GLOBAL TAXES

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by

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Abstract

This paper argues that environmentally oriented revenue sources are the preferred option for a global tax reflecting their ability to generate a double dividend by, first, helping to keep the environment clean with its concomitant positive impact on community welfare and, second, enabling the use of the revenue collected to mitigate global developmental concerns. A global carbon tax with the requirement of a minimum contribution is most suitable among alternative energy taxes even though global taxes on transport congestion are also feasible. Global financial transactions taxes--despite their significant revenue potential--carry the possibility of distorting prices and volumes of international financial transactions. Based on selected experiences in international treaty making from the recent past, it is not certain, however, that either tax would be easy to introduce. Questions also arise regarding their administration on a global scale unless innovatively designed, regulated and implemented.

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I. Introduction

The world is undergoing rapid economic changes. Its problems are assuming increasingly composite form while its economic growth is commonly found to be equity reducing (World Bank, 1990; Chand and Shome, 1995). The quantum and nature of resources available through multilateral financial institutional lending have been criticised as being inadequate to redress particularly distressing increases in poverty. Though this is difficult, if not impossible, to prove, there is a growing consensus that global taxes be identified and their revenue be earmarked for the purposes of poverty alleviation and fruitful development.

This paper weighs various possibilities of global taxation. Many of the papers in the conference are focussed on the efficacy of a global tax on international financial transactions and on possible uses of the revenue thus generated. Consequently, this paper focusses on other taxes, mainly global environmental levies, while also considering the potential usefulness of international financial transactions as the base for a global tax. [1]

Section II provides the setting of the paper by addressing the question: why global taxes? The answer has to lie in the need to protect the global habitat for future generations and to improve equity for the current generation, for both of which global use of the revenue generated would be needed.

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[1] For the views of this author, prior to the holding of the U.N. Meeting, on the suitability of international financial transactions as a global tax base, see Shome and Stotsky (1995). For the U.N. Meeting, he was given the task of especially considering other possibilities of global taxation, in particular, environment-related taxes, while revisiting the essential elements associated with the arguments related to international financial transactions taxes.

In pursuance of Section II, Section III presents a schemata illustrating the constraining influence of today's deleterious environmental practices on the welfare of future generations even if today's generation had the good intention of bequeathing the pecuniary maximum for posterity. Therefore, revenue could be derived by targeting the sources of environmental degradation, and the revenue used for achieving global development objectives.

Section IV considers some alternatives of environmentally oriented taxes that could hypothetically be designed for global revenue generation. The list comprises much discussed sources such as a carbon tax, charges or taxes on international transport, as well as tradeable or marketable permits. It is found that not all feasible national instruments are necessarily suitable for global use. A carbon tax is likely to fare best as a global tax but, in order for such a policy to be successful, a case is made for the imposition of a minimum global carbon tax.

Section V attempts a critique of international financial transactions as a potential base for a global tax. While the option of using environmental degradation or its proxies as an alternative base possesses the quality of a double dividend--reduction in environmental degradation and generation of revenue--the use of international financial transactions as the base offers a single dividend--revenue--but is likely to distort international financial flows.

Section VI discusses selected recent experiences in international treaty making with the objective of gauging the feasibility of introducing a global tax. It then raises global tax administration issues that are needed to be kept in mind if the implementation of a global tax is to be successful. Section VII concludes.

II. Why Global Taxes?

The justification for global taxes is couched in terms of intergenerational and intragenerational equity. Such a tax on environmental degradation would preserve the environment for the future. The revenue from a global tax could be used to redress poverty.

1. Intragenerational and intergenerational perspectives

Population, technology and resources have been called the "master variables" connected with a complex interrelationship and resulting in an international tension between growth and development and also between the North and the South (Choucri and North, 1993). The North-South debate could (partially) be seen as an intragenerational one. Although multinationals, mainly from the North, carry technology, trade and investment to the South, they have distributive and allocational as well as global and domestic ramifications. Their investment tends to cause environmental degradation unless checked. Poverty and population growth are affected by environmental degradation. [2] In its turn, the North argues that poverty and population growth cause environmental degradation. This exacerbates the world's economic polarization, necessitating a minimum degree of oversight at the global level (Davidian, 1994). [3]

The recent rise of "global politics of environmental issues" has involved interdisciplinary research and reflects a genuine interest in global "sustainable development in balance with the biosphere as a whole". This has immediate intergenerational implications (see Brown Weiss, 1993; and Rothenberg, 1993). Past generations have bequeathed to the present generation an endowment reflecting the fruits of the former's efforts through trial and error and learning by doing. Thus there is a backward indebtedness of the latter towards the former. A social contract represented by a social security transfer mechanism is inadequate

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[2] The same interrelationship could be posed within a particular country context, thereby generating an argument for a domestic environment tax whose revenue could be used for social purposes. The proposition, when cast in terms of international investment, allows the argument to be extended to a case in favour of a global environment tax.

[3] Davidian (1994) has made similar arguments, nested in terms of the North's "ignored responsibility of development" and the disproportionately high energy consumption by the North compared to the South. According to his statistics, from recent world consumption levels of oil of about 100 million barrels per day, it is possible that consumption will rise to 300 million barrels per day by 2000 A.D. (p.215). He predicts that oil supply will be exhausted in the not too distant future, coal will then be used, and the true crunch will appear when both oil and coal are exhausted, and cites other believers. He warns, "unless concerted international action is taken in time (and there is no time to be lost), we may expect social and political upheavals and military conflagrations" (pp.238-39).

for reaching sufficiently back into the past to repay this debt. Perhaps an alternate adequate mechanism is for the present to ensure and safeguard its received gift of endowment for the future.

Most environmental threats--global warming, forest depletion--are not likely to affect us or our immediate descendants. [4] There is no particular reason, therefore, for a human being--or even for a particular country--to individually take action. [5] Commitment at a global level for equity with future generations therefore emerges as a distinct necessity. Global taxes comprise an important vehicle for the realisation of that commitment.

2. The atmosphere as an illustration of a global resource

Examples of a global resource may be found in sea, land or air. The oceans are a common example of an international common property resource. Ships ply on the high seas and nationstates bury refuse of various sorts in their beds. The quality of seas and oceans as a resource is thus degraded by chemical and nuclear wastes, and also by oil spills and atomic explosions. If and when any compensations are made for accidents, they tend to be small if not minuscule compared to their social cost. Further, payments made and received tend to be confined within individual countries, reflecting international norms regarding the prerogatives of state sovereignty, though some cross country compensation has also taken place. Thus, first, marginal social costs of environmental degradation do not get fully reflected when such degradation occurs and, second, it is safe to say that it is generally not treated as a cutting edge global issue in international fora. These issues are taken up in some detail in Section VI.

Similarly, focussing on land on a global scale, the continent of Antarctica is an example of an abundant common property resource. Though the 1959 Antarctic Treaty has

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[4] If there is no abatement of environmental degradation, damages from climate change would be negligible for the next fifty years. It would thereafter accelerate and become very high after 150 years or so. See Choucri and North (1993).

[5] Indeed, non-governmental organizations (NGOs) formed by interested parties in their individual capacities often seem to do more than their governments. For the role that co-operatives and local governments have been playing, see Singh (1994).

been praised by some (see Victor et al, 1993) for the research coordination it has generated as the central component of international cooperation, the stakes already made out by individual countries for the eventual exploitation of the continent's natural resources again reveal individual motives of nationstates which conflict with truly global notions of intergenerational and intragenerational (cross country) equity. [6]

The common property resource that is most often discussed is, however, the atmosphere (see Soroos, 1991). Its degradation spans the problems of acid deposition, global climate change and ozone depletion. Perhaps acid deposition has had the most apparent environmental consequences in the form of acid rain i.e. acidic moisture caused by oxides of sulphur or oxygen reaches the ground as rain, snow, mist, fog, frost or dew. Human activities--rather than natural sources such as volcanoes--cause 90 percent of the quantities of these substances in the industrialised regions of the North. Its consequences include Arctic Haze, forest-death, acid-death of aquatic life as well as extensive damage to stone statues, monuments and structures.

The problem of global climate change is caused by the excessive emission of carbon dioxide that warms the lower atmosphere (troposphere). It is known that atmospheric concentrations of carbondioxide have increased significantly over the last two centuries, mainly reflecting a ten-fold increase in energy consumption during the twentieth century as well as large scale cutting and burning of forests. While relatively small areas such as Scandinavia may experience a somewhat longer growing season as a result, much larger tracts of land are destined to suffer hotter and drier seasons and reduced production. It is not at all impossible that glacial ice would melt more rapidly and sea levels would rise due to thermal expansion, thus increasing the salinity of rivers and inundating highly populated areas. OECD (1992) analyses various forms of damage--on agriculture, forests, species, sea level, space cooling and heating, human amenity, life and morbidity, migration, construction, leisure, water

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[6] Even within nationstates, nationally demarcated land is often exploited for their timber, minerals and metals or its quality degraded by burying atomic waste or piling chemical waste. Related policy decisions reflect the possible impact on progeny (short term) rather than on posterity and the estimates of environmental costs are often uncovered to be grossly optimistic.

supply, urban infrastructure--on an item by item basis. [7]

Ozone depletion affects the upper atmosphere (stratosphere), which houses a thin layer of naturally occurring ozone that absorbs 99 percent of the incoming ultraviolet solar radiation. Industrially produced chemicals--chloroflurocarbons (CFCs) diminish the ozone layer. In 1985, Antarctica's atmosphere was observed to have been punctured with an "ozone hole" i.e. 40 percent below average ozone levels, caused mainly by CFCs. The situation did not subsequently improve. Resultant increases in ultraviolet radiation are likely to have similar effects as those of carbon gases; but equally significantly, a 1 percent reduction in the ozone layer could lead to a 10 percent increase in human skin cancers.

It is obvious that the targets for penalization should be emissions of acid, CFCs and carbon into the atmosphere. Given that their primary source is the North, it is unavoidable that it has to bear the brunt of the cleanup and maintenance costs of the atmosphere for some time to come. In particular, a level of awareness, discussion and debate, if not a critical mass of consensus, already exists in the matter of targeting carbon emission. Appropriate policies at the global level--or policies coordinated at the national level by various nations--could help arrest atmospheric degradation and, at the same time, enable the generation of significant revenues for global use.

III. Schemata to Illustrate the Constraining Influence of a Global Factor

In Section II, we argued that environmental degradation can cause factor depletion both in terms of capital and labour. In this Section we attempt to illustrate the point with the help of a diagrammatic scheme. Its objective is to demonstrate how constraining influences such as environmental degradation could diminish the productivity of factors of production such as labour and capital in future generations.

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[7] Also see Cline (1992) for greater details and a benefit-cost approach for estimating such damage.

1. $Y_t = C_t + I_t$

2. $I_t^o = I_t(L_t, K_t, F_t^o)$

3. $C_t^o = C_t(L_t, K_t, F_t^o)$

4. $C_{t+1} = f^c C_t$

5. $I_{t+1} = f^i I_t$

6. $L_t = \bar{L}_t$

7. $K_t = \bar{K}_t = I_{t-1}$

8. $F_t = \bar{F}_t(f^c, f^i)$

We have a world economy in two periods--present (t) and future (t+1) with a global factor (F) that can constrain world production of consumption goods (C) and investment goods (I) by limiting the productivity of ordinary factors of production, say labour (L) and capital (K). This is depicted in equations 1, 2 and 3. In Diagram 1, the transformation curve EF in period t is not limited by any constraint posed by F, and solely reflects the given endowments of labour and capital in equations 6 and 7.

Assuming that the world is interested in leaving an adequate bequest, it prefers to consume a minimum, OB, in period t. Then OA is the investment good produced. [8] Combined with $\bar{L}_{t+1}$, it yields the transformation curve GH in period (t+1), if unconstrained by F. The community indifference curve UU′ determines J as the equilibrium production-consumption combination.

Given Q and J, quadrilateral ABCD is the equilibrium production-consumption configuration for current and future generations.

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[8] OB plus OA yields Y_t at normalised prices.

Diagram 1

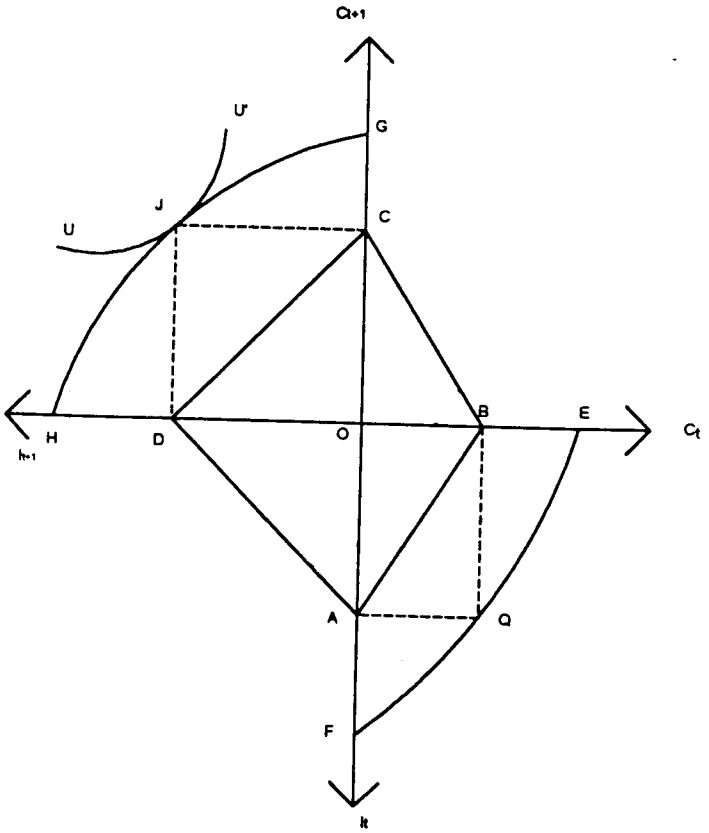


Diagram 2

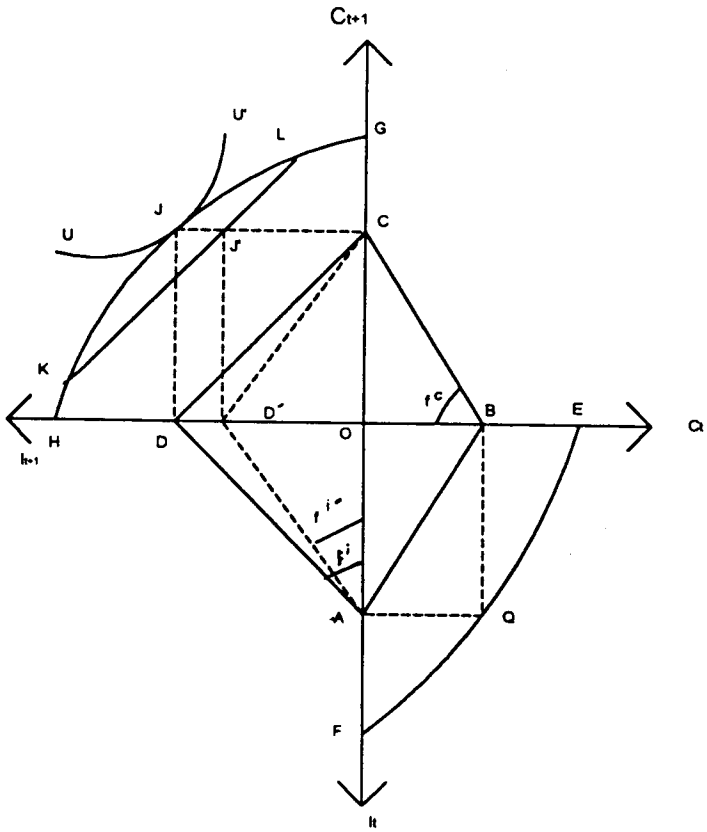
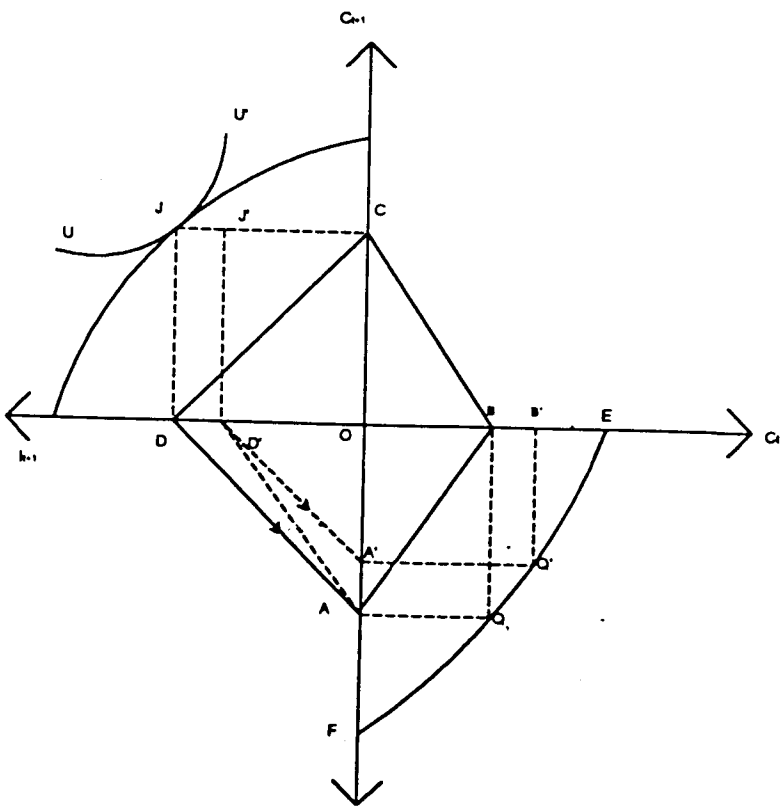


Diagram 3



The constraining influence of F would appear, however, if the production of C_t and I_t ignored, say, environmental factors. This would not show up in the production in period t but would constrain production in period (t+1). This is depicted in equations 4 and 5 which are simple specifications, to facilitate the diagrammatic schema. A more general specification could be equations 4′ and 5′:

$$4'. \quad [I_t^o > I_t^* \;/\; C_t^o = C_t^*] \Leftrightarrow F_t^o > F_t^*$$

$$5'. \quad [C_t^o > C_t^* \;/\; I_t^* = I_t^*] \Leftrightarrow F_t^o > F_t^*$$

which indicate that the production of the investment good or consumption good will increase [9]--the production of the other remaining the same--if and only if, F, the constraining factor increases. [10]

Using the more restrictive formulation in equations 4 and 5, Diagram 2 shows the impact of environmental degradation on period (t+1) production. Determined by f^c and f^i, factor F--see equation 8--constrains production in period (t+1) to J′ which lies within GH. As long as there is environmental degradation in period t, different combinations of f^c and f^i would constrain production in period (t+1) and comprise a binding constraint such as KL in period (t+1).

A reduced quadrilateral such as ABCD′ results if, for example, in period t, the capital goods industry causes environmental degradation--$f^{i'}$ less than f^i--with detrimental consequences on its production in period (t+1).

Diagram 3 illustrates the backward implications of J′ for period t if factor F had not

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[9] The increase being referred to would be from a constrained equilibrium in period (t+1), such as J′-- This is explained further in Diagram 2 below.

[10] F_t could be seen to work in a three-pronged manner: (1) a "fixed endowment" of F_t is determined by f^c and f^i which, in turn, are determined by the previous period's environmental policies; (2) a greater availability of F_{t+1} implies that more I_t can be brought into the production process as a factor of production--thus they are complimentary; and (3) while L_t and K_t are substitutable in the production of I_t and C_t, F_t is not.

been depleted (i.e. $f^{i'} = f^{i}$): more consumption good OB′ may as well have been consumed and less investment good OA′ produced. The generation of period t unwittingly sacrificed consumption BB′ without receiving the anticipated results in period (t+1).

To sum up: (1) the F constraint--environmental degradation-- results in a reduced Y_{t+1}; (2) the maximum possible investment--and minimum consumption--need not be opted for in period t; and (3) the reduced Y_{t+1} results in factor unemployment in period (t+1).

The policy conclusions that may be drawn are that, first, it is not enough for the present generation to bequeath pecuniary savings--and presumed investment and consumption possibilities--to posterity, but it is also necessary to bequeath the natural habitat in similar condition as it inherited from past generations. In order to do so, it is important to explore the possibilities of devising global tax mechanisms that could minimise environmental degradation and increase future production and consumption. The use of the revenue thus generated to mitigate global developmental concerns would comprise a double dividend.

IV. Global Environmental Taxes

Various market based tax instruments (MBTIs) have been discussed in the literature in the context of checking environmental decline. [11] They have been described, in the context of transportation, [12] in a nutshell by Button (1993) as including:

(i) for vehicles: emissions charges, tradeable permits, differential vehicle standards taxation, tax allowances for new vehicles;

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[11] Command and control regulations such as direct controls on emission, fuel composition, traffic incidence and routes, or phasing out of high polluting fuels, as well as indirect controls such as compulsory inspections, scrapping of old and acquisition of new vehicles, fuel economy standards, speed limits and so on, are not considered here since the focus is on revenue generation.

[12] MBTIs may, of course, be used to redress industrial or other pollution.

(ii) for fuel: differential fuel taxation, high fuel taxes; and

(iii) for traffic: congestion charges, parking charges, subsidies for less polluting modes.

Except for emissions fees which attempt to attack environmental intrusion directly, the others are indirect instruments that affect vehicle use or associated inputs. In reality, however, even though emissions charges are a direct instrument and attempt to put an appropriate price on users for the use of the environment, there can be said to be at best a fine dividing line between a user charge and a tax (see Bell, 1995).

Three among the above list could be imagined as possible candidates for a global tax. They are: (1) emissions charges or Pigouvian taxes on international airlines and shipping companies; (2) tradable permits that would apply across nations within limits set by them; and (3) a global carbon tax. Their usefulness as global levies is examined below. The carbon tax is specially treated since it has been discussed in some detail in the global context and since it seems to offer a not totally infeasible option in terms of its introduction and implementation as a global tax.

1. A Pigouvian global tax on airlines and shipping

A Pigouvian tax attempts to internalise the true value of the environment in product prices. Take traffic: without internalization of external costs, traffic would be produced at greater than optimal levels. In Diagram 4, Q would be produced, reflecting maximisation of net private benefit (marginal schedule MNPB) while ignoring external costs (marginal schedule MEC). A Pigouvian tax t imposed by the authorities would make traffic "producers" to treat (MNPB-t) as their new decision making parameter, with the effects of: (1) producing less traffic Q*; and (2) generating tax revenue CAQ*D. This could be achieved through t, a Pigouvian tax or charge.

If this could be made applicable to all international airlines, the tax would become a global tax candidate. First, it would not be impossible to design it for all states and would have the impact of reducing noise and air pollution. Second, on the assumption that the world's poor do not fly internationally very often, the tax could be expected to be quite

equitable. Third, it should be revenue productive as long as international air travel exists, even though its occurrence would be reduced, beneficially from the viewpoint of global welfare. Fourth, it should be an administratively feasible tax. If it turns out to be difficult to administer by a global body, the tax could be collected by national authorities and the revenue handed over to a global regulatory body. Of course, there will be a need for an international convention or treaty, selected related matters of which are addressed in Section VI.

A similar tax could be levied on international shipping based on a similar argument i.e. that of their use of the open seas which are global commons, and to the extent that the use leads to pollution and congestion.

If such a global tax takes hold, it is perhaps not too far fetched to imagine that it might even be possible to introduce differential taxation to reflect congestion costs at airports or ports. For example, the rates could be related to arrivals and departures during heavy or light traffic periods, introducing an element of peak-off-peak differentials such as usually experienced where competition exists, for example, in the telephone, movie or hotel industries. A well crafted design would include two parts: (1) a fixed component for the entitlement to enter; and (2) a differential component reflecting the marginal cost of abatement.(see Congressional Budget Office, 1992).

2. International tradeable permits?

Tradeable permits have the merit of exerting direct control over the quantity of emissions. In the case of a Pigouvian tax or charge, if it is calculated to be too low, pollution may exceed optimal levels, necessitating reiterations to set the right tax. Tradable permits do not suffer from this shortcoming. [13]

If a permit is required for each unit of pollution, then the optimal number of permits is Q* in Diagram 5, where MAC (marginal abatement cost) and MEC (marginal external cost)

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[13] However, it should be kept in mind, that, a tradeable permit, like a Pigouvian tax, necessitates differential assessment to reflect differences in marginal damage caused in different areas, for example, with different population densities, by the same pollutant.

intersect. The equilibrium market price of a tradable permit is P*. Since MAC is the demand curve for permits--derived as the horizontal summation of schedules MAC1 and MAC2 of individual firms 1 and 2--any price higher than P* would reduce the number of permits demanded since it would be cheaper to clean up production. Firms 1 and 2 buy Q1 and Q2 of permits respectively. Thus, if initially they are allotted an equal number of permits, they will trade permits between themselves. Thus a permits market emerges.

The United States made explicit use of permits during its lead trading programme whose aim was to allow petroleum refineries greater flexibility during the 1982-86 period when lead in petroleum was being reduced. Permits trading has continued and they are regularly traded, for example, in the Chicago stock exchange, for sulphur dioxide emissions.

Tradeable permits may not, however, be easily amenable to international manipulation. Their very merit in fixing pollution levels in the national context becomes a demerit in the international context because the levels of pollution caused by individual industries would have to be agreed upon internationally.

There is likely to be a lack of incentive for any particular country to come forward with global welfare in mind. This is depicted in Diagram 6 in which an individual country would be willing to undertake abatement to an extent less than the global optimum (Q* less than Q**) as long as a country considers its own marginal benefit of abatement schedule to lie below the global one. Indeed, some countries might prefer to be freeriders knowing that others would foot the bill of attempting to achieve Q**. Leave alone developing countries, even high pollution developed countries such as the United States have demanded special consideration in international negotiations for undertaking to "decrease" pollution more rapidly than in the past (Soroos, 1991).

Even if hypothetically the quantum of allowable pollution per industry could be determined at the global level, the revenue impact of each agreement would be one shot, requiring increasing coverage of industries on a continuing basis. It is difficult to predict with confidence that such progress is achievable. To conclude, the use of tradeable permits as a global revenue source is fraught with practical difficulties.

Diagram 4

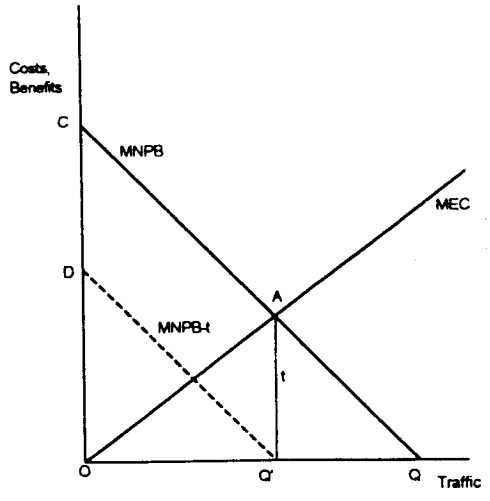


Diagram 5

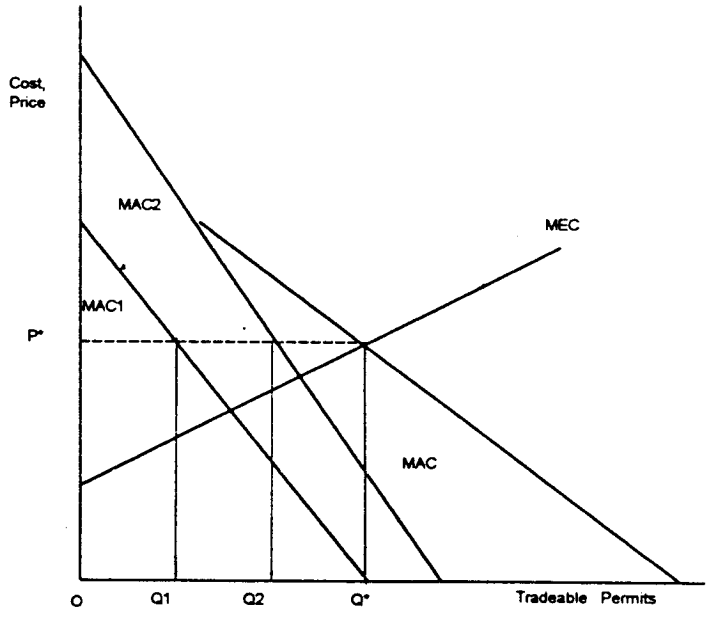
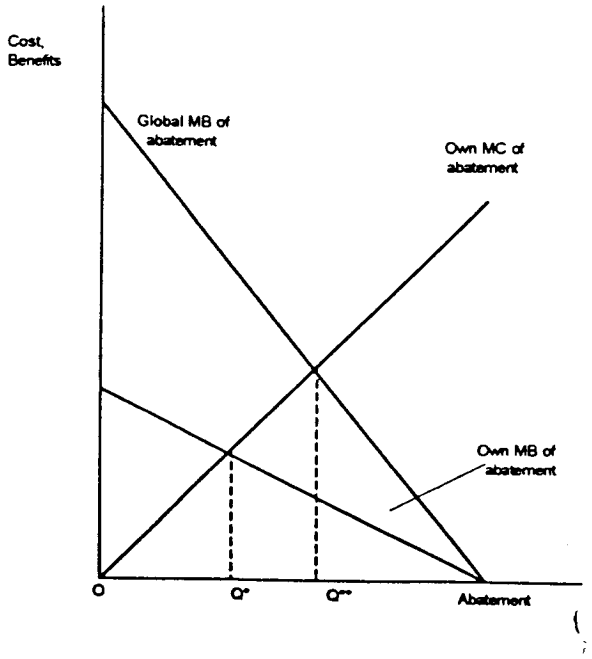


Diagram 6



Source for Diagram 4, 5 and 6: Button (1993)

3. A global carbon tax

The incidence of emission of carbondioxide, the most important anthropogenic greenhouse gas, has been considered in Section II. Energy taxes are a strong and low-cost mechanism for the control of carbondioxide emission because it is predominantly caused by energy production and use. Most authors seem to agree that the advantage of energy taxes lies in that they could be designed to directly target the primary source--transport fuels--of carbondioxide emission, are more amenable to global taxation than other tax candidates, and could yield significant revenue.

a. Appropriate tax base

The base for an energy tax could, of course, be alternatively selected, for example, the carbon content of fossil energy or the Btu content of fossil energy. Scheraga and Leary (1994) compare and contrast the advantages and disadvantages of a carbon tax with a Btu tax. They examine both as taxes on the primary production of fossil energy, setting the tax rates such that carbondioxide emissions in 2000 are equalised to 1990 levels. While the Btu tax generates greater emission reductions, the carbon tax has ancillary benefits in that it comes closest to the ideal of placing a uniform price on carbondioxide emissions. a condition necessary for least cost abatement, which their model confirms. [14]

Therefore, the carbon tax has been especially subjected to analysis and critique, as well as to various degrees of application in the European Union (EU). Many authors have discussed its advantages and disadvantages--Sterner, Dahl and Franzen (1992), Barker (1993), Shome and Spahn (1994) and Scheraga and Leary (1994)--to name only a few.

b. Indicators of growth in energy consumption

Gasoline demand has been widely modeled and analysed. Typically, demand for transport fuels is derived from vehicle stock, its composition and vehicle utilisation. Sterner et al (1992), using such a model, estimated demand elasticities to make inferences regarding

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[14] Their simulations show that the Btu tax would be between 25 percent and several times higher than the least cost carbon tax for the same abatement. Despite the attractiveness of the Btu tax, therefore, in terms of revenue, it could not be justified on efficiency grounds.

the effectiveness of possible tax policies. Applying the model to OECD data, they found that cross-country gasoline price differences were determined mainly by tax differences. Their results also indicated that the consumption of low-tax North America was large relative to the rest of the OECD.

The more interesting part of their results pertain to the future: (1) if taxes are maintained at the 1987 levels, by the year 2000, the United States would be responsible for over two-thirds of the gasoline carbon emissions while, for the OECD as a whole, carbon emissions would increase by about half; (2) if taxes were raised to the highest (Italian) level across the OECD, consumption and emission would fall by approximately one-third, reflecting a fifty percent decline in North America and a quarter in the EU; (3) if taxes were reduced to the lowest (Greek) level, the main change would be in the EU which, with its prevailing high tax rates, would experience a tripling in its consumption.

Other interesting conclusions bear on the elasticity estimates: (1) long run elasticities average approximately -0.8 for price and 1.2 for income; (2) the high income elasticity indicates that consumption would tend to increase with world growth; (3) the significant price elasticity indicates that appropriate tax policies could control consumption; and (4) the income elasticity being higher than the price elasticity, prices will have to rise faster than the rate of economic growth if consumption is to be stabilised.

The justification for the above tour de force lies in the need to drive home the case in favour of a carbon tax on transport fuels on a global scale. From the point of view of global warming, confining such a tax within the EU would serve the purpose only partially; it must extend to North America to have any meaningful effect, South America, Asia or Africa should not be excluded, or should be included soon thereafter, for example, in line with the extra time given to developing countries to conform to the recommendations of the Montreal Protocol.

c. The case for a minimum global carbon tax

Barker (1993) has made the case for a global carbon tax emphatically. According to him, such a tax is, indeed, the optimal instrument for the transfer of clean technology and,

therefore, for world growth and development. Since domestic energy prices in developing countries are often below world prices, he argues that a carbon tax would help improve efficiency and perhaps be more revenue productive than conventional domestic revenue sources. [15]

However, Gupta and Mahler (1994) found that domestic petroleum prices and tax rates vary significantly among countries across the world. They have also varied over time. Cross-country variations were also reported by Sterner et al (1992) for the OECD. In this scenario, an argument in favour of increasing domestic petroleum taxes in countries where prices are low may hold more water than the argument in favour of a global tax. The latter argument is better couched, therefore, in terms of global environmental needs than on the basis of low prices. Nevertheless, this does pose a moral hazard problem for a global carbon tax since countries which already have high tax rates may, to an extent justifiably, feel that the global tax be designed in such a way that they do not suffer inequities because of the tax. [16]

That is not impossible, however. The design could include the stipulation of a minimum global tax on countries. After paying the minimum to the global regulatory body, any country could be free to levy any tax rate for domestic purposes. If the minimum is set at an appropriately high level, the existing high tax countries could be expected to reduce their domestic rates. Those countries that have been taxing below the minimum, would have to increase their overall tax rates significantly, first, to meet the global payment and, second, to meet their own revenue needs. [17]

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[15] He mentions the income tax, value added tax and customs duties. He even claims that, on balance, the carbon tax, compared to the others, would also have the least harmful effects on inflation and equity. Some of these claims may or may not be provable--but this is just to indicate that, among the analysts, there are indeed some extremely strong proponents of the tax as a global tax.

[16] This comments should alert the reader to the many practical issues that must be faced in designing the tax on a global scale.

[17] If their domestic revenue needs do not change, then they would simply need to increase their tax effort by the global minimum tax.

V. International Financial Transactions as a Global Tax Base

Tobin (1978) proposed a tax on foreign currency transactions and revived the idea in the early 1990s (Tobin, 1991). This year, as world financial markets experienced a marked volatility, the "Tobin tax" has reemerged. It has been debated by, for example, Eichengreen, Tobin and Wyplosz (1995), Garber and Taylor (1995), Greenaway (1995), and Kenen (1995) in one volume of the Economic Journal, while Shome and Stotsky (1995) have also attempted to weigh its pros and cons as an instrument for reduction in the volatility in world financial markets. This seminar is, again, a forum to exhaustively reconsider the tax in the light of its potential as a revenue generator and the concomitant attractiveness that is entailed in the possible use of the revenue for achieving global equity objectives, an idea that has recently gained currency. This section attempts to summarise the main issues in this debate while cautioning against selected possible difficulties with the tax.

1. Efficiency issues

A financial transactions tax may assume various forms. In a domestic context, it is usually an excise levied on transactions in financial assets, including stocks, bonds, futures, options, and other derivative instruments. In an international context, it could be conceived as an excise levied on transactions involving currency conversions (for transactions in financial assets, goods, and services).

It is feared that a financial transactions tax may carry significant efficiency costs (Hubbard, 1993, Schwert and Seguin, 1993, Hakkio, 1994). International financial markets are usually characterised by low transactions costs and limit the incentive of investors to hold on to financial assets. A tax would impose a cost on this market, affect trading patterns, increase the cost of capital, necessitate higher before-tax rates of return, and possibly affect capital formation and growth. Application of the tax to selected assets would result in unwarranted resource reallocation. If, however, the tax applied to all currencies, traders would shift into vehicle currencies to minimise currency conversions.

2. Impact on market volatility

The power of an international financial transactions tax to reduce market volatility through increased transactions costs is an empirical issue. If anything, empirical observations do not provide a firm link, however. For example, in recent years, average transactions costs in the United States have fallen significantly; nevertheless stock market volatility has not increased (Schwert, 1993). Similarly, nowhere did the existence of a domestic transactions tax seem to influence the severity of the October 1987 stock market crash (Hakkio, 1994). Finally, the argument of Summers and Summers (1990) that the tax would discourage investment by "noise traders"--those whose information is not based on fundamentals--has no empirical support.

3. Distribution and incidence effects

It may be argued that a global financial transactions tax would be progressive under particular assumptions regarding the main participants in currency conversions. Nevertheless, some of the primary market operators--pension funds, insurance companies, mutual funds--hold assets of a broad cross-section of the population. This would dampen the progressive nature of the tax.

In terms of cross-country incidence of the tax, it is likely that a general tax on currency conversions would fall most heavily on countries trading intensively in international financial markets and would depend, therefore, on the size of the traded sector. Thus while large developing countries whose traded sectors are small compared to their GDPs may be shielded, small, open developing economies may suffer in particular.

4. Revenue productivity

The attraction of the tax lies in its revenue potential. Assuming that global net turnover in the world's currency markets (spot, contract and derivative contracts) is US $1 trillion per day, a 0.01 percent tax would yield US $25 billion per year under static assumptions. The possible economic effects of the tax discussed above could, however, dampen its revenue productivity, especially under non-static conditions. For example, it was argued by some participants during the U.N. Meeting that the tax base could shrink significantly even with a very small tax, which could, therefore, be expected to be highly

elastic.

5. Design and implementation

If one were to design a financial transactions tax in its broadest form, too many considerations would arise: identification of coverage, short-term versus long-term transactions, treatment of debt versus equity, derivatives, financial intermediaries, foreign substitutions, and so on. It would be more productive, therefore, to be restricted, in its global variant, to the Tobin tax on international transactions involving the conversion of one currency into another. Tobin envisaged an international tax whenever foreign currency conversion was involved, at a uniform rate, on all spot transactions in domestic security and foreign exchange markets, and on payments for goods and services across currency areas.

The problem with design has been succinctly put by the proponents of the tax themselves. Eichengreen, Tobin and Wyplosz (1995) have noted that, "...a transaction tax on purchases and sales of foreign exchange would have to be universal and uniform; it would have to apply to all jurisdictions, and the rate would have to be equalised across markets. Were it imposed unilaterally by one country, that country's forex markets would simply move offshore" (p.165). Thus a consensus would be needed since even a critical mass of likeminded countries would be insufficient to carry out a fully successful implementation of the tax. [18]

To sum up, for its success, the Tobin tax would need international policy coordination: tax policy (tax base and rates), tax administration, and the sharing of the proceeds of the tax. Thus the tax would have to be internationally agreed upon and administered by each government. Rules and regulations would have to be established by an international

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[18] In contrast, recall that it was argued in the case of a global carbon tax that universal participation right from the beginning may not be essential to begin implementation. Of course, one could argue that, if universal participation was not imposed right from the beginning for the global carbon tax, investment would move to states with less stringent requirements. However, first, that would not happen as quickly as foreign exchange markets could move and, second, the slower adherence of the Montreal Protocol in developing countries does not, by itself, seem to have generated any massive transfer of foreign direct investment to their shores.

organisation or by an autonomous intergovernmental commission. Tobin proposed that the proceeds of the tax could be paid to the World Bank or International Monetary Fund which would, in turn, be responsible for coordinating the administration of the tax at the international level. The commensurate transfer of sovereignty would have to be based on a treaty which would have to be ratified by the parliaments of all participant countries. These are issues that we turn to next.

VI. Issues in International Law and Tax Administration

Whether it is a Tobin tax or a carbon tax or a congestion tax, the ground necessities in implementing a global tax include an international treaty or treaties and an international regulatory and administrative framework. Having dealt with Tobin tax related issues above, in this section we focus mainly on issues related to environment taxes.

1. International law and treaties

International treaty negotiations have reflected two conflicting norms of customary law: a state's sovereign right to exploit its own resources and its responsibility to ensure that damage is not caused to other states. The principle of international liability was developed in Article 22 of the 1972 Stockholm Declaration, sometimes manifesting itself in judgments against one country to compensate another for environmental damages. But the Convention on Long Range Transboundary Air Pollution of 1979 did not mandate abatement methods or any specific transboundary reductions in emissions. Since the UN Conference on the Human Environment, 1982, however, states are also assuming greater obligations to inform and consult neighbours before undertaking projects with possible wide ranging environmental ramifications.

Focussing on the atmosphere, the state of international treaty law on the atmosphere--as opposed to oceans--is still rudimentary (Soroos, 1991). For example, despite scientific evidence of radioactive fallout from extensive atmospheric nuclear testing and a 1963 treaty against it, it has taken some countries much longer to move to underground testing. In matters of warfare, again environmental effects on the atmosphere have not so far been

meaningfully recognised within the framework of international treaties.

It is true perhaps that matters with more immediate repercussions such as acid rain face a greater probability of success in finalising international treaties than problems such as the greenhouse effect or ozone hole that are unlikely to cause immediate symptoms. Nevertheless, the 1987 Montreal Protocol did attempt to freeze the production of CFCs to 1986 levels while giving developing countries breathing time to conform to the norms over a longer period.

The few existing treaties could be said to comprise a limited first step to clean up the environment. Experience reveals that treaty negotiations are fraught with moral hazard in the guise of equity bargaining. Selected important developing countries with low pollution emission histories have arguably positioned themselves as having the right to exploit and pollute, to catch up on the development race, since they did not pollute earlier. Developed countries such as the United States itself have argued that it should be compensated for reductions in pollution through the introduction of catalytic converters for vehicles. Other states such as in Scandinavia, may feel that they may actually gain from global warming. [19]

It is clear that there is an inertia to finalise international treaties on the environment to alleviate future environmental problems (Choucri and North, 1993); perhaps this reflects a perception that there are more immediate global problems to be addressed. While a global carbon tax will also have to be achieved through negotiations, it may be seen as a more directly interventionist yet complementary instrument that would perhaps work better in a case where the consequences are not as immediate as acid rain but are of a longer run nature, such as the greenhouse effect or ozone hole. Nevertheless, it will require a fundamental transformation in the thinking on energy policies of major energy consuming states.

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[19] Indeed, relating to the environment in general, the United States has been called "a cautious champion", a phrase that has taken hold after the 1994 Rio Summit. And, relating to acid deposition in particular, "upwind" sates such as the United Kingdom and the United States have been called "least cooperative" (Soroos, 1991, p.213).

2. Administration and implementation

I have myself suggested above that the global carbon tax or congestion tax on international transport--airlines and shipping lines--could be administered by country authorities and the revenues submitted to an international regulatory body which would also bear the responsibility of dispensing the revenue. Tobin wanted the World Bank or the IMF to take on the regulatory function for the Tobin tax on international currency transactions. This could work in the beginning if, initially, the tax were to be an experiment.

I believe, however, that if a global tax such as the Tobin tax or carbon tax is to be successfully implemented on a continuing basis, a global tax administration would be eventually needed. Tanzi (1988) mooted the idea of a global tax administration sometime ago. Thus it is not altogether unknown. But the required commitment from nationstates would be enormous since it would surely imply an intrinsic change in the ways in which governments of every political pursuation function i.e. a sacrifice of individual country sovereignty for the sake of the global good.

Focussing on the global carbon tax, an international tax administration would be essential not least because of the possibilities of evasion. Many of the expected problem areas would parallel evasion problems associated with fuel excise taxes (Reno, 1990). Only, in this case, there would be no reason to thrust upon individual countries the responsibility to carry out the task for a global objective.

If the tax were not deftly designed, evasion could take various forms: (1) failure to file information, reports or returns; (2) "daisy chain" schemes involving the use of dummy companies that could claim to have paid the tax through a chain of complex paper transactions; (3) filing false exemptions by claiming to use nontaxed or lower taxed fuels; or (4) failure to pay taxes that have been already assessed or agreed upon by, say, setting up dummy corporations showing little assets.

The objectives of the global tax administration would, therefore, have to include: (1) improving regulations for screening, licensing and bonding of taxpaying entities; (2) introducing innovative measures such as exclusive fuel coloration; (3) enforcing

procedures such as fuel purchase invoice requirements; (4) developing a mechanism for and carrying out selective audits; (5) establishing and practising modes of interagency cooperation; and (6) enforcing criminal penalties.

As country finances get inextricably interrelated, with increasing transboundary tax incidence effects often necessitating intercountry cooperation on tax and tax evasion matters, perhaps the need for a global tax administration--rather than a continuance of exclusive dependence on bilateral tax treaties--also increases. While this has obvious pecuniary and opportunity costs--higher expenditure of global monies and another international bureaucracy--its benefits may compensate the costs. Existing multilateral institutions whose mandates comprise mainly international monetary stabilisation perhaps should not be burdened with additional tasks even as the complexities in world financial markets increase in phenomenal ways. A new, autonomous and streamlined global tax administration, therefore, deserves serious consideration.

VII. Concluding Remarks

This paper explored the possibility of introducing a global tax or selected global taxes, the revenue from which could be used for addressing global objectives such as poverty alleviation, environmental improvement, or space exploration. It considered a global tax on carbon emissions, a tax on congestion caused by international transport, and a tax on international currency conversions (the Tobin tax). The first two have a double dividend--they not only generate revenue but also correct distortions by internalising disexternalities.

The Tobin tax, while possessing some revenue potential, would tend to distort market transactions in foreign currency and could affect international financial flows. Nevertheless, if a global tax is considered to have become necessary to meet global objectives, one on currency conversions may have to be introduced if there are no other possibilities. However, one might question why the world would need to restrict itself only to the volume of currency conversions for a global tax base. If distortions are not a consideration, other alternatives, that would also raise some revenue, come to mind (Shome, 1995). The magic of the carbon tax,

on the other hand, is its double dividend.

A global tax on currency conversions may also have some detrimental effects for developing countries. First, there could possibly be ramifications against the use of newer currencies for international transactions. The number of currencies used could diminish and converge towards the use of the usual few. Second, not all short term capital flows may be considered destabilising at all times for all countries. For those developing countries which are liberalising and opening up to international trade and finance, short term flows could provide a stable stock of reserves, even while their movements may be quite brisk. A tax on international transactions may thwart some of these emerging features of global financial markets from a developing country perspective.

All countries should have to agree to the introduction of the Tobin tax, if it were to function efficiently. The global carbon tax could conceivably be introduced without all countries having to bear the same increase in cost right from the start. Nevertheless, the successful implementation of either tax would eventually require the services of a well trained global tax administration corps. Their need should be felt, in any event, as world financial markets get increasingly integrated with transboundary tax effects. The idea of an autonomous international tax institution has, perhaps, arrived.

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Annex

UNDP
Office of Development Studies

DRAFT AGENDA

Meeting on "New and Innovative Sources of Financing Development" New York, 10 October 1995[1]

9.00 a.m.

- Opening of the meeting by Mahbub ul Haq and Inge Kaul

Contemporary International Financial Markets and the Case for a Levy on International Transactions

9.15 a.m.

- *The Economic Desirability of a Levy on International Currency Transactions*
  Jeffrey Frankel
- *The Feasibility of a Levy on International Currency Transactions*
  Peter Kenen
- *The Feasibility of a Levy on International Currency Transactions*
  Peter Garber
- *Proceeds from a Levy on International Currency Transactions*
  David Felix
- *Uses of Proceeds from a Levy on International Currency Transactions*
  Inge Kaul

10.30 a.m.

- COFFEE BREAK

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[1] *The meeting will be held at 777 United Nations Plaza in the Dag Hammarskjold Lounge (Church Center, corner of 44th Street and 1st Avenue, 12th Floor); the Security Officers in the lobby will be advised of your participation in the meeting. If you have any problems or queries, please call Flora Aller tel. (906-6064).*

Contd...2

10.45 a.m. - DISCUSSION

The discussion will be opened by a brief presentation by the lead discussants

- Stephany Griffith-Jones on the economic desirability of a levy
- Arminio Fraga on the feasibility of a levy
- John Williamson on the proceeds from a levy
- Keith Bezanson on the uses of the proceeds from a levy

12.30 p.m. - LUNCH BREAK

Implementation Arrangements and Policy Measures Related to a Levy on International Currency Transactions

13.30 p.m.

- *Legal and Institutional Arrangements for a Levy on International Currency Transactions*
  Stephany Griffith-Jones

- *Latin American Experiences with National Policy Measures for Managing Foreign Capital Flows*
  Ricardo Ffrench-Davis and Manuel Agosin

- *Korean Experiences with Managing Foreign Capital Flows*
  Ki Young Chung presenting a paper by Yung-Chul Park

- *Other Global Taxes*
  Partho Shome

- *Synthesis Report*
  Barry Eichengreen and Charles Wyplosz

15.00 p.m. - COFFEE BREAK

15.15 p.m. - DISCUSSION

The discussion will be opened by a brief presentation by the lead discussants

- Andrew Cornford on the institutional arrangements for a levy
- Albert Fishlow on the Latin American experience

Contd...3

	-	Carmen Reinhart on the Korean Experience
	-	Paul Armington and Helmut Reisen on global taxes
	-	James Tobin on the synthesis report
16.45 p.m.	-	GENERAL DISCUSSION
17.50 p.m.	-	Conclusion of the Meeting
18.30 p.m.	-	Reception[2]

Informal consultations among authors will continue from 9:00 a.m. until 12:00 p.m. on Wednesday 11 October 1995.[3]

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[2] *The reception will be held at the Hank Shannon Conference Room (DCI Building, corner of 1st Avenue and 44th Street, 21st Floor); the UN Security Officers in the lobby will be advised of your attendance at the reception.*

[3] *The consultations will be held at the Uganda House Conference Room (Uganda House, corner of 1st Avenue and 45th Street, 5th Floor).*

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I. Expert Group

Manuel Agosin	(University of Chile)
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John Langmore	(Australian Parliament)
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Carmen Reinhart	(International Monetary Fund)
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James Tobin	(Yale University)
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Barry Herman	(DESIPA)
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Rafael Bonoan	(The Ford Foundation)
Joan P. Trapnell	(Money Matters Steering Committee)
Hans d'Orville	(United Nations Development Programme)
Jaime Serra	(Princeton University)
Andrew Cornford	(UNCTAD)
Ralph Bryant	(The Brookings Institute)
Bo Jerlstrom	(Ministry of Foreign Affairs, Sweden)

Contd...5

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