WP/00/83

IMF Working Paper

VIVAT, CVAT and All That: New Forms of Value–Added Tax for Federal Systems

Michael Keen

INTERNATIONAL MONETARY FUND

IMF Working Paper

Fiscal Affairs Department

VIVAT, CVAT and All That: New Forms of Value-Added Tax for Federal Systems

Prepared by Michael Keen[1]

April 2000

Abstract

Conventional wisdom has it that the value-added tax is not a suitable instrument for lower-level jurisdictions ('provinces') in a federal system. The problems that arise when it is so used have become a serious constraint on the development of the VAT—and closer economic integration—in Brazil, the EU, India and elsewhere. This paper describes and compares two recent proposals for forms of VAT intended to alleviate these difficulties: the VIVAT and the CVAT. Both enable the VAT chain to be preserved on inter-provincial trade without compromising the destination principle (allowing provinces to tax consumption at different rates) or introducing new scope for game-playing by the provinces. The key difference between them is that the CVAT requires sellers to discriminate between buyers located in different provinces of the federation, whereas VIVAT requires them to discriminate between registered and non-registered buyers. Where the balance of advantage between the two lies is not entirely obvious.

JEL Classification Numbers: H20, H71

Keywords: Value added tax, Fiscal Federalism.

Author's E-Mail Address: mkeen@imf.org

---

[1] I have gained much from the comments of Richard Bird, Charles McLure, Jack Mintz, Bill McCarten, Victor Thuronyi, Howell Zee, and participants in the 1999 meetings of the Canadian Public Economics Group. Views are mine alone, and not necessarily those of the International Monetary Fund.

Contents Page

I. Introduction

At the heart of the remarkable spread of the VAT around the world there is a great irony. One of the main appeals of the tax has been the elegance with which it enables tax to be removed from commodities entering international trade. In this way the VAT has done much to foster closer economic integration. As that integration proceeds, however, and trading partners seek to establish a more complete economic union with one another, so the difficulties that arise when VAT powers are allocated to the members of a federation—elaborated on below—become more evident. That is, while VAT is widely heralded as a good tax for countries trading with one another it is also generally regarded as a bad tax to give to lower-level jurisdictions in a federation. This is most evidently the case in the European Union (EU), of course, where the development of the VAT has been the central tax accomplishment of the member states but has now reached an impasse, with those member states unable to agree on how to design a VAT for the single market that they seek to deepen. The EU experience is merely one instance of a more general question: Can the VAT be run in a federal system other than as a federal tax?

This is a key question in many parts of the world. It seems unlikely to be coincidence, for example, that the two largest countries still without a VAT—India and the US—are both federations. In both Brazil and Argentina, the question of state-level VATs has become a key policy issue. The former states of the Soviet Union have also now struggled for several years with the interactions between their VAT systems. And in Canada the future of the provincial sales taxes and their relation with the federal GST has been a concern for many years.

There is of course no particular difficulty in running a VAT at the central level of a federation and sharing the proceeds with lower-level governments, either as part of a broader equalization program (as in Canada) or by applying sharing rules explicitly to VAT revenues (as in Germany). The question is whether lower-levels of government can successfully run a VAT that gives each some real discretion over the rates and/or base of the tax. Only in Brazil has a systematic attempt has been made to operate a lower-level VAT of this kind; an example, which, as Bird (1999) puts it, "..has usually been taken as a horrible example that proved the point." In some ways more interesting is the experience with the Quebec GST, which appears to be the only example of a VAT operated on a destination basis by a lower-level government in a federation.

Indeed Canada is particularly interesting in the context of the debate over the coordination of VATs. For the appropriate architecture in terms of the federal GST and provincial sales taxes has led to considerable experimentation, with broadly three models of co-occupation currently in place: the dual VAT of Quebec, with a provincial VAT—whose rate and base[2] are at provincial discretion—sitting on top of the federal VAT; the Harmonized Sales Tax

[2] In practice, the base has converged substantially with the federal: see Mintz, Wilson and Gendron (1994).

system in Newfoundland, Nova Scotia and New Brunswick, which is effectively a common (federally-administered) VAT, again superimposed on a federal VAT, with revenues shared amongst participating provinces by a consumption-based allocation formula; and the combination of provincial retail sales taxes (RSTs) and a federal VAT to be found in all other provinces bar Alberta (which has no provincial sales tax). This variety of arrangements is testament to the continuing importance of the issue, provides a useful well of experience, and perhaps also suggests that equilibrium has not yet been reached.

The purpose of this paper is to evaluate some recent conceptual developments which suggest that the assignment of VAT to lower-level governments may not be as problematic as previously supposed. The focus here is on two schemes: the CVAT proposed by Varsano (1995, 1999) and further developed by McLure (1999); and the VIVAT of Keen and Smith (1996). Neither is without flaw—though it will become clear, if it isn't already, where my own sympathies lie—and there may be better schemes awaiting discovery. The key point, however, is that these conceptual developments have taken us much closer to extending the VAT logic so as to allow the operation of distinct VATs by lower-level governments within federal systems.

Section II first spells out the problem to which these schemes are addressed, and the failings of previous proposals. CVAT and VIVAT are described in Section III and compared in Section IV. Section V concludes.

II. THE PROBLEM

What is so hard about allocating VAT to lower-level jurisdictions? (For brevity, we shall call these 'provinces'—recognizing that in the EU context they are actually countries—and to the over-arching structure as the 'federation').

A. Objectives

To see the difficulty, consider the features one would like such a system to have. In addition to the usual canons of equity, efficiency and minimal collection costs, specific desiderata in the present context would include:

- *Provincial autonomy in tax-setting* The essence of the exercise, after all, is to preserve real tax-setting powers to the lower-level jurisdictions. Autonomy is of course ultimately a matter of degree, as it may be tempered both de facto by the constraints of operating in a wider world and de jure by forms of coordination voluntarily entered into. But, for example, both the Harmonized Sales Tax agreement in Canada and the scheme most recently proposed by the European Commission[3]—which involve complete harmonization of tax rates—remove any real fiscal autonomy, and so violate this first criterion.

[3] Commission (1996).

- *Taxation on the destination principle*Tax paid on final consumption should be at the rate specified by, and the revenue should accrue to, the province in which consumption takes place. The theoretical case for the destination principle, which rests on the Diamond-Mirrlees theorem on production efficiency,[4] is strong, but not absolute.[5] Moreover, the ease with which commodities can be moved across borders in federations—a central objective of policy in itself—means that a significant element of origin taxation is inescapable. Nevertheless, there seems to be some professional consensus in favor of the maintaining as much of the destination principle as possible (perhaps supporting it by use of restrictions on distance sales); not the least reason for this is fear of the transfer pricing problems that potentially arise when VAT is levied by the origin principle.[6]

- *Minimize scope for game-playing by the provinces*The exercise of their tax-setting powers may trigger external effects across jurisdictions—intentional or otherwise—with consequent potential for the provinces to do themselves mutual harm. The destination principle in itself goes a long way in this respect: origin taxation, in contrast, creates scope for either exporting taxes onto foreigners or stealing tax base by under-cutting rates charged elsewhere. But, as we shall see, other kinds of game-playing may be possible under alternative forms of implementing destination taxation.

- *Identical compliance requirement for inter- and intra-provincial trade*Ideally, the obligations on tax payers should be the same wherever in the federation they sell, a condition we refer to as 'compliance symmetry.' This has been a particular concern in the EU: in a genuine single market, the argument goes, a trader in Edinburgh need not care, for VAT purposes—indeed need not know—whether a customer is located in London or Linz: trades within and between member states would be treated identically. The European Commission has been adamant on this point:

  > "The single market should function on the same conditions and in the same way as a domestic market, and this also applies in the field of VAT...Eliminating the distinction between domestic and intra-Community transactions must enable operators to reduce to only two the number of tax systems currently applicable:

---

[4] Or some variant thereof: see Keen (1993) and Keen and Wildasin (1999).

[5] See, for instance, the reviews in Keen and Smith (1996) and Lockwood (1999).

[6] The difficulty is that levying VAT on an origin basis means, properly speaking, charging the value that is added to a product in different jurisdiction at the rates charged by those jurisdictions. Firms producing in multiple jurisdictions then have an incentive to transfer price value-added into low tax jurisdictions, for instance by charging high internal prices for intra-firm sales out of them. See Cnossen and Shoup (1987).

> transactions involving a third country and transactions carried out within the Community."[7]

It is not clear how substantial a barrier to trading between member states these asymmetries are, or how great a cost saving their elimination would produce. Certainly it is noticeable that such well-established federations as Canada and the US do not in fact have single markets in this sense, and nor do they seem greatly concerned by this. Nevertheless, the criterion has clearly been a very prominent one in the EU.

- *Providing proper collection incentives within existing tax administrations*. The system should provide tax administrations with the incentives to enforce tax in a manner, and with a vigor, that is appropriate for the federation as a whole. Moreover, implementation should not require the creation of significant new administrative machinery: in the EU, in particular, the creation of a federal tax administration is a long way from practical politics.

- *Preserving the VAT chain* A key advantage of the VAT—relative to, for example, a retail sales tax—is that it secures revenues by collection throughout the chain of production and sale. Breaks in this chain, reducing or eliminating the tax on commodities at intermediate stages of production, fundamentally compromise the integrity of the VAT.

Can a VAT be found that performs well on all these criteria?

B. The trouble with zero-rating exports

The standard treatment of trade under the destination-based VAT is to zero rate exports and bring imports fully into tax.

The mechanics of this are illustrated in Table 1, the example there being used throughout this note. It envisages a chain of three firms, with the first two, A and B, located in country I and the third, firm C, in country II. They have value-added of 80, 120 and 280 respectively. The tax rate is 10 percent in country I and 15 percent in country II. With zero-rating of exports, the exporting firm B simply reclaims input tax of 8 (10 percent of 80) charged on its purchases from A. The good thus leaves country I free of VAT. On entry into country II, tax at 15 percent on its value of 200 gives rise to a revenue collection at the border of 30;[8] this is then available as a credit against the output tax of 72 (15 percent of the final selling price of 480), so that the total tax paid (all by firm C) is 72.

---

[7] European Commission (1996, p.14).

[8] Under a postponed accounting system of the kind in place in the EU and in Quebec, importers account for tax not at the border but in their next VAT return. This makes no difference to the argument here.

Why not apply this treatment of sales between lower-levels of a federation? Zero-rating enforces the destination principle—in the example, the only tax ultimately collected is the 15 percent tax on consumption in country II—and so minimizes game-playing, whilst evidently retaining some tax-setting power at lower-level. Nor are there any particular incentive difficulties in collecting the tax, since each national tax administration retains in full all the tax it collects. Zero-rating falls foul however, of the last two of the criteria set out above. It requires taxpayers to treat differently sales to residents in the same province (taxable) and those registered in other provinces (zero rated). And it breaks the VAT chain by removing tax from traded goods. This last feature puts great pressure on the ability of the tax authorities to control refund claims: limiting the obvious scope for fraud whist ensuring prompt refunds for honest traders is one of most difficult aspects of administering a VAT. In developing countries in particular, this has been an area of recurrent difficulty. Even in the EU, fraudulent refund claims are a real concern: and with EUR 70 bn. of trade moving in the EU tax-free, the risk to the integrity of the VAT chain is significant even there.

C. The trouble with clearing

An alternative approach—which the European Commission first proposed in the early 1990s and has recently revisited—is to remove the zero-rating of exports, so that exports would be taxed at the same rate as domestic sales, with a credit then available against output tax in the importing country, but introduce a 'clearing house' system by which revenues would effectively be reallocated across provinces so as to preserve the same allocation of revenues as under zero-rating.

This is illustrated in the second column of Table 1. Now firm B charges output tax at the rate of country I on its export to firm C, giving a charge of 20 (10 percent of B's selling price, 200) that is then available as a credit against C's own output tax charge in country II of 72. In order to leave the distribution of final revenues as required by the destination principle—nil in country I, 72 in country II—the output tax that I collected on its exports to II must be transferred to II: the task of the clearing house is to arrange just such a movement of funds.

How does this approach measure against the criteria above? On the plus side, it fixes the break in the VAT chain—goods now move between provinces tax-laden—and establishes compliance symmetry. The difficulty is in finding a way of clearing that preserves proper incentives for tax collection.

One possibility, envisaged in the Commission's original proposals for VAT in the internal market,[9] is to clear on the basis of invoices. That is, each member state would claim repayment by summing across transactions the total input tax claimed in respect of imports from each other member state. This has the apparent appeal of potential accuracy. Even apart

[9] Commission (1985).

Table 1: Alternative treatments of inter-provincial sales /1

				CVAT		
		Zero-rating	Clearing house	State tax	CVAT 2/	VIVAT /3
Firm A (80)	Input tax	0	0	0	0	0
	Output tax	8	8	8	0	8
	Net tax	8	8	8	0	8
Firm B (120)	Input tax	8	8	8	0	8
	Output tax	0	20	0	24	20
	Net tax	-8	12	-8	24	12
			Country I			
			Country II			
Firm C (280)	Input tax	30	20	0	-24	20
	Output tax	72	72	72	0	72
	Net	42	52	72	-24	52
Total tax:		72	72	72	0	72

Notes: /1 Rate of tax on final consumption is 10 percent in country I, 15 percent in country II
/2 CVAT rate is 12 percent.
/3 Intermediate rate under the VIVAT is 10 percent

Value-added:		*Tax rates:*	
Firm A	80	Country I	0.1
Firm B	120	Country II	0.15
Firm C	280	CVAT	0.12
		VIVAT	0.1

from the administrative cost of processing billions of invoice in this way, however, this scheme violates the requirement above of preserving proper collection incentives, as emphasized by Lee, Pearson and Smith (1988). For if an importing country is fully reimbursed for all tax credits claimed in respect of imports from another state then it has little incentive to guard against fraudulent claims: the cost of these will be borne elsewhere. High rate countries would be especially vulnerable, as the gains to fraudulent refund claims is then greatest.

An alternative approach, suggested for the EU in the Commission's most recent proposal,[10] and currently implemented under the HST, is to reallocate revenues on the basis of aggregate consumption statistics. This reduces the administrative burden, but at the cost of creating a different disincentive to collection: if the net VAT that a country receives depends only on its level of consumption and the rate of tax, it has no incentive to put any effort into collection at all. Even if the tax it receives is based on some sharing of total revenues collected, the sharing with other states will blunt collection incentives.

These difficulties point to a more fundamental problem. For provincial tax administrations to have proper incentives to collect revenues they must retain some of the revenues collected in their jurisdiction; but the reallocation of revenues called for with the removal of zero-rating requires, to the contrary, that they in part hand revenues that they have collected over to other jurisdictions.

It is these incentive problems that pose the most severe difficulties for clearing house arrangements. One way to establish proper incentives would be to hand over the administration of the provincial VATs, and the clearing house, to a federal agency. But if—as in the EU—no such apparatus already exists, this violates the requirement above that no new tax administration be created. Short of that, one could conceive of incentive mechanisms that go some way towards aligning the narrow self-seeking interests of provincial tax administrations with the wider collective interests of the federation as a whole. The possibility of finessing these difficulties by constructing incentive mechanisms for provincial tax administrations is an important one, and under-researched. In what follows, however, we focus instead on recent approaches that address these issues by reforming the structure of the VAT itself.

III. New Approaches

Two such structural proposals suggest that the VAT may not be quite so difficult to operate in federal systems as has been thought.

---

[10] European Commission (1996).

A. The CVAT

The first is the 'compensating VAT' (CVAT) originally proposed by Varsano (1995, 1999) and eloquently advocated by McLure (1999). Bird (1999) argues that that this ".....may prove to be one of the key innovations in tax thought of the century."

The essential idea is to preserve the zero-rating of inter-provincial sales in respect of provincial VATs but to superimpose on this a 'compensating VAT' levied on sales between provinces (including, in McLure's version, inter-province sales to households and non-registered traders). [11] This compensating VAT is quite distinct from the provincial VAT. It might be, and indeed is proposed as, an add-on to a federal VAT. But for purpose of explanation—and thinking through the logic of the idea—it is helpful to think of it, for the moment, as a stand-alone tax.

Thus conceived, the working as of the CVAT is shown in Table 1. The provincial VAT in each province works exactly as in the third column of the table, with zero-rating of inter-province exports. The innovation of the CVAT is that the compensating VAT of 24 (12 percent of the selling price of 200) on inter-provincial exports is charged to the exporting firm B and recovered by the importing firm C.

One key question is the rate at which the CVAT [12]should be charged. This is discussed in McLure (1999). With a low CVAT rate, there is an artificial incentive for final consumers to import; with a high CVAT rate, the incentive is to make false refund claims or, for final consumers, to buy within the province rather than import. McLure concludes that it would be best to pitch the CVAT rate at broadly the average of the rates of provincial tax. [13]

How does the CVAT measure up against the criteria listed above, and the schemes just described? It preserves the destination principle and

- CVAT strengthens the VAT chain—relative to zero-rating—to the extent of the compensating VAT levied on trade between provinces.

---

[11] Exports to the rest of the world would be zero-rated under both provincial and any federal VAT, and would not be subject to the compensating VAT.

[12] We use the term CVAT to refer to both the scheme in general and the tax on inter-provincial trade in particular.

[13] It seems this might require different CVAT rates on different commodities if there is significant variation across provinces in the rates applied to particular commodities.

Notice, however, that CVAT does not leave the chain entirely inviolate: it is still necessary to refund provincial tax on inter-provincial exports, and , moreover, it becomes necessary to refund CVAT (unless it is simply offset against a federal VAT).
One attractive feature of the CVAT is clear:

- Since the rate of the CVAT is determined centrally, there is no scope for game-playing by provinces through the tax treatment of their exports and imports.

The implications of CVAT for collection incentives are less clear-cut. If, as McLure (1999) assumes, administration of the CVAT is by federal authorities—or, more generally, can be by some other means locked in a single administration[14]—then there is no intrinsic difficulty: the cost of refunding to the importer (whether as cash or as a credit against federal tax) the compensating VAT levied on inter-provincial trade provides the right incentive to collect it from the exporter. That is, the incentive problems that we have seen are associated with clearing between distinct provincial administrations are dealt with by internalizing the transfers within a single administration. The only difficulty which arises is that of sharing out the CVAT collected on inter-provincial sales other than to registered traders (which are not recovered); unless, that is, such revenues are simply allocated to the federal government. If, however, administration of the tax on inter-provincial trade is not by some body whose interests over-arch those of the provinces, then all the incentive and administrative difficulties associated with clearing recur in relation to CVAT revenues: funds must be moved from the provincial authority which collects funds to those that effectively refund them. Thus:

- If administered by a single agency, the most obvious candidate being a federal tax administration, CVAT avoids the incentive and administrative problems associated with clearing between provincial tax administrations.

A clear disadvantage however is that :

- CVAT violates compliance symmetry, since inter-provincial trade (bearing CVAT plus any federal VAT) is treated differently from intra-provincial trade (bearing provincial and any federal VAT).

---

[14] A federal administration, as the term is used in this discussion, could be a confederation of provincial administrations. The important feature is that the interests of this over-arching administration are aligned with those of the full set of provinces rather than of any province itself.

B. The VIVAT

The other new scheme is the 'VIVAT'[15] proposed by Keen and Smith (1996). This requires all provinces to set the same tax rate on all sales to registered traders anywhere in the federation.[16] But the rate(s) applied to final sales—to consumers and other non-registered traders—remains entirely at the discretion of the provinces.

The final column of Table 1 shows how the VIVAT works. Since both A and B sell to registered traders, they charge tax at the intermediate VIVAT rate, assumed to be 10 percent: both charge the same rate, note, even though one sells only domestically and the other sells across borders. Firm C is selling to a final consumer, and so charges the rate of the country she is located in; tax paid on C's intermediate purchases is credited in the usual way.

This example points to two other ways in which one can usefully think of the VIVAT. First, it is in structural terms equivalent to a common federal VAT levied at the intermediate rate combined with a series of provincial retail sales taxes levied at rate equal to the difference between the provincial VAT and the common intermediate rate. In Table 1, for instance, the outcome—in terms of aggregate revenues and the effect on consumer prices—is exactly as it would be if there were a federal VAT of 10 percent and a retail sales tax in country II of 5 percent.[17] Second, it is also equivalent to a common withholding tax at the intermediate rate, charged and credited at each stage (and so raising no net revenue), combined with a final sales tax at the rate of the country of destination: again in Table 1, the outcome is equivalent to a creditable withholding tax of 10 percent on all transactions combined with a 15 percent retail sales tax in country II.

At what level should this intermediate rate be set? The higher the rate, the greater the protection of revenues through the early parts of the VAT chain. Setting this rate above the rate on final sales, however, would create the possibility of refund claims by those selling to final consumption. Focussing on the latter concern, Keen and Smith (1996) incline to setting it set at the lowest of the rates applied by any province. There is, however, no necessity to do so. Setting a rate that in some provinces implies that inputs are taxed more heavily than final sales will give rise to refunds at the retail stage only if value-added at that stage is sufficiently low. At a final tax rate of 15 percent and an intermediate rate of 20 percent, for example, refunds are payable only if value-added is less than 25 percent of final sales. Thus

---

[15] Standing for 'Viable Integrated VAT.' Or something like that.

[16] Exports to the wider world beyond the federation are zero-rated.

[17] As an important special case, if the intermediate rate is set at zero the VIVAT is essentially equivalent to a series of provincial VATs operated on a suspension basis, as proposed for Canada by Mintz, Wilson and Gendron (1994).

Laser (undated), who arrives at a similar scheme, notes that the intermediate rate might be set at the highest of the rates applied by the provinces, and proposes that it be set at the average.

What of the criteria set out above? VIVAT preserves the destination principle and provincial autonomy: the final tax applied to sales depends only on the tax applied at that stage—which remains under provincial discretion—not on the common rate levied at prior stage. Since that common rate is chosen centrally, there is no new scope created for game-playing by the provinces. This scheme also has the advantages:

- VIVAT preserves the VAT chain on inter-provincial trade, to an extent that depends on the level of the intermediate rate. It also strengthens the chain on intra-provincial sales if the intermediate rate is set at the highest of the final rates.

- VIVAT ensures compliance symmetry, in that the taxpayer's obligations are the same for inter- and intra-provincial trade.

Some form of clearing will be needed to ensure that tax collected on intermediate inter-provincial sales is reallocated in line with the destination principle. This is straightforward if collection and refund of the intermediate tax is entrusted to a single agency, a federal tax administration again being the natural candidate. The familiar collection incentive issues arise, however, if implementation is by provincial administrations. Thus:

- If the intermediate tax on sales to registered traders is administered—whether as a withholding tax or wound into a federal VAT—by a single agency (the most obvious candidate being a federal tax administration), VIVAT avoids the incentive and administrative problems associated with clearing between provincial administrations.

But VIVAT too has potential disadvantages:

- VIVAT weakens the chain on intra-provincial trade in at least one province to the extent that the intermediate rate is set below the highest of the provincial rates.

- This problem is not as severe as Keen-Smith originally supposed, since the intermediate rate need not be set at the lowest of the provincial rates; but there is a potential difficulty. More intrinsic to the scheme is that:

- VIVAT introduces a new kind of compliance asymmetry: firms must treat their customers differently according to whether they are registered for VAT or not.

- How burdensome is this administrative requirement is this likely to be? Not very. Many VATs already require sellers to distinguish between registered and non-registered purchasers by reporting the VAT number, if any, of their customers.[18] In the EU, indeed, taxpayers are already required to verify the VAT status of customers located in other member states (in order to determine whether the sale can be zero-rated). It is striking too that recent proposals to deal with indirect tax problems posed by the internet involve distinguishing between business and other purchasers: (see McLure (1997) and European Commission (1999)). Indeed the Commission discusses the prospects for verifying purchasers' tax status in real-time for online transactions.

IV. Comparing CVAT and VIVAT

The CVAT and VIVAT proposals have breathed new life into the discussion of VAT in federal systems. They were developed, it should be borne in mind, with very different applications in mind: the CVAT for situations, such as those of Brazil and India, in which there is a significant federal tax presence; and the VIVAT for the EU situation in which there is not. In terms of understanding and assessing their intrinsic design, however, it is important to put aside this contextual difference and simply ask: How do CVAT and VIVAT compare as forms of decentralized VAT for federal systems?

There are clearly important similarities between them. In particular, both tax inter-provincial exports at a rate that is taken out of the control of the provinces themselves. In this way they fix the break in the chain that is created by zero-rating inter-provincial exports in a way that preserves the destination principle without creating any scope for game-playing by the provinces.

- There is also little difference between CVAT and VIVAT in terms of preserving the VAT chain. With CVAT at the average of provincial rates and VIVAT at the smallest, there would be some advantage in this respect to the CVAT.[19] But, as we have seen, there is no reason in principle why the VIVAT rate should not be set higher.

It is especially important to note, moreover, that there is no intrinsic difference between VIVAT and CVAT in terms of collection incentives and clearing: both require that tax levied on exports from one province be credited/refunded against tax due in another. The distinct nature of this—separable from other parts of the VAT system—may in each case mean that there are in principle ways of implementing this clearing other than through provincial tax

[18] Nor is the need for such a distinction unique to the VIVAT proposal. Bird and Gendron (1998) also recommend that sellers report the registration numbers of their customers to support the dual VAT model of Quebec; the proposal of Mintz, Wilson and Gendron (1994) referred to above also requires distinguishing between sales to registered and unregistered persons. And the distinction is of course commonplace under RSTs.

[19] The advantage would be great in Canada, given that the lowest of the provincial sales tax rates is zero.

administrations, thereby avoiding some of the problems cited above. It is in this respect too that these two schemes may offer advantage over the clearing house proposal.

To see this key conceptual similarity most clearly, suppose that there exists a federal VAT and—this is the crucial part—a distinct federal tax administrations.[20]

The administration of a CVAT on inter-provincial sales would then naturally be entrusted to the federal authorities and wound into that of the federal VAT. The federal authorities would collect the CVAT on inter-provincial sales and credit it against federal output tax liabilities; if federal tax due exceeds CVAT tax paid on inputs—as it might well do if the rate of the federal VAT is low relative to provincial taxes (and hence to the CVAT rate), the federal authorities would provide refunds. The beauty of this is that the incentive problems associated with clearing under the EU models discussed above disappears, since the same body collects the tax as pays for the rebate. Clearing problems are resolved, that is, by internalizing the operation of clearing within a single administration.

The presence of an over-arching federal administration enables a similar resolution of the clearing problems that arise under VIVAT: they can be internalized by entrusting the administration of the intermediate rate to the federal authorities. That is, all tax charged to registered traders would be paid to, and registered traders would claim all their credits and refunds from, the federal authority (along with their payments of federal tax). Tax on sales other than to registered traders would be paid to the provincial administration. In effect, the federal administration would implement both the federal VAT and a withholding tax at the intermediate rate; the provincial administration would simply implement, in effect, a tax on sales to non-registered traders.

In either case, of course, most traders would need to deal with two tax administrations: federal and provincial. But that simply reflects the premise of there being an over-arching federal VAT. One key difference between the CVAT and VIVAT as envisaged in a federal system, however, is that the task of the provincial tax authorities is much simpler under the VIVAT scheme than under the CVAT: since the provincial VAT is effectively converted to a single stage tax under VIVAT, the provincial authorities simply collect tax on output, with all refunds of input tax being dealt with by the federal authorities. More fundamentally, however, there would obviously be economies of scope in the implementation of federal and provincial taxes, and significant benefit from close cooperation between provincial and local administrations. Under CVAT, for instance, some coordination would be needed to ensure that traders presenting themselves to the provincial administration as exporting to another province also present themselves to the federal administration for payment of the compensating VAT.

[20] Recall footnote 13.

Summarizing:

- In the presence of a distinct federal tax administration, both CVAT and VIVAT finesse the collection incentives associated with clearing. If, however, their implementation is through provincial administrations then both face the same qualitative difficulties with clearing.

- This key similarity between the schemes has perhaps been obscured by the different contexts in which they have been developed. In quantitative terms there may be some difference in the scales of the problems to be addressed: the compensating VAT would be applied only to a subset of the transactions that would be subject to the intermediate rate under VIVAT, so that the sheer administrative burden under the latter would be greater to the extent of intra-provincial transactions. But the most burdensome aspects may arise not from the volume of information to be processed but from the coordination needed with provincial administrations, which—since there is then no logical link between liability to central and provincial taxes—might be less under VIVAT . The issue of coordination between tax administrations clearly requires closer study under both schemes.

- Given their similarity in relation to collection incentives, the key difference inherent in the structures of the two schemes is consequently:

- Under CVAT, traders must distinguish between sales within and between provinces; under VIVAT they must distinguish between sales to registered and unregistered traders.

- It is notable, however, that while there is already considerable and largely unproblematic experience with distinguishing between sales to registered and unregistered buyers, experience with distinguishing sales by the location of purchaser has been amongst the most unsatisfactory aspects of the VAT. This point should not be over-stated: VIVAT could create stronger incentives to misrepresent whether or not one is registered for VAT than there are at present. The administrative precedents are, however, broadly supportive of the VIVAT.

- A complete evaluation of the relative merits of CVAT and VIVAT would of course need to look at a host of other considerations, and many detailed aspects of both schemes remain to be developed. In some respects VIVAT, but not CVAT, clearly improves on present arrangements. For instance, differences in VAT rates across the member states of the EU distort the competitive position of firms that use exempt inputs (such as financial services), since the price they pay for those commodities will reflect unrecovered input tax charged at different rates. Under VIVAT (but not CVAT), these distortions would evaporate since all intermediate purchases in all member states would be taxed at the same rate.

V. CONCLUDING REMARKS

The logic of the invoice-credit VAT is a thing of some beauty. It may be more powerful, indeed, than has yet been fully understood. In the area of financial services, for instance, recent work—see for instance Poddar and English (1997)—has shown its application to be more straightforward than has commonly been thought. Something similar is happening in terms of the potential applicability of the VAT to lower-levels of government. New conceptual advances suggest that the prospects for implementing the VAT as a provincial tax within a federation are brighter than previously thought. The ideas of VIVAT and CVAT both provide ways of implementing the destination principle without breaking the VAT chain on inter-state exports or inducing game-playing.

In the absence of an over-arching federal administration (or the willingness to create one), however, both schemes run into difficulty in securing appropriate clearing, ensuring that revenue collected on exports from one province is available to finance credits/refunds claimed in another. One approach to resolving this problem, as yet little explored, is to look for mechanisms that provide provincial tax administrations with incentives to provide the appropriate level of effort in terms of their wider collective interests.

The clearing problem is relatively readily resolved, however, if there is an over-arching federal system. For then in either case it is in principle possible to internalize the clearing of taxes on inter-state sales and so avoid the incentive problems otherwise involved in running clearing through national tax administrations. This is not to say, of course, that a lower-level VAT is appropriate for all federations: in some the provinces will be too small for cross-border shopping to be controlled, or the capacity of provincial tax administrations too weak. There are also a range of issues that arise in designing a CVAT or VIVAT that we have not been able to develop here. These conceptual advances have been enough, however, to put the feasibility of lower-level VATs firmly on the tax reform agenda.

REFERENCES

Bird, Richard, 1999, "Rethinking tax assignment: The need for better subnational taxes." Mimeo, University of Toronto.

Bird, Richard and Pierre Pascal Gendron, 1998, "Dual VATs and cross-border trade: Two problems, one solution?" *International Tax and Public Finance*, Vol. 5, pp.429-442.

Commission of the European Communities, 1985, *Completing the Internal Market*, COM (87) 320, Brussels.

Cnossen, Sijbren and Carl S. Shoup,1987, "Coordination of value added taxes," pp.59-84 in Sijbren Cnossen (ed), *Tax Coordination in the EC*, Deventer: Kluwer Law and Taxation.

Dahlby, Bev, 1999, "Tax co-ordination and tax externalities," this issue.

European Commission, 1996, A Common System of VAT: A Programme for the Internal Market, COM (96) 328, Brussels.

European Commission, 1999, "Indirect taxes and e-commerce," Working Paper of Working Party No. 1, DGXXI, Brussels.

Keen, Michael, 1993, "The welfare economics of tax coordination in the European Community: A survey," *Fiscal Studies*, Vol. 14, pp.15-36.

Keen, Michael and Stephen Smith, 1996, "The future of the value added tax in the European Union," *Economic Policy*, Vol. 23, pp.375-471 and 419-420.

Keen, Michael and David Wildasin, 1999, "Pareto efficiency in international taxation." Mimeo, International Monetary Fund.

Laser, Helmut (undated) "Is a definitive "country of origin" system feasible even prior to the introduction of Monetary Union and the complete harmonisation of rates within the Community?" Mimeo, Wolfsburg.

Lee, C., Pearson, Mark and Stephen Smith, 1988, *Fiscal Harmonisation : An Analysis of the European Commission's Proposals*, Report Series No. 28, London: Institute for Fiscal Studies.

Lockwood, Ben , 1998, "Tax competition and tax coordination under destination and origin principles: A synthesis." Mimeo, University of Warwick.

McLure, Charles, 1997, "Electronic Commerce, state sales taxation, and intergovernmental fiscal relations," *National Tax Journal*, Vol. L, 731-749.

McLure, Charles, 1999, "Implementing subnational VATs on internal trade: The compensating VAT (CVAT)." Mimeo, Hoover Institution.

Mintz, Jack, Thomas Wilson and Pierre-Pascal Gendron, 1994, "Canada's GST: Sales tax harmonization is the key to simplification," *Tax Notes International*, March 7, 661-679.

Poddar, Satya and Morley English, 1997, "Taxation of financial services under a value-added tax: Applying the cash flow method," *National Tax Journal*, Vol. L. pp.89-111.

Varsano, Ricardo, 1995, "A tributação de Comércio interstadual: ICMS versus ICMS partilhado." Texto par Discussão No.382, Instituto de Pesquisa Econômica Aplicade, Brasilia.

Varsano, Ricardo, 1999, "Subnational taxation and the treatment of interstate trade in Brazil: Problems and a proposed solution." Forthcoming in S. J. Burki and G. Peary (eds), *Decentralization and Accountability of the Public Sector*, Proceedings of the Annual Bank Conference on Development in Latin America and the Caribbean (World Bank: Washington D.C.).