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   BORDER TAX ADJUSTMENTS AND THE ALLOCATION OF
   TAX REVENUES: THE CASE OF THE STATE
   VALUE-ADDED TAX IN BRAZIL.

   RICE UNIVERSITY, PH.D., 1978

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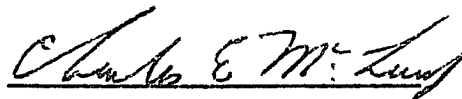
by

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A THESIS SUBMITTED
IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

THESIS DIRECTOR'S SIGNATURE:

HOUSTON, TEXAS

JUNE 1978

Abstract

Border Tax Adjustments and the Allocation of Tax Revenues:
The Case of the State Value-Added Tax in Brazil

Carlos A. Longo

So far as a general value-added tax is concerned trade theory
tells us that there would be no long-run difference between the origin
and the destination principles. When the international trade is
balanced and factors are immobile between countries, adjustments in
foreign exchange or price levels could be expected to wash out changes
in the principle of border tax adjustments. In this study we show
that, even when we allow for the assumptions embodied in the standard
literature of border tax adjustments and furthermore restrict our-
selves to the case of uniform as well as general taxes across pro-
ducts and countries, the choice between origin and destination prin-
ciples need not be irrelevant. In fact, when a triangular trade flow
of products takes place between two countries and the rest of the
world, and these two countries decide to form an economic union (or
a federation) and the restricted origin principle is adopted in this
union, a reallocation of tax revenues is generated between member
countries (or states) which cannot in general, be compensated by a
change in exchange rates or absolute price levels. We have seen
that the reallocation of tax revenues along these lines took place in
1969 and 1974 from the Brazilian Northeast to the rest of the country,
which amounts to approximately twenty percent of the value-added tax
collected in the Northeast in those years.

When we dropped the assumption that the regional or state trade
is balanced, the choice of border tax adjustments became dependent
on both the benefits of public expenditures, between producers and
consumers, and the tax induced change in the absolute price level.
By assuming that consumers get between sixty and seventy percent of
the state expenditure benefits and that product prices fully reflect
the introduction of the tax, we estimated the amount of tax revenue
reallocation due to the "net" trade imbalance in the Northeast. It
turns out that, on both accounts triangular trade flow and "net"
trade imbalance, the Northeast transferred to the rest of the country
approximately thirty and forty percent of their actual tax revenues
collected in 1969 and 1974 respectively.

To my parents

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Acknowledgements

Support, assistance, and criticism were generously provided by

many institutions and persons during the course of my graduate study

at Rice. Let me first thank the Agency for International Development

and the Ford Foundation through the Instituto de Pesquisas Economicas

at the Universidade de Sao Paulo, for their grants which helped finance

my graduate program. The Institute of International Education and the

Consortium for International Development effectively administered those

grants.

As a graduate student I incurred many intellectual debts which

makes it impractical to thank them all individually, but a few deserve

special recognition. My greatest debt is to Professors Donald L. Huddle,

Marian Krzyzaniak, and Ronald Soligo, who have been exceedingly helpful

in countless occasions and assisted me throughout the doctoral program.

I also wish to thank Mrs. Florence I. Fulton, a departmental secretary,

for her cheerful cooperation in general and friendly care along the

various stages of my studies.

Many persons have collaborated to this research. Foremost among

them is my thesis director Professor Charles E. McLure, Jr., whose

dedication to intense work and high standards has been a permanent

source of inspiration for me. His constructive criticism, suggestions,

and patient reading of all my many drafts were essential to the comple-

tion of this dissertation. Special thanks are also due to Professors

Thomas S. McCaleb and Peter Mieszkowski, who commented on all or parts

of various drafts. Along the way Professors Wayne R. Thirsk, John G.

Pomery, Osmundo E. Reboucas, Ricardo Varsano, Claudia C.C. Eris, and

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Chapter I

Introduction

This study investigates one aspect of the interstate incidence
of the state value-added tax in Brazil. In particular, we look at
the implications of border tax adjustments on state domestic and
foreign trade upon the allocation of state tax revenues. When a gen-
eral product tax is imposed, a method for treatment of out-of-state
transactions on goods must be specified. The fiscal treatment of
out-of-state transactions on goods which complements internal product
taxation is called border tax adjustments, BTA. The BTA issue arises
usually in connetion with a value-added tax, VAT, since this tax, as
opposed to other forms of product taxation, can be put more or less
easily on either an origin or a destination basis.[1] Hence, a choice
must be made on how to treat interjurisdictional trade, that is
whether the tax should be collected by the state in which the earning
of income or production occurs, or by the state in which income is
spent or consumption takes place.

The 1965 tax reform in Brazil sought to improve the structure
of the state taxes with the substitution in all states of a VAT
for a turnover commodity tax. As a tax on value added it eliminated
the well known disadvantages of the turnover method of taxation:
incentives for vertical integration of production processes and
variable tax rate on final goods. The new tax was meant to be simply
an improvement over the turnover method of collection remaining

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[1]A retail sales tax is an almost perfect example of a destina-
tion principle tax, and the turnover commodity tax can be applied
easily only on an origin basis.

basically a sales tax to finance state expenditures. In 1971, the
state VAT was responsible for about 67.5 percent of the fiscal reven-
ues at the state level which represented a little less than 30.0 per-
cent of the fiscal revenues at all levels of government. The federal
government prescribes most of the basic features of this tax with
minimal variance among states. The VAT is fairly general and uniform
across products and states, and the rate of tax is close to 15.0
percent everywhere. An approximation of the origin principle is
adopted for domestic trade and the destination principle is essential-
ly enforced on foreign trade.

Given the existence of a chronic deficit or surplus in the inter-
states balance on current account between certain states when the
VAT was introduced in 1967, a debate arose among state representatives
over the proper allocation of the VAT base on domestic trade. Deficit
states argued that, in effect, they were net transferors of tax
revenues to the surplus states because the origin principle was
adopted on domestic trade. On the other hand, surplus states claimed
that the origin principle was not that relevant in terms of potential
revenues at the state level since the federal tax and spending policies
would redistribute revenues from the surplus to the deficit states.
Incidentally, essentially surplus states are the developed Southern
states while deficit states are the less developed Northern and
Northeastern states.

A compromise solution on this problem of the allocation of the
domestic tax base is currently being pursued by state representatives
and the federal government where the interstate tax rate would be set
at 50.0 percent of the national tax rate. Or, equivalently, a 50.0
percent partial BTA would be enforced on domestic trade, since taxes
paid on traded goods in the state of origin are recognized as tax
credits in the state of destination. The proponents of this solu-
tion argue, along these lines, that the VAT revenue collected on the
Brazilian trade would be equally and fairly divided among the partici-
pant states. We take issue on this proposition by suggesting that
the choice of domestic BTA need not be decided on such an ad hoc
basis, and set up a framework of analysis which allows us to decide
whether the origin or the destination principle should be enforced
on domestic trade. Furthermore, we point out that the state for-
eign trade as well as domestic trade must be brought into this
discussion, so that each state's total trade pattern is taken into
acount when the choice of BTA is at stake.

A standard result that emerged from the literature on inter-
national tax harmonization is that changes in the principle of BTA
do not have, in the long run, allocative effects on the trade flow
of the countries involved. When exchange rates or absolute price
levels are flexible and taxes are truly general, international
trade should not be disturbed if a country moves from the destina-
tion to the origin principle, or vice versa, provided that factors
of production are immobile between countries and that the inter-

national transactions on current account is balanced.

We qualify this result by showing that under special trade conditions, i.e., triangular trade flow, BTA may not be neutral with respect to international trade flows. In particular, we argue that when a triangular trade flow of goods takes place between states of a federation and foreign countries, unless the same principle of BTA is adopted on both domestic and foreign trade, part of the state tax base is transferred from one state to the other leading to a reallocation of interstate tax revenues which cannot, in general, be neutralized by a correspondent change in the exchange rate or the absolute price level. Thus, in this case, BTA disrupts the horizontal fiscal relationships between states involved as well as their international and domestic trade flows.

During many years (1948-74) the Brazilian northeastern states maintained a continuous deficit in their domestic trade with the rest of the country, but the overall northeastern balance of trade, domestic plus foreign was roughly in balance during that period. An underlying triangular trade flow of commodities took place between Northeast, the rest of the country, and the rest of the world, the Northeast being a net foreign exporter of raw materials and agricultural goods to the rest of the world, and a net domestic importer of manufactured products from the rest of the country. Under these trade

conditions adoption by the Brazilian states of the origin principle
for domestic trade and the destination principle for foreign trade
led to a 'reallocation of interstate tax revenues in the above sense,
from the residents of the Northeastern states to the residents of the
rest of the country.

Recently the Northeast' deficit on domestic trade is not en-
tirely financed by their foreign trade surplus as implied in the
case of a balanced triangular trade. As a result of allocative and
distributive policies of the federal government, and the interstate
flow of private capital, a net transfer of income takes place from
the rest of the country to the Northeast, beginning in the late
sixties, which since then increasingly financed part of the North-
east's domestic trade deficit. In contrast with international bal-
ance of current account which must somehow be balanced, at least in
the long run, the interstate net transfer of funds might go on for
an indefinite period of time without causing major problems of inter-
state liquidity.[1] Hence, in the interest of examining general rules
of interstate taxation we dropped the assumption that the state com-
modity transactions, domestic plus foreign, are balanced.

Relaxing this assumption implies that the origin-destination
principle equivalence as indicated by the literature of international
tax harmonization breaks down. Whether, in this case, as a matter of
tax policy a state VAT should be levied on the origin or destination

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[1]The built-in compensation of trade imbalances such as federal
income taxation, private capital flows, and migration which operates
more or less automatically at the subnational level are usually
absent in the international context.

principle depends on the nature of the benefits of public services and the tax induced change in the absolute price level. As a matter of efficiency we abandon the ability to pay rationale in the context of state and local taxation and concentrate on taxes which can be regarded as a measure of individuals enjoyment of general benefits from public services, either through consumption or production. When public expenditures are in the first instance a benefit to residents of a state in their capacity as consumer of public services, a product tax is designed to finance only the state's consumption of public services. On the other hand, when public expenditures are in the first instance a benefit to business enterprises located and producing in the state, a product tax is designed to finance only the state's provision of intermediate public services. In this setting, whether the origin or the destination principle should be applied on interjurisdictional trade will depend on the direction of the tax induced change in the absolute price level. The question here is whether or not goods that cross the borders carry, embodied in them, intermediate public services provided by the state of origin, and if so, whether or not the price of these goods reflect the value of the public service provided.

Chapter II provides the institutional background for the problem of the allocation of state tax revenues in Brazil. A brief review of the major features of the Brazilian tax reform that

introduced the state VAT is given here. Chapter III examines the
tax base controversy which surrounds the proper treatment of BTA
among the Brazilian states. The theoretical framework for the
analysis of the allocation of state tax revenues is presented in
Chapter IV. In this chapter we adopt and extend some standard
implications of the literature of international tax harmonization
to derive useful results with respect to the optimal choice of BTA
principle. Chapters V and VI apply the result of this analysis
to the Brazilian case.

Chapter II

The State Value-Added Tax

2.1 Introduction

Unlike the former Spanish colonies in South America, which

founded republics after independence, Brazil established a constitu-

tional monarchy in 1822 and maintained it for sixty-seven years.

Brazil has had a federal system of government since the proclamation

of the Republic in 1890. The constituion of 1891, which was modeled

after that of the United States, elevated the former imperial prov-

inces to the rank of states, giving them a large measure of political

and fiscal autonomy. However, acute awareness of the political

implications of public finance prompted the first republican Congress

to circumscribe the taxing powers in the constitution of 1891 in much

greater detail than is usual for such documents in Europe and America.

The system then adopted rested on the allocation to the federal gov-

ernment, to the states, and to the municipalities (local governments)

of specific taxes designated by name in the constitution itself. In

the short lived constitution of 1934, other specific allocations were

made to the local governments. The constitution of 1937 reflected

the political philosophy of the moment by evidencing a return to

centralization, but this trend was reversed by the constitution of

1946.[1]

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[1]See R. Gomes de Souza, "Tax Reform in Brazil," Bulletin for
International Fiscal Documentation, Vol. 20, 1966, pp. 353-68. See
also A. B. de Araujo and others, Transferencias de Impostos aos
Estados e Municipios, IPEA, Colecao Relatorios de Pesquisa No. 16,
Rio de Janeiro, 1973.

As part of its program of economic, financial, and administrative reform, the federal government in January of 1965 appointed a special committee of official and private experts to revise the tax system, with a view to submit to Congress a proposal for a constitutional amendment. The bill produced by this committee was debated and voted during November and approved, with few changes of detail, on the first of December 1965 as amendment No. 18 to the constitution of 1946. The basic tax principles established in this amendment were maintained by the new constitutions of 1967 and 1969. The amendment defined three fields of taxable economic activity: (a) foreign trade, (b) property and income, (c) production and distribution. Within each field, it then selected the types of activity best suited to be taxed, and allocated these to the level of government best indicated in each case by economic, political, legal or administrative considerations. The constitutions of 1967 and 1969, though not repeating the definitions of the three fields of taxable economic activity, nevertheless preserved the same system, as it retained, with certain changes of detail, the same allocation of taxes to the three levels of government.[1]

2.2 Tax Reform at the National Level

The main purpose of the tax reform at the federal level was to reorganize the tax system along national lines as opposed to the

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[1] See R. Gomes de Souza, "Taxation in Brazil," Bulletin for International Fiscal Documentation, Vol. 22, No. 10, October 1968, pp. 415-55.

former concept of three simultaneous and partially overlapping in-

dependent systems. Taxes, as we mentioned earlier, are divided into

three economic activities. First, taxes on foreign trade are fully

allocated to the federal government. Second, taxes on property and

income, include the tax on rural land collected by the federal

government and allocated to the municipalities; the real estate tax

on urban land, whether improved or not, which is allocated to the

municipalities; the real-property transfer tax which is allocated

to the states; and the income tax on domestic and foreign income

applied according to the source principle, which is collected by the

federal government and allocated according to the formula: 80 percent

of the tax proceeds to the federal government, and 20 percent divided

equally between state and local governments. Third, taxes on pro-

duction and distribution, which include the value-added tax collected

by the federal government and allocated according to the same formula

above; the value-added tax which is collected by the state govern-

ments and allocated according to the formula: 80 percent of the tax

proceeds to the state governments, and 20 percent to the local govern-

ments; the financial transactions tax which is allocated to the fed-

eral government; the service tax on international, interstate, and

intermunicipal transportation and communication services which is

allocated to the federal government; the service tax on commer-

cial, industrial, or professional services which is allocated

to the municipalities; and the excise tax on liquid or gaseous fuels,
electric power and mining products which is collected by the federal
government and allocated to the three levels of government according
to various formulas.[1]

The percentage breakdown of the Brazilian fiscal revenues by
level of government is shown in Table I for the period 1968-75. As
observed, the federal and state share of fiscal revenues make up for
roughly 90.0 percent of public revenues at all levels of government,
at least until 1971. This is not too different from the vertical
distribution of tax revenues in the U.S. In 1970 the U.S. federal
and state government together collected 85.9 percent of total tax
receipts. However, in the U.S. the state share on total tax receipts
was 20.1 percent in that year, which is in sharp contrast with the
35.5 percent state share on total public revenues in Brazil.

Intergovernmental mechanisms of revenue transfers were devel-
oped to compensate subnational governments for reduced revenues
attributed partially to the centralization of tax decisions. Prior
to 1965 states and municipalities were free to set their own rate
of tax, and the transfer mechanisms relied heavily on the method of
"grant in aid" from the federal to the state and municipal govern-
ments, and from the states to the municipalities. This transfer
mechanism was generally criticized on three grounds: (a) political,
as it made the lower levels of government financially dependent on

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[1]See Gomes de Souza, "Taxation in Brazil," ibid. See also J.
Linhares, A Reforma Tributaria e sua Implicacao nas Financas dos
Estados e Municipios, Fundacao Getulio Vargas, Rio de Janeiro, 1973.

Table I

FISCAL REVENUES BY LEVEL OF GOVERNMENT

US Millions[*]

Year	Federal	State	Municipalities
1968	3,472.7	3,164.4	950.9
1969	4,834.7	3,681.9	975.8
1970	6,498.1	4,161.9	1,060.9
1971	5,116.6	4,556.5	1,361.6
1972	6,643.1	5,337.6	
1973	8,607.0	6,985.7	
1974	11,143.4	8,942.8	
1975	12,378.9	11,168.7	

In Percentage

Year	Federal	State	Municipalities
1968	45.8	41.7	12.5
1969	50.9	38.8	10.3
1970	55.4	35.5	9.1
1971	47.1	41.9	11.0

Source: Anvario Estatistico do Brasil-1976, Fundacao IBGE, Rio de
Janeiro.

[*]Dollar exchange rate as published in Conjuntura Economica, F.G.V.,
Vol. 31., No. 4, April 1977.

the higher ones, although all three levels have politically the same
status; (b) legal, as it tended to obscure and confuse the constitu-
tional allocation of taxing powers; (c) economic, as the methods
adopted to compute grants were sometimes inspired by reasons of
expediency rather than based on analytical premises, and sometimes
had adverse economic effects, such as leading the beneficiary of
grants to lose interest in the administration of their own taxes and
other sources of revenue.[1]

The tax reform of 1965 replaced all former grants-in-aid with a
system whereby only a stipulated percentage of the proceeds from the
collection of certain taxes are defined as revenue of the government
exercising the power of taxation. The remainder is defined as revenue
of the government which formerly was the beneficiary of a grant-in-aid.
From the actual proceeds of the collection of the federal taxes on
production and on income, as seen before, 80 percent is federal
revenue, 10 percent is revenue of the states, and 10 percent of the
municipalities. These latter percentages are deposited, as and when
the taxes are collected, at the Banco do Brasil in a State Partici-
pation Fund and a Municipal Participation Fund respectively. The
share of each state in the State Participation Fund is then prorated
according to the following rule: (a) 5.0 percent proportionately to
the area of each state; (b) 95.0 percent according to the combination
of two factors, namely, (i) a multiplicative factor of 2 to 10

[1]See Gomes de Souza, "Taxation in Brazil," ibid. See also D. J.
Mahar, "The Failures of Revenue Sharing in Brazil and Some Recent
Developments," Bulletin for International Fiscal Documentation, Vol.
25, No. 3, March 1971, pp. 71-79.

depending on the direct ratio of the state's population to the national population, and (ii) a multiplicative factor of 0.4 to 2.5 depending on the inverse of the state's per capita income to the average per capita income of Brazil.[1]

Other taxes whose revenues are redistributed to the states are the federal excise tax on fuels, electric power, and minerals. The excise tax replaced all taxes, whether federal, state, or municipal, capable of falling on the taxable transaction. The redistribution rates are computed on the basis of former collection statistics which indicated that those rates should be 40.0 percent to to the federal government and 60.0 percent to the states and municipalities together in the case of fuels, and electric power, and 10.0 percent and 90.0 percent respectively in the case of domestic minerals. The further redistribution of their common percentages among states and municipalities is based in each case on a combination of four factors, namely, the area and population of each jurisdiction where the collection took place, and the production and consumption of the taxable commodities in their respective territories.

The municipalities were stripped in 1967 of almost all of their traditional sources of tax revenue, sources which had in any case been limited and extremely inelastic. They were left with a relatively minor tax on urban real property and a new tax on services, with federal rate ceilings. In addition, 80 percent of the proceeds of

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[1]See Gomes de Souza, "Taxation in Brazil," ibid., and Araujo and others, Transferencias de Impostos aos Estados e Municipios, ibid., chapter 3.

the rural land tax, levied by the federal government, is returned to the

municipal governments though the revenue is quite small. The service

tax, although potentially productive in urban areas, is not expected

to provide revenues of any magnitude in the poorer rural localities.

For most municipal governments, there is an almost complete lack of

locally raised funds and virtually total dependence on revenue trans-

fers from the states and the federal government. Beginning in 1967,

the state governments were required to return 20.0 percent of their

VAT receipts to the municipal governments. This transfer, unlike

that from the federal government, does not aim at fiscal equalization

since no allocation formula is used in the distribution of tax receipts.

It consists of returning the revenue to its point of collection. Each

year the state government adds up the total amount of VAT collected

in each municipality and then releases 20.0 percent of that amount

for them.[1,2]

2.3 Tax Reform at the State Level

At the state level the major impact of the tax reform was the

substitution of the VAT for the turnover commodity tax in all states.

The reform was basically designed to secure a greater degree of tax

coordination among states and to overcome the defects of the turnover

taxation. It was necessary to decrease tax competition among states

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[1]See J. Linhares, A Reforma Tributaria e sua Implicacao nas
Financas dos Estados e Municipios, ibid., chapter 8.

[2]The revenue allocated to the municipalities along these lines
does not depend on the tax treatment of interstate or international
trade hence a strict origin basis is enforced.

and municipalities. Also state taxes on imports and exports were affecting the coordination of national policies in the foreign sector. Thus, the Brazilian states had to abolish the export tax and the heterogeneous turnover tax that they levied for 30 years and replace them with a unified sales tax of the value added type.

The constitution now limits the states to the tax on value added and a minor tax on the transfer of real property. Both taxes are regulated by the federal government which sets ceilings on their rates. The composition of state fiscal revenues for the period 1969-75 is shown in Table II. The importance of the VAT as a source of revenue at the state level is difficult to overstate. Almost 70.0 percent of total state fiscal revenues comes from the VAT in the period 1969-74.

For all practical purposes and for a long time the states had depended almost entirely on the turnover commodity tax. It was the only levy of sufficient scope and flexibility available to the states, and the only one that could resist the erosion of inflation. The turnover tax was an important source of revenue for the states since it replaced a tax on domestic trade back in 1934. The export tax which had been assigned to the states in Brazil's first republican constitution was applied indiscriminately to interstate sales and foreign exports. This tax was responsible for about half of the state revenues in the early 1930s and was almost the sole source of revenue in some of the northern and northeastern states. Also taxes on interstate imports were in use almost everywhere. As a result the

Table II

COMPOSITION OF STATE FISCAL REVENUES
US Millions*

	1969	1970	1971	1972	1973	1974	1975
Value added tax	2,605.1	2,908.1	3,073.7	3,614.2	4,809.5	6,034.2	6,790.6
Other tax receipts	205.2	196.7	274.6	304.0	311.1	379.1	331.2
Federal transfers[1]	421.7	450.5	547.3	704.1	990.4	1,285.6	1,627.4
Other revenues	449.9	606.6	660.9	715.3	874.7	1,243.9	2,420.1
Total	3,681.9	4,161.9	4,556.5	5,337.6	6,985.7	8,943.8	11,168.7

In Percentage

	1969	1970	1971	1972	1973	1974	1975
Value added tax	70.8	69.9	67.5	67.7	68.8	67.5	60.8
Other tax receipts	5.6	4.7	6.0	5.7	4.5	4.2	3.0
Federal transfers	11.5	10.8	12.0	13.2	14.2	14.4	14.5
Other revenues	12.1	14.6	14.5	13.4	12.5	13.9	21.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Anvario Estatistico do Brasil, several years, Fundacao IBGE, Rio de Janeiro.

*Dollar exchange rate as published in Conguntura Economica, F.G.V., Vol. 31, No. 4, April 1977.

[1]Federal transfers includes intergovernmental revenue transfers and direct expenditures (Transferencias correntes e de capital).

constitution of 1934 explicitly prohibited taxes on interstate com-

merce and placed a 10.0 percent ceiling on export taxes.[1] The states,

in compensation, were allowed to levy a turnover tax on commodity

sales. These quickly became the cornerstone of state finance through-

out the country. The state turnover tax was a general tax on gross

receipts from the sales of goods by farmers, manufacturers, whole-

salers and retailers. It was normally levied at a uniform rate on

all transactions. The tax rates rose swiftly, as the states made

increasing demands on the levy to meet their needs of revenue. By

1950 the rates were mostly about 2.5 percent, and in 1966 at the eve

of its abolition, the turnover tax was levied at an average rate of

about 5.8 percent. There was substantial interstate variation in the

tax rate. In 1966 the range was from 1.25 percent to 10.0 percent,

although most of the states had rates between 4.0 and 7.0 percent.[2]

The states could, and did, adjust the tax rate to their needs, with

the less developed states generally making up for their narrow tax

base by levying the tax at rates somewhat above the nation-wide

average. As a turnover tax it had the disadvantage of encouraging

vertical integration of production processes, as well as imposing an

erratic total tax on final products, depending on the number of times

the item changed hands before reaching the consumer and on how early

[1] In the U.S. the courts have long held that a state cannot apply sales tax on interstate trade. But the courts permit the states to employ a supplemental use tax, applied to the initial use in the state of a good purchased in another state. Most of the U.S. states now employ these levies. See J. F. Due, State and Local Sales Taxation, Structure and Administration, Public Administration Service, Chicago, Illinois, 1971.

[2] See M. Guerard, "The Brazilian State Value-Added Tax," IMF

in the production cycle it received the greatest part of its final

value.

The new value-added tax was named "tax on the circulation of

goods" (commonly referred to by its Brazilian initials, ICM - Imposto

de Circulacao de Mercadorias) and the innovation was meant to be simp-

ly an improvement over the turnover method of collection, not a new

type of levy in any fundamental sense. The tax remained basically a

sales tax, and it was still intended that it be fully shifted forward

to the purchaser of each successive transaction. An important merit

of the value-added tax is its neutrality with respect to allocation of

resources in the economy so long as the tax is not riddled with exemp-

tions. Unlike the turnover tax, the value-added tax is assessed at

each stage on only the increment in value acquired by the product since

the last taxable transaction. In its consumption variant, the tax also

makes no difference between present and future consumption while the

income tax discriminates against future consumption.

The federal government presecribes most of the basic features of

the state VAT, including the scope of the tax, method of collection,

exemptions, rate ceilings, and with minimal variance across states.

Taxable activities include the production and marketing of virtually

all tangible goods. The tax is levied at each sale (or transfer) along

the production/distribution cycle, and the tax due on sales is computed

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(continued)
Staff Papers, Vol. 20, No. 1, March 1973, pp. 118-69.

[1]Strictly interpreted even the consumption type VAT is not
neutral since it discriminates equally in favor of leisure against
present and future consumption.

on the basis of the actual sale price. The tax applies also to imports. Indirect taxes in general are included in the tax base. An exception is made for the federal VAT on manufacturers which is not included in the taxable value of factory sales. But the tax base for imports includes all customs charges and fees. The tax extends through all phases of distribution, including retail sales. Public enterprises engaged in the production and sale of goods are generally within its scope. The consumption variant of VAT is adopted in Brazil, since taxes paid on the purchase of industrial machinery and equipment are eligible for tax credits, and imported machinery is exempt from the VAT too. However this tax is not a strict consumption tax since tax credits are not allowed for office machines, furnishings, and transportation equipment other than equipment specialized for the internal handling of materials.[1]

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[1] The consumption variant exempts the full value of investment goods. In this form the VAT reaches only consumption expenditures, and, if it is carried through the retail level, its base is identical to that of a retail sales tax on consumer goods. For administrative reasons sales of investment or capital goods by retailers to business firms usually are taxed. Hence the equivalence between retail sales tax and VAT of the consumption type breaks down. See C. S. Shoup, "Theory and Background of the Value-Added Tax," Proceedings of the 48th Annual Conference on Taxation, NTA, Detroit, Michigan, October 1955, pp. 6-19. A complete description of the income as well as consumption type of VAT, and the subtraction, addition as well as credit method of computing liability under the VAT, is presented in C. S. Shoup, Public Finance, Aldine, Chicago, 1969, chapter 9. See also C. E. McLure, Jr., "The Tax on Value Added: Pros and Cons," in Value Added Tax: Two Views, edited by American Enterprise Institute, Washington, D.C., 1972, pp. 1-68.

The value-added tax is collected according to the credit method
in Brazil. Each taxpayer determines his liability by computing the
total tax that is due on his sales during a given period and subtracts
from this amount the tax paid on eligible purchases made during the
same period. For this purpose, the tax paid on purchases is required
to be quoted separately on all invoices except those of final sales
to consumers. Excess credits in one period are carried over to the
next period. There are generally no provisions for refunds, except for
the prior-stage tax paid on their inputs by exporters of manufactured
goods and by manufacturers of capital equipment.

The state VAT falls short of an ideal comprehensive model in
many respects. The service sector is excluded from its scope, along
with a number of special activities, such as mining, fuels, and
electric power. Exemptions are governed by interstate agreements and
are subject to tight federal controls. There are a few exemptions,
and preferential treatment in the form of explicit rate differenti-
ation is non-existent. Most of the exemptions that do exist under
the state VAT have actually been granted by federal decree. They
concern, essentially, books, newspapers, and printing paper. A
limited number of unprocessed foods, agricultural producer goods,
industrial machinery and equipment and foreign exports of manufactures
are also exempted.[1]

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[1] Complete exemption from paying a credit-method VAT on sales of
any stage of the productive process besides the first and the last
could pose problems. The problem is not that the final output would
be undertaxed, since the tax would be made up at later stages. It is,
rather, that being exempt from the tax the firms in the exempt sector
might not be allowed credit for taxes paid on their purchases. If the
chain of credits is broken, the product would be overtaxed rather than

The rate of the tax is 15.0 percent in the North and Northeast
and 14.0 percent elsewhere in the country. The rate on interstate
sales is 11.0 percent. As the tax itself is included in the tax base,
the effective ad-valorem rates are 12.3 percent on interstate sales,
and 17.6 percent and 16.2 percent on internal sales in the Northern
states and the rest of the country, respectively.[1] The tax paid to
the state of origin is set off against the tax liability in the state
of destination. The assessed value in transactions between affilitated
firms in different states is likewise regulated by the tax statutes.
In general, the state of origin must levy its tax on a base equal to
the f.o.b. factory or wholesale price at which the vendor customarily
sells to third parties. On commodities destined for resale at a
fixed retail price in another state, the tax base of the state of
origin must not exceed 75.0 percent of the fixed retail price.[2]

The problem of interstate tax allocation, although not peculiar
to the VAT, comes into sharper focus under the VAT than under the
previous turnover tax regime. To be consistent with trade neutrality
and efficient allocation of resources among different states, the
levying of VAT requires the specification of an appropriate principle

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(continued)
undertaxed. Note that the credit method of collection can be used
to discriminate among final goods but it cannot apply differential
treatment on stages of production if so deemed necessary. On the
other hand, the VAT enforced according to the subtraction method can
discriminate among stages of production but cannot allow final goods
to be taxed differentially. See McLure, "The Tax on Value Added:
Pros and Cons," ibid.

[1] See appendix for the evolution of the state VAT since 1967.

[2] See Guerard, "The Brazilian State Value-Added Tax," ibid.

of border tax adjustments. The taxing state may elect to apply the

VAT either on the basis of origin (the tax is levied on all state's

production, regardless of where the goods are to be consumed), or on

the basis of destination (the state levies the tax on all goods con-

sumed within its borders, regardless of where they are produced).

Implementing the destination principle requires application of BTA,

or equivalently, a compensatory tax on goods purchased out-of-state

and an tax rebate on out-of-state sales. With the origin principle,

on the other hand, out-of-state sales must be taxed and goods pur-

chased out-of-state are exempted, but this is achieved automatically

by taxing the state's production and does not require BTA or equiva-

lently special tax adjustments (or rates) on interstate transactions.[1]

Applying the origin or the destination principle may have

important implications for the interstate pattern of revenue allo-

cation. A levy based on origin automatically increases the tax

base of the states having a balance of trade surplus, reducing the

tax base of the states having a balance of trade deficit, which

could raise more revenues with a tax based on destination. Antici-

pating these difficulties the Tax Reform Commission, when it devised

the state VAT, prescribed the adoption of a national rate ceiling

on interstate transactions coupled with the ability for individual

states to set their internal rates at higher levels. As a result,

interstate transactions are taxed somewhat more lightly in the state

of origin than are internal sales. The state of destination then

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[1] With a turnover tax, the impact of interstate tax differentials
on trading patterns and on allocation of resources among states is
blunted by the cumulative nature of the levy itself.

collects the difference between the tax paid in the state of origin

at the interstate rate (11.0 percent), for which the destination

state is required to allow full credit, and the amount due at the

next stage according to its own internal tax rate (15.0 percent in

the North and Northeast and 14.0 percent in the rest of the country).

The 1965 tax reform exempted foreign exports of manufacturers

from the state VAT base, but the way state VAT affects international

trade so far have varied considerably from state to state. In

principle, foreign exports of primary products are taxed at full rate.

In practice, however, a number of states have granted tax concessions

to their most important exports of primary products. In the Southern

state of Sao Paulo, all agricultural exports are exempt except coffee.

In the remaining states, rate reductions on foreign exports affect

a whole range of primary products. On the other hand, there are

few rate reductions on the agricultural exports in the Northeastern

states, where the export base of primary products still constitutes

a large segment of the economy and one of its principal source of

tax revenue. The status of these exports will not be entirely clear

until the tax treatment of foreign transactions have been settled

uniformly in all states.

2.4 Alternative Forms of State Taxation

If it were decided that the state government should impose a

broad-based tax on production, a VAT applied according to the origin

principle would be the best form to reach the production base.

However, if it were decided that the state government should impose

a broad-based tax on consumption, it would still be open to debate

whether the tax should be a tax on value added applied according

to the destination principle, or a single-stage consumption tax,

presumably at the retail level.

The tax on value added is sometimes favored over the retail

sales tax because (a) the VAT applied according to the credit method

has self-enforcing features lacked by the retail sales tax, which

may be important if the tax rate is high, and (b) capital goods are

more easily excluded from the VAT than the retail sales tax. When

the VAT is carried through the retail level it offers all the economic

advantages of the tax that includes the entire retail price within

its scope, and at the same time, the direct payment of the tax is

spread out over a large number of firms instead of being concentrated

on a particular sector, such as the retailers. Thus, a large portion

of the tax - perhaps two thirds - will be collected prior to the

retail level and hence evasion will be minimized, yet the advantages

of the retail tax retained. If retailers do evade, tax will be lost

only on their margins. Furthermore, if evasion occurs at any par-

ticular pre-retail link, the entire amount will be recovered at

another stage under the credit method of tax collection, since there

will be less to deduct. Purchasers that are registered firms gain

nothing if their suppliers fail to collect tax, since they will pay

more to the government themselves. Under a consumption type VAT,

credit is allowed for taxes on all inputs, whether of capital goods

or intermediary goods. Thus only consumer goods are taxed under the

VAT. The enforcement of the consumption base under the retail sales tax is not so simple. Since some goods can be employed either as productive inputs or as consumer goods, a way must be found to exempt them from the tax when purchased for business use. One approach is to exempt from tax the sales of specific items used largely for business purposes, but this is clearly unsatisfactory since for many products this kind of distinction is untenable.[1]

Against the advantages of the VAT is the obvious limitations of greater complexity. The tax is collected from a larger number of firms than under any form of single-stage tax. The need for more extensive records to justify tax credits are likely to prove serious to the typical smaller firms. Experts concerned with this problem in Brazil point out that the VAT could be enforced up to the manu- facture level only, with the remaining stages of production being covered by a retail sales tax.[2]

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[1]See Mclure, "The Tax on Value Added: Pros and Cons," ibid. See also C. S. Shoup, "Experience with the Value-Added Tax in Denmark, and Prospects in Sweden," Finanzarchiv, Vol. 28, No. 2, March 1969, pp. 236-52; and J. F. Due, "Alternative Forms of Sales Taxation for a Developing Country," Journal of Development Studies, January 1972, pp. 263-75.

[2]See F. Rezende, "Modificacoes na Estrutura Tributaria: Uma Agenda para Debate," Pesquisa e Planejamento Economico, Vol. 6, No. 3, December 1976, pp. 701-26.

Chapter III

The Tax Base Controversy

3.1 Introduction

One question which must be resolved for a state VAT is whether

the tax should be levied on the origin or the destination principle.

So far as a national VAT is concerned, international trade theory tells

us that for general taxes financing broadly diffused benefits of public

services, there would be little long run difference between the origin

and destination principles. When factors are not mobile between

countries and the international trade is balanced, adjustments in the

exchange rate or the price levels between countries could be expected

to wash out the choice of one principle or the other.[1]

Adoption of the foregoing assumptions for the choice of BTA at

the domestic level may turn out to be out of place. If nothing else,

factors of production are not totally immobile between states, and

adjustments of the exchange rate are precluded by a common monetary

unit. Furthermore the interstate commodity trade is seldom balanced,

even in the long run. Whether, in this case, as a matter of tax

policy a state VAT should be levied on the origin or destination

principle depends on the nature of the benefits of public services

and the tax induced change in the absolute price level. As usual

there seems to be no uniquely correct solution, the question is

[1]See for instance, H. G. Johnson and M. Krauss, "Border Tax
Adjustments, Comparative Advantage, and the Balance of Payments,"
Canadian Journal of Economics, Vol. 3, No. 4, November 1970, pp. 595-
602.

essentially empirical, and a very difficult one.

3.2 Border Tax Adjustments on Domestic Trade

Border tax adjustments may have special importance for the
interstate pattern of revenue distribution when the balance of inter-
state commodity trade is in deficit or surplus. For example, if the
benefits of state public expenditures accrue to residents of the tax-
ing state and the tax is fully added to the state price level, adop-
tion of the origin principle means that states experiencing favor-
able trade balances with other states will gain revenues, while,
those with unfavorable balances will suffer revenue losses. The
dual rate system adopted in Brazil has the advantage of representing
a compromise between origin and destination principle in interstate
trade. Although each state is allowed to tax all value added that
originates within its borders, the internal/external rate differ-
ential constitutes, in effect, the equivalence of a partial system
of compensatory import taxes and export rebates on interstate trade,
without requiring actual BTA.

The simultaneous application of the origin principle and the
destination principle in the state VAT system generates some mis-
understandings in the interpretation of the tax in interstate
operations. A formal representation of this issue may greatly sim-
plify matters. Let t^f be the tax rate applied to interstate sales
and t^d be the tax rate applied to internal sales. If, for example,

the rest of the country sells to the Northeast a product for the
amount (gross of tax) of V^{ROC}, and if this product reaches the final
consumer in the Northeast for the amount of $V^{ROC}+V^{NE}$, then the VAT
collected by the Northeast's treasury will be,

$$T_{NE} = t^d(V^{NE}+V^{ROC}) - t^f V^{ROC}$$

or

$$T_{NE} = (t^d-t^f)V^{ROC} + t^d V^{NE}$$

When the interstate tax rate is zero or, equivalently, the destina-
tion principle applies, all taxes paid on traded goods are collected
in the Northeast. On the other hand when the internal and interstate
tax rates are equalized, or equivalently the origin principle applies,
then the Northeast collects no taxes on traded goods. In the former
case the Northeast's tax collection equals $t^d(V^{NE}+V^{ROC})$, and in the
latter case the Northeast's tax collection equals $t^d V^{NE}$.

The Tax Reform Commission had hoped that the dual rate system
would ensure an adequate share of total revenue to those states
that are net importers from the others (and are, in general, the
less developed states in the country). In retrospect the Commission
appears to have been somewhat over optimistic in its evaluation of
a balanced distribution of revenue under the proposed system. The
actual difference between out-of-state and internal tax rates turned
out to be too small to permit more than a marginal weighting of the
interstate distribution of revenue in favor of the state of destin-

ation. Because the rate differentials are small, the application of
this mixed principle to interstate transactions does not in fact
differ substantially from a system based strictly on origin, under
which each state would apply the same rate on both internal and out-
of-state sales.[1]

Administrative considerations suggest quite strongly that if
states levy a credit-method VAT according to the origin principle,
then, the tax should be applied at uniform rates across states,
because of the difficulties involved in computing tax liabilities.
In implementing the credit method of computing tax liabilities under
the origin principle, if rates are not made uniform across states,
a state's receipts need bear no close resemblance to the product
of the rate of tax and the value added in the state. Table III
shows an hypothetical example where a particular product flows from
the rest of the country to the Northeast with value added equally
divided between the two regions. The problem in implementing the
origin principle is that under the credit method only the tax rate
at the final stage matters for determining the tax burden in the
importing Northeast's region. Earlier rates and the division of

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[1]Interstate sales to the final consumer apparently are not
subject to the reduced interstate tax rate, and thus the strict
origin principle applies. The law, however, is still not clear
on this respect, but court decisions at the state level has con-
firmed the above interpretation. See J. Linhares, A Reforma
Tributaria e sua Implicacao nas Financas dos Estados e Municipios,
Fundacao Getulio Vargas, Rio de Janeiro, 1973, pp. 265-266.

Table III

CREDIT METHOD VAT UNDER THE ORIGIN PRINCIPLE

Region	Nominal Tax Rates	
Rest of the Country:	Non Uniform	Uniform
Nominal tax rate	0.10	0.15
Sales value	100.00	100.00
Gross tax revenue	10.00	15.00
Export tax rebate		
Net tax revenue	10.00	15.00
Effective tax rate*	0.10	0.15
Northeast:		
Nominal tax rate	0.15	0.15
Sales value	200.00	200.00
Gross tax revenue	30.00	30.00
Tax credit offset	-10.00	-15.00
Net tax revenue	20.00	15.00
Effective tax rate*	0.20	0.15

*Defined as the ratio of net tax revenue to the state value added.

value added between regions combine with the final rate to determine

the division of the total proceeds among states. Thus, as shown in

the first column, the Northeast's effective tax rate is different

from the Northeast's nominal tax rate when the rates are not uniform

across states. If, however, rates were the same in all states no

problem would arise since the nominal/effective tax rates would be

the same, as observed in the second column.[1]

3.3 Border Tax Adjustments on Foreign Trade

In order not to squeeze the financial budget of those states

which always had and still have their economy basically built on

the production for foreign exports of agricultural goods and raw

materials, the Brazilian tax law does not require export tax rebates

on the foreign export of primary goods. The complete standardization

of BTA on foreign exports however is still a fairly distant goal

even for manufactured products. Manufactured exports are exempt

from the VAT by the tax statutes but this will not yet ensure uni-

form treatment of all manufactured exports, as there is still no

agreement about the allowance of export tax credits on the export of

goods that embody only a small amount of processing over and above

the value of the basic raw materials. The tax law has been inter-

preted somewhat loosely that the export tax credit of the state VAT

on foreign exports of manufactures should not be allowed unless the

amount of processing accounts for at least a doubling of the value

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[1]See C. E. McLure, Jr., "TVA and Fiscal Federalism," in Pro-
ceedings of the Sixty-Fourth Annual Conference, National Tax
Association, 1971, pp. 279-91.

of the original primary product.[1]

The failure of some states to recognize the criterion of doubling
the value of raw materials to grant tax credits on their foreign ex-
ports has generated interstate tax competition which may affect nega-
tively the spatial location of domestic industries involved. A case
in point is the problem faced by the export oriented caster-oil indus-
tries in the states of Pernambuco and Bahia. These industries were
denied credit on their purchases of castor beans in the stated of Pernam-
buco and Bahia, while the state of Sao Paulo allowed full credit. As a
result, major firms began to close down their Northeastern plants and
to concentrate their operations in Sao Paulo, until Pernambuco took
the step of exempting castor beans from the tax and Bahia granted them
a rate reduction of 50 percent. Castor beans were finally declared
exempted from the tax throughout the country by an interstate covenant
signed in January 1970.[2]

The partial system of BTA on foreign trade may induce inefficient
pattern of international commodities flow as well as it may not be
neutral with respect to domestic industrial location. Since the
agricultural sector does not benefit from tax credits on its foreign
exports and the industrial sector at least partially does get this
benefit, the current system of BTA favors undully activities where

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[1]See Linhares, ibid., pp. 266-75.

[2]See M. Guerard, "The Brazilian State Value-Added Tax," IMF Staff
Papers, Vol. 20, No. 1, March 1973, pp. 118-69.

the country has less comparative advantage at the expense of activities where the country is likely to be more efficient in the international market. Thus, unless there is strong reasons for protection such as the so-called infant industries argument, the current system of discriminatory BTA on foreign trade is highly inefficient.[1]

When the origin principle is enforced on domestic trade and the destination principle is adopted on foreign trade, tax rates must be made uniform for domestic and foreign trade; otherwise trade distortions take place and tax revenues flow from the high tax states toward the low tax states. Differentiated tax rates induces producers in low tax states to export to foreign countries through high tax states. Similarly, it induces consumers in high tax states to import from foreign countries through low tax states. The induced change in both imports and exports from and to foreign countries results in a reallocation of tax revenues from high tax states to low tax states.[2] Furthermore, when the origin principle on domestic trade is levied at different rates across states, the difficulties involved in making accurate BTA on foreign trade would seem to be impossible. The compensatory levy and rebate at the international border would have to be set at the average rate applied to domestic production in several states through that stage.

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[1] See M.H.G.P. Zockum and others, A Agricultura e a Politica Comercial Brasileira, Instituto de Pesquisas Economicas, Universidade de Sao Paulo, Serie Monografias, Vol. 8, Sao Paulo, 1976.

[2] See H. Shibata, "The Theory of Economic Unions: A Comparative Analysis of Customs Unions, Free Trade Areas, and Tax Unions," in Fiscal Harmonization in Common Markets, Vol. 1, edited by C. S. Shoup, Columbia University Press, New York, 1967, pp. 145-264.

The simultaneous application of the origin principle to inter-
state trade and the destination principle to foreign transactions may
lead to a reallocation of tax revenues between states, even under
uniform rates of VAT for domestic and foreign trade. Whenever an ex-
port product is manufactured in one state from raw materials
acquired in another state, the granting of a full export tax rebate
implies, in substance, that the state that does the international
exporting, apart from waiving its tax claim on value added within
its borders, must refund the tax on the raw materials even though
the tax was in fact collected by another state. Similarly, whenever
a product is manufactured and consumed in one state from raw materials
imported from abroad through another state, the enforcement of com-
pensatory tax on foreign imports implies, in practice, that the state
that does the international importing, apart from taxing the value
added within its borders, further appropriate the tax collected on
raw materials embodied in the good which is produced abroad and con-
sumed in another state.[1]

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[1]The reallocation of interstate tax revenues implied by the
simultaneous application of the origin and destination principle
under uniform tax rates for domestic and foreign trade seems to
be neglected in the literature. McLure, for instance, states that
"There are no particular problems under either the credit method
or the subtration method in making the border tax adjustments
necessary to render the VAT levied at uniform rates on the origin
principle internally a destination principle tax with respect to
international trade." See his "TVA and Fiscal Federalism," ibid.,
p. 284.

3.4   Intersector Allocation of the Tax Base

Because of the activities it excludes, the state VAT as mention-
ed before, departs to a substantial extent from the pure value-added
principle in allocating the tax among sectors of economic activity.
The industrial sector, in particular, in its capacity as user of
inputs from the nontaxed sector, bears a far heavier initial tax
load than the rest of the economy in relation to its own value added.
From a global point of view, the nondeductibility of certain inputs
from the tax base simply means that the value embodied in these
inputs is taxed to the purchaser rather than to the seller of these
items; but for the individual business firms the result is that the
base of the tax includes not only wages, profits, depreciations,
rents, and interest but also a series of intermediary inputs, in-
cluding minerals, fuels, electricity, professional and business
services, advertising, and transportation costs. As a result owing
to the failure of the tax to encompass all sectors of activity, the
apportionment of the tax among sectors differs significantly from
the corresponding value added.

The size of the effective tax base in relation to value added
is in fact widely different in Brazil, among the various sectors
of economic activity. While the manufacturing sector generates
less than one fourth of the net national income, Guerard showed
that it supplies most of the revenues from the VAT. The agriculture
tax base, on the other hand, although in principle encompassing

the entire value of agriculture production, is in fact likely to be considered narrower. Several factors are responsible for a substantial shrinkage of the effective tax base in relation to the gross value of the agricultural product: the amount of direct consumption of farm products by the sector itself, the exemption of essential foodstuffs, and the relative ease of tax evastion in this area. On the basis of 1966 data Guerard estimated that the effective agricultural tax base represents only 44.0 percent of the gross value of agricultural production, while the manufacturing tax base exceeded the net value added of the sector by roughly two thirds.[1]

Inasmuch as the output of the agricultural sector is destined largely to some form of industrial processing, the low effective base in the agricultural sector is not likely to reduce revenues in all states very much. However, it will shift the collection of revenues from the agricultural to the industrial component of the tax base, and thus from the agricultural to the industrial states. The concentration of revenues in the manufacturing sector may thus lead to distortive competition among state governments who try to

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[1]See Guerard, "The Brazilian State Value-Added Tax," ibid., pp. 153-62. See also F. A. Rezende da Silva and M. da Conceicao Silva, O Sistema Tributario e as Desigualdades Regicnais: Uma Analise da Recente Controversia sobre o ICM, IPEA, Serie Monografica No. 13, Rio de Janeiro, 1974, chapter 4; and O. E. Reboucas, "Imposto sobre Circulacao de Mercadorias: Diagnostico e Alternativas," in Revista Economica do Nordeste, Vol. 8, No. 2, April/June 1977, pp. 213-59.

maximize tax revenues by granting special concessions to potential

investors in the industrial sector. State governments would tend to

seek private industrial investment at any cost, by granting locational

advantages (e.g., exemption from VAT for a given period of time)

which may distort the allocation of national resources and might not

be in the best interest of the community residents. Competing public

programs which benefit the local population such as health, education,

and urban transit may have to wait too long before they get started.

Furthermore, the concentration of revenues in the manufacturing

sector will tend to accentuate interstate differeneces in tax base

by increasing the fiscal capacity of the industrial and more develop-

ed states.[1]

3.5 Interstate Allocation of the Tax Base

The extreme inequality of state fiscal tax bases or capacities

in different parts of the federation poses important problems to the

Brazilian allocation of tax revenues among states. This inequality

is even more acute than the basic regional economic imbalance from

which it stems. In 1970, for instance, the five southeastern states,

with slightly more than 40.0 percent of the country's population,

accounted for nearly two thirds of domestic income and for more than

70.0 percent of the state VAT collections. On the other hand, in

the Northeast with 30.0 percent of the national population, income

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[1]See P. R. Haddad and T. A. Andrade, "Politica Fiscal e
Desequilibrios Regionais," in Estudos Economicos, Vol. 4, No. 1, 1974,
pp. 9-54.

was somewhat higher than 11.0 percent of the nation-wide total,

and tax receipts did not reach 8.0 percent of the total levied in

the country as a whole. The foregoing picture is reproduced in

Table IV, and the geographical location of the Brazilian regions

and states are presented in Graph I below.

The transformation of the state turnover tax into value-added

levies has not substantially altered the regional picture as seen in

Table IV. The VAT has proved a highly reliable source of funds in

the more developed states, but in the poorer regions the VAT, like

its predecessor the turnover tax, has been incapable of producing

revenues adequate to the needs, or even commensurate with the income

base of these regions.[1] Furthermore, it has been argued that the

VAT has tended to accentuate the fiscal imbalance that prevails in

favor of the industrialized states, to the detriment of those states

that constitute the chief market for their manufacturers.[2] As we

stated before, the turnover tax was subject to very little federal

regulation. The states were entirely free to set their rate of tax

and thus could, and did, adjust the tax rate to their needs. The less

developed states generally made up for their narrow tax base by

levying the tax rate at rates somewhat above the nation-wide average.

Empirically, however, the argument that the VAT has tended to accentu-

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[1]See L. Sande, "O Nordeste e a Aliquota Interestadual do ICM," _Revista de Financas Publicas_, No. 308, March/April 1972, pp. 17-63.

[2]See Sande, _ibid_.

Table IV

REGIONAL DISTRIBUTION OF POPULATION, INCOME, AND VAT REVENUES, 1970[*]

REGION[1]	POPULATION		INCOME		VAT REVENUES	
	Thousands	Percentage	US$ millions	Percentage	US$ millions	Percentage
North	3,603.8	3.87	714.6	2.14	30.8	1.06
Northeast	28,111.9	30.18	3,887.2	11.65	214.2	7.37
Southeast	39,853.5	42.79	21,843.1	65.46	2,098.8	72.17
South	16,496.5	17.71	5,719.7	17.14	461.9	15.88
West	5,073.3	5.45	1,202.5	3.61	102.3	3.52
Total	93,139.0	100.00	33,367.1	100.00	3,908.1	100.00

Sources: Population: Anuario Estatistico do Brasil-1974, Fundacao IBGE; Income: Centro de Contas Nacionais e Centro de Estudos Fiscais - DCS/IBRE/FGV; VAT Revenues: Anuario Estatistico do Brasil-1973, Fundacao IBGE.

[1] Regional groupings of states and territories are as follows:

North: Rondonia, Acre, Amazonas, Roraima, Para, Amapa;

Northeast: Maranhao, Piaui, Ceara, Rio Grande do Norte, Paraiba, Pernambuco, Alagoas, Sergipe, Bahia;

Southeast: Minas Gerais, Espirito Santo, Rio de Janeiro, Guanabara, Sao Paulo;

South: Parana, Santa Catarina, Rio Grande do Sul;

West: Mato Grosso, Goias, Distrito Federal.

[*] Dollar exchange rate as published in Conjuntura Economica, F.G.V., Vol. 31, No. 4, April 1977.

GRAPH I

MAIN REGIONS AND STATES IN BRAZIL
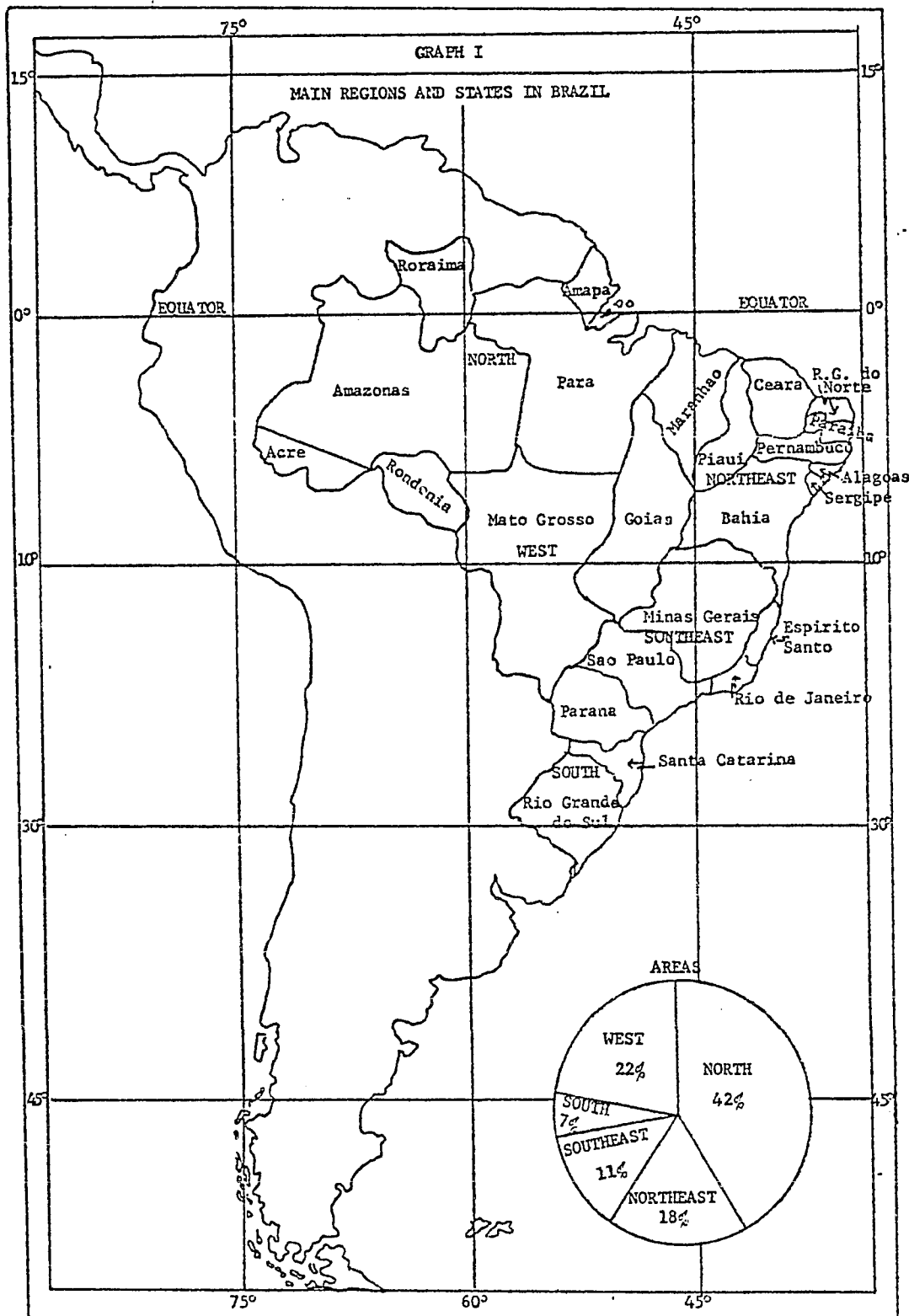
ate even further regional inequalities has not been proved over the
years. The regional share of state tax revenues has remained practi-
cally constant since 1966, the last year the turnover tax was enforced.
Various factors may account for this stability, as for instance, the
relatively rapid industrialization of the less developed states as
well as better enforcement techniques where tax collections were very
low.[1]

In addition to the uneven sectorial impact of the state VAT,
domestic trade imbalances may compound the differences in state tax
collections. Because the approximate origin principle is used in
domestic trade the capacity of the net importer states to raise rev-
enues is substantially reduced in relation to the net exporter states.
When the less developed and agricultural states are furthermore net
importer of commodities from the more developed and industrialized
states, tax collections in the former may drop beyond the level
which would be expected due to the uneven sectorial impact of the VAT.
Furthermore, tax base inequality among states might be fostered by
the composition of interstate transactions between capital and con-
sumption goods. Other things equal, the tax base will be relatively
smaller in those states where the capital goods share on interstate
imports is larger, since capital goods are tax exempt under the state
VAT. As a result of some or all of the above considerations in more

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[1]See C. A. Rocca, "Imposto de. Circulacao de Mercadorias e o
Desenvolvimento Nacional," Revista de Financas Publicas, No. 308,
March/April 1972, pp. 65-98.

prosperous Southeastern states the VAT does reach about 70.0 percent

of total income, and only 40.0 to 50.0 percent of the income gener-

ated in other regions is likely to be effectively taxed by the VAT.[1]

3.6 The Tax Base Controversy

There exists a long-standing and unsolved controversy in the

Brazilian Congress, the press, and academic circles, over whether the

application of the origin principle on domestic trade discriminates

against the states which are net importers on domestic transactions.

Since the interstate commerce is out of balance most of the time, it

is argued that the usual net importer states pay and net exporter

states collect more taxes than what they normally would if interstate

trade were balanced. The net exporter states have been called,

throughout this discussion, the producer states and the net importer,

the consumer states. Perhaps the best formal account of the early

exchanges in this connection is in the papers published in 1972 by

the Revista de Financas Publicas,[2] which were later summarized by

Rezende da Silva and Conceicao Silva.[3]

The basic position of the consumer states was advanced by Sande,

who pointed out that since the VAT was substituted for the turnover

tax, the ratio of tax collections to total fiscal revenues, including

federal transfers, has declined in the Northern and Northeastern

states. The major reason for this outcome, he claims, is that the

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[1]See Guerard, ibid., pp. 163-64.

[2]F. A. Roquete Reis, "O ICM e os Desniveis Regionais," Revista de Financas Publicas, March/April 1972, No. 308, pp. 9-17; Sande, ibid.; and Rocca, ibid.

[3]Rezende da Silva and Conceicao Silva, ibid., Chapter 1.

substitution of the VAT coupled with a high rate of tax in interstate

commerce, caused an outflow of revenues from the consumer states to-

ward the producer states. Although, he conceded, this outflow was

partially compensated by an increased inflow of federal intergovern-

mental transfers, he concluded that as a result of the domestic trade

deficit the Northeastern states transferred to the rest of the country

78.2 millions of U.S. dollars of its own VAT revenues in 1970.[1] The

amount of the Northeastern VAT receipts in that year were 358.7

millions of cruzeiros or 211.0 millions of U.S. dollars, hence tax

reallocation represented 37 percent of the Northeast's own tax receipts.

Similar conclusions with respect to the reallocation of VAT rev-

enues were reached by Reboucas who estimated the amount of tax re-

allocation in all states of the country.[2] According to this study

the outflow of revenues in those states with domestic trade deficit

varied from 4 to 88 percent of their actual tax collections. He con-

cluded, as reproduced in Table V below, that only the state of Sao

Paulo and Rio Grande do Sul were beneficiaries of the process of re-

allocation of state tax revenues. The rest of the Brazilian states

lost tax revenues to those two states in 1969 due to their specific

pattern of mutual trade.

On the other hand Rocca defended the adoption of the origin prin-

ciple, based on a broader framework which includes both economic

growth as well as interregional balance of trade. He pointed out

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[1] See Sande, ibid., p. 85.
[2] See Reboucas, ibid., pp. 234-242.

Table V

REALLOCATION OF VAT REVENUES,[*] 1969
(U.S. millions)

STATES	Tax Reallocation[1]	Tax Reallocation/VAT Revenue (Percentage)
Amazonas	-8.1	-76.73
Para	-10.5	-67.53
Maranhao	-3.1	-23.19
Piaui	-1.5	-28.32
Ceara	-17.7	-68.84
Rio Grande do Norte	-4.5	-52.36
Paraiba	-6.1	-42.64
Pernambuco	-26.1	-42.76
Alagoas	-4.6	-34.77
Sergipe	-3.0	-49.65
Bahia	-23.0	-33.61
Minas Gerais	-46.3	-23.73
Espirito Santo	-9.8	-59.83
Rio de Janeiro	-87.9	-87.89
Guanabara	-26.1	-9.13
Sao Paulo	303.3	23.72
Parana	-5.6	-4.10
Santa Catarina	-2.4	-4.60
Rio Grande do Sul	16.0	7.55
Mato Grosso	12.0	-71.20
Goias	-1.8	-5.83

Source: Reboucas, ibid., p. 235.

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[1]The amount of revenue transferred was obtained by applying to the domestic trade deficit (or surplus) in each state the correspondent "effective" tax rate. The effective tax rate is defined as the ratio of actual VAT collections to the state value added.

[*]Dollar exchange rate as published in Conjuntura Economica, FGV, Vol. 31, No. 4, April 1977.

that a substantial share of the consumer states deficit is financed

by interstate transfers of federal revenues which are basically col-

lected from the producer states of the South.[1] The immediate effect

of a reduction on the interstate tax rate as proposed by the consumer

states, he argues, would be to reduce the amount of public investments

in the South, which in turn would reduce their potential ability to

finance federal transfers to the Northeast. Therefore, he concludes,

the abandonment of the origin principle would have two major impli-

cations: first, it would tend to contract the rate of economic growth

in the South, and second, as a following result it would stifle the

potential level of interregional tax transfers. Instead of changing

the interstate tax principle, Rocca suggests, the interstate redis-

tribution of tax revenues through the federal budget may continue at

the present levels, and more emphasis should be put on projects which

accelerate the rate of growth in those less developed regions.[2]

The two arguments, as advanced by Sande and Rocca, are not

strictly comparable. While Sande stresses the short run consequence

for state revenues of the adoption of the origin principle on inter-

state trade, Rocca seems to be more concerned with the long run impli-

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[1]Rocca points out that for each dollar of federal tax collected
in the Southeastern state of Sao Paulo, for instance, only 0.10 cents
returns to this state as federal expenditures, while for the same
dollar of federal tax collected in the Northeast, 1.75 dollars returns
as federal transfers and direct investment in this region. See Rocca,
ibid., p. 73.

[2]See Rocca, ibid., pp. 75-78.

cations that the adoption of the origin principle would have on the
potential ability of the producer states to subsidize the consumer
states. In the third National Conference of Producers Representatives
(III-Conferencia Nacional das Classes Produtoras - CONCLAP) in 1972 a
compromise solution between origin and destination principle was
advanced. CONCLAP approved a motion to be submitted later to the
Congress whereby the interstate tax rate should be reduced to 50.0
percent of the national tax rate. Therefore, according to this agree-
ment, the VAT revenues collected on domestic trade would be equally
and fairly divided between the participants states.

The tax bas issue reached the Congress in 1975, mostly through
pronouncements of the Senator Helvidio Nunes from the state of Piaui.[1]
The Brazilian interstate allocation of tax revenues, he argues, is not
equitable because producer states are able to continually export
their taxes to the consumer states. According to Nunes the North-
eastern states transferred to the rest of the country on account of
the adopted principle of BTA 63.9 percent of its own VAT receipts.
He documented his statement with figures covering all states of the
Northeast which Table VI reproduces below.

A special report about the problems raised by interstate tax
transfers was prepared by a Congressional subcommittee and presented
to the Senate Economic Committee in the Fall of 1975.[2] This report

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[1] An account of his pronouncements made before the Brazilian
Senate during 1975 sessions appears in H. Nunes, O Nordeste e o
Imposto Sobre a Circulacao de Mercadorias - ICM, Brasilia, 1975
(no publisher).

[2] Report of a Special Subcommittee on the Problems Raised by
the ICM Tax Collections presented to the Senate Economic Committee,

Table VI

REALLOCATION OF VAT REVENUES, 1972 (Percentage)

STATES	Tax Reallocation/VAT Revenue[1]
Pernambuco	-28.16
Maranhao	-33.01
Piaui	-99.39
Ceara	-92.74
Rio Grande do Norte	-80.08
Paraiba	-61.85
Alagoas	-44.29
Sergipe	-170.19
Bahia	-55.72
Northeast	-63.9

Source: A Problematica Nordestina, Confederacao Nacional do Comercio,
1973. Reproduced in H. Nunes, ibid.

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[1]This ratio was presumably obtained (the methodology was not made
explicit) by applying the current interstate tax rate to each state's
deficit on commercial tarde with the rest of the country.

summarized several propositions made to that date through congressional hearings which aimed to cope with the reallocation of state revenues. From the more important and viable propositions the first favors a compromise solution where interstate tax rates should be reduced to 50 percent of the national tax rate. The second proposition, which seems to be preferred by the Subcommittee, supports the creation of a VAT National Fund. The Fund would receive 80.0 percent of state VAT collection on an origin basis and would be redistributed to the states on the basis of a two-factor formula, involving population and the inverse of per capita income.

On the other hand, the enforcement of the destination principle through adoption of the retail sales tax has been recommended by two well known Brazilian economists. Eugenio Gudin pointed out that as much as a country usually cannot and should not export domestic taxes to foreign countries, a state at the subnational level should not be allowed to collect taxes from other states.[1] According to Otavio G. de Bulhoes the substitution of the VAT for the turnover tax in Brazil was only the first step toward an improvement of the previous method of collecting taxes on consumption.[2] Both Gudin and Bulhoes seem to agree that a sales tax collected at the consumption level, with less exemptions and lower rates as compared with the current VAT, would be an appropriate solution for the interstate reallocation of tax revenues.

(continued)
Senator Milton Cabral, Chairman of the Subcommittee, Brasilia, October 1975, Reprinted in Nunes, ibid., pp. 226-269.

[1]Jornal do Brasil, Rio de Janeiro, November 11, 1973, p. 36.

[2]Ibid., April 22, 1974.

The destination principle has also been supported by Senator Cid

Sampaio who is probably the only participant in this debate who empha-

sized the importance of public expenditure benefits.[1] In fact,

Sampaio stressed the relationship between different levels of govern-

ment activity, federal, state, and local, and the spatial benefits of

public services when he stated:

> In Brazil, the expenditures that have a national
> character are financed by tariffs, by the income
> tax, by the federal value-added tax and by the
> rural land tax. Those federal taxes are generally
> paid by all citizens irrespectively of the state
> or region in which they live.... [At the state
> level however] What occurs in Brazil is that local
> expenditures of the state-members, which should be
> paid by local residents, are in fact being paid...
> by the residents of other members of the federation
> ... [If the destination principle is adopted] the
> expenditures that each state of the federation are
> responsible for would be paid by their own resi-
> dents.[2]

No affirmative action on this problem of revenue reallocation has

been taken so far, either by the Congress or the executive branch of

the federal government. The second National Plan of Development (II-

Plano Nacional de Desenvolvimento-PND) prepared by the Executive and

approved by the Congress in December 1974 for the period 1975-79,

recognized the importance and desirability of introducing changes in

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[1]Reboucas briefly indicated that a rigorous treatment of the re-
allocation problem of state revenues must include the benefits of
public expenditures. See Reboucas, ibid., p. 240.

[2]Diario de Pernambuco, Recife, December 13, 1973.

the mechanism of interstate allocation of tax revenues. In this
particular the Plan suggests the creation of a VAT National Fund simi-
lar to those lines described above in connection with the Report
prepared by the Congressional subcommittee.[1]

The II-PND is in the right track, in the sense that the current
system of tax allocation between states should be modified. But dis-
tributional issues, it seems to us, should be kept apart from this
problem. As a matter of policy, the guidelines for choosing the
proper principle of BTA should be based on allocative considerations
and independent of the ideal distribution of regional income. Further-
more, as Wilberg has pointed out, the choice of BTA's cannot be based
on concepts of producers and consumers states as defined by the domes-
tic balance of commodity trade only. Since states may trade with
foreign countries it must be the balance of both foreign as well as
domestic trade that counts for an adequate definition of producer and
consumer states.[2]

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[1]See II Plano Nacional de Desenvolvimento (1975-79), Republica
Federativa do Brasil, September 1974, Brasilia, Chapter 12, pp. 116-17.
The plan states that "The modifications in the VAT structure will be
guided by two objectives: (a) insure a more equitable distribution of
the state fiscal revenues with the introduction of a Participation
Fund, collected from all states and redistributed, among other cri-
teria, according to population and the inverse of the income per
capita; (b) avoid tax competition among states, consolidating the
principle that the VAT is not an adequate instrument for granting
locational advantages."

[2]E. Wilberg, "A Aliquota Interestadual do ICM," Revista Parana-
ense de Desenvolvimento, No. 33, Nov/Dec. 1972, pp. 17-26.

We will try to show that a meaningful choice of BTA principle can be made only when full account is taken of the foreign as well as domestic aspects of state trade imbalance. Furthermove, if the overall state trade (domestic plus foreign) is not balanced, then the choice of BTA principle will depend on the nature of the benefits of public services and the tax induced change in the absolute price level. The use of this comprehensive approach in connection with the allocation of the Brazilian state tax revenues will be explained in Chapter IV.

Chapter IV

Border Tax Adjustments and the Allocation of Tax Revenues

4.1 Introduction

A standard result that emerge from the literature on international
tax harmonization is that changes in the principle of BTA does not have,
in the long run, allocative effects on the trade flow of the countries
involved, provided that taxes are truly general, factors of production
are immobile between countries, and international trade is balanced.
We qualify this result by showing that under special trade conditions,
i.e., trigangular trade flow, BTA may not be neutral with respect to
international trade flows. In particular, we argue that when a tri-
angular trade flow of goods takes place between states of a federation
and foreign countries, unless the same principle of BTA is adopted on
both domestic and foreign trade, part of the state tax base is trans-
ferred from one state to the other leading to a reallocation of inter-
state tax revenues which, in general, disrupts the horizontal fiscal
relationships between states involved as well as their international
and domestic trade flows. In the interest of examining optimal rules
of interstate taxation when trade is not balanced we dropped the
assumption that the overall state trade, domestic plus foreign, is
balanced. Relaxing this assumption implies that the origin-destination
principle equivalence as indicated by the literature of international
tax harmonization breaks down. Whether, in this case, as a matter of
tax policy a state VAT should be levied on the origin or destination
principle depends on the nature of the benefits of public services
and the tax induced change in the absolute price level.

We start by looking at some principles of multilevel government

finance where the role of benefit taxation as an allocative device at

the state level is singled out. We move on to look at the rationale

for choosing the benefit principle of taxation in connection with the

choice of border tax adjustments. The allocative implications of

border tax adjustments on trade and factor flows are examined next.

Adoption of the origin principle on domestic trade and the destination

principle on foreign trade (restricted origin principle, ROP) may

affect the interstate distribution of tax revenues and furthermore

distort the efficient pattern of domestic and foreign trade. This

problem is analysed under the assumption of a triangular trade flow.

Finally, we look at the revenue effect of state trade imbalances.

4.2 Principles of Multilevel Government Finance

As a matter of efficiency the assignment of functions faced by

the different levels of government organized under a federal system

may depend on the nature of the services provided. Ideally a model

of multilevel government finance would confine subnational govern-

ments to allocation activities, while distribution activities as well

as allocation activities of a national scope would be provided by the

central government.[1]

[1]See G. Stigler, "Tenable Range of Functions of Local Government,"
in Joint Economic Committee, Subcommittee on Fiscal Policy, Federal
Expenditure Policy for Economic Growth and Stability, Washington, D.C.,
1957, pp. 213-19, reprinted in Private Wants and Public Needs, E. S.
Phelps (ed.), Norton, New York, 1962, pp. 167-76; R. A. Musgrave,
The Theory of Public Finance, McGraw-Hill, New York, 1959, pp. 179-83,
Fiscal Systems, Yale University Press, New Haven, 1969, chapters 12
and 14; R. A. Musgrave and P. B. Musgrave, Public Finance in Theory
and Practice, McGraw-Hill, New York, 1973, chapter 26; W. E. Oates,

The spatial limitation of expenditure benefits of the public sec-
tor may be regarded as a rational for multilevel finance in a federal
system of government. Some pure public goods are such that the inci-
dence of their benefits are nationwide (e.g., national defense) while
others are geographically limited (e.g., fire and police protection).
We may expect a central government to provide a better approximation to
the efficient level of output of those public goods that benefit the
members of all communities alike than would a system of decentralized
decision-making. The reason is that each state in determining whether
to provide an additional unit of public good considers only the bene-
fits its own residents will receive from that marginal unit. Thus, an
undersupply of public goods may result since its marginal social value
is not taken into account by the decision makers at the subnational
level.[1]

(continued)
"The Theory of Public Finance in a Federal System," Canadian Journal
of Economics, Vol. 1, February 1968, pp. 37-54, Fiscal Federalism,
Harcourt, New York, 1972, "An Economist's Perspective on Fiscal Fed-
eralism," in The Political Economy of Fiscal Federalism, W. E. Oates
(ed.), Lexington Books, D. C. Heath, Lexington, 1977; and C. E. McLure,
Jr., "Revenue Sharing: Alternative to Rational Fiscal Federalism?,"
Public Policy, Summer 1971, pp. 457-78, reprinted in The Economic
Approach to Public Policy, R. C. Amacher, R. D. Tollison, and T. D.
Willett (eds.), Cornell University Press, Ithaca, 1976, pp. 225-43.
The complexities involved in trying to set out a model of multilevel
government finance were described by M. Olson, Jr., "The Princple of
'Fiscal Equivalence': The Division of Responsibilities among Dif-
ferent Levels of Government," American Economic Review, Vol. 59, May
1969, pp. 479-87. A critique of this model appears in S. J. Mushkin
and R. F. Adams, "Emerging Patterns of Federalism," National Tax Journal,
Vol. 19, No. 3, September 1966, pp. 225-46. The observed conditions
that bear upon the validity of this formulation has been explored by
D. Netzer, "State-Local Finance and Intergovernmental Fiscal Relations,"
in The Economics of Public Finance, A. S. Blinder and R. M. Solow and
others (eds.), Brookings, Washington, D.C., 1974, pp. 361-421.

[1]A pure public good is provided for each person to enjoy or note,
according to his tastes. It differs from a private good in that each

A basic shortcoming of the unitary form of government is its
insensitivity to varying preferences among the residents of the dif-
ferent communities. When all public goods are supplied by a central
government we may expect a tendency toward uniformity in public pro-
grams across states. However, such uniform levels of provision and
consumption of public services may not be efficient, because they do
not reflect possible variations in the tastes or income levels of
residents of differing states. In contrast, when each community is
responsible for the provision of its own public services we might
expect variations in the level (and composition) of publicly provided
goods across the different jurisdictions, variations that would to
some extent at least, reflect the differences in tastes of the con-
stituencies of the communities. The possibilities for efficiency gains
through decentralizing the provision of local public goods are further
enhanced by the phenomenon of consumer mobility. As Tiebout pointed
out, in a system of local government, a household can select as his

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man's consumption of it is related to the total provision by a condi-
tion of equality rather than summation. See P. A. Samuelson, "Pure
Theory of Public Expenditure," The Review of Economics and Statistics,
Vol. 36, November 1954, pp. 387-89; "Diagrammatic Exposition of a
Theory of Public Expenditure," ibid., Vol. 37, November 1955, pp. 350-
56. The essential difference between the local public good and the
national public good appears to be that in the latter case agreement
has to be reached by the nation as a whole concerning some particular
amount of public good which is then the amount for the entire group.
In the case of local public good, this same decision is made within
each separate local community. In fact, the national public good is
a good which is purely public both within and between communities,
and the local public good is a good which is purely public within com-
munities but purely private between communities. See M. V. Pauly,
"Optimality, 'Public' Goods, and Local Governments: A General The-
oretical Analysis," Journal of Political Economy, Vo. 78, May 1970,
pp. 572-85.

place of residence a community that provides a fiscal package more

suited to his preferences by voting with his feet.[1]

In the above discussion about an efficient design of multilevel

fiscal structure the specific setting assumed is one in which a nation

is exhaustively divided into distinct non-overlapping communities, each

of which has its own local government. Each local government provides

certain public goods for its citizens and levies taxes to pay for them,

in accordance with the preferences of its own citizens. In order to

extend the issues posed by this approach and include the problems of

interregional spillover effects let us consider only two levels of

government, national and local, and furthermore suppose that national

government plays no role in the provision of public goods. Let the

public goods provided by each local government for its residents be

goods (like interstate highways or eradication of mosquitoes in a

swamp which lies on the border) which may be assumed to have "spillover

effects," that is, they may be assumed to benefit the residents of the

other communities as well as the people within the community providing

them.[2]

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[1]See C. M. Tiebout, "A Pure Theory of Local Expenditures," _Journal of Political Economy_, Vol. 64, October 1956, pp. 416-424.

[2]Actually in this context, these goods may be looked at as being a mixture of local and national public goods. The problem of spillover benefits in the context of local governments has been studied before. See A. Williams, "The Optimal Provision of Public Goods in a System of Local Government," _Journal of Political Economy_, Vol. 74, February 1966, pp. 18-33; W. C. Brainard and F. T. Dolbear, Jr., "The Possibility of Oversupply of Local 'Public Goods': A Critical Note," _Journal of Political Economy_, Vol. 75, February 1967, pp. 86-92; and M. V. Pauly, "Optimality, 'Public' Goods and Local Governments: A General Theoretical Analysis," _ibid_. The William's model of local public goods has been extended for the case of factor mobility between communities by P. S. Kochanowski and S. Pleeter, "Compensation with

Just as the benefits of local public goods may spill over to

people in other communities, so may taxes levied to finance them. It

is possible for some taxes to be ultimately paid to a jurisdiction

by taxpayers who are not residents of that jurisdiction. This is

known as the phenomenon of tax exporting.[1] Tax exports of a particular

state represent the portion of the state tax burden borne by out-of-

state residents, in the form of higher product prices of local goods

and/or lower factor incomes of non-residents, which result from the

purchase by non-residents of local output. Usually local governments

in making their decisions on the level of public goods provision are

concerned only with appraising the benefits and costs to their own

residents and thus local governments may under-supply or over-supply

them even if they supply an amount which is optimal for their own

residents. In particular they will tend to extend the provision of

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(continued)
Induced Factor Movements in a Simple General Equilibrium Model,"
Public Finance Quarterly, Vol. 5, No. 1., January 1977, pp. 23-39.

[1]Examples of tax exporting include taxation of tourist expendi-
tures and taxation of an industry concentrated in the state and selling
outside the state. Tax exporting or tax spillovers have been studied
by C. E. McLure, Jr., "Commodity Tax Incidence in Open Economies,"
National Tax Journal, Vol. 17, June 1964, pp. 187-204, "The Interstate
Exporting of State and Local Taxes: Estimates for 1962," National
Tax Journal, Vol. 20, No. 1, March 1967, pp. 49-77, "The Inter-Regional
Incidence of General Regional Taxes," Public Finance, Vol. 24, No. 3,
1969, pp. 457-83. McLure in "The Inter-Regional Incidence of General
Regional Taxes," analysed the interregional incidence of regional
taxes based on the effect that changes in interregional relative
prices have upon the income of the residents of each region, by look-
ing at their average propensity to consume local and foreign goods and
their relative holdings of factors of production. For a generalized
treatment of this subject see M. Homma, "On the Theory of Interregional
Tax Incidence," Regional Science and Urban Economics, Vol. 7, No. 4,
November 1977, pp. 377-92.

public goods up to the point where the marginal benefits to local residents are equal to the marginal costs to their residents, ignoring the benefits and costs which accrue to others, and therefore stopping short of or extending beyond the socially optimal level of provision. This level can only be attained through an appropriate mechanism of interstate revenue compensation carried out either by the central government through the tax-transfer mechanism or by interstate compacts where each state is to be compensated (or to compensate) for the units of benefits (or costs) that spill over to other states.

Public policy toward redistribution of income is in general seriously constrained in its operations at subnational levels of government. In the absence of an adequate inter-individual distribu- tional policy, the central government may secure some degree of fiscal equalization among poor and rich states through the tax transfer mec- hanism. The scope for an active redistributive policy depends criti- cally upon the existing degree of mobility of both individuals and other economic resources. At the local level of government, for example, the obstacles to movement among a group of adjacent communi- ties, especially in the long run when commitments are less rigid, are usually not very great. Thus, an attempt by a local government to undertake an agressive redistributive program is likely to be abortive. If a community were to institute a highly progressive income tax to redistribute income in favor of the poor, many wealthy residents would simply move to nearby communities where they could receive more favor- able fiscal treatment, and the poor would move in, attracted by a more

generous public expenditure program. Thus, in the end, mobility would largely defeat the ability of the program to accomplish its goal of redistribution. Since mobility across national boundaries is generally much less than within a nation, a policy of income redistribution has a greater promise of success if enforced on a national level. Otherwise it could affect the choice of residence by individuals and business location, thus resulting in locational inefficiencies.[1]

The three major principles of multilevel government finance in a system of fiscal federalism may then be summarized as follows: (1) The benefit principle: various public services should be provided for at the local, regional, or national level, depending on the spatial range of benefits, so as to let provision be decided and cost be borne by the residents of the particular area in which the benefits accrue. (2) The principle of fiscal compensation: the spatial model of fiscal structure, outlined above, oversimplifies matters unduly. One major reason for coordinating adjustments among jurisdictions is that existing jurisdictions do not neatly correspond to benefit and tax cost areas. Spillovers may result and due compensation might be carried on by the higher level government through the tax transfer mechanism. (3) The principle of centralized distribution: adjustments in the distribution of income should be the responsibility of central policy, since it is only here that such measures can be conducted effectively and without causing severe efficiency losses.[2]

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[1]An early argument along these lines is found in Stigler, "Tenable Range of Functions of Local Government," *ibid.*

[2]Due to the high degree of interdependence between communities at the subnational level we must expect that stabilization activities should also be responsibility of central policy.

While it is more or less evident that major redistribution measures can be carried out effectively only at the national level, should national concern be only with adjustments between rich and poor individuals or should it also be with adjustments between rich and poor communities? To come to terms with this question, consider a normative setting in which a "proper" state of income distribution among individuals has been provided for by the central government and in which individuals and factors are free to move among regions. In such a setting, there may still be some communities with high average incomes and others with low average incomes. Since residents who join with others of high income will obtain public services on more favorable terms (higher value of public services and/or lower taxation), it may be argued that people in the low income states must be subjected to greater fiscal pressure than the people in high income states.[1] On economic grounds, apparently no case can be made for interregional revenue transfers if the geographic mobility of individuals and resources is considered "sufficient" in order to make different fiscal systems constitute acceptable alternatives to the buyer of government services.[2]

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[1] See J. M. Buchanan, "Federalism and Fiscal Equity," _American Economic Review_, Vol. 40, September 1950, pp. 583-600, for cogent argument suggesting that such differences in fiscal pressure (fiscal residuum) should be reduced. Note that if local taxes are applied according to the benefit principle, all individuals will face the same fiscal pressure at the margin. It follows then that the concept of fiscal pressure used above refers to total benefits which people derive from their transactions with the fisc, since in marginal terms these benefits are equalized.

[2] This point is stressed by A. D. Scott, "A Note on Grants in Federal Countries," _Economica_, Vol. 17, November 1950, pp. 416-422, "Federal Grants and Resource Allocation," _Journal of Political Economy_, Vol. 60, December 1952, pp. 534-538.

On the other hand, if the geographic mobility of individuals and re-
sources is not considered "sufficient" in some rasonable sense, then

on both equity and efficiency grounds, the fiscal differentials should

be attacked indirectly by a system of central revenue transfers from

rich to poor communities.[1]

The Tiebout process of adjustments by household mobility ensures

efficiency because the difficulties that locational regidity would

introduce are ruled out by the assumption that all personal incomes

come from dividends. If all income should be received from dividends

the individual's actual choice of location in space would be independ-

ent of the allocation of resources in the private sector of the economy.[2]

The setting within which local governments provide public goods to

their citizens is quite different however from this idealized Tiebout

world. Individuals locate themselves in space and migration is not

just the transfer of factors of production from one region to another.

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[1] Revenue transfers to lower level governments along different lines
is advocated under the name of revenue sharing. It is generally thought
that state governments are faced with a "fiscal squeeze" between accel-
erating expenditure responsibilities and decelerating tax yields. The
opposite problem at the federal level is labeled "fiscal drag". Given
these circumstances tax revenue sharing would relieve both the "fiscal
drag" problem at the federal level and the "fiscal squeeze" at the local
level. Most of the early literature on revenue sharing has been brought
together in the U.S. Congress, Joint Economic Committee, Revenue Shar-
ing and its Alternatives: What Future for Fiscal Federalism?, Washing-
ton, D.C., Government Printing Office, 1967. For a critical review of
the revenue sharing perspectives see McLure, "Revenue Sharing: Altern-
ative to Rational Fiscal Federalism?", ibid.

[2] See J. M. Buchanan and R. E. Wagner, "An Efficiency Basis for
Federal Fiscal Equalization," in J. Margolis (ed.) The Analysis of
Public Output, NBER Conference, Columbia University Press, New York,
1970, pp. 139-62; J. M. Buchanan and C. J. Goetz, "Efficiency Limits
of Fiscal Mobility: An Assessment of the Tiebout Model," Journal of
Public Economics, Vol. 1, 1972, pp. 25-43.

The migrant supplies labor for which he is paid according to his marginal productivity, but he also acquires "citizenship" which entitles him to a share in the provision of local public goods. The effect of this sharing of public services - if the migrant is poor - is that the migrant confers a benefit upon the residents of his country of emigration, and a cost upon the residents of his country of immigration.[1]

As Buchanan and Goetz have shown, it remains difficult to generalize concerning the direction of distortion that the free mobility embodied in the Tiebout process may produce. However they tend to conclude that:

> To the extent that public goods impurities
> in the form of congestibility become impor-
> tant, it seems plausible to suggest that the
> Tiebout process is likely to lead to an over-
> concentration of population in those communi-
> ties where public goods quantities are large.
> This would, in turn, suggest that there may be
> an overconcentration of persons in the larger
> communities and in the communities with higher
> than average income levels.[2]

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[1] This is why trade and migration may be similar in promoting interregional or international equalization of factor prices but not of average real income per capita. Trade increases a region or country's total real income without increasing the number of persons sharing it. On the other hand, poor immigrants receive economic benefits (in the form of public services) over and above the marginal productivity of their own factors. See L. B. Yeager, "Immigration, Trade, and Factor-Price Equalization," Current Economic Comment, Vol. 20, No. 3, August 1958, pp. 3-8; M. Krauss, "The 'Tax Harmonization Problem' in Free Trade Areas and Common Markets," The Manchester School, Vol. 39, June 1971, pp. 71-82; and D. Usher, "Public Property and the Effects of Migration upon Other Residents of the Migrants' Countries of Origin and Destination," Journal of Political Economy, Vol. 85, No. 5, October 1977, pp. 1001-1020.

[2] Buchanan and Goetz, ibid., p. 33.

By use of a similar framework and in the special case that the compensated price elasticity of demand for public goods in unitary, Flatters and others have demonstrated that free migration will produce an efficient allocation of household workers between two regions. However, otherwise they show that free migration will be inefficient and in the context of a federation incentives should be set up in order to induce workers to move from the overpopulated to the underpopulated region, by subsidizing those residents in the latter region and taxing those residing in the former region.[1]

4.3 The Benfit Principle Applied to the Choice of BTA

The proper choice of border tax adjustments by subnational governments may be regarded as essentially concerned with the benefit aspects of product taxation in a geographical limited area. Product taxes may be intended as a method of collecting taxes from individuals in their capacity as consumers or producers. In other words, product taxes may be intended as a tax assessed on individuals in their capacity as consumers of _final_ public goods. Alternatively, product taxes may be used as a tax assessed on business enterprises in their capacity as users of _intermediate_ public goods. Under such a system, a distinction would be drawn between the financing of final and intermediate public expenditures.[2,3]

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[1] F. Flatters, V. Henderson, and P. Mieszkowski, "Public Goods, Efficiency, and Regional Fiscal Equalization," Journal of Public Economics, Vol. 3, 1974, pp. 99-112.

[2] The use of benefit taxation in connection with the choice of BTA has been suggested before. See C. S. Shoup, "Export Exemption and Import Taxation under Sales Taxation," paper contributed at request of Ways and Means Committee, in Excise Tax Compendium, U.S. House of Representatives, Committee on Ways and Means, U.S. Government Printing Office,

The cost of public expenditures that render final services to the

consumer would be defrayed from taxes levied directly upon him. Such

taxes would be imposed on the consumer at the place where he lives and

thus enjoys the consumption benefits. When products are exported, such

taxes should not be paid for by the foreign consumer who, in fact, does

not become the beneficiary of public services. Revenues to cover the

cost of such services should be collected on the destination principle

if product prices rise as a result of the introduction of the tax.

Otherwise out-of-state purchasers of domestic output will be subsidiz-

ing domestic consumers of imports, who are exempt, under the origin

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(continued)
Washington, D.C., 1964, pp. 57-64; E. R. Morss, "Tax Policy Implications
of Free Trade," Public Finance, Vol. 21, No. 3, 1966, pp. 372-89; and
Musgrave, Fiscal Systems, ibid., chapter 9.

[3]The problem of separating government services to business from
those to consumers is discussed extensively in the literature on nat-
ional income accounting, where its significance lies in the need to
identify the final output of the economy. Some part of the output of
the public sector is not final output, but may be used up in the pro-
duction of other goods (maintenance of law and order, roads used for
business purposes, and so on). To reckon this as well as other public
services provided directly to individuals (public parks, roads used for
recreation, and so on) as national output would involve double count-
ing. The contention that it is impossible to distinguish final and
intermediate output of government activity is scarcely defensible if
it means inability to identify the two categories of output as dis-
tinct from measuring them in the ordinarily available data. See S.
Kuznets, National Income and Its Composition, 1919-1938, National
Bureau of Economic Research, New York, 1941, National Income: A Sum-
mary of Findings, National Bureau of Economic Research, New York, 1946;
C. S. Shoup, Principles of National Income Analysis, Houghton Mifflin,
Boston, 1947, chapters 4 and 7; and Musgrave, The Theory of Public
Finance, ibid., chapter 9. The Samuelson's formulation of pure public
good has been extended to include intermediate public goods by K.
Kaizuka, "Public Goods and Decentralization of Production," The Review
of Economics and Statistics, Vol. 47, 1965, pp. 118-20.

principle, from the tax collected on exports. However, if product prices remain unchanged, the origin principle should be enforced, otherwise out-of-state purchasers of domestic output will be subsidized by domestic consumers of imports, who collect, under the destination principle the revenue lost on exports. Thus, in rendering services that basically benefit the consumer residents, government functions in the same way as private producers of final goods and acts to recover the cost of these services through consumption taxes.

On the other hand, intermediate public goods provide for the supply of public services that reduce the cost of private output. This cost, under the benefit rule, should be charged to the producer of that output. These charges enter into his cost of production and may be reflected in the price paid by the consumer. If the products happen to be exported, such taxes should be paid for by the foreign consumer who, in this case, becomes the beneficiary of the public service. Revenues to cover the cost of such services should be collected on the origin principle if product prices rise as a result of the introduction of the tax. Otherwise out-of-state purchasers of domestic output will be subsidized by domestic consumers of imports, who collect, under the destination principle, the revenue lost on exports. However, if product prices remain unchanged, exports should be taxed and imports should be subsidized, otherwise out-of-state purchasers of domestic output will be subsidized by domestic consumers of imports, who collect, under the origin principle, the revenue lost on exports. Thus, in rendering services that basically benefit business enterprises,

the government functions in the same way as private producers of

intermediate goods and acts to recover the cost of these services

through production taxes.[1] The conditions indicated in the preceding

and the foregoing paragraphs are summarized in Table VII.

The application of product taxation according to the criteria

suggested above to the actual categories of government activities is

bound to raise many statistical problems. The only way in which goods

and service expenditures of government can be divided between expendi

tures of final and intermediate products is through a qualitative

analysis of each expenditure item in the budget. A few expenditures

fall clearly into one or the other category. For instance, the fol-

lowing categories of government services may be distinguished: (1)

those services of direct benefit to individuals in their capacity as

final consumers such as public parks, health care, welfare programs,

housing, free entertainment, and transfer payments; (2) those services

of direct benefit to business firms such as industrial and agricultu-

ral research, economic and statistical reporting, and subsidies to

enterprises. In many instances however, the same expenditures benefit

both consumers and business firms, thus containing elements of both

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[1]Intermediate public services can be represented as a form of
technical change as well as a cost reduction type of public service,
We distinguish between a government service to business firms which
reduces the cost of producing a given output or increases equally the
productivity of household's factors, from a government service to con-
sumers which increases household's income directly. A government
service to business has been compared with a technical change which is
neutral in the Hicks sense. See P. Mieszkowski, "The Distributive
Effects of Local Taxes: Some Extensions," in Public and Urban Econom-
ics, R. E. Grieson (ed.), Lexington Books, D. C. Heath, Lexington, 1976
pp. 293-312.

TABLE VII

BENEFIT RULE FOR THE CHOICE OF BTA

Product Price / Benefits to:	Rise	Unchanged
Consumers	Destination Principle	Origin Principle
Business Firms	Origin Principle	Export Tariff Import Subsidy

final and intermediate products. Highways are used for pleasure driv-
ing and business transport; education provides consumer satisfaction
and raises productivity, and so forth. Those expenditures of joint
benefit to consumers and business firms include general administration,
judiciary, police protection, transportation, communication, and
education.[1] If all expenditures of the public sector were of this
latter type a mixture of origin and destination principles should be
applied on interjurisdictional trade, ideally reflecting the tax
induced change in the absolute price level as well as the share of
benefits which accrues to each producers and consumers.

A rigorous enforcement of BTA along the foregoing lines might
pose administrative difficulties which could neutralize the positive
effects of a well designed border tax plan. This may happen, for
instance, if the benefits of public expenditures and/or the tax in-
duced change in price level are specific across jurisdictions. Each
state, then, would have to calculate separately differentiated rates
of BTA. The complexity of such a system would seem unbearable in the
context of a federation where border controls on interstate commerce

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[1]For an analysis of the benefits of the chief services commonly
supplied by governments, see C. S. Shoup, Public Finance, Aldine,
Chicago, 1969, chapter 5. The difficulties related to estimation of
the benefits of public expenditures are well known. See, for instance,
C. E. McLure, Jr., "On the Theory and Methodology of Estimating Bene-
fit and Expenditure Incidence," paper presented at the workshop on
"Income Distribution and Its Role in Development," Rice University,
1974; L. De Wulf, "Fiscal Incidence Studies in Developing Countries:
Survey and Critique," IMF Staff Papers, Vol. 24, March 1975, pp. 61-
131; and G. Ballentine, J. Dean, and W. R. Thirsk, Some Measures of
Fiscal Incidence in Canada: 1969, unpublished Research Report,
1977, chapter 4.

are not sufficiently articulated. On the other hand, if the benefits

of public expenditures and the tax induced change in price level are

fairly uniform across jurisdictions, then, the enforcement of BTA

would pose no major administrative problems.

The type of VAT which should be adopted depends on the treatment

of investment goods. The gross product variant makes no allowance

whatsoever for investment and its conceptual base is the gross

domestic product. The income variant permits the deduction of annual

depreciation and its conceptual base is net domestic income. Finally,

the consumption variant exempts the full value of investment goods

and, in this form, the VAT reaches only consumption expenditures. The

value-added tax of the gross product type seems to be the adequate

form of business taxation to be implemented on a benefit basis. This

tax which is related to the jurisdictional concept of output on a

gross product basis provides a better approximation to a firm's volume

of activity, for the use of government services accrues whether capital

is replaced or not. The consumption basis, by excluding capital goods

as well as depreciation, omits an important share of the business

activity, and thus is a wholly inadequate index of the firm's utili-

zation of public services. On the other hand, the retail sales tax

or the value-added tax of the consumption type seems to be the adequ-

ate form of consumption benefit taxation. While the retail sales tax

enforces the destination principle automatically, the value-added tax

may be applied on either principle, since by means of BTA jurisdic-

tional taxes of the value added form can be transformed easily from

the origin to destination principle taxes. It follows that the en-
forcement of a mixture of origin and destination principles if deemed
necessary, would require a tax of the value added form.

4.4 Efficiency Aspects of Border Tax Adjustments

In this section we disregard the expenditure side of government
activity and concentrate on the BTA effects of general taxes on the
trade patterns and resource allocation of the countries involved. The
first systematic treatment of BTA appeared in 1953's Tinbergen Report,
in connection with the different treatment accorded to internal sales
tax by the the countries of the European Coal and Steel Community.[1]
Despite the elimination of customs barriers, the products of the Com-
mon Market still passed from one taxation system to another when they
moved from one country of the community to another. A solution should,
therefore, be found which avoided superimposing taxes of the same kind,
and which thus enabled products to move freely throughout the community.

One of the main results that emerged from the analysis of BTA is
that when exchange rates or price levels are flexible and taxes are
truly general, international trade will not be disturbed if a country
moves from the destination principle to the origin principle, or vice
versa, provided that international trade is balanced and provided that
international flows of factors and transfer payments are either zero or

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[1]See Tinbergen Report, European Coal and Steel Community, High
Authority, Report on Problems Raised by the Different Turnover Tax
Systems Applied Within the Common Market, Luxembourg, March 1953.

balanced before and after the exchange rate or price levels are

altered.[1]

The above argument is nothing but the direct application of the

theory of comparative advantage based on a static equilibrium model of

international commodity trade. Essentially, it states that interna-

tional trade is not based on any absolute cost advantage a country

may possess over other countries in production of any particular good,

but, rather, it depends on the difference between relative costs of

producing a particular good between one country and another. A truly

general tax does not change relative prices within a country, regardless

[1] See Tinbergen Report, ibid.; C. S. Shoup, "Taxation Aspects of International Economic Integration," Travaux de L'Institut International de Finances Publiques, Neuvieme Session, Fracfort, 1953, V. Stockum and Fils, The Hague, pp. 89-118, "The Theory of Harmonization of Fiscal Systems," a General Report to the Congress of Luxembourg, 1963, published by the Institut International de Finances Publiques, York, pp. 23-42; J. E. Meade, Problems of Economic Union, Chicago University Press, Chicago, 1953, Trade and Welfare, Theory of International Economic Policy, Vol. II, Oxford University Press, London, 1955, "A Note on Border Tax Adjustments," Journal of Political Economy, Vol. 82, November 1974, pp. 1013-15; Neumark Report, "Report of the Fiscal and Financial Committee," in The EEC Reports on Tax Harmonization, translated by H. Thurston, International Bureau of Fiscal Documentation, Amsterdam, 1963, pp. 95-156, also translated by the editors of Commerce Clearing House, Inc., Tax Harmonization in the Common Market, Chicago, 1963; H. Shibata, "The Theory of Economic Unions: A Comparative Analysis of Customs Unions, Free Trade Areas, and Tax Unions," in Fiscal Harmonization in Common Markets, Vol. 1, edited by C. S. Shoup, Columbia University Press, New York, 1967; pp. 145-264; H. G. Johnson and M. Krauss, "Border Tax Adjustments, Comparative Advantage and the Balance of Payments," Canadian Journal of Economics, Vol. 3., No. 4, November 1970, pp. 595-602; R. H. Floyd, "Domestic Tax Systems and the Provisions of the GATT A Theoretical Analysis of Their Implications for Economic Efficiency," doctoral dissertation, Rice University, 1971; E. Berglas, "Devaluation, Monetary Policy, and Border Tax Adjustments," Canadian Journal of Economics, Vol. 7, No. 1, February 1974, pp. 1-11.

of which principle of taxation that country employs, since the rate of
tax is the same for every product. Since the relations between the two
countries in real terms remains the same, the effect of a change in
tax principle is a nominal one, expressed in monetary terms, and is
compensated for automatically by changes in the value of the two cur-
rencies, or in the world of fixed exchange rates by changes the abso-
lute price level.[1]

Let us illustrate the foregoing proposition by assuming two trad-
ing countries Home, H, and the Rest of the World, ROW, each producing
two goods X and Z with international prices given by P_x and P_z respec-
tively. In the absence of taxes, these are the prices faced by pro-
ducers and consumers in both countries. Assume that under perfect
competition and full employment, H's government imposes a general tax
on goods and the <u>origin</u> principle is adopted. After the imposition
of the tax, at constant terms of trade, consumers face the same price
as before and producers face lower prices, i.e.,

$$P_{ic} = P_i; \quad P_{ip} = \frac{P_i}{1+t_p} \; ; \; i = X, Z \tag{1}$$

where P_{ic}, P_{ip}, and t_p stand for H's consumers price, and H's producers
price and tax rate respectively. Suppose now that H's government im-
poses a general tax on goods and the <u>destination</u> principle is choosen

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[1]Note the similarity of movement from origin to destination prin-
ciple and movement from export tax to tariff. The symmetry between
export taxes and tariffs was first noticed by A. P. Lerner, "The Sym-
metry Between Import and Export Taxes," <u>Economica</u>, Vol. 3, August
1936, pp. 306-313.

instead. After the imposition of the tax, at constant terms of trade, producers face the same price as before and consumers face a higher price, i.e.,

$$P_{ic} = P_i(i+t_c) \; ; \; P_{ip} = P_i \; ; \; i = X,Z \tag{2}$$

where t_c stands for the consumers tax rate in H.

The after tax position of the economy H with respect to the ROW is the same regardless of whether the origin or the destination principle applies since relative prices of X and Z as seen by consumers and producers has not changed between H and ROW, i.e.,

$$\frac{P_{xc}}{P_{zc}} = \frac{P_x}{P_z} = \frac{P_{xp}}{P_{zp}} \tag{3}$$

The final consumption and production level in economy H will depend on how the government spends their tax proceeds. If the government and the private sector have the same marginal propensity to consume between goods X and Z, then, the after tax level of consumption and production in H economy remains the same. The only difference between the two principles, origin and destination, is the absolute price level in H economy. Under the origin principle producer prices are lower than foreign prices, and with the destination principle consumer prices are higher than foreign prices. A switch from the origin to the destination principle increases import prices as faced by consumers and export prices as faced by producers. As a result a balance of payment surplus takes place and an appreciation restores the initial

trade equilibrium. Similarly, a change from the destination to the

origin principle decreases the import prices as faced by consumers and

the export prices as faced by producers. As a result a balance of pay-

ments deficit is generated and a devaluation restores the initial trade

equilibrium.[1] Therefore, for truly general taxes BTA are quite irrele-

vant to considerations of efficiency. A truly general production tax

is equivalent to a fiscal system that taxes the domestic production of

both commodities, X and Z, at the same rate, exempts exports, and

imposes a compensatory tax on imports. The sole effect of the BTA is

to transform the general production tax into a general expenditure or

consumption tax.

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[1] A devaluation brings about changes in relative prices that causes
a shift of expenditures towards the devaluing country's exports and
away from its imports. These relative price changes may affect the
devaluing country's terms of trade. The terms of trade will not change
with a devaluation if the elasticity of supply of exports is equal to
the elasticity of demand for imports at home and abroad. See J. Robin-
son, "Beggar-My-Neighbour Remedies for Unemployment," in Essays on the
Theory of Employment, 2nd. ed., Blackwell, Oxford, 1947, Part III,
chapter 2. Reprinted in Readings in the Theory of International Trade,
American Economic Association, Blakiston, Philadelphis, 1949. None
of these questions is particularly novel; however it is well under-
stood by now that there are some things in the background that are
being held constant. Since these background stories are essential to
the operation of the model, it is important to establish what exactly
is implicitly assumed. For instance, an exogenous increase in the
price of traded goods due to a devaluation, given the nominal quantity
of money, in the short run will result in a fall in real money balances,
aggregate expenditure, and the relative prices of non-traded goods.
Starting from an initial equilibrium in the balance of payments, this
will lead to a surplus. In the long run, equilibrium will be restored;
all prices will increase proportionatelly; and the stocks of foreign
exchange reserves will rise. See Berglas, "Devaluation, Monetary Policy,
and Border Tax Adjustments, ibid.

Proposals in the late sixties to substitute in the U.S. a value-
added tax for the corporation income tax arose because provisions of
the General Agreement on Tariffs and Trade, GATT, do not allow tax
rebates on direct taxes. It was contended that nations like the U.S.,
which use factor taxes rather intensively are at a competitive dis-
advantage as compared with nations which rely relatively more on pro-
duct taxes. The basic shortcoming of this argument is that it fails to
distinguish clearly between the effects a nation's tax structure may
have on international trading patterns on the one hand, and the effect
that _changes_ in the nation's tax structure may have on international
trading patterns on the other hand. In other words, when price levels
are allowed to fluctuate, changes in general tax structures are equiva-
lent in the long run to a devaluation or an appreciation and therefore
should not have major implications on existing patterns of trade.[1]

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[1] See R. A. Musgrave and P. B. Richman, "Allocation Aspects, Domes-
tic and International," in The Role of Direct and Indirect Taxes in the
Federal Revenue System, N.B.E.R. and Brookings, Princeton University
Press, Princeton, 1964, pp. 81-139; R. A. Musgrave, "Tax Policy," The
Review of Economics and Statistics, Vol. 46, May 1964, pp. 127-30,
"Effects of Business Taxes upon International Commodity Flows," in M.
Krzyzaniak (ed.) Effects of Corporation Income Tax, Wayne State Univer-
sity Press, Detroit, 1966, pp. 118-35, Fiscal Systems, ibid., chapter 11;
W. Salant, "The Balance of Payments Deficit and the Tax Structure," The
Review of Economics and Statistics, Vol. 46, May 1964, pp. 131-38; R. W.
Lindholm, National Tax System and International Balance of Payments,"
National Tax Journal, Vol. 19, June 1966, pp. 163-72, "The Value Added
Tax: A Short Review of the Literature," Journal of Economic Literature,
Vol. 8, No. 4, December 1970, pp. 1178-89, "The Value Added Tax: Re-
joinder to a Critique," Journal of Economic Literature, Vol. 9, No. 4,
December 1971, pp. 1173-79; C. E. McLure, Jr., "Taxes and the Balance
of Payments: Another Alternative Analysis," National Tax Journal,
Vol. 21, March 1968, pp. 57-69; The Tax on Value Added: Pros and Cons,"
in Value Added Tax: Two Views, edited by American Enterprise Institute,
Washington, D.C., 1972, pp. 1-68, "Economic Effects of Taxing Value
Added," in Broad-Based Taxes: New Options and Sources, R. A. Musgrave
(ed.), Johns Hopkins University Press, Baltimore, 1973, pp. 155-204;

The BTA issue has usually been confined to cases of open economies under balanced international trade, flexible price levels and/or exchange rates, and internationally immobile factors of production. In this setting the allocation effect of a general tax on products is equivalent to a general tax on incomes, since no factor income flows between countries. Thus, an interesting correspondence develops between the origin-principle product tax and the source-principle income tax on the one hand, and the destination-principle product tax and the residence-principle income tax on the other hand.[1]

Suppose, however, that besides product trade there are movements of factors of production across borders and/or movements of residency of factor owners. For example, an individual may export his capital but stay in his home state, or he may decide to live in some other state but leave his capital service at home. Once we allow for the existence of factor mobility and changes of residency between countries, the correspondence between origin and source principles on one side, and destination and residence principle on the other side ceases to hold. Only in the special case where an origin principle tax is fully reflected in lower factor prices the origin-source correspondence is preserved.

(continued)
R. H. Floyd, "Domestic Tax Systems and the Provisions of the GATT: A Theoretical Analysis of their Implications for Economic Efficiency," ibid., M. Krauss and R. Bird, "The Value Added Tax: Critique of a Review," Journal of Economic Literature, Vol. 9, No. 4, December 1971, pp. 1167-73; A. C. Harberger, Taxation and Welfare, Little Brown, Boston, 1974, chapters 14 and 15.

[1] The closed economy counterpart of this result is the equivalence between a general tax on factor payments and a general tax on sales. See Musgrave, The Theory of Public Finance, ibid., pp. 350-53.

The correspondence between destination and residence principle however
is less close, since incomes earned abroad may be spent and used
abroad, thereby avoiding their domestic destination tax but not their
domestic residence tax.[1]

The long run equivalence between the origin and the destination
principle in connection with general taxes is not universal and depends
crucially on the assumptions of the model. In fact the equivalence of
principles breaks down completely with factor/owner mobility. When
factor services can move across the border, an origin principle tax
induces movements of factor services, unless the rate of tax is the
same as that applied by the rest of the world. Similarly, when factor
owners, instead of factor services, can move across the border a des-
tination principle tax induces movements of factor owners unless the
rate of tax is the same as that applied by the rest of the world.[2]
Finally, when factor services and factor owners can move across the
border, any form of tax induces one of these movements, except when
tax rates are equal in all jurisdictions, since factor owners can
minimize their destination tax burden by living in the low tax state
or employing their factors in the state of low origin tax.[3]

[1]The tax rate will not provoke movements of factor services and/or
factor owners across the border if it can be assumed that income re-
cipients regard the tax as a payment for governmental services pro-
vided. See C. K. Sullivan, "Indirect Taxation and Goals of the Euro-
pean Economic Community," in Fiscal Harmonization in Common Markets,
Vol. II, ibid., pp. 1-102, pages 73-79.

[2]Aside considerations of commuting transport costs.

[3]See R. Varsano, "Border Tax Adjustments, Factor Mobility, and
Growth," doctoral dissertation, Stanford University, July 1977; M.
Schmundt, "The Value Added Tax and International Factor Mobility -
A General Equilibrium Analysis," unpublished paper, 1974.

A switch from the origin to the destination principle has, in this case, allocative effects which were absent with immobile factors of production. Suppose that capital services are internationally mobile. While changes in BTA do not affect capital services directly, changes in the exchange rate do affect the rate of return of international factors of production. A switch from the origin to the destination principle which leads to an appreciation of the exchange rate can be thought of as an export tax and an import subsidy of factor services. Domestic residents supplying capital services abroad face a reduced value for their repatriated factor earnings at the new exchange ratio. On the other hand, foreign residents supplying capital services domestically face an increased value for their repatriated factor earnings at the new exchange ratio. Thus, a switch toward the destination principle induces capital to flow into the country. By a similar reason a switch toward the origin principle induces capital to flow out of the country.[1]

4.5 Triangular Trade Flow with Restricted Origin Principle

In this section we will show that even when we allow for the assumptions embodied in the standard analysis of BTA (balanced international trade, flexible exchange rate or price levels, and internationally immobile factors) and furthermore restrict outselves to uniform as well as general taxes across products and countries, the choice of BTA need not be irrelevant. In effect, a change-over from an over-all destination or origin principle to the restricted origin

---

[1] See Schmundt, _ibid_.

principle, ROP, (origin principle applied to domestic trade and des-

tination principle applied to foreign trade) may affect the interstate

distribution of revenues and the domestic and foreign trade patterns

as well. In particular, when a triangular trade flow of goods takes

place and, say, two countries decide to form an economic union or a

federation and the restricted origin principle is adopted in this

union or country, a reallocation of tax revenues is generated between

these two countries or states which cannot in general be compensated

by a change in the exchange rate or absolute price levels.[1,2]

Let us suppose a federation composed of only two states or per-

haps more realistically two regions:[3] the Northeast, NE, and the Rest

of the Country, ROC. Suppose furthermore that these two regions are

open to trade with the Rest of the World, ROW, as well as between

themselves, and that factors of production are immobile between re-

gions and internationally. Finally, assume that both regions balance

of commodity trade is equilibrated which may be stated in terms of

the usual trade notation:

$$X^i - p^i M^i = 0, \quad i = NE, ROC \tag{4}$$

---

[1] Difficulties related with the adoption of the ROP has been analysed for the case of general and uniform taxes which are not equal between countries. See H. Shibata, "The Theory of Economic Unions, Free Trade Areas, and Tax Unions," ibid., T. Georgakopoulus, "Tax Harmonization and International Income Distribution," National Tax Journal, Vol. 25, December 1972, pp. 541-55.

[2] As in the previous section we disregard here the expenditure side of government activity.

[3] The terms "state", "region", and "country", are used here inter-changeably.

where X^i, M^i and p^i refer to the amount of regional exports (to both

domestic and foreign sources), imports (from both domestic and foreign

sources), and the relative price of regional imports in terms of

regional exports respectively, for the NE and the ROC. Since

$X^{NE} + X^{ROC} = X$, and $M^{NE} + M^{ROC} = M$ the federation balance of trade

is also equilibrated, or in the above notation:

$$X - pM = 0 \tag{5}$$

where X, M, and p refer to the amount of exports, imports, and the

relative price of imports in terms of exports for the whole nation.

A typical case of triangular trade flow may arise if we suppose

that the NE is a net exporter to the ROW. Under this assumption the

above formulation immediately implies that the NE must be a net importer

from the ROC, and it also follows that the ROC must be a net importer

from the ROW and a net exporter to the NE. In order to point out more

clearly the tax revenue effects of border tax adjustments let us put

the above assumptions in a graph.

Suppose a simple model consisted of three goods X, Y, and Z, three

states, NE, ROC, and ROW, each producing and trading two goods, and let

the price of the three goods be initially equal to one. Consider an

extreme case of balanced triangular trade, where NE exports only to ROW,

ROW exports only to ROC, and ROC exports only to NE. In Graph II below,

by rearranging the conventional trade diagram, we describe the produc-

tion transformation frontier under increasing costs of the three coun-

tries involved. In the absence of taxes and assuming perfect competi-

GRAPH II

TRIANGULAR TRADE FLOW
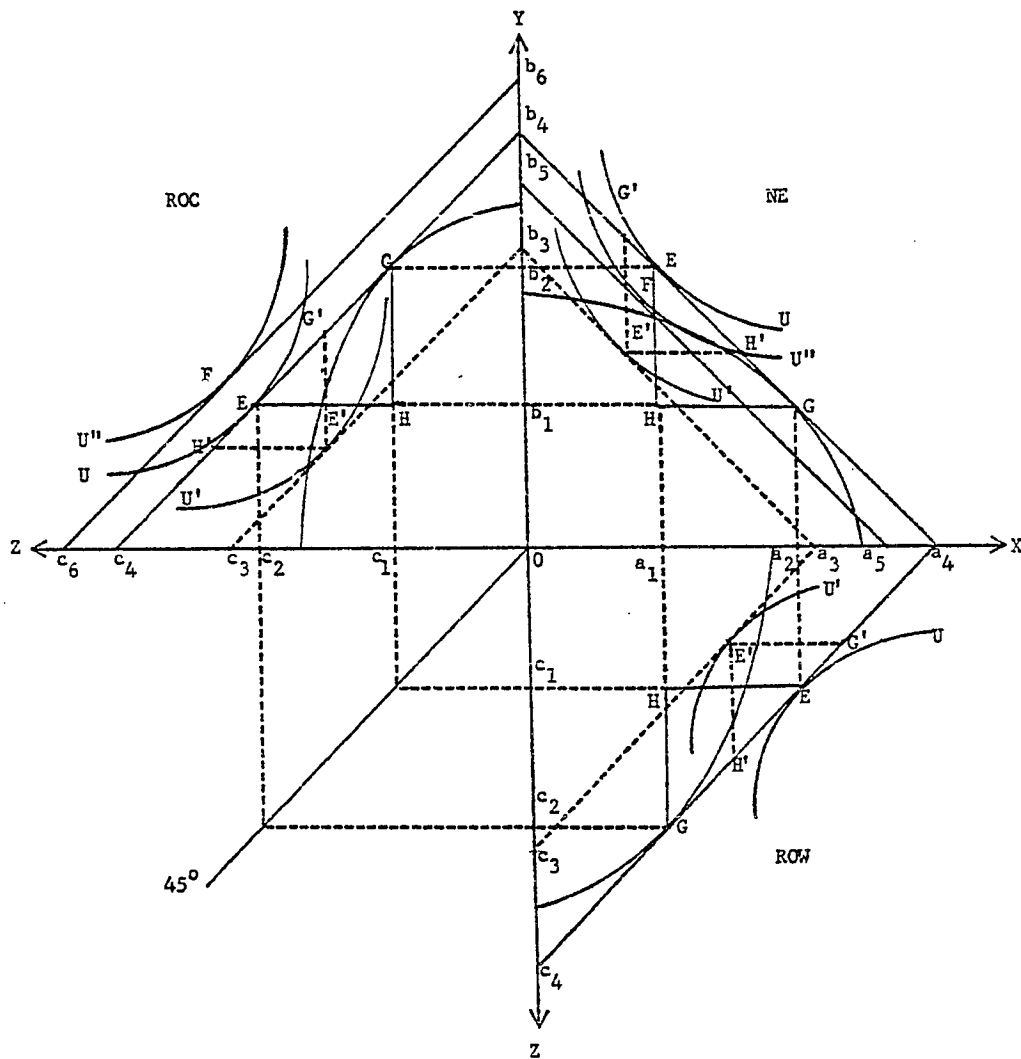
tion, full employment, and given tastes these conomies maximize consumption at equilibrium point E where each state's community indifference curve, U, is tangent to the outermost respective budget lines or relative prices, a_4b_4, a_4c_4, b_4c_4. At this point E all states display equilibrated balance of trade given by equal trade triangles EGH: the NE's export to the ROW, a_1a_2 of X, is matched by its import from the ROC, b_1b_2 of Y; the ROW's export to the ROC, c_1c_2 of Z, is matched by its import from the NE, a_1a_2 of X; and the ROC's export to the NE, b_1b_2 of Y, is matched by its import from the ROW, c_1c_2 of Z.[1]

Let each state impose a general and uniform tax across products and states with the destination (origin) principle enforced on domestic and foreign trade. After the imposition of the tax, at constant terms of trade, producers (consumers) face the same price as before and consumers (producers) face higher (smaller) prices. As consumers (producers) in each state face higher (lower) absolute prices, private incomes in terms of either good are smaller now and this change may be represented by the dashed budget lines, a_3b_3, a_3c_3, b_3c_3, which lies inside and parallel the initial budget lines. The government in each state obtains an income equal to a_3a_4 in terms of X (or c_3c_4 in terms of Z, or b_3b_4 in terms of Y). Since relative prices have not changed

---

[1]The use of community indifference curves to clarify the basic problem of international trade is due to W. Leontief, "The Use of Indifference Curves in the Analysis of Foreign Trade," *Quarterly Journal of Economics*, Vol. 47, May 1933, pp. 493-503. For a critique of the concept of community indifference curve, see P. A. Samuelson, "Social Indifference Curves," *Quarterly Journal of Economics*, Vol. 70, No. 1, February 1956, pp. 1-22.

the new private consumption point of these economies is E',[1] and

their total consumption (private plus public) depends on how the

government sector spends the tax revenue. Assume that the only

government activity is taxation and consumption. The total consump-

tion points must lie somewhere between G' and H' on the initial budget

lines.[2] If government and private tastes are identical at the margin

then E is the equilibrium point of total consumption and the trade

triangle EGH remains the same with or without the tax in all states.[3]

Now, in this setting, let us suppose that two states, NE and ROC,

join in a federation and decide to adopt the ROP. As a result, with

the adoption of the origin principle for, and only for, interstate

trade, the ROC's import tax base is unchanged and it gets an entirely

new export tax base, while the NE is not allowed to tax any of its

imports or any of its exports. In graph II, before the change in

tax principle, the value of the NE's tax base was a_1+b_2 and the ROC's

tax base was b_1+c_2, both measured in terms of a common unit of ac-

count. After the shift to the ROP the NE's tax base reduces to a_1+b_1

---

[1] We assume homothetic tastes which imply that the consumption
expansion path is a straight line for constant price ratios. The
argument does not depend on this assumption.

[2] Points like G' and H' are relevant for, say, the NE when the
government's marginal propensity to consume good Y and X is equal to
one respectively.

[3] The assumption that the government and the private sector have
the same tastes ensures that relative product prices will not change
as a result of the "expenditure" incidence of government activity.
However, relative prices may vary also due to a change in the distri-
bution of the benefits of government expenditures. Since public goods
are not incorporated into this model we may not have to worry about
the benefit side at this point.

while the ROC's tax base increases to b_2+c_2. Thus the tax base lost

by the NE, b_1b_2, is equal to the tax base gain by the ROC. The re-

allocation of tax bases implies a reallocation of tax revenues from

the NE to the ROC, given by the product of the common tax rate times

the changed value in the domestic tax base (or, the value of the

domestic trade imbalance).

An alternative and much simpler interpretation of this result is

presented in Table VIII. The allocation of the tax base under the

three tax principles depends ultimately upon the origin and destination

of the taxed goods. Only domestically produced and consumed goods

(purely local) are part of the tax base under the three tax principles

under consideration. Even though the taxable activity is different

under each tax principle, the size of the NE's tax base does not depend

upon the choice of BTA. Thus, in Table VIII (a) a size of the tax base

in the NE is the same whether one chooses one principle or the other.

However, under the assumption of our triangular trade model, adoption

of the ROP implies that the NE loose their tax base on domestic as well

as on foreign trade. Hence, in Table VIII (b) the size of the NE's tax

base is reduced to goods which are produced and consumed domestically

only.

The implication of a unilateral transfer of revenues to the states

involved may be singled out into the income effect or purchasing power

passing between the two states, and the change in the terms of trade

implied by this transfer. If the terms of trade do not change the

income effect shifts parallel the budget line of both states in oppo-

site directions. The NE's budget line would shift inward to a_5b_5 say,

TABLE VIII

(a)

NE's ALLOCATION OF THE TAX BASE

Goods / Tax Principle	Imported from		Purely	Exported to	
	ROC	ROW	Local	ROC	ROW
Destination	*	*	*		
Origin			*	*	*
ROP		*	*	*	

(b)

RESTRICTED ORIGIN PRINCIPLE IN THE TRIANGULAR TRADE MODEL

Goods / State	Imported from		Purely	Exported to	
	ROC	ROW	Local	ROC	ROW
ROC		*	*	*	
NE			*		

*Stands for part of the tax base.

and the ROC's budget line would shift outward to say $b_6 c_6$. Therefore,

after the ROP is adopted the consumption point takes place at F where

each state indifference curve U" is tangent to the respective new bud-

get lines. However, point F cannot be a final solution since at this

point the market for X, Y, and Z are not cleared. In fact, there is

an excess supply of Y in the domestic market, while in the internatioal

market there is an excess demand for Z and an excess supply of X. As

a result a readjustment of production, consumption, and trade is likely

to occur in each economy until a new equilibrium is eventually attained.

Whether the terms of trade will change depends upon the relative size

of the marginal propensities to consume goods X, Y, and Z in the

relevant economies.[1]

4.6 The Restricted Origin Principle and the Provision of State Public Services

When a reallocation of tax revenues takes place along the lines

described above the provision of local public goods may not be socially

optimal. Since part of the ROC's tax revenues end up being paid by

out of the state residents the ROC's provision of public goods will

tend to be oversupplied and the NE's provision of public goods will

tend to be undersupplied.[2]

---

[1] In the usual two goods, two countries model, the terms of trade will be unchanged by a unilateral transfer if the ratio of the marginal propensity to consume imports and exports are equal in both countries. See P. A. Samuelson, "The Transfer Problem and Transport Costs: The Terms of Trade when Impediments are Absent," Economic Journal, Vol. 62, June 1952, pp. 278-304.

[2] In the context of interstate tax exporting this point has been advanced by McLure. See his "The Interstate Tax Exporting of State and Local Taxes: Estimates for 1962," ibid. The impact of state tax exporting on the level of state expenditures (from own sources) has been found to be positive and significant at the one percent level.

A simple way of showing the welfare effects of ROP is to assume

two states, NE and ROC, producing public goods at constant costs in

terms of a private numeraire good. Assume as before that the two

states are open to domestic and foreign trade and that a balanced

triangular trade takes place. Furthermore, assume that the two states

have equal incomes, identical homothetic tastes, factors of production

are immobile between states and internationally, and that benefits of

public expenditures accrue to consumers. Thus a general, uniform, and

equal rate product tax is applied, in each state, according to the

destination principle on both domestic and foreign trade.[1] Finally,

suppose that consumption is maximized in each state in the sense that

the slope of their community indifference curves are equated to the

slope of their budget lines.[2]

(continued)
See F. J. Cummings, III, "The Interstate Incidence of State and Local
Taxes: Theory and Application," doctoral dissertation, University of
Virginia, 1976.

[1]That is, we assume that the marginal tax for every individual in
each state equals a measure of the marginal benefit to him of the pub-
lic provided good. Implicit in this statement is the assumption that
public preferences are somehow revealed to the state decision maker,
possibly through the political process. Alternatively, we might regard
the preference map as belonging to the state legislature, which is ex-
pected to have majority preferences with respect to the burden of taxes
and type of expenditures. See A. D. Scott, "The Evaluation of Federal
Grants," Economica, Vol. 19, November 1952, pp. 377-94. These assump-
tions which are based on the tradition of the voluntary-exchange tax
theories have been criticized by P. A. Samuelson. See his "Pure Theory
of Public Expenditure and Taxation," in J. Margolis and H. Guitton
(eds.), Public Economics: An Analysis of Public Production and Con-
sumption and Their Relations to the Private Sector; Proceedings of a
Conference held by the I.E.A., London, MacMillan, 1969.

[2]These indifference curves show, by their slopes, the value of the
sum of the marginal rate of substitution between public and private
goods in each state. Note also that in the case of constant costs be-
tween public and private goods the budget lines as seen by consumers
coincide with the production transformation frontiers as seen by pro-
ducers.

In this setting, let the ROC and NE's incomes in terms of private

goods be shown on the vertical axis of graph III by the distance OM_o,

and along the horizontal axis we measure quantities of the local public

goods provided in each state.[1] Furthermore, let M_oM' represent the

budget line and let U_o represent the community indifference curves

facing each state. Under these assumptions the production and con-

sumption equilibrium point in each state is P_o. Adoption of the ROP

rotates the ROC's budget line as seen by consumers outward to M_oM_R' by

an amount equal to the tax rate times the ROC's domestic trade surplus,

and similarly it rotates by the same amount the NE's budget line in-

ward to M_oM_N'. The new consumption point takes place at P_1 in the ROC

and at P_2 in the NE, if for instance, the price elasticity of demand

for local public goods in each state is equal to one.[2]

Now, suppose that instead of reallocating revenues through adopt-

ion of the ROP the central government decides that the same amount of

tax reallocation should be attained through federal lump-sum transfers.

In this case, the state budget lines after the tax redistribution must

be parallel to M_oM_o' since prices are unaffected by lump-sum transfers,

and furthermore, the budget lines must go through points P_1 and P_2 if

the amount of tax redistribution is to be equal to the revenue trans-

ferred through the change in BTA principle. But along these new bud-

---

[1]Since the assumed price per unit of public goods in terms of pri-
vate goods is unity, the horizontal axis may be set to indicate the
value as well as the quantities of the public services provided.

[2]Unitary price elasticity of demand implies that total expendi-
tures in public goods must be constant, hence, in graph III revenues
at points P_o, P_1, and P_2 equals M_oT. The argument does not depend on
this assumption.

GRAPH III

PROVISION OF STATE PUBLIC GOODS
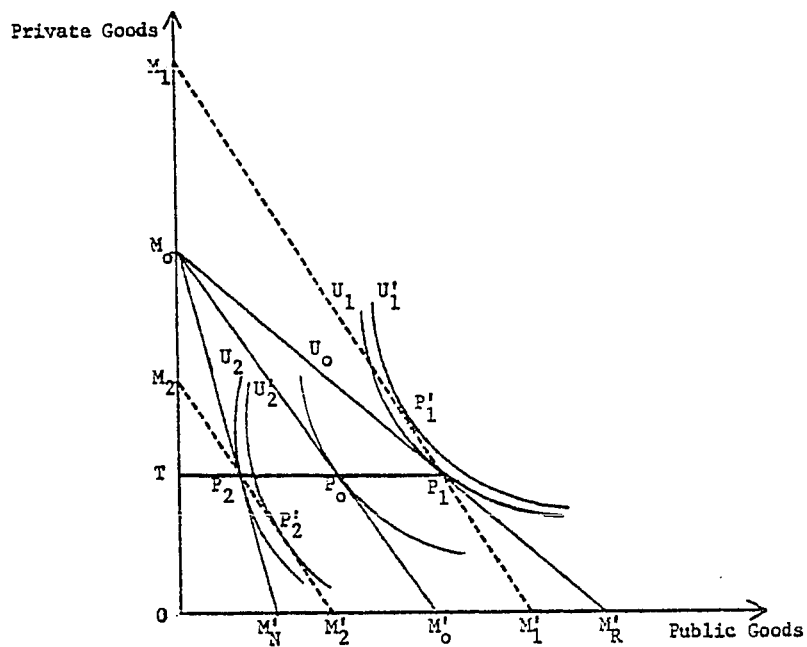
get lines, M_1M_1' in the ROC and M_2M_2' in the NE, both states may increase their levels of welfare since the ROC and the NE can chose instead of P_1 and P_2 respectively, the consumption points P_1' and P_2' which correspond to higher community indifference curves. Therefore, the provision of local public goods will tend to be oversupplied in the ROC and undersupplied in the NE with the implied efficiency cost being indicated by the difference between community indifference curves U_1' and U_1 in the ROC, and U_2' and U_2 in the NE.[1]

4.7 The Restricted Origin Principle with State Trade Imbalance

The NE's domestic trade deficit might not be financed only through foreign trade surplus as implied by the triangular trade model. As a result of redistributive policy of the central government net unilateral transfers of income may take place between states or regions, which might finance a continuous imbalance in the domestic trade on goods. Also, the provision of "national" public goods by the central government and/or the net flow of private capital and other services might finance a deficit in the domestic balance of trade. In contrast with international transactions the interstate net transfer of funds might continue for a long period of time without causing major problems of interstate liquidity, and thus there is no reason to expect that

---

[1] The distortions caused by enforcing the ROP with triangular trade flow does not depend on the benefit of public expenditures, as long as they accrue equally to producers and/or consumers in both states.

domestic trade imbalance be adjusted even in the long run.[1]

Let us now drop the assumption that the regional commodity trade
is balanced and let us assume instead that the international trans-
actions of the whole country is balanced. Conditions (4) and (5) may
be restated as:

$$X^i - p^i M^i \lesseqgtr 0 \qquad , i = NE, ROC \qquad (4')$$

$$X - pM = 0. \qquad (5')$$

Condition (4') tells us that the level of regional expenditure on
final goods (or absorption) is greater or smaller than the level of
regional production or income. Since the national balance of trade
is equilibrated by condition (5'), a deficit or a surplus in one
region will be equal to a surplus or a deficit in the other region.[2]
In this setting, as seen in section 4.4, origin and destination
principle taxes are no longer equivalent, and thus the choice of BTA
at the subnational level have distribution as well as allocation

---

[1] A characteristic of interstate payments in a federal system is
the existence of a common monetary unit which rules out exchange rate
adjustments for correcting domestic trade imbalances. However, in
this section we neglect this aspect of interstate payments since price
flexibility as well as flexible exchange rates relates to the adjust-
ment, as opposed to mere financing of a commodity trade deficit. See
T. Scitovsky, "The Theory of Balance-of-Payment Adjustment," _Journal
of Political Economy_, Vol. 75, No. 4, Supplement, August 1967,
pp. 523-31.

[2] This imbalance defines unequivocally the "producer" and the
"consumer" region or state. It reflects the difference between total
goods produced in the region and total goods taken off the market
locally in a given period.

effects quite apart from the implications of the triangular trade model.[1]

Once these difficulties are recognized it does not follow that BTA considerations should stop here. The determination of optimal rules for interstate taxation might be derived through benefit taxes as suggested in section 4.3 above. Within the framework of benefit taxation, however, the choice of an adequate principle of BTA must rely on assumptions regarding the tax induced change in the absolute price level in each state as well as on the beneficiary of the state public expenditures. The question here is whether or not goods that cross the borders carry, embodied in them, intermediate public services provided by the state of origin, and if so, whether or not the price of these goods reflect the value of the public service provided.

Let us consider illustrative values for the regional trade imbalance which satisfy conditions (4') and (5') stated above. Furthermore, let us incorporate the results of the triangular trade model by assuming that a triangular trade flow takes place in the same direction considered before. Table IX shows the composition of the regional trade imbalance divided between domestic and foreign trade imbalances along with an equilibrated balance of trade at the federal level. Although the regional domestic and foreign imbalances have opposite

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[1]The fiscal impact of international trade imbalances has been studied by Sullivan without consideration of the expenditure side of government activity. See C. K. Sullivan, "Indirect Tax Systems in the European Economic Community and the United Kingdom," in Fiscal Harmonization in Common Markets, Vol. II, ibid., pp. 103-72.

TABLE IX

REGIONAL TRADE IMBALANCE

$\underline{NE}$ $(X^{NE} - p^{NE} M^{NE} < 0)$ -100

Domestic   -150

Foreign   50

$\underline{ROC}$ $(X^{ROC} - p^{ROC} M^{ROC} > 0)$ 100

Domestic   150

Foreign   - 50

$\underline{FEDERATION}$ $(X - pM = 0)$ 0

signs they do not cancel each other, hence the regional trade imbalance.

In order to calculate the amount of tax revenues transferred between

the NE and the ROC when the ROP is adopted, we must now treat separ-

ately, the triangular trade component of the regional imbalance from

the domestic surplus or deficit generated through the interregional net

transfers of funds. We have seen that the reallocation of tax revenues

from the NE to the ROC as implied in the triangular trade model is giv-

en, by the national tax rate times the value of the ROC's domestic trade

surplus which is financed through the NE's foreign trade surplus. The

ROC's domestic trade surplus, as presented in Table IX, 150, overstates

the amount of the ROC's domestic surplus which is financed through the

NE's foreign surplus, 50, by an amount equal to the interregional net

transfers of federal funds, 100. Call this latter balance the "net"

domestic surplus (deficit) of the ROC (NE). The amount of tax reven-

ues eventually reallocated through the "net" domestic imbalance then

may be calculated with the aid of the "benefit rule" for the choice of

BTA as derived in section 4.3 above.

In Table X we seek to characterize the interstate reallocation of

revenues which may result from the application of incorrect BTA to the

NE's and ROC's commercial trade, as depicted in Table IX. Consider

the introduction of a ten percent national tax on all goods applied

according to the ROP. In the triangular trade model the reallocation

of tax revenues does not depend on the benefits of public expenditures,

thus 5 units are transferred from the NE to the ROC in the four cases

under analysis. Within the framework of benefit taxation the reallo-

cation of tax revenues depends on the benefits of public expenditures

TABLE X

REALLOCATION OF TAX REVENUES[1]

Product Price:	Rise	Unchanged
Benefits to:		
CONSUMERS		
NE	-15	- 5
Due to triangular trade	- 5	- 5
Due to "net" domestic deficit	-10	0
ROC	15	5
Due to triangular trade	5	5
Due to "net" domestic surplus	10	0
Benefits to:		
BUSINESS FIRMS		
NE	- 5	5
Due to triangular trade	- 5	- 5
Due to "net" domestic deficit	0	10
ROC	5	- 5
Due to triangulr trade	5	5
Due to "net" domestic surplus	0	-10

Source: Table IX

[1] Minus sign stands for revenue lost.

and the tax induced changes in the price level. Suppose, first, that
public expenditures are a benefit to consumers. As a result of the
"net" domestic imbalance the NE would lose and the ROC would gain
tax revenues, 10 units, when product prices fully reflect the amount
of the tax. However, if prices remain unchanged, no reallocation of
tax revenues takes place. The total reallocation of tax revenues
adds up to 15 units in the former case and 5 units in the latter case.
Secondly, suppose that public expenditures are a benefit to business
firms. There would be no reallocation of tax revenues as a result of
the "net" domestic imbalance when product prices fully reflect the
amount of the tax. However, if prices remain unchanged, the NE would
gain and the ROC would lose tax revenues, 10 units. The total real-
location of tax revenues adds up to 5 units in each case.[1]

4.8 Conclusion

The choice of proper BTA depends crucially on the composition of
the regional trade imbalance. The reallocation of revenues due to the
triangular trade flow could be easily adjusted by adoption of the same
principle, origin or destination, for domestic as well as foreign
trade. On the other hand, the reallocation of revenues due to the
"net" trade imbalance would require the adoption of an interstate tax
rate that takes into account the benefits of public expenditures and
the tax induced change in the price level.

---

[1]This broad view of the fiscal implications of BTA rejects the
popular argument in Brazil that the origin principle, as applied for
domestic trade, inevitably favors producer's states. Thus, if public
expenditures are a benefit to business firms and product prices remain
unchanged, the ROC is likely to be worse off under the current system
of BTA.

Chapter V

Revenue Effect of NE's Triangular Trade

5.1 Introduction

The quantification of regional trade flows involves known statis-
tical difficulties essentially because of the lack of adequate infor-
mation on trade at the subnational level.[1] In the case of Brazilian
Northeast, however, it is possible to obtain, for domestic as well as
foreign flow of goods, a set of data which in spite of the statistical
limitations, portrays the performance of the NE's regional balance of
trade, and indicates the general trend of its recent development.
Once the quantity of goods that flow to and from the NE's region by
origin and destination has been identified, the characterization of a
triangular trade will emerge between the NE, ROW, and ROC. The real-
location of tax revenues, in the sense discussed before, will then be
calculated by applying to the ROC's domestic trade surplus the inter-
state tax rate.

5.2 NE's Domestic Trade

A substantiated account of the NE's economic condition during the
fifties is presented by the CODENO report which was submitted to the
President Kubistchek administration in 1959. Included in this docu-
ment is a description of the NE's foreign as well as domestic imbal-
ance on traded goods. The data on domestic trade imbalance is pre-
sented in time series form covering the period 1948-56, being estimated,
presumably, through the direct counting of sales receipts copies which

-----

[1]The values of 1963 trade between 51 U.S. states are listed in
J. M. Rodgers, State Estimates of Commodity Trade Flows, 1963, Heath,
Lexington Books, Lexington, Massachusetts, 1973.

are collected on interstate border controls.[1] These data were extend-
ed into the sixties through a special study carried by SUDENE's econo-
mists in 1970.[2] Currently, the last information on both NE's domestic
imports and domestic exports is given by the CEDEPLAR's matrix of
interstate commerce for 1969.[3] Data on the NE's domestic imports
were published for 1974 and preliminary estimates for this year's
domestic exports were provided to us by SUDENE.[4] The foregoing infor-
mation is brought together in Table XI.

Table XI shows that the NE has had perenial deficits with the
ROC, and these deficits increased in the latter years of the sixties.
The average domestic deficit was 63.1 millions during the early
fifties (1948-56), and 214.4 millions during most of the sixties
(1960-69). Observe that inspite of the annual changes in the level
of exports it remained practically constant, both in the fifties and

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[1]See Conselho de Desenvolvimento do Nordeste - CODENO (Council
for the Development of the Northeast), A Policy for the Economic De-
velopment of the Northeast, Presidencia da Republica, Rio de Janeiro,
1959. The Working Group for the Development of the Northeast (Grupo
de Trabalho para o Desenvolvimento do Nordeste - GTDN) created in
1956 was superseded by CODENO in 1959 which shortly after gave way to
the agency Superintendency for the Development of the Northeast -
SUDENE.

[2]SUDENE, Assessoria Tecnica, Importancia do Comercio Exterior no
Desenvolvimento da Economia do Nordeste, Recife, July 1970.

[3]Matriz de Comercio Interestadual, Centro de Desenvolvimento e
Planejamento Regional - CEDEPLAR, UFMG, 1976.

[4]See Importacoes por Vias Internas, Nordeste do Brasil, 1974,
SUDENE, Recife, 1976.

TABLE XI

NE's DOMESTIC TRADE (current US millions)[1]

Year	Exports	Imports	Balance
1948	217.6	296.3	-78.7
1949	244.9	354.5	-109.6
1950	286.0	381.9	-95.9
1951	365.9	443.7	-77.8
1952	357.6	436.3	-78.7
1953	171.1	231.6	-60.5
1954	175.7	209.3	-33.6
1955	180.2	220.0	-39.8
1956	267.1	265.0	2.1
1960	222.5	337.0	-114.5
1961	253.2	356.7	-103.5
1962	200.3	412.0	-211.7
1963	226.8	244.8	-18.0
1964	191.1	340.3	-149.2
1965	193.4	354.5	-161.1
1966	183.5	424.3	-240.8
1967	197.8	570.0	-372.2
1969	273.1	831.7	-558.6
1974	1,031.7	3,267.8	-2,236.1

Sources: 1948-56, CODENO Report, ibid.; 1960-67, SUDENE, AT, ibid.;
1969, CEDEPLAR, UFMG, ibid.; 1974, Importacoes por Vias
Internas, Nordeste do Brasil, 1974, ibid., and SUDENE's
preliminary estimates (exports). Trade through coastal
navigation was added according to Anuario Estatistico do
Brasil - 1976, Fundacao IBGE, Rio de Janeiro.

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[1] Dollar exchange rate as published in Conjuntura Economica, FGV,
Vol. 31, No. 4, April 1977.

sixties. Also, the NE's imports showed no significant trend until

1966, when it started to increase slowly in 1967 and substantially in

1969. The NE's exports to the ROC could have expanded in the two

decades, since the ROC was growing fast during all those years. How-

ever, the industrialization and modernization which was taking place

in the ROC was directed basically toward the provision of national

markets. Hence, many items of primary goods as well as manufactured

goods produced in the ROC substituted for ROC's imports from the NE.

On the other hand, the recent expansion of the NE's imports from the

ROC since 1967 is essentially the result of intensified policy of

regional development in the NE pursued by the federal government

through direct investments, revenue transfers, and investment tax

incentives to the private sector.[1]

5.3 NE's Foreign Trade

A complete account of the NE's foreign trade flows is less dif-

ficult to find and less subject to errors of estimation too. Data on

the NE's foreign imbalance covering the period 1948-56 appears in the

CODENO report[2] and they are extended through the sixties and into the

seventies in several sources.[3] Table XII assembles information show-

ing that the NE has had perenial surpluses with the rest of the world,

and these surpluses increased sharply in the latter years under exami-

[1]See D. E. Goodman and R. C. Albuquerque, Incentivos a Industrial-
izacao e Desenvolvimento do Nordeste, IPEA, Research Report No. 20,
Rio de Janeiro, 1974, Chapter 4.

[2]Ibid.

[3]See Anuario Estatistico do Brasil, Fundacao IBGE, Rio de Janeiro,
several years; and Manual de Estatisticas Basicas do Nordeste, Banco do
Nordeste do Brasil S.A., ETENE, Fortaleza, 1977.

TABLE XII

NE's FOREIGN TRADE   (current US millions)

Year	Exports	Imports	Balance
1948	197.6	93.2	104.4
1949	133.0	100.3	32.7
1950	174.1	86.9	87.2
1951	197.6	166.4	31.2
1952	114.5	173.3	-58.8
1953	169.6	95.3	74.3
1954	235.4	87.0	148.4
1955	238.5	86.2	152.3
1956	164.0	97.7	66.3
1957	212.1	131.8	80.3
1958	246.1	94.3	151.8
1959	216.1	79.3	136.8
1960	247.7	85.3	162.4
1961	262.6	81.9	180.7
1962	196.0	73.6	122.4
1963	247.8	80.4	167.4
1964	215.6	96.3	119.3
1965	203.0	67.0	136.0
1966	278.3	104.4	173.9
1967	277.2	119.7	157.5
1968	279.5	123.6	155.9
1969	415.3	118.7	296.6
1970	381.2	144.8	236.4
1971	403.3	210.4	192.9
1972	544.6	234.5	310.1
1973*	655.7	350.5	305.2
1974*	1,387.3	595.5	791.8

Sources: 1958=56, CODENO Report, ibid.; 1957=72, Manual de Estatisti-
cas Basicas do Nordeste, ibid.; 1973-74, Anuario Estatistico
do Brasil -1976, Fundacao IBGE, Rio de Janeiro.

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*Dollar exchange rate as published in Conjuntura Economica, FGV,
Vol. 31, No. 4, April 1977.

ination. The average foreign surplus was 70.9 millions during the
early fifties (1948-56), 167.2 millions during most of the sixties
(1960-69), and 398.8 millions during the early seventies (1970-74).
Observe that in spite of the annual changes in the level of exports
and imports they remained practically constant until the mid sixties.
Since the mid sixties the value of foreign exports increased substanti-
ally reflecting essentially favorable international prices of primary
goods. The value of foreign imports increased at similar pace since
the mid sixties, mostly due to the increased imports of capital and
intermediate goods used in the expanding new industrial base of the
Northeast.[1]

5.4 NE's Balance of Trade

The NE's total exports and imports (domestic plus foreign) as
well as overall balance of trade are shown in Table XIII. Although
the value of total exports and imports have undergone some irregular
fluctuations they remained roughly unaltered until the mid sixties,
when the level of both imports and exports began to increase. During
the fifties and a major part of the sixties, 1948-56 and 1960-67, the
NE's foreign trade surplus amounted to 1,857.6 millions, and the NE's
domestic trade deficit amounted to 1,943.5 millions, hence almost
sufficient to equilibrate each other in average terms. In the last
two years where information on domestic trade is available, 1969 and
1974, the NE's foreign trade surplus amounts to 296.6 millions and

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[1]See "Northeast's External Trade," Banco do Nordeste do Brasil
SA, ETENE, unpublished report, Fortaleza, 1977.

TABLE XIII

NE's BALANCE OF TRADE[1]   (current US millions)

Year	Exports	Imports	Balance
1948	415.2	389.5	25.7
1949	377.9	454.8	. -76.9
1950	460.1	468.8	-8.7
1951	563.5	610.1	-46.6
1952	472.1	609.6	-137.5
1953	340.7	326.9	13.8
1954	411.1	296.3	114.8
1955	418.7	306.2	112.5
1956	431.1	362.7	68.4
1960	470.2	422.3	47.9
1961	515.8	438.6	77.2
1962	396.3	485.6	-89.3
1963	474.6	325.2	149.4
1964	406.7	436.6	-29.9
1965	396.4	421.5	-25.1
1966	461.8	528.7	-66.9
1967	475.0	689.7	-214.7
1969	688.4	950.4	-262.0
1974	2,419.0	3,863.3	-1,444.3

Source: Tables XI and XII.

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[1]Arrived at by adding up domestic and foreign trade from Tables XI and XII.

791.8 millions respectively, and the NE's domestic trade deficit

amounts to 558.6 millions and 2,236.1 millions respectively. Hence

the average size of the triangular trade flow in the early period

under examination, until 1967, was approximately 110.0 millions, but

it increased substantially in the late years to 296.6 millions in

1969 and to 791.8 millions in 1974. Therefore a clear pattern of

triangular trade was taking place in those years between the NE, the

ROW, and the ROC, with the NE paying for at least part of their do-

mestic trade deficit with their foreign trade surplus.

The NE's triangular trade flow might reflect relative endowment

of natural resources, such as water and arable land, as well as pre-

vious accumulation of capital. There is no particular reason whereby

a triangular trade of this nature between the Northeast, the foreign

countries, and the rest of the country will necessarily bring forth

economic disadvantage to the former. This pattern of trade would be

the same as that of a country which spends in another the favorable

balance of trade it maintains with a third nation.[1]

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[1] A similar triangular adjustment of the balance of payments among
countries was observed by Viner for Canada, England, and the United
States in the period 1900-1913. Canada maintained throughout this
period a favorable commodity balance of trade with Great Britain, and
an excess of imports over exports with the United States. Great
Britain was a much more important market than the Ù.S. for the Canadian
products which were predominantly foodstuffs and raw materials. On
the other hand, Canadian manufacturing industry almost invariably
were modelled on American lines, so that the U.S. and not Great Britain
was the main source of machinery and equipment not available in Canada.
See J. Viner, Canada's Balance of International Indebtedness 1900-
1913: An Inductive Study in the Theory of International Trade, Harvard
University Press, Cambridge, 1924. Also, a triangular flow of com-
modities and adjustment of the balance of payments takes place cur-
rently between regions in Canada and the rest of the world. Manufac-
tured goods are mainly exported from the industrial heartland of the

Although triangular trade is expected to be a result of natural factors, policy arrangements may induce them too. As a result of national policies of import substitution the federal government might induce changes in the structure of domestic and foreign trade which in turn helps magnify the size of the triangular trade flow. Actually, the Brazilian government during the last two decades raised tariffs which protected mostly industries located in the ROC. After the imposition of tariffs the less industrialized region, NE, had an incentive to substitute in consumption, relatively more than the ROC, domestic protected goods for foreign taxed goods. As a result the NE's foreign surplus and domestic deficit seems to have expanded along with the expansion of the ROC's domestic surplus, hence helping to inflate the size of the triangular trade flow.[1]

(continued)
country, Ontario and Quebec, to the other provinces of the west, Prairie Provinces, which pay for their domestic trade deficit with an external trade surplus made basically of industrial raw materials. Since the mid 1930s British Columbia's commodity trade balance with the rest of the world has shown a substantial surplus - in excess of 650.0 millions in 1963. By contrast, the commodity trade balance with the rest of Canada showed a substantial deficit - over 550.0 millions in 1963. See R. A. Shearer, "The Economy of British Columbia," in R. A. Shearer, J. H. Young and G. R. Munro (eds.), Trade Liberalization and Regional Economy: Studies of the Impact of Free Trade on British Columbia, Private Planning Association of Canada, University of Toronto Press, Toronto 1971, pp. 3-42.

[1]Furthermore the domestic terms of trade seems to have turned against the NE, favoring the ROC, since the price of protected goods lies above the international market prices. This argument, which the CODENO Report pointed out, became popular in Brazil during the sixties. See W. Baer, "Regional Inequality and Economic Growth in Brazil," Economic Development and Cultural Change, Vol. 12, No. 3, April 1964.

5.5 Revenue Effect of NE's Triangular Trade

As we concluded in section 4.5 of chapter IV, adoption of the
restricted origin principle instead of the destination or origin
principle on domestic as well as foreign trade, reallocates tax
revenues from the NE toward the ROC. In fact, when the regional
balance of trade was equilibrated the amount of tax reallocation was
given by the VAT rate times the ROC's domestic trade surplus. However,
in order to calculate the amount of revenue reallocation with imbal-
anced regional trade we must somehow estimate the underlyring tri-
angular trade flow. As seen in section 4.7 of chapter IV, when
regional trade is not balanced the value of the domestic trade im-
balance may overstate the value of the domestic trade imbalance which
follows from the triangular trade flow. We treated separately the tri-
angular trade component of the regional balance of trade from the
interstate domestic imbalance which is financed by an interstate net
transfer of funds.[1]

Let us single out the years of 1969 and 1974 and estimate the
amount of interstate revenue reallocation due to the triangular trade
flow only. The triangular trade component of the domestic trade

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[1] A complication arises when the foreign trade of the whole country
is out of balance. In this case the NE's and the ROC's trade imbal-
ances are not necessarily symmetric and triangular trade cannot be
measured indiscriminately by foreign exports or foreign imports. Fur-
thermore, in this case an international reallocation as well as an
interstate reallocation of tax revenues may take place. The Brazil-
ian's current account transactions were roughly balanced in 1969 and
highly imbalanced in 1974.

imbalance was approximately equal to the NE's foreign trade surplus or

296.0 millions and 791.8 millions in 1969 and 1974, respectively.

Since the VAT rates were almost everywhere close to 15.0 percent in

1969 and 13.0 percent in 1974, the amount of tax reallocated from the

NE to the ROC due to triangular trade is approximately 44.5 millions

in 1969 and 102.9 millions in 1974. This amounts to 20.6 percent and

20.4 percent of the Northeast's value-added tax revenues actually

collected in 1969 and 1974 respectively.

We may now decompose the revenue effect of the triangular trade

flow by states in the NE. Adopting the same methodology as before

Table XIV shows the foreign trade surplus in each NE's state. Appli-

cation of the national tax rate of 15.0 percent and 13.0 percent

to each state's foreign trade surplus in 1969 and 1974 respectively,

yields the amount of taxes reallocated from each Northeastern state

to the ROC on account of the triangular trade flow. This is pre-

sented in Table XV column 2. State tax reallocation as a percentage

of the VAT revenues collected is shown in the column 3 of Table XV.

TABLE XIV

NE's FOREIGN TRADE PER STATE, 1969, 1974 (US millions)

State	Exports		Imports		Balance	
	1969	1974	1969	1974	1969	1974
Maranhao	4.3	30.3	3.5	11.3	0.8	19.0
Piaui	2.1	-	-	-	2.1	-
Ceara	61.7	105.6	16.4	58.2	45.3	47.4
R.G. do Norte	6.7	17.8	2.2	3.2	4.5	14.6
Paraiba	15.3	53.7	2.9	8.7	12.4	45.0
Pernambuco	92.9	434.0	52.6	280.7	40.3	153.3
Alagoas	36.2	220.2	5.6	29.2	30.3	191.0
Sergipe	-	1.9	0.9	2.6	-0.9	-0.7
Bahia	196.3	523.7	34.5	201.6	161.8	322.1
Northeast	415.3	1,387.3	118.7	595.6	296.6	791.8

Source: 1969, Manual de Estatisticas Basicas do Nordeste, ibid.;
         1974, Anuario Estatistico do Brasil - 1976, ibid.

TABLE XV

REVENUE EFFECT OF NE's TRIANGULAR TRADE, 1969, 1974
(US millions)

State	VAT Revenue		Tax Reallocation		Percentage:2/1	
	1969	1974	1969	1974	1969	1974
Naranhao	13.4	39.1	-0.1	-2.5	-0.7	-6.4
Piaui	5.5	17.4	-0.3	-	-5.5	-
Ceara	25.8	55.5	-6.8	-6.2	-26.4	-11.2
R.G. do Norte	8.7	24.5	-0.7	-1.9	-8.0	-7.8
Paraiba	14.2	32.4	-1.9	-5.9	-13.4	-18.2
Pernambuco	61.1	127.1	-6.0	-19.9	-9.8	-15.7
Alagoas	13.4	36.1	-4.5	-24.8	-33.6	-68.7
Sergipe	6.0	18.0	0.1*	0.1*	1.7	0.6
Bahia	68.3	153.7	-24.3	-41.9	-35.6	-27.3
Northeast	216.4	503.8	-44.5	-102.9	-20.6	-20.4

Source: Column 1, Anuario Estatistico do Brasil, ibid;
Column 2, Obtained through multiplication of the national tax
rate, fifteen percent, by the state's foreign trade surplus.

*Positive sign imply that tax revenues were reallocated from the ROC
into this state.

Chapter VI

Reallocation of Tax Revenues Under Imbalanced Trade

6.1 Introduction

As indicated in chapter IV, in order to estimate the amount of tax revenue reallocation between the NE and the ROC when regional trade is not balanced we rely on benefit taxation as well as on the implications of the triangular trade model. In this case, we also treat separately the triangular trade component of regional trade balance from the "net" trade imbalance due to the interregional "net" transfer of funds. The relevant variables for the application of benefit taxation in this context becomes the distribution of government expenditure benefits between consumers and business firms, and the tax induced change in the absolute price level. Furthermore, in considering regional or state trade imbalances, reference can be made to the concept of balance of payments, so that the ability of the deficit region to finance their trade imbalance is spelled out.

6.2 NE's Balance of Payments

Like countries, regions or states may be confronted with balance of trade problems. Each region purchases and sells to other regions and foreign countries, and, for instance if the NE's residents purchase more goods in the ROC and abroad than the ROC's and foreign residents together purchase in the NE, the NE runs a balance of trade deficit which must somehow be financed if a deflationary pressure is to be avoided. However, the NE's trade deficit might be compensated by an offsetting surplus on the NE's capital account and an inflow of transfer payments from the ROC. The compensatory or autonomous

flow of capital at the subnational level may be accomplished with

no or hardly any price and income changes between regions. As opposed

to the balance of trade between countries there is no particular reason

for trade to be balanced at the subnational level. The transfer of

funds among regions through private capital markets, federal tax and

spending policies, and official banking operations, may continue for

long periods of time without causing major problems of interregional

liquidity.[1]

The ability of the deficit region, NE, to finance their "net"

trade deficit is almost unlimited if the "net" transfer of funds from

the ROC continues as shown in table XVI. This table give us a simpli-

fied view of the Northeast's balance of payments where sources of

finance of the "net" trade imbalance at the subnational level are

pointed out. In 1969 and 1974 the deficit of the NE's balance of

current account (or the NE's "net" trade deficit) was financed by

intergovernmental revenue transfers, federal direct expenditure, in-

vestment tax credits, and short term capital movements. The item

intergovernmental revenue transfers are basically resources allocated

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[1] See P. C. Hartland, "Interregional Payments Compared with Inter-
national Payments," Quarterly Journal of Economics, Vol. 63, No. 3,
August 1949, pp. 392-407; J. E. Meade, The Balance of Payments, The
Theory of International Economic Policy, Vol. I, Oxford University
Press, London, 1951, part 4, Chapter 19; S. E. Harris, International
and Interregional Economics, McGraw-Hill, New York, 1957, part 3;
J. C. Ingram, "State and Regional Payments Mechanisms," Quarterly
Journal of Economics, Vol. 73, November 1959, pp. 619-32; T. Scitovsky,
"The Theory of Balance-of-Payments," Journal of Political Economy,
Vol. 75, No. 4., Supplement, August 1967, pp. 523-31.

TABLE XVI

NORTHEAST'S BALANCE OF PAYMENTS, 1969 and 1974
(US millions)

		1969	1974
1.	Exports	688.4	2,419.0
2.	Imports	-950.4	-3,863.3
	Balance of current account[1]	-262.0	-1,444.3
3.	Intergovernmental revenue transfers	172.1	446.2
4.	Federal direct expenditures[2]	47.6	-42.2
	Balance of current account and unilateral transfers	-42.3	-1,040.3
5.	Investment tax credits[3]	119.0	191.5
	Balance of current account and long term capital	76.7	-848.8
6.	Short term capital investments[4]	137.6	1,771.7
	Total balance	214.3	922.9

Source: Lines 1-2, table XIII
Lines 3-6, R. C. de Albuquerque and C. V. Cavalcanti,
Desenvolvimento Regional no Brasil, IPEA, Serie Estudos
para o Planejamento, No. 16, Brasilia, 1976.

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1. Service flows not included.
2. Equals the difference between total federal revenues collected in Northeast and of federal direct expenditures in the Northeast.
3. Private investments due to federal income tax credit.
4. Official and private banks loans minus deposits. Other financial asset flows not included.

to the NE from the federal government (State and Municipal Participation Funds, and the sharing of revenues from federal excise taxes). Federal direct expenditures reflect the balance between federal tax payments by the NE's residents and federal direct expenditures in the NE. Investment tax credits refer to the amount of private investments in the Northeast which results from the federal income tax credit for investments in this area. Finally, the interregional flow of financial capital through the national banking system (private and official) is shown in the item short-term capital movements. The Northeast shows a balance of payments surplus equal to 214.3 millions and 922.9 millions in 1969 and 1974 respectively, and thus the NE's current account deficit seems to be more than compensated by an offsetting flow of money income from the rest of the country.[1]

6.3 The Benefits of Public Expenditures

The benefits of public expenditures must be evaluated before we estimate the revenue transfers due to the "net" trade imbalance between the NE and the ROC. Most studies concerned with the benefits of public expenditures examine the incidence of expenditure benefits among individual income classes. In these studies the cost of public services subject to specific allocation are allocated on behalf of various

[1]Galvao argues that the NE's surplus might be biased upwards because the financial center of the country which is located in the South captures an important share of the NE's potential source of investments outside the banking system (purchase of bonds, stocks, insurance, etc.). See O. de Arroxelas Galvao, "Comercio Exterior e Balanco Estadual de Pagamentos," in A Economia de Pernambuco: Um Estudo das Transformacoes Recentes, Universidade Federal de Pernambuco, PIMES/CME, Recife, 1975, pp. 350-96.

groups of individual beneficiaries according to the correspondent income distributive shares. For instance, education expenditures are allocated in line with the income position of the student's parent. Public health expenditures are allocated equally among all individuals, while hospital expenditures are allocated to patients. Highway expenditures are usually split in line with the household and business share in highway use, and agricultural expenditures are allocated by income of farm owners. On the other hand, the cost of public services which are not subject to specific allocation among individuals group (e.g., general government expenditures with administration, judiciary, and defense), a general allocation formula must be resorted to in order to obtain a distribution pattern of public service benefits among income classes. For this purpose two hypothesis have been advanced in the literature: (a) allocation in proportion to individual income based on the rationale that the state is a protector of private property, or that the benefits derived from the consumption of public services are complementary to those derived from private goods. (b) allocation on a per capita basis, which reflects the view that public services are consumed equally by all individuals.[1]

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[1] A classical study of benefit distribution along these lines is W. I. Gillespie, "Effects of Public Expenditures on the Distribution of Income," in R. Musgrave (ed.) Essays in Fiscal Federalism, Brookings Institution, Washington, D.C., 1965; see however, H. Aaron, "Estimates of the Distributional Impact of Brazilian Taxes and Expenditures," unpublished preliminary report, USAID/Brazil, July/August 1968; R. A. Musgrave, K. E. Case, and H. Leonard, "The Distribution of Fiscal Burdens and Benefits," Public Finance Quarterly, Vol. 2, No. 3, July 1974, pp. 259-311. It has been shown that under the assumption of identical and separable utility functions benefits of general public services may accrue to households in proportion to income. See H. Aaron and M. McGuire, "Public Goods and Income Distribution," Econometrica, Vol. 38,

The question in this section, however, is whether or not goods
that cross the borders carry, embodied in them, intermediate public
services provided by the state of origin. A few simplifying assumptions
have to be made. First, we assume that benefits of state public ex-
penditures are uniform across states within a region. Second, the cost
of government services is assumed to be the best measure, in monetary
terms, of the benefits conferred to producers and/or consumers. Finally,
we assume that the pattern of state government expenditures is invariant
with respect to intergovernmental federal transfers.

The assumptions used in the estimation of public expenditure bene-
fits will be classified into three basic variants, each illustrating
a possible approach to benefit incidence.[1] These variants were chosen
to show the effect of their modification in the amount of interstate
reallocation of tax revenues. In all three variants it is assumed that
the benefits of government expenditures with housing and urban services,
health and sanitation, and public welfare are allocated to consumers.
Similarly, the benefit of government expenditures with industrial
research and planning are allocated to producers. Public expenditure
on energy is distinguished among producers and consumers through their
share in total consumption. On the other hand, the benefits of govern-

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(continued)
No. 6, November 1970, pp. 907-20. However, we do not know the utility
function, hence we cannot allocate benefits among households scientifi-
cally. See C. E. McLure, Jr., "On the Theory and Methodology of Esti-
mating Benefit and Expenditure Incidence," paper presented at the work-
shop on "Income Distribution and Its Role in Development," Rice Univer-
sity, 1974.

[1]Only the percentage of the state's total expenditure that benefit
consumers or producers is estimated. No attempt is made to determine
the value of the correspondent benefits.

ment expenditures with general administration, transportation and communication, and transfers to local governments are not allocated specifically to either group, consumers or producers, in the three variants. For purposes of this study an allocation has to be made and we assume that fifty percent of these expenditures are a benefit to consumers and fifty percent are a benefit to business firms.[1] The division drawn here is admittedly rough. On one side, expenditures such as housing and urban services are allocated entirely to consumers while external benefits to business firms are disregarded; on the other, expenditures on industrial research and planning are treated as allocable to producers, even though more detailed study might permit partial allocation among consumers and business firms. We are inclined to regard this allocation procedure as a necessary extreme if we are to perform the particular task at hand, that is to bring into the discussion of interstate revenue allocation the benefit side of public expenditures.

In Variant 1 no specific allocation to a particular group is assigned on public expenditures such as education, police protection, and investments on agriculture and natural resources. In Variant 2 the benefit from public expenditures with police protection are allocated to consumers, and the benefits from public expenditures with agriculture and natural resources are allocated to producers. Variant 3 is similar to Variant 2 except that the benefits from public expenditures with education are allocated to consumers. The assumptions made

[1] Similar procedure has been adopted by R. W. Nelson and D. Jackson, in "Allocation of Benefits from Governmental Expenditures," in Conference on Research in Income and Wealth, Studies in Income and Wealth, Vol. II, National Bureau of Economic Research, New York, 1938, pp. 317-31.

in allocating the various benefits of state public services are sum-
marized in Table XVII.

The resulting pattern of benefit distribution at the state level
is obtained by applying the above benefit assumptions to each category
of state government expenditure as shown in Tables XVIII and XIX.[1] The
major result that emerged from this estimation, based on three sets of
benefit incidence, is that consumers receive approximately 60.0 percent
to 70.0 percent of the benefits of government expenditures in both
regions, NE and ROC. Or equivalently, producers receive approximately
30.0 percent to 40.0 percent of the benefits of government expenditures.[2]
Therefore, in 1969, the last year that information on the composition
fo state public expenditures is available in Brazil, 60.0 to 70.0 per-
cent of the state public expenditures may have taken the form of final
public services, and 30.0 to 40.0 percent may have taken the form of
intermediate public services.[3]

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[1] The composition of the Brazilian government expenditures at the
state level, has been studied for 1968 and 1969 in a research report,
Dimensao e Estrutura do Setor Publico Estadual, Vol. 1, Setor Publico
Estadual Consolidado 1968/1969, M. Hanson Costa and F. A. Rezende da
Silva (cordinators), IPEA, Instituto de Pesquisas - INPES and FGV,
Centro de Estudos Fiscais - CEF, Rio de Janeiro. See also F. A. Re-
sende da Silva, Avaliacao do Setor Publico na Economia Brasileira,
Estrutura Funcional da Despesa, IPEA/INPES, Colecao Relatorios de Pes-
quisa No. 13, Rio de Janeiro, 1974.

[2] Similar results were obtained for the U.S. by Nelson and Jackson,
ibid.

[3] This procedure is limited to estimating the first-order benefits
of government expenditures. We recognize that a government service to
business might be relinguished to consumers in the form of higher wages
and rental income and/or lower product prices. See C. S. Shoup, Public
Finance, Aldine, Chicago, 1969, chapter 4.

TABLE XVII

EXPENDITURE BENEFIT ALLOCATION

VARIANT 1

Specific Benefits:

Consumers
Housing and urban services
Health and sanitation
Public welfare
Energy[1]

Business Firms
Industrial research and planning
Energy[1]

General Benefits:

Government administration
Transportation and communication
Transfers to local governments
Education
Police protection
Agriculture and natural resources

VARIANT 2

Specific Benefits:

Consumers
Housing
Health and sanitation
Public welfare
Energy[1]
Police protection

Business Firms
Industrial research and planning
Energy[1]
Agriculture and natural resources

General Benefits:

Government administration
Transportation and communication
Transfers to local governments
Education

VARIANT 3

Specific Benefits:

Consumers
Housing and urban services
Health and sanitation
Public welfare
Energy[1]
Police protection
Education

Business Firms
Industrial research and planning
Energy[1]
Agriculture and natural resources

General Benefits:

Government administration
Transportation and communication
Transfers to local governments

1. The benefits from expenditures with energy are allocated according to the correspondent
consumption share, i.e., 28.0 percent consumers and 72.0 percent producers, in line with data published
in the Anuario Estatistico do Brasil - 1972, Fundacao IBGE, Rio de Janeiro.

TABLE XVIII

DISTRIBUTION OF GOVERNMENT EXPENDITURES IN THE ROC, 1969[1]

EXPENDITURE:	US MILLIONS	TOTAL	PERCENTAGE					
			CONSUMERS			BUSINESS FIRMS		
			Variant 1	Variant 2	Variant 3	Variant 1	Variant 2	Variant 3
Government administration	499.4	14.2	7.1	7.1	7.1	7.1	7.1	7.1
Executive branch		80.4						
Legislative branch		4.6						
Judiciary branch		12.9						
Planning and research		2.1						
Agriculture and natural resources	76.5	2.2	1.1			1.1	2.2	2.2
Resource protection		23.9						
Supervision, planning and research		45.1						
Energy	133.3	3.6	1.0	1.0	1.0	2.6	2.6	2.6
Electric energy		96.8						
Transportation and communication	470.4	13.4	6.7	6.7	6.7	6.7	6.7	6.7
Highways		65.2						
Communication		2.8						
Industrial research and planning	24.3	0.7				0.7	0.7	0.7
Education	572.9	16.4	8.2	8.2	16.4	8.2	8.2	
Elementary		26.5						
High school		44.0						
Technical school		3.5						
College		5.7						
Housing and urban services	248.4	7.0	7.0	7.0	7.0			
Health and sanitation	176.1	5.1	5.1	5.1	5.1			
Medical services and hospitals		47.6						
Sanitation		22.4						
Research, control and planning		7.7						
Public welfare	336.5	9.6	9.6	9.6	9.6			
Social security		78.9						
Welfare programs		17.3						
Security	277.6	7.8	3.9	7.8	7.8	3.9		
Police protection		86.2						
Transfers	708.4	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Transfers to municipalities		61.1						
Public debt		32.7						
Total	3,523.8	100.0	59.7	62.5	70.7	40.3	37.5	29.3

Source: Dimensao e Estrutura do Setor Publico Estadual, ibid; and Table XVII.

[1] The percentage of total corresponding to subtitles (e.g., Executive branch, 80.4) indicate the share of this item on total group expenditure (Government administration).

TABLE XIX

DISTRIBUTION OF GOVERNMENT EXPENDITURES IN THE NE, 1969[1]

EXPENDITURE:	US MILLIONS	TOTAL	CONSUMERS			BUSINESS FIRMS		
			Variant 1	Variant 2	Variant 3	Variant 1	Variant 2	Variant 3
					PERCENTAGE			
Government administration	96.3	24.4	12.2	12.2	12.2	12.2	12.2	12.2
Executive branch		71.2						
Legislative branch		4.9						
Judiciary branch		10.2						
Planning and research		13.7						
Agriculture and natural resources	10.7	2.8	1.4			1.4	2.8	2.8
Resource protection		5.2						
Supervision, planning and research		49.5						
Energy	4.5	1.0	0.3	0.3	0.3	0.7	0.7	0.7
Electric energy		97.7						
Transportation and communication	27.1	6.8	3.4	3.4	3.4	3.4	3.4	3.4
Highways		20.7						
Communication		6.4						
Industrial research and planning	6.2	1.5				1.5	1.5	1.5
Education	62.4	15.8	7.9	7.9	15.8	7.9	7.9	
Elementary		45.5						
High school		23.4						
Technical school		0.4						
College		5.3						
Housing and urban services	19.6	5.1	5.1	5.1	5.1			
Health and sanitation	22.9	5.8	5.8	5.8	5.8			
Medical services and hospitals		49.8						
Sanitation		1.0						
Research, control and planning		0.3						
Public welfare	48.3	12.2	12.2	12.2	12.2			
Social security		83.1						
Welfare programs		10.9						
Security	32.6	8.4	4.2	8.4	8.4	4.2		
Police protection		82.1						
Transfers	64.4	16.2	8.1	8.1	8.1	8.1	8.1	8.1
Transfers to municipalities		81.9						
Public debt		13.9						
Total	395.0	100.0	60.6	63.4	71.3	39.4	36.6	28.7

Source: Dimensao e Estrutura do Setor Público Estadual, ibid.; and Table XVII.

[1] The percentage of total corresponding to subtitles (e.g., Executive branch, 71.2) indicate the share of this item on total group expenditure (Government administration).

6.4 The Tax Induced Change in Price Level

Tax incidence is most usefully seen as primarily a matter of

changes in relative factor and product prices, and as determined by the

structure of taxation, whereas changes in the level of absolute prices

are determined by macroeconomic policies, including the level of tax-

ation. Thus, we may argue that changes in both general price levels

and relative prices determine the "post tax-change" price of a product

or resource.[1] Given the strategic importance which the absolute change

in the factor and product prices occupy in the framework of interstate

benefit taxation, we must inquire a little further upon the sources of

absolute price changes. To simplify, suppose that all states are faced

with the introduction of a general and uniform VAT of the consumption

type which is accompanied by an expenditure increase of the same amount.

Assume also that government has the same marginal consumption patterns

as individuals and business firms. Hence changes in relative prices

may be ignored and attention is focused in price level adjustments.[2]

The change in absolute prices in the above setting depends only

upon the macro nature of the system in which the tax introduction takes

place. In other words, changes in absolute prices depend in the nature

[1]See C. E. McLure, Jr., "Tax Incidence, Macroeconomic Policy, and Absolute Prices," _Quarterly Journal of Economics_, Vol. 84, May 1970, pp. 254-67.

[2]By assuming that the government has the same marginal consumption patterns as individuals and business firms, the demand of the public sector replaces the reduced demand of the private sector without changing relative prices of factors and products. As used here, balanced-budget incidence refers to the effects of incomes available for private use resulting from the tax-expenditure process and does not include the distribution of benefits of public services. It follows McLure, _ibid_.

and degree of price rigidities as well as in the behavior of the mone-
tary policy at the federal level. Let us consider possible patterns
of absolute price change in response to the adoption of a VAT under the
following policy situations: (1) Factor prices flexible and monetary
policy permissive; the absolute price adjustment in this flexible system
may be said to depend upon pure monetary factors, such as the demand
for money and the velocity of money circulation. In this case, there
is nothing in the operation of the price system which tells us in
advance what the direction of absolute price changes will be. (2) Fac-
tor prices downward rigid and monetary policy permissive; in this case
adoption of the tax must be reflected in higher product prices. (3)
Factor prices flexible and monetary policy stabilizes product price
level; in this case adoption of the tax must be reflected in lower fac-
tor prices.[1]

Looking at the above possibilities with the Brazilian context in
mind we are tempted to conclude that the most realistic case is number
two. The fact that wages and the rate of return in the business activi-
ties tend to be rigid downward is an almost universal phenomenon, at
least in the long run.[2] Furthermore, the Brazilian VAT is a consumption

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[1]See R. A. Musgrave, "Effects of Business Taxes Upon International
Commodity Flows," in (ed.) M. Krzyzaniak, Effects of Corporation Income
Tax, Wayne State University Press, Detroit, 1966, pp. 118-35.

[2]In a dynamic setting, adoption of the tax might depress factors
income not in monetary terms but in real terms by limiting the increase
in factors income which otherwise would have occurred. This is compati-
ble with the hypothesis of downward rigid factor prices. See. M. Krzy-
zaniak, "The Long-Run Burden of a General Tax on Profits in a Neoclassi-
cal World," Public Finance, Vol. 22, No. 4, 1967, pp. 472-91.

related tax, since it does not reach capital goods (consumption type

VAT) and is collected according to the credit method (each vendor is

required to itemize the tax separately) which does not garantee that

the tax will be added to the price but greatly encourages it in a world

of imperfect markets. On the other hand, monetary policy in Brazil

is known for being permissive through the years passed because the

rate of inflation has been well beyond the two digit level since the

early fifties. In general, the intent of sales tax legislation is

that taxes be shifted forward to consumers through higher prices, thus

the appropriate assumption to make about monetary policy is that ad-

justments will be made in the money supply to permit the realization of

this intent.[1] On the whole, the assumption that the Brazilian VAT is

fully reflected in higher product prices, as in case 2, appears to be

a reasonable one.

6.5 Reallocation of Tax Revenues under Imbalanced Trade

Collecting the results of the last two sections we initially

estimate the amount of interstate revenue reallocation due to the "net"

trade imbalance of 262.0 millions in 1969 and 1,444.3 millions in 1974,

as given in Table XIII above. As discussed before, the choice of proper

BTA in this case depends on the benefits of public expenditures and the

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[1]See J. F. Due, "Sales Taxation and the Consumer," American Economic Review, Vol. 53, December 1963, pp. 1078-84; H. C. Recktenwald, Tax Incidence and Income Redistribution, An Introduction, Wayne State University Press, Detroit, 1971, chapter 4, pp. 82-85. For recent empirical evidence of the inflationary effect of product taxes see D.A.L. Auld, "Taxation and Inflation: A Survey of Recent Theory and Empirical Evidence," Public Finance Quarterly, Vol. 5, No. 4, October 1977, pp. 403-18.

tax induced change in the price level. Let us assume that the tax is fully reflected on higher product prices, and that 60.0 percent or 70.0 percent of ROC's and NE's public expenditures are a benefit to consumers along with variant 1 and 3 respectively. Thus, according to our "benefit rule" the proper rate of BTA on the "net" trade imbalance is 60.0 percent (Variant 1) or 70.0 percent (Variant 3) of the internal tax rate in the NE and the ROC.

In 1969 and 1974 the tax rate applied on domestic trade was 15.0 percent and 13.0 percent respectively in both states. However, the ROC's internal tax rate was 17.0 and 15.0 percent, and the NE's internal tax rate was 18.0 and 16.0 percent in 1969 and 1974 respectively. Hence, the ROC's implied rate of BTA on domestic trade was only 2.0 percentage points (or equivalently, 11.8 and 13.3 percent of their internal tax rate in 1969 and 1974 respectively), and the NE's implied rate of BTA on domestic trade was only 3.0 percentage points (or equivalently, 16.7 and 18.8 percent of their internal tax rate in 1969 and 1974 respectively). The ROC's proper rate of BTA on domestic trade according to the "benefit rule" would have been 10.2 and 9.0 percentage points according to Variant 1 (60.0 percent of their internal tax rates), and 11.9 and 10.5 percentage points according to Variant 3 (70.0 percent of their internal tax rates), in 1969 and 1974 respectively.[1] Similarly, the NE's proper rate of BTA on domestic trade would have

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[1]Alternatively, the ROC's proper rate of tax on interstate trade would have been 6.8 and 6.0 percent according to Variant 1, and 5.1 and 4.5 percent according to variant 3, in 1969 and 1974 respectively.

been 10.8 and 9.6 percentage points according to Variant 1, and 12.6

and 11.2 percentage points according to Variant 3, in 1969 and 1974

respectively.[1] The amount of VAT revenue reallocation between the NE

and the ROC on account of the small size of BTA on domestic trade in

these two years may then be estimated by applying to the correspondent

"net" trade imbalance the difference between the ROC's proper and actual

rate of BTA under incidence Variants 1 and 3.[2]

Table XX describes the calculations of the reallocation of NE's

VAT revenues due to the "net" trade imbalance. It follows that 21.5

millions to 25.9 millions of tax revenues had flown from the NE to the

ROC in 1969 on account of the "net" trade imbalance only, which repre-

sented about 9.9 to 12.0 percent of the NE's own VAT revenues. Simi-

larly, in 1974 approximately 101.1 millions to 122.8 millions of tax

revenues had flown from the NE to the ROC, which represented about 20.1

to 24.4 percent of the NE's own VAT revenues in this year. Adding to

these figures our previous estimates of NE's VAT reallocation due to

the triangular trade flow, 44.5 millions and 102.9 millions in 1969 and

1974 respectively, we arrive at the combined estimates of VAT revenue

reallocation from the NE to the ROC. Therefore, 66.0 millions to 70.4

millions of tax revenues had flown from the NE to the ROC in 1969 on

account of both triangular trade flow and "net" trade imbalance, which

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[1] Alternatively, the NE's proper rate of tax on interstate trade
would have been 7.2 and 6.4 percent according to Variant 1, and 5.4
and 4.8 percent according to Variant 3, in 1969 and 1974 respectively.

[2] Since the "net" trade imbalance is equivalent to the ROC's "net"
trade surplus, only the rate of BTA in the ROC is relevant here.

TABLE XX

REALLOCATION OF VAT REVENUES DUE TO THE
"NET" TRADE IMBALANCE, 1969 and 1974

(US millions)

	1969	1974
"Net" Trade Imbalance	-262.0	-1,444.3

Variant 1

		1969	1974
1.	Proper rate of BTA's (percentage points)	10.2	9.0
2.	Actual rate of BTA's (percentage points)	2.0	2.0
3.	Difference (percentage points)	8.2	7.0
4.	VAT reallocation	-21.5	-101.1
5.	NE's VAT revenues	216.4	503.8
6.	Percentage: 4/5	-9.9	-20.1

Variant 3

		1969	1974
1.	Proper rate of BTA's (percentage points)	11.9	10.5
2.	Actual rate of BTA's (percentage points)	2.0	2.0
3.	Difference (percentage points)	9.9	8.5
4.	VAT reallocation	-25.9	-122.8
5.	NE's VAT revenues	216.4	503.8
6.	Percentage: 4/5	-12.0	-24.4

represented about 30.5 to 32.5 percent of the NE's own VAT revenues.

Similarly, in 1974 approximagely 204.0 millions to 225.7 millions of

tax revenues had flown from the NE to the ROC, which represented about

40.5 to 44.8 percent of the NE's own VAT revenues in this year.

Let us now decompose the reallocation of NE's VAT revenues due

the "net" tarde imbalance on a per state basis. Table XXI shows the

domestic trade imbalance in each Northeastern state, and, each state

balance of trade, domestic plus foreign, is shown in Table XXII.[1] As

before, the amount of VAT reallocation per state on account of the

small size of BTA on domestic trade may be obtained by applying to

the correspondent "net" trade imbalance as shown in Table XXII, the

difference between the ROC's proper and actual rate of BTA under in-

cidence Variants 1 and 3. Table XXIII describes the result of these

calculations.

The balance of trade of each individual state however might not

conform with the NE's aggregate pattern of trade. For instnace, obser-

vation of Table XXII tells us that the state of Maranhao and Alagoas

have a surplus in their balance of trade. In fact, along with Tables

XIV and XXI, the foreign trade surplus of Maranhao and Alagoas, 0.8

millions and 30.3 millions respectively, were larger than their domes-

tic trade deficit 0.7 millions and 17.2 millions, respectively. In

this case, as opposed to most of the other NE's states, VAT revenue

reallocation due to "net" trade imbalance is carried through foreign

trade imbalance instead of being carried through domestic trade imbal-

ance. Since the NE's actual rate of BTA on foreign exports is roughly

[1]No information is available on domestic trade per state beyond
1969.

TABLE XXI

NE's DOMESTIC TRADE PER STATE, 1969[1]   (US millions)

STATE	1 EXPORTS	2 IMPORTS	3 BALANCE
Maranhao	27.3	28.0	-0.7
Piaui	6.4	14.5	-8.1
Ceara	23.1	110.5	-87.4
R.G. do Norte	23.8	28.5	-4.7
Paraiba	21.1	43.0	-21.9
Pernambuco	57.0	260.2	-203.2
Alagoas	13.5	30.7	-17.2
Sergipe	14.5	20.6	-6.1
Bahia	86.4	295.7	-209.3
Northeast	273.1	831.7	-558.6

Source: Matriz de Comercio Interestadual, CEDEPLAR, UFMG, 1976.

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[1]The amount of exports (imports) in each state is obtained by subtracting from the value of total domestic exports (imports) the value of interregional exports (imports).

TABLE XXII

NE's BALANCE OF TRADE PER STATE, 1969 (US millions)

STATE	1 EXPORTS	2 IMPORTS	3. BALANCE
Maranhao	31.6	31.5	0.1
Piaui	8.5	14.5	-6.0
Ceara	84.8	126.9	-42.1
R.G. do Norte	30.5	30.7	-0.2
Paraiba	36.4	45.9	-9.5
Pernambuco	149.8	312.8	-163.0
Alagoas	49.7	36.3	13.4
Sergipe	14.5	21.5	-7.0
Bahia	282.6	330.3	-47.7
Northeast	688.4	950.4	-262.0

Source: Table XIV, chapter V and Table XXI above.

TABLE XXIII

REALLOCATION OF VAT REVENUES DUE TO THE
"NET" TRADE IMBALANCE PER STATE, 1969

STATE	1	2		3	
	VAT Revenue	Tax Reallocation		Percentage: 2/1	
		Variant 1	Variant 3	Variant 1	Variant 3
Maranhao	13.4	-	-	-	-
Piaui	5.5	-0.5	-0.6	-9.1	-10.9
Ceara	25.8	-0.5	-4.2	-13.6	-16.3
R.G. do Norte	8.7	-	-	-	-
Paraiba	14.2	-0.8	-0.9	-5.6	-6.3
Pernambuco	61.1	-13.4	-16.1	-21.9	-26.4
Alagoas	13.4	-0.6	-0.3	-4.5	-2.2
Sergipe	6.0	-0.5	-0.6	-8.3	-10.0
Bahia	68.3	-3.9	-4.7	-5.7	-6.9
Northeast	216.4	-21.5*	-25.9*	-9.9	-12.0

Source: Column 1, Anuario Estatistico do Brasil - 1972, Fundacao IBGE;

Column 2, obtained by applying to the "net" trade deficit, as
given in column 3, Table XXII, the difference between the
ROC's proper and actual rate of BTA's. Maranhao, Alagoas,
and Sergipe are special cases handled in the test.

*These columns do not add up since Maranhao, Alagoas, and Sergipe have
a different pattern of trade as compared with the rest of the NE's
states.

15.0 percentage points, and the NE's proper rate of BTA varies from
10.8 percentage points (Variant 1) to 12.6 percentage points (Variant
3) in 1969, VAT revenue must have been reallocated from the states of
Maranhao and Alagoas to the ROC in this year. The amount of VAT real-
location from these two states to the ROC on account of the large
size of BTA granted on international trade may be obtained by applying
to the correspondent "net" trade imbalance, as shown in Table XXII, the
difference between the NE's actual and proper rate of BTA under Vari-
ants 1 and 3. On the other hand, observation of Tables XIV and XXI
tells us that the state of Sergipe is a special case too since it has
a deficit on foreign trade as well as on domestic trade like most of
NE's states. In this case, the outflow of VAT revenues due to domes-
tic trade deficit must be balanced with the inflow of VAT revenues due
to foreign trade deficit. The outflow is obtained by applying to the
domestic trade deficit of Sergipe, 6.1 millions, the difference between
the ROC's proper and actual rate of BTA. The inflow is obtained by
applying to Sergipe's foreign trade deficit, 0.9 millions, the differ-
ence between the NE's actual and proper rate of BTA.

Table XXIV combines the amount of VAT revenues that were reallo-
cated from the NE's states to the ROC due to the triangular trade flow
and the "net" trade imbalance. As shown in this table the estimated
amount of VAT revenue transfers is significant for most of the NE's
states as well as for the Northeast region as a whole. We may reason-
ably expect that, in average terms, 66 millions to 70.4 millions of tax
revenues had flown from the NE to the ROC, which represented about 30.5

TABLE XXIV

REALLOCATION OF VAT REVENUES UNDER
IMBALANCED TRADE, 1969
(US millions)

STATE	1 VAR Revenue	2 Tax Reallocation		3 Percentage: 2/1	
		Variant 1	Variant 3	Variant 1	Variant 3
Maranhao	13.4	-0.1	-0.1	-7.5	-7.5
Piaui	5.5	-0.8	-0.9	-14.5	-16.4
Ceara	25.8	-10.3	-11.0	-39.9	-42.6
R.G. do Norte	8.7	-0.7	-0.7	-0.8	-8.0
Paraiba	14.2	-2.7	-2.8	-19.0	-19.7
Pernambuco	61.1	-19.4	-22.1	-31.8	-36.2
Alagoas	13.4	-5.1	-4.8	-38.1	-35.8
Sergipe	6.0	-0.4	-0.5	-6.7	-8.3
Bahia	68.3	-28.2	-29.0	-41.3	-42.5
Northeast	216.4	-66.0*	-70.4*	-30.5	-32.5

Source: Column 1, _Anuario Estatistico do Brasil - 1972_, Fundacao IBGE;
Column 2, obtained by adding column 2 of Tables XV and XXIII
above.

*These columns do not add up since Maranhao, Alagoas, and Sergipe have
a different pattern of trade as compared with the rest of the NE's
states.

to 32.5 percent of the VAT revenues collected in the NE in 1969.[1]

Value-added tax collections in Bahia and Ceara were reduced, due to

this process of tax reallocation, by approximately 40.0 percent of

their potential VAT revenues. Similarly, tax collections were reduced

by more than 30.0 percent in Pernambuco and Alagoas, while Paraiba

and Piaui transferred to the ROC about 20.0 percent and 15.0 percent

of their own VAT revenues respectively, in 1969.

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[1]The amount of state VAT collected in the ROC equaled 2,388.8
millions in 1969, hence the above tax transfer represents less than
3.0 percent of the ROC's VAT receipts in that year.

Chapter VII

Summary of Findings and Policy Implications

7.1 Introduction

This study has concentrated on the analysis of border tax adjust-
ments and their implication for the distribution of state tax revenues.
We started out by describing the characteristics of the Brazilian state
tax on value added, and we proceeded to describe the Brazilian contro-
versy over the proper allocation of the tax base on interstate trade.
The analytical framework of the border tax adjustments issue has been
reviewed and extended in Chapter IV. Based on the implications of this
conceptual framework we quantified the revenue effect which results
from the adoption of the restricted origin principle in Brazil. First
we estimated the reallocation of state revenues due to the triangular
trade flow and secondly we estimated the reallocation of state revenues
due to the "net" trade imbalance. Finally, under conditions of imbal-
anced trade we estimated the amount of tax reallocation due to both
triangular trade and the "net" trade imbalance.

7.2 Summary of Findings

We have seen that the three principles of multilevel government
finance in an efficient system of fiscal federalism may be summarized
as follows: (1) The benefit principle: Various public services
should be provided for at the local, regional, or national level,
depending on the spatial range of benefits, so as to let provision
be decided and cost be borne by the residents of the particular area
in which the benefits accrue. (2) The principle of fiscal compen-
sation: The spatial model of fiscal structure, outlined above, over-

simplifies matters unduly. One major reason for coordinating adjust-
ments among jurisdictions is that existing jurisdictions do not neatly
correspond to benefit and tax cost areas. Spillover cost or benefits
may result and due compensation should be carried out, either by the
higher level of government through the tax transfer mechanism, or by
interstate compacts where each state is to be compensated (or compensate)
for the benefits (or cost) that spillover to other states. (3) The
principle of centralized distribution: Adjustments in the distribution
of income should be the responsibility of central policy since it is
only here that such measures can be conducted effectively and without
causing severe efficiency losses. In the absence of an adequate inter-
individual distributional policy, the central government may secure some
degree of fiscal equalization among poor and rich communities through
the tax transfer mechanism.

In the context of local taxation we abandoned the ability to pay
rationale and concentrated on taxes which can be regarded as a measure
of individuals enjoyment of general benefits from public services,
either through consumer spendings or through services provided to busi-
ness enterprises. Thus the proper choice of border tax adjustments by
subnational governments was regarded as essentially concerned with the
benefits aspects of product taxation.

When public expenditures are in the first instance a benefit to
residents of a state in their capacity as consumer of public services,
a product tax should be designed to reach jurisdiction's consumption.
The tax is intended to reach only ultimate consumers residing in the

taxing jurisdiction subjecting them to the same tax regardless of

whether they purchase domestic or out of state products, while exempt-

ing products destined for the use of foreign residents. Revenues to

cover the cost of such services should be collected on the destination

principle if product prices rise as a result of the introduction of

the tax. However, if product prices remain unchanged, the origin

principle should be enforced. On the other hand, when public expendi-

tures are in the first instance a benefit to business enterprises of a

state, a product tax should be designed to reach jurisdiction's pro-

duction. The tax is intended to reach only business enterprises located

and producing in the taxing jurisdiction subjecting them to the same tax

regardless of whether they sell to domestic or out-of-state buyers,

while exempting products manufactured in other states and imported for

the use of domestic residents. Revenues to cover the cost of such

services should be collected on the origin principle if product prices

rise as a result of the introduction of the tax. However, if product

prices remain unchanged, exports should be taxed and imports should be

subsidized. In general public expenditures may be seen as a benefit

to local residents in their capacity as both consumers and producers,

and a product tax may be designed to reach both jurisdiction's con-

sumption and production. Therefore, in this case, a mixture of origin-

destination principles should be applied on interjurisdictional trade

ideally reflecting the tax induced change in the absolute price level

as well as the share of benefits which accrues to each producers and

consumers.

In the general equilibrium framework of the two-country, two good model of international trade the choice of border tax adjustments for general taxes seems to be irrelevant. A review of the conclusions in this literature has shown that when the international balance of trade is equilibrated and factors of production are immobile between countries, adjustments in the foreign exchange rate could be expected to wash out changes in border tax adjustments.

The origin-destination principle equivalence breaks down however with the international mobility of factors of production and/or factor owners. When factor services can move across the border an origin tax induces movements of factor services, unless the rate of the tax is the same as that applied by the rest of the world to their income. A general origin tax has, in this case, allocative effects which are absent with immobile factors of production. Similarly, when factor owners, instead of factor services, can move across the border a destination tax induces movements of factor owners unless the rate of the tax is the same as that applied by the rest of the world to their residents. A general destination tax has, in this case, allocative effects which were absent with immobile factor owners. Finally, when factor owners as well as factor services can move across the border, any form of tax induces one of these movements, except when tax rates are equal in all jurisdictions, since factor owners can minimize the destination tax burden by living in the low tax state or employing their factors in the state of low origin tax.

An important result of this study is that, even when we allow for the assumptions embodied in the standard analysis of BTA and furthermore restrict the tax to be uniform as well as general across products and countries, the choice between origin and destination principles need not be irrelevent. In fact, when a triangular trade flow of products takes place between two countries and the rest of the world, and these two countries form an economic union (or a federation), and the restricted origin principle is adopted in this union (or federation), a reallocation of tax revenues is generated between member countries (or states) which cannot, in general, be compensated by a change in exchange rates or absolute price levels. The analysis of the triangular trade model found that a movement to the restricted origin principle simultaneously reduces the VAT base in the Northeast and increases the VAT base in the rest of the country. This reallocation of tax bases imply a reallocation of tax revenues from the Northeast to the rest of the country, given by the product of the common tax rate times the transferred tax base between states. We have seen that the reallocation of tax revenues along the above lines is not neutral with respect to the trading patterns between the NE, the ROC, and the rest of the world, and with respect to the horizontal fiscal relationships at the sub-national level. Furthermore, as a result of tax reallocation the provision of state public services may not be socially optimal. Since part of the ROC's tax revenues end up being paid out by out-of-state residents the ROC's provision of public services will tend to be oversupplied while the NE's provision of public services will tend to be under-supplied.

When we dropped the assumption that regional or state trade
was balanced, the choice of border tax adjustments had to be made
within the framework of benefit taxation where the choice of BTA
became dependent on both the benefits of public expenditures and the
tax induced change in the absolute price level. Failure to do so
means that tax revenues would tend to be reallocated between the states
due to the inadequate principle of border tax adjustments. Four cases
were distinguished when we considered the introduction of a new value
added tax: (1)   if the VAT is fully reflected in higher product prices
and the benefits of public expenditures accrues to consumers; border
tax adjustments should be enforced so that export prices remain un-
changed and relative prices of domestic and imported goods do not
change as a result of the tax;   (2)   if the VAT is fully reflected in
higher product prices and the benefits of public expenditures accrues
to business firms; the origin principle should be enforced since the
higher product prices of exports corresponds to the embodied cost of
public services financed by the tax;   (3)   if the VAT is fully re-
flected in lower factor prices and the benefits of public expenditures
accrues to consumers; the origin principle should be enforced since
export prices are unchanged as a result of the tax;   (4)   if the VAT
is fully reflected in lower factor prices and the benefits of public
expenditures accrues to business firms; an export tariff and import
subsidy should be enforced so that export prices allow for the benefit
of public services and relative prices of domestic and imported goods
remain unchanged as a result of the tax.

One outcome of our analysis is that tax revenues in Brazil may be unintentionally transferred from one state to another due to the adop= tion of the principle of border tax adjustments. The simple reduction of the interstate tax rate to fifty percent of the national tax rate, viewed as the best compromise, considering the interests of the states involved, is not likely to solve this problem. The choice of proper rate of border tax adjustments, as shown in this study, depends crucially on the existence of triangular trade flow and the "net" trade imbalance between states which results from the distributive policy of the central government.

We quantified the triangular trade flow and estimated the amount of tax revenue reallocation which took place in 1969 and 1974 from the NE to the ROC due to the triangular trade flow. It turned out that 20.6 percent and 20.4 percent of the Northeast's VAT revenues, or the amount of 44.5 millions of dollars and 102.9 millions of dollars, were transferred from the NE to the ROC on account of the triangular trade flow in 1969 and 1974 respectively. On the other hand, we quantified the NE's "net" trade imbalance and by assuming that consumers get approximately 60.0 percent (Variant 1) to 70.0 percent (Variant 3) of the state expenditure benefits and that product prices fully reflect the introduction of the VAT, we estimated the amount of tax revenue reallocation which took place in 1969 and 1974 from the NE to the ROC due to the NE's "net" trade imbalance. It turned out that 9.9 to 12.0 percent of the NE's VAT revenues, or the amount of 21.5 millions of dollars to 25.9 millions of dollars, was transferred from the NE to

the ROC on account of the "net" trade imbalance in 1969 according to

Variants 1 and 3 respectively. Similarly, 20.1 to 24.4 percent of the

NE's VAT revenues, or the amount of 101.1 millions of dollars to 122.8

millions of dollars, were transferred from the NE to the ROC in 1974.

On both accounts, triangular trade flow and "net" trade imbalance the

NE transferred to the ROC approximately 30.5 to 32.5 percent of their

own VAT revenues in 1969, or the amount of 66.0 millions of dollars

to 70.4 millions of dollars. Similarly in 1974 approximagely the

amount of 204.0 millions of dollars to 225.0 millions of dollars of

tax revenues had flown from the NE to the ROC, which represented about

40.5 to 44.8 percent of the VAT revenues collected in the NE in this

year.

7.3 Implications for Public Policy

There are two implications of this study for public policy. First,

there is the reallocation of tax revenues due to the triangular trade

flow which can be adjusted for through adoption of the same principle

of border tax adjustments on domestic and foreign trade. Second,

there is the reallocation of revenues due to the "net" trade imbalance

which requires the adoption of a tax rate, on domestic and foreign trade,

that reflects the tax induced changes in the price level and the benefits

of state public expenditures. When both sources are taken into account

and if our empirical observations are reasonably accurate, we

determined that the proper rate of BTA on domestic as well as foreign

trade should lie between 60.0 and 70.0 percent of the tax rate

which applies for sales within each state.   In other words,

if the tax rate applied on sales within each state is 15.0 percent, we suggest that the BTA rate applied on domestic and foreign trade should ideally lie between 9.0 and 10.5 percentage points, which is in marked contrast to the current 4.0 percentage points applied on domestic trade and an almost 15.0 percentage points applied on foreign trade.

Several proposals have been advanced in Brazil to cope with the reallocation of state tax revenues. Consider first the proposal that the Brazilian states adopt on domestic trade a partial BTA equal to 50 percent of the national tax rate. In the absence of knowledge of the benefits of public expenditures and without taking into account the magnitude of foreign trade, our analysis suggests that reallocation of tax revenues will be curtailed, but not eliminated by the adoption of such proposal. Based on our observations of the triangular trade flow, tax revenues would still flow from the NE to the ROC on account of full border tax adjustments on foreign trade. Furthermore, based on our observations of the "net" trade imbalance and the benefits of public expenditures, tax revenues would still flow from the NE to the ROC on account of small border tax adjustments on domestic trade.

Consider next the proposal for the introduction of a VAT National Fund to be collected from the states on an origin basis and distributed among the states on the basis of a two-factor formula, involving population and the inverse of per capita income. This proposal seems not to fit clearly into the spirit of our discussion of border tax adjustments, since the distribution of the fund is concerned with the question of vertical equity among regions. As a matter of policy, the guidelines

for choosing the proper principle of BTA's should be independent of the ideal distribution of regional income. On the other hand, if deemed desirable, the VAT National Fund might be redistributed so as to enforce the destination principle on domestic and foreign trade. This alternative should eliminate the reallocation of tax revenues due to the triangular trade flow since the same principle is enforced on domestic and foreign trade, but in this case BTA's would be too large on account of the "net" trade imbalance.

What are the implications of our analysis of the suggestions that Brazil transfer the collection of the state VAT to the federal government? Replacing a federal collected tax for a state collected tax without changes in the tax base would not modify the interstate allocation of tax revenues, but would alter the national tax structure further away from the ideal principles of multilevel government finance. However if, as seems likely, this proposal is accepted, the federal government allocates revenue among states either on the basis of some redistributional factor formula, or else so as to enforce the destination principle, our comments above in connection with the VAT National Fund similarly apply.

The substitution of the retail sales tax at the state level for the VAT has been suggested also as a possible alternative to eliminate the undesirable reallocation of tax revenues from the NE to the ROC. As already mentioned, the only inconvenience of the overall destination principle is that part of the benefits of public expenditures accrue to business firms, hence a rigorous interpretation of the "benefit rule"

as described before would suggest that BTA should not be granted in full
and a retail tax would be improper.

Perhaps the most important result of this study is that BTA of
general and uniform taxes are not necessarily neutral with respect to
the allocation of tax revenues. Conceptually, at least, in a world of
triangular trade flow and imbalanced commodity trade, tax neutrality
requires that BTA should be equal on domestic as well as foreign trade
(or, equivalently, on trade between countries of an economic union as
well as on trade with the outside world) and the proper rate of BTA
may depend on the benefits of public expenditures and the tax induced
movement of the price level.

7.4 Limitations of the Analysis

It may be worthwhile to point out some of the more important limi-
tations of the analysis used in this study. The analysis adapts and
applies to a current policy problem the standard results of the princi-
ples of multilevel government finance, of the international payments
theory, and of the theory of public goods. These models are essenti-
ally neoclassical and at best imperfectly descriptive of a world in
which competition is seldom perfect, prices are not completely flexi-
ble and the demand for public goods is not revealed and values cannot
be known.

The assumptions of these models overlook many aspects of the real
world taxes. First, the Brazilian service sector and other special
activities are not included in the VAT base as it would be required by
a truly general product tax. Secondly, the concept of restricted

origin principle (the destination principle enforced on foreign trade

and the origin principle enforced on domestic trade) as used in our

analysis cannot be readily equated to the actual Brazilian BTA principle.

As noted before, exports of raw materials may not receive full tax re-

bates. Furthermore, since in practice it is difficult to draw a line

between raw materials and processed goods a discriminatory treatment

develops for BTA on the foreign exports of those goods which do not

fall in the straightforward classification of manufactured goods. On

the other hand, the BTA treatment of domestic trade is only a close

approximation of the origin principle since the equivalent of a small

BTA is granted on all interstate transactions. Finally, little atten-

tion was given in this study to the administrative problems involved in

the various policy alternatives stated above. For instance, the pros

and cons related to the enforcement of the destination principle vis a

vis the origin principle on domestic trade have not been considered.

The recognition of these imperfections could modify some of the results

of the analysis and hence deserve additional research, but are beyond

the scope of this study.

7.5 Suggestions for Additional Research

The results and technique of this study's analysis suggest several

areas in which additional research should be fruitful. The results of

the triangular trade model, for example, indicate that tax revenues are

decreased in the NE by the same amount that it increases in the ROC. A

fully specified model of triangular trade flow might spell out the terms

of trade effect of the change in BTA. It is possible, theoretically,

that changes in the terms of trade more than compensate for the real-
location of tax revenues, so as to leave the NE better off and the
ROC worse off as a result of the BTA change.

Another area deserving additional research is the effect of in-
dividual mobility on efficiency in the public good model. If states
provide "impure" public goods a new entrant confers a negative exter-
nality on individuals already living in the state of destination, and
a positive externality on individuals left behind in the state of
origin. Since the individual compares only his utility level in the
two states and ignores marginal effects of his move on others, individ-
ual mobility (or "voting-with-the feet") does not, in general, produce
Pareto optimality. Efficiency can be achieved at the state or at the
federal level through the tax-subsidy scheme so as to internalize the
external costs (benefits) of moving. While these alternatives have
identical efficiency outcomes, they differ in spirit and equity pro-
perties. The former produce a decentralized solution to the allocation
of individuals among states. The enactment of such taxes and subsidies
by states immediately provides states favored by natural character-
istics, population size, or income with a valuable property right,
which they exercise by taxing individuals outside of their state (i.e.,
those who would have entered in the absence of the tax-subsidy scheme).
The centralized solution bestows the entire population with a property
right in both states, NE and ROC say, and achieve allocational effici-
ency by taxing all members of the favored state to subsidize the dis-
favored state.

Other possible areas of further research include the effect of tax reallocation on regional development. The fact that the NE is less developed than the ROC suggests that the revenue effect of the ROP is non-neutral on vertical as well as on horizontal grounds. Hence, the flow of tax revenues from the NE toward the ROC largely undermines the interregional redistribution of income carried out by the federal government. Closely related to this would be additional work into the effects of freeing tax rates at the state level so as to reduce their financial dependence from the federal government and increase their autonomy in the provision of local public services. Actually, the effective autonomy of state governments in Brazil is fairly attenuated these days. State governments are practically limited to one tax in which they have virtually no power to fix the tax rate. Consequently a large proportion of the state's expenditures is met by federal revenue transfers which have been associated with close financial control and supervision.

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Appendix

TAX RATES ENFORCED BY THE STATE VAT, 1967-76

Year	Northeast and North Sales			Rest of the Country Sales		
	Internal	Interstate	Exports	Internal	Interstate	Exports
1967	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
1968	18.0%	18.0%	18.0%	16.0%	15.0%	15.0%
1969	18.0%	15.0%	15.0%	17.0%	15.0%	15.0%
1970	18.0%	15.0%	15.0%	17.0%	15.0%	15.0%
1971	17.5%	14.5%	14.5%	16.5%	14.5%	14.5%
1972	17.0%	14.0%	14.0%	16.0%	14.0%	14.0%
1973	16.5%	13.5%	13.5%	15.5%	13.5%	13.5%
1974	16.0%	13.0%	13.0%	15.0%	13.0%	13.0%
1975	15.5%	12.0%	13.0%	14.5%	12.0%	13.0%
1976	15.0%	11.0%	13.0%	14.0%	11.0%	13.0%

Source: O. E. Reboucas, Imposto Sobre Circulacao de Mercadorias, Diagnostico e Alternativas, Fundacao Instituto de Pesquisas Economicas, processed, May 1976.