DISCUSSION PAPER

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THE ARGENTINEAN EXPERIENCE WITH THE VALUE-ADDED TAX

By

Osvaldo Horacio Schenone
Centro de Estudios Macroeconomicos de Argentina

February 1987

Development Research Department
Economics and Research Staff
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Abstract

This paper outlines the experience of Argentina after it introduced the (income-type) VAT in 1974. It evaluates the effectiveness of the VAT as a device for promoting sectoral and regional development: the exempted agricultural sector and the favored Catamarca region are used as examples of Argentina's efforts to use the VAT as a selective promotion instrument. The paper attempts to analyse the effects of excluded sectors within a formal model of tax incidence. The author concludes that the VAT (with excluded sectors) has proved ineffective as a device for promoting sectoral efficiency. This paper was prepared for the Conference on Value-Added Taxation in Developing Countries, sponsored by the Public Economics Division, Development Research Department, the World Bank.
**THE ARGENTINEAN EXPERIENCE WITH THE VALUE ADDED TAX**

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THE ARGENTINEAN EXPERIENCE WITH THE VALUE ADDED TAX

1. Background and History

The Value Added Tax (VAT) in Argentina is an income-type VAT imposed on the destination principle. The tax extends through the retail level. It was adopted in 1974 to replace a sales tax which had been adopted in the mid-thirties at a rate of 1.25%. The rate was subsequently raised to 10%. There were higher rates on durable goods (up to 20%) and also lower rates (i.e. 3%) for certain goods of mass consumption. The sales tax fell on manufactures only, while agriculture, wholesale and retail trade were exempted. After 1969 construction and certain services also became subject to the sales tax.

The sales tax base was given by the value of sales minus the value of inputs physically embodied in the goods being sold. Only in 1970 was a deduction of 25% of capital invested allowed. This deduction increased to 50% in 1971.

In 1968 the Argentinean government took the first steps to examine the advantages and pitfalls of the VAT. A team of experts was sent to Europe to collect practical experience on the implementation of the tax. France, Netherlands, Germany and Denmark were visited and interviews were held with four groups of people in each country; namely 1) Public officials in tax administration bureaus; 2) Independent economists as well as economists in public sector; 3) Entrepreneurs, individually and as members of the Chambers of Commerce, Industry or Agriculture as the case may be; 4) Private tax consultants.
The Argentinean team of experts found diverse opinions on the desirability of adopting the VAT. The main recommendations of this team were that the adoption of VAT, as a substitute for the sales tax, would be an improvement in the tax system. Nonetheless there were, according to this team's report, more urgent measures to be taken to improve the overall tax system, such as changes in the income tax structure. Also, some reservations were expressed concerning both the administrative cost of adopting the system and the potential loss of revenue during the transition from the sales tax to the VAT.

This reluctance to undertake a drastic change, and the concern with the revenue loss of the transition, may explain why the adoption of the VAT proceeded gradually. Indeed the VAT itself resembled the previous sales tax during its early years. Almost three fourths of the VAT revenue in 1975 was collected from the manufacturing sector, which had been the main taxed sector under the sales tax.

Nonetheless, the share of VAT in total tax revenue and in GDP has been substantially higher than was ever the case for the sales tax, particularly since the early stages of VAT implementation; i.e., since 1975, as shown in table 2.

Since the purpose of the adoption of VAT was to replace the sales tax, which was not itself the main component of the tax system, it is hardly surprising to find that the VAT has never amounted to more than 25% of total revenue, excluding social security contributions (or around 15% if social
security contributions are included in total revenue)/. More recently VAT collections amounted to 18.9% of total revenue (excluding social security contributions) in 1985 and is expected to rise to 19.8% in the 1986 Budget approved by the Parliament.

Table 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Registered Tax Payers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974 (Sales Tax)</td>
<td>180,992</td>
</tr>
<tr>
<td>75 (VAT Starts)</td>
<td>262,498</td>
</tr>
<tr>
<td>76</td>
<td>305,649</td>
</tr>
<tr>
<td>77</td>
<td>353,982</td>
</tr>
<tr>
<td>78</td>
<td>387,755</td>
</tr>
<tr>
<td>79</td>
<td>434,189</td>
</tr>
<tr>
<td>1980</td>
<td>824,638</td>
</tr>
<tr>
<td>81</td>
<td>922,274</td>
</tr>
<tr>
<td>82</td>
<td>974,475</td>
</tr>
</tbody>
</table>

Source: Direccion General Impositiva.

One reason for the stronger revenue performance of the VAT, relative to the tax it replaced, was the inclusion of a significantly larger number of firms in the indirect tax base under the VAT. By 1977, two years after implementation, the number of firms registered for VAT was double that of the old tax (See Table 2).

Notice that the sharpest increase in the number of registered tax payers occurs in 1980, when a tax reform replaced 23 small taxes (the most important of which was a payroll tax) by a widening of the VAT base, i.e., the inclusion of (a) Mining; (b) Electricity, Gas and Potable Water and (c) Communications, Transport and Storage in the tax base.
The VAT rate was set in 1974 at 16%, which was changed to 20% in 1980 (except for foodstuffs and pharmaceuticals which were subject to a 10% rate). A variety of other small exceptions are included or deleted almost every year). The Sales Tax and VAT revenues as percentages of GDP are given in Table 2.

Table 2: SALES TAX AND VAT REVENUE AS A PERCENTAGE OF TOTAL TAX REVENUE AND GDP

<table>
<thead>
<tr>
<th>YEAR</th>
<th>SALES TAX</th>
<th>VAT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revenue (%)</td>
<td>Percent of GDP</td>
</tr>
<tr>
<td>1966</td>
<td>19.3</td>
<td>2.3</td>
</tr>
<tr>
<td>67</td>
<td>14.2</td>
<td>1.9</td>
</tr>
<tr>
<td>68</td>
<td>14.4</td>
<td>2.0</td>
</tr>
<tr>
<td>69</td>
<td>14.3</td>
<td>1.9</td>
</tr>
<tr>
<td>70</td>
<td>12.8</td>
<td>1.7</td>
</tr>
<tr>
<td>71</td>
<td>14.6</td>
<td>1.7</td>
</tr>
<tr>
<td>72</td>
<td>13.0</td>
<td>1.4</td>
</tr>
<tr>
<td>73</td>
<td>10.7</td>
<td>1.2</td>
</tr>
<tr>
<td>74</td>
<td>11.9</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Direccion General Impositiva, and Secretaria de Hacienda, Ministerio de Economía.

One striking feature of Table 2 is that indirect tax revenue did not change much after the VAT replaced the sales tax: in 1976 the VAT revenue as a percentage of GDP equaled that of the sales tax in 1966; it was only after 1980, when the VAT coverage was substantially improved, that the revenue as a percentage of GDP rose, although it fell again in 1983 and 1984.
Leaving aside the issue of evasion due to lack of data, we will turn next to a discussion of the VAT base in Argentina.

II. The VAT Base

1. Tax Treatment of Exports and Imports

In Argentina, as in many other countries, the VAT base differs from GDP mainly because exports are exempted from the tax and imports are taxed. Thus, the tax base becomes Gross Domestic Expenditure, GDE. Although the tax base is no longer value added in the economy, neutral treatment of tradeable and non-tradeable goods is preserved by taxing imports and exempting exports. This can be seen by considering an economy with fixed exchange rate and downward inflexible factor prices. In such a case the imposition of a VAT at rate t% must yield a t% increase in the general price level.\(^\text{1}\) If exports were taxed and imports were exempted (i.e., if the tax base were precisely the value added of the economy), the relative price of tradable goods would fall vis-a-vis non-tradables. To avoid such a tax-induced distortion in relative prices, exports should be exempted from the VAT and imports should be subject to the VAT. By doing so all nominal prices will increase by t% and relative prices will remain undistorted, *ceteris paribus*, and the tax base will not be value added but domestic expenditure (consumption plus investment).

On the other hand, if factor prices are fully flexible and/or the economy is under a free floating exchange rate, then VAT effects on relative prices of tradeables and non-tradeables does not depend on whether imports are taxed and exports exempted or vice versa; i.e., does not depend on whether the tax base is value added or domestic expenditure of the economy. Three cases, then, arise in which the VAT treatment of imports and exports do not alter the neutrality of the tax: (1) the exchange rate and factor prices are flexible;
(2) the exchange rate is flexible and factor prices are not and (3) the exchange rate is fixed and factor prices are flexible. As an illustration, let us consider one of them; namely the case of inflexibility of factor prices and floating exchange rate. If a VAT is imposed, under which imports are taxed and exports are exempted, their prices rise pari passu with the price of nontradables, leaving all relative prices unaltered. If imports are exempted and exports are subject to the VAT, there will be a tendency to increase imports and decrease exports. This will increase the exchange rate until equilibrium is restored at the original relative prices of tradables with respect to non-tradables. The allocation of resources does not change regardless of the VAT treatment of exports and imports. This result holds if either the exchange rate or factor prices (or both) are freely flexible. If both are fixed, then the VAT will be neutral with respect to the allocation of resources if exports are exempted and imports are subject to the tax.\(^3\)

Thus the tax treatment of exports and imports and the issue of whether the tax base is GDE or the value added, is not a source of tax-induced distortions in relative prices and resource allocation in Argentina. The imperfections of the VAT in Argentina are not related to the external sector. The imperfections arise from (a) the type of VAT adopted, (b) the use of VAT exemptions to achieve objectives of regional or sectoral promotion and (c) the exclusion of certain sectors from the system.

2. The Type of VAT

The consumption-type VAT is the variety in use throughout Europe. In Argentina, on the other hand, the income-type VAT was adopted, subject to the qualification that true economic depreciation is not allowed, and a legal rate
of depreciation of 20% was established in 1974 (changed to 33% in 1983). It has been stressed in the literature that the income-type VAT discriminates against capital accumulation and in favor of present consumption, unless the supply of savings has zero interest elasticity. This discrimination is due to the fact that, under an income-type VAT, investors are induced to make their decisions based on a private rate of return which is lower than the social rate of return.

The consumption-type VAT, on the other hand, does not create such a distortion for it allows instantaneous depreciation of capital equipment. In equilibrium the price of a capital good equals the present value of the expected flow of income from the good; therefore it is this flow which would be free of tax under a consumption-type VAT. In particular, such a VAT does not exempt the income from capital over and above the level of income whose present value equals the price of capital goods. In other words pure profits, in the sense of Frank Knight, are not exempt by definition.

There exists a concern that a consumption-type VAT might be a regressive tax, on the grounds that consumption expenditures represent a higher proportion of income for poor families than for richer families. Sometimes a two-period numerical example is provided to illustrate this view: consider Mr. Rich with an income of $1000 and Mr. Poor with an income of $100. In the first period, Mr. Poor does not save after satisfying his most essential needs at a cost (net of taxes) of $80 with a consumption-type VAT rate of 25%. Mr. Rich, on the other hand, indulges himself in consumption of $400, paying taxes of $100 and saving $500. Therefore, in the first period, Mr. Poor contributed 20% of his income as taxes while Mr. Rich only contributed 10%, hence the consumption tax is said to be regressive.
The problem with the preceding argument is that it is incomplete, for it ignores what happens in the future: Assume these individuals live only two periods with the same incomes each period; Mr. Rich will consume $1200 in the second period (assuming a zero interest rate, for simplicity) being subject to a tax of $300 which exhausts both his savings and his second year income. Such a tax burden represents 30% of his income in the corresponding year, while Mr. Poor will again contribute 20% of his second year income as taxes. Over their lifetimes they both contributed 20% of their respective incomes as taxes, hence the consumption tax is not regressive but proportional, when it is properly considered from a lifetime perspective.\[4

3. **Regional and Sectoral Promotion**

VAT exemptions are common in Argentina and are of two different types. First there are what could be called "false" exemptions. These are granted on the grounds that the "exempted" value added will be taxed in a subsequent stage of production where collection will be easier and cheaper. Not only does this procedure not exempt anything, but it also generates additional tax liability because the "exempted" tax payer cannot claim any fiscal credit for the VAT embodied in his inputs' prices.

The second type may be called a true exemption (also called zero-rated status). These are granted to exports and some other activities. These are "true" exemptions in the sense that those activities (1) do get a fiscal credit on their input's VAT and (2) include the VAT in their invoices but do not pay it to the Treasury, in such a way to enable their customers, in turn, to claim a fiscal credit for a tax which did never reach the Treasury but was privately collected by the promoted activity.
Besides exports, for which there exists a justification on efficiency grounds, other activities are zero-rated without such a clear justification. These are activities located in poor regions of the country or activities deemed specially desirable for non-economic reasons. Unfortunately, the information on the number of zero-rated status granted every year or the fiscal cost to the Treasury is scarce and not updated, so that a quantitative analysis of the phenomenon cannot be done.

It is, however, clear upon a qualitative analysis that these privileges create incentives to waste resources in unproductive investments, without even benefiting the poor regions of the country which presumably was the purpose of the VAT exemption. The incentives to undertake unproductive investments are very clear, since the VAT exemption might make such an investment look attractive despite its low productivity. The failure of the VAT exemption to achieve the regional development objective requires a little more explanation: this exemption is granted to firms which locate in certain provinces, say Catamarca. These firms would buy a product from another firm, say in Buenos Aires, in a transaction subject to VAT. Once the goods are in Catamarca, the local firm (which may, and usually does, belong to the firm in Buenos Aires) would sell the goods (probably in Buenos Aires or nearby), subject to zero rate VAT and claim a fiscal credit for the VAT which was billed on its purchases ... which is precisely the VAT paid by the firm in Buenos Aires. If these two firms are really one and the same, then it ends up paying no VAT, the firm in Catamarca may exist only in paper, and the goods may never be shipped further than from one warehouse to another (probably, within Buenos Aires), with no benefits whatsoever to the poor inhabitants of Catamarca.
The fragments of available information suggest that these exemptions reached modest values during 1975/79. A study by Alejandro Aguirre /5 shows that these exemptions amounted to around 2.5% of the VAT revenue, more than 80% of which accrued to industrial manufactures (Sector 3) in 1978 and 1979, as shown in Table 3.

### TABLE 3: VALUE OF VAT EXEMPTIONS GRANTED AS PERCENT OF VAT REVENUE

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Exemptions/Revenue (%)</th>
<th>Exemptions granted to Sector 3 (%)</th>
<th>Other Sectors (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>2.38</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1976</td>
<td>2.51</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1977</td>
<td>2.34</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1978</td>
<td>2.82</td>
<td>2.44</td>
<td>0.38</td>
</tr>
<tr>
<td>1979</td>
<td>2.31</td>
<td>1.85</td>
<td>0.46</td>
</tr>
</tbody>
</table>

Source: A. Aguirre, op. cit.

These figures severely underestimate the value of exemptions. The information comes from firms which produced both exempted and taxed goods; while firms producing only exempted goods do not even submit a VAT statement, so that the value of exemptions to those firms remain unknown, hence not reported in Table 3.

4. Excluded Sectors
   a) A Model of VAT with Excluded Sectors

   The exclusion of certain sectors from the VAT system generates an implicit tax, over and above the VAT itself, on their purchases from other...
firms in the VAT system. In practice, the VAT liability is calculated as the difference between the so-called "fiscal debit" (which is equal to the tax rate times the value of the good or service sold) and the "fiscal credit", which is equal to the tax already included in the price of the inputs in the production of those goods and services. Notice that any inputs that do not generate a fiscal credit (i.e., exempted inputs) are treated as value added for VAT purposes.

Argentina is an example of a common application of this rule. The VAT system in Argentina until May 1983 excluded the agricultural sector; that is, its sales to sectors within the VAT system were exempt and its purchases of taxed inputs did not generate a fiscal credit. This meant that the use of agricultural products as inputs by other sectors would not generate a fiscal credit for those sectors; i.e., inputs of agricultural origin would be treated, for VAT purposes, as value added of the sector that use those inputs. Thus, the exemption of the agricultural sector implied that the value of its sales to the industrial sector (a fortiori, the value added in those sales) were taxed exactly as industrial value added. On the other hand, agricultural sector's sales to final consumers were subject to the VAT.

From the viewpoint of tax neutrality with respect to resource allocation, it is correct that the agricultural value added turns out to be taxed (as all value added in the economy), but the lack of fiscal credit for the purchases of taxed inputs by the agricultural sector was a distortion that violated the neutrality of the tax.

A rule-of-thumb deduction to try to overcome this pitfall in the implementation of the VAT consisted of granting the users of agricultural products a so called "presumptive fiscal credit" on the value of their
purchases of agricultural goods at a rate normally equal to a fraction of the VAT rate. In the case of Argentina the users of agricultural products were allowed to deduct from their VAT liability 4% of the total value of those purchases.

The model presented in the Annex to this paper allows us to analyze the effects on resource allocation of these features of the value added tax in Argentina. The results of the model show that the lack of fiscal credit for the purchases of taxed inputs by the agricultural sector has the following consequences:

1. Raises the relative price of agricultural goods.
2. From the viewpoint of agricultural producers, however, the relative price of their output falls vis a vis industrial inputs.
3. Reduces the quantity demanded of agricultural goods by final consumers and increases the quantity demanded of industrial goods by final consumers.
4. As a consequence of (1), the intensity of agricultural goods in industrial production falls.
5. As a consequence of (2), the intensity of industrial goods in agricultural production falls.
6. As this distortion generates substitution and scale effects of opposite signs, the net effect on the absolute quantity of agricultural (industrial) goods used in the production of industrial (agricultural) goods is indeterminate.

The lack of fiscal credit for the taxed inputs bought by the agricultural sector is actually an implicit tax on these inputs used by that
sector. In practice, an attempt is made to compensate this distortion with the so-called presumptive fiscal credit described earlier.

Nonetheless, the effect on resource allocation persists: the presumptive fiscal credit is just a subsidy on agricultural production sold to industry, which cannot neutralize the implicit tax on industrial inputs bought by agriculture.

b) The Evidence.

Ideally, under a perfect VAT system, the share of the i\(^{th}\) sector in GDP, \(g_i\), should be equal to the sector's share in VAT revenue, \(v_i\). In practice, however, this may not be the case for several reasons. One reason is differential evasion across sectors; another is the existence of so-called false exemptions or excluded sectors. According to the previous section, a sector \(i\) with a \(v_i\) substantially lower than \(g_i\) is likely to be a sector which ends up paying the VAT (unless it sells to final consumers only) and not getting a credit for the tax included in its inputs' prices. On the other hand, a sector \(j\) with \(g_j < v_j\) is likely to be a sector whose tax base for VAT purposes includes the purchases from excluded sectors as well as its own value added. Of course, this does not mean that sector \(j\) is more heavily taxed than other sectors; it only performs as a tax collector on the excluded sectors whom it buys its inputs, in addition to paying its own VAT.

In the case of Argentina evidence could be found for the period 1975 to 1981, for the nine sectors of the national accounts. This information is compiled in Table 5. While the share of agriculture in GDE remains around 9\%, its share in VAT revenue never reached above half of 1\%. Except for the sales to final consumers (a small fraction of total production) and exports (which are truly exempted (zero-rated) and account for about a third of the sector's
Table 4: SECTOR SHARES IN VAT REVENUE AND GDE

<table>
<thead>
<tr>
<th>Year</th>
<th>Sector 1 (+)</th>
<th>Sector 2 (+)</th>
<th>Sector 3 (+)</th>
<th>Sector 4 (+)</th>
<th>Sector 5 (+)</th>
<th>Sector 6 (+)</th>
<th>Sector 7 (+)</th>
<th>Sector 8 (+)</th>
<th>Sector 9 (+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>8.9</td>
<td>0.1</td>
<td>2.1</td>
<td>0.3</td>
<td>34.0</td>
<td>74.6</td>
<td>2.8</td>
<td>0.5</td>
<td>14.4</td>
</tr>
<tr>
<td>1976</td>
<td>9.7</td>
<td>0</td>
<td>2.3</td>
<td>0.7</td>
<td>30.8</td>
<td>69.6</td>
<td>3.1</td>
<td>0.2</td>
<td>6.8</td>
</tr>
<tr>
<td>1977</td>
<td>8.3</td>
<td>0.1</td>
<td>2.3</td>
<td>0.8</td>
<td>30.9</td>
<td>65.4</td>
<td>3.1</td>
<td>0.1</td>
<td>7.3</td>
</tr>
<tr>
<td>1978</td>
<td>8.7</td>
<td>0</td>
<td>2.5</td>
<td>0.8</td>
<td>27.6</td>
<td>66.8</td>
<td>3.4</td>
<td>0.2</td>
<td>7.6</td>
</tr>
<tr>
<td>1979</td>
<td>7.8</td>
<td>0.2</td>
<td>2.4</td>
<td>1.0</td>
<td>29.7</td>
<td>66.4</td>
<td>3.3</td>
<td>0.2</td>
<td>7.2</td>
</tr>
<tr>
<td>1980</td>
<td>7.3</td>
<td>0.2</td>
<td>2.4</td>
<td>2.4</td>
<td>32.5</td>
<td>59.6</td>
<td>3.4</td>
<td>3.6</td>
<td>7.5</td>
</tr>
<tr>
<td>1981</td>
<td>7.5</td>
<td>0.4</td>
<td>2.6</td>
<td>3.6</td>
<td>28.6</td>
<td>46.4</td>
<td>3.7</td>
<td>11.5</td>
<td>7.8</td>
</tr>
</tbody>
</table>

Note: Sector 1: Agriculture, Hunting, Fishing and Forestry
      Sector 2: Mining
      Sector 3: Manufactures
      Sector 4: Electricity, Gas and Potable Water
      Sector 5: Construction
      Sector 6: Wholesale and Retail Trade
      Sector 7: Communication, Transport and Storage
      Sector 8: Insurance, Banking and Professional Services
      Sector 9: Other Services

Source: (*): Dirección General Impositiva, unpublished data.
production), the value added of agriculture gets taxed at the next stage in the production process while the inputs of the sector do not generate any fiscal credit. At the other end of the spectre we find the manufacturing sector whose share in GDE, $g_3$, has been around 30% during the period, while its share in VAT REVENUE, $V_3$, started off at about 75% in 1975 and declined steadily to about 46% in 1981. That is to say, the manufacturing sector reduced its tax collector performance on other sector's value added as these sectors were gradually included in the VAT system. The sectors gradually included in the system are mining, electricity, gas and potable water and communications, transport and storage after 1979.

Another sector which performed as a tax collector on other sector's value added was wholesale and retail trade: $g_6 < v_6$ for every year between 1975/1981.

The fact that $v_3 + v_6 = 90.5\%$ in 1975 means that sector 3 and 6 (manufactures and trade, respectively) collected VAT for almost all sectors in 1975, creating the already mentioned lack of fiscal credits to all other sectors whose $v_i < g_i$. This situation improved over time, mainly due to the 1980 reform which included most sectors in the VAT system. The main distortion still evident in 1981 arose from the exclusion of sectors 1, 8 and 9 (agriculture et al., financial institutions and other services, respectively). Sector 2 and 4 (mining and electricity, gas and potable water) joined sectors 3 and 6 in 1980 as the sectors with $v_i > g_i$; that is, the responsibility of these four sectors for collection VAT for other sectors began to fall after the 1980 reform (see Table 5).
Table 5: SELECTED SECTOR’S SHARES IN VAT REVENUE AND IN GDE AFTER THE 1980 REFORM

<table>
<thead>
<tr>
<th>Year</th>
<th>( v_2 + v_3 + v_4 + v_6 )</th>
<th>( s_2 + s_3 + s_4 + s_6 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>86.0%</td>
<td>52.1%</td>
</tr>
<tr>
<td>1981</td>
<td>83.9%</td>
<td>48.5%</td>
</tr>
</tbody>
</table>

SOURCE: Table 4.

In May 1983 there was a significant change whose effects cannot yet be ascertained due to lack of data: Sector 1 (Agriculture) was included in the VAT system by virtue of Law 22817 of that year. This was, however, done in a very peculiar fashion: agricultural producers can claim the VAT fiscal credit only against the income tax and/or capital tax liability. Of course, an agricultural producer who does not make any taxable income in a particular year could not get the VAT fiscal credit corresponding to that year’s purchases. There is, obviously, no justification for such a procedure; purchases subject to VAT should give rise to a fiscal credit regardless of the profit result of the operation. This is unfortunately not the only flaw in Law 22817: its validity expires on December 31, 1986; after that date the agricultural sector will presumably be again excluded of the VAT system.

The 1980 reform, which consisted of including most sectors in the VAT system, was proposed as a substitute for 23 small taxes (the most important of which was a payroll tax) which were lifted at that time. The revenue from these taxes was approximately equal to the VAT revenue, so that in order to keep overall revenue constant the reform should have doubled VAT revenue. As
shown in Table 2 that was not the case and most of these taxes, including the payroll tax, were imposed again during 1983 and 1984.

III. Concluding Remarks

The VAT in Argentina has not been a successful source of revenue. Except for 1980/82 VAT revenue did not rise above 3% of GDP and remained substantially below that level most of the time. This is just modestly better than the revenue performance of the sales which raised revenues of 1.5% to 2% of GDP. Although the available evidence is not enough to pin the blame on exemptions for sectoral and regional promotion, they are likely to explain, at least partially, the poor revenue performance of VAT in Argentina. Another leading candidate to explain this phenomenon would be evasion, on which very little is currently known.

On the effects upon allocative efficiency, two points ought to be stressed: First, the VAT in Argentina is of the income-type variety, hence the consumption-saving choice is likely to be distorted; and second, the existence of sectors outside the VAT system is likely to undermine the neutrality of the tax with respect to the allocation of resources.

A change towards a consumption type VAT with a perfectly general coverage would promote efficiency from the viewpoint of both capital accumulation and the composition of current consumption. Other changes needed to improve the VAT in Argentina consist of (a) abstaining from using it as an instrument for sectoral or regional promotion, and (b) making the legislation more stable by preventing frequent and unpredictable changes in the base or the rate of the tax.
1. These are approximately the same percentages observed in Italy. See paper by A. Pedone in H. Aaron (Ed.).

2. With a fixed exchange rate, the nominal quantity of money will automatically adjust, via changes in Central Bank reserves, to restore equilibrium in the money market.


ANNEX

A MODEL OF VAT WITH EXCLUDED SECTORS

The model assumes a closed economy with two sectors, agriculture and industry, that have linearly homogeneous production functions. The agricultural sector uses two inputs: (1) Goods produced by the industrial sector, $I_A$, and (2) a composite input (in the sense of Hicks*) which generates the agricultural value added. (It comprises the primary factors land, labor and capital). The industrial sector uses an input that is produced by the agricultural sector, $A_I$, and the composite input mentioned above. Let $V_A$ denote the quantity of the composite input used by the agricultural sector and $V_I$ denote the quantity used by the industrial sector. The model assumes that this input is perfectly mobile between sectors and that the total supply is perfectly inelastic.

We can write:

\begin{align*}
I &= g(V_I, A_I) \quad (1) \\
A &= f(V_A, I_A) \quad (2) \\
V_I + V_A &= V, \quad (3)
\end{align*}

where $g$ and $f$ denote the production functions of industrial goods, $I$, and agricultural goods, $A$, respectively.
To describe the equilibrium of the consumers we select the market of agricultural goods* and assume that the quantity supplied, net of sales to the industrial sector, \( A_I \), equals the quantity demanded, \( D \), which is a function of the relative price of industrial goods relative to agricultural goods, \( p \).

That is**:

\[
 f(V_A, I_A) - A_I = (Dp), \quad dD/dp > 0. \quad (4)
\]

Equilibrium in the factor markets using agricultural goods as the numeraire requires:

\[
p \ g_V(V_A / A_I) = E_V(V_A / A_I), \quad (5)
\]

\[
p \ g_A(V_A / A_I) = 1, \quad (6)
\]

\[
f_I(V_A / I_A) = p, \quad (7)
\]

where the subscripts \( V, A \) and \( I \) in the functions \( g \) and \( f \) denote the variable with respect to which the first derivative of the functions has been calculated.

Let \( w_I = V_I / A_I \) and \( w_A = V_A / I_A \). From equation (7) we can rewrite equations (5), (6) and (4) respectively as:

\[
f_I(w_A) \ g_V(w_I) = f_V(w_A), \quad (8)
\]

* The choice of either market is irrelevant. If one market is in equilibrium, the other must also be in equilibrium.

** For simplicity, we ignore income effects on demand by making the assumption that the fiscal revenue is spent in exactly the same composition of goods in which the private sector would have spent it.
Equations (8), (9) and (10) depend on three variables only, \( w_A, w_I \) and \( A_1 \).

Equations (8) and (9) can be represented in the space \((w_A, w_I)\): Let us calculate \( dw_A/dw_I \) from equations (8) and (9) respectively:

\[
\left(\frac{dw_A}{dw_I}\right)(8) = -f_I g_{Vw}/\left(f_I w g_V - f_V w\right) > 0,
\]

\[
\left(\frac{dw_A}{dw_I}\right)(9) = -f_I g_{Aw}/\left(f_I w g_A\right) < 0.
\]

These results allow us to draw Figure 1 which shows the equilibrium conditions of factor markets in the model.

The equilibrium value of factor intensity in the agricultural sector, \( w^*_A \), determines the relative prices of the goods in the model through equation (7), hence the quantity demanded \( D \). This is depicted in Figure 2.

Equilibrium in the goods markets require:

\[
D^0 = D(f_I(w^*_A)) = M(A_I, w^*_I, w^*_A, V)
\]

Where:

\[
\frac{\partial f_I}{\partial w_A} = f_I w > 0, \quad \frac{\partial g_V}{\partial w_I} = g_{Vw} < 0, \quad \frac{\partial f_V}{\partial w_A} = f_V w < 0, \quad \text{and} \quad \frac{\partial g_A}{\partial w_I} = g_{Aw} > 0.
\]
Figure 1.

Equation (9)
Figure 3.

Figure 4.
Equation (11) allows us to determine $A_1$, which completes the solution of the model. This result can be seen in Figure 3, which is drawn by calculating $\frac{\partial H}{\partial A_1}$:

$$\frac{\partial H}{\partial A_1} = \left( f - A_1 + f \frac{V}{V_A} \right) / A_1 < 0.$$ 

Let $t$ be the rate of the VAT, expressed as a percentage of the gross price*. A general VAT at a uniform rate can be built into the model simply by multiplying each side of equation (5) by $(1-t)$, because the value added in all sectors will get paid out of the price net of tax, which is $t\%$ less than the price that consumers pay in the market. Obviously, the values of the variables that satisfy equation (5) will remain unaffected. Moreover, a generalized VAT provides fiscal credit for all intersectoral transactions in the economy; therefore, a generalized VAT will not show up in equations (6) and (7). Thus, the system of equilibrium equations (8), (9) and (10) will not be affected by a generalized VAT and consequently, such a tax is neutral: the equilibrium values of the variables, hence the allocation of resources, will be the same as those without the tax.

This result does not hold when the tax does not provide fiscal credit for all purchases of taxed inputs by all sectors. Thus, the lack of fiscal credit for the purchases of taxed inputs by agriculture, say in Argentina, makes $I_A$ is not actually value added. This constitutes an additional tax, over and above the VAT itself. Consequently, equation (7) becomes,

* That is, as a percentage of the price that includes the tax. Alternatively we can define $T$ as the rate of the VAT expressed as a percentage of the net price. Obviously, $1+T=1(1-t)$. The choice between the use of $t$ or $T$ does not affect the results and we adopt $t$ to simplify the algebra.
(1-t) f_I(w_A) = p.

The equilibrium conditions, equations (8), (9) and (10), become respectively,

\[ (1-t) f_i(w_A) g_V(w_i) = f_V(w_A), \quad (12) \]

\[ (1-t) f_I(w_A) g_A(w_I) = 1, \quad (13) \]

\[ f(V_A, I_A) - A = D((1-t) f_I(w_A)). \quad (14) \]

To see the effects of this distortion on the equilibrium values of our variables, we calculate dw_A/dt in the equilibrium conditions: From equation (12),

\[ \frac{dw_A}{dt} (12) = \frac{f_I g_V}{g_V f_I w (1-t) - f_V w} > 0. \]

From equation (13):

\[ \frac{dw_A}{dt} (13) = \frac{f_I}{f_I w (1-t)} > 0. \]

Notice, furthermore, that,

\[ \frac{dw_A}{dt} (12) < \frac{dw_A}{dt} (13) \]

These results indicate that to preserve the equilibrium in the input markets, in the presence of a VAT system such as the one considered here, the
factor intensities in both sectors, \( w_A \) and \( w_I \), have to rise. The interpretation of this result is as follows: Increases in \( t \) require, to restore equilibrium in the input markets, increases in \( w_A \), hence in \( f_I \), and a fall in \( p \) which reduces the quantity demanded of agricultural goods.

Finally, let us consider the effects of the lack of fiscal credit for the purchases of taxed inputs by the agricultural sector on the quantity of inputs from that sector demanded by industry, \( A_I \). As the relative price of agricultural goods will have to rise, there will be a negative substitution effect on the quantity demanded of \( A_I \). There will also be a positive scale effect, due to the increase in the quantity demanded of industrial goods by final consumers. The net effect on the quantity demanded of \( A_I \) is, therefore, indeterminate. This can be seen in Figure 6.

To summarize, the lack of fiscal credit for the purchases of taxed inputs by the agricultural sector has the following consequences:

1) Rises the relative price of agricultural goods.
2) From the viewpoint of agricultural producers, however, the relative price of their output falls *vis-a-vis* industrial inputs.
3) Reduces the quantity demanded of agricultural goods by final consumers and increases the quantity demanded of industrial goods by final consumers.
4) As a consequence of (1), the intensity of agricultural goods in industrial production falls.
5) As a consequence of (2), the intensity of industrial goods in agricultural production falls.
Figure 5.
Figure 6.

Equation (16), for $s^0$. 

Equation (15), for $s^0$. 

Equation (15), for $s^0$. 

Figure 7.
6) As this distortion generates substitution and scale effects of opposite signs, the net effect on the absolute quantity of agricultural (industrial) goods used in the production of industrial (agricultural) goods is indeterminate.

The presumptive fiscal credit subsidizes \( A_1 \) independently of the use of industrial inputs: it is not selective in favour of those inputs whose use is distorted and which the presumptive fiscal credit was supposed to correct.

Let \( s \) be the rate of the presumptive fiscal credit. Given the purpose of the presumptive fiscal credit, we can assume that \( s \) is a certain fraction of \( t \); that is,

\[
t = ks,
\]

where \( k \) is a constant greater than one.

Thus, the equilibrium conditions become:

\[
(1-ks) f_A(w_A) g(v_I) = f_v(w_A), \quad (15)
\]

\[
\frac{(1-ks)}{(1-s)} f_A(w_A) g_A(w_I) = 1 \quad (16)
\]

\[
f(V_A, l_A) - A_1 = D((1-ks) f_A(w_A)). \quad (17)
\]

In equilibrium \( w_A \) must rise unequivocally as a consequence of the imposition of \( t \) and \( s \), but \( w_I \) can rise, fall or remain constant: the subsidy on \( A_1 \) can reverse the incentive (previously discussed) for industry to become intensive in \( V_I \). Naturally, such a subsidy does not reduce the
incentive for agriculture to become more intensive in $V_A$ as a consequence of the lack of fiscal credit for its taxed inputs, $I_A$: consequently, $w_A$ rises unambiguously, as shown in Figure 7.

In equilibrium, the quantity demanded of agricultural goods by final consumers falls as a consequence of simultaneous increases in $t$ and $s$. This result is depicted in Figure 8 and its interpretation is very simple: The reduction in $p$ needed to restore equilibrium in the input markets, reduces the quantity demanded of agricultural goods by final consumers independently of the subsidy on $A_I$, because such a subsidy does not apply to sales to final consumers.
Figure 8.

Equation (17), for $s^1 \rightarrow s^0$.

Equation (17), for $s^0$. 

Figure 8.
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