



Economic Effects of Origin and Destination Principle for Value-Added Taxes

Jesus E. S. Oliveira

Advisor: Prof. Jed Kee

MINERVA PROGRAM
INSTITUTE OF BRAZILIAN BUSINESS AND PUBLIC
MANAGEMENT ISSUES
SCHOOL OF BUSINESS AND PUBLIC MANAGEMENT
GEORGE WASHINGTON UNIVERSITY

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1 – Introduction

This paper is a brief account of our research on value-added taxes and the economic effects of choosing to implement such tax under the destination principle or under the origin principle, with regard to trade done between states that use a VAT and are part of some type of economic community. Our main goal was to understand how that choice affects production and consumption efficiency. Production efficiency holds if producers at the margin in different states have their prices equalized across the community, thus having the same marginal cost and consequently receiving the same returns on their activities. Likewise, consumption efficiency holds if, for a given good, consumers at the margin in different states pay the same price, thus attributing the same utility to that good. We also considered the main effects that such decision has on the public administration, considering both revenues and the effort needed to obtain compliance under each VAT principle.

Section 2 contains a short overview of the most common ways in which goods are taxed. Section 3 introduces the main features of the VAT, which are necessary to fully understand the analysis that follows. Some previous knowledge of Economics fundamentals, though, is needed.

There does not seem to be consensus as to what principle would be the best, which reason we draw our own conclusions. As is very frequent in tax literature, analyses are tinted either by some normative judgment or by the incomprehensiveness of the models

employed. We tried to stay clear of that first pitfall as much as practical. We surely did not venture in trying to solve the second.

2 – Taxes on Goods and Services

2.1 – Sales Tax

The most straightforward type of sales tax is the turnover sales tax. Under this framework, every sale is subjected to tax accrual regardless of its nature as to being a final or intermediate sale. The tax amount due in each period is determined by adding the tax due in each sale carried out during that period. Examples are the Argentine turnover tax, levied by provinces and a few social contributions levied by the Brazilian federal government.

Such a tax, despite its simplicity, as far as determination is concerned, poses a significant problem, namely that of cascading. When the tax is levied in each stage of the production chain, the longer the chain is the more often the tax is levied, with no provision for compensation of the amount already paid in previous stages. The means of estimating¹ the degree of cascading are well known. The main problem with cascading is that it has nasty consequences regarding producers' choices or, as seen from the opposite side, consumer prices. This is sometimes referred to as a fairness issue, but we will avoid this approach in this paper.

The most common argument against cascading is that it encourages production verticalization, which means the incorporation, by firms, in its productive process, of

¹ Shome, 1995, p.79

activities that would otherwise be performed by suppliers. This allows the producer to skip one or more commercial transactions, thus reducing its own overall tax burden. The problem is that such producer is not likely to be as efficient in producing its “inputs” as an occasional supplier, because of both economies of scale and extended know-how demands. There are arguments in favor of verticalization; such as hedging against fluctuations in supply of key inputs (a good example would be Alcoa Aluminum having electrical plants in the west coast of the USA, which has proven to be a wise choice), but still this is an individual choice and not something that should be forced by a tax framework.

Cascading also discourages investment in activities that have inherently long production chains, which means, as a rule, industrialized goods. One last negative outcome of cascading worth mentioning is price pyramiding. This is the behavior of a monopolist who, upon an increase of the tax rate, knowingly raises prices above the level that would be enough to fully offset the effects of the new rate, based on the assumption that the real impact of raising a cascading tax is difficult to be estimated by laymen.

There are a few ways in which cascading can be alleviated. The most obvious one would be setting the tax at a very low rate, but this would lead to such a low revenue that maybe it would be preferable to eliminate the tax altogether.

The next step is to charge the tax only at the final sale to consumers, be it households or firms. This is known as retail sales tax, sometimes referred to as suspensive sales tax.

Theoretically, sales taxes could be levied at any stage, but choosing a stage other than the final one would obviously lead to lower revenues.

Under this modality, taxes would not be levied on sales of goods to producers or traders. Some countries demand that these be registered, so as not to allow sales for non-registered companies to be excluded from the tax base. This may seem to eliminate cascading, but depending on how imports are treated and what the requirements for registering are, some cascading may still occur.

As to how efficiently this tax can be administered:

On the surface, this suspensive mechanism appears simple and easy to administer for both the government and businesses. However, this is not necessarily the case. Such a system can be subject to abuse and non-compliance. Suppliers are required to evaluate evidence provided to them by purchasers. Purchasers could provide false evidence to the supplier. In such circumstances, the tax authorities may require suppliers to remit tax that was not collected even though the purchaser provided evidence that the tax was not required to be paid on the sale. This potential liability to tax can introduce some uncertainty into the tax system for suppliers. (Shome, 1995, p.81)

A better approach to eliminating cascading is to adopt multi-stage sales taxes, in which the vendor is entitled to claim credit for taxes levied at previous stages. This may assume

many forms and the taxonomy is not consistent across the literature on the subject. We prefer to encompass all variants of non-cumulative sales taxes under the value-added taxes classification, for their similarities are far greater than their differences

2.2 – Value-Added Taxes

The basic idea of a value-added² tax is that the tax rate is applied on the portion of the sales price that is the result of the vendor's activity, so that the value of the inputs used in the production process is not part of the tax base. The same holds true for businesses that do not carry out any industrial process, in which case the value of his purchases is excluded from the tax base.

The most important decision to be made in designing a VAT system is what the tax base³ should be. This affects not only the revenue that can be potentially raised at a given rate but also to what extent the VAT may discourage investment. Conversely, for a given intended revenue, the narrower the base, the higher the rates will need to be. This interwoven relation between tax base and tax rate notwithstanding, we still think that the tax base should be looked at with greater attention, for once the system is in place adjusting rates is much less troublesome than making inclusions and exclusions to the tax base, be it from a lawmaking standpoint or from a compliance standpoint.

² Also called "Value Added Tax". See Thuronyi, 1996, pp. 167-169 for further discussion on VAT terminology.

³ A framework for estimating the base of a VAT in numerical terms is presented by Howell H. Zee in Shome, 1995, pp.96-99.

The broadest base is achieved by taxing all expenditures but government wage expenditure. This is called product-type VAT or P-VAT. Another variant allows for capital depreciation to be excluded from the base, resulting in what is called income-type VAT, or I-VAT.

If expenditures that result in an increase in the capital stock are removed from the VAT base, we are left with what is called consumption-type VAT, or C-VAT.

Of the three variants presented above, the P-VAT allows for the highest revenue, but taxing capital goods can prove to be a strong disincentive for investment. To the extent that the VAT on capital goods cannot be recovered by businesses, some cascading⁴ also occurs. These problems are only slightly reduced with the adoption of an I-VAT. Some countries allow for the tax on purchased capital goods to be recouped over a period of time.

The C-VAT seems to be the less economically intrusive variant “as it generates no distortion in the production process between capital and other inputs”⁵. Its narrower base, though, mandates that rates be set higher, which gives rise to every sort of problems, such as enhanced distortions caused by multiple rate schedules, exemptions and zero rating,

⁴ This depends on how much producers are able to forward-shift the burden of the tax on their capital expenditures. In a competitive model, it is well established that this ability depends on the relation between supply and demand price elasticity. See Shome, 1995, pp. 75-77 for an analysis showing two extreme cases and one intermediate case. A more realistic analysis is presented in Browning and Zupan, 1999, pp. 247-248, in which two intermediate cases with different elasticity ratios are shown.

⁵ Shome, 1995, p.87

high evasion, public perception of excessive tax burden, increased pressure on businesses cash flow requirements, etc. Still, the C-VAT is the most common variant across countries.

2.3 – Excise Taxes

Some taxes are imposed only on the consumption of a few selected goods, either as an extra source of revenue or to correct negative externalities created by their consumption.

If revenue (or income distribution) is the main concern, goods to be taxed should be luxury goods, which can be identified as those showing high income elasticity of demand. Low price elasticity of demand is also desirable, so as the imposition of the commonly high rates used by these taxes will not decrease sales to a point where revenue would suffer.

Negative externalities are generally tackled by levying excise taxes on products like alcoholic beverages, tobacco and fossil fuels. High excises rates, though, may not be efficient to deter consumption of addictive substances. Revenues obtained from these excise taxes are often earmarked so as to address specific problems created by consumption of the corresponding goods.

Ease of administration is a major goal to be pursued in creating excise taxes. For this reason, other desirable characteristics of goods to be taxed include large sales volumes,

few producers, easy definability and some degree of government supervision in their production and trade. Contrary to a VAT or sales tax, excise taxes often have fixed values, as opposed to ad valorem rates, again with ease of administration in mind.

2.4 – Taxes on Services

Sales taxes may or may not include services in its tax base. Many states in the U.S., for example, include services in the sales tax base. EEC countries include services in their VAT's. When this is not the case, the government may choose to create a separate tax to be levied on services, such as Brazilian ISQN, a tax levied on services by local governments.

2.5 – Taxes on International Trade

Goods and services may be subjected to additional taxation if they are imported or exported. Export taxes are the less common variant, often used not as a means to obtain revenue but to affect supply of a certain good in the internal market. That is the case with the tax on exports of raw cashew nuts levied by Mozambique, in an effort to protect local cashew processing industry. These cases, though, are rare, and not only do governments avoid creating tax on exports but they also tend to exempt exports from other types of taxation, such as VAT.

Imports, on the other hand, are treated in a very different manner. Import taxes, generally referred to as tariffs, are common across countries, for different reasons. Countries that import significant volumes of some commodities might wish to adopt tariffs to improve their terms of trade (optimum tariff theory). Developed countries, in general, rely on tariffs for protecting domestic interest groups. Developing countries will seek tariffs as part of an export substitution policy or as a means to reduce trade deficit. Tariffs play a central role in poor countries in terms of revenue, for these countries lack the apparatus to enforce compliance of other types of tax and, given the presence of border controls, tariffs are easy to collect.

3 – Value-Added Taxes

3.1 – Indirect vs. Direct Method

The non-cumulative nature of the VAT demands that calculations are made to determine the amount to be considered as the tax base. This can be achieved directly or indirectly.

Under the direct method of determining the tax liability (also known as the subtraction method) the taxpayer has to determine what is his added value, generally by subtracting the tax-inclusive value of his purchases from that of his sales⁶. This value is the tax base that has to be multiplied by the tax rate to determine the tax liability. The tax due in each sale does not have to be shown in the invoices and no extra bookkeeping is needed other than that already necessary to determine corporate income tax.

Under the indirect method (also known as credit method or invoice method) the added value is not calculated. Instead the tax amount is calculated by adding up the tax due at each sale and then subtracting the tax already paid by suppliers on the inputs. Such method demands that the VAT is shown in invoices and also calls for some extra bookkeeping, so as to keep track of credits and debts in each period.

⁶ Ture, 1979, p. 14 suggests another direct method for determining the VAT liability: *“For example, in the “consumption” VAT, the business firm may total the components of its value added – all the payments it makes for the production services it uses – and subtract from this sum its payments for other businesses for capital facilities. The result is the company’s value added which is multiplied by the applicable VAT rate to find the amount of the business’ VAT liability”*

What we said above seems to indicate that both methods would ultimately lead to identical outcomes as far as revenue is concerned, thus indicating that the direct method should always be chosen on grounds of lower compliance costs. That is not always the case, though. In the presence of multiple rates and exemptions, it can be shown⁷ that these methods bring different revenues, sometimes even negative revenues, that is, a claim against the government. Also, the indirect method is considered to be self-enforcing, for purchasers would demand their suppliers to indicate in their invoices the amount of tax paid, which the formers would then be able to claim credit for. That said, the direct method is advantageous only in a single-rate VAT framework and in countries with very strong tradition of tax compliance. Other than that, as is the common case, the indirect method should be favored.

3.2 – Inclusive vs. Exclusive Tax Base

An important consideration to be made when looking at a tax rate is whether this is levied on a price inclusive of tax or not. This allows us to reach the effective tax rate being used. It is worth noting that the term “effective” rate has broader significance in the presence of different rates and less than perfect credit mechanisms⁸, but here we assume these do not exist.

A tax-exclusive tax base is what one would expect to see more often, for the nominal rate is the same as the effective rate. In this case the tax base would be the producer price, to

⁷ Shome, 1995, pp. 92-96

⁸ Tait, 1988, p.44

which in some cases other taxes are added (e.g. excise taxes). The consumer price (not considering transportation, insurance, etc.) would then be the advertised price plus VAT.

Under a tax-inclusive tax base the tax liability is the tax rate applied to the consumer price, which has already been adjusted to allow for the included VAT. That means that a nominal rate of, say, 25% actually translates to a 33% effective rate in a tax-inclusive tax base VAT, as shown below:

Tax Base Type	Producer Price	Tax Base	Nominal Tax Rate	Tax Liability/Revenue	Advertised Price	Consumer Price
Tax exclusive	\$75.00	\$75.00	25%	\$18.75	\$75.00	\$93.75
Tax inclusive	\$75.00	\$100.00	25%	\$25.00	\$100.00	\$100.00

3.3 – Single Rate vs. Multiple Rate Tax Schedule

Indirect taxes are widely perceived as being regressive. Politicians are well aware of that, and the idea of setting low rates for basic or “merit” goods as a means to reduce that perceived regressive character is very tempting. That said, it should be to no one’s surprise that multi-rate tax schedules are so commonly adopted. Tait⁹ studied 55

⁹ Tait, 1988, p. 39-41.

countries and found that 21¹⁰ of those use a single rate. Haufler¹¹ studied the tax rates in 12 EEC countries and found only two having a single rate, yet one of them (UK) also uses a “zero rate on certain domestic transactions”.

A strong case¹² can be build against multiple rate schedules. The main problem is that it is not yet clear whether multiple rates reach the desired income distributive effect. And if they do, a VAT schedule is hardly the best tool to accomplish such goals.

3.4 – Exemptions vs. Zero Rate

VAT rates can be set at zero. That means whatever the tax base is, the amount due will be zero. Still, the merchant is able to claim credit for his purchases if that is the case, for his activities are subjected to a VAT rate.

Exemption occurs when the business is considered to be excluded from the VAT system, no tax is levied but no recouping from VAT on its purchases can take place. This

¹⁰ We have reasons to believe that such number may be flawed, for the rates presented for Brazil in that study are wrong (9% and 11% for interstate operations, depending on region, when in fact the rates are 7% and 12% and apply only for transactions between registered merchants, levied in the origin, and any difference between the interstate rate and the internal rate for the state of destination being levied by the state of destination. For intrastate operations he claims the single rate to be 17%, but actually there is a myriad of rates, for these are set at state level, each state having its own multi-rate schedule)

¹¹ Haufler, 1993, p.15

¹² See Tait, 1988, pp. 42-44 for a comprehensive list of reasons why a multiple rate tax schedule might not be such a good idea.

Among those we can't help but quote: “A glance at any of the VAT regulations defining differential categories should quickly convince any sensible person how ill advised it is to multiply rates and create the attendant problems of definition. It is not only that VAT staff time is taken up defining the various categories of goods, assessing the borderline cases, and explaining decisions to traders and public interest groups, but that, typically, these decisions require the attention of highly qualified, intelligent staff, whose decisions will stand up to debate and argument. Such a staff can be employed much more fruitfully on administering the VAT. Settling hardline definitions therefore becomes an expensive exercise.”

Those with some experience in tax collection can recognize on the spot the soundness in this advice.

business is worse off than that subjected to zero rate and if other companies use its produce as input, these can claim no credit, breaking the VAT chain and ultimately resulting in some cascading.

Tait comments on this interesting differentiation:

A linguistic quirk of the VAT is that “exemption” actually means that the “exempt” trader has to pay VAT on his inputs without being able to claim any credit for this tax paid on his inputs. “Zero rating” means that a trader is fully compensated for any VAT he pays on inputs and, therefore, genuinely is exempt from VAT. (Tait, 1998, p.49)

4 – Origin vs. Destination Principle in Intra-community Trade – Effects

When we consider that commodities will almost certainly enter intra-community¹³ trade, new considerations¹⁴ arise. Goods shipped from one state to another may or may not be subjected to VAT, both in the state of origin and that of destination. That leads to four possible combinations of inter-state taxation.

The first would be that the good be taxed in both states, giving rise to double taxation. The second would be that the good would not be taxed in either state. Both combinations are obviously undesirable. Double taxation is a strong deterrent to inter-state trade, making imported goods more expensive in the importing state, way beyond transportation costs. No taxation at all is just as bad, for it gives imports an advantage over domestic production that has no justification on the production efficiency of foreign manufacturers.

We are then left with two possibilities: either the good is taxed only in the state of origin or only in the state of destination. These two approaches to VAT taxation in inter-state trade are called, respectively, origin principle and destination principle.

Another way to think of these approaches is to consider that under the destination principle everything that is domestically consumed is taxed, whereas under the origin

¹³ We will use the expression “community” in this paper to refer to any group of states with common interstate trade rules, either based on multilateral agreements or on their legal framework. Thus, every degree of integration from free trade areas to federated states is covered by this expression. Accordingly, the expression “state” refers to states or provinces, in the case of federations, and to member countries, in other forms of trade communities. “Imports” and “exports” should then be understood in a manner consistent with what was said above.

¹⁴ Particularly in the case of federated states, such considerations are meaningful only if the VAT is levied by states, for a federal VAT in inter-state sales would be treated in every aspect just as intra-state sales.

principle everything that is produced domestically is taxed. This does not mean, though, that any relation exists between the taxation principle employed and the tax base mentioned in section 2.2. There is no inconsistency in designing, for example, a C-VAT based on the origin principle.

As discussed in section 3.1, the non-cumulative character of the VAT is brought to practice by mechanisms that ensure that the tax paid in previous stages is recovered, either through the subtraction method or, as is often the case, the credit method. In a destination-based environment, though, items shipped from one state to another are not subjected to VAT, so no recovery is needed. That means these recovery mechanisms only apply to inter-state trade if the states are subjected to the origin principle. This leads to some confusion, as the origin principle is often referred to as “credit method” in political discussions¹⁵.

4.1 – The Need for Border Controls

Under the destination principle, imports are taxed but exports are not. This requires border tax adjustments, for the VAT must be removed from products leaving the state and then added upon entry in the importing state, at the importing state internal rate. This need for border controls creates two problems.

First, every move in the direction of integration reflects the political desire of citizens of member states towards the removal of every barrier to free circulation of goods. Border

¹⁵ Haufler, 1993, p. 11.

controls are very hard to accept in an economic community and simply unacceptable within federated states. Such a desire was expressed, for example, by the Fiscal and Financial Committee¹⁶ set up by the EEC in 1960:

“Such a measure [the abolition of tax frontiers] also seems necessary to the Fiscal and Financial Committee for psychological and political reasons. Thus it is advisable never to lose sight of such an abolition, in the perspective of the ultimate objective of economic integration policy, even if it is only achievable slowly.” (European Communities-Commission, 1963, in Haufler, 1993, p. 01)

Second, there are obvious costs associated with maintaining border controls. These will be dealt with in section 4.5.1.

4.2 – Clearing systems

Under the origin principle, commodities are taxed only in the exporting country. As exports are taxed just like domestic sales and imports are not taxed, no need exists for border controls.

Another issue, though, arises: the fact that the importing state cannot tax imports means less revenue than that obtained under the destination principle. States that are net exporters of taxable commodities benefit, while those that are net importers suffer, if we compare their revenues with what they would be under the destination principle.

¹⁶ Widely known as the “Neumark Committee” for it was chaired by Fritz Neumark.

From a revenue-wise fairness standpoint, we see no reason why taxing a good in the state of production would be inherently better than taxing it in the state of consumption, as long as rates are equalized across states. As a matter of fact, Brazil's mixed system resembles much more an origin-based solution than a destination-based one. In this case, revenue is concentrated in the most industrialized states, but that is just a reflex of higher economic activity in some areas rather than a distortion caused by the tax framework. On the other hand, high rate differentials do cause distortions, encouraging manufacturers to go to states where rates are low.

The case of the EEC, though, deserves special attention. Before integration efforts took place, the destination principle prevailed across countries that levied a VAT. Given the problem created by the presence of border controls demanded by the destination principle, as outlined above, a strong move was in place towards the adoption of an origin based VAT. Such a change would obviously alter the revenue of the member countries, as compared to what the situation was under the destination principle.

The desire to retain the previous revenue status led to the suggestion of creation of a clearing-house. Such mechanism would allow countries to claim compensation based on their imports from countries in the EEC, at the same time demanding them to compensate for exports to other EEC countries. It was both suggested that countries would claim their credits against each other or against the community. The amount could be determined in either of two ways: each merchant would keep track of its imports and

exports from and to each EEC country and would then remit these data to the administration, who would then obtain the aggregate figures. This idea *was criticized for the administrative and compliance costs it required* (Haufler, 1993, p. 19). Alternatively, as suggested by Germany, the amount of the compensations could be based on foreign trade statistics. These two schemes are sometimes called micro-clearing and macro-clearing, respectively. As no information would be available regarding final consumer purchases, these would not be included in the clearing system.

4.3 – Effects on Purchases

Given the non-cumulative quality of the VAT, the choice between the destination principle and the origin principle affects consumers and VAT-registered traders that import goods as inputs in different ways. We look at both cases below.

4.3.1 – Effects on Consumers

Consumers (either individuals or firms) may or may not be affected by the choice between destination and origin principle. If tax rates are identical both in the exporting and in the importing state, transportation costs notwithstanding, consumer prices are to be the same for both imported and domestically produced goods. Once tax rate differences come into play, though, the choice of taxation principle does matter.

Under the destination principle, the tax-inclusive consumer price of a commodity bears the internal tax rate of the importing state regardless of its origin. The obvious outcome is that the origin of the good will not affect consumer's choice as far as that particular good is concerned. On the other hand, consumers in different states, with different rates, would pay different prices for the same product, which means that the consumer at the margin in the high rate state pays more than the consumer at the margin in the low rate state, thus leading to inefficiency in community-wide consumption.

If not only tax rates differ, but schedules are also different between two countries so that different goods are subjected to different rates, relative prices within each country will also be different, increasing the above mentioned consumption inefficiency.

Another important way in which the destination principle introduces consumption inefficiency is the distortion in relative prices caused by the existence of non-tradable products. It is hard to think of a non-tradable good but when one considers services such as education, health care, public urban transportation and services provided by individuals that may not be VAT-registered, it becomes easy to see how different VAT rates across states affect relative prices and consumer choices under the destination principle, leading to further consumption inefficiency.

Under the origin principle, the tax-inclusive price of a good bears the tax of the exporting country so that goods from different states have different consumer prices. Except for transportation costs, consumers in every state pay the same price for a given good. The

consumer at the margin in state A pays the same price as the consumer at the margin in state B, with no room left for further Pareto improvements. This leads to global consumption efficiency, as consumer prices will be equalized over the community.

4.3.2 – Effects on VAT-registered Traders

When goods are purchased by VAT-registered traders for further processing or resale, the VAT levied in previous stages can be recovered, either by the subtraction method or the credit method. As discussed in section 4, this applies only to a VAT under the origin principle. That said, 3 relevant cases should be examined: Destination principle, origin principle with credit method and origin principle with subtraction method.

Under the destination principle, the price of an imported input bears no VAT at all, so that no recovering takes place. The final good is fully taxed at the internal rate and the effective VAT rate that the imported input will finally be subjected to is that of the importing country. Considering this taxation in the final stage, input prices in a given state are the same regardless of the state of origin. Again, as is the case with final consumers, input prices differ across states in the case of different internal VAT rates and schedules. Given a certain amount of forward-shifting capability by traders, this causes final prices to consumers to be different across states, leading to global consumption inefficiency.

If the origin principle is adopted and the recouping is done by means of the credit method, the tax-inclusive price of an imported input will bear the VAT rate of the exporting country. At first glance, this may indicate that the rate in the state of origin will affect purchase decisions of VAT-registered trades, but that is not the case. Under the credit method, the VAT paid for in previous stages is removed from the VAT accrued at the final sale. That means that the higher the VAT rate in the input exporting state the higher the VAT that can be removed in the final sale. If the exporting state has a VAT rate for that input that is higher than that of the importing state, the VAT recovered in the final sale will be exactly the amount needed to offset the higher price paid for the input. Conversely, if the VAT rate in the exporting state is lower, the amount recovered at the sale of the final product will be lower, thus compensating any apparent initial advantage. The final economic outcome then is the same as under the destination principle, that is, global consumption inefficiency.

From a financial point of view, though, it must be noted that the recovery from higher rates on imported inputs is postponed until the moment of the final sale. Depending on how significant a certain input is within a firm's cost framework and what the VAT rate difference is between exporting candidates, this may lead to some preference to imports from a low rate state, for this would put less pressure on the importing firm's cash flow.

In a community that adopts the origin principle with the subtraction method the recouping effect does not take into account the VAT paid for at previous stages. The internal VAT rate is applied to a base that is the final price minus the VAT-inclusive

price of the inputs. This means that the part of the final good that is the result of the importer's activity is subjected to the internal VAT rate, while the part corresponding to the imported inputs is taxed at the rates of the exporting state. Assuming different VAT rates between states, the rate in the exporting state does affect the importer's choice. As was the case with consumers, prices within a given state differ depending on origin, but for a given exporter consumer prices are equalized across states, resulting in global consumption efficiency.

The table below¹⁷ summarizes the 3 cases, assuming a two-stage setting in which an intermediate input is produced in country A and then exported to a producer in country B. It shows the revenue accrued for exporting and importing states and the effective rate applied in both stages. "V" represents the value added in each stage and "t" represents the VAT rate in each country.

	Stage 1 Country A	Stage 1 Country B	Stage 2 Country B	Effective tax in stage 1
Destination principle	0	$t^B V_1$	$t^B(V_1+V_2)-t^B V_1=t^B V_2$	$t^B V_1$
Origin principle – Tax Credit Method	$t^A V_1$	0	$t^B(V_1+V_2)-t^A V_1$ $= (t^B - t^A)V_1 + t^B V_2$	$t^B V_1$
Origin principle – Subtraction Method	$t^A V_1$	0	$t^B(V_1+V_2-V_1)=t^B V_2$	$t^A V_1$

¹⁷ Haufler, 1993, p. 11.

One last idea worth mentioning was presented by Keen¹⁸ stating that in some circumstances both the destination principle and the origin principle would be equivalent. The argument is that movements in exchange rates, prices and labor would adjust and compensate for the difference in VAT rates between two countries. We think that this view is of little practical usefulness¹⁹. Other than the objection²⁰ stated in that work we add a few more. First, it is well known since Keynes that price and wage mobility is quite limited in a real economy. Second, even if such price and wage mobilities or exchange rate adjustments led to equalization in the long run, the argument still assumes a two-country model. It is hard to think of such a mechanism at work in a multi-state community, given the complexity arising from all the exchange rate interactions. Last, exchange rates are a nonexistent factor in federated states and monetary unions.

4.4 – Effects on Production and Investment

As was shown in section 4.3, if tax rates and schedules across states are the same, the choice between the destination principle and the origin principle has no effect on consumers' choices and both lead to global consumption efficiency. An analogous rationale applies to producers' choices and global production efficiency. The discussion that follows assumes different tax rates and schedules between member states. Transportation costs also will not be accounted for. Still, the analogy with our analysis on

¹⁸ Devereux, 1996, p. 194

¹⁹ This also applies to global production efficiency.

²⁰ *“This equivalence result is striking. But it is also very fragile. For note that the exchange rate adjustment required in the example depended on the precise tax rates assumed: since there is only one exchange rate, if tax rates differ across commodities – as they do – it cannot adjust so as simultaneously to ensure neutrality in respect of all commodities.(...)”*

global consumption efficiency is straightforward, which reason we opted for a briefer approach .

Under the destination principle, inputs leave the exporting state bearing no VAT at all. As seen in section 4.3.1, the origin of the good will not affect consumer's choice, equalizing producer prices across states. That leads to global production efficiency, for if producer prices are the same in all states so are the marginal costs.

Again, as seen above, under the origin principle the tax-inclusive price of a good bears the tax of the exporting country so that goods from different states have different consumer prices.

If the importer is a consumer the choice will be affected by the origin of the good, causing exporters situated in high-rate states to be harmed. Factor incomes will be different across different states, leading to global production inefficiency. The likely outcome is that prospective entrants will prefer to invest in low-rate states, changing production patterns in the community.

When goods are imported under the origin principle to be used as inputs, VAT-recovery mechanisms must be considered. As seen in section 4.3.2, if the credit method is employed, the effect on VAT-registered traders is identical (except for possible cash-flow concerns) to that of the destination principle. The VAT levied in the intermediate state is

fully recovered at the sale of the final good. The origin of the input is not important, free trade ensures producer price equalization and global production efficiency is attained.

If the origin principle is combined with the subtraction method, as seen in our comments in section 4.3.2, the VAT of the exporting state is not exactly recovered, which causes VAT-registered traders to favor inputs from states with lower rates. Again, as was the case with sales to final consumers under the same origin principle, producer prices are not equalized and production efficiency is not reached.

4.5 – Effects on Public Administration and Public Revenue

4.5.1 – Border Controls

The adoption of the destination principle, as seen in section 4.1, calls for some sort of control of trade that crosses interstate borders. The most straightforward type are physical border controls, in which goods and invoices would be inspected at state borders, both upon exit and entry. The time spent in such checkpoints itself acts as a deterrent against interstate trade because of rising transportation costs associated with that disruption.

The administration also bears the cost of maintaining such checkpoints. Cecchini²¹ estimates the gain of eliminating border controls in the EC at 1.7 percent of the value of intra-community trade, a very high figure by any account.

²¹ Devereux, 1996, p. 200.

The EC has taken a bold step towards the elimination of physical border controls²². In a transitional period between Jan1, 1993 and December 31, 1996, exports are entitled to refunds based on documental proof that the good has been exported. VAT-registered importers would pay the VAT either at the next stage, in the case of inputs, or upon receipt of the goods. Purchases by individuals would still be subjected to origin-based taxation, except for items explicitly excluded from this mechanism, such as mail-order sales and cars. Such a system demands a high degree of cooperation between authorities in different states. See section 6.1 for details.

There is, however, a flipside. If the origin principle does not require any kind of border control, it may be, as is the case in the EC, that member states demand a clearing mechanism as mentioned in section 4.2. Such a clearing house would impose costs, not only on the administration but on taxpayers too, for these will have to do most of the bookkeeping. How much this will cost is a question we think will remain unanswered for a considerable period.

4.5.2 – Auditing and Collection

From a tax auditor standpoint, the fewer possible variants in which an operation can be classified, the easier the auditing process. That said, the easiest theoretical situation would be a VAT fully levied under the origin principle, so that every sale would be taxed and every purchase would give rise to a VAT credit. A pure origin-based VAT, though, is not attainable under WTO rules, its closer cousin being a VAT levied under the restricted

²² Shome, 1995, p. 90.

origin principle, as outlined in section 5. The restricted destination principle is described in section 6.1.

The table below summarizes the possible combinations of principles and operations, showing the tax incidence on sales and credit²³ possibility on purchases:

	Origin Principle	Restricted Origin Principle	Destination Principle	Restricted Destination Principle
Sales to domestic final consumers	Taxed	Taxed	Taxed	Taxed
Sales to final consumers in the community	Taxed	Taxed		Taxed
Sales to domestic VAT-registered traders	Taxed	Taxed	Taxed	Taxed
Sales to VAT-registered traders in the community	Taxed	Taxed		
Exports to the rest of the world	Taxed			
Domestic purchases	Credit	Credit	Credit	Credit
Purchases from within the community	Credit	Credit		
Imports from the rest of the world	Credit			

Leaving aside the pure origin principle, the sure winner is the restricted origin principle, for except for extra-community trade, every transaction is treated in the same way.

The destination principle leads to different treatment of both sales and purchases. Auditing credit on purchases is not a major problem under the credit method, considering

²³ Under the subtraction method, whether or not the VAT-inclusive price of the input can be excluded from the VAT base at the next stage.

that a necessary condition for credit to be given is that the VAT is clearly indicated in the invoices, which shifts the burden of proof to the taxpayer.

On the other hand, determining that a good has really been exported requires some more care. It must be noted that, depending on how the destination principle is implemented, non-taxed operations may actually be taxed upon the sale but refunded after proof has been shown that the goods have been exported. So, in the case of intra-community exports under the destination principle, either one has to cross-check the transaction with authorities of the importing country or borders controls have to be in place. In either case, costs will be higher than those under the destination principle.

It is worth noting that, in general, the easier the tax system makes the auditing process, the easier it is for taxpayers to comply with tax rules.

One last observation is that tax returns do not have to be more or less complicated under either principle. If the origin principle, though, is coupled with a micro-clearing mechanism, then traders need to report their import and export volumes to tax authorities, possibly in a per-country basis, which adds to the complexity of the returns.

4.5.3 – Revenues

It can be easily extracted from the overall discussion in this paper that harmonization of tax rates between different states reduces most, if not all, distortions caused by VAT

taxation, except obviously for deadweight losses, which are inevitable if states are to have any revenue at all. The immediate conclusion is that states that have to lower their rates will lose revenue, while those rising their rates will see their revenues increased. This has little to do with destination or origin principle, rather a consequence of integration. However desirable tax rate harmonization may be, tax burdens reflect people's preference for public goods, and these may have widely varying degrees across the community. So, again, the following discussion assumes different rates for different states.

Under the origin principle, as was pointed out in section 4.1, states with lower rates tend to attract investment. This may lead to the so-called "fiscal-war", a scenario in which states compete lowering their rates. In this scenario, , abstracting from economic growth, production of taxable goods tends to grow in states with lower rates, while that in states with higher rates decreases, leading to a net overall revenue loss. This means that even clearing mechanisms will not compensate for the loss of revenue in the high-tax state, and will offset the gains obtained by the low rate states.

Also, under the origin principle (which assumes open borders within the community), there is the problem of cross-border shopping, purchases made by individuals in foreign

states when tax rates in neighbor states differ substantially²⁴. The table below shows tax rates²⁵ in different EEC member states effective during 1987:

	Reduced Rate(s)	Standard Rate	Increased Rate(s)
Belgium	1%, 6%, 17%	19%	25%, 33%
Denmark	-	22%	-
France	2.1%, 4%, 5.5%	18.6%	22%
Germany	7%	14%	-
Greece	3%, 8%	18%	36%
Ireland(*)	2.2%, 3.3%, 12.5%	21%	-
Italy	4%, 9%	19%	38%
Luxemburg	3%, 6%	12%	-
Netherlands	6%	18.5%	-
Portugal(*)	8%	17%	30%
Spain	6%	12%	33%
UK	-	15%	-

(*) – Countries that extensively use zero rates.

The reciprocal effect under the destination principle would be that individuals would tend to move to states with lower rates. We don't see this as such a realistic concern for, contrary to firms, individuals chose their place of dwelling based on a very wide variety

²⁴ See Haufler, 1993, p. 14 for a brief account of two studies on the significance of cross-border shopping. Purchases made in Northern Ireland by residents of the Republic of Ireland during 1986 amounted for 2.2 percent of the total imports of that country during that year. Another study reports that purchases of Danish residents in Germany during 1985 represent 1.6 percent of total Danish imports during that period.

²⁵ Tait, 1988, p.40

of factors, such as employment, culture, language, social network, family, etc. Also, the average citizen preference for public goods would in principle make one feel comfortable with existing tax rates.

5 – Origin vs. Destination Principle in Extra-Community Trade

Community member states will naturally wish to trade with the rest of the world. In this case, taxing exports will make domestic goods less competitive in foreign markets, for countries outside the community are likely to subject imports to whatever commodity tax they have, not to mention the possibility of import tariffs. Exceptions were mentioned in section 2.5. Conversely, imports from outside the community are likely to arrive the state with no commodity tax at all, so that it is necessary to levy a VAT on imports so as to level prices with domestically produced goods²⁶. This is in accordance with WTO rules.

This imposes that in practice extra-community trade by member states is carried under the destination principle. If the community chooses to carry its internal trade under a VAT based on the destination principle, then no conflict arises.

On the other hand, if the choice is made favoring the origin principle, a mixed system has to be adopted, one that treats all intra-community trade under the origin principle and trade with the rest of the world under the destination principle. This is called restricted origin principle.

²⁶ This is still viewed by some as a non-tariff barrier to free trade. See Appleyard, and Field, 2001, pp. 245-246.

The advantage of adopting the destination principle is clear: firms will do their bookkeeping in the same manner when exporting, regardless of what the destination of the sale is, be it export to another member state or export outside the community. Auditing is facilitated just as well, for no proof of export outside the community would be demanded by authorities to accept the exempt sales.

6 – Other Mixed Solutions

We call mixed solutions those that encompass both origin-based and destination-based VAT taxation in a single scheme. The restricted origin principle outlined in the previous section is an example. We described it separately because once the option is made favoring the origin principle in intra-community trade taxation, the restricted origin principle is the necessary result of international trade circumstances rather than a choice. The two solutions described below are practical ones, adopted by the EC during the 1993-1996 period and by Brazil since the VAT was introduced in Jan 1967.

6.1 – Restricted Destination Principle

As pointed out in section 4.5.1, there were strong reasons to eliminate physical border controls in the EC. Member countries, however, did not agree upon a full shift to the origin principle up front. Effective Jan 1, 1993 a transitional system was devised, to last until Dec 31, 1996, when the (restricted) origin principle would then be adopted. This system, called restricted destination principle, can be very shortly described as a destination principle without border controls.

Under that framework, purchases by final consumers would be taxed under the origin principle. In the absence of border controls it just could not be otherwise. Tax rates of the exporting countries would dictate consumer prices, and revenues would be accrued to the exporting country. No provision existed for clearing mechanisms.

Purchases by VAT-registered traders, on the other hand, would be taxed under the destination principle. The proof of export would be based on commercial documentation and cross-checking between countries rather than on invoices stamped by border officials. Collection on the country of destination was not a concern, for the inputs would be taxed at a later stage.

Trade with countries outside the EC, as explained above, would be forcibly taxed under the destination principle.

The absence of border controls demanded that tight cooperation existed between tax authorities in different member countries, so as to avoid fraud by means of simulated exports. Whatever the operational details of this cooperation were, costs should not be expected to be low. A study commissioned by the West German government pointed that this system would actually increase administrative costs, as compared to the cost of maintaining border controls²⁷.

6.2 – Brazil's ICMS

The VAT in Brazil, called ICMS (Imposto Sobre Circulação de Mercadorias e Serviços – Tax on Circulation of Goods and Services) is in place since 1967, its current form being adopted since 1988, except for some reductions in the tax base in 1999 that brought this levy closer to a C-VAT.

²⁷ Haufler, 1993, p. 22.

This tax is collected by states, which are demanded to transfer 25 percent of the revenue to municipalities. Though states can legislate on details and issue regulations, the tax base and operational guidelines are determined by federal law. The Federal Senate is in charge of setting minimum and maximum rates, within which states can set their internal schedules. Exemptions must be approved by a body called CONFAZ (Conselho Nacional de Política Fazendária) which is formed by representatives of every state. These can individually veto requests for internal exemptions from other states. Rates for inter-state transactions between VAT-registered traders are set by the Federal Senate, as explained below. The non-cumulative effect is obtained by the credit method. No clearing mechanism exists. Most states adopt border controls to some extent for commercial vehicles, but do so as a means of enforcement rather than to carry out border tax adjustments.

Purchases by individual consumers and non VAT-registered firms are taxed under the origin principle, under the internal rate of the exporting state for that good.

Purchases by VAT-registered traders are taxed in the following manner: The exporting state can levy a VAT at the interstate rate. There are two rates depending on the state of destination. Sales to states in the south and most states in the southeast regions are taxed at 12 percent in the state of origin. Sales to the states in the north, northeast and middle-west regions, as well as those to the state of Espírito Santo in the southeast region are taxed in the state of origin at a 7 percent rate. The state of destination is allowed to levy a

VAT on the rate differential, that is, its internal rate minus the interstate rate. The rationale behind this split rate taxation is to allow for some balance between revenues of importing and exporting states. Two interstate rates exist to provide some income distribution in favor of poorer states.

In the case of interstate purchases of inputs, however, the VAT paid to both states is fully recovered at the sale of the final good, against the state of destination. Purchases of consumption items by VAT-registered trades are not recovered, though this is about to change as of Jan 1, 2002. VAT on capital goods can be recovered over a five-year period.

Imports are taxed at internal rates. Exports are not taxed.

This mixed system, although designed to provide some balance between states, is still heavily biased towards an origin based VAT. The natural result is that there is a fiscal war in place. This bias towards the origin principle also interferes in the choice of location by firms, leading to production inefficiency.

As far as administrative costs are concerned, the ability of VAT-registered traders to fully recover the VAT paid to other states on its inputs and capital goods and the split taxation of consumption goods purchased by these also demand some degree of cooperation between authorities in different states. There has been a move towards relying more on this cooperation and less on border controls.

7 – Conclusion

Again, we mention that if the VAT is levied at a single rate, not only both principles lead to the same (desirable) results but a lot of other distortions are eliminated. Given the existence of different tax schedules, neither of the principles discussed here is clearly superior than the other one as a second-best solution. While the origin principle in general brings consumption efficiency, the destination principle brings production efficiency to the economy of the community. The effects of the two principles on the public administration do not show a sure winner either. The origin principle does not call for border controls and tend to make auditing and, to some extent, compliance easier. The destination principle avoids fiscal wars, net overall revenue losses and does not cause states to wish for a clearing mechanism.

Taking a closer look, we think that the destination principle is superior. The relocation of producers that is likely to happen under the origin principle does not have a significant parallel under the destination principle, for individuals are much less likely to move to another country or state solely on a VAT rate basis. Border controls can be replaced by close cooperation between tax authorities from different states. As these integrate more and more, cooperation tends to become the rule, rather than the exception and the fast pace at which information systems are evolving makes this cooperation increasingly easier.

As to how production and consumption efficiency compare, none is inherently superior. The problem under the destination principle is that the consumer at the margin in a state with a high VAT rate pays a higher price than that paid by the consumer at the margin in a low VAT rate state. Why would we think this is acceptable? Because a tax rate (except in Leviathan states) reflects a choice based on average citizen preference for public goods, so that these individuals paying higher prices do receive something in return. But that is a judgment call.

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