

**“Reconsidering the question: Is Subnational Value Added Tax  
the best alternative?”\***

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**Abstract\***

The paper analyzes different types of “subnational” Value Added Tax, trying to find out possible distortion effects, incentives to fraud, and other administrative problems that can emerge from the performance of the tax. Particularly, ideas and suggestions from Bird, R. and Gendron, P., Keen, M. and Smith, S., McLure, C., Poddar, S., Schenone, O., Varsano, R., and other author's previous papers are herein confronted. Besides, ideas and suggestions born from discussions on fundamental tax reform in the U.S.A. during the mid-nineties and contributions from the *public choice* literature are considered to support the final proposal. The analysis finally concludes in introducing doubts on an affirmative answer to the question formulated in the title and in suggesting the need to explore other tax sources for subnational governments. In the specific category of real and indirect taxation, the author suggests a federation tax system that combines a National VAT (exclusive) and a Provincial Retail Sales Tax.

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**Key Words:** Fiscal Federalism, Optimal Taxation, Tax Assignments to Subnational Governments, Value Added Tax.

**Code (JEL):** H2, H7, R5

**Resumen\***

El trabajo analiza diferentes tipos de IVAs Sub-nacionales intentando encontrar posibles efectos distorsivos, incentivos al fraude, y otros problemas administrativos que pueden surgir en la operatoria del impuesto. En particular, ideas y sugerencias adelantadas por Bird, R. y Gendron, P., Keen, M. y Smith, S., McLure, C., Poddar, S., Schenone, O., Varsano, R., y otros trabajos previos del autor son confrontados. Además, ideas y sugerencias surgidas de las discusiones sobre la reforma tributaria fundamental en los Estados Unidos de Norteamérica de los años noventa y de contribuciones de la literatura sobre elección pública (*public choice*), son considerados para fundamentar la propuesta final. El análisis finalmente concluye en introducir dudas sobre una respuesta afirmativa a la pregunta formulada en el título del trabajo y sugerir la necesidad de explorar otras fuentes tributarias para los gobiernos sub-nacionales. En la categoría específica de la imposición real e indirecta, el autor sugiere un sistema tributario de la federación que combina un IVA Nacional (exclusivo) y un Impuesto Provincial a las Ventas Minoristas.

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**Palabras Clave:** Federalismo Fiscal, Tributación Óptima, Asignación de Potestades Tributarias a los Gobiernos Sub-nacionales, Impuesto al Valor Agregado.

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the best alternative?”\***

**Dr. Horacio L. P. Piffano (Universidad Nacional de La Plata) \*\***

## **1. Introduction**

In recent years provocative contributions dealing with the Value Added Tax (VAT) at the sub-national level of government have been registered in literature<sup>1</sup>. According to the opinion of prominent experts, the idea of extending the application of VAT to state or provincial level of government, including in LDC's and emergent economies, has spilled over the academic and political world. However, problems that could emerge from the operation of the tax are analyzed in this paper.

Point 2 passes review of the present agenda dealing with the sub-national VAT. Point 3 presents a taxonomy of the sub-national VAT suggested in literature and a brief explanation of each alternative. Point 4 analyzes the performance of each alternative using a simple model of liabilities and fiscal credits, assuming two jurisdictions and two sectors or activities. The intention is to find out possible distortion effects, incentives to fraud, and other administrative problems induced by the fiscal treatment of the added value in each alternative<sup>2</sup>. There are two relevant matters in relation to taxation design: first, the incidence of probable changes in taxpayers behavior with respect to avoidance and evasion practices and, second, changes in revenue services officials behavior with respect to their commitment and ability to administrate the tax<sup>3</sup>. According to modern normative and positive literature on taxation, administrative aspects of tax systems have been admitted as a relevant issue in tax policy design. This is true for all type of countries but particularly for LDC's<sup>4</sup>. Point 5 deals with the sub-national Retail Sales Tax and supports the idea of a “combined National VAT - Provincial RST system”. Point 6 introduces the “public choice” point of view. Finally, in point 7, the concluding remarks.

## **2. The Sub-national VAT in the agenda**

The possibility for sub-national governments to operate a VAT has been largely discussed, especially through the experiences of the European Union (UE), dealing with tax harmonization among states members. As Bird, R., and Gendron P. (1998) have pointed out, the traditional recommendation has been that such an assignment is not convenient for sub-national governments (McLure, C. 1993)<sup>5</sup>. The suggestion given was that the simplest and most practical way of solving the “cross border trade problem” is to adopt a revenue sharing system, similar to the one of Germany (Tait, A., 1988) or Argentina (*Coparticipación Federal*)<sup>6</sup>.

From the political economy point of view, macroeconomic considerations, and the reluctance of central governments to admit "tax room" regarding sub-national governments in so important tax base, have contributed to the opposition to decentralize this tax. From the technical point of view, fraud incentives dealing with sales destination in cross border trade, within a geographical area with no border controls, and the consequent administration difficulties for the enforcement of the tax, have delayed the adoption of a Sub-national VAT design of general acceptance in most countries.

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The great challenge is to design a sales tax, that guaranteeing sub-national autonomy to fix the tax rate<sup>7</sup>, will satisfactorily perform on efficiency and enforcement grounds, in a common geographical space divided into several jurisdictions, states or provinces, without border controls of goods and services. Before analyzing this challenge, a sub-national VAT's taxonomy containing a brief characterization of each alternative is hereby presented.

### 3. A taxonomy for the Sub-national VAT

Sub-national VAT's that have been suggested by experts are:

**“Pure” Origin VAT.** Sales are taxed in the state or province where vendors reside. Fiscal credits recognized in each jurisdiction correspond exclusively to purchases inside the same jurisdiction. Whereas exports are taxed, imports from other jurisdictions do not generate fiscal credits<sup>8</sup>.

**“Modified” Origin VAT.** Sales are taxed in the state where vendors reside. Fiscal credits recognized in each jurisdiction correspond to purchases inside the same jurisdiction and to invoices coming from others. Imports from other jurisdictions are not taxed; but contrary to the previous case, they generate fiscal credit at destination, and exports are taxed. Since fiscal credits are admitted at destination, a clearinghouse of compensations from the state of origin to the state of destination is needed. This way, “tax export” is avoided<sup>9</sup>.

**“Restricted” Origin VAT.** Sales inside the region or federation are taxed in origin, that is, where vendors reside, with an agreement to equalize tax rates in all jurisdictions. Sales outside the region are zero-rated. The clearinghouse is avoided; states revenues will depend on - and each state will win or lose revenues according to - the interstate commercial flow, that won't be affected by the rate regime, since the tax rate is the same in all states, provinces, or jurisdictions.

**“Hybrid” Origin-Destination VAT.** Interstate transactions are taxed in origin with reduced rates (smaller than the intrastate ones) in order to transfer resources, or potential revenues, from the “producing” states to the “consumers” states. The system is operative in Brazil at a state (provincial) level (the ICMS or Tax on the Circulation of Merchandises and on Services of Interstate and Interurban Transport). It consists on the application of differential rates centrally regulated by the federal government - initially 7%, now 9% -, for sales from developed states (the regions of the south and southeast) to less developed states (the regions of the north, northeast and center-west); and initially 12%, now 11%, to the rest. States have the obligation to tax intrastate sales with a tax rate higher than the one ruling interstate sales (usually 17%).

**Destination “Deferred Payment” VAT.** Sales inside the jurisdiction are taxed at the local rate, but sales to other jurisdictions are zero-rated. Fiscal credits correspond in this case to the VAT incorporated in the invoices of intermediate inputs purchased inside the jurisdiction where vendors reside, as long as imports (not taxed in origin as they are taxed at destination with deferred payment), do not generate fiscal credit. A suggested alternative that would avoid the deferred payment for imports is that vendor burdens exports at the tax rate of the destination jurisdiction, pays the tax to the local (origin) revenue administration and this, in turn, delivers the corresponding revenues to the state of destination by a clearinghouse mechanism.

**“Prepaid” VAT.** Poddar (1990, 1999) has suggested that registered vendors in any state or province should apply the local tax rate to all sales, unless buyers residing in another state or province provide them with a certificate that corroborates the tax has been already paid in their jurisdiction. By this way, firms that want to buy goods from another province should make two

payments before the exporter makes the shipment of goods. One payment to the exporter, in concept of “price before tax” of the goods, and another to the state of his or her residence for the destination tax on such purchases. On getting such a certificate, exporter will be able to burden his or her sale to other state with zero tax rate and justify that situation at his or her provincial revenue service.

**“Viable Integrated” VAT (VIVAT).** In this alternative, suggested by Keen and Smith (1999), a common and uniform tax rate is fixed in all states or jurisdictions on transactions among registered merchants - that usually reflects intermediate transactions - letting each state to fix the rate on sales made to non-registered buyers - that is assumed generally directed to final consumption -. So, the tax doesn't demand to differentiate sales according to destination of goods (intrastate or interstate), but to buyer's situation (registered or non-registered), in whatever state or jurisdiction he or she resides. Revenues from sales to non-registered traders or buyers make necessary a sharing-distributive mechanism.

**“Dual” VAT.** Bird and Gendron have suggested this alternative that is similar to the Deferred Destination-Payment VAT one, actually in use in the province of Quebec and in the European Union, but with the particularity in Canada of coexisting with the federal VAT. Both taxes (federal and provincial) burden the same tax base; each government fixes its own rate and, administration of both taxes is assigned to one of the two revenue services. In Canada, the province of Quebec is administering both taxes<sup>10</sup>.

**“Partilhado” VAT (“Barquinho” or “Little Boat” Model).** In this alternative, suggested by Varsano (1995, 1999), sub-national government taxes sales inside its jurisdiction with the local tax rate and sales to other jurisdictions are taxed with “zero sub-national rate”. However, sales to other jurisdictions are taxed with a supplementary federal tax rate similar to the sub-national tax rate; so, in case of a dual VAT system, this supplementary tax rate is added by the federal government to its own federal tax rate. By this procedure fiscal liabilities are equalized in origin, no matter where goods are sent. The revenue from this added federal rate belongs to the federal government and it will be recognized as fiscal credit (federal) in the intermediate purchases of the jurisdiction of destination. If sales are directed to final consumption, this part of the federal added revenue should be distributed among provinces by a sharing mechanism.

**“Radial” VAT.** This alternative analyzed by Schenone (1999) modifies the Destination Partilhao or Barquinho VAT type by the way fiscal credits are treated. The federal fiscal credits, corresponding to the tax burden in origin, are recognized in destination with the added federal tax rate that is levied in the province of destination and not with the one of vendors state, that is, according to fiscal liability of the state of origin.

**“Compensating” VAT.** It is a variant of the Partilhao VAT proposed by McLure (2000). The main difference is that interstate sales are taxed with an added federal tax rate (the CVAT rate) that is determined as a weighted provincial average tax rate. Buyers registered at destination will have fiscal credit for the CVAT paid in origin for their imports, that will be taxed (with deferred payment) in the following stage the moment when the importer sales the goods in his or her own state. If sales go to registered buyers of the same state, they will be taxed with the local rate (and they will generate fiscal credit of the corresponding sub-national revenue service). If sales go to registered buyers of other states, the CVAT works again and will generate fiscal credit of the federal revenue service to those buyers of the other state. Finally, if sales go to non-registered buyers or final consumers, the CVAT levied on imports from other states will work as a final VAT. These sales generate a revenue surplus to federal government that should be later distributed among states or provinces (because the federal added tax only works as a “barquinho”, without any

intention of generating a positive tax revenue for the federal government). So, it requires a sharing mechanism based on a given formula<sup>11</sup>.

#### 4. Analysis of the alternatives

Before analyzing the “sub-national” VAT, we will review the performance of the “National” VAT, dealing with its sector and regional incidence, just to make easier the understanding of problems to be found in the sub-national case<sup>12</sup>.

##### 4.1. The National VAT

Suppose a closed economy in a federation with two regions, states or provinces ( $j = A, B$ ) and two firms, sectors or activities ( $i = 1, 2$ )<sup>13</sup> operating in either provinces or states. Each sector using as inputs the production of all sectors. Let  $x_{i(i)}^{A(A)}$  be the tax-exclusive value of **sales** from sector  $i$  to sector  $(i)$  inside province **A**.  $i$  **without parenthesis**, is used to identify the **vendor sector** and  $(i)$ , that is,  $i$  **with parenthesis**, the **buyer sector**.  $j (= A \text{ or } B)$  **without parentheses** is indicating the **vendor** geographical residence, and  $(j)$ , that is, **A or B with parenthesis**, indicates the **buyer** geographical residence. Now,  $x_{i(i)}^{B(B)}$  is the tax-exclusive value of sales from sector  $i$  to sector  $(i)$  inside province **B**.  $x_{i(i)}^{A(B)}$  is the tax-exclusive value of **sales** from sector  $i$  resident in province **A** to sector  $(i)$  resident in province **B**.  $x_{i(i)}^{B(A)}$  is the tax-exclusive value of **sales** from sector  $i$  resident in province **B** to sector  $(i)$  resident in province **A**. Therefore, super indexes **A(A)**, **B(B)** mean **intrastate** sales and super indexes **A(B)**, **B(A)** mean **interstate** sales.

Changing the place of the variable in parenthesis, references will be directed to **purchases**, that is,  $x_{(i)i}^{(A)A}$  is the tax-exclusive value of **purchases** of sector  $(i)$  -the buyer- from sector  $i$  -the vendor-; both resident in province **A**. And so for the rest. That means the existence of the well-known sales – purchases identities:  $x_{i(i)}^{A(A)} \equiv x_{(i)i}^{(A)A}$ ;  $x_{i(i)}^{A(B)} \equiv x_{(i)i}^{(B)A}$ ; and so on.

Finally,  $C_i^{A(A)}$ ,  $C_i^{B(B)}$  are the tax-exclusive values of final consumption, corresponding to sales from sector  $i$ , inside province **A** and **B**, respectively. And,  $C_i^{A(B)}$ ,  $C_i^{B(A)}$  the tax-exclusive values of final consumption corresponding to sales from sector  $i$  located in **A** or **B**, respectively, to customers (non-registered buyers) located in the other jurisdiction.

The Federal Government taxes sales with a uniform tax rate  $t^F$  in both sectors and provinces. The tax revenue from both sectors (**TOTREV**) is:

$$(1) \text{TOTREV} = t^F (x_{1(1)}^{A(A)} + x_{1(1)}^{A(B)} + x_{1(1)}^{B(B)} + x_{1(1)}^{B(A)} + x_{1(2)}^{A(A)} + x_{1(2)}^{A(B)} + x_{1(2)}^{B(B)} + x_{1(2)}^{B(A)} + x_{2(1)}^{A(A)} + x_{2(1)}^{A(B)} + x_{2(1)}^{B(B)} + x_{2(1)}^{B(A)} + x_{2(2)}^{A(A)} + x_{2(2)}^{A(B)} + x_{2(2)}^{B(B)} + x_{2(2)}^{B(A)} + C_1^{A(A)} + C_1^{B(B)} + C_1^{A(B)} + C_1^{B(A)} + C_2^{A(A)} + C_2^{B(B)} + C_2^{A(B)} + C_2^{B(A)}) - t^F (x_{(1)1}^{(A)A} + x_{(1)1}^{(A)B} + x_{(1)1}^{(B)B} + x_{(1)1}^{(B)A} + x_{(1)2}^{(A)A} + x_{(1)2}^{(A)B} + x_{(1)2}^{(B)B} + x_{(1)2}^{(B)A} + x_{(2)1}^{(A)A} + x_{(2)1}^{(A)B} + x_{(2)1}^{(B)B} + x_{(2)1}^{(B)A} + x_{(2)2}^{(A)A} + x_{(2)2}^{(A)B} + x_{(2)2}^{(B)B} + x_{(2)2}^{(B)A})$$

The first sum represents fiscal liabilities and the second one fiscal credits. Making fiscal liabilities and fiscal credits compensations, results:

$$(2) \text{TOTREV} = t^F ( \sum_i \sum_j \sum_{(j)} C_i^{j(i)} )$$

So, in this closed economy:

$$(3) \text{TOTREV} = t^F \sum_i VA_i$$

The national VAT burdens total added value (allover sectors and jurisdictions uniformly and final consumption only). Intermediate consumption is free of tax burden. In this “national” version, it is irrelevant the place of residence of firms, vendors or buyers; consequently, also the territory or jurisdiction where the intermediate or final consumption takes place (origin or destination of goods and services within the federation). But, anyhow, from the point of view of tax administration, if the national revenue service collects the tax (net liability) in the place where “vendors reside” or where vendors defined as their legal residence for fiscal affairs, National VAT operates as an “Origin” VAT. This characteristic is important to be pointed out, because in case of the sub-national “destination” VAT, revenue service will face the problem of identifying the geographical residence of intermediate and final consumption.

The uniform treatment of sectors and regions has important consequences. First, tax neutrality in production and consumption is guaranteed, as long as sectors are taxed with the same effective tax rate (the same proportional net liability on the added value of each sector). Second, incentives for fiscally inducing location of firms in a particular jurisdiction are not present; neither is the place where purchases will be demanded. Third, incentives for “invoice sightseeing”<sup>14</sup> will not be present (as long as fraud, simulation, or change in destinations of sales would not produce any gain to taxpayers).

## 4.2. The Provincial "Origin" VAT

Suppose now a Sub-national VAT autonomously fixed by each jurisdiction (province A and province B), with the "Origin" criteria. Interstates sales will be taxed with the tax rate of the vendor's jurisdiction, so it is irrelevant for them whom to or what for goods are sold (final or intermediate consumption) and the place of the buyer's residence (in A or in B). However, fiscal credit treatment admits different criteria.

### 4.2.1. The Provincial “Pure” Origin VAT

Given this alternative, where fiscal credits recognized in each jurisdiction correspond exclusively to liabilities generated by sales inside the same jurisdiction, imports from other jurisdictions are not taxed (neither they generate fiscal credit) while exports are taxed. Equations that explain the revenue obtained from each sector and jurisdiction ( $\mathbf{REV}_i^A$ ,  $\mathbf{REV}_i^B$ ) are:

$$(4) \mathbf{REV}_i^A = t^A \sum_i \sum_{(i)} \sum_j (x_{i(i)}^{A(j)} + C_i^{A(j)}) - t^A \sum_i (x_{(i)i}^{(A)A})$$

$$(5) \mathbf{REV}_i^B = t^B \sum_i \sum_{(i)} \sum_j (x_{i(i)}^{B(j)} + C_i^{B(j)}) - t^B \sum_i (x_{(i)i}^{(B)B})$$

The first and second terms between brackets in (4) and (5) indicate fiscal liabilities due to sales made inside the own jurisdiction and to other jurisdictions. The third term indicates fiscal credits for the tax levied on the purchases made inside the own jurisdiction. The consolidated provincial VAT (**TOTREV**) is:

$$(6) \mathbf{TOTREV} = t^A \left( \sum_i \sum_{(i)} C_i^{A(j)} + \sum_i \sum_{(i)} x_{i(i)}^{A(B)} \right) + t^B \left( \sum_i \sum_{(i)} C_i^{B(j)} + \sum_i \sum_{(i)} x_{i(i)}^{B(A)} \right)$$

Therefore, this Sub-national VAT taxes more than the national added value: final sales and intermediate sales (exports) among jurisdictions. Of course, assuming the relevant case where  $t^A \neq t^B$ , sectors are taxed differently depending on vendor's residence. Distortion caused on relative prices among sectors according to the geographical location of vendors allows provinces to fiscally

induce the location of firms in their own territory. This means an opened door to possible “tax wars” among jurisdictions<sup>15</sup>. In this case, it has been suggested to fix a uniform tax rate in all jurisdictions in order to avoid distortions of prices and regional arbitrages. But this solution would harm an elementary principle of tax decentralization, which is the sub-national autonomy to fix the own tax rate.

There are not incentives for fraud in sales at destination. It makes no difference the place where goods are sent, just because all sales are taxed with the same tax rate. On the other hand, purchases made in other jurisdictions do not generate fiscal credits. Only purchases inside the jurisdiction generate fiscal credits and the local revenue service can corroborate intrastate intermediate sales by invoice tracking inside its jurisdiction.

Finally, it is important to notice that, as any tax that burdens production and not consumption, the Origin VAT is especially attractive for producing and net exporting provinces, with important earnings of revenue relative to Destination VAT<sup>16</sup>. On the other hand, such provinces may reasonable argue that many public investments complementary of private investments should be financed by taxes paid by those firms located in their territory<sup>17</sup>.

#### 4.2.2. The Provincial “Modified” Origin VAT

In this second alternative exports are taxed and imports are not, but on the contrary to the previous case, they generate fiscal credit at destination. As fiscal credits are admitted by the VAT levied in origin, a clearinghouse of compensations among revenues services is needed, so that the revenue service of the buyer’s jurisdiction should be compensated by the revenue service of the vendor’s jurisdiction<sup>18</sup>. By this mechanism, tax export is avoided<sup>19</sup>. In this case, tax revenue obtained in **A** ( $REV_i^A$ ) and in **B** ( $REV_i^B$ ) would be:

$$(7) \text{REV}_i^A = t^A \left( \sum_i \sum_{(j)} C_i^{A(j)} \right) + t^A \left( \sum_i \sum_{(i)} x_{i(i)}^{A(B)} \right) - t^B \left( \sum_{(i)} \sum_i x_{(i)i}^{(A)B} \right)$$

$$(8) \text{REV}_i^B = t^B \left( \sum_i \sum_{(j)} C_i^{B(j)} \right) + t^B \left( \sum_i \sum_{(i)} x_{i(i)}^{B(A)} \right) - t^A \left( \sum_{(i)} \sum_i x_{(i)i}^{(B)A} \right)$$

Total (consolidated) tax revenue is modified the following way:

$$(9) \text{TOTREV} = t^A \sum_i \sum_{(j)} C_i^{A(j)} + t^B \sum_i \sum_{(j)} C_i^{B(j)}$$

Fiscal liabilities and fiscal credits on intermediate consumption cancel each other, and fiscal result (net tax revenue) in each sub-national government depends on commercial flow and the tax rate differential. The revenue service with positive fiscal credit due to the intermediate transactions will compensate to the other revenue service (that will obviously register negative fiscal credit for such transactions). This demands coordination and the instrumentation of an interstate clearinghouse. Clearly, in a federation like Argentina with 24 jurisdictions, such clearinghouse carries on complexity in tax administration; at least, computer harmonization of sub-national revenue services.

In this alternative, the possibility of the “factory of invoices” or the “fraud in origins” arises, by allowing the simulation of input purchases in jurisdictions with higher tax rates. In addition, when goods are directed to provinces with smaller tax rates, to simulate intermediate sales instead of final sales. Finally, to modify “transfers prices” among firms economically linked, in order to increase fiscal credits<sup>20</sup>. The auditing and coordination among tax administrations are increased. It is much more complicated than simply harmonizing computer systems. As McLure (2000) points out, the revenue service of destination doesn't clearly have any incentive to verify the validity of the credit being informed, because anyway, whatever the credit amounts, it would be compensated by the

state of origin. The auditing effort concentrates naturally on the revenue service of origin. Without enough cooperation from revenue services of destination, fraud could be important.

Finally, it is useful to mention at this point the suggestion for the “simplifying” alternative of piggy backing a sub-national VAT rate to the National VAT, in countries where the federal government would already have levied this tax. This alternative would allow simplifications, avoiding: a) duplication of administrative procedures; b) considering remittances without invoicing to other jurisdictions would not be require; c) refunds of taxes are eliminated, except for interstate compensations due to exports, since the system would be assimilated to the “Modified Origin” VAT. Nevertheless, the system can operate on the bases of two alternatives. One is the clearinghouse system, with computation of the real transactions produced in the corresponding fiscal year in each jurisdiction. The other alternative is the one suggested in case of a federation with many jurisdictions. Were the estimation of real transactions expensive, the alternative would be to levy an uniform tax rate by the central government and to assign revenues to each jurisdiction through a formula basis, like the statistical estimation of consumption in each jurisdiction (Commission of the EU, 1996; Canadian HST). However, this solution does not solve the central problem of assuring complete fiscal independence, demanding interstate compensations and requiring complex distribution of funds mechanisms due to refunds to exports. On the other hand, the second alternative means a solution not essentially different from the “*coparticipación federal*” (tax sharing) solution. That is, through a tax sharing system based on a distribution formula with a “*devolution*” assignment approach. Anyway, tax-sharing mechanism faces the danger of the well-known “common pool problem” and takes the solution far away from the essential objective of tax decentralization.

### 4.3. The Provincial “Destination - Deferred Payment” VAT

Suppose now a provincial VAT established autonomously by each jurisdiction designed under the “destination” criteria. Sales directed to final consumption inside the jurisdiction are taxed with the local tax rate, and sales directed to other jurisdictions are taxed with zero tax rates. In this case fiscal credits correspond only to the VAT incorporated in the invoices of intermediate inputs bought inside the own jurisdiction, as long as imports are not taxed in origin (they are taxed at destination with deferred payment), so they do not naturally generate any fiscal credit<sup>21</sup>. Equations that explain the revenue obtained from each sector and jurisdiction ( $\mathbf{REC}_i^A$ ,  $\mathbf{REC}_i^B$ ) are:

$$(10) \mathbf{REV}_i^A = t^A \left( \sum_i \sum_{(i)} x_{i(i)}^{A(A)} + \sum_i \sum_{(j)} C_i^{A(j)} \right) + 0 * \left( \sum_i \sum_{(i)} x_{i(i)}^{A(B)} \right) - t^A \left( \sum_i \sum_{(i)} x_{(i)i}^{(A)A} \right)$$

$$(11) \mathbf{REV}_i^B = t^B \left( \sum_i \sum_{(i)} x_{i(i)}^{B(B)} + \sum_i \sum_{(j)} C_i^{B(j)} \right) + 0 * \left( \sum_i \sum_{(i)} x_{i(i)}^{B(A)} \right) - t^B \left( \sum_i \sum_{(i)} x_{(i)i}^{(B)B} \right)^{22}$$

Then, consolidated provincial VAT ( $\mathbf{TOTREV}$ ) burdens only the national value added:

$$(12) \mathbf{TOTREV} = t^A \sum_i \sum_{(j)} (C_i^{A(j)}) + t^B \sum_i \sum_{(j)} (C_i^{B(j)})$$

Tax burden on sectors is different according to the place where final sales are registered. This generates an incentive for fraud at destination; probably, economic agents would try to maximize sales in jurisdictions with smaller tax rate and/or to minimize them in those with higher tax rates. This aspect was treated by Varsano, R. (1995 and 1999) and also by Silvani, C. and Dos Santos, P. (1996), who pointed out the incentive for traders to simulate sales with different destinations, in some cases, for example, simulating intrastate sales as if they were interstate. In the extreme case, a wholesaler could hide sells to a retailer inside the own state (with higher tax rate), making fraudulent sales to a company of another jurisdiction (with lower tax rate). Simply sending the

invoice to the supposed buyer, and later on returning it to the true buyer of the own state (“invoice sightseeing”). The lack of cross border trade controls makes these simulations possible. This invoice sightseeing has been detected in the ICMS of Brazil, caused by tax rates differentials in interstate sales. Federal government centrally fixes interstate rates and sub-national governments fix intrastate rates. As these intrastate rates must be greater than interstate rates, incentives to fraud at destination are present<sup>23</sup>. Fraud incentive would be extremely increased in the case of zero-rate treatment for the interstate sales. This is the basic problem of the Destination - Deferred Payment VAT.

The administrative complexity for tax enforcement is naturally higher than the case of an exclusively national VAT, depending on the taxpayers data for identifying the destination of sales (intrastate or interstate), and demanding coordination among provincial revenues administrations<sup>24</sup>.

One administrative problem of this type of sub-national VAT is that the state or province of origin should tax imports from foreign countries. If goods are later on exported, refund mechanism will be complicated, unless goods were exported from the same province of origin. The alternative is that the federal government levies imported goods with a compensating-additional federal rate (similar to the one fixed by the state or province of origin) plus its federal tax rate and refunds both revenues to exporters. Federal fiscal administration would be involved in - or complicated by - sub-national revenue policy and administrative affairs.

Finally, destination-based VAT, as any tax that burdens consumption and not production, is especially attractive for consuming and net importing provinces, with earnings of revenue relative to Origin VAT. But destination-based VAT induces cross-border shopping; producing important effects on easily transportable high value items, especially among close jurisdictions. This naturally could generate pressure on province or state tax rates determination. On the contrary, tax rate competition among states or provinces could induce “trade-wars” with direct consequences on commercial flows and even more in the long run, depending on customers residence, with indirect incidence on firms localization<sup>25</sup>. Of course, with no border controls, simulation or fraud in sales destination would imperfectly compensate some of these possible consequences. Anyhow, avoiding tax rate differentials among sector or activities in sub-national tax systems, tax competition among jurisdictions on a uniform general tax rate basis should be considered beneficial, not detrimental, for individuals welfare, as it is later argued in point 6.

#### **4.4. The Provincial “Partilhado” VAT**

Varsano, R. (1999) has pointed out that the Destination - Deferred Payment VAT is not a solution for the design of a Sub-national VAT for Brazil, as a substitute for the ICMS, which is at present registering serious deficiencies. In fact, taking the current differential tax rate between intrastate and interstate sales to the extreme limit - like it would be the case of zero-rate interstate sales - would magnify the incentive already mentioned of fraud at destination.

In the Partilhado VAT sub-national government taxes intrastate sales with the local tax rate and interstate sales with a sub-national zero-rate, and the federal government taxes interstate sales with a tax rate equivalent to the sub-national tax rate. This federal compensating mechanism allows the equalization of the consolidated tax burden in origin for all sales (intrastate and interstate). Anyhow, tax revenue coming from the added federal tax rate will be recognized as fiscal credit (federal) at destination, in case of intermediate consumption. Therefore, the federal substitute tax rate is only used as a “boat to cross the river” (that’s why the alternative name of “little boat model” used for this alternative). The federal government doesn't win nor lose, because definitively, it will

compensate liabilities with fiscal credits. The sub-national government will collect only the provincial portion for its final intrastate sale (sales to other jurisdictions are made to zero rate)<sup>26</sup>.

Now, if we assume the case of a “dual VAT”, that is, the federal government also levying its own VAT on the same sub-national VAT tax base<sup>27</sup>, the tax revenue obtained from each sector and jurisdiction by both sub-national and federal governments ( $\mathbf{REC}_i^A$ ,  $\mathbf{REC}_i^B$ ) is now:

$$(13) \mathbf{REV}_i^A = (t^A+t^F) \left( \sum_i \sum_{(i)} x_{i(i)}^{A(A)} + \sum_i C_i^{A(A)} \right) + t_f^A \left( \sum_i \sum_{(i)} x_{i(i)}^{A(B)} + C_i^{A(B)} \right) - (t^A+t^F) \left( \sum_i \sum_{(i)} x_{(i)i}^{(A)A} \right) - t_f^B \left( \sum_i \sum_{(i)} x_{(i)i}^{(A)B} \right)$$

$$(14) \mathbf{REV}_i^B = (t^B+t^F) \left( \sum_i \sum_{(i)} x_{i(i)}^{B(B)} + \sum_i C_i^{B(B)} \right) + t_f^B \left( \sum_i \sum_{(i)} x_{i(i)}^{B(A)} + C_i^{B(A)} \right) - (t^B+t^F) \left( \sum_i \sum_{(i)} x_{(i)i}^{(B)B} \right) - t_f^A \left( \sum_i \sum_{(i)} x_{(i)i}^{(B)A} \right)$$

Where  $t_f^A$  and  $t_f^B$  are the federal tax rate levied on interstate transactions; and,  $t_f^A = (t^A+t^F)$ ;  $t_f^B = (t^B+t^F)$ . That is, sales to other jurisdictions will be taxed with the same total tax rate (provincial plus federal) like intrastate sales, due to the federal compensatory rate that burdens exports to others provinces. The total consolidated Nation - Provinces tax revenue ( $\mathbf{TOTREV}$ ) is:

$$(15) \mathbf{TOTREV} = (t^A+t^F) \sum_i (C_i^{A(A)}) + (t^B+t^F) \sum_i (C_i^{B(B)}) + t_f^A \sum_i (C_i^{A(B)}) + t_f^B \sum_i (C_i^{B(A)})$$

The expression contains: a) the tax revenue belonging to provincial revenue services [ $\mathbf{REV}^A = t^A \sum (C_i^{A(A)})$ ]; and,  $\mathbf{REV}^B = t^B \sum (C_i^{B(B)})$ ]. b) the federal tax revenue due to intrastate sales [ $\mathbf{REV}^F = t^F \sum (C_i^{A(A)}) + t^F \sum (C_i^{B(B)})$ ]. And, c) the tax revenue corresponding to the surplus generated by the federal tax due to interstate sales that it is not canceled, like in the case of the intermediate sales, because it burdens final consumption [ $\mathbf{REV}^{(A,B)}_f = t_f^A \sum (C_i^{A(B)}) + t_f^B \sum (C_i^{B(A)})$ ].

Varsano proposed to distribute the residual component ( $\mathbf{REV}^{(A,B)}_f$ ) that belongs to provinces - a shared common tax revenue -, in proportion to the own provincial tax revenue. Varsano identifies this part of the tax with the acronym CVAT (meaning Compensating Valued Added Tax), the name used by McLure for his federal compensatory VAT. Therefore the Partilhado VAT implies the existence of a “common pool”, with the difficulties usually associated with it.

Both provincial and national VAT together tax national added value only; intermediate sales are free of tax burden. As it is natural in case of destination criteria, the final tax burden position of sectors will differ depending on geographical residence of final consumers. Equation (16) can be expressed as:

$$(16) \mathbf{TOTREV}_i = t_f^A \left( \sum_i \sum_{(i)} C_i^{A(i)} \right) + t_f^B \left( \sum_i \sum_{(i)} C_i^{B(i)} \right)$$

Again, assuming the relevant case where  $t_f^A \neq t_f^B$ , that implies  $(t^A+t^F) \neq (t^B+t^F)$ , the tax burden on added value in each sector will differ according to the place where final consumption is supposed to be located. Due to the lack of cross border trade controls, this generates an incentive to fraud at destination, simulating sales in jurisdictions with lower tax rates. Therefore, although the Partilhado VAT seeks to eliminate the incentive for fraud by equalizing tax liabilities in origin, as these liabilities are recognized as fiscal credits at destination - through the federal revenue service - it is possible to reduce the sector tax burden maximizing fiscal credits (simulating false destinations). The objective of the "Barquinho" VAT could be deceived, that is, the problem of the Destination - Deferred Payment VAT is not solved<sup>28</sup>.

An important characteristic of this sub-national VAT alternative is that it requires considering each taxpayer's net liability situation at the national and at the provincial revenue administrations. Since the national and provincial net positions of taxpayers would be different (in net exporters

jurisdictions with credits against the provincial government and with liabilities in favor of the national government), it should take into account the problem of the compensation that naturally taxpayers will demand. In this case, to reduce administrative costs, it is possible to let taxpayers pay the consolidated net liability (national liabilities less provincial credits) and create a Nation – Provinces clearinghouse with periodic intergovernmental payments.

Now, when asymmetries of net balances among revenue services emerge, “refunds or rebates problem” arise. Revenue services use to be reluctant to admit cash refunds or another type of compensations with other tax liabilities. IMF experts in a VAT’s international experiences review have found general inability of tax administrations to make timely refunds of excess credits, “which legitimately can amount to one-half of net VAT revenues”<sup>29</sup>. In Argentina exporters usually suffer important delays in the refunds of VAT’s fiscal credits. National Government has also been reluctant to accept fiscal compensations in the agricultural sector (their sales taxed with a smaller differential rate justified by social reasons) with others tax liabilities from the income tax and the patrimonial tax (“*Impuesto a las Ganancias*” and “*Impuesto a los Bienes Personales*”).

#### 4.5. The Provincial “Radial” VAT

This alternative discussed by Schenone (2001) modifies the Destination VAT of "Barquinho" type in the way that fiscal credits are treated: fiscal credits are recognized at the local tax rate of the buyer’s province, instead of the local tax rate of origin, the one that vendor pays. The intention of this version, once again, is to eliminate the incentive to fraud at destination and to avoid distortions. Since fiscal credits are recognized at the tax rate of destination, the possibility of differential tax treatments would be eliminated (tax burden in any jurisdiction would be the same). Let us analyze if this aim is achieved. Now the tax revenues obtained from each sector in each jurisdiction ( $\mathbf{REV}_i^A$ ,  $\mathbf{REV}_i^B$ ) are:

$$(17) \mathbf{REV}_i^A = (t^A + t^F) \left( \sum_i \sum_{(i)} x_{i(i)}^{A(A)} + \sum_i C_i^{A(A)} \right) + t_f^A \left( \sum_i \sum_{(i)} x_{i(i)}^{A(B)} + C_i^{A(B)} \right) - (t^A + t^F) \left( \sum_i \sum_{(i)} x_{(i)i}^{(A)A} \right) - t_f^A \left( \sum_i \sum_{(i)} x_{(i)i}^{(A)B} \right)$$

$$(18) \mathbf{REV}_i^B = (t^B + t^F) \left( \sum_i \sum_{(i)} x_{i(i)}^{B(B)} + \sum_i C_i^{B(B)} \right) + t_f^B \left( \sum_i \sum_{(i)} x_{i(i)}^{B(A)} + C_i^{B(A)} \right) - (t^B + t^F) \left( \sum_i \sum_{(i)} x_{(i)i}^{(B)B} \right) - t_f^B \left( \sum_i \sum_{(i)} x_{(i)i}^{(B)A} \right)$$

Where, once again,  $t_f^A = (t^A + t^F)$ ; and,  $t_f^B = (t^B + t^F)$ . Equations differ from the previous case only in the last term. The total tax revenue obtained in each jurisdiction from each sector ( $\mathbf{TOTREV}_i$ ) is now:

$$(19) \mathbf{TOTREV}_i = (t^A + t^F) \sum_i C_i^{A(A)} + (t^B + t^F) \sum_i C_i^{B(B)} + t_f^A \sum_i C_i^{A(B)} + t_f^B \sum_i C_i^{B(A)} + \\ + [ t_f^A \left( \sum_i \sum_{(i)} x_{i(i)}^{A(B)} - t_f^B \left( \sum_i \sum_{(i)} x_{(i)i}^{(B)A} \right) ] + [ t_f^B \left( \sum_i \sum_{(i)} x_{i(i)}^{B(A)} - t_f^A \left( \sum_i \sum_{(i)} x_{(i)i}^{(A)B} \right) ]$$

According to identities: tax-exclusive sales value  $\equiv$  tax-exclusive purchases value ( $x_{i(i)}^{A(B)} \equiv x_{(i)i}^{(B)A}$ ;  $x_{i(i)}^{B(A)} \equiv x_{(i)i}^{(A)B}$ ), and expressions  $(t^A + t^F) = t_f^A$ ; and,  $(t^B + t^F) = t_f^B$ , total revenue is:

$$(20) \mathbf{TOTREV}_i = t_f^A \sum_i \sum_{(j)} C_i^{A(j)} + t_f^B \sum_i \sum_{(j)} C_i^{B(j)} + (t_f^A - t_f^B) \sum_i \sum_{(i)} x_{i(i)}^{A(B)} + (t_f^B - t_f^A) \sum_i \sum_{(i)} x_{i(i)}^{B(A)}$$

In comparison with expression (16), last equation shows two new components. That is: a) the tax revenue obtained in each province by both level of government due to inter and intrastate sales to final consumption [ $t_f^A \sum_i \sum_{(j)} C_i^{A(j)} + t_f^B \sum_i \sum_{(j)} C_i^{B(j)}$ ]; b) the net fiscal liability from the federal-radial VAT, on interstate intermediate sales from province A to province B (exports from A) [ $(t_f^A - t_f^B) \sum_i \sum_{(i)} x_{i(i)}^{A(B)}$ ]. And, c) the net fiscal liability from the federal-radial VAT, on interstate intermediate sales from province B to province A (exports from B) [ $(t_f^B - t_f^A) \sum_i \sum_{(i)} x_{i(i)}^{B(A)}$ ].

Therefore, Radial VAT does not solve the problem of the incentive to fraud at destination, as long as it is assumed the relevant case where  $t_r^A \neq t_r^B$ . Besides, it causes distortion in relative prices in intermediate consumption due to the differential effects of the net tax rates on interstate intermediate consumption sales.

Moreover, though the net results for provincial revenue administrations do not differ from the previous case<sup>30</sup>, the federal government faces a different situation. It will receive the (uncertain) net result of the compensations for fiscal liabilities and credits due to interstate intermediate transactions (the result of components b) and c)). This is really an important disadvantage, if it is admitted that independence of the two tax systems (national and provincial) should be the basic characteristic of any federation tax system. The operation of the sub-national tax system should not carry on any fiscal consequence to the national system, and vice versa.

Another disadvantage of this alternative, is the difficulty for tax administration to estimate fiscal credits on inputs sold from (or bought to) multiple jurisdictions of origin, with the tax rate corresponding to the jurisdiction of destination<sup>31</sup>.

#### **4.6. The “Dual” VAT**

Dual VAT suggested by Bird and Gendron (1998, 2000) is similar to the Destination - Deferred Payment VAT operating in the Province of Quebec, coexisting with the federal VAT. Both level of government taxing the same tax base with its own tax rate. The administration of both taxes has been assigned to the revenue service of Quebec.

Bird and Gendron emphasize one interesting feature of the Canadian system: the federal revenue service fixes certain high-priority audit approaches to the provincial revenue service. As the tax base of the federal tax and the provincial one coincide, there exists an interest of the Province in turn to take these audits ahead, similarly with those demanded by the administration of the provincial VAT. For example, if Quebec had an own VAT without the federal VAT being administered by its revenue service, it would be impossible to force taxpayers of other provinces to reveal information for the interstate transactions. Bird and Gendron give special importance to the fact of concentrating the tax administration in a single entity (federal or provincial). They expect that this unified administration would solve fraud problems. To put it more clearly, a “unified administration” allows that the “overriding of national and provincial tax” does not mean a mere overlapping of tax legislation but an opportunity for an effective tax enforcement. That is, a tax system that avoids cross-border-trade frauds. Nevertheless, whether “unified” means “unique administration service” or a “coordinated fiscal administration” it is not really the point. Bird and Gendron message seems to point out that “unified administration” means unique audits plans and that on that way the provincial revenue service could obtain the necessary information to control the cross-border-trade problem of the Sub-national VAT. Expertise and mutual trust that should exist between the federal and the provincial tax administrations for efficient tax enforcement are essential. Bird and Gendron do not think that this could be the situation of countries like Argentina, Brazil, Russia, or India.

#### **4.7. The “Compensating” VAT (CVAT)**

Changing his initial suggestion with regard to the technical possibility of a sub-national VAT, more recently Charles McLure has defended the proposal of a sub-national VAT of the "Partilhado" style. One important modification introduced by McLure proposal is the determination of the CVAT rate to tax interstate transactions. This rate is calculated as a weighted average of provincial tax rates,

while Varsano only allows for the federal added rate (in substitution of the state or provincial tax rate) to equalize fiscal liability in the jurisdiction of origin.

Explaining the election of a weighted average tax rate for the CVAT, McLure mentions two extreme approaches. One alternative is to fix a tax rate equivalent to the lower sub-national tax rate; and, the other alternative is to fix it equal to the highest sub-national tax rate. The first alternative has the advantage of reducing possible refunds for CVAT fiscal credits, but it would generate a discrimination against local merchants in states or provinces with tax rates above the lowest rate. Because the CVAT rate (lower than the provincial tax rate in origin) is also applied to final consumers and non-registered merchants of other provinces. *“This would lead to some margin of deviation of products to final consumers and non-registered merchants. Finally, it would introduce an incentive to distance purchases, or by mail, and to cross-border shopping”*(sic)<sup>32</sup>.

In the second alternative, according to McLure, the high rate would avoid the incentive to the deviation of products to the states of destination with low rates. It also generates an incentive for merchants of the importing states to be registered an, this way obtaining fiscal credits for the CVAT. Clearly the need of refunds would be increased due to such a high CVAT. Moreover, it would tax in excess the interstate trade directed to states or provinces with low rates, if the CVAT also applies to final consumers and non-registered merchants.

For these reasons McLure suggests a “weighted” average tax rate (neither the lowest nor the highest). The tax revenue obtained from each sector in each jurisdiction ( $\mathbf{REV}_i^A$ ,  $\mathbf{REV}_i^B$ ) is:

$$(21) \mathbf{REV}_i^A = (t^A+t^F) \left( \sum_i \sum_{(i)} x_{i(i)}^{A(A)} + \sum_i C_i^{A(A)} \right) + t^{CVAT} \left( \sum_i \sum_{(i)} x_{i(i)}^{A(B)} + C_i^{A(B)} \right) - (t^A+t^F) \left( \sum_i \sum_{(i)} x_{i(i)}^{(A)A} \right) - t^{CVAT} \left( \sum_i \sum_{(i)} x_{i(i)}^{(A)B} \right)$$

$$(22) \mathbf{REV}_i^B = (t^B+t^F) \left( \sum_i \sum_{(i)} x_{i(i)}^{B(B)} + \sum_i C_i^{B(B)} \right) + t^{CVAT} \left( \sum_i \sum_{(i)} x_{i(i)}^{B(A)} + C_i^{B(A)} \right) - (t^B+t^F) \left( \sum_i \sum_{(i)} x_{i(i)}^{(B)B} \right) - t^{CVAT} \left( \sum_i \sum_{(i)} x_{i(i)}^{(B)A} \right)$$

where:  $t^{CVAT} = 0.5*(t^A+t^B)$  <sup>33</sup>

The expression for the total tax revenue obtained from each sector ( $\mathbf{TOTREV}_i$ ) using the CVAT rate, is now:

$$(23) \mathbf{TOTREV}_i = t^A \left( \sum_i C_i^{A(A)} \right) + t^B \left( \sum_i C_i^{B(A)} \right) + t^{CVAT} \left( \sum_i \sum_j C_i^{j(i)} \right)$$

Like in the Partilhado VAT, national VAT and provincial VAT burden only the added value (or final consumption). But, in this case, with three different treatments depending on whether trade takes place (sales inside province A, sales inside province B or interstates sales for final consumption in both provinces, that is, corresponding to cross border purchases)<sup>34</sup>.

An issue that deserves discussion in this proposal is that difficulties foreseen by McLure anyway will be still present with the suggested average rate, depending on the degree of dispersion of sub-national tax rates. On this topic, it is worth mentioning an explanation that frequently appears in McLure’s paper. Usually, when differences among sub-national tax rates generate problems, the invocation that in the real world of the sub-national tax systems such a divergence must not be very important appears. Such an assumption (of reduced dispersion in tax rates levels) can only be supported in cases of jurisdictions with similar socioeconomic profiles, like type and magnitude of population size, productive profile or tax bases characteristics, voters (constituency) preferences and governments size, among others possible factors. The assumption that tax rates will not differ is

crucial to validate all the administrative complexity of the tax invention that is proposed. If tax rates do not differ, just by chance or due to consent through a federal agreement, except by small margins (like Varsano propitiated), then the essential question or the reason of fiscal decentralization has not been solved.

Unfortunately, to average sub-national tax rates for the CVAT rate hoping to reduce tax rates differentials does not solve the problem of cross border trade, because it maintains the opened possibility of fraud at destination. This possibility naturally appears as an obvious result, because the CVAT rate is only good to cross the river! Finally, fiscal liabilities and fiscal credits compensate, generating a net fiscal liability equal to zero. What really matter in cross border trade is the sub-national tax rate differentials. No matter whatever the tax rate level of the CVAT is.

The rest of McLure proposal does not differ in general from the "Partilhado" VAT, as it was exposed by the original idea of Varsano, with the exception of the already mentioned different tax rate treatment on intrastate and interstate sales to final consumption.

#### **4.8. The "Prepaid" VAT (PVAT)**

Poddar, S. (1990) has suggested a sub-national VAT for India in which "prepayment" of the tax for interstate sales can be made at destination. All registered vendor in any state or province should apply the effective tax rate of his or her state to sales (except when exporting abroad), unless the buyer residing in another province provides him or her with the certificate that corroborates that he or she has already paid the tax in his or her province. The administrative system of this variant allows for a more sophisticated transactions tracking and has the evident advantage of the financial gain for the revenue services, compared with the Destination – "Deferred" Payment VAT. Anyhow, dealing with the main cross border trade problem, the possibility of frauds at destination is not avoided. Merchants can buy or obtain certificates in provinces with lower tax rates.

#### **4.9. The "Viable Integrated" VAT (VIVAT)**

The VIVAT proposed by Keen and Smith (1996, 2000), has been thought essentially for the case of the EU, where it is not possible to imagine a central government levying the tax (shared, dual or compensatory). A common and uniform tax rate is fixed in transactions among registered merchants - that usually reflect intermediate transactions - letting each state to fix the rate in sales made to non-registered buyers - that is assumed generally directed to final consumption -. That is, the operating of the tax doesn't demand to differentiate sales according to the destination (intrastate or interstate), but to the buyer's situation (registered or non-registered, in whatever state or jurisdiction). Revenues from sales to non-registered traders or buyers make necessary a sharing-distributive mechanism. Keen and Smith point out that states members retain at least so much autonomy as they enjoy at present, as regards establishing the tax rates corresponding to the "relevant rate". They correctly argue that the rate at which the intermediate sales are taxed is irrelevant, as long as fiscal liabilities and fiscal credits cancel definitively. VAT taxed only the final consumption that fundamentally belongs to non-registered buyers.

One important issue pointed out by Keen and Smith is that the system would guarantee symmetry of enforcement costs, meaning that the costs of tax administration would not differ according to whether sales are directed or not to intrastate or interstate buyers. Unfortunately, Keen and Smith should recognize that the VIVAT has also its price. They must admit a characteristic that was already pointed out by McLure, by Bird and Gendron and by Baldwin. The cost of administration based on the distinction between registered and non-registered buyers, to a great extent will depend on the different effective tax rates for each "differentiable" side of the purchases, the corresponding

to intermediary firms and those corresponding to final consumers. Keen and Smith point out, in a foot note that, anyway, this happens in the current VAT operating in all the countries where the only problem is to restrict fiscal credits for inputs to registered taxpayers. However, they neglect the fact that in case of interstate transactions, under the VIVAT, tax rates will differ for those non-registered merchants.

The crucial point is that there should not exist the possibility of earnings from burden savings, for example, by consumers simulating their final purchases as sales to registered firms. In addition, if the tax rate to non-registered buyers is higher than the uniform tax rate applied to intermediate sales (corresponding to registered buyers); or, vice versa, if the tax rate differential favors consumers. On this respect, Keen and Smith sustain that differences of tax rates will be probably worthless and, consequently, enforcement cost, too. Surprisingly, by this argument Keen and Smith neglect the problem of the asymmetry in enforcement cost. In this case, the asymmetry shows up among registered and non-registered buyers and difficulties to identify who really makes the acquisition. So Keen and Smith recognize that the cost of administering the fiscal limits between both types of transactions will emerge when differences among tax rates are very important. That is why they suggest that the rate of the VIVAT for intermediate transactions should be fixed in a way of “maintaining such differential rates inside reasonable margins”<sup>35</sup>.

In fact, VIVAT tries to solve the problem of fraud at destination (in the geographical or territorial sense), but it doesn't solve the problem of fraud at destination among purchases to final (or non-registered merchants) and to intermediate (or registered merchants) buyers, both type of economic agents of course having certain geographical location. As Bird and Gendron have pointed out, VIVAT changes one kind of enforcement asymmetry (dealing with intra or interstate sales) by other type of asymmetry (dealing with registered or non-registered merchants).

## 5. The Provincial Retail Sales Tax (PRST)

Retail Sales Tax (RST) has been the target of many critics in literature (see particularly Cnossen, S., 1987 and 2002)<sup>36</sup>. In theory RST should tax final consumption and produce the same tax revenue than the VAT, with the only difference that RST taxes total added value in the last stage of the production – consumption chain, while VAT taxes total added value partially in each stage along that chain.

To tax just added value or final consumption with a uniform tax rate and not to tax intermediate consumption, it is a principle of general acceptance in the academic world. Exceptions for no using uniform tax rates are admitted only in presence of non-taxable goods (like leisure), substitutes or complementary of the taxable goods. Ramsey and Corlett y Hague – Haberberger – Meade rules have recognized different treatment in tax rates on economic efficiency basis, though usually in practice these principles or rules are not followed. Actually, VAT legislation in many countries has differential tax rates justified by equity principles and not by economic efficiency arguments.

Dealing with non-taxing intermediate consumption, there is some literature that has advanced a different idea in case of firms that have market power. Myles (1989, 1996) has suggested that in case of firms vertically bounded when only one of them is imperfectly competitive, intermediate goods should be taxed with a specific tax rate. Later, Colangelo, G. and Galmarini, U. (2001) extended that recommendation in the case of an *ad valorem* tax rate. The conclusion of this literature is that in case of intermediate goods that have close substitutes, market power is weak, benefit margins are reduced, and marginal cost pricing principle will work in the economy. So, in that case, VAT is the best alternative. But in the opposite case, where intermediate goods have non-

close substitutes and firms have market power (oligopoly), taxing intermediate goods is efficient and VAT is not the best alternative.

Now in the real world RST taxes more than the final consumption. Usually it is difficult to avoid taxing intermediate consumption<sup>37</sup>. Assuming perfect competition in all markets and admitting that non-taxing intermediate consumption is the right principle, two methods have been suggested for a solution in RST. One is to differentiate “registered merchants” from “non-registered merchants” allowing the former to deduct fiscal credits for liabilities that are included in their purchases. The other alternative is to identify the “use” of goods by the buyer and not to tax those directed to final consumption. Neither of both alternatives is perfect, especially the latter, due to the very known difficulty of tracking the real destination of goods or the final stage of the production – consumption chain. Firms can make fraud simulations when they sale goods to final consumption and to intermediate consumption at the same time. This was already mentioned in the VIVAT solution.

The second problem of RST is that evasion is concentrated at the final stage of the production – consumption chain and that the tax compliance control on retail transactions means a “hard work” for revenue administrations. It is argued that in case of VAT, though using a high threshold to avoid administration cost in small traders, it is possible not to loose the full amount of the tax incorporated in the exempt sales. But, anyhow, without invoices at the last stage, evasion in VAT through “the black – underground - upstream chain” is also possible<sup>38</sup>.

Summarizing conclusions arrived in literature on fundamental tax reform, taking into account these difficulties, many authors suggest that the VAT solution is superior to the NRST one. But know what is under discussion is the case of the “Sub-national” VAT. In this case, and in presence of a “national” VAT already levied by the federal government, like in many LDC’s countries, those problems of the RST can find solutions. Especially, the problem of fraud at the final stage and the aim of not taxing intermediate consumption with the sub-national RST can get a solution through a “federal VAT - provincial RST administrative information exchange agreement”. Federal VAT revenue administration could inform the provincial revenue administration all registered merchants that should be allowed to demand fiscal credit for the PRST included in their purchase invoices and reduce evasion practices. On the other hand, provincial tax administration could inform to the national revenue service about its retailer’s audit results that would reduce the possibility of National VAT evasion through “the black – underground – upstream chain” dilemma<sup>39</sup>. The proposal is very similar to the idea suggested by Llach, J., et al, (2000) of a “Provincial VAT with zero tax rate plus a Provincial RST” and in some way similar to Bird and Gendron’s idea of fiscal cooperation between federal and Province of Quebec revenue administrations through the dual VAT! And more surprisingly perhaps, very similar – though not equal - to VIVAT solution applied to a federation!<sup>40</sup>

Finally, in case of small traders, in order to reduce costs of administration, a complementary “modular patent tax system” (presumptive taxes) could be the solution. Besides, the ongoing tendency of concentration of retail sales activities in few firms (supermarkets and shopping centers) will reduce administrative costs. Another problem of RST usually mentioned is the difficulty to tax services. Once again, coordination between “federal VAT administration” and “provincial RST administration” will allow identifying taxpayers usually excluded in the “isolated PRST”.

On the other hand, challenging the traditional literature supporting the advantages of the VAT for tax enforcement and its potential technical design to avoid evasion, recent studies have investigated distortion effects and evasion practices in the National VAT that tax administration must face and can’t avoid<sup>41</sup>. Adding the sub-national tax rate in countries that have already levied a National VAT will increase the enforcement difficulties that National VAT has registered in many of them, by

increasing the premium for evading the tax<sup>42</sup>. The international experience shows a large range of VAT tax rate level. The problem would be superlative in cases of actual national tax rate higher than 10%-12%, which is considered by many experts as the reasonable rate-limit for sales taxes<sup>43 44</sup>.

Anyhow, the future of the “tax revenue administration business” dealing with indirect taxation, like the VAT or the RST, is full of dark clouds, especially in case of sub-national governments.

International literature has discussed the difficulties of taxing transactions in presence of growing distance purchases and e-commerce practices<sup>45</sup>. These practices put ahead a challenge for tax administration, particularly in case of jurisdictions located very close within reduced geographical spaces<sup>46</sup>. E-commerce, while making huge reductions in delivery costs by Internet, improves mail order practices, and has the inherent problem of identifying providers’ location – especially those with no formal establishment in the jurisdiction of destination - and purchasers who can not be located even among countries. The possibility of levying “use taxes”, like states in sale taxes intend to do in USA, will be difficult to enforce in businesses, not only in individuals<sup>47</sup>. Finally, the tendency to more trade involving services – many on digital technology basis through Internet - and intangible rather than goods, altogether make traditional enforcement of the destination principle in sales taxes extremely cumbersome.

## 6. The “public choice” point of view

One important issue dealing with Sub-national VAT, particularly the Dual-Partilhado-Compensating type, is the possibility of the strategic behavior of governments exploiting the same common tax base. If the federal government pursues to equalize the tax burden in all jurisdictions, it is clear that a strong incentive is generated to jurisdictions for politically pressing to fix the tax rate at the maximum level that the national government considers convenient to set up. All provinces trying to maximize the sub-national tax-room position in any possible national intention to “equal-leveling” a consolidated tax rate. The solution that begs for harmonization of the two systems (National and Provincial taxation) seems to be troublesome when changing scenarios and characteristics of regional economies have to be taken into account. To fix a uniform sub-national sales tax rate by the federal government, when this is possible by constitutional regulations, – no matter its level, whether the highest, the lowest or an average with a small admitted dispersion –, destroys the original reason of fiscal decentralization: sub-national autonomy for tax structure and tax rate determination.

Sub-national autonomy for tax rate determination is crucial for tax competition among states or provinces. This competitive scenario allows Tiebout theorem to work for good. In principle, tax competition should not be qualified negative, when distortions are avoided by tax systems using uniform tax rates structures. Governments competition for investment through tax incentives have been accused as welfare detrimental due to fiscal externalities among regions which would lead to too low tax rates and under-provision of public goods in equilibrium (“*race to the bottom*”)<sup>48</sup>. As Janeba, E. and Schjelderup, G. (2002) have pointed out, this view is in sharp contrast to the thinking of conservative policymakers and the Public Choice literature (particularly Brennan and Buchanan, 1980 and McLure, C, 1986) who argued that competition in general, and competition among governments in particular, is beneficial because it reduces government waste and disciplines politicians (reducing rents to politicians). The externality argument also forgets to take into account that distortions could be produced through the expenditure side of fiscal policy. When asymmetric provision of public goods are present and this asymmetric provision change the economic equations of private investments, tax harmonization could not only be a non-sufficient condition but also a non-necessary condition for avoiding distortions through governments fiscal behavior<sup>49</sup>.

A fundamental critic that could be formulated to the alternative of a sub-national VAT, and particularly any VAT system of the “dual” type, is that though the tax rate at each level of government can be identified by the corresponding tax law, tax incidence will be hidden to citizens. They won't have a clear idea of the magnitude and destination of their contributions; especially in which is the difference between fiscal residuals (sub-national and national). Though net fiscal balances (net liability) are individualized by each level of government, constituency perception of the corresponding tax-price of national and sub-national public goods will be unclear or confused, so the fiscal correspondence principle, the essential reason of tax decentralization, will be broken.

On this respect, it should be noticed that who pays the net fiscal liabilities to each level of government is a trader or merchant. That is, legal taxpayers represent a smaller portion of the electorate and not all consumers and factors owners (on whose real income will finally impact the tax). From the economic point of view, VAT taxpayers can be considered as “perception agents”, not taxpayers in the economic sense, because tax incidence will affect any economic agent direct or indirectly bound to the taxed transaction. Affected citizens will have little information or transparency about the opportunity cost linked to their demands for public goods to the corresponding level of government<sup>50</sup>.

Lack of transparency in fiscal affairs produces “fiscal illusion”<sup>51</sup>. This phenomenon prevails if constituency systematic misperceives tax burden. The effect of separation of taxing and spending decisions have been analyzed by Winner, S. (1983), who has demonstrated that this characteristic of most representative democracies, may promote fiscal illusion and contribute to increase government expenditure. The influence of tax framing as a cause of fiscal illusion was also analyzed by Tyran and Sausgruber (2000) in an interesting paper combining the comparative experimental market approach (Smith et al., 1982) with an experimental voting study (Palfrey, 1991). Authors show and confirm John Stuart Mill hypothesis (1848) that the tax burden associated with an indirect tax (which incidence is “hidden” in goods prices) is systematically underestimated, whereas this is not the case with an equivalent direct tax<sup>52</sup>. They show that voter's fiscal illusion makes them approve a tax-redistribution proposal, which is not in their material self-interest.

Though there exist mixed finding of the Leviathan effect advanced by Brennan and Buchanan (1980), the literature on the issue is not conclusive (Oates, W. 1985); neither the effect of fiscal accountability on the size of government (Lassen, D. D., 2001 and Dusek, L. 2002). But Becker and Mulligan (1998) find that tax systems that are more efficient i.e. induce less economic distortions, lead to larger governments. Indirect taxation using VAT, like some proposal of fundamental tax reform in the U.S.A. have suggested, produce welfare improvements if government expenditure “are given”. But efficient tax systems, which rely on broad-based taxes with fairly flat rate structures, are associated with larger governments because resources availability changes politician's behavior. It makes them increase public expenditure in excess.

Kenny and Winer (2001) find out that tax composition varies with the nature of political regime. Socialist countries tend to make more use of corporate sale, sales and excise tax sources than other regimes, due to greater ease with which the activity of businesses can be monitored, a stronger ideological interest in taxing business, or a reduced need to use taxation on individuals to accomplish social goals. On this respect, they find that repressive governments rely less on personal income taxation, possibly because this tax source requires a higher degree of voluntary compliance than other forms of taxation. From the individualist freedom perspective, VAT can be seen as less intrusive than Income Tax, but at the end could be more harmful to individual welfare and liberty<sup>53</sup>.

At last but not least, Persson, Roland and Tabellini (1997, 2000) and Persson and Tabellini (1999) identify the effects of political institutions on the size of government, in particular whether a

country is presidential or parliamentary. They find that presidentialism increases political accountability, which in turn decreases the size of government.

Tax rate differentials in most VAT legislations – always opened to lobbies influences - are another source of administrative complexity and cause of evasion. Though justified by equity considerations, this rate legislation and many other administrative rules to avoid evasion like retention mechanisms and advanced payments on presumptive basis have contributed to worsen income distribution<sup>54</sup>, complicate revenue administration and weak tax enforcement. Of course, sub-national VAT legislation couldn't modified the national tax rate structure and anyhow it would increase revenue administrative difficulties.

In case of indirect taxing solution, the double NVAT – PRST alternative at least allows the identification of tax sources between federal and provincial governments. That is, a more effective performance of the Wicksellian connection. Of course if invoices on final consumption identify the sub-national VAT rate, this would operate as a RST in the final stage. But this identification is not sufficient due to the possible upstream and interregional incidence (through burden translation forward and backward and along regions) of all different sub-national VAT tax rates (including the effect on the welfare of citizens living in regions with no sub-national sales tax at all!). If we add to that influence frauds in destination caused in cross-border-trade (naturally without border controls), distortions and lack of visibility for constituency would be superlative.

Anyway, problems faced with all sales taxation alternatives lead to consider direct and personal taxation superior to indirect and real taxation, including RST!

Finally, dealing with the accountability issue: it is probably that more accountability could not explain in some cases larger size of governments, as same authors have concluded. Moreover, perhaps more transparency may lead to improve lobbying activities and government expenditure, like some experts have reported in case of tax expenditure exposition in public accounting<sup>55</sup>. But, that is not the main point. Perhaps constituency preferences will lead to vote big governments, if politicians make a good job! Or to consent to assign subsidies to some sectors due to national prestige or whatever. But the relevant point is that constituency should have transparency about the cost they are bearing when voting for and why. This is the basic principle of democracies.

## **7. Concluding remarks**

The performance of the VAT at sub-national level carries on problems that are not present in the case of a national VAT. The basic reason is the uniformity of the national tax rate for all goods and services, independently of sectors and places of origin and where such goods and services are used or consumed. This circumstance avoids the presence of two effects particularly analyzed in this paper: distortion effects and incentives to fraud at destination. When the VAT is applied to domestic interstate transactions by the sub-national governments, these consequences which are resumed in the expression “cross border trade problem” emerge with different characteristics according to the Sub-national VAT alternative chosen.

In case of the “Pure” Origin VAT, there are not incentives for fraud at destination but generates incentives to sub-national governments for tempting firms to locate within their territory manipulating the tax burden, allowing the possibility of “tax wars”. Exports are taxed while imports are not, generating an anti-export or pro-import bias. In the Modified Origin VAT, with fiscal credits for the purchases coming from others jurisdictions, the possibility of the invoice sightseeing arises, simulating the acquisition of inputs in jurisdictions with higher rates, or manipulations in transfer payments among firms economically linked, trying to reduce the resulting fiscal burden.

In the Destination - Deferred Payment VAT version, as exports are not taxed (they are zero-rated) and imports are taxed (with deferred payment), biases or distortions among local productions and those coming from other jurisdictions are not present. However, the invoice sightseeing phenomenon or fraud at destinations arises. Anyhow, the possibility of “trade-wars” induced by different tax rate (“tax wars?”) on final consumption is opened, and cross-border-trade will be promoted.

The "Partilhado" VAT tries to eliminate the incentive to fraud at destination equalizing fiscal liabilities in origin. However, good intention fails because recognition of fiscal credits at destination by federal administration maintains the differences in tax burden among sectors, inviting to fraudulent arbitrages. The intend to reduce this problem averaging sub-national tax rates for the determination of the CVAT rate doesn't eliminate the margin gain from frauds. Actually, the tax rate used for interstate sales are irrelevant; what matters are the tax rates differentials among provinces.

The “Radial” VAT does not avoid fraud at destination either, as it admits differences in tax burdens sectors, generating at the same time a not wanted effect on federal revenue administration that should compensate the net result between fiscal liabilities and fiscal credits produced by interstate intermediate transactions. The distortion effect on intermediate goods relative prices is also present in this alternative of Sub-national VAT.

VIVAT does not avoid the existence of incentives to fraud at destination, except in the hypothetical case of rate differentials not very wide, like in the Partilhado and CVAT cases. Enforcement asymmetry is harmed, even in the VIVAT, although certain differences with the other alternatives could be admitted.

The PVAT of Poddar adds financial advantages for revenue services, but it doesn't solve the elimination of fraud at destination, in spite of the biggest bureaucracy that requires for tracking interstate sales. Any merchant can buy a prepaid certificate in the province with the lowest tax rate.

Finally, Dual VAT seems not applicable to countries with weak tax administrations, as authors recognize with explicit reference of Argentina, Brazil, Russia, and India.

The basic problem arises in all cases when tax rate differentials among states or provinces are relevant. In all alternatives, experts hope for narrow sub-national tax rates differentials. But if tax rates differentials were near zero, any kind of VAT would be viable though not necessarily recommended from the fiscal correspondence principle point of view. Anyhow, other difficulties have been found in national VAT performance that naturally will be present in the sub-national version of VAT.

As a concluding remark, the review of all the imaginable alternatives for a Sub-national VAT generate serious doubts on an affirmative answer to the question contained in the title of the present paper. For some reason, very few countries have at present implemented the Sub-national VAT: the Province of Quebec in Canada and Brazilian states (ICMS)<sup>56</sup>. Problems faced with the ICMS in Brazil are evidence of a bad tax design. To Bird and Gendron eyes, it seems that Quebec VAT is the only successful experience.

We have already suggested (Piffano, H., 1999a) the proposal of combining an exclusive National VAT – with a low tax rate - and an exclusive Provincial Retail Sales Tax in federations like Argentina. This solution will provide the advantages looked for many of the analyzed sales taxing

alternatives, avoiding their disadvantages. The system doesn't demand additional costs of administration, nor technical complexity that any state or provincial tax administration could reasonably operate. It would only require cooperation (information exchange) among national and provincial revenue services, to avoid upstream distortion effects and fraud in both taxes. It doesn't require combined administration or compensations among revenue administrations (national and provincial or inter-provincial). From the accountability point of view, it fulfills more reasonably the "Wicksellian" principle of fiscal correspondence, by differentiating national and provincial tax sources and allowing consumers to identify the sub-national tax burden in their final consumption.

From the public choice point of view a dual VAT is not recommendable. However, if the political determination is to insist in real and indirect taxation for sub-national governments, we insist to differentiate tax sources between federal and provincial tax systems through the combined National VAT – Provincial RST. Anyway, the increasing problems detected in the indirect-real taxation world (distance purchases, e-commerce) and the need in many LDC's and emerging countries of enhancing the "Wicksellian" fiscal correspondence principle (and democracy systems!), lead to suggest the convenience of a sub-national personal income tax or a sub-national personal consumption flat-tax for state or provincial governments. As many authors have pointed out, a consumption-based taxation solution could be found through modifications in the present federal income tax law<sup>57</sup>. Sub-national governments could also levy that type of tax with little cost of administration and little cost of enforcement using the federal income tax as their basis for income tax base determination. Lessons and experiences from many federations, like U.S.A. or Canada, could be taken as references for its design. Finally, fiscal cost visibility through direct taxation will avoid fiscal illusion in constituency voting decisions.

## NOTES

<sup>1</sup> For a review see Varsano, R. (1995, 1999), Bird, R. and Gendron, P. (1998, 2000), McLure, C. (1993, 1999, 2000), Keen, M. and Smith, S. (1996, 1999), Poddar, S. (1990, 1999), Schenone, O. (1999), Fenochietto, R. and Pessino, C. (2000) and Piffano, H. (1999a, 1999b, 1999c, 1999d, 2000).

<sup>2</sup> The basic theory and discussions on VAT origin – destination economic effects and equivalencies (“production efficiency” versus “exchange efficiency”) are not analyzed here. For a review on the topic see Lockwood, B. (1993), Lockwood, B., de Meza, D., and Myles, G. (1994) and Genser, B. (1996).

<sup>3</sup> See Slemrod, J. and Yitzhaki, S. (2000) and Gale, W. and Holtzblatt, J. (2000) for the analysis of administrative aspects effecting avoidance and evasion practices.

<sup>4</sup> Bird, R. (1983), Casanegra de Jantscher (1990) and Bird, R. and Casanegra de Jantscher (1992) have said that “tax administration *is* tax policy” in developing countries.

<sup>5</sup> In McLure, C. (2000), the author radically modified his opinion when he became enthusiastic with the Partilhado VAT modality, suggested by Varsano, R. (1995).

<sup>6</sup> See the recent suggestion for Brazil in Varsano, R., Ferreira, S. G. and Afonso, J. R. (2002). Some authors have suggested the inconvenience of *decentralizing* any general sales tax, due to bases mobility and administration problems, with the exception of certain countries territorially very extensive like USA or Canada (see Noorregaard, J., 1997; Vehorn, C. L. and Ahmad, D. E., 1997).

<sup>7</sup> Federal public finance requires independence of the fiscal decisions of governments and a clear information on the tax-prices that citizens should pay for public goods provided by each level of government (“Wicksellian” fiscal correspondence principle). We will return to this aspect in point 6.

<sup>8</sup> The definition responds to a similar approach used in IMF official documents (See Shome, P., 1995). The alternative design in which fiscal credits with compensations among revenues services are admitted is identified as “Modified” Origin VAT. This “modified” version coincides with the definition used by EU sixth Directive (Commission of the European Communities, 1996). For IMF experts the fact of crediting importers at destination for the tax levied in origin would transform this modality in a “destination” VAT (see IMF, 2000).

<sup>9</sup> The concept whether a tax is exported or not should be understood as the place where percussio of the tax is located. When it is levied in the state of origin (so taxes are incorporated in the invoices sent to other jurisdictions and the revenue service at destination is not compensated by such liability) or when the revenue service at destination levies the tax (so invoices are sent zero-rated from the state of origin), respectively. Then, this is not the concept of incidence of the tax, that is, the place where the tax burden is definitively located, which obviously depends on market conditions.

<sup>10</sup> The taxonomy of Sub-national VATs only considers as “Dual” VAT this alternative, that essentially allows state autonomy in the definition of the tax rate. This is the case of the federal General Sales Tax and the Quebec Sales Tax (GST/QST). In Canada there is another sales tax arrangement among the federal government and three provinces: the Harmonized Sales Tax (HST) (see Bird and Gendron, 1998). This system is not classified as “Dual VAT” in the taxonomy, because it is a “joint-national-provincial VAT” or a “piggy-backing” sub-national tax with a uniform tax rate in all states, with a revenue sharing mechanism.

<sup>11</sup> Fenochietto, R. and Pessino, C. (2000) have suggested a similar sub-national VAT for Argentina, that they named “Shared VAT” (SVAT). The federal tax rate levied on interstate sales - that authors denominate the “perception rate” - is calculated as a weighted average of provincial tax rates ruling during the corresponding fiscal year.

<sup>12</sup> A similar analytical treatment of Schenone’s paper is followed here, though the model differs from it in many important features. See Schenone, O. (1999).

<sup>13</sup> For the purpose of the analysis, the reference to “firms”, “sectors” or “activities” is the same or equivalent; from now on, it is used the term “sectors”.

<sup>14</sup> Simulations or cheating (fraud) that taxpayer can make by changing the true destination of sales.

<sup>15</sup> Actually, tax competition should not be a problem when tax systems avoid tax rate differentials treatment among sectors or activities. Ideas dealing with tax competition are discussed in point 6.

<sup>16</sup> Tax revenues are associated with the value of the product generated (produced) in the jurisdiction, while in the case of the destination VAT or in the retail sales tax, are associated with the consumer population.

<sup>17</sup> The “benefit principle” argument in favor of origin-based-VAT.

<sup>18</sup> The system demands vendors to inform the destination of their sales, because fiscal liabilities will be returned in compensation to the destination revenue service, which in turn recognizes the VAT paid in origin as fiscal credit. On the other hand, buyers should identify the state where their inputs were taxed and inform

to their revenue service (at destination), so their local government could know whom to claim the pertinent compensations.

<sup>19</sup> Actually, the main problem of the Origin VAT dealing with cross-border trade, resides in the treatment of exports and refunds in frontier. It should be contemplated the problem of goods remittances (without invoicing) among establishments belonging to the same firm residing in different jurisdictions and the acceptance of provinces to return fiscal credits to exporters although the tax has been paid in another province. In any case, the revenue service should establish the clearing system for compensations, so provinces where the effective payments of the tax were made should participate of such refunds, unless goods were exported from the same jurisdiction. The administrative complexities of such a clearing mechanism are obvious. Border adjustment turn to be administratively impossible to carry out, due to the different stages and jurisdictions where the intermediate goods are sold and taxed.

<sup>20</sup> On the topic see Genser, B., and Schultze, G. (1997).

<sup>21</sup> "Deferred - Payment" mechanism makes unnecessary compensations among jurisdictions. However, it generates a delay in collecting the tax revenue on imports, with a consequent financial cost for revenue services. A solution suggested by Poddar (1990), is that vendors tax interstate sales with the jurisdiction of destination tax rate; then pay the tax to their revenue service, which in turn would send revenues to the provinces of destination by a clearinghouse mechanism. However, this procedure would carry on higher costs of administration for revenue services and compliance costs for taxpayers that should consult information about tax laws belonging to others provinces. The other alternative is the one already analyzed in the "Modified" Origin VAT, where vendors charge sales to other jurisdictions with the tax rate of their own jurisdiction and buyers claim that amount as fiscal credit in their province of destination. As it was explained, this revenue service should be compensated through a clearinghouse mechanism.

<sup>22</sup> An alternative is to ask vendors to differentiate sales to local customers from sales to customers of others jurisdictions. The tax revenue from the latter should later be distributed to provinces according with real transactions or on the basis of independent estimates of consumption.

<sup>23</sup> Varsano, R. (1999) mentions the example of two famous cases of fraud in Brazil, in which massive sales of sugar and automobiles from São Paulo to Western Amazon were involved. The application of differential tax rates in the ICMS regulated by the federal government generated an incentive for "invoice sightseeing".

<sup>24</sup> This is the case of the VAT Information Exchange System operating in the EU since 1993. It consists in an on-line data information exchange system containing the registration of the tax codes emitted in each country member and the volumes of the community interstate sales. Actually, the Neumark Report had proposed a "**restricted origin VAT**" for the EU, that is, taxing sales sent outside community countries with zero tax rate (destination principle) and applying the origin principle for intrastate (intra-community) sales. This implied the necessity to equalize tax rates among country members. Difficulties to achieve this uniform tax rate induced to apply the destination deferred - payment VAT as "transitional regime".

<sup>25</sup> Cross-border shopping have caused fiscal problems in many places, like in Canada – USA border (due to Canadian tobacco taxation), in UK – France border (beer commerce), or in the Republic of Ireland - Northern Ireland border (spirits commerce).

<sup>26</sup> Silvani and Dos Santos (1996) have proposed a similar model.

<sup>27</sup> Though the existence of a National VAT is not necessary for the performance of the Partilhado Sub-national VAT, it is assumed a dual system with both governments levying the tax to make the case more realistic.

<sup>28</sup> In Piffano, H., 1999c there are numerical exercises of fraud simulation in the Sub-national Dual – Partilhado - Compensating VAT.

<sup>29</sup> IMF (2000). Dealing with refunds involving different jurisdictions (cross-border refunds), IMF review reports additional difficulties in the EU in case of border-cross services used as business inputs. When traders of one Member State have to claim funds from authorities of other member state, they face difficulties. Experts propose that refund claims should follow the *reverse charging* method (claims should be made to the jurisdiction in which the purchaser is registered rather than the jurisdiction of the supplier).

<sup>30</sup> Each province receives the revenue due to goods consumed within its jurisdiction and taxed with the corresponding own tax rate, plus its sharing in the common pool residual produced by interstate sales taxed by the federal-radial VAT.

<sup>31</sup> Taxpayers at destination should adjust the invoices of their purchases according to the respective origins, transferring them an additional cost of compliance, or, possibly, the federal revenue administration should try to make the pertinent corrections in the invoices at destination. A rather similar type of problem has been

already contemplated by experts in the intent of reducing the financial cost of the Destination Deferred – Payment VAT.

<sup>32</sup> McLure mentions the example of Alberta in Canada. At present, Alberta has no sale tax of any type.

<sup>33</sup> For simplicity we assume an equivalent relative weight in the weighted average tax rate for province A and province B.

<sup>34</sup> McLure suggests the distribution of this component using the CVAT rate for calculating the revenue obtain by each province, instead of the real revenue suggested by Varsano (see McLure, 2000).

<sup>35</sup> Like in the case of the CVAT, VIVAT's authors hope that rates will not differ considerably among countries or states members; at least they suggest that tax rates should not be higher than those registered in the Sales Tax of the USA. Of course this is not precisely the case of the VAT rates in EU states members.

<sup>36</sup> The analysis and discussion about Sales Tax and VAT solutions were important during the mid-nineties as a consequence of proposals on fundamental tax reform in the U.S.A., when the substitution of the federal income tax by the National Sales Tax or the Hall and Rabushka (1995) Flat Tax alternatives were presented. See Zodrow, G. R. and Mieszkowski, P. (2002) for a revision of the literature.

<sup>37</sup> Estimations for the sub-national RST in USA measure no less than 40% of the tax revenue coming from sales belonging to intermediate consumption (see Gale, W., 1998 and Gale, W. G. and Holtzblatt, J., 2002).

<sup>38</sup> In Argentina many vendors use to ask buyers if they need the invoice or not. Naturally, sale prices change with the answer. This is common in both intermediate and in final consumption. The Argentine revenue service (AFIP) makes constant publishing campaigns trying to convince final consumer to ask for the invoice in every purchase they make.

<sup>39</sup> In Argentina the federal revenue administration (AFIP) and some important provincial revenue services have very recently signed agreements for technological harmonization and data exchange procedures dealing with the national VAT and the provincial "Impuesto a los Ingresos Brutos" (Turn Over Tax). The PRST solution in this case is clearly recommendable.

<sup>40</sup> The Fiscal Affairs Department (FAD) of the IMF has recommended a similar solution for Brazil. FAD advised Brazil to replace the state ICMS with a national VAT supplemented by regional retail sales taxes (IMF Fiscal Affairs Department, 2000). This recommendation means a sharp change of the predominant opinion of some IMF and World Bank experts that in the late nineties have been supporting the idea of a Sub-national VAT, at the time we were suggesting the Federal VAT-Provincial RST solution (See Piffano, H., (1999a and 1999b).

<sup>41</sup> Theoretical explanation and empirical estimations for Argentina, can be found in Llach, J. and Llach, L. (2000) and in Llach, J., Flood, C. V de, Harriague, M., Llach, L. and Piffano, H. (2001).

<sup>42</sup> In Argentina, according to official data tax evasion were 45% in 1994 and 26/27% in 1997/98. International experience, studied by Silvani and Brondolo (IMF, 1993), indicates that Argentinean VAT has a low productivity index (0,33). Many countries have a better performance: Portugal (0,71), New Zealand (0,67), Israel (0,54), South Africa (0,52), Spain (0,52), and Chile (0,49). While others have similar performances: Uruguay (0,34), Mexico (0,30), and Bolivia (0,28). The case of Canada shows different estimations. In Silvani and Brondolo the coefficient is 0,32 a relatively low productivity index that contrasts with the measurement of Ebrill, et al. (2001), with a coefficient of 0.37. But since the dual VAT started in Canada in 1991, we can accept the argument that there is a relative little time experience for any final conclusion on its performance.

<sup>43</sup> Gale, W. (1998).

<sup>44</sup> General VAT rate in Argentina (21%) is relatively high according to the international experience. Three groups of countries have higher or similar rates. Nordic countries, with a strong socialist tradition, like Denmark (25%), Sweden (25%), Norway (23%), and Finland (22%). Some countries of the former Communist or Soviet block like Hungary (25%), Czech Republic (22%), Poland (22%), Croatia (22%), Ukraine (20%), and Russia Federation (20%). And the two Latin American countries – Mercosur partners - Uruguay (23%) and Brazil (with a consolidated tax rate between 20,48% and 21,95%). Countries with a strong federal tradition like Switzerland and other unitary countries like Japan, register tax rates relatively small (7,5% and 5%, respectively). The general average tax rate is 19,3%. Countries close to that average are those of Western Europe, Greece and Turkey. Latin America and the Caribbean countries register low general tax rates, lower of course than the average, with the exception of the three Mercosur countries.

<sup>45</sup> See McLure, C., (1997 and 1999), United States General Accounting Office (2000), Goolsbee, A. and Zittrain, J. (1999), and Bruce, D. and Fox, W. (2000 and 2001).

<sup>46</sup> In case of Argentina, for example, in spite of its large territory with 24 jurisdictions, 56% of the GDP is concentrated in only two jurisdictions (Province of Buenos Aires and Municipality of Buenos Aires City) and another 22% in three provinces located in the central part of the country (Córdoba, Santa Fe - both provinces bordering with Province of Buenos Aires - and Mendoza – bordering with Province of Córdoba -).

<sup>47</sup> See Hal R. Varian (2000) for the analysis of this issue.

<sup>48</sup> See Zodrow, G. and Mieszkowski, O. (1986), Wilson, J. D., (1986, 1999).

<sup>49</sup> On this aspect of fiscal harmonization see Piffano, H.L.P. y Porto, A. (1994).

<sup>50</sup> Sub-national public goods costs will always be hidden to citizens when all prices (on final and intermediate consumption) are affected by the combine dual VAT (federal and sub-national), with different tax rates in each jurisdiction. Interregional trade in the common market should necessarily be distorted by this different tax burden (incidence) on regional VAs. This tax burden on regional added values will not necessarily coincide with the nominal or legal tax rate structure due to the translation phenomenon. Finally, no matter whether liabilities and fiscal credits cancels or not from the accountable point o view, tax incidence will depend on the legal tax rate structure, the changing market conditions along the business cycle and the production / consumption chain and regional resources characteristics. Where, when, on whom individual welfare should have dual VAT burden be located? Who knows? Nobody knows! That's why VAT is the tax preferred by some politicians, apart from its revenue engrossing capacity. Wicksellian connection will be at least seriously weakened.

<sup>51</sup> For a survey on the issue see Oates, W., 1988.

<sup>52</sup> John Stuart Mill (1848) says: *"Perhaps...the money which [the tax payer] is required to pay directly out of his pocket is the only taxation which he is quite sure that he pays at all...If all taxes were direct, taxation would be much more perceived than at present; and there would be a security which now there is not, for economy in the public expenditure"*. Juan Bautista Alberdi (1954) also suggested this idea saying: *"...indirect taxation is the most abundant in fiscal revenue,..., superior in comparison to all other taxation...."*. It is the most easy because it is imperceptive its payment to taxpayer, that he usually does with the price he pays for the good he consumes. He (taxpayer) pays the tax in the price of the good he bought with pleasure, and naturally he pays it without the unpleasantness that causes any isolated (tax) payment...".

<sup>53</sup> Barnes, J. (2001) while commenting the "ideological underpinnings" of fundamental tax reform proposals, makes an interesting review of "leftwing" and "rightwing" arguments in favor of or against to consume-based taxation versus income taxation. Representatives from the rightwing position seem to rely too much on arguments such as "intrusiveness" and high rates of the Income Tax "that threaten individual freedom" (as Barnes quoted from Hall and Rabushka, 1985, on this later assertion). Surprisingly, rightwing supporters seem to ignore how Socialist and Unitarian is a consume-based tax like the VAT, where all population pay taxes without knowing whom to, where, when and why they are compelled to do so, due to the unknown tax incidence. On the other wind, leftwing supporters don't realize how difficult Income Tax could be to enlarge revenue collection for distributive policy objectives, particularly in a worldwide competitive scenario.

<sup>54</sup> IMF experts have estimated that 45% of VAT revenue forgone by equity considerations benefited the richest 30% and only 15% benefited to the poorest 30%. In Argentina, FIEL (1998) using Feldstein (1972) "distributive characteristic of goods", has estimated that 58% of VAT expenditure due to the some reduced tax rates (on meals and drugs) has benefited the upper 40% richest families. In Italy, Liberati, P. (2001) has estimated the distributional and welfare effect of two legislative changes in VAT in 1995 and 1997, that fulfilling the EU directive, reduced to three the number of tax rates. Using two approaches, the Feldstein distributive characteristic of goods, and the marginal dominance method (Mayshar and Yitzhaki (1995, 1996), demonstrated that a simpler "two tax rate" structure would have improved welfare even more. That is, a more proportional or uniform VAT is better for enhancing income redistribution objectives.

<sup>55</sup> See Ladd, H. F. (1998).

<sup>56</sup> IMF international VAT review (IMF, 2000) mentions the example of some Indian states that have also implemented sales tax systems with VAT characteristics. Also William Fox (2003) mentions two USA states cases, Michigan and New Hampshire, levying variants of an origin-based VAT as part of their business tax structure.

<sup>57</sup> See Zodrow, G. and Mieczkowski, P. (Editors), 2002. Papers of Zodrow and Mieczkowski, Jane Gravelle, William Gale and Janet Holtzblatt, for example, suggest that the improvement in tax structure pursued by fundamental tax reform proposals could be made within the existing income tax law.

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