}{1-ab}[(1-a)\lambda_w(\bar{l}^d_{\bar{y}^d}\bar{y}^d_w) - (1-b)\lambda_p(\bar{c}_w + \bar{i}_w + i_{\bar{c}}\bar{c}_w + \bar{c}_{\bar{l}^d}\bar{l}^d_{\bar{y}^d}\bar{y}^d_w)]w^O < 0$$

$$B_2 \equiv \frac{1}{1-ab}[(1-a)\lambda_w(\bar{l}^d_{\bar{y}^d}\bar{y}^d_k) - (1-b)\lambda_p(\bar{c}_k + \bar{i}_k + i_{\bar{c}}\bar{c}_k + \bar{c}_{\bar{l}^d}\bar{l}^d_{\bar{y}^d}\bar{y}^d_k - f_k)]w^O > 0$$

$$B_3 \equiv \bar{s}_w + \bar{s}_{\bar{l}^d}\bar{l}^d_{\bar{y}^d}\bar{y}^d_w < 0$$

$$B_4 \equiv \bar{s}_k + \bar{s}_{\bar{l}^d}\bar{l}^d_{\bar{y}}\bar{y}^d_k - n < 0$$

It is assumed that $\bar{c}_{\bar{l}^d}\bar{l}^d_{\bar{y}^d}\bar{y}^d_w$ is too weak to make B_1 positive and $\bar{i}_{\bar{c}}\bar{c}_k$ and $\bar{l}^d_{\bar{y}^d}\bar{y}^d_k$ are too weak to make B_2 negative. We also assume that the direct effect $\bar{s}_k$, in B_4 dominates the indirect one. The consequences of relaxing these assumptions will be examined in section 7.

The stability conditions i) and ii) of the previous section are satisfied and therefore, any steady state in the region of Keynesian Unemployment will be stable.

Examining the slopes of the curves $\dot{w} = 0$ and $\dot{k} = 0$ we find that

$$\left.\frac{dw}{dk}\right|_{\dot{w}=0} = -\frac{B_2}{B_1} > 0$$

$$\left.\frac{dw}{dk}\right|_{\dot{k}=0} = -\frac{B_4}{B_3} < 0$$

A steady state is shown in Figure 5.

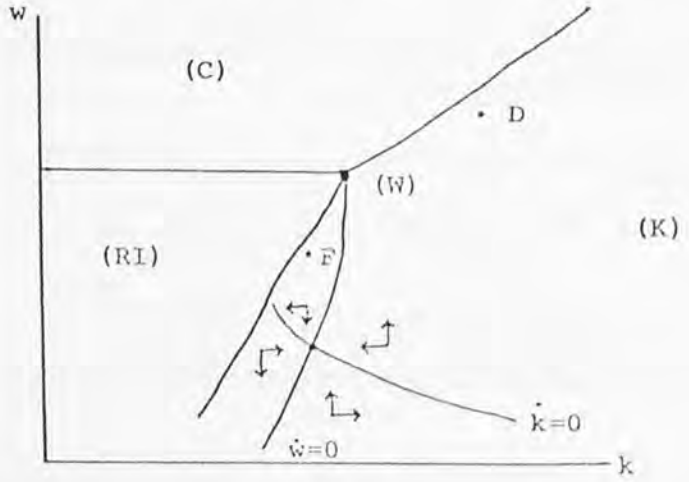

Figure 5

Note that a steady state in the (K) region can take place to the left or to the right of the Walrasian capital-labour ratio depending on whether the two curves intersect close to the (RI) region or the (C) region. Also, note that even though any steady state is stable, the system may move to the (C) or (RI) region if it starts at a point such as *D* or *F*, depending of course on how the capital-labour ratio behaves in these regions.

V. The region of classical unemployment and the Walrasian equilibrium

We have noticed that the system may switch from one region into another and in order to study its behaviour we must specify how the real wage rate and the capital-labour ratio behave in each region. Having examined the (RI) and (K) regions we now turn to the region of Classical Unemployment (C). First of all note that since in this region there is excess demand for output and excess supply of labour, the real wage rate will be falling. Hence, the system has a tendency to return to the (K) region or enter the (RI) region depending on how the capital-labour ratio behaves in this region. Since there is excess demand for output, both investment and consumption plans will be frustrated. We again assume that the rate of capital accumulation will be determined by a linear combination of planned investment and planned

effective savings defined as $\bar{S} = \bar{S}$ (w, K, L^d). Hence, $\dot{K} = \alpha I + (1 - \alpha)\bar{S}$ or in per capita terms

$$\dot{k} = \alpha i + (1 - \alpha)\bar{s} - nk \text{ where } \bar{s} \equiv \frac{\bar{S}}{L^S} \tag{19}$$

Equation (19) describes the dynamics of the capital-labour ratio in the (C) region and its steady state value is given by the equation $\dot{k} = 0$ Its slope is,

$$\left.\frac{dw}{dk}\right|_{\dot{k}=0} = -\frac{\alpha i_k + (1-\alpha)\bar{s}_k - n}{\alpha i_w + (1-\alpha)(\bar{s}_w + \bar{s}_{l^d} l^d_w)}$$

which depends on the value of α. Suppose first that consumers are rationed more than producers so that $\alpha \approx 1$. Then this slope becomes positive and Figure 6 shows that a trajectory entering the (C) region from the (K) region will have a tendency to move towards the Walrasian equilibrium or the (RI). region especially when the boundary between (K) and (C) is quite steep. On the other hand, any trajectory entering the (C) region from the (RI) region may return to the (RI) region.

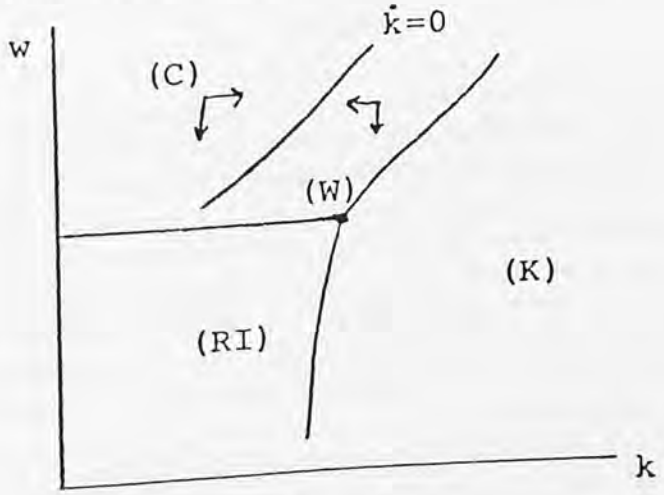

Figure 6

If producers are rationed more than consumers so that $\alpha \approx 0$ then the slope of the $\dot{k} = 0$ curve becomes negative.

We are now in a position to examine the behaviour of the system as a whole. To do so, we reproduce Figures 4 and 5 in Figure 7 under the assumption that in the (RI) and (C) regions producers are frustrated more than consumers so that $\alpha \approx 0$ and therefore the $\dot{k} = 0$ curve has a negative slope. We assume away any discontinuities of this curve on the boundaries it crosses, as Bohm (1978) and Honkapohja (1979) have done for their curve describing the rate of change of real money balances.

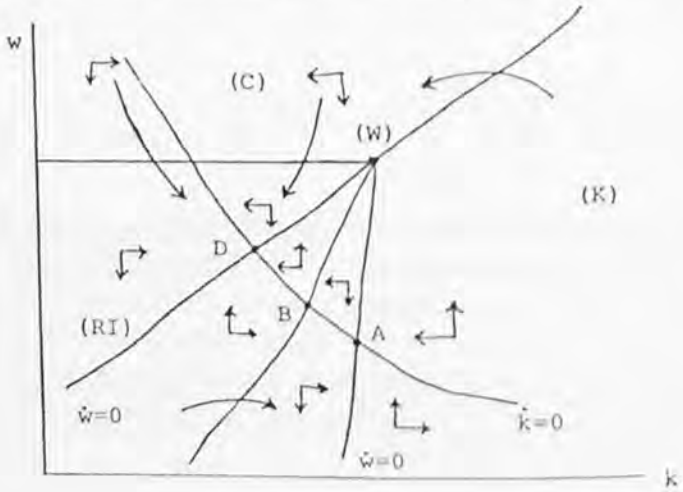

Figure 7

It is clear from Figure 7 that three steady states are possible. At point *A* there is steady state growth with Keynesian Unemployment and at point *D* there is steady state growth with Repressed Inflation. Both of these steady states are stable as we saw in Sections 4 and 5. A third steady state at point *B* is characterized by market clearing in both markets and is a saddle point as the direction of arrows indicate. Such a steady state may be called a non-Walrasian equilibrium since effective excess demands are zero (see also Barro and Grossman (1976, pp. 90-92)). It is now easily seen that the system is stable and it will rest either at point *A* or *B* or *D* depending on where the system starts.

The system may switch from one region into another out of a steady state. A trajectory may enter the (C) region from the (K) region and it will then enter the (RI) region, where it will approach a steady state in this region. However, if a trajectory enters the (K) region from the (RI) region, it will approach a steady state in that region. Note that it is possible that the $\dot{w} = 0$ curve in the (K) region extends to the north east of point (W) so that in

this case there would be no steady state in the (K) region. A long run steady state may be located at the Walrasian equilibrium (W) if the $\dot{k} = 0$ curve passes through this point. The location of this curve depends on the level of population growth, the rate of interest and other exogenous factors such as the rate of monetary expansion. If this curve passes through (W) as in Figure 8, then the Walrasian equilibrium is a stable steady state as the arrows indicate.[6] Note that at the boundaries between (C) and (RI), and (RI) and (K) the arrows are consistent with the fact that $\dot{w} < 0$ on the first boundary and $\dot{w} = 0$ on the second. However, the arrows in (C) and (K) regions indicate that w must be constant on the boundary between them, whereas we know that on this boundary $\dot{w} = 0$ since the output market clears and there is excess supply of labour. The point to stress here is that the arrows show how a trajectory behaves within each region but **not** on the boundaries where the system is governed by different equations.of motion. Therefore, we have to know the behaviour of w and k on each boundary in order to specify the behaviour of the overall system.

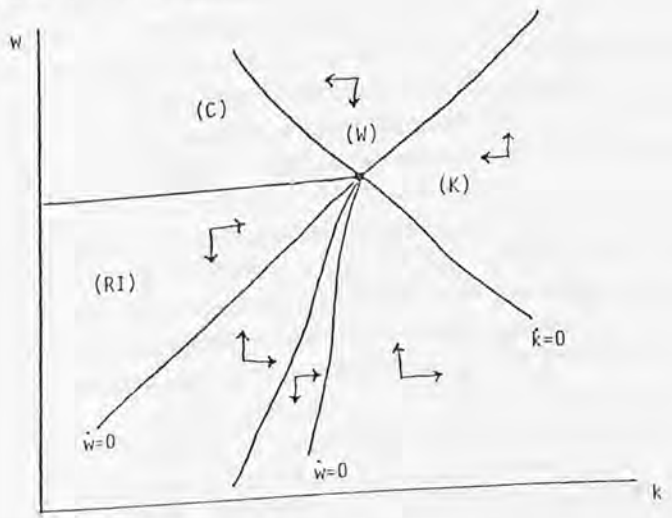

Figure 8

Finally, we must note that if the $\dot{k} = 0$ curve passes to the right of (W) and the $\dot{w} = 0$ curve lies to the north east of (W) then the only long run steady state would take place in the region of Keynesian Unemployment. The case where consumers are rationed more than producers so that $\alpha \approx 0$, can be similarly handled by reproducing either Figure 2 or 3 in Figure 7.

VI. The role of spillover effects and the coefficients of the model

The results obtained up to now are based on the assumption that the spillover effects are weak. In this section we examine the consequences of relaxing this assumption.

Let us first examine the stability results in the (RI) region. Inspection of equations (12') and (16') shows that the coefficients A_1 to A_4 are unchanged. Therefore, all the results of section 4 are unaffected as stability depends only on the degree of rationing of consumption and investment plans.

We now turn to the (K) region. We assume that the spillover or indirect effects in section 5 are quite strong so that our stability results are affected as follows. First, the sign of B_3, is unaffected and B_4 becomes positive. B_1 and B_2 depend now on the adjustment coefficients λ_w and λ_p as well as the parameters a and b. Let us first assume that λ_p is very large and λ_w very small (or a is close to unity) so that $B_1 < 0$ and $B_2 < 0$. In this case the slope of the $\dot{w} = 0$ curve becomes negative and that of $\dot{k} = 0$ becomes positive. A steady state in such a case will be a saddle point. On the other hand, if λ_p is very small (or b is close to unity) then $B_1 > 0$ and $B_2 < 0$. In this case the slopes of both curves $\dot{w} = 0$ and $\dot{k} = 0$ become positive and a steady state will either be unstable or a saddle point depending on their relative steepness. Therefore, we may conclude that the spillover effects are destabilizing no matter what the values of the adjustment coefficients of the model are.

The parameters a and b on the other hand play a crucial role in determining the particular long run steady state. A value of b equal to unity, which means no money illusion and enough power by workers in negotiating in real terms, would imply that the labour market always clears in a steady state as is evident from equation (10). Such a steady state could only take place on the boundary between (RI) and (K). Note that on the boundary between (RI) and (C) the labour market clears but $\dot{w} < 0$ so that a steady state cannot take place on this boundary. On the other hand, if $a = 1$ then the goods market always clears in a steady state (see equation (11)) which again must be located on the boundary between (RI) and (K). If $a = b = 1$ both markets clear and a steady state must take place either at the Walrasian equilibrium or on the boundary between (RI) and (K). Hence, if $a = 1$ or $b = 1$ and one market clears in a steady state, the other market must clear as well since only points on the boundary between (RI) and (K) are consistent with the requirement that $\dot{w} = 0$.

Conclusions

The main result of this paper is that in the long run, steady states with Repressed Inflation or Keynesian Unemployment are quite possible if prices and wages adjust at a less than infinite rate. Stability in the Repressed Inflation region depends on the degree of rationing of producers and consumers in the output market. If producers are rationed more, then the system is stable. If consumers are rationed more then it is either stable or a saddle point.

In the Keynesian Unemployment region, stability depends on the speed of adjustment in the two markets and on the strength of the spillover effects. In general, a steady state in this region will be stable provided that the spillover effects are not very strong. Spillover effects, if strong enough, can destabilize the system irrespectively of the values of the adjustment coefficients.

A steady state characterized by zero effective excess demands in both markets is also possible but will not be stable. Finally the Walrasian equilibrium as defined by the neoclassical growth model (see Solow (1956)) involving zero notional excess demands in both markets will be stable. Which particular steady state will take place in the long run depends on the location of the curve on which the capital-labour ratio is constant. The location of this curve in turn is influenced by the rate of growth of population, the rate of interest and other exogenous factors that affect savings and investment decisions.

The model presented in this paper is only a first approximation to reality since the role of financial markets as well as expectations are not taken into account. This must be a subject for future work in the area, taking into account the role that monetary and fiscal policy can play in not only determining but also changing a long run steady state if it is undesirable.

Notes

1. A superscript d (s) denotes a demand (supply) function and bars denote effective demand or supply functions.
2. We implicitly assume that the demand for capital by firms for production purposes is always satisfied but their investment demand may not be as we will see later on. Furthermore, we assume that there is no intended investory investment by the firms. This rules out the possibility of firms being constrained in both markets (see Muellbauer and Fortes (1978)). The model, however, can be easily extended to take into account the regime of under consumption.
3. Empirical evidence suggests that the value of c_k is very small, approximately equal to .04. Hence, we may safely assume that A.1 holds for any k. This is also the reason that we will assume that $y_k^d < 0$.
4. Eckalbar (1980, p. 380) has shown that $\bar{c}_w = c_w$. Also, it can easily be shown that $\bar{c}_k = c_k$. These remakrs together with our assumptions establish our assertion.

5. More precisely, to the right of $k^{(w)}$ and above the real wage which corresponds to (W), any unemployment must be due to overproduction and not to deficient demand which may not exist given the high values of w and k.
6. A rigorous proof of this statement would, however, require use of the techniques developed by Honkapohja and Ito (1983).

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*George D. Demopoulos**

ASPECTS OF FOREIGN EXCHANGE MARKET INTERVENTION[1,2]

Introduction

The generalized floating exchange rate system was first adopted by the major industrialized countries in 1973. At that time, there was a widespread belief that a floating exchange rate regime would secure a smooth functioning of national economies and eliminate the constraints on domestic monetary policy imposed by external balance considerations. However, the floating rates system proved less satisfactory than prior expectations; considerable volatility in the exchange rate of major currencies, overshooting and exchange rate adjustments unwarranted by «fundamentals», had characterized the period from 1973 through the late 1980s.

Since the early 1990s, the monetary authorities of the major industrialized countries, with the notable exception of Japan, have greatly curtailed their interventions in foreign exchange markets.

The reaction of academics and policy makers to the frequent foreign exchange interventions, especially through the early period of 1980s, was a reconsideration of the merits of stable exchange rates, and of national priorities, heavy intervention in the foreign exchange market, and exchange rate stabilization schemes, like the EMS. The view that intervention was necessary to smooth out the response of nominal exchange rates to unexpected shocks (random and/or policy induced) was heavily supported.

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1. Based on a doc. II/344/83-E prepared by the author for the Directorate-General for Economic and Financial Affairs, Commission of the European Economies, during his temure as an Economic Adviser.
2. The views expressed in this paper are those of the author and do not necessarily reflect those of the European Commission and the Bank of Greece or the Eurosystem. I would like to thank Athina Zervoyianni for invaluable suggestions and comments.

Volume of essays in honour of Professor N. Yannacopoulos

The recent dollar depreciation vis-à-vis the euro has prompted calls for the European Central Bank to intervene in foreign exchange markets to stop the dollar's slide against the euro. In other words, the discussion on the intervention issue has come up again. Is such a policy appropriate at this time?[1]

Of course, the appreciation of the euro vis-à-vis the dollar affects the economies of the euro-zone area in different ways: Under ideal conditions, an optimum currency area consists of economies with similar economic structures and similar current account positions. Since the euro-zone economies do not meet these conditions, the effects of the euro appreciation are different for the euro's economies, not to mention the existing difference in their real exchange rate. This situation leads-on the assumption that other variables remain constant-to a decline in the euro-zone countries' exports and to an increase in their current account deficit. These developments create pressures on the country's income and employment since, under a fixed exchange rate regime, the restoration of equilibrium requires a decline in income, assuming that prices remain fixed. The prons and cons for the dollar's slide against the euro for the U.S. economy are well known.

This paper does not discuss the issue if there are good reasons why the European Central Bank should intervene in the foreign exchange market. Neither does it mention if a potential ECB's intervention policy could have worked out at this time. Instead, it discusses some aspects of foreign exchange market intervention, related experiences with intervention practices, as well as policy implications of the issue.

The paper discusses, in Section 2, the nature of intervention (sterilized-unsterilized) and its influence on the impact effect and the path of the exchange rates. Section 3 focuses on symmetrical versus asymmetrical intervention; differences in its effects are depending on which of the two countries, whose bilateral rate is to be stabilized, intervenes. Section 4 explores the question of how much intervention should be undertaken and whether such intervention should be sterilized or unsterilized. In Section 5, we explore differences in the objectives of national authorities and how such differences affect the objective of intervention. Section 6 presents the alternatives to intervention and their merits. The final section reports on the difficulties arising in the measurement of intervention.

I. The nature of intervention: Sterilized - unsterilized

Intervention in the foreign exchange market can be either sterilized or unsterilized. It is sterilized when purchases/sales of foreign assets are matched

by changes in Central Bank's holdings of domestic currency assets so that the monetary base, remains undisturbed. In contrast, unsterilized intervention affects Central Bank liabilities and hence, the monetary base. That is, while sterilized intervention merely affects the composition (foreign/domestic) of government debt held by the private sector, unsterilized intervention implies, additionally, a change in the relative supply of national monies. It is these different implications of sterilized/unsterilized intervention that have stimulated the debate over the effectiveness of foreign exchange market intervention.

The views that have been developed along the above lines are briefly the following:

According to a *first* view, *sterilized* intervention is completely ineffective in influencing the exchange rate; that is, if the interest bearing assets are perfect substitutes and intervention is not accompanied by changes in relative supplies of national monies; *a second* view argues that sterilized intervention is effective only if the private sector envisages the intervention as an action, marking a general, future change in monetary policy stance; proponents of the *third* view postulate that sterilized intervention is effective in the short run but it does not have long-lasting effects, while according to a *fourth* view, its effectiveness is extended in the long run.

The above different views are strongly influenced by the presumption of their proponents about the degree of substitutability between interest bearing assets in different currency denominations as follows:[2]

(i) Proponents of the *first* view (associated with what is known as the *monetary channel*) argue that asset holders are typically risk neutral, and thus, domestic/foreign assets should be considered as **perfect substitutes**. In such a case, the relative returns on assets are governed by the uncovered interest rate parity (UIP), and are not affected by changes in the relative supplies of outside assets. Therefore, *sterilized* intervention is entirely **ineffective** in influencing the exchange rate; only if intervention is accompanied by a change in the relative supplies of national monies, national monetary authorities can maintain control over the exchange rate.

(ii) According to the second view (associated with what is known as the *expectations* or *signaling channel*), *sterilized* intervention, in itself, is **ineffective** because interest bearing assets are **perfect substitutes (Mussa, 1981)**. It can be **effective**, however, if the private sector views it as a first step towards a more expansionary/contractionary monetary policy in the future. Under such circumstances, *sterilized* intervention can affect the current exchange rate via its impact on expected future depreciation.

(iii) Proponents of the *third* and *fourth* view (associated with the *portfolio balance channel*) argue that **risk aversion** among speculators provides

national authorities with an additional instrument for influencing the exchange rate besides monetary policy. Indeed, with assets **less than perfect substitutes**, *sterilized* intervention can alter relative returns on assets and hence it can influence the exchange rate.[3]

These two views differ, however, in their assumptions about the time span that the above policy can be successfully used. That is, according to the *third* view, foreign/domestic assets are imperfect substitutes in the short run, but the «fundamentals» or long-run determinants of the exchange rate are relative money supplies. Therefore, *sterilized* intervention can be used for day-to-day or month-to-month smoothing of the exchange rate; however, long-lasting influences can be maintained only if the intervention is *unsterilized*. Thus, *sterilized* intervention according to this view can affect the impact response but not the long-run time path of the exchange rate. Moreover, it is argued that a non-sterilization policy reduces the amount of intervention which is required to stabilize the exchange rate.

(iv) Finally, proponents of the *fourth* view postulate that both the short-run and the long-run determinants of the exchange rate are relative money supplies as well as relative supplies of outside interest bearing assets. Under such circumstances, *sterilized* intervention can have long-lasting effects and it can influence both the impact response and the long-run time path of the exchange rate.

It is obvious, that only **empirical analysis** can give an insight into which of the above views is closer to the reality. However, empirical evidence has not yet provided a clear answer to the question.

Indeed, a part of the literature on the issue, finds that interest bearing assets are perfect substitutes which, in fact, implies that the *first* approach of intervention should be considered as the correct one. According to this expectations or signaling channel, "monetary authorities can use sterilized foreign exchange intervention to transmit private information to the market, thereby affecting the market participants' assessment of the equilibrium rate of exchange", (Baillie, Humpage and Osterberg, 2000; Chaboud and Humpage, 2005, Vitale, 2006).

On the other hand, the findings of some other publications support the hypothesis of imperfect assets substitutability which, in turn, implies that the *third* or even the *fourth* view is the correct one. Empirical evidence in favor of a portfolio-balance channel has generally been found to be weak, with the notable exception of Dominquez and Frankel (1973, a,b). Also, subsequent literature including Lewis (1995), Kaminsky and Lewis (1996), and Bonser-Neal, Roley and Sellon (1998) provides evidence on the effectiveness of the portfolio and signaling channels.

Earlier empirical findings are discussed in Genberg (1981) and are also reported in the Juergense Report (1983). In particular, the Juergensen's report ends up with the adoption of the *third* view and the conclusion that national authorities can exploit the short run effects of sterilized intervention reducing foreign exchange market disorder. In general, the empirical work on the effectiveness of intervention has failed to find conclusive evidence that intervention operations "would in a systematic manner affect the daily spot exchange rate returns" (Catren, 2004).[4]

II. Symmetrical vs asymmetrical intervention

Intervention in the foreign exchange market can be characterized also as being either *symmetrical* or *asymmetrical*. Foreign exchange market intervention can be undertaken either by one of the two National Central Banks, whose bilateral rate is to be stabilized, or by both Central Banks cooperation; in the former case the intervention is *asymmetrical* while in the latter, *symmetrical*.

The above distinction does not have significant «qualitative» implications if the effects of the intervention on the monetary base are sterilized. Indeed, in such a case, the intervention leads to a change in the relative supplies of outside interest bearing assets quite independently of which Central Bank intervenes and of whether one of the two or both Central Banks intervene. That is, the consequences of the intervention in both cases are, qualitatively, the same.

It is obvious, however, that *coordinated sterilized* intervention reduces the required amount of intervention that should be undertaken by each of the two National Central Banks for stabilizing the bilateral rate, and furthermore, enhances the effectiveness of intervention. In other words, the different implications of *symmetrical/ asymmetrical* but *sterilized* intervention, are rather «quantitative» than «qualitative». The distinction becomes particularly important, however, when the intervention is *unsterilized*. In this latter case, *asymmetrical* intervention induces an increase (or reduction) in the supply of one of the two national monies while the supply of the other remains constant. The above asymmetrical policy, in turn, spreads over the various sectors of the two national economies producing an overall *asymmetrical* response of the two countries.

In contrast, under *coordinated unsterilized* intervention the supply of both national monies is adjusted and hence the overall reaction of the two economies is more or less symmetrical. Thus, *symmetrical/asymmetrical* but *unsterilized* interventions have different qualitative implications.

It follows from the above, that when the intervention is *asymmetrical*, its consequences depend on which of the two National Central Banks intervenes. This is because when, for example, the home country Central Rank intervenes, it is the supply of home currency which is affected, while when foreign Central Bank intervenes, it is the foreign money whose supply is altered.

On the other hand, the *appropriateness* of symmetrical or asymmetrical intervention has much to do with the *nature of the shocks* affecting the National economies.[5] For example, when the shock affects the same markets in the two countries in an opposite direction, the response of National Authorities should be broadly symmetric. Assuming that *unsterilized* intervention to stabilize the bilateral exchange rate is indeed the policy in the correct direction, - an issue which is discussed in detail below, - *symmetrical unsterilized* intervention implies a reduction (increase) in the supply of home country money and an increase (reduction) in foreign money, which is the appropriate response under the given circumstances. In contrast, *asymmetrical unsterilized* intervention leads to a unilateral direct response which is hardly the correct one as the *shock* affects both countries and thus its consequences can be more effectively dealt with coordinated action.

It is only in the case of «country specific» shocks that *asymmetrical* intervention is most appropriate; indeed, under such circumstances, symmetrical actions are unnecessary and furthermore, they might be proved harmful as they disturb the functioning of that economy whose performance is relatively stable. In reality, «country specific» shocks can be considered less frequent than the ones affecting more than one country at the same time (if we take into account the increased interdependence of national economies).

The above considerations make clear the importance of cooperation between national authorities and in general, of coordinated actions.

III. How much intervention should be undertaken

Having discussed the *question* of whether the response of National Authorities should be symmetrical or asymmetrical, we now turn to the question of *how much intervention should be* undertaken and whether such intervention should be sterilized or unsterilized.

Published studies that analyze the issue within a framework of a small open economy as well as on going research that analyzes the issue within the framework of a two-country model, suggest that the answer depends on the relative variance of the disturbances affecting national economies.

In particular, they indicate that neither exchange rate fixity nor pure floating is the appropriate policy *if the circumstances are such that disturbances*

of different origin are simultaneously taking place. The reason is that the destabilizing effects of some disturbances (shocks), as, for example, symmetrical supply side shocks or aggregate demand shocks, are smaller under a more flexible nominal or real exchange rate, while the effects of others, like for example, shocks in exchange rate expectations, symmetrical disturbances in bonds and money markets, are minimized under symmetrical intervention which stabilizes the exchange rate.

Therefore, the *question of how much intervention* is to be undertaken should be related to the information that National Authorities have with respect to the frequency and magnitude of the *different disturbances*. Indeed, under the above circumstances, exchange rate management should be linked to some kind of *contingent* rule, the determinants of which could be the elements of the probability distribution of the various shocks.[6]

Now, *the question of whether sterilized or unsterilized intervention is most appropriate*, depends on two factors, namely, the degree of substitutability between domestic/foreign interest bearing assets and national monies, and the nature of the disturbance affecting national economies. In this respect, the research findings suggest that *symmetrical random disturbances* in the bonds markets and *random* shocks in the exchange rate expectations, are best dealt with symmetrical *sterilized* intervention *provided* that interest bearing assets are less than perfect substitutes and also the degree of substitution between national monies is low. On the other hand, when the *degree of substitutability* between national monies is high, random shocks in exchange rate expectations should best be dealt with unsterilized intervention; the same holds for symmetrical disturbances affecting directly national money markets.

IV. The objectives of national authorities and the objective of intervention

In certain cases, foreign exchange market intervention aims at some additional objectives besides the direct stabilization of the exchange rate around the target level. The additional objectives may include, for example, a current account target and/or an increase in employment via an intervention policy which raises domestic competitiveness and hence promotes the demand for domestic products, or finally, a reduction in domestic inflation via an intervention policy which induces nominal exchange rate appreciation.

Indeed, research findings suggest that in some countries, the determinants of intervention include not only stabilization of the exchange rate around a target level, but also the inflation rate.

V. Alternatives to intervention and their merits

Assuming that the circumstances are such that make an exchange rate target appealing, *the question* remains as to whether other policy instruments, besides foreign exchange market interventions, can be used to attain the target exchange rate.

The most «popular» instrument suggested by a number of academics is financial taxes; that is, taxes that are imposed *on* foreign currency transactions undertaken for purposes other than trade payments. Such policy can indeed be effective and furthermore, under particular circumstances, i.e., random disturbances in exchange rate expectations and non-zero substitutability between national monies, constitutes the policy which minimizes the effects of the shock on national economies.

Some academics have strongly opposed the imposition of such taxes on the belief that they introduce imperfections in the financial markets, and therefore reduce world welfare. However, one can postulate, that the functioning of some other markets, as, for example, goods and more probably labour markets, is less than perfect and thus it is worthwhile to disturb the free functioning of the rest of the markets, in our case the financial markets, since such action increases rather than reduces world welfare.

VI. Difficulties in measuring foreign exchange market intervention

Finally, the difficulties in measuring foreign exchange market intervention should be noted. The difficulties arise for the following reasons:

Firstly, there is the *issue* of actually *defining* intervention. In the *narrowest sense*, it should only embrace the sales/purchases of foreign exchange by the Central Bank aiming directly at influencing the exchange rate, while in a *broader sense* it should include «all sales and purchases of foreign exchange against domestic currency which monetary authorities undertake», including reserve changes, swaps, IMF financing, official borrowing, etc.

This latter definition is more appropriate when the objectives of intervention include price stability, a current account target, etc, besides the direct exchange rate stabilization.

An even broader definition includes, additionally, 1MF drawings, interest payments on international reserves and «all exchange market transactions carried out by other entities (banks, public or private corporations) which may be considered to be directed by the government or the Central Bank".

Secondly, even if the problem of definition is resolved, the problem of finding the appropriate data remains. Research work indicates that in some countries, the published data on changes in official reserves do not fully reflect intervention.

Therefore, the empirical studies on intervention make a number of compromises with respect to the data they use, which in turn implies that the quality of their results are not entirely satisfactory and should be interpreted with some caution. Indeed, the problems arising with the data used for intervention purposes can be considered as one of the reasons for the poor results and the differences in the findings of the various empirical studies.

Conclusions

This paper explores the "theoretical" aspects of foreign exchange market intervention (sterilized and unsterilized) and its influence on the exchange rate. The different implications of sterilized/unsterilized interventions have stimulated the debate over the effectiveness of foreign exchange market intervention.

It then focuses on symmetrical and asymmetrical intervention. Differences in its effects are depending on which of the two countries, whose bilateral rate is to be sterilized, intervenes. The paper further explores the question of how much intervention should be undertaken and whether such intervention should be sterilized or unsterilized,

The paper looks also at the differences in the objectives of national authorities and how such differences affect the objective of intervention. The question as to whether other policy instruments, besides foreign exchange market interventions, could be used to attain the target exchange rate, is elaborated.

Finally, the difficulties arising in the measurement of foreign exchange market intervention are noted.

As to the empirical work done on the issue of the effectiveness of foreign exchange rate intervention, its is noted that empirical evidence has not yet provided a clear answer to the question.

Notes

1. For an answer to this question and the issue related to the effectiveness of foreign exchange markets interventions and the options of the ECB in this context, see De Grauwe (2004).
2. See the escellent survey by Sarno and Taylor (2007).
3. For these distinct channels of transmission of foreign exchange market intervention, see, also, Castren (2004).

4. On the relative effectiveness of sterilized and unsterilized foreign exchange market intervention, see also Pilbeam (2005).
5. On this, see, Zervoyianni (1988).
6. On the observed frequency and magnitude of different disturbances that would randomly occur in the sample of exchange rate movements, see, Chaboud and Humpage (2005).

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THE MONETARY APPROACH IN THE PRESENCE OF I(2) COMPONENTS: A COINTEGRATION ANALYSIS OF THE OFFICIAL AND BLACK MARKET FOR FOREIGN CURRENCY IN LATIN AMERICA*

Introduction

Recently there has been a growing recognition of the importance of parallel or black markets for foreign currency. The evidence available suggests that black markets have recently increased in size and sophistication in many countries, in relation to capital movements, (Gupta 1981; Edwards 1989, 1999; Agenor 1992; Kiguel and O'Connell, 1995; and Phylaktis 1996 among others provide an extensive theoretical and empirical analysis of these markets as well as of the determinants of the black market premia in a variety of countries).

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The emergence of parallel or black markets is a well known feature of many developing countries for several decades, with parallel exchange rates deviating, in some cases, considerably from official rates. Parallel markets for foreign currency are the result of direct and indirect government intervention in the foreign exchange market. When access to the official foreign-exchange market is limited and there are various foreign-exchange restrictions on international transactions of goods, services and assets, an excess demand develops for foreign currency at the official rate, which encourages some of the supply of foreign currency to be sold illegally, at a market price higher than the official rate. The size of the market as well as the black market premium, i.e. the amount by which the parallel market rate exceeds the official rate, varies from country to country and depends on the type of the exchange and trade restrictions imposed along with the degree to which these restrictions are implemented by the government agencies (see Edwards, 1989, 1999; Montiel, Agenor and Haque, 1993).

The main determinants of the demand for foreign currency in the parallel markets are the following. First, legal and illegal imports, the former resulting from the existence of rationing of foreign currency in the official market, and the latter from the different types of prohibitions of imports which give an incentive for smuggling when duties are greater than the black market premium. Second, domestic residents travelling abroad and facing limits on the amount of foreign currency they can buy. Third, portfolio diversification particularly in cases where the inflation is high and there is great uncertainty in economic activity, leading domestic residents to hold foreign currency as an efficient way of hedging against domestic inflation.[1] Finally, capital flight in the presence of political instability.

The main sources of the supply of currency are the following. The most significant source is smuggling and underinvoicing of exports; when there is an export tariff, underinvoicing allows the exporter to avoid the tariff and to sell the foreign currency which has been illegally obtained at a premium. When an export subsidy is considered, which is less than the black market premium, the sale of foreign currency in the parallel market could provide a compensation greater than the subsidy loss. Additional sources of supply of foreign currency to the parallel market is overinvoicing of imports when the tariff rate on imported goods is sufficiently lower than the premium, foreign tourists and diversion of remittances.

The purpose of this paper is to provide an insight on the relationship that exists between the exchange rate and several key monetary variables when a parallel or black market for dollars exists. The analysis is done by employing a popular model used to explain the movements of the exchange rate,

namely the monetary model to the exchange rate first developed by Frenkel (1976).[2] This model suggests that the exchange rate is considered to be the price of relative monies and thus it should be explained by the movements of the monetary aggregates in the two countries, the corresponding real outputs and the interest rates. Blejer (1978) has extended the monetary approach to the exchange rate to emphasize the role of monetary factors as the main determinants of the black market rates. The importance of the monetary factors on the behaviour of the black market rate has been verified by several studies in addition to the empirical results presented by Blejer (1978) for Brazil, Chile and Colombia. Thus, Gupta (1980) and Biswas and Nandi (1986) have tested the model for India; Olgun (1984) for Turkey; and within the cointegration context Van den Berg and Jayanetti (1993) for Pakistan, Sri Lanka and India and recently Kouretas and Zarangas (1998) for Greece.

Our analysis is applied to two Latin American countries, Chile and Mexico and covers the recent period of floating exchange rates. Black market for foreign currency, and in particular for U.S. dollars, has operated continuously in most of the Latin America countries for the past decades. The experience of these countries with chronic high inflation rates and corresponding current account deficits since 1970s has led to the emergence of a strong black market for dollars, one that has become an integral part of the countries' infrastructure. Figure 1(a) gives a plot of the black market and official exchange rates for Chile. In January 1981 one U.S. dollar bought 41650 Chilean pesos on the black market and by January 1987 one U.S. dollar was buying 238100 pesos on the black market. At the same time in the official market the official exchange rate was 39000 pesos per dollar in January 1981 and 206290 in January 1987. Similar patterns emerge for the foreign exchange markets of Mexico and they are plotted in figure 1(b). Accordingly, figures 2(a)-(b) show the evolution of the black market premium in these Latin American countries. These plots show that there is significant variation in both countries and over time with respect to premia.

The analysis is conducted within the context of cointegration and therefore we examine the existence of a long-run relationship between the black market exchange rate, the official exchange rate and the monetary variables. Our approach is novel in a number of ways. First, we provide a new analysis for the determination of the order of integration of the variables. Although testing for unit roots has become a standard procedure it has been made clear that if the data are being determined in a multivariate framework, a univariate model is at best a bad approximation of the multivariate counterpart, while at worst, it is completely misspecified leading to arbitrary con-

clusions. Therefore, we employ the recently developed testing methodology suggested by Johansen (1992a, 1995a, 1997) extended by Paruolo (1996) and Rahbek et al. (1999) which allows us to reveal the existence of I(2) and I(1) components in a multivariate context. This analysis is done by testing successively less and less restricted hypotheses according to the Pantula (1989) principle. Additionally, we apply a test developed by Juselius (1995) that is based on the roots of the companion matrix and allows us to make firmer conclusions about the rank of the cointegration space. Second, since in a multivariate framework, such as the one given by the monetary model, a vector error correction model may contain multiple cointegrating vectors, a question arises as to whether one can associate all of them with the monetary model or otherwise which vector is identified with it and what is the interpretation given to the others. Thus, following Johansen and Juselius (1994) and Johansen (1995b) we impose independent linear restrictions on the coefficients of the accepted cointegrating vectors. Third, given that at least one statistically significant cointegrating vector has been found we examine the stability of the long-run relationships through time. Hansen and Johansen (1993) propose three tests for parameter stability in cointegrated-VAR systems which allow us to provide evidence of the sample independence of the cointegration rank as well as of parameter stability.

There are several important findings which stem from our estimation approach. First, we find evidence of cointegration between the black market Chilean peso-dollar, and the Mexican peso-dollar exchange rates and the corresponding official rates and the monetary variables. Furthermore, in both cases we were able to establish the presence of a common I(2) component which was assumed to be between the Chilean and U.S. money series and the Mexican and U.S. money series, respectively. Second, given the presence of an I(2) stochastic trend we adopted a data transformation that allows us to move to the I(1) model, which can simplify the empirical analysis considerably. Therefore, for both cases we tested whether long-run proportionality between domestic and foreign money could be imposed on the data. Third, given that three cointegrating vectors were found to be statistically significant, for both cases under investigation, we imposed independent linear restrictions so that we associated one vector with the monetary model, the second with the uncovered interest parity (UIP) condition and the third one was taken to describe a relationship between the official and black market exchange rates. This joint structure is shown to be overidentified and the joint restrictions are rejected for both the Chilean peso-dollar and the Mexican peso-dollar exchange rates. This result implies that the monetary model in its forward-looking solution does not hold, an outcome which is

attributed to the failure of the UIP condition in the long-run. Fourth, we find that the unconditional UIP condition version of the monetary model may still be a valid framework to explain the long-run movements of the black market and official exchange rates in Chile and Mexico. Finally, the application of the recursive tests of Hansen and Johansen (1993) show that the dimension of the cointegration space may be sample dependent while the estimated coefficients do not exhibit instabilities in recursive estimations.

The plan of the remainder of the paper is as follows. Section 2 presents the monetary model in the presence of a parallel market for foreign exchange. In section 3 we discuss the econometric methodology for modelling and testing cointegration. The data used and the multivariate cointegration results are presented in section 4. The final section presents our concluding remarks.

I. The monetary exchange rate model

Since its conception in the 1970s the monetary exchange rate model has become the dominant theoretical model of exchange rate determination. The monetary model class of models is based on the assumption of perfect substitutability of non-money assets so that the exchange rate is determined only by relative excess money supplies. However, although this model is theoretically very appealing, its empirical validity has produced conflicting results. Furthermore, Meese and Rogoff (1983) show that a random walk model outperforms the monetary model in out-of-sample forecasting ability. Early studies for the recent floating exchange rate experience has shown that the monetary model is plagued by unstable regression coefficients in term of sign, magnitude and significance. Recently, attention has shifted towards the ability of the monetary model to adequately characterize long run movements in the exchange rate. In particular, following the work of Engle and Granger (1987), studies have been conducted to test the long run properties of the monetary model using cointegration analysis. Within this context, MacDonald and Taylor (1994), Kouretas (1997) and Diamandis et al. (1998) among others, provide evidence for the long-run validity of the model as well as its out-of-sample forecasting performance for a number of key currencies. Additionally, Diamandis, et al. (2000) provide further evidence in favour of the monetary model in the presence of variables that are I(2) processes, for the case of the drachma/dollar and drachma/mark exchange rates.[3]

The basic monetary model was developed by Frenkel (1976) and combines domestic and foreign money demand functions with purchasing

power parity (PPP). Moreover, the UIP condition is invoked to derive the forward-looking version of the monetary model, under which the exchange rate depends on all the expected realizations of the forcing variables, that is, the monetary aggregates and the output variables.

Under these assumptions a typical monetary reduced form equation is obtained (see Baillie and MacMahon, 1989; and MacDonald and Taylor, 1992):

$$e_t=\beta_0+\beta_1 m_t+\beta_2 m_t^*+\beta_3 y_t+\beta_4 y_t^*+\beta_5 i_t+\beta_6 i_t^*+u_t \quad (1)$$

where e_t is the spot exchange rate (home currency price of foreign currency); m_t denotes the domestic money supply; y_t denotes domestic income; i_t denotes the short-term domestic interest rate; corresponding foreign magnitude are denoted by an asterisk; u_t is a disturbance error; and all variables apart from the interest rate terms, are expressed in natural logarithms.

The expected signs of the coefficients in (1) are: $\beta_0>0$, $\beta_1>0$, $\beta_2<0$, $\beta_3<0$, $\beta_4>0$, $\beta_5>0$, $\beta_6<0$. The Keynesian (sticky-price) model assumes opposite signs for the interest rates. Different signs of the interest rate coefficients in equation (1) will also be produced under imperfect substitutability between the assets of the two countries. Associated with equation (1) is a set of coefficients restrictions that are regularly imposed and tested. The most important restriction is whether proportionality exists between the exchange rate and relative monies ($\beta_1=-\beta_2=1$). Moreover, the assumptions that the income and interest rate elasticities for money demand are equal in both countries, ($\beta_3=-\beta_4$) and ($\beta_5=-\beta_6$), are often being tested.

Blejer (1978) extended the monetary approach to emphasize the role of monetary factors as the main determinants of the black market rates. Blejer constructs a model of the black market exchange rate by incorporating a flow black market for foreign currency into a monetary model in which the rate of devaluation of the official exchange rate is fixed by the authorities according to some reaction function aimed at maximizing a government utility function. In this section, we follow Phylaktis (1996) and Kouretas and Zarangas (1998) and we provide a simplified version of the model.

As a starting point we consider that the black market exchange rate depends on: (1) the underlying supply and demand for foreign currency, which according to PPP are in the long-run driven by countries' price levels, (2) the level of the official exchange rate, and (3) the diverse set of policies and institutions that govern the legal exchange market, e.g., rationing procedures, who is permitted to buy and sell there, and of course the severity and likelihood of penalties for dealing in the black market. If this latter set

of policies and institutions is stable, we can then investigate whether there is a linear long-run equilibrium relationship between the parallel and official market exchange rate as well as between the parallel market exchange rate and the two price levels.

The black market rate is determined by the interaction between demand for and supply of foreign currency in the black market. The demand for foreign currency in this market depends positively on the return from holding this asset. Furthermore, this return is a function of the expected rate of appreciation of the foreign currency in the black market. If we assume that economic agents form their expectations by comparing the movements of the exchange rate with the movements of the ratio between domestic and foreign price level, then the demand for foreign currency can be described as follows:

$$D_b = b_0 + b_1(p - p^* - e_b),\ b_1 > 0, \tag{2}$$

where D_b is the demand for foreign currency in the black market, p and p^* are respectively the domestic and foreign price level, and e_b is the black market exchange rate. Therefore, in case that p rises faster than p^* and at the same time there is no corresponding increase in the parallel market exchange rate, the economic agents expect a depreciation of the parallel exchange rate by a percentage equal to the observed inflation rate differential.

The supply of foreign currency to the market is provided mainly through receipts from the overinvoicing of imports and underinvoincing of exports as well receipts from tourism, shipping and immigrants' remittances. These activities are positively related to the differential between the official and the black market exchange rates. As the differential increases, the profit possibilities increase leading to higher incentive to divert foreign exchange to the parallel market. The supply function of foreign currency to the black market is given as follows:

$$S_b = \gamma_0 + \gamma_1(e_b - e_0),\ \gamma_1 > 0 \tag{3}$$

where S_b is the supply of foreign currency to the black market, and e_0 is the official exchange rate. Both exchange rates are defined as domestic currency per one unit of foreign currency. All variables are in logarithms.

Equating the demand for and the supply of foreign currency in the black market and solving for e_b, we obtain

$$e_b = a_0 + a_1 e_0 + a_2 p + a_3 p^* \tag{4}$$

where $\alpha_1 = \frac{\gamma_1}{\gamma_1 + b_1}$ and $\alpha_2 = \frac{b_1}{\gamma_1 + b_1}$, $\alpha_2 = -\alpha_2$ and $\alpha_0 > 0$, $\alpha_1 > 0$, $\alpha_2 > 0$ and $\alpha_3 < 0$.

The above formulation considers the black market exchange rate, is being a weighted average of the official exchange rate, e_0, and the price differential, which essentially is the PPP exchange rate. In absence of direct or indirect official intervention in the foreign exchange market through the imposition of capital controls, the official exchange rate will converge to the PPP rate in the long-run while it will be equal to the black market rate leading to a gradual elimination of the black market for foreign currency. In case though, that intervention of some form exists, then the official exchange rate will be different from the PPP rate, and the black market rate will be a function of the official market rate and the equilibrium rate implied by PPP.

Solving for the price level from the standard money market equilibrium and substituting in eq. (4) we obtain the monetary model relationship in the presence of a black market rate

$$e_{bt} = c_0 + c_1 e_{ot} + c_2 m_t + c_3 m_t^* + c_4 y_t + c_5 y_t^* + c_6 i_t + c_7 i_t^* + u_t \qquad (5)$$

Model (5) implies that an increase in the domestic money supply results in a domestic money market disequilibrium. As economic agents get rid off their excess cash balances, domestic prices rise. This creates expectations of exchange rate depreciation and an increase in the demand for black market dollars. This in turn increases the differential between the official and the black market rate, increasing the incentive to underinvoice exports, to smuggle imports, or to divert remittances through the black market. Although this increase in the supply of foreign currency in the black market will reduce the upward pressure on the black market exchange rate, a higher stock of money will overall be associated with a depreciation of the parallel market rate.

II. Econometric methodology

Our cointegration analysis is based on the multivariate cointegration technique developed by Johansen (1988, 1991) and extended by Johansen and Juselius (1990, 1992) which is a Full Information Maximum Likelihood (FIML) estimation method. It makes use of the information incorporated in the dynamic structure of the model and it also estimates the entire space

of the long-run relationships among a set of variables, without imposing a normalization on the dependent variable a priori. Although the Johansen procedure is well known we discuss it briefly in light of some recent extensions of the methodology that are applied in this paper.

Consider a **p**-dimensional vector time series z_t with an autoregressive representation (AR) which in its error correction form is given by

$$\Delta z_t = \sum_{i=1}^{k-1} \Gamma_i \Delta z_{t-i} = \Pi z_{t-1} + \gamma D_t + \mu_0 + \mu_1 t + \varepsilon_t \quad t=1,\ldots,T \tag{6}$$

where $z_t=[e_{p'}e_{0'}m,m^*,y,y^*,i,i^*]$, as defined in section 2, $z_{k+1},\ldots,z_0$ are fixed and $\varepsilon_t \sim Niid_p(0,\Sigma)$. The adjustment of the variables to the values implied by the steady state relationship is not immediate due to a number of reasons like imperfect information or costly arbitrage. Therefore, the correct specification of the dynamic structure of the model, as expressed by the parameters $(\Gamma_1,\ldots,\Gamma_{k+1},\gamma)$, is important in order that the equilibrium be revealed. The matrix $\Pi=\alpha\beta'$ defines the cointegrating relationships, β, and the rate of adjustment, α, of the endogenous variables to their steady state values. D_t is a vector of nonstochastic variables, such as centered seasonal dummies which sum to zero over a full year by construction and are necessary to account for short-run effects which could otherwise violate the Gaussian assumption, and/or intervention dummies; μ is a drift and T is the sample size.

If we allow the parameters of the model $\theta=(\Gamma_1,\ldots,\Gamma_{k+1},\Pi,\gamma,\mu,\Sigma)$ to vary unrestrictedly, then model (6) corresponds to the I(0) model. The I(1) and I(2) models are obtained if certain restrictions are satisfied. Thus, the higher-order models are nested within the more general I(0).

It has been shown (Johansen, 1991) that if $z_t \sim I(1)$, then that matrix Π has reduced rank $r<p$, and there exist pxr matrices α and β such that $\Pi=\alpha\beta'$. Furthermore, $\Psi = \alpha_\perp'(\Gamma)\beta_\perp$ has full rank, where $\Gamma = I - \sum_{i=1}^{k}\Gamma_i$ and $\alpha_\perp$ and $\beta_\perp$ are $px(p-r)$ matrices orthogonal to α and β, respectively.

Following this parameterization, there are r linearly-independent stationary relations given by the cointegrating vectors β and $p-r$ linearly-independent non-stationary relations. These last relations define the common stochastic trends of the system and how they contribute to the various variables. By contrast the AR representation of model (6) is useful for the analysis of the long-run relations of the data.

The I(2) model is defined by the first reduced rank condition of the I(1) model and that $\Psi = \alpha_\perp'\Gamma\beta_\perp = \varphi\eta'$ is of reduced rank s_1, where φ and η are $(p-r)xs_1$ matrices and $s_1<(p-r)$.

Under these conditions we may re-write (6) as

$$\Delta^2 z_t = \Pi z_{t-1} - \Gamma \Delta z_{t-1} + \sum_{i=1}^{k-2} \Psi_i \Delta^2 z_{t-1} + \gamma D_t + \mu_0 + \mu_1 t + \varepsilon_t \quad (7)$$

where $\Psi_i = -\sum_{j=i+1}^{k-1} \Gamma_j$, $i=1,\ldots,k-2$

Following Rahbek et. al (1999) we outline a representation of the restricted VAR (7) which allows the observed process z_t to have (at most) linear deterministic trends and some or all components I(2). In general if $z_t \sim I(2)$ then the unrestricted linear regressor, $\mu_1 t$, allows for cubic trends while the constant regressor, μ_0, allows for quadratic trends. Rahbek et al. (1999) show that to guarantee linear trends in all linear combinations of z_t we must impose restrictions on both μ_1 and μ_0. First, the constant is decomposed into the spaces spanned by α and $\alpha_\perp$ respectively such that

$$\mu_0 = \alpha\bar{\alpha}'\mu_0 + \bar{\alpha}_\perp \alpha_\perp' \mu_0 \equiv \alpha\kappa_0 + \bar{\alpha}_\perp \alpha_\perp' \mu_0 \quad (8)$$

Then, the restrictions required to guarantee the linear trends correspond to

$$\mu_1 = \alpha\beta_0' \quad (9)$$

where $\beta_0' = -\beta'\tau_1$, and

$$\alpha_\perp' \mu_0 = \xi\eta_0' - (\alpha_\perp'\Gamma\bar{\beta})\beta_0' \quad (10)$$

where $\eta_0' = -(\bar{\beta}_\perp \eta)'\tau_1 = -\beta_\perp' \tau_1$. Note that κ_0, β_0 and η_0 are freely varying vectors of dimension s, r and respectively.

Finally, Rahbek *et al.*, (1999) provide a likelihood ratio (LR) test to test whether the linear trend enters the cointegrating vector significantly. Thus, under H_r the hypothesis of no linear trend in βz_t and therefore in the *polynomial* or *multicointegrating* relations is given by $\beta_0 = 0$. The likelihood ratio test for this hypothesis is given by

$$Q_{\beta_0} = T\sum_{i=1}^{r} \ln\{\frac{(1-\tilde{\lambda}_i^{\beta_0})}{(1-\tilde{\lambda}_i)}\} \quad (11)$$

where $\tilde{\lambda}_i$ are the largest eigenvalues solving the eigenvalue problem in (7) and likewise $\tilde{\lambda}_i^{\beta_0}$ are the largest eigenvalues solving (7) with z_t^* replaced by z_t. The test statistic for this likelihood ratio test is asymptotically $\chi^2(r)$ distributed.

Johansen (1997) shows that the space spanned by the vector z_t can be decomposed into r stationary directions, β, and $p-r$ nonstationary directions, $\beta_\perp$, and the latter into the directions $\beta_\perp^1, \beta_\perp^2$, where $\beta_\perp^1 = \beta_\perp \eta$ is of dimension pxs_1 and $\beta_\perp^2 = \beta_\perp (\beta_\perp' \beta_\perp)^{-1} \eta_\perp$ is of dimension pxs_2 and $s_1+s_2=p-r$. The properties of the process are described by:

$$I(2): \{\beta_\perp^{2\prime} z_t\},$$
$$I(1): \{\beta' z_t\}, \{\beta_\perp^{1\prime} z_t\},$$
$$I(0): \{\beta_\perp^{1\prime} \Delta z_t\}, \{\beta_\perp^{2\prime} \Delta^2 z_t\}, \{\beta' z_t + \omega \Delta z_t\}$$

where ω is a pxr matrix of weights, designed to pick out the I(2) components of z_t (Johansen, 1995a). Thus, we have that the cointegrating vectors $\beta' z_t$ are actually I(1) and require a linear combination of the differenced process Δz_t to achieve stationarity, i.e. the *polynomial* or *multicointegration* cointegration (Haldrup, 1998).

Johansen (1991) shows how the model can be written in moving average form, while Johansen (1997) derives the FIML solution to the estimation problem for the I(2) model. Furthermore, Johansen (1995a) provides an asymptotically equivalent two-step procedure which computationally is simpler. It applies the standard eigenvalue procedure derived for the I(1) model twice, first to estimate the reduced rank of the Π matrix and then, for given estimates of α and β, to estimate the reduced rank of $\tilde{\alpha}_\perp' \Gamma \hat{\beta}_\perp$, (Juselius, 1994, 1995, 1998).

In a multivariate context, such as the one given by the monetary model, a vector error correction model may contain multiple cointegrating vectors, and in such a case the individual cointegrating vectors are *underidentified* in the absence of sufficient linear restrictions on *each* of the vectors. The issue of identification in cointegrated systems has recently been addressed by Johansen and Juselius (1994) and Johansen (1995b).

Consider again the long run matrix $\Pi=\alpha\beta'$ and let Φ be any rxr matrix of full rank. Then $\Pi=\alpha\Phi^{-1}\Phi\beta'=\alpha^*\beta^*$, where $\alpha^*=\alpha\Phi^{-1}$ and $\beta^*=\Phi\beta$ and without imposing restrictions on α and β so that to limit the admissible matrices, Φ, the cointegrating vectors are not unique. In fact given the normalization under which both α and β are calculated, only the space spanned by the β vectors is uniquely determined. Thus, we need to impose restrictions implied by economic theory, for example homogeneity and zero restrictions, so that we are able to discriminate between them.

The necessary and sufficient conditions for identification in a cointegrated system in terms of linear restrictions on the columns of β are analogous to the classic identification problem that we face in the simultaneous equations problem. Thus, the order condition for identification of each of the r cointegrating vectors is that we can impose at least $r-1$, just identifying restrictions and one normalization on each vector without changing the likelihood function. This is a necessary condition. The necessary and sufficient condition for identification of the ith cointegration vector, the Rank condition, is that the rank $(R_i'H_1,\ldots,R_i'H_k) = k$, where i and $k=1,\ldots,r-1$ and $k\neq i$ (Johansen and Juselius, 1994). The linear restrictions of the model are of the form $R_i'\beta_i = 0$, where R_i is a (pxk) matrix, or equivalently by $R_i'H_i = 0$, $i=1$, where H_i is a known (pxs_i) design matrix which satisfies $\beta_i = H_i\tau_i$ and τ_i is a $(s_i x1)$ vector of freely varying parameters $(k_i+s_i=p)$. For example, if there are three accepted cointegrating vectors among the eight variables of our model, the exact identification, according to the order condition requires one linear restriction on each cointegrating vector and the Rank condition is satisfied if rank $(R_i'H_j) \geq 1, i \neq j$. Johansen and Juselius (1994) provide a likelihood ratio statistic to test for overidentifying restrictions that is distributed as a χ^2 with $v = \sum_i (p - r + 1 - s_i)$, where p and r are given by the dimension pxr of β, and s_i is the number of freely estimated parameters τ_i in vector i, which comply with $\beta_i = H_i\tau_i$.

An equally important issue, along with the existence of at least one cointegration vector, is the issue of the stability of such a relationship through time as well as the stability of the estimated coefficients of such a relationship. Thus, Septhon and Larsen (1991) have shown that Johansen's test may be characterised by sample dependency. Hansen and Johansen (1993) have suggested methods for the evaluation of parameter constancy in cointegrated VAR models, formally using estimates obtained from the Johansen FIML technique. Three tests have been constructed under the two VAR representations. In the "Z-representation" all the parameters of model (8) are re-estimated during the recursions while under the "R-representation" the short-run parameters Γ_i, $i=1...k$, are fixed to their full sample values and only the long-run parameters α and β are re-estimated.

The first test is called the ***Rank*** test and is used to examine the null hypothesis of sample independency of the cointegration rank of the system. This is accomplished by first estimating the model over the full sample, and the residuals corresponding to each recursive subsample are used to form the standard sample moments associated with Johansen's reduced rank. The eigenvalue problem is then solved directly from these subsample mo-

ment matrices. The obtained sequence of trace statistics is scaled by the corresponding critical values, and we accept the null hypothesis that the chosen rank is maintained regardless of the subperiod for which it has been estimated if it takes values greater than one.

A second test deals with the null hypothesis of constancy of the cointegration space for a given cointegration rank. Hansen and Johansen propose a likelihood ratio test that is constructed by comparing the likelihood function from each recursive subsample with the likelihood function computed under the restriction that the cointegrating vector estimated from the full sample falls within the space spanned by the estimated vectors of each individual sample. The test statistic is a χ^2 distributed with $(p-r)r$ degrees of freedom.

The third test examines the constancy of the individual elements of the cointegrating vectors β. However, when the cointegration rank is greater than one, the elements of those vectors can not be identified, except under restrictions. Fortunately, one can exploit the fact that there is a unique relationship between the eigenvalues and the cointegrating vectors. Therefore, when the cointegrating vectors have undergone a structural change, this will be reflected in the estimated eigenvalues. Hansen and Johansen (1993) have derived the asymptotic distribution as well as the asymptotic variance of the estimated eigenvalues.

III. Empirical results

The monthly data for this study, relating to the Chilean peso-dollar and Mexican peso-dollar official exchange rates and Chilean, Mexican and US macroeconomic variables, are all taken from the International Monetary's Fund *International Financial Statistics* CD-ROM while the data for the black market exchange rates were taken from the monthly series in various issues of the *World Currency Yearbook* and the relevant time periods are Chile (1973.10-1993.12) and Mexico (1976.09-1993.12). In particular, the black and official market exchange rates are expressed in units of home currency per foreign currency and they are end-of-month quotations; The money stock is M1 (line 34 for Chile and Mexico and line 59 for the U.S. and is seasonally unadjusted). Real output is proxied by manufacturing output (Chile; line 66) or industrial production (Mexico and U.S.; lines 66 and 66c, respectively). For the U.S. the interest rate is the Treasury bill rate (line 60c). Because sufficient interest rate data do not exist for Chile and Mexico, we measured the cost of holding money as the annualized three-month rate of consumer price inflation (line 64).[4,5]

1. Determination of the cointegration rank and the order of integration

The first step in the analysis is the determination of the cointegration rank index, r, and the order of integration of the variables. As a first check for the statistical adequacy of model (8) we report some multivariate and univariate misspecification tests in Table 1, in order to investigate that the estimated residuals do not deviate from being Gaussian white noise errors. A structure of three lags for each bilateral exchange rate was chosen based on these misspecification tests.

Specifically, the multivariate LB test for serial correlation up to the 42nd order and the multivariate LM tests for first and fourth order residual autocorrelations are not significant, whereas multivariate normality is clearly violated. Normality can be rejected as a result of skewness (third moment) or excess kurtosis (fourth moment). Since the properties of the cointegration estimators are more sensitive to deviations from normality due to skewness than to excess kurtosis we report the univariate Jarque-Bera test statistics together with the third and fourth moment around the mean. It turns out that the rejection of normality is essentially due to excess kurtosis, and hence not so serious for the estimation results. The presence of non-normality may be attributed to the fact that both the Chilean peso-dollar and the Mexican peso-dollar official exchange rates were administratively determined throughout the period under consideration as well as to the short-term interest rates, signifying both the high volatility of money stock in both countries. The ARCH(3) tests for third order autoregressive heteroscedasticity and is rejected for all equations. Again cointegration estimates are not very sensitive to ARCH effects.[6] The R^2 measures the improvement in explanatory power relative to the random walk (with drift) hypothesis, i.e. $\Delta x_t=\mu+\varepsilon_t$. They show that with this information set we can explain quite a large proportion of the variation in the exchange rates and the money supply, but to a much lesser extent the variation in the output and the interest rates.

The Johansen-Juselius multivariate cointegration technique, as explained in section 3, is applicable only in the presence of variables that are realizations of I(1) processes only or a mixture of I(1) and I(0) processes, in systems used for testing for the order of cointegration rank. Until recently the order of integration of each series was determined via the standard unit root tests. However, it has be made clear by now that if the data are being determined in a multivariate framework, a univariate model is at best a bad approximation of the multivariate counterpart, while at worst, it is completely misspecified leading to arbitrary conclusions. Thus, in the presence of I(1) series, Johansen and Juselius (1990) developed a multivariate stationarity

test which has become the standard tool for determining the order of integration of the series within the multivariate context.

Additionally, when the data are I(2) one also has to determine the number of I(2) trends, s_2, among the $p-r$ common trends. The two-step procedure discussed in section 3 is used to determine the order of integration and the rank of the two matrices. The hypothesis that the number of I(1) trends = s_1 and the rank = r is tested against the unrestricted H_0 model based on a likelihood ratio test procedure discussed in Paruolo (1996) and Rahbek et.al (1999).

Table 2(a) reports the evidence from the application of the two step procedure discussed in section 3. The numbers refer to the value of the trace test statistics for all values of and $s_1=p-r-s_2$, under the assumption that the data contain linear but no quadratic trends. The 95% critical test values reported in italics below the calculated test values are taken from the asymptotic distributions reported in Rahbek et.al (1999, Table 1). Starting from the most restricted hypothesis $\{r=0, s_1=0, s_2=8\}$ and testing successively less and less restricted hypotheses according to the Pantula (1989) principle, it is shown that the case in favour of one I(2) component can not be rejected in both cases. Specifically, we are unable to reject the hypothesis $\{r=3, s_1=4, s_2=1\}$ for both the Chilean peso – dollar and the Mexican peso – dollar case.[7,8]

In addition to the formal test, Juselius (1995) offers further insight into the I(2) and I(1) analysis as well as the correct cointegration rank. She argues that the results of the trace and maximum eigenvalue test statistics of the I(1) analysis, i.e. from the estimation of the model without allowing for I(2) trends, should be interpreted with some caution for two reasons. First, the conditioning on intervention dummies and weakly exogenous variables is likely to change the asymptotic distributions to some (unknown) extent. Second, the asymptotic critical values may not be very close approximations in small samples. Juselius (1995) suggests the use of the additional information contained in the roots of the characteristic polynomial. Table 2(b) provides the pxk roots of the companion matrix. If there are I(2) components in the vector process, then the number of unit roots in the characteristic polynomial is s_1+2s_2. The results of this test are consistent with the estimated roots of the companion matrix since for both the Chilean peso-dollar case and the Mexican peso-dollar case there are six unit roots in the process, four of which are I(1) components and one of which is the I(2) component, and given that we have a system of eight variables three additional smaller roots are left in the process associated with the three stationary long-run relationships.[9]

Finally, we allow for the presence of a linear trend following the work by Dornbusch (1989) who suggests that due to both differing productivity trends in the tradeable and non-tradeable goods sectors and inter-country differences in consumption patterns, a decline in domestic prices relative to foreign prices could appear as a linear trend in the purchasing power parity (PPP) relationship underlying the monetary model. We tested for the significance of the deterministic trend in the multicointegrating relation by applying the likelihood ratio statistic discussed in (12). The test statistic in the Chilean peso–dollar case is and in the Mexican peso–dollar case is 13.69 and 15.21 respectively, with a p-value (0.00) and thus we reject the null hypothesis that the linear trend does not enter significantly in the cointegration vector of the multicointegrating relation.

2. *A data transformation from I(2) to I(1)*

Since the statistical inference of the I(2) model is quite complicated relative to that of I(1) model, a data transformation that allows us to move to the I(1) model will simplify the empirical analysis considerably without any loss of substance, and this transformation is needed for both the Chilean peso-dollar and the Mexican peso–dollar cases. A possible hypothesis which could be extracted from presence of an I(2) component in the system is that the variable $\{m_t - m_t^*\}$ is a first-order nonstationary process.[10] If accepted, the implication is that the domestic and foreign money aggregates are cointegrating from I(2) to I(1), and use of the transformed data vector $z_t = [e_p, e_o, m_t - m_t^*, \Delta m_t, y_t^*, i_t, i_t^*]$, would then allow us to move to the I(1) model. The validity of this transformation is based on the assumption that $\{m_t - m_t^*\} \sim I(1)$, $\{e_p, e_o, y_t, y_t^*, i_t, i_t^*\} \sim I(1)$, and that $\{m_t - m_t^*\}$ is a valid restriction on the long-run structure, but not necessarily on the short-run structure.

To test whether long-run proportionality between the domestic and foreign money could be imposed on the data and the test statistic which is asymptotically distributed as $\chi^2(1)$, is equal to 0.64 for the Chilean peso–dollar case and 0.89 for the Mexican peso–dollar case and hence was not significant. Therefore, long-run proportionality between the Chilean and US money stock and the Mexican and US money stock could not be rejected. Furthermore, the I(2) test confirmed that this transformation removes all signs of the I(2) components from the data.

The remaining analysis for Chile and Mexico will be performed in the I(1) model, containing long-run but not short-run proportionality between the domestic and foreign money, based on the vector $[e_p, e_o, m-m^*, \Delta m, y, y^*, i, i^*]$. Alternatively we could have chosen to analyze the vector $[e_p, e_o, m-m^*, \Delta m, y, y^*, i, i^*]$ as it corresponds to the same likelihood function. Since, we

are interested in how the exchange rate reacts to disequilibrium positions in the domestic money we choose the first alternative.

To assess the statistical properties of the chosen variables for both cases the test statistics reported in Table 3 are useful. The test of long-run exclusion is a check of the adequacy of the chosen measurements and show that none of the variables can be excluded from the cointegration space. The test for stationarity indicate that none of the variables can be considered stationary under any reasonable choice of r. Finally, the test of weak exogeneity shows that the output and possibly the domestic interest variables can be considered weakly exogenous for the long-run parameters β. All three tests are χ^2 distributed and are constructed following Johansen and Juselius (1990, 1992). Furthermore, Table 3 presents diagnostics on the residuals from the cointegrated VAR model which indicate that they are i.i.d. processes since no evidence of serial correlation or non-normality was detected. This provides further support for the hypothesis of a correctly specified model.

3. The empirical analysis of the transformed I(1) model

All results discussed in this section are based on the analysis of model (2) with the reduced rank condition on Π imposed for $k=3$ and $r=3$ applied to the transformed vector for Chile and Mexico $z_t=[e_b,e_o,m-m^*,\Delta m,y,y^*,i,i^*]$.

Table 4 reports the unrestricted estimates of the normalized cointegrating vectors which are based upon eigenvectors obtained from an eigenvalue problem resulting from Johansen's reduced rank regression approach. The estimated parameters, in both cases, carry signs which are in line with those that the monetary model predicts in (1) (expressed in implicit form that the estimates correspond to the elements of an eigenvector).

Given the presence of three cointegrating vectors we continue now with the economic identification of our system. On the first cointegrating vector we impose five restrictions, namely proportionality between the exchange rate and relative monies and exclusion of the official exchange rate, the growth of domestic money as well as of the two interest rates. This long-run relationship is necessary to hold in the forward looking solution of the monetary model when the variables are I(1) processes, the UIP condition is invoked and no bubbles are present in the foreign exchange market. In fact, the imposition of these five restrictions overidentifies this relationship. Identification of the second cointegration vector requires a set of restrictions that is independent of the one imposed on the first one. This implies that from the accepted cointegrated vectors only one can possibly describe the long-run monetary model and this is in variance with the cointegrating results on the monetary model which other researchers report (e.g. MacDonald and

Taylor, 1992, 1994), where they conclude that as many four vectors can be considered as possibly explaining the monetary model, but in line with the recent results of Kouretas (1997) and Diamandis et al. (1998, 2000). The second vector can be interpreted as a particular variant of the UIP condition for countries like Chile and Mexico, which has been suffering from chronic budget deficits and have adopted a policy of high interest rates to finance these deficits with increasing capital inflows while at the same time the Central Bank of Chile and the Central Bank of Mexico had been using the exchange rate as a target for the monetary policy in an effort to combat double digit inflation rates, (Edwards, 1988, 1989; Edwards and Montiel, 1989). During the period under examination Latin American countries have experienced serious financial imbalances and a quite contrasting behaviour of net capital flows. In late 1970s those capital flows were associated mainly with foreign direct investments while in early 1990s there was a tremendous surge in portfolio funds following the market oriented reforms adopted by almost all the countries in the region. In the meantime, the 1980s, the area experienced a drying up of private international financing which resulted to significantly negative net resource transfers.

A common feature for the majority of Latin American countries had been the restrictions on international capital mobility through a variety of means like administrative controls, outright prohibitions etc. However, the true degree of capital mobility was substantially higher than what the legal restrictions would imply. This has been clearly documented either by examining the historical events following the 1982 debt crisis and the ensuing massive private capital outflows and/or from several recent papers (Edwards, 1994, 1998 and 1999; Phylaktis, 1991). The foreign exchange restrictions initially were adopted in order to defend the domestic currency from devaluation pressures. In fact we observed a significant increase in capital controls prior to the abandonment of the fixed peg and a substantial increase of the black market premium (Edwards, 1998; Montiel and Reinhart, 1999). In the early 1990s several Latin American countries- with the exception of Mexico-resorted to exchange controls in order to prevent the real appreciation of their currencies. This appreciation was the outcome that the capital inflows had on the monetary base with a resulting negative impact on inflation. Most countries tried to deal with this situation through the imposition of controls on capital inflows and sterilized interventions. The latter mechanism has been used by almost all countries in the region although its effectiveness in the medium to long run is very doubtful due to the high cost it imposes on the central bank and the higher interest rates it generates. Chile has been an exception to this situation through the adoption of a policy towards high-

er exchange rate flexibility based on a crawling band system which helped it to maintain the real appreciation of peso to controlled levels.

Finally, on the third vector we impose the proportionality hypothesis between the black and official market exchange rates and zero restrictions on all other coefficients, as well as on the constant term, and this set up provides a direct test of long-run informational efficiency between the two markets (Moore and Phylaktis, 1996).

Imposing the above restrictions on the transformed vector for Chile and Mexico, the matrix of the linear and homogeneous restrictions is the following.

$$C = \begin{bmatrix} 1 & 0 & -1 & 0 & \lambda_4 & \lambda_5 & 0 & 0 \\ 0 & 0 & 0 & \lambda_3 & 0 & 0 & 1 & -1 \\ 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \quad (12)$$

where λ_3 is expected to be negative.

The results of the estimated restricted vectors along with the likelihood test for the acceptance of the overidentifying restrictions, for both the Chilean peso-dollar and the Mexican peso-dollar exchange rates, are given in Table 4. According to the evidence we reject the joint restrictions for both cases which implies that for both countries we reject the forward-looking version of the monetary model.

In order to uncover which of the three structures, the monetary model in its forward-looking version (i.e. the interest rates are excluded) or the UIP condition in the long-run (i.e. the interest rate differential is stationary) or the proportionality hypothesis between the black and official exchange rates, is responsible for the afore-mentioned result, we tested each one of them separately. This can be accomplished by imposing the same restrictions on all three cointegrating vectors (Johansen and Juselius, 1992) and the test statistic is distributed as χ^2 with $(p-s)xr$ degrees of freedom. The test results lead to the conclusion that we are unable to reject the coefficient restrictions implied by the monetary model given in equation (1). On the contrary in both cases we rejected the result that the UIP condition is encompassed in the cointegrating space we have estimated. This finding may be attributed to the extensive foreign exchange controls which still exist in both countries and cause a continuous deviations from the UIP condition. Finally, long-run informational efficiency holds in both countries implying the black and official exchange markets have the ability to process information efficiently.

Figures 3-5 present the evidence from the Hansen-Johansen (1993) recursive analysis on the sample independence of the Johansen procedure results. The overall conclusion drawn from the three tests is mixed

and it may suggest that there is evidence of sample dependency of the cointegration results. Specifically, Figures 3(a) and 3(b) show that the rank of the cointegration space depends on the sample size from which it has been estimated, since the null hypothesis of a constant rank is rejected for both the Chilean peso-dollar and the Mexican peso-dollar cases. Figures 4(a) and 4(b) clearly indicate that we are always unable to reject the null hypothesis for the sample independence of the cointegration space for a given cointegration rank for both cases. Finally, the last two figures 5(a) and 5(b) in each case provide overwhelming evidence in favour of the constancy of the cointegrating vectors since no substantial drift was detected on the time paths of the eigenvalues. The last finding seems to indicate that the maximum likelihood estimates do not display considerable instabilities in recursive estimates. These results further reinforce our conclusion that the unrestricted monetary model of exchange rate determination is a valid framework to analyze movements of the Chilean and Mexican black market exchange rates from a long-run perspective.

Conclusions

In this paper we have examined the long-run properties of the monetary exchange rate model modified to incorporate the existence of a substantial black market for U.S. dollars for two Latin America countries, Chile and Mexico under the twin hypotheses that the system contains variables that are I(2) and that a linear trend is required in the cointegrating relations. The data used are monthly and are Chile (1973.10-1993.12) and Mexico (1976.09-1993.12). Several recent developments in the econometrics of non-stationarity and cointegration were applied and a number of novel results stem from our analysis. First, this paper makes use of the recently developed testing methodology developed by Johansen (1992a, 1995a, 1997) and extended by Paruolo (1986) and Rahbek et al. to test for the existence of I(2) and I(1) components in a multivariate context. Additionally, we estimated the roots of the companion matrix as suggested by Juselius (1995) in order to make firmer conclusions about the rank of the cointegration space. The joint hypothesis of three cointegration vectors and one I(2) component could not be rejected for both countries an outcome that led to the transformation of the basic monetary model to contain I(1) variables and in which the rate of growth of domestic money plays a significant role. Second, given that three cointegration vectors were accepted, we formally imposed independent linear restrictions on each vector as suggested by Johansen and Juselius (1994) and Johansen (1995) in order to identify our

system. Based on a likelihood ratio test for overidentifying restrictions (Johansen and Juselius, 1994) we rejected the joint restriction that the system represents the forward looking version of the monetary model for either case. Given this negative result we then tested whether independently the unrestricted version of the monetary model, the UIP condition and the proportionality between the black and official exchange rates could be considered and the results show that the UIP condition is not valid as a long-run relationship while the unrestricted version of the monetary model can still be a valid framework to investigate the long-run movements of the Chilean and Mexican black market exchange rates. There is also evidence of long-run informational efficiency in the black market which implies that this market processes information efficiently to the official market. Finally, we tested for parameter stability and it is shown that the dimension of the cointegration rank is sample dependent while the estimated coefficients do not exhibit instabilities in recursive estimations.

TABLE 1
RESIDUAL MISSPECIFICATION TESTS OF THE MODEL WITH K=3

Chilean Peso-Dollar

Eq.	S_c	LB(42)	ARCH(3)	NORM(3)	R^2
Δeb	0.0023	42.34	3.35	6.98	0.69
Δeo	0.0018	44.32	2.89	12.34	0.55
Δm	0.0044	54.67	4.45	5.57	0.77
Δm*	0.0056	44.82	5.56	4.56	0.62
Δy	0.0012	46.98	3.46	8.67	0.73
Δy*	0.0145	61.22	0.99	1.23	0.45
Δi	0.0033	53.45	2.32	22.34	0.46
Δi*	0.0125	37.28	1.98	5.97	0.42

Mexican Peso-Dollar

Eq.	S_e	LB(42)	ARCH(3)	NORM(3)	R^2
Δeb	0.0037	47.00	2.68	7.89	0.72
Δeo	0.0015	43.00	1.99	13.55	0.54
Δm	0.0032	53.93	2.31	9.23	0.80
Δm*	0.0127	55.42	2.42	3.38	0.84
Δy	0.0013	34.56	4.28	9.76	0.85
Δy*	0.0009	51.28	1.34	0.98	0.50
Δi	0.0022	26.78	0.21	19.34	0.41
Δi*	0.0008	33.24	2.47	5.78	0.49

Notes: LB is the Ljung-Box test statistic for residual autocorrelation, ARCH is the test for heteroscedastic residuals, and NORM the Jarque-Bera test for normality. All test statistics are distributed as x^2 with the degrees of freedom given in parentheses.

Multivariate Residuals Diagnostics

Case	L-B(2938)	LM(1)	LM(4)	c^2 (14)
CP/USD	1933.29(0.20)	64.09(0.07)	59.79(0.14)	35.82(0.00)
MP/USD	2009.33(0.15)	66.22(0.06)	62.78(0.12)	37.67(0.00)

Notes: L-B is the multivariate version of the Ljung-Box test for autocorrelation based on the estimated auto- and cross - correlations of the first [T/4=51] lags with 2938 degrees of freedom. LM(1) and LM(4) are the tests for first and fourth-order autocorrelation distributed as a x^2 with 24 degrees of freedom and x^2 is a normality test which is a multivariate version of the Shenton-Bowman test with 14 degrees of freedom.

TABLE 2
TESTING THE RANK OF THE I(2) AND THE I(1) MODEL

Testing the joint hypothesis $H(s_1 \cap r)$

Chilean Peso-Dollar

p-r	r	$Q(s_1 \cap r/H_0)$								Q_r
8	0	1152.9	942.4	795.0	676.4	576.8	489.4	425.1	368.3	350.6
		441.5	397.4	356.5	317.9	283.3	252.3	225.6	202.2	182.6
7	1		895.4	725.7	586.8	469.9	378.2	309.2	252.1	239.5
			351.6	311.2	274.0	241.2	211.6	186.1	164.6	146.8
6	2			691.8	528.1	401.9	304.1	219.3	156.2	146.7
				269.2	233.8	202.8	174.9	151.3	130.9	115.4
5	3				504.2	362.75	253.0	169.3	93.5	79.2
					198.2	167.9	142.2	119.8	101.5	87.2
4	4					322.4	209.5	125.8	70.2	58.6
						137.0	113.0	92.2	75.3	62.8
3	5						204.9	107.7	47.3	30.6
							86.7	68.2	53.2	42.7
2	6							99.3	39.6	16.0
								47.6	34.4	25.4
1	7								45.1	4.4
									19.9	12.5
s2		8	7	6	5	4	3	2	1	

Mexican Peso - Dollar

p-r	r	$Q(s_1 \cap r/H_0)$								Q_r
8	0	989.4	813.5	688.3	566.7	471.8	392.7	334.7	284.2	265.4
		441.5	397.4	356.5	317.9	283.3	252.3	225.6	202.2	182.6
7	1		710.6	564.2	445.4	362.9	285.0	231.1	194.2	177.3
			351.6	311.2	274.0	241.2	211.6	186.1	164.6	146.8
6	2			519.1	401.4	313.0	241.8	193.7	148.1	124.7
				269.2	233.8	202.8	174.9	151.3	130.9	115.4
5	3				345.9	237.5	166.0	117.5	94.1	85.3
					198.2	167.9	142.2	119.8	101.5	87.2
4	4					206.2	116.3	78.1	55.8	48.2
						137.0	113.0	92.2	75.3	62.8
3	5						128.5	53.5	32.4	25.0
							86.7	68.2	53.2	42.7
2	6							89.2	31.3	14.0
								47.6	34.4	25.4
1	7								28.7	5.4
									19.9	12.5
s2		8	7	6	5	4	3	2	1	

Notes: p is the number of variables, r is the rank of the cointegration space, S_1 is the number of I(1) components and S_2 is the number of I(2) components. The numbers in italics are the 95% critical values (Rahbek, et al., 1999, Table 1). For all tests a structure of three lags for both black exchange rates was chosen according to a likelihood ratio test, corrected for the degrees of freedom (Sims, 1980) and the Ljung-Box Q statistic for detecting serial correlation in the residuals of the equations of the VAR. A model with an unrestricted constant in the VAR equation and a linear trend restricted in the cointegrating vector is estimated for all three cases according to the Johansen (1992b) testing methodology.

TABLE 2
CONTINUES

Modulus of 9 largest roots

Chilean peso	
Unrestricted model	0.98 0.98 0.97 0.97 0.95 0.88 0.71 0.55 0.42
r=3	1.00 1.00 1.00 1.00 1.00 0.94 0.65 0.48 0.33
Mexican peso	
Unrestricted model	0.99 0.99 0.95 0.95 0.90 0.90 0.81 0.72 0.62
r=3	1.00 1.00 1.00 1.00 1.00 0.96 0.70 0.60 0.33

TABLE 3
TESTS FOR LONG-RUN EXCLUSION, STATIONARITY, AND WEAK EXOGENEITY

	Long-run exclusion		Stationarity		Weak exogeneity	
Variable	**CP/USD**	**MP/USD**	**CP/USD**	**MP/USD**	**CP/USD**	**MP/USD**
e_p	11.34*	9.46*	33.87*	32.01*	15.45*	13.11*
e_p	11.55*	13.97*	43.15*	31.93*	40.22*	41.58*
m-m*	22.45*	21.08*	21.56*	25.45*	11.23*	53.88*
Δm	35.67*	24.29*	33.23*	20.45*	16.45*	20.20*
y	8.99*	7.99*	21.44*	20.49*	6.68	7.11
y*	10.23*	8.87*	25.23*	19.71*	3.24	2.32
i	9.67*	9.64*	17.77*	17.60*	17.56*	16.45*
i*	19.67*	21.03*	19.02*	23.75*	14.22*	13.67*

Notes: e_o, e_p, (m-m*), Δm, y and i are respectively the spot exchange rate, the relative monies, the first difference of the domestic money supply, the real output and the short-term interest rate, with the U.S. magnitudes denoted with an asterisk. The long-run exclusion restriction and the weak exogeneity tests are χ^2 distributed with three degrees of freedom and the 5% critical level is 7.81, and the stationarity test is a χ^2 distributed with six degrees of freedom and the 5% critical level is 12.59.

Multivariate Residuals Diagnostics

Case	L-B(3072)	LM(1)	LM(4)	χ^2 (16)
CP/USD	1696.12(0.26)	52.20(0.35)	61.12(0.09)	726.29(0.00)
MP/USD	1453.60(0.28)	58.71(0.09)	63.50(0.08)	288.12(0.00)

Notes: L-B is the multivariate version of the Ljung-Box test for autocorrelation based on the estimated auto- and cross - correlations of the first [T/4=51] lags with 3072 degrees of freedom. LM(1) and LM(4) are the tests for first and fourth-order autocorrelation distributed as a χ^2 with 64 degrees of freedom and χ^2 is a normality test which is a multivariate version of the Shenton-Bowman test with 16 degrees of freedom.

TABLE 4
ESTIMATED COEFFICIENTS AND HYPOTHESIS TESTING

$$e_b = \lambda_1 e_0 + \lambda_2 (m - m^*) + \lambda_3 \Delta m + \lambda_4 y + \lambda_5 y^* + \lambda_6 i + \lambda_7 i^* + \lambda_0 + \kappa_1 t$$

CP/USD	1.00	-1.46	3.45	-93.82	-7.88	5.34	0.03	-0.15	-0.23	-1.34
	1.00	-6.55	11.24	-86.46	77.87	-33.24	0.01	-0.11	0.34	0.02
	1.00	-1.14	10.98	-34.56	22.56	-12.55	0.02	-0.16	0.09	0.23
MP/USD	1.00	-1.22	4.33	-3.32	-8.01	4.21	0.04	-0.11	-0.79	-1.45
	1.00	-3.52	9.23	-6.22	7.21	-3.89	0.03	-0.17	1.25	0.11
	1.00	-1.15	4.66	-4.77	-6.22	-2.55	0.19	-0.24	-011	-0.55

Notes: The eigenvectors have been normalized with respect to the estimated coefficient on the black market exchange rate

A. TESTS FOR OVERIDENTIFYING RESTRICTIONS

CP/USD

$$C = \begin{bmatrix} 1 & 0 & -1 & 0 & 5.58(2.16) & -3.65(1.22) & 0 & 0 & -6.6(1.34) & -3.56(2.56) \\ 0 & 0 & 0 & -29.16(3.22) & 0 & 0 & 1 & -1 & 0.03(0.013) & 0.23(0.89) \\ 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0.88(1.01) \end{bmatrix}$$

Q(7)=43.79[0.00]

MP/USD

$$C=\begin{bmatrix} 1 & 0 & -1 & 0 & 3.87(0.93) & -2.77(1.08) & 0 & 0 & -4.6(1.1) & -2.89(3.01) \\ 0 & 0 & 0 & -24.35(2.99) & 0 & 0 & 1 & -1 & 0.07(0.03) & -0.78(1.23) \\ 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0.99(0.65) \end{bmatrix}$$

Q(7)=39.42[0.00]

Notes: Q denotes a likelihood ratio test for overidentifying restrictions as suggested by Johansen and Juselius (1994) and is distributed as a χ^2 with the corresponding degrees of freedom given in parentheses. Numbers in brackets denote marginal significance levels. Numbers in parentheses below the coefficient estimates report estimated asymptotic standard errors which are the square roots of the computed Wald test statistics developed by Johansen (1991).

Case	H_1 ($\lambda_1=0,\lambda_2=1,$ $\lambda_4=-\lambda_5,\lambda_6=\lambda_7$)	H_2 ($\lambda_1=0,\lambda_4=\lambda_5=0,$ $\lambda_7=-\lambda_7$) e_b is excluded	H_2 $\lambda_1=1$
CP/USD	0.23	0.00	0.11
MP/USD	0.12	0.00	0.09

Notes: Numbers correspond to marginal significance levels of the H_5 test statistic (Johansen and Juselius, 1992) distributed as a χ^2 with five degrees of freedom, $(p-r)xr_1$. [p = number of variables, r = cointegration rank, r_1 = number of vectors on which the restrictions are imposed]. The coefficient estimates necessary for the construction of the test are those given above.

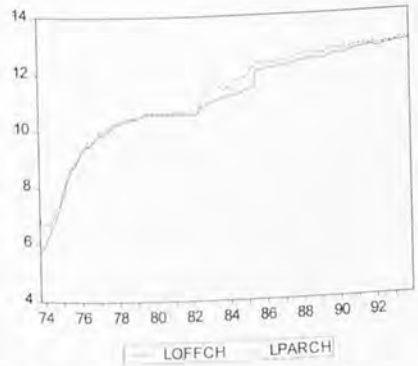

Figure 1(a): Official and black market exchange rates Chile-U.S. case

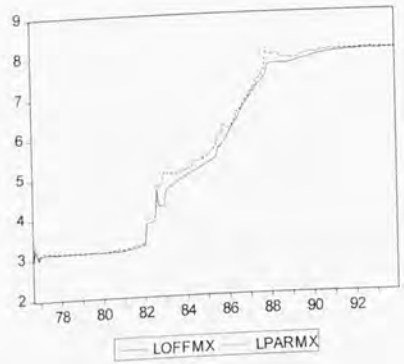

Figure 1(b): Official and black market exchange rates Mexico-U.S. case

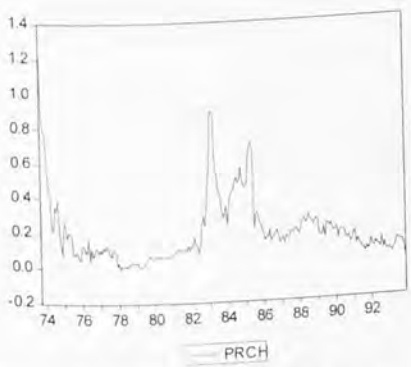

Figure 2(a): The black market premium Chile-U.S. case

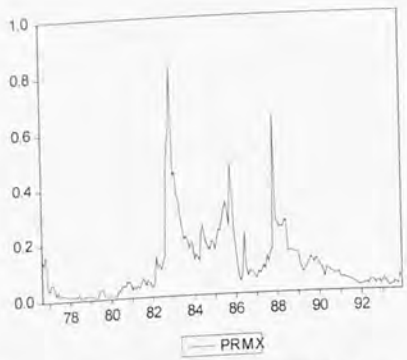

Figure 2(b): The black market premium Mexico-U.S. case

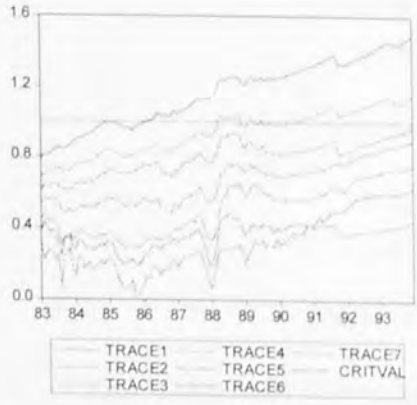

Figure 3(a): The Trace Test Chile-U.S. case

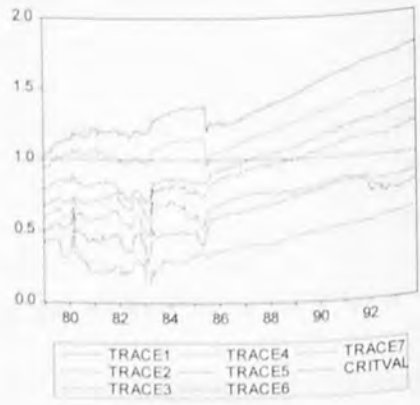

Figure 3(b): The Trace Test Mexico-U.S. case

1 is the 5% significance level

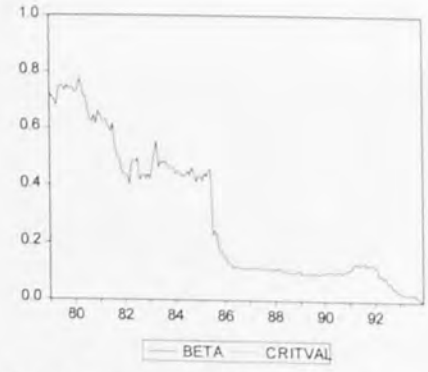

Figure 4(a): The test for the constancy of beta Chile-U.S.case

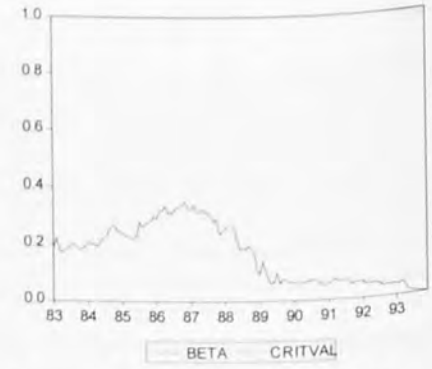

Figure 4(b): The test for the constancy of beta Mexico-U.S.case

1 is the 5% significance level

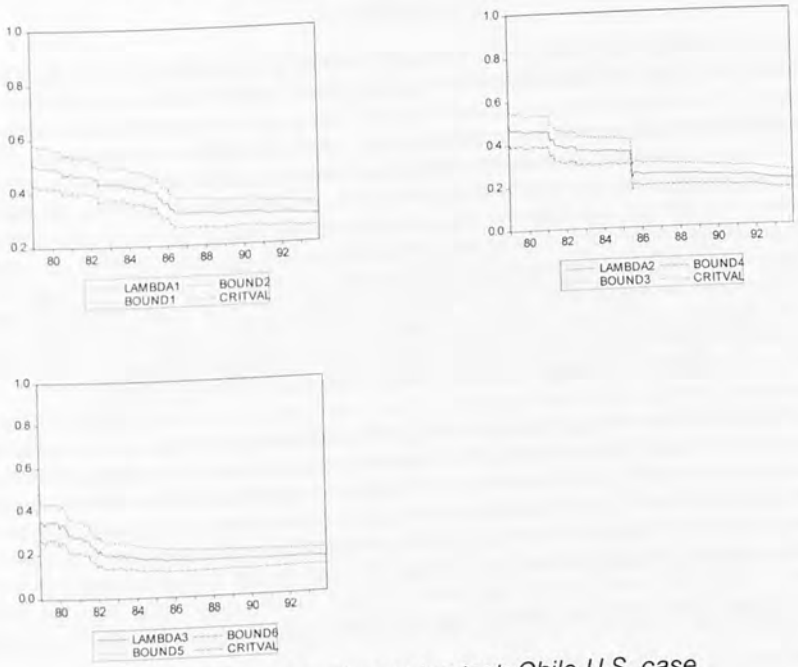

Figure 5 (a): The eigenvalue test: Chile-U.S. case

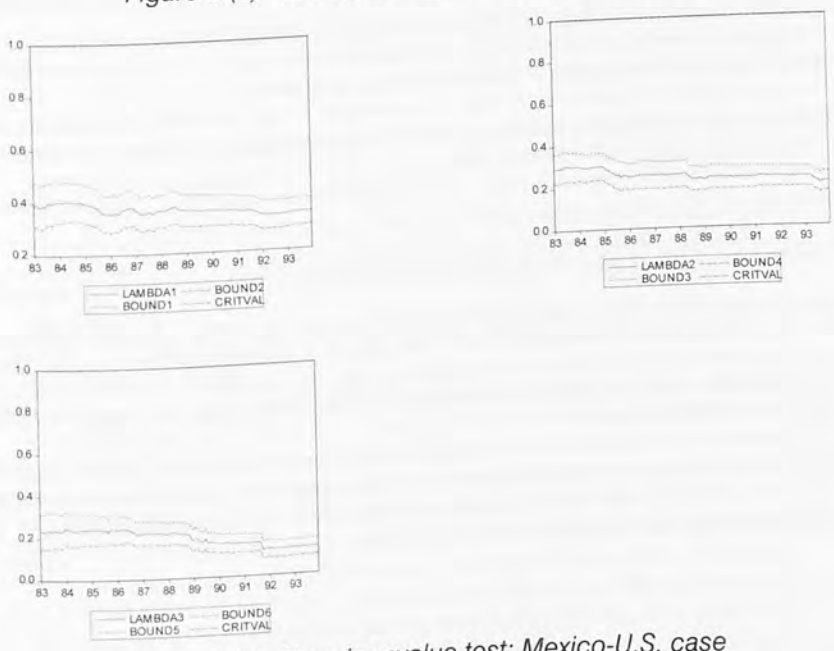

Figure 5 (b): The eigenvalue test: Mexico-U.S. case
1 is the 5% significance level

Notes

1. Gulati (1988) estimated that during the period 1977-83 underinvoicing of exports as a percentage of official exports was 20% for Argentina, 13% for Brazil and 34% for Mexico.
2. Apart for the monetary class of models, two other group of models have been developed to explain the behaviour of black market exchange rates. One group of models evolved from the theory of international trade and emphasize the transactions demand for foreign currency, (see, for example, Sheikh, 1976; Pitt, 1984). Another class of models, the portfolio balance of models, combines the characteristics of real trade models, by taking into account the flow considerations for black market dollars with the characteristics of monetary approach models by emphasizing the role of asset composition in the determination of the black market exchange rates (see, for example, Dornbusch, et al., 1983; Phylaktis, 1991).
3. The important link between exchange rates and fundamentals and the relevance of the monetary model to the exchange rate determination was again discussed in a series of recent papers Rogoff (1999), Flood and Rose (1999) and MacDonald (1999).
4. Availability of data is a major problem with all Latin American countries and this fact restricts our choices of measures. For Mexico, there is a treasury bill rate series available that begins in January 1978 and it could be used as a proxy for short-term interest rate. However when this series is compared to the inflation rate series the latter is smoother, which may be the result of continuous intervention of the Central Bank of Mexico. Furthermore, the treasury bill market in Mexico was substantially thin for most of the period. Similarly, for Chile a deposit rate series exist from January 1977 but there is also doubt about its usefulness. Finally, we note that we need to use as much as long data series following Hakkio and Rush (1991) who demonstrate the difficulties of detecting cointegration over short periods.
5. For an early justification of inflation as a measure of the cost holding money see Cagan (1956) and Wong (1977).
6. Gonzalo (1994) shows that the performance of the maximum likelihood estimator of the cointegrating vectors is little affected by non-normal errors. Lee and Tse (1996) have shown similar results when conditional heteroskedasticity is present.
7. The calculations of all tests as well as the estimation of the eigenvectors have been performed using the program CATS 1.1 in RATS 4.20 developed by Katarina Juselius and Henrik Hansen, Estima Inc. Illinois, 1995.
8. A small sample adjustment has been made to the Trace test statistics, Q_r, for the I(1) analysis

$$-2lnQ = -(T - kp)\sum_{i=r+1}^{k} ln(1-\hat{\lambda}_i) \text{ as suggested by Reimers (1992)}$$

9. Madhavi and Zhou (1994) have shown that the Mexican peso-dollar official exchange rate is I(2) and McNown and Wallace (1994) have shown that the Chilean peso-dollar official exchange rate and the Chilean money stock are also I(2) variables. Both these works have use univariate tests to reach their conclusion and we have already discussed how inappropriate these tests are.
10. The assertion that the domestic and foreign money are I(2) comes from recent empirical work on modeling money demand functions which suggest that nominal money stocks are I(2), (see Johansen, 1992c; Haldrup, 1994; Paruolo, 1996; and Rahbek et al. (1999) for UK monetary data and Juselius, 1994 for Danish data).

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CAPITAL INCOME TAXATION AND GLOBALISATION: SETTING THE RIGHT INCENTIVES FOR CAPITAL FORMATION AND INVESTMENT

Introduction

The collapse of the Iron Curtain as well as the free mobility of persons and capital have strengthened international competition, which recently has also increased the pressures on the national tax and transfer schemes to reduce costs by abolishing existing inefficiencies. Even there is not much fear on a «race to the bottom»,[1] at least more or less large groups within the societies favoured by the old systems inevitably will become losers, loudly complaining in the public on the unjustified social dismantling. Globalisation pressures, recessions and accelerating structural problems have also forced several European and other extra-European countries to reform their direct tax systems, especially the taxation of capital income and companies.[2] Sole traders, partnerships and legal entities but also capital income from capital investment, renting and leasing, and other entrepreneurial activities are or at least have been burdened by a whole basket of taxes, which are (were) more or less closely related to capital ownership or the connected income: income tax (for natural persons), corporation tax (for legal entities), property tax, business tax (or similar taxes), capital gains tax, and inheritance tax are taxes, which are levied on the earnings or the capital stock itself. Beside such general taxes on capital income and property further taxes do exist, which burden specific kinds of real and financial assets like land taxes, second habitation tax, motor vehicle tax, stock exchange tax, insurance tax, etc. By comparatively simple transformations all these taxes can be related to capital income, so that the total burden on capital income can be easily derived.[3]

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Taking the growth performance of different countries into consideration, obviously Germany is seriously lagging behind and recently France as the second core country of the EU is also confronted with stronger growth retardation.[4] Other EU countries like Austria, Belgium, Denmark, Finland, Greece, Italy, Ireland, the Netherlands, Portugal, Spain, Sweden, and last but not least the United Kingdom have been much more successful, partly dependent on fundamental economic reforms which have been applied since the mid 80s, the latter especially true for Denmark, Finland, Ireland, the Netherlands, Sweden, and the UK.[5] In other countries like Austria, Luxembourg and Switzerland relatively stable economic framework conditions have successfully worked, while in Greece, Italy, Portugal and Spain the European Stability and Growth Pact (SGP) has created positive incentives for fiscal discipline.

On the whole fundamental reforms in the tax and transfer systems have led to a growth stimulation, which often were closely connected with tax privileges for foreign direct investment (e.g., Ireland and the Netherlands) or at least with a more favourable taxation of capital income (Austria, Denmark, Finland, Luxembourg, Netherlands, and Sweden).[6] In the same period these countries and the UK have substantially reduced the transfers and implemented measures against the poverty trap phenomenon, which enforced the reintegration of unemployed into the official labour markets.[7] The more efficient taxation of capital income and companies have improved capital formation as well as the assumption of risk, both being the most important prerequisites for a stable and increasing pattern of private investment.

Especially the dual character of the Scandinavian tax systems, the box system of the Netherlands and low source taxes on interest payments in Austria, Luxembourg, and some other EU countries, have especially met critical scepticism of German and French politicians, obviously prejudiced by their thinking in patterns of traditional income taxation. Non-EU countries with a similar favourable taxation of capital income like Switzerland, Liechtenstein, countries in the Caribbean, Singapore, Hong Kong or at least partly Australia and New Zealand etc., have often be blamed as tax shelters due to their reserved and often comparatively low tax burdens on capital income and business profits. Obviously those countries have profited by enormous capital inflows, while the high tax countries are increasingly confronted with capital outflows. But even within the EU beside Ireland and the Netherlands some regions like Jersey, Guernsey, and Gibraltar do exist, which set similar tax incentives without being blamed by the high tax countries within the EU, perhaps because they play more a role as collecting bank than as competitor for productive investment.[8] However, the detour of capital to EU external or internal tax shelters increases capital costs.

The most effective way to avoid thus additional transaction costs would be to reform the own tax and transfer systems in the high tax countries at least to narrow the gap between low and high tax countries.[9] A total harmonisation in the direction of the lowest existing tax rates connected with an then inevitable dismantling of the social security system is not necessary, because the high tax countries in the EU are the largest countries with big internal markets and good infrastructures, which allow a higher level of taxation than in the small tax shelters, at least because of their advantages in scale and scope.[10]

I. Problems of traditional income and profit taxation

1. Basic principles

Mobility of persons and of capital are basic components of human rights; consequently the tax basis of wage and capital income taxation (both bases linked to traditional income and corporation taxes) are mobile as well. While high tax burdens push potential taxpayers away, high transfer payments attract potential transfer recipients. Due to the residence principle (unlimited tax liability) and the world income principle as cornerstones of direct taxation and (at least partly) for social protection, tax burdens and transfer generosity at residence determine the behavioural adaptations of citizen. In a world of almost legally unlimited mobility - or in other words in a globalised world - the outcome is local, regional and international competition of tax and transfer systems, setting pressures on efficient regulation and limiting the always threatening Leviathan.[11]

Obviously the mobility is dependant on the individual endowment with human, monetary, and real capital. Because of free movement of capital, monetary capital has doubtlessly the highest mobility, even if physical persons are not mobile.[12] Regarding physical persons, people with overwhelming capital income are highly mobile, whilst employees with lower qualifications and mainly dependant on their wages have a comparatively low mobility. Realities and buildings are immobile by definition. In case of tax increases or transfer reductions the mobile owners naturally can sell real estate, but the additional burden is then shifted by lower prices as consequence of tax (and transfer) amortisation to the former owners.[13] Therefore, the actual behavioural adaptations of the citizen are determined by tax and transfer policy patterns of the past and their expectations for the future burden developments. If their individual projections will make them to believe in further burden increases, then even immobile citizen will reconsider the location advantages (in form of personal and public

infrastructure) and disadvantages (in form of factual or at least presumed future burden increases).

Lafay (2003) has correctly pointed to the problem that the absence of tax revolts in France as well as in Germany does not mean that the electorate are completely inactive. In the contrary, since decades they are active in the informal sector and increasingly voting by feet, even accelerated by the fastened globalisation as consequence of the changes after 1989. Already at the end of the 70s and the beginning 80s growing shadow economies have been observed with a permanent increase until today.[14] Increased voting by feet is an expression of inefficiencies within the tax and transfer systems especially of high tax countries leading at least in short and mid term to expatriation of capital and in the long run even to migration of persons (especially the well-to-do). In spite of the above mentioned necessary adaptations in the national tax and transfer policy patterns, usually tax and social politicians in the respective countries are blaming the countries with immigration of capital and high skilled persons as tax havens or shelters, which they often denote as immoral political strategies. Such tax shelters with an obviously more attractive environment for capital income and investment are often ask to make any necessary adjustments for a harmonisation on the level of their inefficient regulations, neglecting the fact that because of the avalanche effects[15] described below their own capital income taxation by the existing traditional income and corporation taxes is highly questionable and immoral itself. The hope for an increased national and global capital formation partly due to overcome problems within the PAYGO pension systems at higher tax burdens on capital income is a contradiction in terms.

2. *Consequences of the existing traditional tax and transfer schemes*

The existing tax and transfer schemes in Germany as well as in France include numerous regulations, which create enormous inefficiencies and behavioural adaptations connected with tax avoidance and tax evasion -apart from the complexity that on the one hand discourages the taxpayers and impairs the compliance and on the other hand overstrains the fiscal administration. As result an increasing number of tax assessments are false, thus inducing arbitrariness, impairing equity and creating state sullenness (Staatsverdrossenheit)- all connected with harmful consequences for tax mentality and morality. Spreading moral hazard behaviour yields in accelerating tax evasion and transfer fraud.

Lifetime avalanche effects and the cumulative burdens of multiple capital income taxation (by income, corporation, firm, property, capital gains, and potentially inheritance taxes) cause behavioural adaptations: Capital, large

enterprises (especially multinational corporations), and well-to-do people leave the high tax countries due to a strategy of tax optimisation. This double and multi-burdening of capital income has been justified for generations by the extra security, which is connected with property and funded income, and additionally with the fact that capital income at least in a very specific literature was characterised as «unearned». Such justifications were overwhelmingly accepted as long as the property of real and financial assets was heavily concentrated on the happy few rich. Nowadays a majority of taxpayers dispose of different forms of capital income and property has become a usual income source of almost everybody; beyond that property was not created by overnights miracles but heavily earned by own hands work and personally saved by abnegation of consumption. No wonder that double and multi-burdening today is evaluated quite differently and has led to an enormous spectrum of behavioural adaptations from tax avoidance to tax evasion. Additionally capital risks are often comparable to labour market risks, so that the additional security of capital ownership is also very limited.

The negative impacts of high burdens on interest payments and profits have led many countries to overcome old ideological positions, which at least today still motivate many tax politicians to demand additional property taxes and surcharges on capital income. But in spite of such lip services, in many countries the corporation tax rates have been seriously decreased and source taxes on interest payments have been introduced with flat rates formerly only typical for the heavily hated tax havens. Dual income tax systems like in Scandinavia or even triple box systems with different tax schedules like in the Netherlands have been implemented, which favour interest payments, dividends and profits from real and financial assets compared to the marginal tax rates applied already for lower and middle wage earners. Connected with serious social and labour market reforms such measures have been comparatively successful, especially if the unemployment figures are taken as performance measure.

At least with regard to corporate taxation, in Germany the tax burden for legal entities was drastically reduced especially if the scheduled tax rates are taken into consideration. While in the mid 90s of the last century the average corporation and business tax burden (including the solidarity surcharge) was often above 70%, the reforms of 2000 have reduced that burden to about 43.5%.[16] But even this tax cut has not yielded the expected expansive impacts on growth and labour markets, and this negative outcome is not only caused by the necessary but also heavily delayed social and labour market reforms.

3. Avalanche effects

Due to historical reasons within the German income and corporation tax system many tax concessions and loopholes did exist, overwhelmingly motivated to reduce the effects of high marginal tax rates on certain kinds of profits and capital gains. For individual savings comparatively generous saving exemptions left a considerable amount of financial assets untaxed and especially favoured were (and are) different expenses for old age provision. Especially many tax theorists made the diagnose that the income and corporation tax base was heavily eroded and the switch to a more comprehensive tax base would yield that additional revenue, which would allow for a substantial decrease of the marginal tax rates. This argumentation, obviously in accordance with the mainstream theories of efficient taxation, overlooked the fact that many of the existing concessions have functioned like spiracles and mitigated the long-term burdens on capital income, which are connected with traditional income taxation.[17] If such concessions are abolished, the tax burden on such income parts remain an additional one even if the newly applied marginal rates are much less than the rates levied before on other kinds of (non-favoured) capital income.

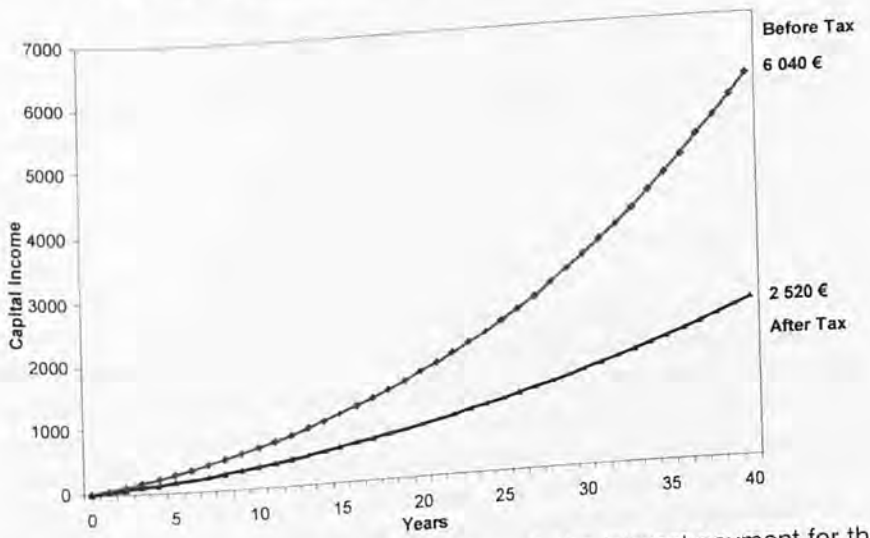
Beyond that many of the abolished concessions were connected with long-term investment perspectives. Obviously many entrepreneurs at least partly invest in their companies in the intent to withdraw the invested amounts and the connected interest or profit in case of old age. Therefore, at least in case of long term investment and old age provision, the periodically orientated ability to pay argumentation seems not to be appropriate.[18] Instead, the accumulated burden over the whole investment period or active life span is of utmost relevance for such investment decisions. A simple example should shed some light on this argumentation.

Precautionary measures within private companies or insurance schemes are principally connected with capital formation and capital income. If a standard (traditional) income tax system is applied, this system exclusively depends on annual incomes. The previous history of the backgrounds of capital formation does not play any role. Therefore, capital formation is usually made from taxed income. In the following periods this capital itself forms a new tax base and the interest payments (or profits, dividends, rent, etc.) on that capital are taxed again. Capital itself and capital income is consequently several fold burdened.[19] Chart 1 demonstrates this so-called avalanche effect of capital income taxation in a simple example.

An income tax rate of 25% (e.g., flat-rate) is assumed; an entrepreneur (or employee) is saving 1,000 Euro and invests that amount profitably at an interest rate of 5% for 40 years in his company (or on the capital market)

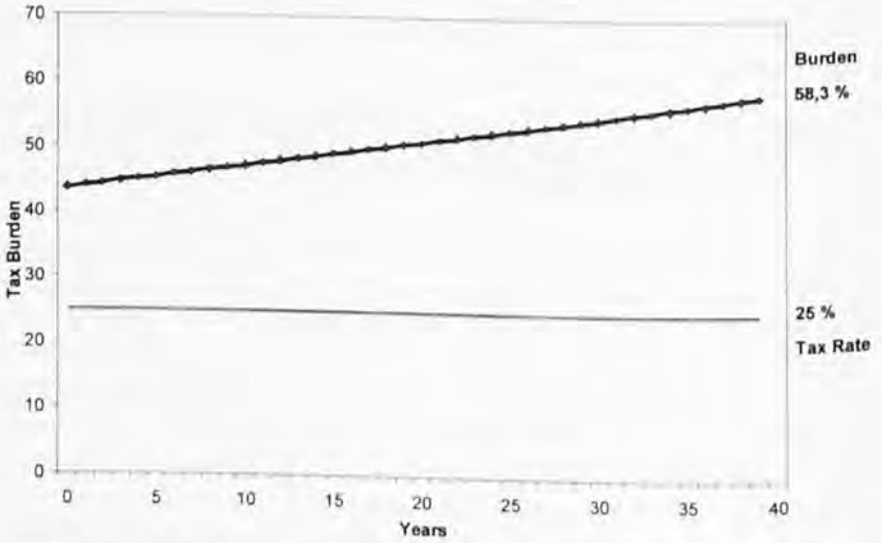
Without any taxation his interest earnings would grow to 6,040 Euro (see chart 1) and be to the disposal for his old-age consumption. In case of a traditional income tax saving is accumulated from taxed income, so that at the assumed wage tax rate of 25% only 750 Euro can be invested for that 40 years period.

CHART 1: INCOME TAX BURDEN OF INTEREST INCOME IN AN TRADITIONAL INCOME TAX SYSTEM (FLAT-RATE 25%)



Due to the tax reduced investment amount, the interest payment for the first year is not any longer 50.00 Euro but only 37.50 Euro. In spite of that original 25%-burden the gross interest payment of 37.50 Euro is taxed again by the 25% flat-rate mentioned above; consequently his saving account is only growing by 28.13 Euro. The effective tax burden including the originally already paid amount is then after the first year 43,7%. In all the following 39 years income tax has to be paid on the annual interest income as well, so that his disposable amount for his old-age consumption is reduced to 2,520 Euro. Compared to the 6,040 Euro in the situation without any income tax, the effective lifetime tax burden on the interest income is 58,3% (see chart 2), which is more than twice as much as the annual 25% flat-rate.

CHART 2: LIFETIME BURDEN ON INTEREST INCOME OF A TRADITIONAL INCOME TAX (FLAT-RATE 25%)



In fact in most of the current traditional income tax systems small saving amounts are protected by special saving allowances or other tax privileges, but for savings beyond the exemptions much higher income tax rates are applied, so that the avalanche effects are even more severe. If we take the current German tax burden on corporate profits as estimated by the *Bundesministerium der Finanzen*, the above-mentioned average rate is about 43.5%. For a 40 years investment period then the accumulated burden is with 80.8% much higher than in the simple example - and this burden is not the end of the flagpole. Compared to the situation before the tax reform, at least for such investments the decrease of marginal rates has played no role, in the contrary, an enormous increase in tax burdens has taken place. Dependent on the relevance of such investment at least a certain restraint with regard to long-term investments might be a likely consequence.

4. Cumulative effects

The above described avalanche effects are even more intense if beside an income and corporation tax an additional property tax is levied on the personal property or equity capital. Due to reasons of simplicity we neglect all possible exemptions and deductions and argue just with flat-rates on capital income or property beyond such basic amounts. Problems of the appropriate definition of different kinds of property are also not taken into

consideration. In the annual perspective the tax revenue of a property tax T_p results from

$$T_p = t_p \cdot C,$$

where t_p is the property tax rate and C the total amount of wealth or equity capital. The capital income (profit) tax revenue is defined as follows:

$$T_c = t_c \cdot C \cdot r$$

with t_c as flat-rate on capital income ($C \cdot r$). In case of identical tax revenue ($T_p = T_c$) it follows for the two tax rates:

$$t_p = t_c \cdot r$$

and

$$t_c = t_p / r.$$

If we assume an interest rate of 5%, a property tax rate of 1% on total wealth corresponds with an income tax rate of 20% on interest payments and profits. For lower effective interest rates this burden is even higher. Like the capital income tax also the property tax is connected with the above-mentioned avalanche effects. While in the annual perspective the property tax burden of a 1% rate on investment returns is 20%, in a lifetime perspective (over 40 years of investment) this burden increases to 38.6%.

Capital gains taxes[20] and inheritance taxes create additional burdens, which in a lifetime perspective again show elements of the avalanche effects.[21] If in addition to the above-mentioned flat-rate of 25% a 1% property tax on total property is levied, the annual burden on capital income is increasing by 20 percentage points. The avalanche effect then produces a lifetime burden of both taxes, which is clearly above 70%; in case of an additionally levied capital gains tax and in consideration of the burdens of inheritance taxes the total lifetime burden of all income and property taxes often reaches more than 90%.[22]

Hence, in many contemporary tax systems capital income would be obviously overburdened if the numerous existing loopholes were abolished. It also becomes obvious that the frequently made proposal to broaden the tax base is a very dangerous advice, because the long-term burden of capital income taxation is heavily increased even if the annual tax rates are strongly decreased. The avalanche effects overcompensate short-term tax rate cuts as longer the investment period is. Therefore, one should not wonder that in

countries with an extreme long-term burden on capital income, saving and capital formation is increasingly impaired. If in such countries (like Germany) comparatively high saving ratios still exist, this overwhelmingly depends on the fears of the working generations that the social pension system in view of the demographic development has a very gloomy perspective and a sufficient level of retirement income can only be secured by own capital formation. While capital formation at least in the short run might still be satisfactory, especially long term investment is avoided, so that the number of jobs is decreasing, thus creating an ever increasing number of unemployed people.

5. *Arbitrary companies taxation*

For the assessment simulation of the tax burden on the firm sector a data file of the *German Institute for Economic Research* (DIW Berlin) has been used, which contains the information of 51,458 small and large sole traders (SST and LST), 28,450 small, medium sized and large partnerships (SPS, MPS, and LPS) and 50,504 small, medium sized, and large limited liability companies and corporations (SC, MC, and LC).[23] Sole traders and partnerships are burdened by the personal income tax (PIT), corporations by the corporation income tax (CIT), whilst both also have to bear the firms tax levied on the local level. Within the assessment simulation the single interrelations between the income, corporation and firms tax have to be taken into consideration; the comparison is done on the basis of the 2004 tax law, assumed that the last steps of the current tax reform process will have been implemented.[24] For a correct comparison, the personal characteristics of the taxpayer (married, one child, voluntarily insured within the social insurance schemes, no other income sources) are kept constant for all firm types and the average local firm tax rate is applied. For sake of simplicity it is assumed that profits are not distributed but retained in the firms.[25]

Chart 3 represents the marginal annual tax burden of the different average firm types as defined above for the 2004 tax law (dark-grey columns).[26] While the profits in case of sole traders and partnerships are taxed by the PIT and firms tax at marginal rates of about 50 percent and more, the profits of corporations are burdened with marginal rates of the CIT and firms tax of less than 40 percent.[27] Hence, it becomes obvious that the average marginal burden of small sole traders (SST) and small as well as medium partnerships (SPS and MPS) is much higher than in case of corporations at

completely retained profits. In case of fully distributed profits the marginal burden for the corporation increases but still remains more or less below the levels for the partnerships.[28] Therefore the 2004 tax law discriminates firms due to the different legal status and between the corporations those ones, which are distributing a remarkable part of their profits.

CHART 3: MARGINAL TAX BURDEN OF THE MODEL ENTERPRISES

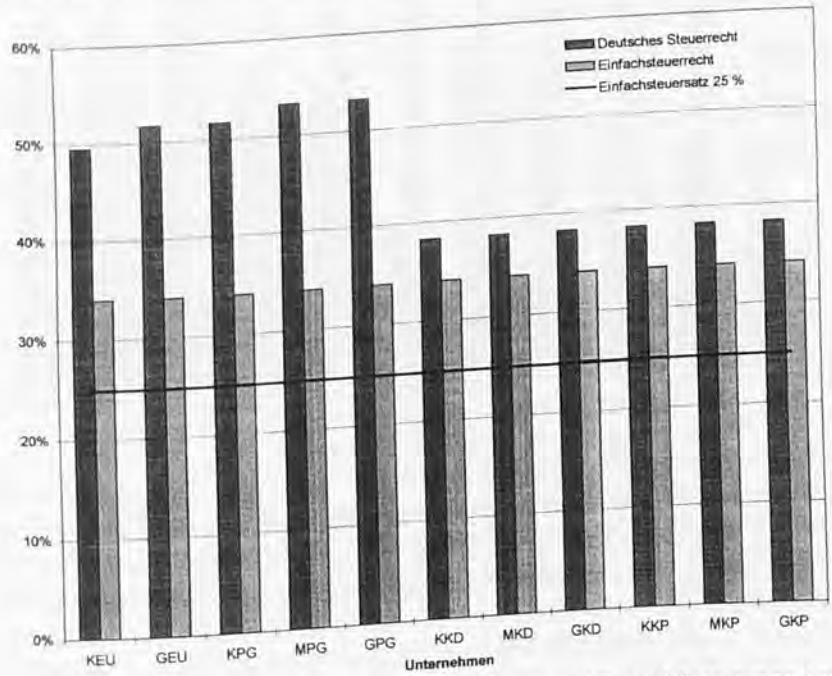
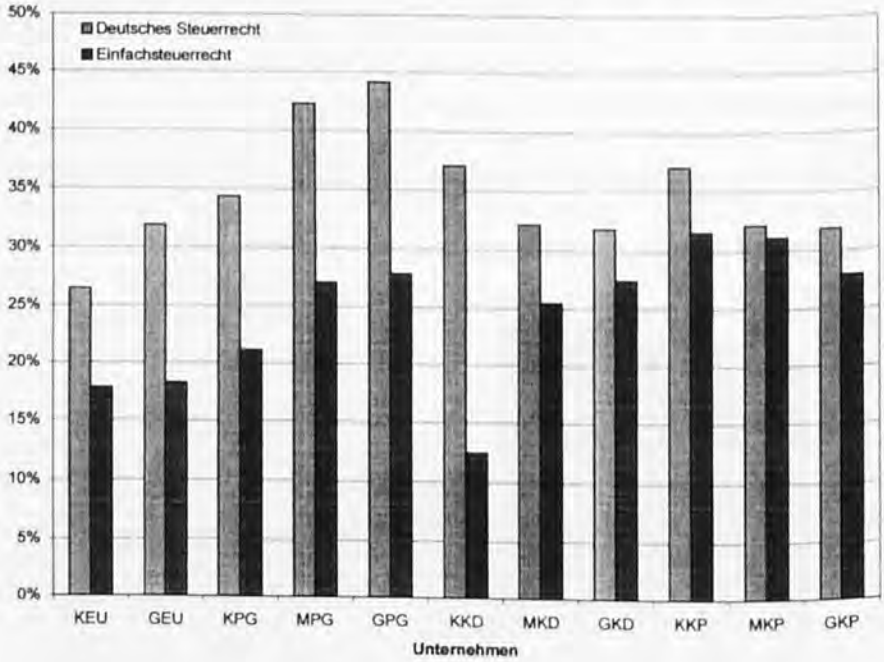


Chart 4 displays the average tax rates for the different firm types under consideration. If the average tax burden on sole traders is compared to that of small corporations, it becomes obvious that in spite of lower marginal tax rates the latter do have a higher average tax rate. This result partly depends on the lower profits of the small corporations compared to the small sole traders, but also on the fact that the corporations are taxed on the firms level by the CIT; consequently the individual deductions of the PIT system do not apply, which leads to the higher average tax burden. Even within the same firm size, extreme discriminations due to the different legal status exist, which are especially turned against small and medium corporations.

CHART 4: AVERAGE TAX BURDEN OF THE MODEL ENTERPRISES



If all the problems of the traditional PIT and CIT are summarized, the fact remains that in spite of the long-termed almost constant macroeconomic tax ratio and a middle position within the usual OECD tax burden rankings the burden of ancillary wage costs and profit taxation has reached or even exceeded a critical level. This is especially true because the current firms tax burden is much more unequally distributed than before. The burdens have been shifted from the highly mobile large multinational corporations, which use all tax saving instruments, on the much more immobile small and medium enterprises (SME). Consequently the SME, whichever have been the backbone of the German economy, are more and more unable for positive net investment, so that new jobs are not created in Germany in a sufficient dimension. Therefore, a fundamental reform of capital income taxation is a necessary prerequisite for additional growth dynamics, which is also inescapable to promote increasing capital formation to overcome the future demographic problems.

II. The Last resort: Easy tax

Almost all of the currently discussed proposals to reform the existing PIT and CIT systems in Germany do not address the above described problems

of capital income taxation; despite the enormous long termed burdens on capital income especially in Germany certain political groups are still discussing the reintroduction of the 1997 abolished property tax or at least a strong increase in the inheritance tax rates. Political illusions and shady promises that the «rich» will be more severely taxed are clear signals for behavioural adaptations. Therefore, it is not astonishing that the mobility of capital and persons is further increased. If such political patterns would become dominant, the German perspective would become really gloomy. However, a sustainable relief from growth retardation and increasing unemployment figures is only possible if the above-mentioned problems are really tackled.

As mentioned above, many countries (like the Netherlands and the Scandinavian countries) have introduced a so-called dual income tax system, which taxes wages and capital incomes with different tax schedules.[29] While for wages overwhelmingly the traditional directly progressive tax schedules (with strongly increasing marginal rates) are applied, for capital gains usually a much lower flat-rate has been adopted, or like in Austria and Luxembourg a withholding tax on interest payments with a comparatively low flat-rate was introduced. The outcome is that at least middle and higher wage income is marginally taxed with rates, which are often much higher than for individual capital income or profits. Therefore, equal income amounts consisting of different sources are often unequally treated, so that the equality of treatment is hurt. Obviously the efficiency target (growth enhancement, capital formation, and job creation) is dominating fairness and justice of ability.[30]

Such a fundamental breach of equality would at least in Germany raise serious constitutional problems. Thus alternative political patterns have to be developed. Because of the close relations between the tax and transfer schemes, an integrated approach is necessary to develop a long-term reform perspective. If for instance the pension system is reformed by expanding capital funding and at least partly substituting the PAYGO system, a harmonisation with the tax system (treatment of contributions as well as pension payments) is inevitable. A simplification of tax and transfer law is much that necessary to improve the information and knowledge of the electorate, which also will lead to a more efficient control over political actions.

But the core aims of tax reform for the household sector are equal treatment of lifetime in come (from wages and capital), independent from the respective source, and the intertemporal neutrality on consumption. Within the enterprise sector neutrality is the most important target, so that at the end of the reform process all enterprises would be confronted with an equal marginal burden. Compared to the current German situation that would

mean a lower marginal burden for sole traders and partnerships as well as for small corporations (the so-called S-corporations) and a strong decrease in the average tax burden for SME.[31]

Therefore, the «Heidelberger Steuerkreis» has developed an «Easy Tax Proposal»,[32] which on the one hand integrates income and corporation tax into one law and on the other hand secures an equal treatment of wages and capital income as far as ever has been possible. The conflict between efficiency and justice is reduced to an absolute minimum. Here only the basic elements for capital income treatment are presented.[33] If the above-implied lifetime perspective for undistorted preferences is striven for, consequently an integrated income and corporation tax system has to be developed, which for wages and capital income applies the same tax criteria. The Easy Tax has two specific forms of tax collection: the personal income tax and the profit tax. The taxable income is composed of three sources: income from wages, income from self-employment, and retirement income. The expenses for vocational education are to be subtracted. The profits of the so-called small corporations, which are corporations with a small number of shareholders, are taxed as income from self-employment. The S-corporation is an element of the US corporation tax; the profits of the S-corporations, named as pass-through companies in the Easy Tax draft law, are distributed on the shareholders and taxed as their other personal incomes.

The integration of profits as far as possible into the personal income tax due to the pass-through company has the overall important feature that small and medium firms are taxed equally independent from their legal construction (neutrality of the legal construction). The big corporations (public companies) are taxed with the highest marginal rate of the income tax, whereas no personal deductions apply. For the equal treatment of wages and capital income in a lifetime perspective, the above-mentioned avalanche effects, in other words the multi-burdening of savings, have to be avoided. Two different methods could be applied, which in their impacts on capital income taxation are equivalent but would heavily influence the periodical distribution of the tax revenue. In case of the *interest adjustment method* a standard market interest rate must be subtracted from all capital income. If the *saving adjustment method* is applied, the saving itself has to be tax-free while the latter earnings in the payment period must be taxed. Consequently the saving adjustment procedure shifts the taxable base into the future, so that the fiscal administration at least for a longer chain of periods would be threatened by large tax revenue losses.

However, the Easy Tax provides pragmatic solutions: in case of all sources of capital income (interest, profits, rents, etc.) a basic rate of return - for

instance the interest rate for a two years government bond - remains as remuneration for the abnegation of consumption tax-free. Consequently only capital incomes above this basic rate of return (also called protective interest rate) are taxed whereas a steady tax base on capital income remains. The protective interest rate avoids the avalanche effects, and in the dynamical perspective the equal treatment of wages and capital income is assured. The calculation of profits follows a modified cashflow method, which defines the profit as (cash) surplus of earnings to business expenses. The modifications are related to the expenses for depreciations and the discount for the protective interest rate.

In case of retirement income (all forms of pensions) the saving adjustment method is preferable in which the premiums and contributions to old-age protection are tax-free. Interest and saving adjustment are the measures for a dynamical design of the annual taxation which necessary remains the basic tax period due to pragmatic reasons. Both methods assure that all components of lifetime income are taxed once and only once, independent from their sources. At the same time the equal burden on the whole lifetime income and the intertemporal neutrality for the consumption decision is guaranteed, which abolishes the discrimination of saving as consequence of the traditional income tax systems.

A consumption orientated enterprise taxation following the interest adjustment method is often objected to leave profits tax exempt; consequently the firm sector would be widely un-taxed. In view of the return on equity within the firm sample for the assessment simulation such presumptions are totally unrealistic.[34] For sole traders and partnerships the deduction of the protective interest rate (interest adjustment) amounts to a reduction of the profits between 2% (SST) and 15% (LPS); for corporations the reduction is between 6% (SC) and 17% (LC). If the firm sample would be taken as representative for the German firm sector, the deduction of with 5% adopted protective interest rate would reduce the taxable base in case of the Easy Tax by 7.4% if the weighting is done with the respective fractions of firm types in the whole sample. The interest adjustment connected with the elimination of the avalanche effects is therefore much less costly than all the loopholes and tax concessions within the existing income and corporation tax systems, which have led to a strong erosion of the tax bases.[35]

Regarding the enterprise taxation, the Easy Tax draft law also establishes the above-mentioned neutrality of the legal status for small and medium sized enterprises. Chart 3 above demonstrates that the marginal tax rate of the Easy Tax is equal for all legal forms, where the S-corporations are marked with S (SCS, MCS, and LCS) and the public companies with P. In

case of the small corporations in chart 4 it becomes obvious that the average burden for the SCS is substantially reduced compared to their treatment as public companies (SCP). Furthermore in the annual perspective the average tax burden for all SME is strongly decreased so that the overall enterprise tax burden is shifted in the direction of the large public companies, which also would pay less profit tax than under the old regime.[36] Additionally the deductible protective interest rate secures neutrality for investment and financing as well as inflationary neutrality. The latter prevents from any taxation of pure inflationary windfall profits. Obviously, the Easy Tax is still a pragmatic approach, which enables the practical implementation but also corresponds to the theoretical demands of a second-best tax.

Conclusions

In an efficient, integrated and consumption orientated tax and transfer system PAYGO financing has to be reduced to the basic security elements (social aid, minimum pensions, basic health care), which are financing the necessary redistribution to prevent society from in-acceptable poverty. Consequently capital shortage is avoided, which is one essential prerequisite for future growth. In the final stage upgrade insurance above the basic provisions has to be assured within the private insurance scheme. Because then basic security in all existing branches of social insurance would be tax financed, social security contributions can be substantially reduced and non-distortable indirect taxes be increased. Consequently ancillary wage costs are strongly reduced, which sets incentives for higher employment and additional investment.

Tax optimisation is a rational behaviour of well-informed individuals within the private sector, having also in mind the equivalence in between tax burdens and the efficient supply of public goods and services. In the sphere of private enterprises it is not an illegal behaviour, because capital owners, shareholders as well as the management have no national obligation but to secure the future existence of their equity capital (and the connected jobs for their employees). Pleas of politicians to remind the entrepreneurs for their national obligations are reminiscences of nationalism, which today should have been overcome at least in open societies, which are seriously profiting by their international relations and cooperation.

Politicians should not complain about the alleged costs of globalisation, but have to face the challenge of systems competition to take the full advantages from a global free trade and mobility of production factors. This challenge has to be put into practice by a fundamental tax and transfer reform,

which improve the advantage of location of their countries in a sustainable manner. Politicians also have to become aware that tax and social security systems competition is a positive and necessary element of a fair global cooperation, thus limiting state activities to an efficient level and preventing from always possible developments in the direction of the Leviathan (more or less totalitarian tax state[37]) with permanent rising tax burdens and ever increasing numbers of transfer recipients being on a drip of the state. The countries, which are falling back, will temporarily loose but also be given incentives for future reforms.

The notion reform should be limited to really fundamental changes; the many centennial reforms of the past have overwhelmingly stand for curing symptoms instead of sustainable therapy. The Easy Tax proposed by the «Heidelberger Steuerkreis» is such a fundamental reform. The integration of the PIT and the CIT would guarantee an equal treatment of wage and capital income in a lifetime perspective and make *ad hoc* interventions and political manipulations into income taxation far more difficult. The Easy Tax Proposal would guarantee neutrality of legal status, investment, financing, profit distribution and inflation as well.[38] Therefore, this proposal considers the most important elements of modern tax theory. At the same time this proposal gives evidence that modern theory can be implemented in realistic tax drafts. In some European countries discussions for an implementation are already flourishing[39] and even in Germany the number of supporters is steadily increasing. If the Easy Tax as core element of a fundamental tax and transfer reform would be implemented, the signals could be set for another German economic miracle.

Notes

1. See, e.g., *Sinn* (2002 and 2003). Such fears are overwhelmingly unsubstantiated because much of the current income redistribution is not directed to the real poor but to middle and higher income brackets, which do not require public assistance; for more detail see *Petersen* (1989 and 2003).
2. Under the term capital income all kinds of income from real and financial assets are subsumed. Following the traditional income definitions of most of the existing income tax laws, capital income consists of profits from agriculture and forestry, trade and self-employment, income from financial assets, rents and leasing as well as capital gains. In a modern and simple income tax system principally only two main income sources do exist: beside capital income the income of the employees (wages) are the second source. For more details see *Rose* (2002) and *Petersen and Rose* (2004).
3. See *Petersen* (forthcoming).
4. Since 1995 the growth performance in France has been much better than in Germany; see OECD (2003): *Economic Outlook* No. 73, Annex Table 1.
5. Very recently even the Netherlands have fallen back into stagnation with a remarkable increase of unemployment rates and also Italy has seriously lost in efficiency.

6. For details see *Bach, Seidel, Teichmann* (2000).
7. This is especially true for the Netherlands, which has developed the most efficient integration of direct taxation and social security contributions; see *Petersen* (2004).
8. Malta as EU accession country 2004 is often named as most favourable tax shelter; but in the accession negotiations Malta has not been obliged to change its tax policy patterns. Therefore, inside the EU Malta might become a much stronger competitor for Switzerland and especially Liechtenstein.
9. For an international comparison of tax pressures see *Lafay and Périvier* (2003).
10. As mentioned above, such fears of inevitable downgrading in the social security systems due to the globalisation process are expressed by *Sinn* (1997, 2002, and 2003). This argumentation becomes invalid if differences in between risk sharing (insurance) and redistribution are taken into consideration, which are totally neglected by *Sinn*; see *Petersen* (2003, p. 212).
11. See *ibid.* and *Petersen* (1998).
12. The shift of monetary capital and connected interest payments into foreign countries implies a breach of the world income principle and is to classify as tax evasion. The very limited control possibilities for the fiscal administrations as well as the lack in awareness and illusions on side of the taxpayers limit the factual and moral costs of such illegal behaviour; for the uninformed electorate with regard to taxation see *Lafay* (2003, pp. 10).
13. For details see *Petersen* (1993, pp. 309, 324).
14. See *Feige* (1979 and 1984), *Petersen* (1981, 1982, and 1984), and *Schneider* (2000).
15. See *Petersen* (2003a) and *Petersen and Rose* (2004).
16. See *Bundesministerium der Finanzen* (2003).
17. Thereto a quotation of Barry *Bracewill-Milnes*: »An economy breathes through its tax loopholes« (see http://www.taxanalysts.com/www/website.nsf Web/TaxQuotes? Open Document).
18. See *Petersen* (2003a).
19. See for more details *Petersen and Rose* (2004) and *Petersen* (2004b).
20. Capital gains are often taxed within the income and corporation tax systems (like in Germany) or by specific capital gains taxes (like in the UK and US).
21. Not to forget the specific property taxes like the land taxes, motor vehicle taxes, etc.
22. See, e.g., *Petersen* (forthcoming) and *Petersen* (2003a).
23. For the pros and cons of that data file see *Petersen, Fischer, Flach* (2003).
24. For details on the German tax reform process see *Petersen* (2000) and *Petersen and Bork* (2000).
25. Due to the fact that half of the dividends are treated as income within the PIT, the marginal and average tax burden of corporations also depends on the part of distributed profits to total profits; see *ibid.*
26. The light-grey columns represent the corresponding marginal rates for the easy tax system, which will be discussed below.
27. All tax rates also reflect the solidarity surcharge.
28. For more detail see *Petersen, Fischer, Flach* (2005).
29. For details see *Bah, Seidel, Teichmann* (2000).
30. For the concepts of justice of ability and justice of needs see *Petersen* (2004a).
31. See *Petersen, Fischer, Flach* (2005).
32. The members of the *»Heidelberger Steuerkreis«* are *Joachim Lang* (Köln), *Hans-Georg Petersen* (Potsdam and DIW Berlin), *Bernd Raffelhüschen* (Freiburg and Bergen), and *Manfred Rose* (Heidelberg); the permanently updated draft law and additional information are to be found under www.einfachsteuer.de.
33. A short description is to be found in *Petersen* (2002); for more detail see *Petersen and Rose* (2004).
34. For the sample of 130,412 model firms the return on equity is between 314% for the average SST, 40% for the LSI, 48% for the SPS, 38% for the MPS, 33% for the LPS, 84% for the

SC, 68% for the MC and 29% for the LC; obviously this high rates of return are the result due to behavioural adaptations to the German income and corporation tax law, which favours a comparatively low input of equity capital. For more details see *Petersen, Fischer, Flach* (2005).

35. The «Heidelberger Steuerkreis» also recommends to replace the current German firms tax by a surcharge for the local communities on the Easy Tax yield. If the firms tax revenue at an average effective tax rate of currently 385% should be substitute by such a surcharge, the necessary surcharge rate on business enterprises would be 29%. If the tax base would be extended to self-employed and employees, the surcharge rate could be reduced to below 10%. Such local surcharge would comprehend all local citizen and firms and could also be connected with a local surcharge rate autonomy. For more details see *Rose* (2002, p. 29).
36. The assessment simulation does not hold the tax revenue constant. This can only be done by an approach using microsimulation models, see e.g. *Anton, Brehe, Petersen* (2002). Because of the lack of micro data on the firms level in Germany, up to now such simulations cannot be realised.
37. See *Schumpeter* (1918).
38. See *Petersen and Rose* (2004).
39. In a region of Bosnia and Hercegovina (Brcko County) a slightly modified Easy Tax has been implemented in 2003 in cooperation in between members of the «Heidelberger Steuerkreis», the German «Gesellschaft für Technische Zusammenarbeit GmbH (GTZ)» and the local government, see also *Petersen* (2003b).

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PART II

EUROPEAN INTEGRATION AND POLICY

PART II

EUROPEAN INTEGRATION AND POLICY

*Herbert Müller**

EUROPEAN MONETARY UNION: OPEN QUESTIONS OF STABILISATION POLICY

Introduction

After the introduction of the Euro in the money transfer system without using cash on January 1st, 1999 and after the redemption of national cash systems by the common currency on January 1st, 2002 the monetary union has been completed for 12 of 15 members. The question of the participation of Great Britain, Sweden and Denmark on the one hand and the opening for east-central European states on the other hand surely will raise further technical, economic and political problems. We shall now focus on some easily comprehensible risks for monetary stability within the Euro-12-region, selecting the following problems out of a conglomerate of different other topics: Which type of risks emerge from the fact that a common monetary policy, executed by the European central bank, coincides with different cyclical, structural and cultural economic entities inside the participating states and regions. At first instance this deals with the problem of different inflationary and deflationary tendencies confronted with the common monetary policy. A second source of risk potentials for the internal and external stability consists concerning reliability of the monetary target M_3. Empirically the quantity of money grows in divergence to the preconceived rate and there arises some explanatory deficit for maintaining the M_3 target, if a stringent relation between final target, intermediate target and indicators of an output oriented monetary policy is questionable. In the background of this question arises the problem of volatile financial markets, since there exists the problem of an asset price inflation or wealth inflation aside the normal phenomenon of inflation, mirrored by consumer price index. Specific effects

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on real economy systems emerge from that type of asset price developments. A problem further focussed on presents the fact of heterogeneity of fiscal policy inside the common regime of a two-pillar-strategy of the European central bank.[1] How could the divergence between monetary and fiscal policy be managed, conform to stability and without damaging the universal community interests?

I. The problem of inflation differences in the common monetary policy

1. In transition to a common monetary policy within the monetary union the central guidelines of monetary management are equally relevant for each member state. This means the monetary growth rate of currently 4.5 per cent concerning M_3 as well as interest decisions do not take into account actual differences of economic variables inside the participating countries. Insofar the actual level of inflation rates and their spread in different areas do not matter, as well as the differentiation in the development of employment and real growth. The common monetary policy creates effects that cannot be anticipated concerning the participants' competitiveness in prices, while those become differently restricted by the instruments of monetary policy, depending on their economic situation and development. That might be deduced from defining competitiveness in a short-term view as the real exchange rate. It expresses the nominal exchange rate, multiplied by the quotient of the external to the domestic level of prices. Since the nominal exchange rate does not further perform as an equaliser, the whole dynamics of economic adaption has to function via the relative prices' relation. Insofar the relative inflation works as a shock absorber. If larger shifts in supply and demand should be avoided, the price level as well as individual prices have to react. Hence, common monetary policy generates a different degree of incidence concerning national price levels and national competitiveness, depending on the price level in the initial position and the related inflations rates inside regional subsystems.

If the two-percent benchmark is taken as a guideline of consumer price development which is compatible with the stability of prices and allows for a sufficient degree of price dynamics inside the markets, then for Ireland, the Netherlands, Portugal and Spain an alarming deviation is considered while France, Austria and Germany are nearly reaching the stability target in 2003/2004. If the inflation rate in a certain country exceeds the central bank's target rate, no change in the area of monetary policy will occur, as long as an overall stability in the sense of a benchmark exists. However, if

certain national developments lead to an accentuation of inflationary processes, now, as mentioned earlier, the relative prices relation influences the national competitiveness in prices. By this way as well as allied to international markets connection in general there exists a feedback to the employment situation. Deviations from the optimal inflation and employment rates may arise, to be seen as welfare losses. Since social welfare depends on the deviation of the actual inflation rate π from the target inflation rate π^* as well as on that of the actual real output rate y from the target output rate y^*, there exists a controlling problem; social welfare W is to be maximised by the following target function.[2]

$$Max\ W = W(\pi - \pi^*, y - y^*)$$

In a medium or long-term view higher inflation rates relative to the target rate lead to a suboptimal state of welfare, even if the short-run fooling effects of non anticipated (non rational) price expectations create positive externalities of the *Lucas*-type for the employment situation, combined with their own way of shock absorption.

2. In which way do inflation differences arise within the monetary union? There are mainly three types of causes. Firstly, the index construction of different countries could show a different structure and insofar composition effects arise. Within the European union this origin has been eradicated by a harmonised price index construction and the adaptation of the national accounting systems. There remain certain composition effects that origin in weighing different consumption habits. Inflations differences relied to this causes of different price developments in certain segments of demand and for instance allied to nutrition habits, surely show a very small percentage for the explanation of the variance in the presently measured inflation rate. An additional reason for inflation differences is to be seen in the separate cyclical developments that create different price gaps. These price gaps of inflation and deflation types are connected with a cyclical cause of economic activity and, from a monetary point of view, depend on the degree of liquidity tension (liquidity grade) and capacity exhaustion (output gap).[3] Finally, besides that cyclical cause of inflation differences an important third reason my be seen around the structural elements of supply side in an economic area. Cyclical as well as structural backgrounds of inflation differences will be analysed opposite to a common monetary policy.

Cyclical inflation differences might be a problem for common monetary policy, if they become an argument for a leverage of the tolerable inflation rate, presently two percent. Political pressure might be triggered by the European council to offset the change in competitiveness caused by a change

in relative prices in form on a less stringent stabilisation policy scheme. Countries with a higher rate of inflation then could take a more expansive path in fiscal policy, without being confronted with immediate restrictions in monetary policy. In general we can expect that cyclically originated inflation differences are being processed by the market and the price system which reduces those types of differences in a transitory phase. The path of the absorption of the price pressure depends on institutional factors and on the extent of price rigidities, which certainly show effects upon the employment system and in consequence welfare losses in the course of the processing may occur. Within the European Union the spread of inflation differences was reduced due to the effects of convergence in the period from 1996 to 1999, but after the completion of the union and the introduction of the common European cash it has been enforced again.

Reduced efforts in convergence might be the reason for this, being observed after having reached the membership in the monetary union by certain countries. Hence, the national fiscal policy as well as the wage and bargaining policy is further being tested. In addition, different degrees of tensions in the productive capacities, reflected as output gap, might be the background. The concept of the output gap represents the difference between potential real output and actual real output as the gross domestic product.

Another complex for inflation rate differences refers to the earlier mentioned structural causes of price development. This line of discussion also partly leads to claims against the ECB to slacken its stability benchmarks. The original background for these arguments is marked by the *Balassa-Samuelson-Effect*, originally an approach out of a theory of international trade. Transferred to a currency union case it presents a real economic supply-side oriented explanation of the origin and transmission of an inflationary process. The basic modelling starts from a two region or two sector design of *tradable* and *non-tradable* goods. Non-tradable goods might be imagined by certain types of services which are not exposed to international competition and in consequence they show a backwardness in productivity.[4] Based on a linear homogenous production function of the *Cobb-Douglas*-Type for both sectors of an economy the real output Y depends on production technology A, capital input K and labour input L, hence, for tradable goods (T) the production function

$$Y_T = Y_T(A_T, K_T, L_T)$$

results as well as for non-tradable goods (NT) in analogy is

$$Y_{NT} = Y_{NT}(A_{NT}, K_{NT}, L_{NT})$$

where Y_T and Y_{NT} mark the real output in both sectors. Supposed that labour force is mobile and labour quality is homogenous, the result for competitive markets is an equal level of nominal wages at a sectoral differentiation of real output price levels P_N and P_{NT}. Due to marginal productivity theory in both sectors real wage W/P equals the marginal product of labour, and in the *Cobb-Douglas* case it equals the output elasticity α multiplied by the average output of labour.

$$\frac{W}{P_T} = \frac{dY_T}{dL_T} = \alpha_T \cdot \frac{Y_T}{L_T}$$

In the same manner the real wage inside the non-tradable goods sector NT is figured out.

$$\frac{W}{P_{NT}} = \frac{dY_{NT}}{dL_{NT}} = \alpha_{NT} \cdot \frac{YN_T}{L_{NT}}$$

The condition of perfect competition assumed inside the labour market, nominal wages are equal in both sectors. Solved by the nominal wage rate W results

$$W = \alpha_T \cdot \frac{Y_T}{L_T} \cdot P_T = \alpha_{NT} \cdot \frac{Y_{NT}}{L_{NT}} \cdot P_{NT}$$

If we substitute the average productivity Y/L by R and then solve the equation for the price relation P_{NT}/P_T, representing the relative price of output in both sectors, the next equation follows:

$$\frac{P_{NT}}{P_T} = (\frac{\alpha_T}{\alpha_{NT}})(\frac{R_T}{R_{NT}})$$

Hence, the relative price of output depends on the product of the coefficient of output elasticities and sector productivities. For a *given* elasticity of output the dynamics of prices and inflation may be determined by a logarithmic transformation of the equation above. It now shows the change rate in the price level and the inflation rate π.

$$\pi_{NT} - \pi_T = \Delta r_T - \Delta r_{NT}$$

Especially it shows the sectoral inflation difference in the volume of deviant states of progress in productivity relied to both sectors. Integrating a weighting factor β for the percentage of consumers' expenditures in total

expenditure, the total consumer price development is determined as the weighted inflation rate π.

$$\pi = \beta_T \cdot \pi_T + (1 - \beta_T) \cdot \pi_{NT}$$

An integration of both preceding equations shows the relationship between the inflationary process and the sectoral path of productivity development.

$$\pi = \pi_T + (1 - \beta_T)(\Delta r_T - \Delta r_{NT})$$

The consequences of the *Balassa-Samuelson-Effects* with respect to the European monetary union are principally far reaching. Since the shock-absorption function of the nominal exchange rate is totally cancelled in the monetary union, the relative prices take on this function. They might be pushed by the pressure of a backwarded productivity situation that affects the regional or sector specific price level.[5] In other words, a real economic approach of inflationary processes which originate in non-tradable goods that are not exposed to international competition becomes causative for the rapidity and the structure of inflation, while labour forces are mobile and adaptive bargaining processes are supposed. Two important consequences for the European monetary union are the outcome: As far as productivity gaps under conditions of an imperfect real convergence are permanent they will influence the national price level, and, depending on certain types of price rigidities and competition in the markets may show a marked effect on the overall inflation rate in the union. Another consequence concerns the eastern enlargement of the EU. Presupposed that some of the participating candidates are only integrated at a low degree into the international competition with tradable goods or into the supply chains of the globalised world, their relative share of non-competitive goods might be remarkably high. Therefore, the adaptive pressure towards rising general inflation rates might be considerable. Related to the opportunity cost of maintaining stability, expressed in an expected growth of unemployment, this tendency could lead to a pull test in such countries, even if the transition periods in productivity alignment are defined short, possibly they too might be not sufficiently accompanied by subsidies for a structural change. A comprehensive survey concerning different empirical studies around the *Balassa-Samuelson*-effect is presented by the annual report of German economic advisors 2001/2002.

II. The relevance of the *M*3 target inside the monetary policy of the European Central Bank

1. The preceding analysis focussed the control problems of the inflationary process which had its origin in the real economic aspects of productivity differences. Their transmission to the wage rate development and their feedback with the price level and the general inflationary process presented a supply side channel of transmission of inflationary pressure. Another serious problem of economic policy relevance results from the finding, that the money definition *M*3 might show an only loose correlation to the price level development in a short-term view. This produces some necessity of legitimation concerning the closeness of the relation between indicators, intermediate targets and final targets of monetary guidance; its observed deviation from the reference values show a remarkable intensity and spread. The allied excess supply of money could be a source of inflations risks, even at the aspect of time lags in transmission processes. If there are additionally different positions of the member states concerning their situation in the business cycle and a divergence in their structural elements of financial architecture, a stability problem of its own arises. Aside the contestability of the second pillar of the ECB policy now the first pillar represented by money supply policy, a dogma of European monetary strategy, has to be questioned.[6]

2. Monetary policy oriented on potential output growth in a *rules versus authorities* concept is based on monetaristic approaches. They are assigned to the demand side causation of the inflationary process. Given the quantity equation as a reference relation, the price level P is defined as the quantity of money per unit of real gross domestic product times v, the velocity of money; the inverse is k, the duration of cash holding.

$$P = \left(\frac{M}{Y^*}\right) \cdot v$$

In the background of v respective k in the equation above being statistical determinants, there are the functional relations of money demand. It shows the dependency of the quantity of money demanded M_3^d from the price level P, the transaction volume Y as well as the short-term and long-term nominal interest rates i_s and i_l

$$P = \left(\frac{M}{Y^*}\right)\left(\frac{1}{k}\right)$$

Under the condition of homogeneity of the money demand function the real money demand is figured out depending on the volume of *real* transactions. Further there exists *Fisher's* hypothesis of expectation which compiles nominal interest rate of the real interest rate plus the expected rate of inflation. Only under the precondition of a sufficiently stable money demand function and of exogenity of the control variables of the quantity of money, the M_3 size itself is controllable.

$$M3^{d} = f(P, Y, i_{e}, i_{l})$$

With the transition of monetary sovereignty to the ECB it executed this so-called first pillar of stabilisation policy, hence money quantity *M*3 was steered in relation with the long-term expectations of real output growth, presumed that the money demand function was stable. The question that arises concerning monetary policy and its efficiency concern the closeness between the policy variables as leverage for the money supply and the connection between money supply and the inflationary development of prices. Concerning the controllability of *M*3 as an intermediate target of the ECB policy there are two questions in the foreground: Firstly, is *M*3 confirmed as an exogenous and independent controlling variable and secondly, is the money demand relation sufficiently stable so that the stringency of transmission between money growth, real output growth and price level rise is maintained. Volatility of the quantity of money *M*3 casts suspicion on an only restricted controllability of money supply, supposing that this outcome is relied to the instability of money demand in the Euro area. The result might be a some way critical connection between money supply and price level with respect to the lead and indicator quality of money supply for the future price stability.

3. The empirical backup of the money growth target of 4.5 per cent is based on the expectations that a rise of the harmonised consumer price index marks 2.0 per cent per year which is compatible with relative purchasing power stability. Further the extrapolated growth of potential output is estimated in a volume of 2 or 2.5 percent, while a backward trend in velocity (rise in cash balances) of ½ per cent is assumed. Opposite to the situation of the German Bundesbank the ECB is facing another environment, so that actually some doubts concerning the controlling ability as even the indicator quality of *M*3 for the future inflation process might arise.

- The *M*3 concept of the ECB, opposite to the former *M*3 definition of the German Bundesbank comprises some money market based components with market oriented interest bearing. Consequently the degree of exogenity of interest leverage is weakening. Approximately only one third

of the volume of *M*3 is principally not interest bearing. In addition to the interest bearing components of the former *M*3 definition of the German Bundesbank now money market certificates and money market bonds as well as bank's debenture bonds and repo-facilities are integrated into the Euro- *M*3 definition. The latter are securing customer's deposits at the monetary financial institutions (MFI) by temporary surrender of financial securities.

- The *M*3 quantity of money is composed by differently high contributions of the member countries. They allow for highly different market influences on the monetary base due to extremely heterogeneous types of finance structures and processes. For instance in the German contribution to the *M*3 volume cash money and saving deposits are dominant. Concerning France the share of money market papers is remarkably high. In Italy and Spain the repo-facilities have a prominent importance. Money market certificates are of importance for Luxemburg and bank debenture bonds for Belgium, Ireland and the Netherlands.
- The distribution of seigniorage gains creates transfer effects which present certain countries as winners or losers of the monetary union. In contrast to seigniorage gains which had been obtained under autonomous central banking according to the size of national cash demand and emission, now they are produced inside the ECP and they are being distributed along the capital share that each state holds at the share capital of the ECB. It is computed out of the population size and the relative volume of the national GDP. Following an international research study, France Italy, Great Britain, Portugal and Greece are winners, whereas Austria, Denmark, Spain and Germany are losers. Since the amount of seigniorage gains in 1995 marked approximately 25 Billions of Euro and surely meanwhile has seriously grown, the redistribution effects are important with certain incidence on financial structure, assets and sources.
- The money demand function in the Euro area seems to be less stable than that in the former German mark area, therefore, the volatility of cash balances is increasing. Spill-overs on the structure of time lags and on the transmission channels that are carrying out impulses to real and nominal variables are the consequence. Additionally there is no explicitly mentioned wealth variable taken into consideration in the empirical modelling of the money demand function. Only by the different time horizon of interest rates there exists an indirect influence of the wealth constraint.

Summarised there are doubts concerning the exogenity of the policy variables which are supposed to steer the *M*3 quantity. This means the short-term interest rates which are used as leverage by the central bank

are possibly not strictly independent (superexogen) from other arguments of cash balances and money demand. If, for instance, the interest rate is raised in order to reduce the expansion of the quantity of money, allied reductions of financial asset prices might lead to a portfolio shift that reduces the wealth components inside *M*3 (wealth effect). At the same time by an interest leverage the pressure of the opportunity cost argument for holding cash which takes a share of approximately one third of the *M*3 volume will rise. The triggered effect is a growing quantity of money (substitution effect). Another scenario could be that the wealth effect and the substitution effect are countervailing and consequently the net effect of a policy change (interest rates) might become totally neutralised.[7]

With respect to the demand side of the money market there has to be taken into account that the income elasticity of money demand is usually higher than one. This presents an argument for the so-called luxury hypothesis of the demand for money and gives some backup for the argument of the wealth-storing function of money aside the classical transaction function. In addition to that there exist dynamic relations concerning the time lags between income and interest rate changes and the allied cash balances change. Research studies by the ECB take these argumentation chains for sufficient for tolerating deviations from the target rate and confirm the reliability of the first pillar of stabilisation policy.[8] External research studies rather back up the suspicion that the ECB policy presently only has a limited controlling ability concerning the aggregate *M*3.[9]

III. Stability risks of budgetary deficits

1. In contracting the Maastricht treaty it was especially a desire of Germany to restrict the risks for the value of money that are a result of deficit spending. Since the deficit rate was limited to a 3 per cent rate even for a cyclical, demand-side oriented deficit development, finally in a mid-term view, a balanced budgetary situation should be targeted. In addition to article 104 of the EU contract a formal pact of stability and growth was decided. It accentuated the obligation for a fiscal discipline with additional duties and sanctions. A principle idea of the agreement on stability and growth consisted in the implementation of rules to fiscal policy instead of discretionary policy aging. By this way moral-hazard positions ought to be prevented, which might arise in the course of political interests, changing votes and economic decision making, being aware of different paradigms that are predominant in the policy design of the member states. The member states of the European Union ought to be obliged to reduce their structural deficit in a

mid-time horizon, to enable them for the future to gain some degree of freedom in the reduction of cyclically caused deficits and finally to avoid them totally. As a consequence an automatic mechanism should be constructed, but it even failed in the negotiation phase of the stability and growth pact. The diagnosis of a risky fiscal behaviour was assigned to the Ecofin council, who had to assure this by a qualified majority vote. In accordance to the theory of economic policy the member states are looking for alliances for an achievement of their individual national and political advantages.[10]

Remarkably it was Germany that should receive an early warning letter by the commission because of a deficit quota which approached the critical three per cent rate. The political pressure which the German administration executed in the foreground of national votes prevented that complaint. But even other states guide a similar strategy of the type of individual rationality in the scheme of the prisoner's dilemma game. Italy, for instance, had negotiated a special condition in 1999 while the Ecofin council accepted an augmented target rate of deficit of 0.4 percent for Italian governmental deficits. Great Britain's Chancellor of the Exchequer *Brown* presented his own visions of the agreement's execution that contains the following additional criteria: (a) There should be an argument for extending public investment in those countries whose infrastructure requires this and the agreement should tolerate an additional deficit. (b) The actual position of each country in the business cycle should be taken into consideration. (c) Not only the actual current budget deficit should play a role, but also the absolute volume of public debt (total deficit quota).

France that traditionally is attached to centralistic forms of organisation reveals its preferences for fiscalistic and discretionary interventions instead of montaristic *rules versus authorities*, took a sceptic position opposite the agreement of stability and growth. Recently France accepted a balance budget target for a four years' period. But evidently it constrained this target by the condition that economic growth reaches the three per cent mark. Regarding the national deficit rates a tendency to a higher rate of net deficits rather than to consolidation as it is intended by article 104 of the Maastricht treaty and the stability and growth pact can be observed. The average deficit rate has increased from –2,2 to –2,9 per cent of GDP in 2003.

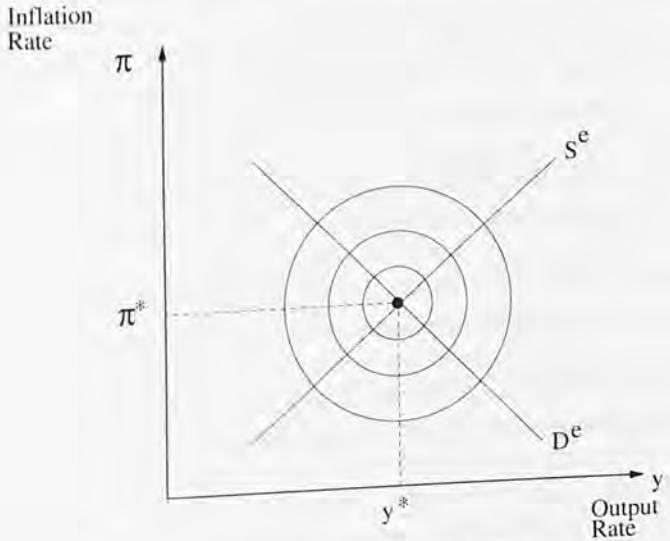
2. Inflation risks out of fiscal activity emerge from different reasons. Fiscal deficits are a source of expansion with respect to the quantity of money, either via the monetary base or directly via M_3 augmentation. Additionally there exists the crowding-out problem of private credit demand in the financial market with a tendency to extend the inflation expectation component in the interest rate. The inflation tax as a further risk might create a welfare

loss of the private sector in favour of the public sector. The argumentation line related to the latter aspect runs from deficit financing of public expenditures to a leverage of the price level. It reduces the real value of nominal cash balances and induces private agents to extend their nominal demand for money in order to re-establish their purchasing power ability. By this way the cash share related to the total quantity of money demand expands. Consequently the seigniorage gains of the cental bank rise, which leads to an extended stock of bonds held by the monetary financial institutions and this leads to an easier placement of additional governmental deficits. If the inflation rate process proceeds, the private sector reacts to that kind of redistribution effects between the state and the economy with a reduction of cash balances and by this way tries to reduce the mentioned transitory effects. Even in some other areas of economic activity the supposed leverage of inflation rate in the consequence of rising financial deficits leads to asymmetries in the system of price information, assigned to the structural elements in creating expectation and to the duration of adaptive processes. The results are mid-term and long-term disadvantages in welfare with feedback effects on the employment system and occasionally on exchange rates and interest rates.

3. Hence, the stability risks out of the fiscal activity and respectively the deficit rate touches the control capacity of the central bank system over the inflation rate. If the central bank takes a conformist position in the agency context of the stabilisation policy, it additionally runs a credibility risk which may affect the stability of the interest structure curve. Then the normal distance between short-term and long-term interest rates might reduce by a general surcharge of expected price rises on real interest rates (*Fisher* effect). This could possibly create an employment risk again that works by the credit cost mechanism in investment decisions. Therefore, the controlling problems concerning public debt show a component of the maximation rule earlier presented in earlier section of this study, being a target function of the stabilisation policy concerning welfare. In adoption of *G. Illing's* approach[11] this view of economic stabilisation might be inversely presented by the welfare losses that originate in certain deviations from money value and employment targets. It can be supposed that welfare losses grow with the target deviations in a quadratic configuration. The related loss function to be minimized by controlling then is

$$L = (\pi - \pi^*)^2 + b(y - y^*)^2 \overset{!}{=} MIN$$

Hereby π is the inflation rate, π^* its target value, y means the output growth, y^* its target value. The parameter b represents a weighting factor, concerning targeted money value and employment rate which here is given the value one, that means equality in the relative valuation of targets.



The controlling problem in stabilisation policy

The quadratic loss functions can be interpreted as indifference curves which are signalling increasing welfare losses with growing distance from the target norms of price level and employment. A failure of control activity in the stability and growth pact in this system can be interpreted as a deviation from optimal targeting. The expected supply function is S^e und the demand function D^e are seen in the understanding of new macroeconomics. Hence, the short-run supply function is of a *Lucas* type and describes cyclical changes in supply activity under the impact of expectation errors in the price system, underlying specific parameters of creating expectations and real factors in the determination of the natural employment rate. The demand function presents the connection between the growth of money offered and demanded, real output growth and the inflation rate in the scheme of a potential output oriented path of monetary policy rules. Here the inflation rate depends on the tension between money growth and output growth. So the graphic summarizes the risks of losing control in monetary and fiscal policy.

Conclusions

At the transition of sovereignty in monetary policy to the European central bank it has taken over the responsibility for monetary stability as a priority task from national central banks. There are three obstacles to be pointed out here concerning a successful execution of this prominent task. Firstly, inflations rates in the monetary union diverge evidently, secondly the overall money quantity M_3 grows in different rates and moves far from the target line, thirdly, national autonomy concerning deficit financing of government expenditure shows interferences, recently inefficiently controlled. An intended reduction of the deficit rates to zero could not be achieved until now.

Behind the first proof of differences in inflation rates a supply-side element of diverging productivity growth rates in national production structures was revealed. As long as those structural differences exist the countries whose production sectors are partly not exposed to the international competition pressure find themselves in a cost push situation. This might have effects on the union's price stability and surely will even have more severe impact within the process of eastern enlargement.

A second finding of an insufficient control ability over the M_3 definition shows different causes. Generally it might be a question of stringency of the first pillar in a potential output oriented monetary expansion rule. Especially with respect to the transmission chains, the time path of action lags and the influence of the money demand side an emergence of inflation risks might be expected. Here a central dogma of traditional monetary policy may be shaken.

Including fiscal policy into the stabilisation task shows additional fragility. Some forms of an establishment of permanent rules and automatic steering could not be really achieved. The reasons lie in institutional economic approaches for explaining policy behaviour of the member states of the EU. This impedes the general task of control for stabilisation policy, especially concerning the trade-off relation between the value of money and the employment problem.

Notes

1. Concerning the two-pillar-strategy see: Europäische Zentralbank, Die zwei Säulen der geldpolitischen Strategie der EZB in: *Monatsbericht November 2000*, p. 41-53.
2. G. Illing, *Theorie der Geldpolitik, Eine spieltheoretische Einfóhrung*, Berlin, Heidelberg, New York 1997, p. 113 f.
3. H. Müller, "Steering Macroeconomics in the Environment of Disinflation and Deflationary Expectation", in: *Discussion Papers in Applied Economics*, Gießen 1998/1, p. 4.
4. "Jahresgutachten des Sachverständigenrats zur Begutachtung der gesamtwirtschaftlichen Entwicklung", 2001/2002, Stuttgart 2001, p. 270 ff.
5. "Europäische Zentralbank, Inflationsunterschiede in einer Währungsunion", *Monatsbericht* Oktober 1999, p. 39-50, 45.
6. "Jahresgutachten des Sachverständigenrats zur Begutachtung der gesamtwirtschaftlichen Entwicklung", 2001/2002, Stuttgart 2001, p. 279 ff.
7. "Europäische Zentralbank, Monatsbericht Januar 1999 folgende", Tabelle Geldmengenaggregate.
8. "Europäische" Zentralbank, Gestaltungsrahmen und Instrumentarium der monetären Analyse, *Monatsbericht* Mai 2001, p. 43-63.
9. H. Hansen und S. Johansen, "Recursive Estimation in Co-integrated VAR-Models". *Discussion Papers 92-18*, University of Copenhagen.
10. R. Peffekoven, "Sollte der Stabilitäts- und Wachstumspakt geändert werden?" In: *Wirtschaftsdienst* 3/2002, p. 127-130.
11. G. Illing, *Theorie der Geldpolitik, Eine spieltheoretische Einfóhrung*, Berlin, Heidelberg, New York 1997, p. 113-115.

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FDI AND GROWTH: EVIDENCE FROM A PANEL OF EUROPEAN TRANSITION COUNTRIES

Introduction

There are many studies examining the effects of FDI in economic growth. The aim of this paper is to shed some light on the controversial issues discussed by those who have written in this area. The work here innovates in the following ways: It uses (a) a set of transition, (i.e. not fully developed), countries of Europe, where FDI is a very important factor in enhancing their economic position, (b) a panel data set which allows the use of alternative methods of estimation, instead of the cross-sectional analyses employed widely so far in the literature and (c) two alternative measures for FDI, namely net FDI and Foreign Portfolio Investments (FPI), both as a percent of GDP, in order to check which of the two alternative measures affects growth.

In order to put our work into context, we present a brief review of some work in this area. In general the relation between FDI and growth is examined in the literature through regressions based on cross-country data. Levine and Renelt (1992) were the first to question the reliability of the results obtained by such an econometric analysis. Taking a sample of 119 countries, (excluding the major oil exporters), for the period from 1960 to 1989 they tested whether the relationship between economic growth and its explanatory variables, such as indicators of fiscal, monetary and political policies as well as of international trade, is strong enough to come to any conclusions. For more accurate results two sets of data source was used: first, the IMF/WB data and second, data obtained from an empirical study of Summers and Heston (1988). Both sets proved that many indicators are

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highly correlated with economic growth or have insignificant influence and should be excluded from the equation. They came to the conclusion that the cross-country statistical relationship between long-run average growth rates and almost every particular macroeconomic indicator is fragile.

One of the first seminal works was that by Barrel and Pain (1997) using panel data for 15 EU countries. This was the first time that the effects of FDI, for both the home (i.e. the advanced) and the host (i.e. the transition) countries were so closely examined. The focus of the analysis is on the developed countries, especially members of OECD, as these appear to attract and at the same time distribute most of the world's investment flows.

Special attention was given to changes in the patterns of FDI after the abrogation of non-tariff barriers and the entry of some countries into a common market, for example NAFTA and EU. Yet the factors of production (relative costs), level of technology, market size and consumer preferences along with national differences are also taken into account, for the type of investment the host country attracts depends largely on these characteristics. To measure the impact of FDI on economic growth a production function (implied by the long-run solution to labour demand equation) was used and the results shown to be positive. Their results come to the conclusion that FDI has a highly positive impact on both the home and the host countries.

Borensztein, Gregorio and Lee (1995) tested the effect of FDI on economic growth using data for 69 developing countries from 1970 to 1989. The cross-country regression analysis proved that foreign investment tends to have a greater positive effect on economic growth than domestic investment as it enhances transfer of technology, knowledge and skills, on condition that the host country has a certain level of human capital available. The authors argue that a minimum threshold stock of human capital is necessary in order to absorb foreign technologies efficiently, and that the higher the level of education the more beneficial is the effect that FDI has on economic growth in the host country. Their results also show that FDI is an important vehicle of technology transfer.

Choe (2003) using panel data examines a mutual relationship between FDI and economic prosperity of the host country and discovers that though there is a strongly positive relationship between the two variables, high inflows of FDI should not be always associated with rapid economic growth. He argues that rapid economic growth enhances more FDI inflows rather than the other way.

Alternative studies within a cross sectional context were carried out by Durham (2003, 2004). They include as a measure of FDI the level of foreign portfolio investments and examine its relationship with growth. These stud-

ies concluded that there is a rather negative relationship between these two variables that is moderated by financial and/or institutional developments in the host country. However, these results are questionable due to possible simultaneity bias.

We have chosen to consider the relation between FDI and economic growth for a set of European countries in transition between state controlled and free market economies. Such transition economies are becoming increasingly significant on the world scene. The choice to work with panel data was made because of the variety of methods of estimation it allows, i.e. common constant, fixed and random effects. Finally it was decided to consider separately the impact of FDI inflows and that of FPI, in order to have a more exact picture of how foreign investment is directed in transition economies. With respect to the last point, as it was intuitively expected foreign investors tend to bypass the less developed stock exchanges and prefer to directly invest in industrial units, taking advantage of lower labour costs.

The rest of the paper is organised as follows. Section 2 presents a discrete time model of FDI and growth. Section 3 makes certain methodological points and presents the empirical results of our panel data regressions and Section 4 concludes the discussion with remarks based on the analysis.

I. A model of FDI and growth

Our theoretical model is in effect a discrete time version of the formulation by Berensztein, De Gregorio and Lee (BDL, 1995). Obviously, in purely theoretical discussions continuous time models have in general a distinct advantage over corresponding discrete time versions. On the one hand continuous models result in closed form solutions, i.e. an explicit formula as a function of time is obtained, and on the other hand the outcome of allowing, in a discrete version, the time interval to tend to zero could depend on how the limits are taken. We adopt here the discrete time approach because we find that this is more convenient in econometric applications since data sets appear at discrete intervals. As in BDL, here as well, the model is not a closed economy because of the presence of foreign firms.

We are working with labour force rather than, as BDL do, with human capital. Labour force is the quantity of working hours of people in the economy. Human capital is calculated by weighting the working hours with the investment in education, training and health. We have taken the labour force data as a more direct and simple variable available. We show a possible derivation of certain results and connection with those on BDL, through approximations as the time interval between decisions decreases.

An economy is considered in which technical progress takes place through "capital deepening". So, technological progress simply leads to the increase of the number of vintages of capital goods in the economy (see Romer (1990) and Grossman and Helpman (1991)).

There are three (sets of) agents in the economy. The producer(s) of the consumption good, the consumer(s), and the producers of the capital good.

The economy produces a single consumption good with the following production function:

$$Y_t = AL_t^{\alpha} K_t^{1-\alpha} \tag{1}$$

where L_t is the exogenously given labour at time t, K_t is capital and Y_t the single good produced at time t.

At each point of time we have the following composition of capital

$$K_t = \left(\sum_{i=1}^{N} x_{it}^{1-\alpha} d_i\right)^{\frac{1}{1-\alpha}} \tag{2}$$

where the x_{it} 's denote the various types of capital and the d_i 's denote their weights. Therefore the overall production function takes the form:

$$Y_t = AL_t^{\alpha}\left(x_{1t}^{1-\alpha} d_1 + x_{2t}^{1-\alpha} d_2 + \ldots + x_{Nt}^{1-\alpha} d_N\right) \tag{2'}$$

where the d_i's are aggregation factors: the machine of more modern vintage get higher d.[1]

There are N varieties of capital goods in the economy:

$$N_t = n_t + n_t^*$$

where n_t denotes the varieties produced by domestic firms, and n_t^* is the varieties produced by foreign firms. At least initially the distribution of these varieties is arbitrary. We are interested in capital deepening in the form of an increase in the number of vintages of capital goods available.

The firms which produce capital rent it out at

$$m_{it} = A(1-\alpha) L_t^{\alpha} d_i x_{it}^{-\alpha} \tag{4}$$

where m_{it} is the real rental rate and $A(1-\alpha)L_t^{\alpha} d_i x_{it}^{-\alpha}$ is the marginal productivity of x_{it}.

This assumes competitive conditions. The firm producing the consumption good maximizes per capital vintage

$$\pi_{it} = AL_t^{\alpha} d_t x_{it}^{1-\alpha} - m_{it} x_{it}.$$

This follows from the separability of the consumer's profit function in capital goods. Note that there is only one good and we have taken the price to be $p_{it} = 1$.

A fixed setup cost F_t is required before the production of a new type of capital can take place. This is given by

$$F = F\left(n_t, \frac{N_t}{N_t^*}\right); \text{ where } \frac{\partial F_t}{\partial n_t} < 0 \text{ and } \frac{\partial F_t}{\partial\left(\frac{N_t}{N_t^*}\right)} < 0 \tag{5}$$

Here N_t^* is the number of varieties of capital goods produced in general in more advanced countries.

Intuitively, the setup costs of new types of capital are decreasing in the number of varieties already produced by foreign firms in the host country. In other words, capital deepening decreases such costs. Setup costs are also decreasing with respect to the ratio of the varieties of capital goods produced in the host country divided by the number of varieties produced in advanced countries as the technological gap between transition countries and advanced countries narrows down. In general increased know-how decreases the setup costs.

The profits for the producer of x_{it} are:

$$\Pi_{it} = \sum_{s=t}^{\infty} (m_{is} x_{is} - x_{is}) \frac{1}{(1+r)^{(s-t)}} - F\left(n_t, \frac{N_t}{N_t^*}\right) \tag{6}$$

An interpretation is as follows. There is a setup cost $F\left(n_t, \frac{N_t}{N_t^*}\right)$ which is paid once at time t. The capital good produced at time t will live forever and is denoted by x_{is} at time s. It will be rented out at a constant rental rate $m_{is} = m_{it}$. It will bring in an income of $m_{is} x_{is}$ and will cost x_{is} to maintain. Finally the discount market rate r is taken to be constant. Hence we obtain the profit function of the producer of the capital good of a particular vintage.

We now consider the problem:

$$Max\ \Pi_{it} = \sum_{s=t}^{\infty} (m_{is} x_{is} - x_{is}) \frac{1}{(1+r)^{(s-t)}} - F\left(n_t, \frac{N_t}{N_t^*}\right)$$

$$s.t.\quad m_{it} = A(1-\alpha) L_t^{\alpha} d_t x_{it}^{-\alpha}$$

By substitution we obtain inside the first bracket:

$$\sum_{s=t}^{\infty}(A(1-\alpha)L_s^{\alpha}d_t x_{is}^{1-\alpha} - x_{is})$$

a typical term of which is

$$A(1-\alpha)L_s^{\alpha}d_t x_{is}^{1-\alpha} - x_{is}$$

which on maximization with respect to x_{is} gives

$$A(1-\alpha)^2 L_s^{\alpha}d_t x_{is}^{-\alpha} - 1 = 0$$

or,

$$A(1-\alpha)^2 d_t L_s^{\alpha} = x_{is}^{\alpha}$$

Hence,

$$x_{is} = A^{\frac{1}{\alpha}}(1-\alpha)^{\frac{2}{\alpha}} d_t^{\frac{1}{\alpha}} L_s, \tag{7}$$

which is the relation (7) in BDL, except for the aggregation factor d_t, and after we replace s by t. This is the supply of the good at t. Now in order to make demand equal to supply we substitute (7) into (4) to get:

$$m_{it} = A(1-\alpha)L_t^{\alpha}d_t A^{-1}(1-\alpha)^{-2}d_t^{-1}L_t^{\alpha}$$

Thus,

$$m_{it} = \frac{1}{1-\alpha} \tag{8}$$

So we have reached relation (8) in BDL which says that $m_{it} > 1$, i.e. the rental rate is higher than the maintenance costs. This makes the maximum profit Π_{it}^{*} positive for sufficiently low r. Now because of free entry r will be driven to a level where profits are equal to zero. This is an assumption of perfect competition.

Now we want to calculate r which makes $\Pi_{it}^{*} = 0$. For this, we proceed as follows. We know that $x_{it} = x_{is} = L_t A^{\frac{1}{\alpha}}(1-\alpha)^{\frac{2}{\alpha}} d_t^{\frac{1}{\alpha}}$ and $m_{it} = \frac{1}{1-\alpha}$. Therefore the expression for maximum profit is

$$\Pi_{it}^{*} = \frac{\alpha}{1-\alpha} L_t A^{\frac{1}{\alpha}}(1-\alpha)^{\frac{2}{\alpha}} d_t^{\frac{1}{\alpha}} \sum_{s=t}^{\infty} \frac{1}{(1+r)^{(s-t)}} - F \tag{9}$$

and because we require $\Pi_{il}^{*} = 0$ we have, after calculating the sum of the geometric progression, that

$$0 = -F + \frac{\alpha}{1-\alpha} L_t A^{\frac{1}{\alpha}} (1-\alpha)^{\frac{2}{\alpha}} d_t^{\frac{1}{\alpha}} \frac{1+r}{r}$$

Therefore r can be obtained from

$$\frac{r}{1+r} = F^{-1} A^{\frac{1}{\alpha}} \alpha (1-\alpha)^{\frac{2-\alpha}{\alpha}} d_t^{\frac{1}{\alpha}} L_t = F^{-1} \psi L_t \tag{10}$$

and of course $\psi = A^{\frac{1}{\alpha}} d_t^{\frac{1}{\alpha}} \alpha (1-\alpha)^{\frac{2-\alpha}{\alpha}}$.

Relation (10) here is the discrete time analogue of (9) in BDL. An intuitive, non rigorous, way of how an approximation can take place is as follows. For a time interval of *dt* relation (10) might be thought of as becoming

$$\frac{rdt}{1+rdt} = F^{-1} A^{\frac{1}{\alpha}} \alpha (1-\alpha)^{\frac{2-\alpha}{\alpha}} d_t^{\frac{1}{\alpha}} L_t dt_t$$

Taylor expanding the left hand side at $dt = 0$ we obtain $0 + rdt$ Cancelling *dt* on both sides we obtain what is basically (9) in BDL.

It is easy to check using relation (10) that the derivative of *r* with respect to *di* is positive. This means that the more modern capital is (i.e. the higher *di* is), the less restrictive is the upper ceiling on r for the profit to be positive.

Now we turn to the individuals' utility maximization, where *c* is the consumption. In discrete time we have at time *t*

$$U_t = \sum_{s=t}^{\infty} \frac{c_s^{1-\sigma}}{(1-\sigma)} \frac{1}{(1+\rho)^{\rho(s-t)}} \tag{11}$$

We assume $0 < \sigma < 1$, in order to secure positive first derivative of the strictly concave felicity function, $\frac{c_s^{1-\sigma}}{1-\sigma}$ and the denominator $1 - \sigma$ can be eliminated through a monotonic transformation. Further, ρ is the psychological rate of discount. Its comparison with the market rate is always relevant. The market rate *r* determines the budget constraint.ρ

Example: we consider the two period model and maximize

$$U = \left[c_0^{1-\sigma} + \frac{1}{1+\rho} c_1^{1-\sigma} \right] (1-\sigma)^{-1}$$

Subject to $c_0 + \frac{c_1}{1+r} = w_0 + w_0 \frac{1}{1+r}$

U gives the sum of the discounted instantaneous utilities at the psychological rate of discount ρ. The constraint says that the individual receives w_0 income in both periods.

We now form the Lagrangean function

$$V = \left[c_0^{1-\sigma} + \frac{1}{1+\rho} c_1^{1-\sigma} \right] (1-\sigma)^{-1} + \lambda \left(w_0 + w_0 \frac{1}{1+r} - c_0 - \frac{c_1}{1+r} \right)$$

If we take the F.O.C.'s we have

$$c_0^{\sigma} - \lambda = 0$$

$$\frac{1}{1+\rho} c_1^{\sigma} - \lambda \frac{1}{1+r} = 0$$

$$w_0 + w_0 \frac{1}{1+r} = c_0 + \frac{c_1}{1+r}$$

It is easy to show that the S.O.C.s are satisfied.

From the first two of our F.O.C. we have

$$\left(\frac{c_1}{c_0} \right)^{\sigma} = \frac{1+r}{1+\rho} \tag{12}$$

$$\frac{c_1}{c_0} = \left(\frac{1+r}{1+\rho} \right)^{\frac{1}{\sigma}}$$

and the rate of increase is

$$\frac{c_1 - c_0}{c_0} = \left(\frac{1+r}{1+\rho} \right)^{\frac{1}{\sigma}} - 1 \tag{13}$$

Now we show how we can approximate relation (11) in BDL through our approach. Suppose that instead of period 1 (discrete model) we have period dt tending to 0. Relation (11) now becomes

$$\left(\frac{c_{t+dt}}{c_t} \right)^{\sigma} = \frac{1+rdt}{1+\rho dt}$$

Taylor expanding at $dt=0$ we have left-hand side being equal to

$$\left(\frac{c_t}{c_t}\right)^{\sigma} + \sigma\left(\frac{c_t}{c_t}\right)^{\sigma-1} \frac{1}{c_t}\frac{dc_t}{dt}dt$$

and the right-hand side equal to $1 + (r - \rho)\, dt$ and relation (11) in BDL follows:

$$\frac{1}{c_t}\frac{dc_t}{dt} = \frac{1}{\sigma}(r - \rho) \tag{14}$$

We emphasize that going from discrete to continuous models is not always obvious or straightforward. Relation (14) is a usual equation of calculus of variations involving the elasticity of marginal felicity.

We rewrite our (13) as

$$\frac{c_{t+1} - c_t}{c_t} = \left(\frac{1+r}{1+\rho}\right)^{\frac{1}{\sigma}} - 1 \tag{15}$$

Adopting the idea of steady state growth, we postulate $g = \frac{Y_{t+1} - Y_t}{Y_t} = \frac{c_{t+1} - c_t}{c_t}$ and if we substitute (10) into (15) we obtain

$$(1+g)^{\sigma} = \frac{1}{1+\rho}\left[\frac{1}{(1 - F^{-1}L_t\psi)}\right] \tag{16}$$

Taking logarithms of (16) we obtain

$$\log(1+g) = \frac{1}{\sigma}\left[\log\left(\frac{1}{1 - F^{-1}L_t\psi}\right) - \log(1+\rho)\right] \tag{17}$$

where $F^{-1}L_t\psi$ is a proxy for new foreign investment. Thus, equation (17) gives us an expression of the growth rate of the economy, g, which contains, at least implicitly, L_t, *FDI*, and Y. In particular *FDI* is contained in F. The prediction is that as n^* goes up, F goes down and therefore g goes up. A similar prediction is obtained with respect to N^*.

The predictions of our theoretical discussion, which determine the sign the relevant derivatives, are that the rate of growth of output is directly related to ψ and L_t and inversely related to F. They are the outcome of assumed rational behaviour on the part of the agent. In order to test the predictions of a theoretical formulation one resorts to an econometric application. We return to this in Section 3.

II. Methodology, data, and empirical results

1. Methodology

In putting forward an econometric model to test the predictions of a theory we are usually faced with a number of problems, such as the availability of data, the fact that proxy variables have to be used etc. Furthermore it is not always possible to cast the application exactly in the same format as the theory. This might be due to the fact that efficient, applied techniques are not always available.

Theoretical constructions attempt to be part of the cumulative development of a discipline and the setting up of approximating econometric models tests their possible validity. The suggestion that we could make the same applied formulation on intuitive grounds is not always very helpful. On the one hand there are usually alternative intuitive formulations and furthermore a fundamental issue is to put to proper use the available methodological, theoretical arguments and discover their possibilities and limitations.[2]

The empirical model we propose here in order to test the theory developed in Section 2 can be thought of as an approximation of equation (17), in the spirit of (13) approximating (12) in BDL. Although we put forward a linear form, in spite of the fact that (17) is not linear, we can, as a first step, test the derivates' predictions with respect to F, ψ and L_t. Note that as a proxy for F we use the ratios of FDI to GDP and FPI to GDP.

Explicitly, our econometric model based on a linearization of (17) is given by

$$g_{it} = c_{i0} + c_1 F_{it} + c_2 L_{it} + c_3 Y_{it} + c_4 X_{it} \qquad (18)$$

where g denotes growth of per capita GDP, F stands for foreign investments and is proxied either by FDI to GDP ratio or by FPI to GDP ratio, L is the labour force, Y is real GDP per capita and finally X can be a set of additional explanatory variables for which we use, given its big significance in transition economies, the rate of inflation.

We shall estimate versions of equation (18) using panel data techniques which allow us to include the data for all ten transition economies (the ten cross-sections) for 14 years at once, hence increasing the explanatory power of our regressions. More importantly, three different methods of estimation are going to be used: common constant, fixed effects and random effects.

According to the common constant method of estimation, also known as pooled OLS method, no differences exist among the data for all ten countries and therefore a common constant can be used. In order to be able to apply this method we must work only with homogenous data, i.e. we

should have a set of countries that share common characteristics. As all our countries are from the Central and Eastern Europe this method might be an appropriate one.

The fixed effects method, or the Least Squares Dummy Variables (LSDV) estimator, provides different constants for each section – in other words for each country – therefore forcing us to include a dummy variable for each group. Unfortunately, this method has some disadvantages, as for example the fact that it does not allow us to include further dummy variables in the model or explanatory variables which change slowly in time, for they would appear to be highly collinear with the effect.

Finally, the main hypothesis under the random effects method is that each of the ten countries has its own error term. As a result a constant is used for each section as a random parameter. To be able to use this method one should make sure that the unobserved effect from all ten countries would not be correlated with the explanatory variables, for otherwise the results would be inconsistent and biased. All three alternative methods will be estimated and a Hausman test will help us decide which method is the appropriate one.

2. *The data set*

The panel data set consists of annual observation for 1990 till 2003 for ten Eastern European countries. These are: Bulgaria, Check Republic, Estonia, Lithuania, Latvia, Poland, Russian Federation, Slovakia, Slovenia and Romania. In our analysis we focuse mainly on seven variables: the dependent variable g which denotes the growth rate of real GDP per capita, the inflow of net foreign direct investments as a percentage of the GDP (FDIN), the inflow of foreign portfolio investments as a percentage of the GDP (FDIP), the labour force (L), real GDP per capita (Y) and inflation (DCPI), measured as the logarithmic change of the consumer price index (LCPI) as an additional explanatory variable. There are several sources for data that have been used in this study. A key source is the IMF publication "International Financial Statistics" (IFS) (2004). Other important information was derived from the annual publications of the main financial institutions of the countries we are studying.[3] Of course, the use of panel data implies that all evidence is used collectively.[4]

3. *Empirical results*

Tables 1 to 3 present summarised results of specification of equation (18) when Y is included in the regression specification. Table 1 presents

results for common constant across the panel, while Tables 2 and 3 present the results for random and fixed effects respectively. In all cases we first estimate the model including only *Y* (regression 1) and then we add in the specification FDIN, to see the importance of FDIN. Then, we add also the other determinants to see whether the inclusion of the other variables that affect growth will change the significance of our results (regressions 2 to 5). Then, we do the same for the alternative measure of FDI, FDIP (see regressions 6 to 9).

For the common constant case (Table 1) we see that in all cases Y is positive (suggesting in a sense non convergence according to the Barro and Sala-i-Martin type of beta convergence hypothesis). Adding FDIN in the regressions we see that in all cases the coefficient is positive (suggesting positive effects of FDIN on growth) and in most of the cases statistically significant as well. On the other hand, FDIP is negative and statistically insignificant in all cases. At the same time the results reveal that there is a negative effect on the level of economic growth from FDIP. This can be partly explained by the level of development of the countries in our sample, while it is consistent with the results obtained by Alfaro *et al.* (2002).

Interestingly enough the coefficients of DCPI and *L* are negative and positive respectively which is a well established case in the literature regarding transition economies. When we estimate the same sets of regression with fixed effects the results show that neither FDIN nor FDIP are significant, but the coefficients are again positive in the first case and negative in the second case as before. Finally estimating the same regression by using the method of random effects the results are again similar but this time the significance of FDIN is quite high.

Hausman tests suggested that random effects against the fixed effects, is the appropriate method of estimation, which implies that FDIN affects growth positively while FDIP has detrimental effects. In particular, for the regressions in Table 3 the test result ranged for a minimum value of around 9 for regression 3 to a maximum value of almost 19 for regression 5, while for the regressions in table 6 the statistic ranged from a minimum value of around 11 for regression 3 to a maximum value of almost 17 for regression 4. The critical value of the statistic using the chi-square tables is around 6 or 7 maximum, leading to the acceptance of the random effects model against the fixed effects in all cases.

For robustness we estimate once more all the regressions using again all three alternative methods of estimation, this time excluding Y from the specification. The results are quite similar to the case described above, suggesting that the estimations are robust. So, finally in all cases the full model

of FDIN (i.e. the one that contains not only FDIN, but all the other possible determinants of growth as well)[5] proved to be the most significant in terms of explanatory power.

Conclusions

The aim of this paper has been to examine the relationship among economic growth and FDI for ten transition economies. For this reason annual data for a set of variables were selected for the time period 1990 to 2003, and an empirical analysis of growth regressions using panel data was employed. Also, in order to test the effects of foreign investments two different proxies were used. These were the ratios of net FDI inflows to GDP and of FPI to GDP.

The results obtained support the hypothesis that FDI affects growth under all three alternative specifications, namely common constant, fixed effects and random effects. The random effects, which proved to be the most appropriate method of estimation, showed clearly that the effect was a positive and significant one. On the other hand the FPI appeared to be insignificant on all the three specifications and entered with a negative coefficient. This could be explained by the fact that stock markets are not fully developed in transition countries, while transition economies with their relatively cheaper labour are seen to be quite attractive for planned FDI. The robustness of the results obtained from alternative specifications make the basic conclusions of our empirical analysis quite strong.

TABLE 1
BASIC EQUATION ESTIMATION INCLUDING THE LEVEL OF GDP AS EXPLANATORY VARIABLE – METHOD OF ESTIMATION COMMON CONSTANT

Variables	Regr. 1	Regr. 2	Regr. 3	Regr. 4	Regr. 5	Regr. 6	Regr. 7	Regr. 8	Regr. 9
Constant	0.703076 (0.656139)	0.926317 (0.927783)	-2.740143 (-.673725)	1.840321 (2.188156)	-0.488277 (-0.347390)	2.322435 (2.613535)	2.664821 (3.594640)	0.377535 (0.241487)	1.477997 (1.134630)
Y	0.142201 (0.863468)	0.050230 (0.351826)	0.073347 (0.524517)	0.183198 (1.529014)	0.195031 (1.638618)	0.076431 (0.578369)	0.189593 (1.716306)	0.076461 (0.576268)	0.188732 (1.692048)
FDIN		0.352929 (2.347316)	0.308682 (2.091090)	0.183389 (1.451599)	0.159102 (1.265423)				
FDIP						-0.404161 (-1.629537)	-0.158546 (-0.763558)	-0.372188 (-1.495057)	-0.139924 (-0.668013)
DCPI				-0.017018 (-6.027722)	-0.016343 (-5.807925)		-0.015814 (-4.553038)		-0.015910 (-4.559983)
L			0.340466 (2.761906)		0.213684 (2.040659)			0.180045 (1.506789)	0.110495 (1.106384)
Obs	124	115	114	111	110	104	100	103	99
R-sq. adj.	0.002073	0.035075	0.090011	0.273136	0.294176	0.012003	0.213627	0.024157	0.190706

TABLE 2

BASIC EQUATION ESTIMATION INCLUDING THE LEVEL OF GDP AS EXPLANATORY VARIABLE – METHOD OF ESTIMATION FIXED EFFECTS

Variables	Regr. 1	Regr. 2	Regr. 3	Regr. 4	Regr. 5	Regr. 6	Regr. 7	Regr. 8	Regr. 9
Y	16.026 (4.034)	15.65736 (4.255462)	11.57879 (3.468910)	13.82675 (13.82675)	10.96493 (3.137176)	13.24775 (3.734601)	10.15280 (3.128844)	12.41843 (3.224159)	10.26019 (2.930333)
FDIN		0.361836 (0.745360)	0.076729 (0.513056)	0.043082 (0.237209)	0.012666 (0.080594)				
FDIP						-0.117624 (-0.439718)	0.073291 (0.316519)	-0.115294 (-0.425998)	0.064762 (0.275518)
DCPI			-0.014139 (-4.721294)		-0.013453 (-4.421912)		-0.012771 (-3.429258)		-0.012713 (-3.376148)
L				0.485017 (2.146041)	0.246203 (1.228977)			0.153055 (0.721097)	0.009704 (0.052844)
Obs.	124	115	111	114	110	104	100	103	99
R-sq. adj.	0.098175	0.148121	0.307173	0.179208	0.312294	0.122058	0.226024	0.119579	0.218418

TABLE 3
BASIC EQUATION ESTIMATION INCLUDING THE LEVEL OF GDP AS EXPLANATORY VARIABLE – METHOD OF ESTIMATION RANDOM EFFECTS

Variables	Regr. 1	Regr. 2	Regr. 3	Regr. 4	Regr. 5	Regr. 6	Regr. 7	Regr. 8	Regr. 9
C	0.722940 (0.727743)	0.973276 (1.058857)	1.974036 (3.339846)	-2.380387 (-1.611868)	0.216730 (0.286470)	2.305329 (2.346020)	2.709258 (5.420486)	0.052623 (0.029791)	1.693951 (1.984567)
Y	0.138569 (0.907564)	0.048248 (0.370599)	0.181436 (2.266397)	0.067010 (0.552638)	0.186934 (3.385514)	0.081050 (0.554585)	0.178082 (2.406075)	0.083706 (0.534393)	0.175367 (2.586598)
FDIN		0.342678 (2.332506)	0.155269 (1.411984)	0.311550 (2.200028)	0.152651 (1.713957)				
FDIP						-0.391333 (-1.557014)	-0.238309 (-1.263807)	-0.348020 (-1.368484)	-0.241823 (-1.324486)
DCPI			-0.017463 (-6.501785)		-0.017811 (-7.394436)		-0.016892 (-5.180557)		-0.017753 (-5.527401)
L				0.309483 (2.781420)	0.161618 (2.945886)			0.207617 (1.570267)	0.096868 (1.421972)
Obs.	124	115	111	114	110	104	100	103	99
R-sq. adj.	0.01049	0.025625	0.251436	0.076675	0.264685	0.025248	0.148482	0.046425	0.140472

TABLE 4
BASIC EQUATION ESTIMATION EXCLUDING THE LEVEL OF GDP – METHOD OF ESTIMATION COMMON CONSTANT

Variables	Regr. 1	Regr. 2	Regr. 3	Regr. 4	Regr. 5	Regr. 6	Regr. 7	Regr. 8
Constant	1.170861 (1.639959)	-2.347573 (-1.617570)	2.682149 (4.192779)	0.487167 (0.379603)	2.749443 (5.577943)	0.801153 (0.582593)	3.695994 (8.426494)	2.482074 (2.119753)
FDIN	0.362639 (2.463150)	0.322985 (2.233606)	0.224620 (1.808738)	0.202934 (1.638882)				
FDIP					-0.420748 (-1.713469)	-0.389415 (-1.580949)	-0.211440 (-1.019527)	-0.193837 (-0.927252)
DCPI (INFL)			-0.016767 (-5.912503)	-0.016111 (-5.687569)			-0.015625 (-4.456486)	-0.015740 (-4.469379)
L		0.337315 (2.748590)		0.206978 (1.962595)		0.180578 (1.516368)		0.113155 (1.122206)
Obs	115	114	111	110	104	103	100	99
R-sq. adj.	0.042557	0.095954	0.264132	0.282956	0.018449	0.030675	0.172787	0.174835

TABLE 5
BASIC EQUATION ESTIMATION EXCLUDING THE LEVEL OF GDP – METHOD OF ESTIMATION FIXED EFFECTS

Variables	Regr. 1	Regr. 2	Regr. 3	Regr. 4	Regr. 5	Regr. 6	Regr. 7	Regr. 8
FDIN	0.425696 (2.405413)	0.192754 (1.031127)	0.227902 (1.511039)	0.115800 (0.721332)				
FDIP					-0.330835 (-1.186067)	-0.258164 (-0.920584)	-0.078054 (-0.328670)	-0.048688 (-0.201312)
DCPI (INFL)			-0.016563 (-5.395216)	-0.015217 (-4.872110)			-0.014878 (-3.873389)	-0.014450 (-3.724986)
L		0.708374 (3.082598)		0.391849 (1.924925)		0.403856 (1.946966)		0.192745 (1.069911)
Obs	115	114	111	110	104	103	100	99
R-sq. adj.	0.007979	0.082561	0.229959	0.249608	-0.000167	0.028680	0.148718	0.149468

TABLE 6
BASIC EQUATION ESTIMATION EXCLUDING THE LEVEL OF GDP – METHOD OF ESTIMATION RANDOM EFFECTS

Variables	Regr. 1	Regr. 2	Regr. 3	Regr. 4	Regr. 5	Regr. 6	Regr. 7	Regr. 8
C	1.249348 (1.991510)	-1.818202 (-1.460095)	2.689201 (4.657919)	0.693179 (0.640521)	2.747704 (5.650546)	0.710086 (0.497676)	3.662399 (10.29970)	2.570530 (2.740667)
FDIN	0.340267 (2.460685)	0.328270 (2.464186)	0.223780 (1.901214)	0.219216 (1.940073)				
FDIP					-0.423113 (-1.727145)	-0.379901 (-1.529540)	-0.28349 (-1.443423)	-0.276684 (-1.416415)
DCPI (INFL)			-0.016847 (-6.024464)	-0.016377 (-5.948847)			-0.016175 (-4.749387)	-0.016611 (-4.871862)
L		0.286563 (2.801678)		0.183686 (2.128901)		0.189565 (1.536941)		0.102361 (1.256183)
Obs	115	114	111	110	104	103	100	99
R-sq. adj.	-0.020732	0.028367	0.229983	0.234771	0.013771	0.046486	0.068223	0.054408

Notes

1. Note that the production function is homogeneous of degree 1 in $(L_t, x_{1t}, x_{2t}, \ldots, x_{Nt})$.
2. A recent scholarly discussion of methodological issues in economics is by S. Sarantides (2004). The construction of theoretical models and the investigation of the implications of their econometric analysis is what we understand by the use of the deductive and the inductive approaches in a complementary manner.
3. More analytical information on the data and the results is available from the authors on request.
4. It should be noted that the data set is unbalanced in the sense that some of the variables were not available for all years in all countries. As a result, there were missing observations that resulted in differences in the numbers of observations among different regressions.
5. This corresponds to regressions number 5 for the first set of regressions (see Tables 1-3) and regressions number 4 for the second set of regressions (see Tables 4-6).

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INWARD INTRA-EU FDI PATTERNS

Introduction

The emergence of a single market in the European Union (EU) is expected to have contributed to the growth of trade and investment, between the countries of the Union. Economic integration is supposed to have set in motion a process of convergence and/or divergence within the EU, which either balances or amplifies inter member country differences related with supply side conditions, e.g. wages, interest rates, external economies, etc., and economic policies, and through them to influence intra-regional foreign direct investment (FDI) flows.

There is considerable theoretical and empirical research on the relationship between the Single Market and FDI into the EU. Clegg (1998) suggests that the growth of intra-EU FDI is linked to the adoption of a pan-European FDI strategy by EU firms, largely prompted by EU market integration. Neary (2002) extends the theory of multinational corporations identifying distinct influences of internal trade liberalization by a group of countries on the level and pattern of inward FDI. There are also other studies concerned with economic integration and FDI (Balasubramanyam, Sapsford & Griffins, 2002; Neven & Siotis, 1996; Pain & Lansbury, 1997). The aim of this paper is to examine the impact of economic integration on intra EU FDI. More specifically, a panel data model is employed regressing country relative intensities of inward FDI originated from within the EU against a set of country related variables specified as deviations from the regional average. These deviations are expected to affect the FDI inter-country distribution. Pantelidis and Kyrkilis (2004) have estimated a similar model using time series data for twelve EU member countries.

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Economic theory suggests that the abolition of tariffs and other trade barriers between two or more countries raises the bilateral or regional trade volume (Viner, 1950). Enhanced trade would partly substitute defensive FDI sourced in the member countries of the customs union and motivated by a strategy of penetrating protected national markets, especially large ones (for an analysis of the exporting vs. local production in the presence of tariffs see Horst, 1973 and Hirsch, 1976). As opposed to that, efficiency seeking FDI (for the categorization of FDI see Narula, 1996) is possible to expand. An emerging single market increases competition, and economies of scale and scope through liberalizing both the access of firms to the constituent national markets and the mobility of production factors. Therefore, it rises the scope for production rationalization (see Cantwell, 1988; UNCTC, 1990) and the building of a regionally integrated network of affiliated firms under common ownership that locate production phases or the manufacturing of different varieties of the same product according to local supply conditions. Such a production network would take advantages from free intra-firm trade, lower cross border coordination costs effected through the inter-country convergence of institutions, policies, attitudes, codes of behavior and the deregulation of market transactions, and finally of economies of scale through marketing to an enlarged regional market.

A liberalized single market through free trade and access to factor, product and services market may also favour strategic asset seeking FDI, which tries to get access to skills, technologies, R&D facilities and other intangible resources, most of which are country and firm idiosyncratic in nature and subject to culture, institutions and agglomeration economies. In addition, a unified single regional market may facilitate the transfer across national boundaries of intangible firm specific income and market power generating resources, such as brand names, managerial expertise and other non-codified information intensive assets, for which market failure is high. Therefore, full economic rents may better be extracted via common ownership, viz. FDI rather than licensing or other arm's length transactions (see the internalization theory of FDI, indicatively Buckley and Casson, 1976; Rugman, 1980,1985; Dunning 1981; Hennart, 1982).

I. Hypotheses and variables

The creation of a single regional market may result to intensified trade between the member countries. That means that the share of intra-regional trade to total international trade of the region (intra plus extra regional trade) would increase. In this context the relative volume of intra-regional trade

may approximate the degree of completing the single regional market and an increasing share may indicate an increasing integration of the individual national markets of the region. In turn, the deepening of regional integration is expected to promote the regional scope of the business and investment strategy of firms, thus advancing the motives for both the efficiency and strategic seeking FDI. It is also expected that a single regional market may nullify the motives for defensive FDI. However, this is a rather once and for all effect occurring in the initial stage of building a unified regional market. For that reason the overall effect is assumed to be rather positive, especially because a customs union preceded the single market program in the case of the EU. Therefore, any substitution effect should have been exhausted well before 1985, the year the single market program was launched (Pantelidis and Kyrkilis, 2004). Therefore, the hypothesis may be formulated as it follows:

H1: An EU member country's integration with the single market, as it is approximated by the ratio of this country's intra EU exports plus imports over its total (intra plus extra EU) exports and imports, is assumed to have a positive effect on the country's inward FDI originated in the EU.

The unification of the EU's internal market spurs competition across the enlarged market, thus triggering industrial restructuring according to national competitive advantages, as they are manifested in supply conditions. With free mobility of production factors and inputs value added activities would tend to locate in the most cost efficient sites. Different cost items, e.g. cost of labor or capital are not equally significant across all production activities. That may create clusters of similar activities located in specific or neighboring areas where the supply and cost of the most important items for the relevant cost structures are more favorable. Such clustering may give rise to agglomeration economies the type of which differs across countries and sub-regions reinforcing the inflow of similar investments. In any case, inward FDI would depend on individual countries supply conditions, with countries having relatively more favorable supply conditions receiving higher proportions of inward FDI. Therefore, the second hypothesis may be as following:

H2: The relative proportion of intra-regional FDI flowing into a member country would be increasing as the country's supply conditions are becoming more advantageous relatively to these of other member countries.

It is assumed that supply cost approximates supply conditions. Supply cost is approximated by real unit labor cost in country i over the EU aver-

age real unit labor cost. As the value of this ratio increases the relative cost advantage of an individual country tends to decrease, so the expected sign is negative.

Inter country differences in demand structures, as they are expressed by per capita income deviations from the region's average, may induce FDI in marketing intensive sectors in cases where more sophisticated structures are being created, or discourage FDI in cases where demand structures tend to downgrade. At the same time, per capita income differences may manifest differentiation of the development level between countries, hence different availability of resources, especially created ones, as well as different levels of agglomeration economies and business opportunities in each country. These differences as they are eliminated or pronounced by the advancement of a country's development may benefit FDI motivated by the existence of resources complementary to firm specific ownership advantages (Pantelidis and Kyrkilis, 2004). The hypothesis may be formed as it follows:

H3: As a member country advances its development level relatively to that of the others, intra-regional FDI would be increasingly motivated to flow intro this country.

The ratio of GDP per capita of country i over the EU average GDP per capita may be used for measuring the relative development position of a country within the EU.

Finally, the dependent variable is the ratio of intra-EU FDI flowing into a member country over total inward intra-EU FDI. An increasing ratio reveals an increasing tendency of intra EU FDI to concentrate in the specific member country.

II. The model

The model function can be summarized as it follows:

FDI = F(YNRA, $YNRA_1$, $YNRA_2$, WRA, WRA_1, WRA2, XMRA, $XMRA_1$, $XMRA_2$, D1, D2, D3)

Where:

FDI = ratio of inward FDI coming from EU over total inward intra-EU FDI.

YNRA = relative GDP per capita = GDP_i over GDP_{EU}

GDP_i = GDP per capita of country i

GDP_{EU} = EU average GDP per capita

WRA = relative labor cost = w_i over w_{EU}

W_i = real unit labor cost in country i

W_{EU} = EU average real unit labor cost

XMRA = ratio of intra EU exports and imports over total exports and imports of country i. That variable represents trade integration in EU.

D1 = dummy variable for the EU enlargement in 1986 (Spain and Portugal enter EU).

The dummy takes the value of 0 prior to 1986 and the value of 1 after.

D2 = dummy variable for the EU enlargement in 1996 (Austria, Sweden and Finland enter EU). The dummy takes the value of 0 prior to 1996 and the value of 1 after.

D3 = dummy variable standing for the German unification in 1989. The dummy takes the value of 0 prior to 1990 and the value of 1 after.

Subscripts **1** and **2** mean the variables with one and two lag periods respectively.

The lags are used in order to allow for past year effects to be tested. Investment decisions precede investment flows, and, then, the latter are influenced by conditions prevailing at the time of the decision rather the time of realization. Furthermore, investment realization may be effected over more than the one-time periods.

III. Estimation methodology, data and results

The log linear form of the equation presented in section 3 is estimated using both OLS and VAR econometric techniques over a set of panel data comprised by all EU member countries for the period 1980-2001. The equation has a log linear form because under this specification elasticities given by the estimated coefficients are constant. Applying the Phillips-Perron unit root test has tested the stationarity of all series and it was found that all series are of level zero (see Table 1).

The GDP per capita, real unit labor cost, imports and exports data have been sourced from *Eurostat*, while FDI data from the *OECD FDI statistics*. The results are presented in Table 2.

TABLE 1
PHILLIPS-PERRON UNIT ROOT TEST STATISTIC IN LEVEL ZERO

FDI	-13.26*
YNRA	-14.41*
WRA	-5.56*
XMRA	-4.92*

* *Means significance at 1% level.*

Trade appears to be a significant and positive factor mobilizing intra regional inward FDI. Internal EU trade has been proved complementary to intra regional FDI, and the opening of markets has facilitated the relocation of economic activity and the formation of production and marketing networks within the region.

Supply cost considerations are significant determinants. Labor cost is significant with the expected sign. Relative development level is not a statistically significant determinant. VAR estimates indicate that FDI ratio has an one year lag autoregressive trend.

TABLE 2
FDI ESTIMATES FOR PERIOD 1980-2001

	OLS estimates	VAR estimates
FDI_1		0.11* (1.97)
FDI_2		-0.04 (0.65)
Constant	-0.42 (0.54)	-0.39 (0.49)
YNRA	-0.41 (1.00)	-0.52 (1.19)
$YNRA_1$	0.10 (0.25)	0.16 (0.39)
$YNRA_2$	0.40 (0.97)	0.38 (0.92)
WRA	-0.23* (2.99)	-0.23* (3.07)
WRA_1	-0.25* (2.61)	-0.28* (2.92)
WRA_2	0.13 (0.94)	0.09 (1.14)
XMRA	0.14* (7.59)	0.14* (7.43)
$XMRA_1$	0.10* (4.24)	0.12* (4.59)
$XMRA_2$	-0.31 (1.61)	-1.50 (0.70)
D_1	0.31 (0.33)	0.28 (0.31)
D_2	1.55* (2.03)	1.41* (2.00)
D_3	-0.38 (0.36)	-0.31 (0.29)
R^2	0.26	0.27
F stat.	7.23*	
DW	1.89	

* *Means significance at 5% level. The values in parenthesis are τ-statistics. Subscripts 1 and 2 mean the variables with one lag period.*

Conclusions

The model appears to have satisfactory explanatory power of the intra-EU FDI distribution. The results indicate that the formation of the single market has been a positive and powerful mobilizing factor of intra-regional FDI. The latter seems to complement intra-regional trade flows as the positive sign of the coefficient of the relevant variable shows it. Labor cost advantages of different locations seem to dictate the direction of intra-EU FDI inflows. The accession of Austria, Finland, and Sweden to the EU in 1996 also proves to have stimulated intra-EU FDI, most probably through the adjustment of FDI inflows to the enhanced internal market and opportunities for production rationalization that may have emerged as a consequence of this.

Overall, both H1 and H2 hypotheses are verified as opposed to H3. Although there are differences in the per capita income of the member countries these differences are not so acute as to create the need for major adaptations of marketing strategies and types of product. Demand structures are rather similar between the member countries and they do not represent major factors in determining the pattern of intra EU FDI. In general, the free mobility of goods, services, and factors of production has benefited the majority of member countries in terms of attracting increasing proportions of intra-regional FDI.

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AMERICAN (UNILATERAL) AND EUROPEAN (MULTILATERAL) MONETARY INTEGRATION: LESSONS FROM HISTORY AND IMPLICATIONS FOR CENTRAL BANK POLICY

Introduction

Supported by politicians and central banks, monetary integration in Europe was established in its multilateral form: After a successful qualification process the involved countries became full members of the European Monetary Union (EMU), their national currencies were abolished and substituted by the euro, the neew common European money. Since 1999 national central banks are branches of the European Central Bank (ECB) and representatives of all member countries have a seat in the ECB-council, the most important executive body responsible for the conduct of monetary policy. Seignorage profits are shared between the member countries according to their relative importance in the community.

In contrast, monetary integration in the dollar hemisphere occurs in its unilateral form: Countries like Panama and Ecuador introduced the dollar as legal tender money unilaterally without an explicit permission of or agreement with the U.S. Unilateral dollarization or euroization occurs because countries try to import economic stability after decades of fruitless internal efforts to implement monetary and fiscal reforms necessary for a stable economic development on a credible and permanent basis. The price unilaterally dollarized countries have to pay for the imported stability, consists in a seignorage tribute, the loss of control over domestic monetary policy and of the lender of last

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resort function. Monetary policy in the U.S. is left untouched and conducted exclusively according to the needs of the U.S. economy.

The recent debate about the pros and cons of the two alternative ways of monetary integration is focussed on many different aspects like the difference in the required adjustment processes (Alexander and von Furstenberg, 2000), the seignorage problems, currency substitution issues (Dean and Feige, 2002), problems of sounding the banking sector and of strengthening financial markets (Giovannini and Mayer, 1990), or aspects of gains and losses in the short and long run.

One specific issue is the analysis of the ovserved difference in the behavior of the two major central banks in the U.S. and Europe: While the FED does not hesitate to support an early unilateral dollarization for countries in the Western Hemisphere EU- and ECB- officials show a substantial scepticism against an early euroization in Central and Eastern European Countries (CEC). A unilateral euroization is consideredto be against «the underlying reasoning of EMU in the (Maastricht-) Treaty» (MT). The fear exists that with an early unilateral introduction of the Euro candidate countries could circumvent the requirements of the MET (Ecofin, 2000).

The purpose of this paper is to analyze whether this fear is valid or not. Many economists – mainly from America – do not support this view or believe that an early euroization even could be beneficial for an accession of CEC to EU first and EMU later. We will argue that two aspects are of crucial importance for the view of European officials: the long run implications of a monetary union (MU) and the empirical experiences from the West European integration process. Therefore, in section I the long run background of a monetary integration of the European type is analysed. Section II summarizes the major empirical lessons from the process of monetary integration in Western Europe. In section III the main arguments in favor and against the ECB scepticism mentioned above are presented and discussed. One main conclusion is that the arguments in favor of scepticism against an early unilateral euroization in CEC are not valid and that the ECB should assist al CEC deciding to introduce the euro before their full membership in the EMU. However, the time period between a unilateral euroization and the final entrance into EMU should be long enough to overcome short run disturbances and to implement structural adjustments and stable monetary and fiscal policies.

I. The long run background

Unilateral dollarization is supported by American economists and the FED to solve the permanent long run stability problems of many Latin Amer-

ican countries. For Chairman Greenspan the view of «let the dollar reign from Seattle to Santiago» (Barro, 1999) implies the famous «three nos»: no inclusion in the U.S. regulatory and supervisory system beyond consolidated home-country supervision of U.S. multilateral financial istitutions; no seat in the FOMC; and no seignorage sharing. The conduct of monetary policy remains determined exclusively for the benefit of the U.S. There is no direct response to economic difficulties in other dollarized countries.

An assession to EMU requires a completely different procedure with a far higher intensity of integration. In a *first step,* the candidates have to implement the «Acquis Communautaire» and satisfy all other entry conditions before they are allowed to join EU (Buiter and Grafe, 2001). As full EU-members they have the right to send representatives to the EU executive bodies. They also participate in the European wide public transfer system. As underdeveloped countries they receive massive transfer payments from the EU agricultural and cohesion budget. The *second step* consists in a participation in the European Exchange Rate Mechanism (ERM II) for two years and as a *third step* they are allowed to intorduce the euro as their national money after having fulfilled the convergence criteria laid down in the MT. After this last step the country's economic development has a direct impact on ECB's monetary policy because its inflation rate becomes part of the EU inflation ECB's policy rests on. The new member country is also allowed to send represenatives to the ECB-council, the executive body of the ECB. In addition, the country's monetary base is converted into euro. The exchange rate is determined by the medium value fixed for the ERM II during the last two years before the entrance into EMU.

The discussion makes clear that the long run degree of monetary, economic and political integration is far higher in an EMU that in the unilateral dollarization case. Therefore, the ECB has good reasons for being more restrictive and selective when accepting a new EMU member than the FED in a case of a unilateral dollarization.

For the long run background and its implications for the behavior of ECB and FED two additional aspects are important:

(1) The question arises whether the FED's view of staying independent from disturbances in a dollarized world is realistic. Consider the situation where the dollar reigns from Alaska to Antarctica and we have a banking crisis in Brasil or Argentina. Obviously the Brasilian central bank will try to do anything in order to limit the negative effects for the domestic economy. It will use every source to support Brasilian banks with dollars. One possibility is to obtain dollar loans from the IMF drawing on one ore more of the IMF's facilities. Also, Europe, Japan and other countries may

supply Brasil with dollars. This is very realistic because these countries will suffer from a Brasilian crisis and possible contagion to other Latin American countries. The FED cannot stop such activities. Base money from US is ttransferred to the IMF and other industrialized countries and from there to Brasil. An additional problem for the FED is the reaction of US banks working in Brasil. They, too, will use their channels to bring dollars to Brasil in order to avoid serious losses. If then the worldwide demand for US dollars increases and the FED persists in restricting money supply, interest rates will be pushed up in the US. It is certainly in the self-interest of the United States to supply liquidity in the form of dollars in order to protect US exporters. As a consequence, the FED will not be able to prevent dollar transfers to Brasil or to avoid political pressure from the US government, from the rest of the world and from Brasil and other Latin American countries to provide relief.

(2) It is likely that in the long run full dollarization will be unstable because the cost of foregone seignorage will increase relative to the benefits of imported stability. Seignorage cost accrues as long as the dollar is used as legal tender. The benefits from imported stability, however, decrease over time. Every year of stability, combined with an improved stability culture, increases the country's international reputation, and reduces the need to import stability (von Furstenberg and Alexander, 1999). This situation creates incentives to abandon the dollar and to save the signorage costs. One possible solution is a monetary union among the unilaterally dollarized countries.[1] Introduction of a stable new currency with an independent central bank distributes seignorage gains among member countries. If the FED prefers to preserve the unilateral dollarization, then it must redistribute gains from seignorage via noninterest bearing loans to the fully dollarized countries. Sometimes it is argued that fully dollarized countries could switch to other anchor currencies like the euro or the yen with better conditions concerning seignorage. This would establish competition among the central banks of hard currencies. We do not regard this competition as easily forthcoming because the change of legal tender is accompanied by extremely high political and economic costs.

From the above discussion we can conclude that the ECB is far more influenced directly by an accession of new members that the FED by a unilateral introduction of dollars although even the FED might be subject to extreme pressure from in- and outside US in case of crises in dollarized economies. Therefore, the ECB has a stronger interest to control the preparations, the qualification process and the «fitness» of new members.

II. Lessons from West European integration

Another source of scepticism against an early unilateral euroization in Europe comes from the very successful West European monetary integration. When the West European integration process started many experts expected a relative advantage of the core, stable, big countries like Germany and France. Peripheral, unstable economies like Ireland, Portugal and Spain were expected to have more difficulties during the specific process of integration laid down in the Maastricht-Treaty because of the following central arguments (Alexander and Loef, 2001, pp. 2-3):

First, stable countries like Germany may be negatively influenced by higher inflation due to the shift of monetary policy competences to the European Central Bank (ECB) and the removal of the Bundesbank with its Germany-specific stability orientation (de Grauwe, 1997, p. 154). On the other side the German export industry will not be hit by frequent appreciations of the DM inside EU and by a very hard currency against the rest of the world and against its European trading partners, in particular. The opposite is true for peripheral states: They gain from greater stability, a sounder fiscal position, a well reputated important currency and as a result from easier access to international capital at lower cost and a solid long run perspective. However, they cannot improve their international competitiveness by devaluations and they are exposed to an intensified competition with powerful large firms from the core countries.

Second, a Maastricht-type integration process consists of a variety of agreements in order to harmonize European standards in labor markets, social and environmental respects. As a consequence peripheral countries with low standards are confronted with substantial increases in their costs of production to fulfill the new requirements. Economies like Germany with social and environmental standards far above the required levels are pushed into a relatively better position (Vaubel, 1992, pp. 44-45).

Third, one single currency for Europe may have important implications for the behavior of trade unions: Trade unions normally fight for an equalization of wages. According to their philosophy «the same work should be paid the same money». After the introduction of the euro it becomes obvious to everybody that, for example, a Portuguese worker earns only about 40% of his German counterpart although he has the same position and qualification. It is highly probable that European trade unions will try to improve the situation of their weakest members, an experience everybody could ovserve after the German reunification. It follows that wages will not be flexible downwards and will not become an appropriate absorber of negative shocks in peripheral countries.[2]

Fourth, the perhaps most important argument for a superior position of core countries refers to the fact that necessary stabilization policies in order to fulfill the Maastricht criteria are far more painful for peripheral countries. More basic reforms are required in those economies reaching from the reduction of huge fiscal deficits, dramatic changes in monetary and labor market policies to legal and insitutional reforms like an independent central bank and the removements of capital controls. As long as these efforts are not credible for private transactors inflationary expectations will remain high resulting in recessions and severe unemployment. When authorities then reduce their stabilization efforts this vicious circle is kept alive (Giavazzi and Spaventa, 1990; Walters, 1986).

The empirical experience from the West European integration process is in sharp contrast to the theoretical considerations presented above: Countries like Ireland, Portugal and Spain showed a far *better* real economic performance than Germany or France. Long run real GDP-growth (calculated by 5 years averages) in Ireland increased from 1.05% (1980-1985) to 1.8% (1985-1990), 5.31% (1990-1995) and extraordinary 9.58% during the period 1995-2000. This implies that Ireland could improve its real economic performance during the whole integration process. For Portugal and Spain we also can observe a long run improvement of real economic performance. Real GDP-growth was 1.53% in Portugal and 1.35% in Spain during the period 1980-1985, went up to 4.3 (Portugal) and 4.1 (Spain) in 1985-1990 and reached 3.33% (Portugal) and 3.57% (Spain) at the end of the integration period (1995-2000). Only during the years 1990-1995 a reduction of GDP – growth to 2.2% in Portugal and 1.75% in Spain could be ovserved.[3]

The corresponding figures for France and Germany were continuously lower during the whole time period although all countries started from comparable initial growth rates. Only during 1990-95 Germany with 2.63% grew faster than Portugal and Spain mainly as a result of the German reunification.[4]

The great success of former unstable West European economies in their real economic performance during the Maastricht type integration process enforced EU- and ECB- officials to accept additional members only after the same qualification procedure. This attitude is supported by the present stability situations of all EU members: They have reached very low inflation rates, budget deficits below the MT criterion of 3% and no country suffered from the euro introduction in 1999 and 2002, respectively.

III. ECB's scepticism against early unilateral euroization – a critical analysis

The above brief discussion tries to explain where the ovserved scepticism of EU officials against an early euroization in CEC rests on: It comes from the far more intensive monetary and economic integration inside a MU and from the great success of the West European integration procedure even for peripheral, formerly unstable EU-members. However, this does not rectify that for the accession of CEC to EU first and EMU later an early euroization has to be considered as negative and should not be supported or even prohibited by the EU or ECB. If we look to the arguments presented in favor or against scepticism the following points are important:

(1) From a purely legal point of view – not very convincing in an economic context – it is argued that early unilateral euroization is not compatible with the MT, the Copenhagen 1993 and the Helsinki 1999 criteria (Buiter and Grafe, 2001). One requirement of the MT says that a candidate's currency has to stay inside the exchange rate band without tensions during the two years prior to the entrance into EMU. Naturally, a country having introduced the euro years ago cannot meet this criterion. This «legalistic» view is not meaningful in an economic context. A country fulfilling all other MT criteria and the requirements of the «Acquis Cummunautaire» and using the euro as its legal tender currency for years has reached sufficient qualification for an EMU entry. Therefore, the overwhelming part of the literature concludes that early dollarization is in principle compatible with the MT (Buiter and Grafe, 2001).

(2) As discussed above, the early introduction of the euro may have important implications for the behavior of trade unions. In a euroized country it becomes obvious that domestic workers only earn a fraction of their counterparts in countries like Germany. If trade unions tray to close this gap – an experience that could be observed after the German reunification – wage increases will exceed productivity growth and flexibility in the labor market will be reduced leading to serious unemployment problems. A MT type integration process makes wage gaps less transparent and can reduce this danger.

(3) Unilateral dollarization implies that exchange rate adjustments are abolished as an instrument to react to country specific shocks. The necessary adjustments take place after the introduction of the euro because structural and stability oriented reforms normally have not been implemented before. The danger arises that the remaining instruments like fiscal and labor market – (wage)- policies are overstrained and not able to

compensate negative country specific developments. In addition, if the reaction of exchange rates is the cheapest possibility to react to country specific shocks the dollarized country is subject to an aggregative loss. In addition, early euroization implies that the domestic national central bank loses its lender of last resort function. Normally, in countries like CEC the banking system is poorly supervised and not very sound. If a banking crisis occurs the national central bank cannot act as a lender of last resort providing liquidity to the banks so that a collapse of the financial system is more probable. Multilateral dolarization, in contrast, is not subject to this danger because the national central banks have the power to act as a lender of last resort.

(4) It is argued that unilateral euroization with an extended use of the euro outside EMU would reduce the ECB's capacity to control the money supply. In particular, a cross-border shift of euros between unilaterally euroized countries and the EMU would lead to an unstable money demand inside EMU thus reducing the power of the ECB to keep inflation rates on desired levels. Obviously, this argument is not valid because nearly all CEC are subject to a substantial currency substitution. Dollars and euros are used for internal transaction purposes and the expected entrance into EU and EMU will increase this currency substitution further.[5] An early unilateral euroization reduces uncertainty about the amount of euros circulating in these countries because more reliable statistics are available from CEC using the euro as their official money (Dean and Feige, 2002).

(5) A further argument against an early euroization expresses the fear that the candidate country can circumvent the Maastricht criteria by introducing the euro in an early stage of is adjustment process (Nauschningg, 2002). If we look to the statements of EU officials this argument seems to be of central importance for the present scepticism against early euroization. To analyze its validity we have to look to the Maastricht criteria in detail: *First*, the exchange rate criterion is meaningless for a euroized country. On the other side, staying in an exchange rate band of +/- 15% during two years is not a very binding constraint. When the exchange rate criterion was fixed the band was +/- 2.25%. After the realignment crisis of the European Monetary System 1992-1993 the band was widened. In its present from the exchange rate criterion is not a very critical proof for the qualification of an entry country. Even CEC subject to higher inflation rates because of the Balassa-Samuelson effect should be able to stay in a band of +/- 15% for only two years at the end of a stabilization process. *Second*, after a short period of adjustment it is far easier for

an early euroized country to meet the inflation criterion. There is a strong constraint for the central bank to issue money and for the government to finance a deficit. *Third*, the interest rate criterion is influenced by earlier euroization in two different ways. On one hand, a better convergence against low EU rates is possible because of lower inflation and as a result lower inflationary expectations. On the other hand, long run interest rates incorporate any country specific risk. If after an early euroization a country is confronted with a serious negative shock, its ability to react is limited as discussed above. In this case the danger of an overall recession increases leading to a higher risk of default for any loan. As a consequence interest rates will go up because of higher country specific risks. A priori, it is not clear what kind of effect is more important so that an early euroization is not a suitable tool to cirumvent the interest rate criterion. *Fourth*, if we look to the budget criteria we first can conclude that the aspect discussed here is only important for the 3% deficit criterion. Apparently, an early euroization will be an obstacle to fulfill this criterion in all cases when a country is confronted with a serious recession and the well known negative consequences for government expenditure and receipts. To sum up, we can conclude that early euroization makes it easier to meet the inflation criterion but makes it more difficult to react to negative country specific shocks leading to higher risks of default and strong pressure on government budgets. A general conclusion that early euroization is a suitable tool to cirumvent all Maastricht criteria is not valid.

(6) Unilateral euroization provides no reliable and systematic way to find the equilibrium exchange rate to start with. Normally, candidates for a unilateral euroization are characterized by their instability in monetary and fiscal policies, highly volatile exchange rates, currency substitution and a large underground sector. To find the correct exchange rate for the euro introduction is nearly impossible. This is different for countries entering a monetary union after having passed a Maastricht-type qualification process: Here, the entry rate of the national currency has been stable during the last two years and, therefore, corresponds to demand and supply of the currency in the international capital markets. However, wrong rates for the initial fixing may lead to severe economic disturbances during the first months after the unilateral euroization. If, for example, the domestic currency is undervalued vis-à-vis the euro, the initial euro prices for all goods and services are too low immediately after the introduction of the euro as legal tender. In the first months after the original fixing high inflation rates will occur followed by a dramatic decrease of

inflation rates after this adjustment (Lopez, 2002). In a Maastricht-type integration process, this problem will not occur because the exchange rate results from a two years adjustment process prior to the introduction of the euro. The different reactions of prices in the unilateral (American) and multilateral (European) case can be seen from Table 1. In the first year after the unilateral dollarization in Ecuador inflation rates went up to sometimes more than 100% and came down slowly to a level below the original one. In Europe, inflation rates in all formerly unstable countries did not react on the introduction of the euro but remained on very low levels.[6] Although this inflationary shock caused by a wrong choice of the initial exchange rate is expected to be transitory it might have significant impacts on wages leading to further disturbances. For example, in all cases where government taxes are imposed on incomes from previous years because of an ineffective tax system – a situation likely in many Latin American and East European countries – any dramatic transitory price and wage shock results in a larger fiscal deficit. As a consequence, the credibility of stabilization efforts will be undermined and the achievement of the MT criteria becomes more difficult.

TABLE 1: INFLATION RATES AFTER THE EURO-/DOLLAR-INTRODUCTION MONTHLY INFLATION RATES (ANNUALIZED)

Country	Ecuador	Ireland	Italy	Portugal	Spain	Greece
Introduction Date (t)	III.2000	I.1999	I.1999	I.1999	I.1999	1.2001
t	80,87	2,1	1,5	2,5	1,5	3,2
t+1	88,88	2,3	1,4	2,7	1,8	3,5
t+2	96,87	2,0	1,4	2,8	2,1	3,2
t+3	103,68	2,0	1,3	2,7	2,3	3,7
t+4	102,37	2,3	1,5	2,1	2,1	3,9
t+5	104,01	2,1	1,4	2,1	2,1	4,5
t+6	107,88	1,9	1,7	1,8	2,1	
t+7	104,94	2,4	1,6	1,8	2,3	
t+8	96,80	2,6	1,9	1,9	2,5	
t+9	91,00	2,8	1,9	1,8	2,4	
t+10	78,69	3,0	2,0	1,9	2,7	
t+11	67,14	3,9	2,1	1,7	2,8	
t+12	58,77	4,4	2,2	1,9	2,9	

Source: EUROSTAT/ANDEAN Community

A further interesting aspect centers around the question: Is there a systematic bias in the fixing of the initial exchange rate? Apparently candidates deciding to introduce the euro unilaterally have a strong interest to avoid a recession. As can be observed in Ecuador, they will prefer an undervaluation of their domestic money with a resulting short inflationary period (Lopez, 2002). If the domestic currency is overvalued, the initial dollar prices of goods and services and the initial dollar wages are too high compared to the relative competitiveness in the world markets and in relation to the domestic labor productivity. A deflation will occur normally accompanied by recession and high unemployment rates. The latter scenario can be observed during the German reunification: Studies analyzing the purchasing power value of the eastmark against the DM showed that the correct exchange rate was about one DM equal to four eastmarks. Because of political reasons the initial exchange rate was one to one for small accounts and wages, one to two for the larger accounts and one to three for all East German debt against foreigners. This dramatic eastmark overvaluation led to a breakdown of the East German industry. A total collapte only could be avoided by massive transfer payments from West to East Germany, the largest transfer payments from one country to an other in economic history.

We can conclude that the initial fixing of exchange rates in the unilateral case leaves open space for manipulation, that means for a systematic under- or overvaluation as well as split initial exchange rates for different kinds of assets or flows based on the actual political situation.

The question arises whether this deficit in finding an equilibrium initial exchange rate is a strong argument for a Maastricht-type integration process with the consequence that ECB and EU officials should not accept an early unilateral dollarization but should insist on a multilateral procedure for CEC. In our view, this consequence is not valid and even the difficulties of finding a correct exchange rate in the unilateral case cannot serve as an argument for the observed scepticism. The ECB could try to avoid a systematic wrong fixing by giving advice to CEC and by helping to find an appropriate initial exchange rate. This could be done by offering CEC assistance in the process of unilateral euroization perhaps in the form of providing the necessary euro supply. On the other hand, the above argument implies that the entrance as a full member into the EMU should be delayed until all necessary structural changes and all unavoidable disturbances discussed above are over. Unilateral euroization is not a suitable tool to shorten the time period before the final entrance into EMU.

Conclusions

The main conclusions we can draw from our brief analysis can be summarized as follows: CEC today are not in the same position as formerly unstable West European countries at the beginning of the West European monetary integration. The main difference is the existence of a substantial currency substitution in CEC that is expected to increase when an entrance into EMU becomes more and more certain. Unilateral euroization in this situation is easier for CEC because only a small fraction of the money in circulation has to be substituted. The gains from unilateral euroization, the import of stability may not occur immediately but only after disturbances arising from a wrongly chosen initial exchange rate. However, other advantages of a unilateral euroization, the enforcement of a stable money supply, the limitations for budget deficits and the absence of speculation, will help CEC to implement necessary reforms and fulfill the MT criteria. One important consequence of our analysis is that the time period between a unilateral euroization and the final introduction of the euro must be long enough to overcome the short run disturbances and to gain a Maastricht-type economic stability. The ECB can assist CEC in finding an appropriate initial exchange rate and in avoiding crises coming from the loss of the lender of last resort function after a unilateral euroization.

Notes

1. Organisations like Mercosur in South America could decide on a multilateral basis to introduce their own common currency after having reached stability for a considerable period of time.
2. For a detailed discussion of labor market reactions to the integration process in Europe see Dohse, Krieger-Boden (1998) and Siebert (1997).
3. The period 1990-1995 is characteristic for a worldwide growth-reduction. For US (UK) the average real GDP-growth was 2.3% (1.47%) after 2.9% (3.1%) for the period 1985-90. For a detailed analysis see Alexander, Loef (2001).
4. Real GDP growth in Germany (France) reached 1.13% (1.55%) during 1980-1985, 2.9% (2.9%) in 1985-1990, 2.63% (1.28%) in 1990-1995 and 1.77% (2.33%) in 1995-2000.
5. The substantial currency substitution in Eastern Europe is a crucial difference between the present situation in CEC and the situation in formerly unstable West European countries at the beginning of the monetary integration process.
6. For Ireland, Italy and Spain we analysed the monthly inflation rates after the final fixing in January 1999, not the physical introduction of the euro coins and notes in January 2002. If we look at the monthly inflation rates in the first half of 2002 the figures are very similar. For Greece we looked at the first months after its entry into EMU in January 2001.

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CURRENCY SUBSTITUTION AND EXCHANGE RATE VOLATILITY: EVIDENCE FROM THE GREEK ECONOMY AND IMPLICATIONS FOR EUROPEAN MONETARY UNION PARTICIPATION- A HISTORICAL ASSESSMENT

Introduction

In the literature of money demand, in certain occasions such as the need to conduct international trade and investment and to hedge against the loss of credibility in domestic economic policy, domestic agents have an incentive to hold both domestic and foreign currency balances as part of their diversified financial portfolios. The ability of agents to replace a currency with other more attractive monies is referred to as currency substitution (CS). If this is the case, then domestic monetary authorities cannot pursue independent monetary policies and thus the domestic economy is exposed to shocks from both home and abroad.

There have been certain empirical works on CS with mixed results (Bordo and Choudhri, 1982; Batten and Hafer, 1984; Melvin, 1985; Rosenberg, 1996). According to these studies, strongest demand for a foreign currency appeared to be for the German Mark (GM), which explains why Germany is the leader within the European Monetary System (EMS). Von Hagen and Neumann (1994) suggest that a common currency between Germany and other industrialized European countries is a feasible arrangement, which implies that the move toward monetary unification in Europe is due to the presence of CS (see also Melvin, 1985; Boyer and Kingston, 1987). However, no evidence on this issue appears in cases that less industrialized European countries can benefit from such currency arrangements when they decide to join in. In addition, the willingness of countries within the European Union

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(EU) to accept rigid exchange rates and, therefore, a common currency, is a function of their degree of intra-regional trade. It has been estimated that trade with member countries has been steadily increased since 1980, while a good portion of that business is conducted with Germany (Goodhart, 1989). It is obvious that European agents will look for the most appealing vehicles to carry out such trade and investment and in this case the GM is considered to be the most likely candidate for such transactions. Therefore, an interest has been stimulated about the implications of CS for the EMS (Currie, 1991). A major concern of the supporters of the European Monetary Union (EMU) is that increased exchange rate volatility may make the EMS unstable and difficult to be managed during the transition period.

The goal of this study is to examine a less industrialized European economy, namely Greece, with respect to its viability in a system with a common currency. Contrary to its more economically advanced partners, the reason for selecting this country is that it shares different fiscal and monetary characteristics, e.g., high inflation rates, and possesses a less developed financial system characterized by frequent government intervention and heavy regulations, i.e., imposed interest rate ceilings and foreign exchange controls. CS has a particular interest for Greece because of its effects on the design and effectiveness of EMU. During the time of deregulation and high inflation rates, which was accompanied by high uncertainty associated with the value of the drachma, the participation to the monetary union offers no advantage to the residents. However, it is expected that as the monetary authorities followed a more consistent and credible macroeconomic policy which led to lower inflation pressures and a more deregulated financial environment, monetary unification is more welcome since it is expected to reduce the uncertainty associated with the value of the drachma, thus leading to lower exchange rate volatility. Therefore, a high degree of CS is developed which in turn suggests that a monetary union is the next step.

In our case the investigation will take place through the impact of exchange rate volatility on CS within the money demand methodology, a version of the methodology followed by Cuddington (1983), Joines (1985), and Mizen and Pentecost (1994). A few existing studies on the opportunity cost of holding real money balances in Greece have incorporated the exchange rate as an explanatory variable in the money demand equation (Apergis, 1996 and the references therein). McGibany and Nourzand (1995) have argued that the demand for money is affected by the level of exchange rates as well as by the volatility of these rates, since erratic exchange rates can cause uncertainty in foreign exchange markets. Thus,

substitute riskier currency assets for safer foreign assets, which in turn reduces the demand for domestic money. Increased CS may exacerbate exchange rate volatility, instability of the income velocity of money, and policy interdependence. Daniel (1985) and Isaac (1989) argue that higher exchange rate volatility leads to rapid and large substitutions among currencies, resulting in a destabilizing money demand. By contrast, in a theoretical paper, Canzoneri and Diba (1993) have argued that an increase in CS tends to decrease the frequency of stabilization efforts, thus making the EMS more viable. Svensson (1991) has also reported that within the EMS, increasing CS does not have any substantial effect on exchange rate volatility. However, higher CS levels may be destabilizing in case that monetary policies do not remain convergent.

The outline of the paper goes as follows. Section 2 sketches out the data employed as well as the methodological framework within which the empirical analysis is conducted. Section 3 reports the empirical results, while section 4 concludes the paper and provides certain important policy implications.

I. Data and methodological issues

Data

Monthly data on nominal money balances (M) defined as M1, prices (P) defined as the consumer price index, real income (Y) measured by the industrial production index, the bilateral exchange rates (E) of the drachma against the GM are obtained from the International Monetary Fund's International Financial Statistics and the OECD's Main Economic Indicators CD-ROMs. The data period runs from 1980 to 1999. The rationale for the sample period is that it coincides with several developments inside Europe as well as Greece, including the establishment of the EMS and the launching of market deregulation plans. Interest rates will not be used as proxies for opportunity cost because of the incomplete level of financial deregulation in the Greek monetary system, the limited range of financial assets available to investors and the underdeveloped nature of the capital market over most of the period under study. In such a case, real assets tend to constitute a substantial component of the investors' portfolio; to the extent that the rate of inflation reflects the return on real assets, price changes should be constituted an explanatory determinant of the demand for money (Baba et al., 1992; Psaradakis, 1993). Throughout the paper lower-case letters signify variables in natural logarithms, while the MFIT software assisted with the empirical analysis.

Methodological issues: The ARCH approach

A correct measure of exchange risk is not the unconditional variance of exchange rate changes, but rather the conditional variance, with conditional information set consisting of all the random variables that affect exchange rate behavior. An appealing way of doing this has been offered by the methodology of ARCH models, developed by Engle (1982). According to this methodology, not only the conditional mean but also the conditional variance evolves in an autoregressive fashion.

Use of the conditional variance of exchange rate changes requires a definition of the conditioning information set, i.e., the mean equation describing changes in the exchange rate. However, there has been no general consensus on what a 'correct' exchange rate model is. The mean equation is described as:

$$E(e_t|I_{t-1}) \tag{1}$$

where e_t is the spot exchange rate and I_{t-1} is the information set available at t-1. For our empirical purposes, conditional variance is time-dependent, thus, the above mean equation is modified as follows resulting in an ARCH(i) model:

$$E(e_t|I_{t-1})$$

$$u_t|I_{t-1} \sim N(0,H_t) \tag{2}$$

$$H_t = a_0 + \Sigma a_i u_{t-1} \tag{3}$$

with H being the estimate of conditional variance.

Methodological issues: A money demand framework

The general model to be estimated is econometrically formulated as follows:

$$log\ (m-p)_t = a_0 + a_1\ logy_t + a_2\ log\pi_t + a_3\ loge_t + a_4\ vole_t + \varepsilon_t \tag{4}$$

where $(m-p)$ defines real money balances, y is real income, π is a measure of inflation, e is the level of the exchange rate, vole is a proxy for the volatility of exchange rate changes, and ε is an error term. While most of the empirical studies have used only the rate of devaluation as proxy for CS, this study

coefficients a_3 and a_4 should be negative and significant. Equation (4) will be estimated through the methodology of the Error Correction (EC) approach.

II. Empirical analysis

Summary statistics

Table 1 provides a data summary describing the data set used. During the period under consideration, the drachma is observed to depreciate against the DM (Apergis *et al.*, 1997). The depreciation is found to be statistically significant. In other words, the DRS/DM exchange rate shows a significant drift in its movement.

The negative coefficient of skewness indicates an extended distribution to the left. However, this statistic is shown to be statistically insignificant. Finally, a positive and significant value of kyrtosis indicates that the distribution is leptokyrtic and has a sharper peak and fatter tails than that of the normal distribution. In other words, the normality assumption is clearly rejected for the DRS/DM exchange rate variable.

Integration analysis and an exchange-rate process

We test for unit root nonstationarity by using the tests proposed by Dickey and Fuller (1981). The tests rely on rejecting the null hypothesis of a unit root in favor of stationarity. Table 2 presents the results of unit root tests. The results are generally consistent with the levels of real money balances, the exchange rate, income, and inflation to be integrated of order one, I(1). In other words, first differencing solves the problem of incorrect specification in levels of unit root variables.

Next, the empirical analysis attempts to identify the appropriate exchange-rate process by means of autoregressive integrated moving average (ARIMA) modeling and the Box-Jenkins methodology. Reliable use of the conditional variance of exchange rate changes requires a definition of the mean equation (1). However, the problem is that so far there has been no general consensus on what the 'appropriate' mean equation is for the exchange rate. In the literature, it has been suggested that at period t-1 agents set a forward rate f_{t-1}, which generally reflects agents' expectations about the future spot rate expected to prevail at period t (Hassapis, 1995). In other words, equation (1) is specified as:

$$E(e_t|I_{t-1}) = f_{t-1} \tag{5}$$

However, forward rate data are not available for the Greek drachma (at the period under study), thus, the mean equation was

determined through the ARIMA modelling. The results indicated that the logarithm of the DRS/DM exchange rate can be approximated by an ARIMA (0,1) process with Q=34.63 with p-value=0.06, where Q is the Ljung-Box diagnostic statistic.

Distributional properties of the 'News' variable and ARCH tests

The measurement of the skewness and the kyrtosis statistics test the acceptance or the rejection of a normal distribution, characterizing the behavior of certain economic variables. Under the null hypothesis, an economic variable is normally distributed. The two corresponding statistics for the distribution of the residuals from the ARIMA (0,1) model are: skewness=-4.1643(p-value=0.028) and kyrtosis=6.1179(p-value=0.00). The figures indicate the rejection of the normality hypothesis. Therefore, an ARCH model seems appropriate to capture any deviations of the news variables from normality.

In addition, direct ARCH tests were conducted in order to determine the presence or not of ARCH effects. The ARCH test was conducted for lags 1 through 12. The criterion for deciding the order of the ARCH impact is based on the statistic TxR^2, with T being the sample size. This statistic is distributed as $x^2(q)$ where q is the number of lags in the ARCH process. The null hypothesis tests the restrictions that the ARCH effects are not present. The results, reported in Table 3, demonstrate that the residuals follow an ARCH process starting at lag one (ARCH[1]).

ARCH estimates

In this step, the estimation of the ARCH model for the DRS/DM exchange rate is obtained. The ARCH model and the conditional variance estimates, H_t, are reported in Table 4. The results reveal that the conditional variance is well described by a mean-reverting (stationary) process. The persistence measurement, that is 0.169, is well below unity, which suggests that the ARCH(1) process is stationary. Moreover, unit-root tests reported in Table 1 for the H variable support this argument.

Cointegration tests and the money demand equation

In the next step of the empirical analysis, cointegration tests developed by Johansen and Juselius (1990) find that real money balances, real income, inflation, and the exchange rate are cointegrated. Exchange rate volatility, as an I(0) variable, is excluded from cointegration tests. Cointegration results are reported in Table 5. According to these results, both the maximal eigenvalue and the trace test statistics indicate that there is a single cointegrating

Error correction (EC) estimates of the demand for money

Next, we estimate the EC model of the demand for money which is closely associated to the cointegrating vector identified in the previous section. The EC model involves the variables involved in the cointegrated vector with a distributed lag plus the variable of exchange rate volatility, which enters in level form. Moreover, the choice of the lag specification is based on the minimum final-prediction-error (FPE) criterion. The EC methodology provided the following results:

$$\Delta(m\text{-}p) = \underset{(2.51)^*}{0.277}\ \Delta(m\text{-}p)_{-3} + \underset{(2.29)^*}{0.214}\ \Delta y_{-1} + \underset{(3.97)^*}{0.139}\ y_{-2} - \underset{(-2.41)^*}{0.414}\ \Delta^2 p_{-1} -$$

$$\underset{(-2.57)^*}{0.316}\ \Delta^2 p_{-2} - \underset{(-2.03)^*}{0.077}\ \Delta e_{-2} - \underset{(-2.01)^*}{0.11}\ H_{-1} - \underset{(-2.00)^*}{0.065}\ H_{-2} - \underset{(-3.19)^*}{0.24}\ EC_{-1} - \underset{(-3.04)^*}{0.237}\ dum88$$

$R^2 = 0.74$ SEE $= 0.051$ LM $= 5.38[0.25]$ RESET $= 2.76[0.37]$ NO $=$ $1.12[0.57]$
HE $= 1.3[0.26]$ ARCH(d.f.$=12$) $= 7.23[0.84]$

Test of the sum of the total impact of both H_{-1} and H_{-2}: $\Sigma H_{(-)} = -0.175$ with t-statistic $= -1.92$

with LM being a serial correlation test, RESET a misspecification test, NO a normality test, HE a heteroskedasticity test, and ARCH an ARCH test. d.f. stands for degrees of freedom, EC is the error correction term associated with the residuals from the cointegrating vector, while dum88 is a dummy variable with 0 values up to 1987:12 and 1 thereafter. Figures in parentheses denote t-statistics, while those in brackets p-values. Finally, an asterisk indicates statistical significance at 5%.

The above EC estimated system is statistically well specified, while it has coefficients with the expected theoretical signs. The discrepancy between the actual real money balances and their desired levels are adjusted within three months (a quarter). The acceleration of inflation is shown to exert a strong influence on the demand for money balances, implying a strong degree of substitutability between physical assets and money. The negative and statistically significant coefficient of the EC term implies a rapid and significant adjustment to disequilibrium deviations of money holdings from their optimal level determined by the long-run (cointegrated) money demand equation. Following Apergis (1997), the EC equation incorporates a dummy variable, dum88, to control for the impact of the deregulation occurred in the monetary

sector in 1988 on inflation. Other dummy variables were also included to capture the potential effect of a restrictive economic program initiated in 1986 but it was found to be statistically insignificant. Finally, structural break tests (CUSUM and CUSUMSQ tests-available upon request) demonstrat the absence of any structural break that characterizes the EC estimates.

Turning to the variables of primary interest to the goal of this paper, the exchange rate and its volatility, it is found that the coefficient of the exchange rate as well as the sum of the two exchange rate volatility coefficients are negative, albeit low, and weakly significant at the 5 percent level. These results imply that the demand for money is not very sensitive to the DRS/DM exchange rate as well as to its volatility.

Conclusions

The empirical analysis in this paper reveal that the demand of money in Greece is affected, albeit weakly, by the level of the DRS/DM exchange rate as well as by its volatility. In particular, both variables ware shown to exert a weak negative influence on money demand. The analysis is conducted using monthly data for the period 1980:1-1999:12.

The results indicate that the level of the exchange rate as well as its volatility tend to weakly reduce the domestic demand for money, implying that domestic money demand is not highly sensitive to both the level and the volatility of the DRS/DM exchange rate. A first implication of the above results is that the exchange rate variables cannot capture CS behavior in Greece. This mirrors the kind of instability of the exchange market during the most part of the period under investigation as plans for economic convergence were fatally slowly progressing.

More importantly, evidence of CS behavior in Greece is consistent with an environment characterized by high inflation rates, inappropriate interest rate policies, and incomplete financial market deregulation. The low degree of CS indicates that the country will experience no benefit for joining the monetary union with a stronger currency (DM) before deregulating its financial system, taming both inflation and exchange rate volatility, and following more consistent and credible macroeconomic policies. Finally, once these conditions are satisfied, joining the euro-currency system the country will experience a decrease in the volatility of its exchange rate, implying that high degree of CS among competing currencies may develop, therefore, suggesting that a monetary union is the next step. In other words, the country needs higher macroeconomic flexibility to combat inflation and aligns itself with its more advanced partners before joining in, for no such flexibility

TABLE 1
DATA SUMMARY FOR THE DRS/DM EXCHANGE RATE

Statistical Measures	DRS/DM
Mean	69.13127
t-statistic	24.619*
Standard deviation	10.0404
Skewness	-0.28123
p-value	0.34
Kyrtosis	5.21225
p-value	0.00

Notes: * denotes significant at 1%.

TABLE 2
AUGMENTED DICKEY-FULLER UNIT-ROOT TESTS

Variable	ADF test	
	without trend	with trend
rm	-1.18	-2.24
Δrm	-13.30*	-5.70*
y	-2.68	-1.45
Δy	-16.81*	-16.72*
e	-2.94	-2.11
Δe	-6.56*	-6.73*
Δp	-2.48	-2.65
Δ^2p	-4.64*	-4.97*
H	-6.00*	-8.18*

Notes: rm = real money balances, y = real income, e = the DRS/DM nominal exchange rate, Δp = inflation, and H = conditional exchange rate volatility. ADF stands for the Augmented Dickey-Fuller test. The test is conducted for up to eight lags.

* denotes significance at 1%

TABLE 3
ARCH TESTS

Variable	Lags	x^2-statistic	p-value
u	1	9.57	0.00
	4	17.47	0.00
	8	55.88	0.00
	12	75.93	0.00

Notes: u are the residuals from the ARIMA (0,1) process for the level of the DRS/DM exchange rate.

TABLE 4
ARCH ESTIMATES (EXCHANGE RATE VOLATILITY ESTIMATES)

$\Delta e = 0.102\ res(-1)$
$(6.35)^*$

$H = 0.01688 + 0.169\ u^2(-1)$
$(4.48)^* \quad (3.53)^*$

$L = 79.38$

Notes: res = the moving average variable, u = the residuals from the ARMA(0,1) process, and L = is the Final Functional Value (the log likelihood) = 357.82

* denotes significant at 1%

TABLE 5
JOHANSEN-JUSELIUS MAXIMUM LIKELIHOOD COINTEGRATION TESTS

r	n-r	m.λ..	95%	Tr.	95%
List of variables included in the cointegrating vector: m-p y Δp e intercept (Lags=2)					
r=0	r=1	45.6675	28.1380	82.1040	53.1160
r<=1	r=2	21.7043	22.0020	26.4365	34.9100
r<=2	r=3	11.4895	15.6720	14.7321	19.9640
r<=3	r=4	3.2426	9.2430	3.2426	9.2430

Notes: r = number of cointegrating vectors, m.λ.. = maximum eigenvalue statistic, n-r = number of common trends, Tr. = trace statistic.

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DISINFLATION POLICIES AND EXCHANGE RATE DETERMINATION IN A SMALL OPEN ECONOMY: A VARIANCE DECOMPOSITION ANALYSIS FOR THE CASE OF GREECE*

Introduction

Nowadays, Greece is participating in Euro zone and despite marginal diversions from the clauses imposed by the stability pact its viable presence into the system is not jeopardized (Papadopoulos and Sidiropoulos, 1999). In the retrospect, the possible participation of Greece in the EMU in the mid 80s looked like a nightmare for the rest of the participants. Fundamental disequilibria in the balance of payments, growing debt accompanied by increasing balance deficits and accelerating inflation significantly diverting from the EU average was the main criticism of the European Commission economic experts. However, no European Union member country ratified the Maastricht Treaty with as large Parliamentary majority as Greece. But for the Greek Communist Party Members of Parliament, less than 8% of the total, the vote for the Treaty would have been unanimous. Arguably, this marked a turning point for the Greek economy. It signalled the emergence of a consensus, extending from the political right to the reformist Communists of Synaspismos, that Greece could not continue as a semi-detached member of the European Union. Greece could not expect the political support of its European partners without participating however reluctantly, in the process of the Union's economic integration. That is, Greece accepted that the price for the European Union's political support was a radical reorientation of its economic policy and a fundamental reform of the economy. State economic activism was to give way to the principles of economic lib-

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eralism, which inspired the Single European Act and the European Union's decision to proceed with the establishment of a European Monetary Union. For PASOK, in power since 1981 except for the years 1989-93, and its founder, A. Papandreou, the declaration of support for the Maastricht Treaty represented a U-turn as dramatic as that of Mitterand's in 1983.

For Greece the espousal of the Treaty was all the more remarkable as no other European Union member country had to cover as long as distance to satisfy the convergence criteria in order to qualify for membership of the monetary union scheduled to be in place at the latest on 1 January 1999. It was accepted by the Greek political leadership that this deadline could not be met. Greece was the only European Union member country that had never operated the Exchange Rate Mechanism of the European Monetary System while its inflation rate was significantly higher than in the rest of the European Union member countries. Throughout the 1980s fiscal policy was designed so as to maximise the likelihood of the government being re-elected rather than ensuring the orderly and systematic modernisation of the country's fiscal policy. The stabilisation programme of the mid-1980s was abandoned, despite the promising beginning, so not to risk electoral alienation of those sectors whose support was judged to be essential if the government were to remain in power. Thus, ever increasing deficits budget deficits were resulted in the rapid growth of the National Debt. And yet as the end of the millennium draws closer, it is now almost certain that Greece will achieve its objective to become a member of the European Monetary Union on January, 2001.

How was this extraordinary transformation of the Greek economic conditions achieved? Given that membership of the European Monetary Union was assigned top priority while a well-defined strategy for satisfying the convergence criteria has not been articulated, there are a variety of ways that one can approach this question. We have opted to focus on the exchange rate policy pursued during the 1990s. More specifically, we wish to suggest that it was the "hard drachma" policy, which enabled Greece to make such rapid progress towards satisfying the Maastricht Treaty convergence criteria. This policy replaced a form of a crawling peg system introduced on 1976 where the national currency was depreciating against a basket of currencies by rates higher than the rates of inflation. In this system, it was perceived that drachma should be used as an instrument that it preserves the competitive position of the economy. On 1987, the Bank of Greece by exploiting the political unease and public anxiety on the operation of a commercial bank, in a effort to provide credibility in the policy setting and make itself a powerful partner in the policy making decisions, unofficially initiated and implemented the "hard drachma" policy. This policy had no precise char-

acteristics regarding the targeting on the exchange rate but it was loosely defined as a policy that could allow drachma to depreciate at rates lower than the rate of inflation. Therefore, there was a shift from intermediate monetary targets to exchange rate targets in an effort to disinflate the economy. Although no substantial, the benefits of this policy in the reduction of inflation were apparent and it was officially adopted as government policy on 1991. The proposition advanced is that "hard drachma" policy facilitated the deceleration of the Greek rate of inflation, imposed a degree of monetary discipline which impacted on the conduct of fiscal policy and allowed the gradual reduction of the fiscal burden of servicing the National Debt. In this paper it is emphasized that the chosen focus is one of a number that could have been chosen when assessing economic policy during the 1990s. Further, it is stressed that in what it follows it is not an attempt to provide a comprehensive evaluation of the "hard drachma" policy. The objective is to investigate whether highlighting the contribution of the policy is a starting point, which is well founded.

Our line of investigation may appear somewhat odd. After all, Levich (1985), Taylor (1995) and Frankel and Rose (1995) in their surveys of the empirical literature on the determinants of the nominal exchange rate draw attention to the rather poor performance of the basic, flexible prices monetary approach to exchange rate determination. Early studies appeared to support the approach but their conclusions were undermined by a large volume of empirical studies since the early 1980s. However, MacDonald and Taylor (1991) and (1994) have presented statistical findings, which suggest that the monetary approach, when interpreted as a long-run equilibrium condition, is not without empirical validity. Their basic proposition is that the proper testing of the approach requires the application of the Johansen multivariate cointegration technique.

In the interpretation of the monetary approach which is pertinent for the evaluation of the potential contribution made by the "hard Drachma" policy in the reduction of the Greek rate of inflation. In this respect of course relevant in this investigation are the empirical findings of Purchasing Power Parity studies focusing in the Drachma/Deutschemark exchange rate and of the demand for money in Greece.[1]

This paper surveys earlier research on this field[2] adds the Drachma/Dollar case and consists of five sections besides this introduction. The second Section outlines on the empirical methodology. The identification of the model is presented in the third Section and the empirical findings are discussed in the fourth part. In the concluding part the main results of the paper are summarized.

I. Methodology: VAR modelling

The VAR model is the unconstrained reduced form of a dynamic simultaneous equations model and expresses each endogenous variable as a function of its own lagged values, the lagged values of the other endogenous variables and a serially uncorrelated error. In matrix form a VAR model can be written as:

$$A(L)y_t = e_t,\ V(e) = D \tag{1}$$

where y_t is a K by 1 vector of endogenous variables, $A(L)$ is a K by K polynomial matrix in the lag operator, i.e. $A(L) = I_K - A_1L - \ldots - A_pL^p$ and e_t is a K by 1 vector of structural disturbances, innovations on y. Due to the assumptions of contemporaneously uncorrelated structural disturbances, the covariance matrix, denoted by D, is diagonal. Provided that the reverse characteristic polynomial of (1) has no unit roots in and on the complex unit circle then it can be converted into a moving average representation of the form:

$$y_t = \left[\Phi(L)\right]e_t \tag{2}$$

where $\Phi(L)A(L) = I_K$, $\Phi_0 = I_K$ and $\Phi_i = \sum_{j=1}^{i} \Phi_{i-j}A_j$

Φ_i's are the impulse responses or the dynamic multipliers. Therefore, impulse response analysis may be given an economic interpretation. In addition to impulse response analysis the moving average representation with orthogonal white noise innovations is also used for variance and historical decomposition. The Vector Autoregression approach was introduced by Sims (1980) as an alternative to large scale ma¬croeconometric models. He argued that these models make ad hoc and excessive restrictions to achieve identification, excluding therefore arbitrarily lags of endogenous variables, which may be important in the dynamic modeling. Hendry and Mizon (1993) are proposing a different approach the dynamic system modeling by adopting a sequential modeling strategy for analyzing non-stationary series with co¬integrating relationships. According to this strategy the estimation of an unrestricted vector autoregression (VAR) is the bench mark of structural modeling which is realized in the following steps. Firstly, the system is modeled in the I(1) space and the number of coin¬tegrating relationships as enumerated by the data set in the closed VAR model is examined. The co¬integrating restrictions are tested, and unique cointegration relationships are determined with testing for weak exo¬geneity. In addition,

the resulting system is tested for parameter constancy and for homoscedastic innovation errors. Then the system is mapped in the I(0) space and a parsimonious VAR (PVAR) is obtained. In this work both of the approaches are integrated in an attempt to evaluate the merits and the power of each approach for economic policy considerations.

II. The model

The estimated VAR for the Drachma/Dollar exchange rate determination rests on the monetary approach as presented by Dornbusch (1976) and Frenkel (1976). The basic monetary approach rests on two assumptions. First, it assumes that purchasing power parity holds continuously and, second, that the demand for money functions of the domestic and foreign economies are stable. Monetary equilibrium in the two economies is given by:

$$m = p + \alpha y - \beta r \tag{1}$$

and

$$m^* = p^* + ay^* - b^*r^* \tag{2}$$

Purchasing power parity is given by

$$\varepsilon = p - p^* \tag{3}$$

In such a model the reduced form equation is given by:

$$\varepsilon = (m - m^*) + ay^* - \alpha y - br^* + \beta r \tag{4}$$

where
ε is the exchange rate expressed as home currency units per unit of foreign currency.
m is the logarithm of the money supply
y is the logarithm of the real income
r is the nominal rate of interest
* denotes the foreign variables.

III. Empirical results

The empirical results for the case of Drachma/Ecu and Drachma/Deutschmark are extensively reported in Papadopoulos and Zis (2000a,b). The

main findings suggest that the monetary approach can be interpreted as a long-run equilibrium relation with complex short-run dynamics and that in terms of policy prescription the "introduction of the "hard Drachma" policy, which involved the Greek currency devaluing at a rate less than the Greek-EU inflation rates differential, had the potential to provide an anti-inflation discipline which Greece lacked". This empirical work employs Drachma/Dollar exchange rate data for the post Bretton Woods System period, i.e., 1975m4 through 1999m4 inclusive, adjusted for lags. This period is chosen because the Greek monetary authorities disengaged the drachma from the dollar and pegged the drachma against a currency basket. The software used for the estimation was Eviews 4.1 as developed by Lilien et al (1997) and PCFIML as advanced by Doornik, J. A. and Hendry, D. F. (1997). The data used for estimation are monthly, not seasonally adjusted and the exact definition and sources are described in the Appendix I. All the series are transformed by natural logarithms. The estimation results are reported in detail in Appendix II, and the related figures in the Appendix III.

First, stationarity is investigated with the use of the standard Fuller (1976) and Augmented Dickey and Fuller (1979) tests. The results reported in Table 1 show that all variables are I(1), implying that a long run empirical equilibrium relationship such as in equation (3) may be identifiable. The next step of the empirical investigation was to resolve the optimum lag length of the VAR. This involved the estimation of an eight lags model with subsequent reductions of one lag. F-tests, shown in the Table 2, indicate that a six lags structure was adequate for explaining the data. Coin¬tegration tests were then carried out by employing the mult¬ivariate cointegration technique proposed by Johansen (1988) and Johansen and Juselius (1990), with the estimation of a closed VAR model to the six dimensional vector $X=[\varepsilon, (m-m^*), y^*, y, r^*, r)]$. The estimation results are reported in Table 3 and the tests based on maximum eigenvalue $T\log(1-\lambda)$ and trace statistic $T\Sigma\log(1-\lambda)$, indicate the existence of a unique coin¬tegrating vector. Table 4 shows the results of testing jointly the coin¬tegrating restrictions for a unique coin¬tegrating vector and weak exogeneity. The normalized coefficients do not possess in all cases theory accepted signs, especially the US interest rate. The loading coefficient is negative and significant, indicating the stability of the model but the variables $m-m^*$, y, y^*, r^* and r are not jointly weakly exogenous implying that the model can not be conditioned and therefore must be analyzed in the standard VAR context. The aim of the VAR modeling is to implement variance decomposition to explain the dynamic characteristics of the empirical model. The results of the variance decomposition analysis, given in figure 1, suggest that the spot exchange

rate changes are largely due to their own innovations and the domestic interest rate, with the latter influencing the former significantly after a two years period, accounting for ten per cent, and stabilizing at around forty percent after ten years. All the other variables seem not to influence the spot exchange rate.

Conclusions

In contrast with the previous investigation for the exchange rate determination in Drachma/ECU and Drachma/ Deutschemark, the empirical findings presented in this paper are not consistent with the hypothesis that relative monetary developments in Greece and the US exerted a systematic influence in Drachma/ Dollar exchange rate. Be that as it may, these findings are not inconsistent with the MacDonald-Taylor proposition that the monetary approach should be interpreted as a statement of a long-run equilibrium relationship. What they do suggest is a negligible degree of interaction between the Greek and American economies.

For the "hard drachma" policy to have made a significant contribution of the Greek rate of inflation, it was necessary, but not sufficient, that there existed an equilibrium relationship between the relative demands for/supplies of money in Greece and the European Union and the Drachma's exchange rates against the currencies of the Union's member countries. We employed previous research in the monetary approach to exchange rate determination against the Drachma/Deutschemark and Drachma/ECU exchange rate. In addition, we investigated if the dollar peg was more appropriate than the former pegs. The reasoning behind this is that central to the monetary approach to exchange rate determination is the implicit assumption that the exchange rates under consideration are of countries which are open. Here the contrast is between an open and an «insular» economy. McKinnon (1981) defined the insular economy as one that though it engages in foreign trade, from its perspective «commodity and financial arbitrage with the outside world is limited» (536). In the case of the insular economy «the exchange rate is assigned to control foreign payments and it is viewed as an instrument essentially separate from domestic monetary policy» (p.536). It follows that if the exchange rate under consideration involves the currency of an insular economy, then the monetary approach will not hold even in the long run. Greece until the late 1980's exhibited the characteristics of an insular economy as defined by McKinnon. Trade barriers with the rest of the world than the EU, combined with the structure of the Greek economy to imply that exchange rate changes did not result in offsetting changes of

the domestic price level. Second, an elaborate system of exchange controls severely restricted private capital movements. Third, the Greek monetary system was largely insulated from balance of payments disequilibria. Under these circumstances the monetary approach can not be expected to hold, even in the long run, when applied to the Drachma/Dollar exchange rate. If that were the case, then it would not be justifiable to reject the monetary approach as irrelevant. All that the empirical evidence would imply is that the degree of commodity and financial integration between Greece and America was insignificant. In this context it can be suggested that anti-inflation policies through exchange rate management require the careful examination of the degree of integration of the country with its main trading partners. The case of Greece indicates that the success of this form of policy was relying in the increasing openness of the economy with its European partners.

TABLE 1
UNIT ROOT TESTS . SAMPLE 1975:04 1999:04

Variable (x)	Unit Root in x ADF				Unit Root in Δx ADF			
	τ	lags	τ_μ	lags	τ	lags	τ_μ	lags
ε1	--	---	-1.25	0	--	---	-17.33	0
(m-m*)	--	---	0.65	12	--	---	-6.04	11
y	1.11	14	--	---	-5.08	13	--	---
y*	--	---	-0.74	2	--	---	-12.63	0
i*	-0.48	2	--	---	-11.11	1	--	---
i	0.33	0	--	---	-16.06	0	--	---

MacKinnon critical values for rejection of hypothesis of a unit root

1%	5%	10%	
-2.57	-1.94	-1.61	for no-trend no constant variables
-3.46	-2.87	-2.57	for no-trend with constant variables
-3.98	-3.42	-3.13	for trend with constant variables

τ no constant and trend in DGP

τ_μ with constant, without trend in DGP

τ_τ with constant, with trend in DGP

TABLE 2
PROGRESS TO DATE AND TESTS OF MODEL REDUCTION

system	T	p		log-likelihood	SC	HQ	AIC
4	281	252	OLS	6283.3364	-39.665	-41.619	-42.928
3	281	288	OLS	6317.1540	-39.183	-41.417	-42.912
2	281	324	OLS	6349.5593	-38.691	-41.204	-42.887
1	281	360	OLS	6373.4847	-38.139	-40.931	-42.801

Tests of system reduction

System 3 --> System 4: F(36, 1003) = 1.5713 [0.0181] *

System 2 --> System 4: F(72, 1213) = 1.5254 [0.0038] **

System 1 --> System 4: F(108, 1245) = 1.3657 [0.0098] **

System 2 --> System 3: F(36, 977) = 1.4644 [0.0392] *

System 1 --> System 3: F(72, 1180) = 1.2544 [0.0786]

System 1 --> System 2: F(36, 951) = 1.0448 [0.3983]

TABLE 3. COINTEGRATION ANALYSIS 1975(12) TO 1999 (4) OF E

Ho:rank=p	-Tlog(1-\mu)	using T-nm	95%	-T\Sum log(.)	using T-nm	95%
p == 0	62.69**	54.66**	39.4	124.1**	108.2**	94.2
p <= 1	27.01	23.55	33.5	61.46	53.59	68.5
p <= 2	17.28	15.07	27.1	34.45	30.04	47.2
p <= 3	11.95	10.42	21.0	17.17	14.97	29.7
p <= 4	3.383	2.949	14.1	5.215	4.547	15.4
p <= 5	1.832	1.597	3.8	1.832	1.597	3.8
standardized \beta' eigenvectors						
ε	m-m*	y	y*	r*	r	
1.0000	4.6675	42.636	-28.134	-1.2820	-6.0033	
0.86409	1.0000	-0.20586	-5.6501	-0.11200	-1.5023	
0.41766	2.1538	1.0000	-7.4213	1.2381	-0.51224	
-0.0035716	-0.21736	-0.19004	1.0000	-0.10148	0.13800	
3.1161	-3.3126	0.12292	2.9538	1.0000	-1.9908	
0.13954	-0.49530	-0.28780	-0.18645	-0.36838	1.0000	
standardized \alpha coefficients						
ε	-0.0026226	-0.010559	0.0059652	-0.040530	-0.0019730	0.0054556
m-m*	-0.0011756	-0.0033606	0.0016929	0.051156	0.0023797	0.0075182
y	-0.014147	0.012034	-0.0071943	-0.021986	0.00057424	-0.0010044
y*	0.00040865	0.0054486	-0.00086093	-0.0010334	-0.00033017	0.0010761
r*	-0.0027019	-0.014407	-0.019542	0.070623	-0.0046259	0.0052187
r	0.0042438	-0.0062495	-0.011229	-0.043561	0.00079773	0.0014324
Number of lags used in the analysis: 6 Variables entered unrestricted:						
Constant	CSeason	CSeason_1	CSeason_2	CSeason_3	CSeason_4	
CSeason_5	CSeason_6	CSeason_7	CSeason_8	CSeason_9	CSeason_10	

*Critical values from Osterwald-Lenum (1992).

TABLE 4
RESTRICTED COINTEGRATION ANALYSIS 1975(12) TO 1999 (4) OF E

ε	m – m*	y	y*	r*	r
1.0000	0.025499	9.6198	-4.2772	-1.2530	-2.6257
Standard errors of beta'					
ε	m – m*	y	y*	r*	r
0.00000	1.3095	5.4405	5.0443	0.55829	1.0196
\alpha					
ε	-0.013345				
m – m*	0.00000				
y	0.00000				
y*	0.00000				
r*	0.00000				
r	0.00000				
Standard errors of alpha					
ε	0.0036529				
m – m*	0.00000				
y	0.00000				
y*	0.00000				
r*	0.00000				
r	0.00000				
LR-test, rank=1: Chi^2(5) = 48.179 [0.0000] **					

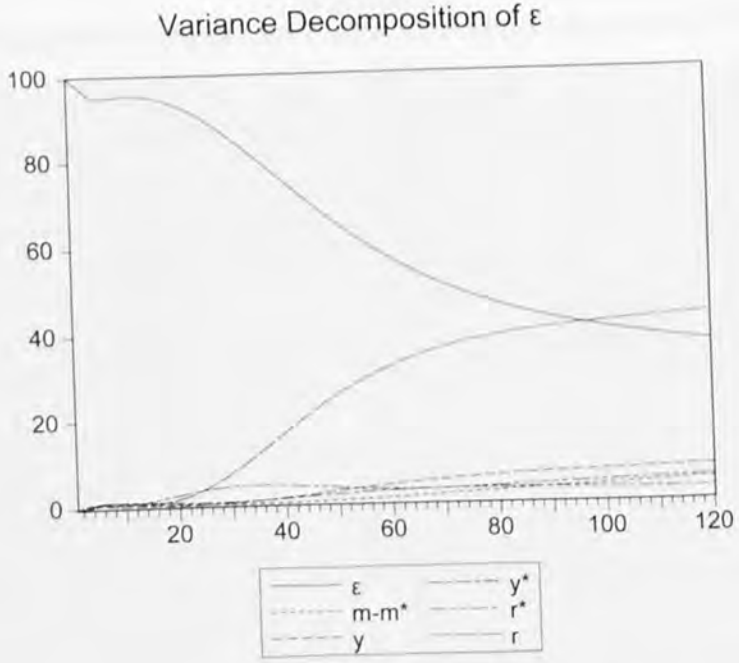

Figure 1:
Variance Decomposition Analysis of the Drachma/Dollar exchange rate.

APPENDIX I: DATA DEFINITIONS AND SOURCES.

Lower case letters indicate log forms.
ER AA= exchange rate, market rate of drachmas per dollar, IFS line aa
M = Money Supply, IFS CD ROM, 17434..zf, Greece
M*,US=M1, IFS CD ROM, 11159MA..zf, USA
R = Working capital interest rate, IFS CD ROM, 17460p..zf,
R*,US= US treasury bill equivelant rate, IFS CD ROM, 11160cs..zf, USA
Y= Manufacturing Production, OECD, Main economic indicators, Greece
Y*,US= US Industrial Production, OECD, Main economic indicators, USA

ABBREVIATIONS FOR SOURCES

I.F.S. = International Financial Statistics.
O.E.C.D. = Organization of Economic Cooperation and Development

Notes

1. See, for example Brissimis and Leventakis (1985), Ericsson and Sharma (1998), Papadopoulos and Zis (1997).
2. Papadopoulos and Zis (2000a, 2000b)

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