Europ.J.Hort.Sci., **73** (6). S. 248–253, 2008, ISSN 1611-4426. © Verlag Eugen Ulmer KG, Stuttgart

Promoting Floriculture Using VAT Regulation

F. Bunte[1)] and E. Kuiper[2)]
([1)]LEI, Wageningen UR, Den Haag, Netherlands and [2)]Social Sciences, Wageningen UR, Wageningen, Netherlands)

Summary

In twelve EU countries, the lower VAT-tariff is applied to flowers and plants in order to promote the production and employment in floriculture. This paper assesses whether the VAT-regulation for flowers and plants achieves the goals set – promoting consumer demand and production and employment in the ornamental supply chain – (effectiveness) and at what cost (efficiency). The empirical results show that the VAT-regulation for floriculture is effective, but not very efficient.

Key words. flowers and plants – economic policy evaluation – value added tax (VAT)

Introduction

Currently, the Dutch government evaluates the value added tax (VAT) which is based on the Sixth VAT Directive of the European Union. In line with European legislation, two VAT rates are applied in the Netherlands: a low tariff (6 %) for such necessities as food and a general tariff (19 %) for all other products. The evaluation of the VAT by the Dutch government focuses on the exceptions to the general VAT regime. According to European legislation, the lower VAT tariff may be applied to some products and services that may not be considered to be necessities. Flowers and plants are one of the exceptions. In twelve EU countries, the lower VAT tariff is applied to flowers and plants. Exceptions are also possible for agricultural inputs, water supplies, transport services, medical equipment and medical care, books and newspapers, sporting facilities and events, hotel accommodation, cultural events, labour intensive services, et cetera. Exceptions in European VAT legislation give rise to heated policy debates within the EU, because national political considerations may be blocked by the unanimity required at the European level. Consider, for example, the French pledge to apply the lower VAT rate to restaurant services. The final choice of a Member State to actually apply the lower VAT to a product or service depends on a range of aspects such as feasibility, definition and interpretation problems, European legislation, the administrative burden of private business and competitive relations. The issue remains topical at the EU level given the fact that the European Commission recently organised a consultation concerning legislation on reduced VAT rates including flowers and plants (EC, 2008).

The aim of our paper is to evaluate whether the Dutch VAT regulation for flowers and plants is effective and efficient. Dutch parliament passed the VAT regulation for flowers and plants in 1975 for three reasons (Tweede Kamer, 1974–1975b). First, low income groups were supposed to be entitled to flowers and plants. Second, Dutch floriculture had to be stimulated after the rise in energy prices in the mid 1970s. Third, application of the lower VAT rate to flowers and plants would make it possible to apply the agricultural allowance regulation to ornamental production. The Dutch VAT Law of 1968 restricted application of the agricultural allowance regulation to products to which the lower VAT rate applies. Recently, the Dutch government decided to maintain the lower VAT rate for flowers and plants (Tweede Kamer, 2007).

This paper evaluates the effectiveness and efficiency of the VAT regulation for flowers and plants on the basis of the following three criteria:

1. The effectiveness of operational management tests what the impact is of the VAT regulation on the administrative burden of businesses.
2. The effectiveness of the VAT regulation measures the impact on the goals pursued: consumer demand and production and employment in Dutch horticulture. The effectiveness with respect to consumer demand is assessed by estimating the rate of price transmission and the price elasticity of demand in the Netherlands. The effectiveness with respect to production and employment in European, in particular Dutch horticulture is assessed on basis of simulation analysis. We elaborate two scenarios. In the first scenario, the Netherlands unilaterally apply the general VAT rate to ornamentals. In the second scenario, other European countries follow the Dutch example and apply the general VAT rate to flowers and plants as well; possibly because the exemption for ornamentals disappears at the EU level if one of the most important proponents of the exemption changes its own VAT policy.
3. The efficiency of the policy can be measured by relating the loss of tax revenues to the policy goals pursued.

Effectiveness and efficiency are defined according to the criteria used in ex post policy evaluations (Swanborn, 1999). These criteria take government objectives as starting point. For this reason, the criteria given above do not correspond with the welfare theoretic criteria given by

economic theory. After all, governments do not maximise social welfare, at least not necessarily. The paper's aim is to give a full and coherent evaluation of all the objectives aimed at. In the discussion, we also pay some attention to the textbook criteria for a good tax system (Cnossen, 2001).

Analysis

The administrative burden

The impact of a change in the VAT rate on the administrative burden of growers of flowers and plants is negligible. Most growers already have a VAT administration and the burden of keeping this administration is limited. The VAT administration is incorporated in the income or corporation tax administration. As a consequence of the ongoing digitalization of business administration, the rising education level of young entrepreneurs and the outsourcing of the administration activities to accountants, the VAT administration is no longer an administrative burden. A change in the VAT rate requires a minor change in the business administration software (Albrechtse et al., 2007).

Application of the general VAT tariff on flowers and plants may have implications for the administrative burden for those growers who currently do not keep a VAT administration. The agricultural allowance regulation allows growers not to keep a VAT administration. The agricultural allowance regulation is laid down in Article 27 (1) of the VAT Law of 1968. Because products and services falling under the general VAT rate are excluded from the agricultural allowance regulation, the agricultural allowance regulation did not apply to flowers and plants from 1968 to 1975. When the VAT regulation for flowers and plants was introduced in 1975, the agricultural allowance regulation was extended to flowers and plants. Currently, eight percent of all producers of flowers and plants (700 growers) make use of the agricultural allowance regulation.

Consequently, if the general VAT tariff is again applied to flowers and plants under the current VAT Law, the agricultural allowance regulation no longer applies to growers of flowers and plants. However, the VAT Law may be changed. In answers to questions posed by parliament in 1975, the Minister of Finance responded that it is technically possible to combine a general VAT tariff and the agricultural allowance regulation (Tweede Kamer, 1974–1975a, b). Doing so, however, may have consequences for the level playing field in the ornamental supply chain. The agricultural allowance regulation allows growers not to charge the VAT, while retailers of flowers and plants would have to charge the general VAT tariff. This would imply that growers selling directly to consumers face a favourable tax regime over retailers. This would distort competition within the flowers and plants supply chain.

Price transmission

The effectiveness of the VAT regulation depends on the transmission of the VAT reduction into consumer prices. We consider the monthly price indices of consumer and producer prices for flowers and plants to find out about their mutual relationship. Statistics Netherlands (www.cbs.nl) provides data for both prices from January 1995 till December 2003. However, a break occurred in the definition of the consumer price index at the beginning of 2000 and hence, the prices that we will study for vertical price transmission concern the monthly data over January 2000 till December 2003. The number of observations available is limited. Natural logarithms are taken throughout the analysis.

Both the consumer and producer prices show a seasonal pattern. Hence, centred seasonal dummies are included in the bivariate Vector Auto-Regression (VAR) of both prices to be specified of order 2 as selected by most VAR lag order selection criteria (see, for example, Lütkepohl, 2005). Along the lines of Johansen (1995) and Mackinnon et al. (1999) we find that both prices contain a common stochastic trend (trace statistic for no stochastic trend = 45.04 >> 25.87 = 5 % critical value, and trace statistic for at most one stochastic trend = 9.04 < 12.52 = 5 % critical value) of which the short-run deviations are stationary around a linear trend as follows (standard errors in parentheses, t values between brackets):

$$\ln(P_{C,t}) = \underset{\substack{(0.14)\\ [6.69]}}{0.95}\ln(P_{P,t}) - \underset{\substack{(0.05)\\ [5.28]}}{0.02} + 0.24t/100 + u_t \qquad (1)$$

where $P_{C,t}$ is the consumer price index, $P_{P,t}$ the producer price index, t = 1, 2, 3, ..., indicating the months 2000.01, 2000.02, 2000.03, ..., and as linear trend in (1) showing an autonomous increase in the percentage retail mark-up, and u_t are the short-run deviations of the long-run vertical price relationship. The standard error clearly shows that the coefficient of $\ln(P_{P,t})$ is not significantly different from one. Consequently, a one percent increase of the producer price also leads to a one percent increase of the consumer price. Based on this result we conclude that pricing in ornamentals retail is competitive and that VAT rate changes may be expected to be transmitted perfectly.

Similar results have been obtained for other retail and repair service industries in which small and medium enterprises are dominant. Cpb (2003) finds perfect price transmission for labour intensive services in the Netherlands: bicycle, clothing and shoe repair services, painting, plastering and hair dressing. Besley and Rosen (1999) find perfect price transmission for local sales taxes in the US. Carbonnier (2007) finds almost perfect price transmission (77 %) for housing repair services in France, but less than perfect price competition in the oligopolistic market for new car sales (57 %). Because price transmission tends to be perfect in markets dominated by SMEs, consumers pay the tax burden. In terms of tax incidence, this implies that the impact on prices at other levels of the supply chain is negligible.

Consumer demand

In order to measure the sensitivity of consumer demand for changes in consumer prices, we estimated the price elasticities of demand. From Statistics Netherlands (http://www.cbs.nl), we have annual data on consumer prices from 1972–2006 and annual data on consumer expenditure and income from 1978 till 2004 with the exception of 2001 and 2002. Again, this implies that the number of observations available is limited. The income

data have been split into quartiles. The estimations refer to the demand of the entire sample in the consumer panel as well as all the four income quartiles. On basis of annual time series from 1978 till 2004 we estimated the price and income elasticities of consumer demand for flowers and pot plants and for garden products. Garden products include nursery material, but also garden equipment and non-organic ornamentals.

Consumer demand is estimated on basis of a log-linear autoregressive distributed lag (ADL) model (HENDRY 1995). More specifically, an ADL(1,1) is estimated. In an ADL(1,1) model, both the dependent variable (i.e., consumer demand of flowers and pot plants divided by the price of flowers and pot plants or consumer demand of garden products divided by the price of garden products) and the independent variables (price of flowers and potplants, price of garden products and income) are included as explanatory variables with a lag of one period. The static version of the model, the ADL(0,0), appeared to have a one period lag in the residuals (AR(1)), suggesting a COMFAC ADL(1,1) model (see HENDRY 1995). The COMFAC restrictions have been imposed on each ADL(1,1) model and could not be rejected. All variables are in levels as a stochastic trend could not be detected in the sample of 23 years (with 2001 and 2002 missing). The following two equations for total consumer demand (one for flowers and pot plants and one for garden products) are estimated as one system.

$$1n\left(\frac{W_{Ot}}{P_{Ot}}\right) = \quad (2)$$

$$\alpha_0 + \alpha_1 1nP_{Ot} + \alpha_2 1nP_{Gt} + \alpha_3 1nY_t + \alpha_4 1n\left(\frac{W_{Ot-1}}{P_{Ot-1}}\right) -$$

$$\alpha_4\alpha_1 1nP_{Ot-1} - \alpha_4\alpha_2 1nP_{Gt-1} - \alpha_4\alpha_3 1nY_{t-1} + \varepsilon_{Ot}$$

$$1n\left(\frac{W_{Gt}}{P_{Gt}}\right) = \quad (3)$$

$$\beta_0 + \beta_1 1nP_{Gt} + \beta_2 1nP_{Ot} + \beta_3 1nY_t + \beta_4 1n\left(\frac{W_{Gt-1}}{P_{Gt-1}}\right) -$$

$$\beta_4\beta_1 1nP_{Gt-1} - \beta_4\beta_2 1nP_{Ot-1} - \beta_4\beta_3 1nY_{t-1} + \varepsilon_{Gt}$$

where W denotes expenditure, P price, Y income, subscript O refers to cut flowers and pot plants, subscript G to garden products, subscript t to period t and subscript t−1 to period t−1, ε to the error terms and the α's and β's are the parameters to be estimated. The parameters of both equations are estimated by iterative nonlinear Seemingly Unrelated Regression (SUR). Notice that in the log-linear specification the parameters of the unlagged explanatory variables in the COMFAC-restricted ADL(1,1) equations are the long-run elasticities.

The estimated long-run elasticities are recorded in Table 1. The elasticities all have the right sign − with one minor exception. However, most elasticities are not significant at the 10 % significance level. This is probably due to the small number of observations. Nevertheless, the following conclusions may be drawn:

1. The absolute value of the own price elasticity of demand is higher for the two lowest income groups than it is for the two highest income groups. This holds for flowers and pot plants as well as for garden products. This result is important, because the VAT regulation for flowers and plants was designed to stimulate purchases by low income groups. Note, however, that the absolute value of the price elasticity of the demand for flowers and pot plants for the lowest income quartile is lower than the one for the second lowest income quartile. This result suggests that households in the lowest income group do not have much scope to optimize and adapt their buying behaviour in reaction to changes in prices. Similarly, the income elasticity of the lowest income group with respect to garden products is the lowest income elasticity observed for garden products. This result may be a statistical artefact − the price elasticity is high − but also to a socio-economic characteristic: low income groups are less likely to have gardens.
2. The absolute value of the price and income elasticities are higher for garden products than they are for flowers and pot plants. This result suggests that the demand for garden products is more susceptible to changes in income and prices than the demand for flowers and pot plants. Note that garden products include more than nursery material.

Production and employment in Dutch horticulture

This section presents the impact of the VAT regulation for flowers and plants on production and employment in Dutch floriculture. The results presented are based on simulation analysis using HORTUS (BUNTE and VAN GALEN, 2005). HORTUS is a simulation model relating the production, consumption and trade of horticultural products to a range of explanatory variables such as production and distribution costs, technology and government policy. The model distinguishes 26 regions, 15 products and 4 inputs. For the purpose of this analysis, floriculture was added to the model. The model contains all the EU25 countries, 6 fruits, 5 vegetables and 4 ornamentals: cut flowers, flower bulbs, nursery material and pot plants.

In this section, we elaborate two scenarios: (1) a scenario in which the Netherlands unilaterally changes the VAT rate for flowers and plants from the lower to the general tariff, from 6 % to 19 %, and (2) a scenario in which all twelve countries currently applying the lower tariff for flowers and plants switch to the general tariff for flowers

Table 1. Price and income elasticities for flowers and plants per income group.

	Cut flowers and pot plants		Garden products	
	Own price	Income	Own price	Income
Quartile 1	−1.29	−0.01	−4.33*	1.84*
Quartile 2	−2.16*	0.41	−2.42*	3.82*
Quartile 3	−1.06	0.12	−1.40	2.79*
Quartile 4	−0.65	0.78*	−1.25	3.27*
Total	−1.13*	1.08*	−1.50	3.05*

* Significant at 10 % significance level (one-sided test)

and plants. The second scenario is based on the idea that the Dutch policy with respect to ornamentals serves as an example for other EU countries due to the large market share of the Netherlands in ornamental production and trade. Moreover, the exception for flowers and plants is probably the outcome of logrolling at the European level. The exception is probably a gift to the Netherlands in exchange for Dutch support for other exceptions in European VAT legislation.

The following assumptions are made in the simulation analyses:

- We measure the impact of a change in the VAT rate from the lower tariff to the general tariff. From the perspective of policy evaluation, the analysis should go the other way around and the general tariff should be the benchmark. What is the gain in production and employment from having the lower tariff rather than the general tariff? The simulation model used to calculate the impact of the VAT regulation is calibrated on data representing a world where the lower VAT tariff applies. Therefore, in the simulation analysis the lower rather than the general VAT rate is the benchmark.
- We assume perfect price transmission. Above, we provided empirical evidence supporting this assumption for the Netherlands.
- The model measures changes in employment as changes in full-time equivalents. When measuring the absolute number of jobs involved, we assume that the average number of working hours per employee remains equal. We do not take labour hoarding into account.
- The simulations are based on the price elasticities of demand found for the Netherlands: −1.1 % for flowers and pot plants and −1.5 % for nursery material including bulbs. Because we do not have information on the price sensitivity of the demand for flowers and plants in other European countries, we assume the price elasticity of demand in those countries to equal those in the Netherlands. We used this strong assumption because of a lack of data on other EU countries.

Scenario 1: A change in the VAT rate in the Netherlands

If the general VAT tariff is applied to flowers and plants rather than the lower tariff, consumer prices in the Netherlands will rise by 12.25 %. As a result, consumer demand for cut flowers and pot plants will fall by 13.3 % and demand for bulbs and nursery material will fall by 18.1 %. Net sales in Dutch ornamental retail decrease by 15.1 % (Table 2). Net turnover falls by 170 million Euro and employment by 2,380 jobs. In terms of employment, the impact on ornamental retail exceeds the impact on ornamental production (Table 2).

Production in Dutch floriculture falls slightly. Because Dutch production of ornamentals is export oriented, the impact of a change in the VAT rate in the Netherlands on Dutch production and employment is minor. The impact is more or less equal to the percentage change in turnover at the retail level times the share of the Netherlands in the sales of Dutch ornamentals. The impact on production and employment is significant in primary production of nursery material. In this sector, production and employment fall by 5 %.

The change in the VAT rate for ornamentals causes some second-order effects. Because the demand for flowers and plants decreases given a certain supply level, producer prices fall. The decrease in producer prices stimulates the sales of Dutch flowers and plants abroad by 0.3–0.6 %. The decrease in producer prices also stimulates growers to switch to other crops, e.g. greenhouse vegetables. Because the supply of ornamentals decreases as a result of this switch, producer prices recover somewhat. In the long run producer prices fall by 0.2 % on net. As producer prices fall and greenhouses become available, production in Dutch greenhouse horticulture becomes less labour and capital intensive.

Scenario 2: A change in the VAT rate in the EU

There are eleven other EU Member States applying the lower VAT rate, most of them located in western and southern Europe (Table 3). If all these countries follow the Netherlands and switch to the general VAT rate for flowers and plants, they face a drop in consumer demand for ornamentals by 9–19 %. Consumer demand for ornamentals will fall sharply in Belgium, France and the Czech Republic, because the difference between the lower and the general VAT tariff is relatively high in these countries (Table 3). As a result, ornamental production will fall by 6–19 % (1,500 million Euro) in the eleven countries concerned (Table 3).

Dutch exports of ornamentals to the eleven countries concerned will fall accordingly. The share of these eleven countries in Dutch exports of ornamentals is high. Sixty percent of Dutch pot plant exports and fifty percent of Dutch cut flower exports are sold in the countries concerned. The share of the eleven Member States in Dutch exports of bulbs and nursery material equals one third.

Because producer prices decline by 0.5 %, the exports of ornamentals towards such countries as the UK, Scandinavia and the US rise by 0.7–1.7 %. Consequently, this second-order effect has an opposite effect on Dutch exports of ornamentals.

If the general VAT tariff is applied to flowers and plants in all EU Member States, the impact on Dutch floriculture will be large (Table 4). Dutch production will fall by 5 % for bulbs, by 6 % for cut flowers, by 8 % for pot plants and by 10 % for nursery material. Sales of Dutch pot plants and nursery material is concentrated in Northwest Europe due to, among other things, transport costs.

Table 2. Effect of the application of the general VAT rate by the Netherlands on the ornamental supply chain in the Netherlands.

	Turnover/ employment (% change)	Turnover (Million Euro)	Employment (Number of jobs)
Retail ornamentals	−15.1	−168.5	−2380
Bulbs	−0.2	−1.3	−30
Cut flowers	−0.7	−16.2	−175
Nursery material	−5.2	−28.5	−790
Pot plants	−1.9	−28.4	−300
Greenhouse vegetables	0.6	7.6	160
Horticulture, total		−66.8	−1135

Table 3. Effect of the application of the general VAT rate to flowers and plants by other EU Countries currently applying the low tariff.

	Lower tariff* (%)	General tariff* (%)	Price effect (% change)	Impact on demand (% change)	Impact on production	
					(% change)	(Million Euro)
Austria	10.0	20.0	9.1	−11.0	−11.2	−26.6
Belgium	6.0	21.0	14.2	−18.7	−15.3	−103.9
Czech Republic	5.0	19.0	13.3	−17.0	−16.6	−9.4
France	5.5	19.6	13.4	−17.7	−18.2	−436.3
Germany	7.0	16.0	8.4	−10.3	−10.6	−291.2
Greece	9.0	19.0	9.2	−10.8	−10.7	−15.3
Ireland	13.5	21.0	6.6	−8.7	−5.7	−0.6
Italy	10.0	20.0	9.1	−11.0	−10.8	−289.9
Luxemburg	6.0	15.0	8.5	−9.6	−9.2	−0.4
Portugal	12.0	21.0	8.0	−11.6	−11.8	−55.0
Spain	7.0	16.0	8.4	−11.9	−11.9	−271.0

* Source: EC (2006)

For this reason, the effect of a change in the VAT rate is particularly pronounced for these products. Employment will fall slightly more than physical production does, because falling producer prices induce growers to cut costs. There is substitution from labour, capital and intermediary products towards land. Greenhouses will become available for the production of greenhouse vegetables.

Discussion

On basis of the above analysis, we are able to interpret the results in terms of effectiveness and efficiency.

Table 4. Effect of the application of the general VAT rate by all EU Member States on the ornamental supply chain in the Netherlands.

	Turnover/ employment (% change)	Turnover (Million Euro)	Employment (Number of jobs)
Retail ornamentals	−14.7	−163.8	−2310
Exports			
Bulbs	−4.1	−25.5	−110
Cut flowers	−5.1	−160.6	−470
Nursery material	−7.2	−29.3	−150
Pot plants	−6.5	−111.2	−320
Exports, total		−326.7	−1050
Horticulture			
Bulbs	−4.9	−27.6	−600
Cut flowers	−5.8	−127.5	−1375
Nursery material	−9.7	−53.5	−1480
Pot plants	−8.0	−121.1	−1310
Greenhouse vegetables	1.6	19.1	410
Horticulture, total		−310.7	−4350

The effectiveness of operational management is hardly affected by a change in the VAT rate for flowers and plants. Most growers already keep an automated VAT administration. A change in the VAT rate will require a minor change in the VAT administration software. Things may be a little different for growers making use of the agricultural allowance regulation. If the general VAT rate is applied and the VAT Law is not adapted, these growers will be forced to keep a VAT administration. Note that it is possible to adjust the VAT Law in such a way that the agricultural allowance regulation is compatible with the general VAT tariff.

The VAT regulation is effective in terms of the two principal objectives: (1) consumer demand and (2) production and employment in Dutch floriculture. Our supporting results are:

1. The price elasticity of demand equals −1.1 for cut flowers and pot plants and −1.5 for garden products. The absolute value of the price elasticity of demand is even higher for low income groups, the target group of the regulation. A change in the VAT regime will lead to a fall in retail turnover by 15 %. The VAT regulation is effective provided that changes in the VAT rate are transmitted into consumer prices, as seems to be the case for the Netherlands. Similar results hold for labour intensive services in the Netherlands (CPB, 2003).
2. The VAT regulation has some impact on production and employment in Dutch floriculture. This holds in particular for nursery material (5 % of production and employment). However, the impact of the Dutch regulation is small due to the export orientation of Dutch floriculture. The contribution to production and employment is only 1–2 % for pot plants and cut flowers and even less for bulbs. However, if a change in the Dutch policy is followed by other countries in the EU, the impact on production and employment is significant. In that case, the contribution amounts to 10 % of production and employment for nursery material, 8 % for pot plants and 5–6 % for cut flowers and bulbs.

The efficiency of the VAT regulation is limited. The regulation involves a loss of tax revenues of 155 million Euro. In Scenario 1, the regulation yields 2,380 extra jobs in the retail trade of ornamentals and 1,135 extra jobs in horticulture. This comes down to roughly 44,000 Euro per job. In scenario 2, the regulation yields 2,310 extra jobs in retail trade, 1,050 extra jobs in export trade and 4,350 extra jobs in floriculture. This comes down to 20,000 Euro per job. If one takes into account that labour costs per FTE equalled 46,200 Euro in the Netherlands in 2004 and even 35,800 in Dutch agriculture and 41,100 in Dutch health care (Statistics Netherlands), the efficiency of the regulation is limited unless scenario 2 is more realistic than scenario 1. Of course, from a general equilibrium perspective, the VAT regulation is even more inefficient if additional employment in the ornamental supply chain crowds out employment elsewhere in the Netherlands. Note that the Netherlands operate more or less at the natural rate of unemployment implying that crowding out is likely.

However, if the VAT guideline for flowers and plants is evaluated using textbook criteria for a good tax system, further qualifications may be made (STIGLITZ, 1988).

Economic efficiency

Multiple-rate VAT systems cause distortions in consumption by discriminating between products. Efficiency is best served if the VAT is imposed on the widest possible range of goods and services that are used or consumed by businesses and individuals (CNOSSEN, 2001). MARÈ (2005) stresses that market segmentation in the common European market is strengthened by the proliferation of exemptions, dispensations, special regimes and differences between countries. Even if one takes into account that multi-rate VAT systems, in particular the reduced VAT rate for necessities, are here to stay because of political reasons, one may criticize the VAT guideline for flowers and plants. First, flowers and plants are no necessities. They serve either as decoration or as a gift. Second, the VAT guideline for flowers and plants distorts competition with direct substitutes: other decoration and gift articles.

Administrative simplicity

CNOSSEN (2001) argues that multiple-rate VAT structures increase the administrative burden. Firms with multiple-rate output – retailers of ornamentals – have substantially higher compliance costs. Moreover, the tax base is eroded by increasing the number of products falling under the lower VAT rate. In the EU, coverage of reduced rates already ranges from 20 percent (Germany) to 40 percent (UK) of total consumer expenditures.

Equity

From the perspective of fairness, there is also no reason to tax the consumption of one decoration article favourably over another one. This violates the principle of horizontal equity. Moreover, differentiated VAT rates are an ineffective, ill-targeted instrument for eliminating income and expenditure differences. Other tax and income-support measures are much better vehicles to improve income and expenditure equality. Differences in VAT rates have little influence on expenditure patterns. High income households have similar expenditure patterns as low income households. They merely buy more expensive varieties (CNOSSEN, 2001). Low income households actually spend relatively more on cut flowers and pot plants than high income households do. From this perspective, one can not say that low income households do not spend enough on flowers and plants, au contraire.

Acknowledgements

The study has been carried out with the help of Jan van der Lugt, Harold van der Meulen and Jeroen Hammerstein. The study has been financed and guided by the Dutch Ministry of Agriculture and the Dutch Ministry of Finance.

References

ALBRECHTSE, D.A., G.S. VENEMA, P. OERLEMANS, H.B. VAN DER VEEN and P. KAVELAARS 2007: Evaluatie van de landbouwregeling in de omzetbelasting. LEI, Den Haag, in press.
BESLEY, T. and H. ROSEN 1999: Sales taxes and prices: an empirical analysis. Nat. Tax Jo. **52**, 157–178.
BUNTE, F.H.J. and M.A. VAN GALEN 2005: HORTUS: Modelling HORTicultural Use and Supply. Lei, Den Haag.
CARBONNIER, C. 2007: Who pays sales taxes? Evidence from French VAT reforms, 1987–1999. J. Publ. Ec. **91**, 1219–1229.
CNOSSEN S. 2001: Tax policy in the European Union: a review of issues and options. Fin. Arch. **58**, 466–558.
CPB 2003: Contra-expertise effecten BTW-verlaging arbeidsintensieve diensten. CPB: Den Haag.
EC (EUROPEAN COMMISSION) 2006: DOC/1829/2006-EN.
EC (EUROPEAN COMMISSION) 2008: Consultation paper Review of Existing legislation on VAT reduced rates. TAXUD D1 D/24232.
HENDRY, D.F. 1995: Dynamic econometrics. Oxford University Press, Oxford.
JOHANSEN S. 1995: Likelihood-based inference in cointegrated vector autoregressive models, Oxford University Press, Oxford.
LÜTKEPOHL, H. 2005: New introduction to multiple time series analysis. Springer, Berlin.
MACKINNON, J.G., A.A. HAUG and L. MICHELIS 1999: Numerical distribution functions of likelihood ratio tests for cointegration. J. Appl. Econometrics **14**, 563–577.
MARÈ, M. 2005: A new VAT for the European Union: taxing consumption and financing the budget, University of Pavia, September 2005.
STATISTICS NETHERLANDS: http://www.cbs.nl.
STIGLITZ, J.E 1988: Economics of the Public Sector. W.W. Norton: New York.
SWANBORN, P.G. 1999: Evalueren: het ontwerpen, begeleiden en evalueren van interventies: een methodische basis voor evaluatie-onderzoek. Boom Uitgeverij, Amsterdam.
TWEEDE KAMER 1974–1975a: 13 104 Wijziging van de omzetbelasting, No. **5**.
TWEEDE KAMER 1974–1975b: 13 104 Wijziging van de omzetbelasting, No. **9**.
TWEEDE KAMER 2007: Letter to Parliament, 7 December 2007, TFE 2007/141.

Received January 14, 2008 / Accepted July 10, 2008

Addresses of authors: Frank H.J. Bunte (corresponding author), Wageningen UR – LEI, PO BOX 29703, 2502 LS Den Haag, Netherlands, and W. Erno Kuiper, Wageningen UR – SSG, Wageningen, Netherlands, e-mail: frank.bunte@wur.nl.