Effects of increased VAT rates for ornamentals

Situation 2015

Frank Bunte and Michiel van Galen

LEI
WAGENINGEN UR

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This paper evaluates the effects of a possible application of the general VAT rate to ornamentals on turnover and employment in the Dutch and European ornamental supply chain. The effects are calculated for the scenario in which the Netherlands decide to apply the general VAT rate and the scenario in which all member states of the European Union (EU) decide to apply the general VAT rate. In 2015, the lower VAT rate is applied to ornamentals in 13 EU member states. The effects are measured using the Hortus model of LEI Wageningen UR, which models demand and supply in European horticulture.

Dit rapport evalueert het effect van toepassing van het algemene btw-tarief op sierteeltproducten op de omzet en werkgelegenheid in de sierteeltketen in Nederland en Europa. De effecten zijn berekend voor het scenario waarin alleen Nederland overgaat tot toepassing van het algemene tarief, maar ook voor het scenario waarin alle lidstaten van de Europese Unie (EU) overgaan tot toepassing van het algemene tarief. In 2015 wordt het lage btw-tarief in 13 EU-lidstaten op sierteeltproducten toegepast. De effecten op de middellange termijn zijn geschat met behulp van het Hortusmodel van LEI Wageningen UR. Hortus modelleert vraag en aanbod in de Europese tuinbouw.

Key words: floriculture, VAT, evaluation

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Preface

In the past, the Dutch government has more than once considered changing the VAT rate for ornamentals. Within the framework of the tax reform, at the moment, the VAT regulation for products and services like books, but also ornamentals is again reconsidered. The government proposed to abolish the VAT regulation for ornamentals in order to simplify the tax system and to broaden the tax base. Since 1975, the lower VAT rate rather than the general rate is applied to ornamentals.

Commissioned by the Association of Flower Auctions (VBN) in the Netherlands, LEI Wageningen UR estimated the effects of the VAT regulation on turnover and employment in the European horticultural supply chain for two scenarios: one in which the Netherlands alone decides to apply the general VAT rate to ornamentals and one in which all EU Member States apply the general VAT rate to ornamentals. The results are complemented by an analysis of the effects on government revenues. This study is an update of the analysis which LEI carried out in 2010 for the Product Board for Horticulture (PT) and the analyses carried out for the Ministry of Agriculture, Nature and Food Quality in 2007 and the Ministry of Economic Affairs in 2014.

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Summary

This report presents the effects of a possible application of the general VAT rate to ornamentals on turnover and employment in the ornamental supply chain. The effects are determined for Dutch and European production, wholesale and retail trade in ornamentals. The lower VAT rate is currently applied to ornamentals in 13 EU Member States.

The study considers two scenarios: (1) application of the general (high) tariff to ornamentals in the Netherlands; (2) application of the general tariff in all EU Member States.

Results of scenario (1): application of the general VAT rate to ornamentals in the Netherlands:

- Application of the general VAT rate causes a decrease in turnover of €300m in Dutch retail trade, of €180m in wholesale trade and of €135m in horticultural production.
- Employment in the Netherlands falls by 1,095 FTEs in primary production, by 285 FTEs in wholesale trade and by 1,630 FTEs in retail trade. The number of jobs affected is much higher. In wholesale and retail trade we estimate the effects at 350 and 2,600 jobs respectively. For primary horticulture we lack comparable data on the ratio of FTE to the number of jobs. We estimate the effects on the primary sector at 2,200 jobs (including temporary workers).
- Tax revenues in the Netherlands rise by €103m in the short run and by €187m in the long run. Tax revenues do not rise by the €249m envisaged, because consumer demand is sensitive to changes in consumer prices. Moreover, in the short run the government loses revenues due to the rise in unemployment, and on top of that, local government costs for public parks will increase considerably.

Results of scenario (2): application of the general VAT rate in all EU Member States including the 13 Member States currently applying the lower VAT rate:

- In the Netherlands 5,120 FTEs are lost; 2,810 FTEs in ornamental horticulture (the number of jobs affected estimated at 5,600) and 725 and 1,585 FTEs in wholesale and retail trade (920 and 2,510 jobs respectively). The loss of turnover in Dutch horticulture is estimated at €340m.
- Application of the general VAT rate to ornamentals in all Member States where the rate is not currently applied, leads to a drop in net sales by €3.8bn in EU retail trade, by €2.8bn in EU wholesale trade and by €1.3bn in EU horticulture. Employment falls by 24,700 FTEs in EU horticulture and by 30,000 FTEs in European wholesale and retail trade (approximately 37,140 jobs).
- Tax revenues in the Netherlands only increase by €83m in the short run, because employment falls dramatically in the export-oriented ornamental supply chain.

Samenvatting

Dit onderzoek presenteert de economische effecten van toepassing van het algemene btw-tarief op sierteeltproducten op de omzet en werkgelegenheid in de sierteeltketen. Deze effecten zijn berekend voor de Nederlandse en Europese productie, groot- en detailhandel in sierteeltproducten. Het lage btw-tarief wordt momenteel in 13 EU-lidstaten op sierteeltproducten toegepast.

Er zijn twee scenario's bestudeerd:
(1) toepassing van het algemene (hoge) btw-tarief op sierteeltproducten in Nederland; en
(2) toepassing van dit tarief in alle EU-lidstaten.

Resultaten scenario (1): toepassing van het algemene btw-tarief in Nederland

- Toepassing van het algemene tarief in Nederland leidt tot een daling van de omzet in de detailhandel met 300 miljoen euro, in de groothandel met 180 miljoen euro en met 135 miljoen euro in de tuinbouw.
- De werkgelegenheid in Nederland daalt met 1.095 fte in de primaire sierteeltsector, 285 fte in de groothandel en 1.630 fte in de detailhandel. Het aantal banen van werknemers dat daarmee geraakt wordt is veel hoger. Voor de groot- en detailhandel gaat het om 350 en 2.600 banen. Voor de primaire sector ontbreken vergelijkbare cijfers over de verhouding tussen het aantal fte en het aantal werkzame personen. Wij schatten het effect echter op 2.200 banen in de primaire sierteeltsector (inclusief niet-regelmatig werkzame personen en inleen- en uitzendkrachten).
- De belastinginkomsten in Nederland nemen op korte termijn met 103 miljoen euro toe en op lange termijn met 187 miljoen euro. De belastinginkomsten nemen niet met de voorziene 249 miljoen euro toe, omdat de vraag gevoelig is voor veranderingen in de prijs. Op korte termijn derft de overheid daarentegen inkomsten door een toename van de werkloosheid. Bovendien nemen de kosten voor openbaar groen aanzienlijk toe.

Resultaten scenario (2): btw-verhoging in alle 13 EU-lidstaten

- In Nederland gaan 5.120 fte verloren; 2.810 fte in de primaire tuinbouw (in aantal banen wordt het effect geschat op 5.600 inclusief niet-regelmatig werkzame personen en inleen- en uitzend arbeid) en 725 en 1.585 fte in de groot- en detailhandel (920 en 2.510 banen). Het omzetverlies in de Nederlandse tuinbouw bedraagt 340 miljoen euro.
- Toepassing van het algemene tarief op sierteeltproducten in alle lidstaten waar dit niet gebeurt, leidt tot een daling van de omzet met 3,8 miljard euro in de Europese detailhandel, met 2,8 miljard euro in de Europese groothandel en met 1,3 miljard in de Europese tuinbouw. De werkgelegenheid daalt met 24.700 voltijdbanen (fte) in de Europese sierteeltproductie en met 30.000 fte in de Europese groot- en detailhandel (geschat op 37.140 banen).
- Voor de belastinginkomsten in Nederland zou dit betekenen dat op korte termijn de inkomsten aan belastingen en sociale premies met hooguit 83 miljoen toenemen, omdat de werkgelegenheid in de op de export georiënteerde sierteeltketen fors daalt.

1 Introduction

Floriculture in an important economic sector in the Netherlands and in the EU. It generates €6.2bn of export revenue in the Netherlands. More than 75% of ornamentals are produced for exports. Important export destinations for Dutch ornamentals are Germany, France, the UK and Italy.

Since 1975 the Netherlands applies a lower VAT rate on ornamental plants and flowers. On the basis of EU Directive 2006/112/EG article 122 the lower VAT tariff may be applied to ornamentals (flowers, potted and garden plants, flower bulbs and nursery material). Currently 13 countries apply the reduced tariff to ornamentals.

Because of the economic downturn, governments all over the world try to raise government revenues and to cut back government expenses. For this reason some European governments reconsider the lower VAT tariff for ornamentals.

In 2007 the Dutch government evaluated the VAT regulation for ornamentals. LEI carried out an analysis into the effects of the regulation on consumer spending and employment (Bunte et al., 2007). LEI concluded that the regulation is effective, i.e. that the objectives strived for are obtained. Based on this evaluation the Dutch government decided to continue the regulation. The analysis in this report is an update of the analysis in 2007 (see also Bunte, 2008 and Bunte and Kuiper, 2008) and of those in 2010 and 2014 (Bunte and Van der Poel, 2010; Van Galen and Dijkxhoorn, 2014).

At this moment, the lower VAT rate for ornamentals is applied in 13 EU Member States. These states represent 77% of European consumption of ornamentals, and 84% of ornamental production. If these states apply the general VAT tariff to ornamentals, consumer prices will rise in these countries. As a result, consumer demand for ornamentals will fall. This leads to a decrease in net sales and employment in retail and wholesale trade and in production.

This report estimates the effects of a change in the VAT rate on net sales and employment in European ornamental production, international trade as well as wholesale and retail trade. The analysis is performed on the basis of LEI Wageningen UR's supply and demand model for horticultural products: Hortus (Bunte and Van Galen, 2005). The analysis only applies to the ornamental supply chain. Effects of a possible VAT rise on other sectors are not taken into account.

Chapter 2 describes the ornamental supply chain, Chapter 3 the methodology used and Chapter 4 the results. The study presents two scenarios: (1) a unilateral rise of the VAT rate by the Netherlands; and (2) a rise of the VAT rate in all 13 Member States concerned. The results describe the effects on turnover, employment and government revenues.

2 The European ornamental supply chain and European VAT regulation

2.1 The European supply chain for ornamentals

Ornamental horticulture production and trade constitutes an important supply chain generating employment for 335,000 FTE in ornamental production in the EU-27 and 428,000 FTE employed in European wholesale and retail trade in ornamentals. Turnover in the European Union is estimated at €17.6bn in production, €30.4bn in wholesale trade and €47.4bn in retail trade (LEI estimates based on Eurostat, PT and APH data). The Netherlands are the largest producer by far, but one should not neglect domestic production in France, Germany, Italy, Spain and the UK. Dutch production is specialised in cut flowers and flower bulbs, but still sizable in pot plants and nursery stock. France, Germany, Italy, Spain and the UK are specialized in the production of nursery material. Italy also has a sizeable cut flower production.

Table 1

Turnover in ornamental horticulture in the EU-27 (estimates of 2013, million euro)

	Production	Wholesale	Retail
Austria	285	585	1,350
Belgium	520	1,185	1,645
Bulgaria	35	85	100
Cyprus	30	50	85
Czech Republic	140	345	630
Denmark	550	860	655
Estonia	-	20	40
Finland	120	245	510
France	1,740	3,110	7,360
Germany	2,630	4,870	11,085
Greece	85	180	260
Hungary	85	220	250
Ireland	45	130	240
Italy	2,690	4,210	7,415
Latvia	10	30	40
Lithuania	20	65	95
Luxembourg	-	30	60
Malta	-	5	10
Netherlands	5,415	8,085	2,250
Poland	685	1,160	1,915
Portugal	275	460	680
Romania	140	270	475
Slovakia	25	120	170
Slovenia	35	85	165
Spain	585	1,160	2,165
Sweden	220	470	1,515
UK	1,225	2,370	6,250
Total	17,590	30,405	47,415

Source: LEI estimates based on Product board for Horticulture (PT), Eurostat and AIPH data.

Table 2

Employment in ornamental horticulture in the EU27 (2013, FTE)

	Production	Wholesale	Retail
Austria	7,750	1,530	10,100
Belgium	6,100	2,060	3,690
Bulgaria	5,860	1,400	3,750
Cyprus	950	580	990
Czech Republic	6,740	3,200	4,640
Denmark	4,360	1,600	3,460
Estonia	-	190	1,020
Finland	1,930	650	2,880
France	37,230	8,510	40,250
Germany	43,080	12,660	93,420
Greece	3,100	940	1,680
Hungary	7,290	2,720	5,900
Ireland	650	450	2,160
Italy	54,840	11,410	23,720
Latvia	1,140	280	1,080
Lithuania	4,510	560	3,150
Luxembourg	-	50	360
Malta	-	10	30
Netherlands	44,730	12,760	12,300
Poland	32,990	3,550	13,620
Portugal	13,540	6,060	9,120
Romania	15,110	5,540	14,270
Slovakia	1,200	1,110	1,250
Slovenia	1,770	790	1,210
Spain	16,020	7,220	14,020
Sweden	2,280	1,140	8,090
UK	22,170	8,130	56,290
Total	335,340	95,100	332,450

Source: LEI estimates based on Product board for Horticulture (PT), Eurostat (FADN and SBS) and AIPH data.

Employment in full-time equivalent jobs (FTEs) is estimated on the basis of data on average productivity in turnover per FTE. In the Netherlands, employment in primary production of ornamentals is estimated at almost 45,000 FTEs. Employment in wholesale and retail of ornamentals is estimated at 12,700 and 12,300 FTEs. Measured in number of people employed (including non-regular and temporary employment) the employment figures are much higher. The Product board for Horticulture (PT, closed in 2014) reported almost 100,000 people employed in primary ornamental horticulture in 2011, of which about 32,000 temporary workers. In ornamentals wholesale, about 28,000 people were employed and in retail sales of ornamentals about 27,000 people (PT, 2012a; PT, 2012b).

2.2 European VAT regulation

Based on EU Directive 2006/112/EC article 122, the lower VAT tariff may be applied to ornamentals (flowers, potted and garden plants, flower bulbs, nursery material). At this moment the lower tariff is applied to ornamentals in 13 Member States (Table 3); the EU15 minus the UK, Portugal and the Scandinavian countries plus Poland, Slovenia and the Czech Republic. These states represent 77% of EU consumption and 84% of EU production. Until recently, the lower VAT tariff was also applied to ornamentals in Portugal.

The effects of the VAT regulation on consumer prices of ornamentals differs from one country to another, because the difference between the lower and the general tariff differ from one country to another. In Austria, the Czech Republic, Ireland and Luxemburg the difference between both tariffs is small (Table 3). In Belgium, France, the Netherlands, Poland and Slovenia the difference is large as is the potential effect on prices.

The VAT rates have been adjusted in eight of the 13 countries concerned (compare Bunte and Van der Poel, 2010). In the Netherlands, France, Italy and Ireland the regular VAT rate has been increased. The difference between the regular and the lower tariff has increased as do the expected effects of an abolition of the lower VAT rate on consumer prices and demand. In Greece the lower VAT rate has been increased. This makes the impact of a possible abolition of the lower VAT rate on consumer prices and demand smaller. In Spain, Poland, the Czech Republic and Luxemburg both VAT rates have been adjusted relative to 2010. The expected impact of an abolition of the VAT rate on consumer prices and demand is bigger for Spain, smaller for Poland and the Czech Republic and more or less the same for Luxemburg.

Table 3

VAT rates and price increases in 13 European countries

	Lower tariff	General tariff	Price effect
	%	%	% Change
Austria	10.0	20.0	9.1
Belgium	6.0	21.0	14.2
Czech Republic	15.0	21.0	5.2
France	5.5	20.0	13.7
Germany	7.0	19.0	11.2
Greece	13.0	23.0	8.8
Ireland	13.5	23.0	8.4
Italy	10.0	22.0	10.9
Luxemburg	8.0	17.0	8.3
Netherlands	6.0	21.0	14.2
Poland	8.0	23.0	13.9
Slovenia	9.5	22.0	11.4
Spain	10.0	21.0	10.0

Source: European Commission, taxud.c.1(2015) - EN.

3 Methodology

The effects of the VAT increases are estimated using a supply and demand model for ornamental products in the EU-27; Hortus (Bunte and Van Galen, 2005). The model assumes that the subsequent stages in the production and distribution chain are characterised by perfect competition. This implies that we assume that there are no actors in the supply chain exercising market power. This assumption is valid given the number and the scale of the firms operating in the chain. The assumption of perfect competition implies that the increase in the VAT rate is completely transmitted into higher consumer prices. Bunte and Kuiper (2008) indeed find that 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 the ornamentals' supply chain is competitive and that VAT rate changes may be expected to be transmitted perfectly. The incidence of the tax burden lies with consumers.

CPB (2003) draws similar conclusions for labour intensive services. Application of the lower VAT rate from 2000 onwards has led to a significant decrease in consumer prices and that this decrease has had a profound effect on both retail turnover and employment.

The effects on sales and employment in the other stages of the production and distribution chain follow from the decrease in consumer demand. The employment results are estimated using productivity indicators for the respective stages in the chain, more in particular turnover per full-time equivalent (FTE) for ornamental production and turnover per FTE and per person employed for wholesale and retail trade. For all three links in the supply chain, estimates are based on Eurostat data.

The effect of a price increase on consumption is measured by the price-elasticity of demand. Bunte et al. (2007) found price-elasticities for the Netherlands: -1.1% for cut flowers and pot plants and -1.5% for garden products. The price-elasticities were calculated for expenditure categories identified by Dutch Statistics: (1) cut flowers and pot plants and (2) garden products. Garden products include nursery trees, flower bulbs, but also garden equipment. For the lowest income quartile, the price elasticities were -1.3% for cut flowers and pot plants and -4.3% for garden products. The price elasticities found indicate that the demand of Dutch consumers for ornamentals is sensitive to changes in consumer prices. Due to a lack of data on price-elasticities for ornamentals, the estimates for the Netherlands have been used for all EU Member States.

The price elasticity of demand may also be derived from the temporary increase in the French VAT rate for ornamental products in 1991. The VAT rate increase from 5.5 to 18.6% coincided with a drop in net retail sales of 12.6% implying a price elasticity of -1.0 (see Exhibit 2). Because consumer expenditures on ornamentals remained more or less constant, the tax-rate increase implied a substantial fall in net sales. In Spain, the VAT rate for ornamental ornamentals was raised from 8% to 21% in 2012. Between 2012 and 2014, florist turnover of ornamentals decreased by 25%. This decrease is undoubtedly caused by the VAT increase to at least some degree, although the economic recession also played a role (see Exhibit 1 in Chapter 4).

In this study, we elaborate two scenarios: (1) a scenario in which the Netherlands unilaterally changes the VAT rate for ornamentals from the lower to the general tariff, from 6% to 21%, and (2) a scenario in which all thirteen EU countries currently applying the lower tariff for ornamentals switch to the general tariff for ornamentals. The second scenario is based on the expectation that the Dutch policy with respect to ornamentals will be followed by other EU countries because the Netherlands acts as market leader in ornamental production and trade. As an important player in the European market for ornamentals, the Netherlands also has an important position in the policy debate in the European Council where decision-making about the VAT directive takes place. If the Netherlands would no longer apply the lower rate to ornamentals, it is likely that the possibility to exempt ornamentals from the general VAT rate will be removed from the VAT directive.

4 Results

4.1 Scenario 1: Application of the general VAT rate in the Netherlands

If the general VAT tariff is applied to ornamentals rather than the lower tariff, consumer prices in the Netherlands will rise by 14.2%. As a result, demand for cut flowers and pot plants will fall by 11.5% and demand for nursery material will fall by 19.0%. Demand falls less than may be expected on basis of the price elasticities of demand alone, because part of demand comes from businesses and businesses do not bear VAT for ornamentals (or any other product or service), because VAT paid by businesses is paid back by the tax administration. Demand for bulbs, however, will only fall by 1.9%, because of the relatively large share of B2B transactions.

Local governments do pay tax on purchases of ornamentals for e.g. public parks and gardens. It is likely that demand from local government decreases. Yearly, local governments spend about €2bn on ornamentals in the Netherlands. A VAT increase will lead to higher costs for governments or – more likely – to lower spending on public parks and gardens and consequently a lower quality of public green services.

Production in Dutch floriculture falls. 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 smaller than in scenario 2. 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 effects are most prominent in the primary production of nursery materials (trees, shrubs, bushes, and perennials) (-5.2%) and pot plants (-3.7%). Aggregate ornamental production falls by €135m (see Table 4). Employment falls by 1,095 full-time jobs in horticultural production (Table 5). Employment rises a little in the production of flower bulbs, because the fall in the demand for nursery material leads to a shift in land use from nursery material to all other horticultural products.

Aggregate retail sales decrease by 12.4% (see table 4). Net turnover decreases by €300m and employment falls by 1,630 FTEs (2,600 jobs). Turnover in wholesale decreases by €180m and employment decreases by 285 FTEs (350 jobs). The calculated effects are comparable in size to the results of Van Galen and Dijkxhoorn (2014).

For primary horticulture we lack comparable data on the ratio of FTE to the number of jobs. We estimate the effects on the primary sector at 2,200 jobs (including non-regular and temporary employment; based on PT, 2012a and PT, 2012b).

Table 4
Effects of a rise of the VAT rate in the Netherlands on sales in the horticultural supply chain in the Netherlands

	Production	Wholesale trade	Retail trade
	Million euro	Million euro	Million euro
Bulbs	~0	~0	-5
Cut flowers	-25	-65	-110
Nursery material	-30	-55	-95
Pot plants	-75	-55	-90
Total	-135	-180	-300

Source: LEI calculations based on Hortus model and data from PT, AIPH and Eurostat.

Table 5

Effects of a rise of the VAT rate in the Netherlands on employment in the horticultural supply chain in the Netherlands, in FTE

	Production	Wholesale trade	Retail trade
Bulbs	5	-5	-15
Cut flowers	-215	-105	-610
Nursery material	-245	-90	-515
Pot plants	-640	-85	-490
Total FTE	-1,095	-285	-1,630
Total number of employees	2,200 a)	-350	-2,600

a) Including temporary workers; estimate based on the number of jobs reported in PT, 2012a and PT, 2012b and the ratio to the number of FTE calculated by LEI based on Eurostat, PT and AIPH.

Source: LEI Calculations based on Hortus model and FADN and Eurostat structural business statistics.

4.2 Scenario 2: Application of the general VAT rate in all EU countries

This section presents the effects of the application of the general VAT rate to ornamentals in all EU Member States including the 13 states who currently do not apply the general tariff. The VAT rate increases lead to a fall in turnover throughout the supply chain: a fall of €3,795m in European retail trade, a fall of €2,780m in European wholesale trade and a fall of nearly €1,330m in European ornamental production (Table 6). This fall leads to a decline in employment throughout the European horticultural chain: 24,695 FTEs in European ornamental production, 7,535 FTEs in European wholesale trade and 22,470 FTEs in European retail trade (Table 7). Because producer prices decline a little due to the fall in demand, consumer demand is stimulated in the countries already applying the regular VAT tariff (see Table 6 and Table 7). Production of ornamentals in the other 14 countries falls. This hold especially for Denmark, because Denmark has a relatively large pot plant production and export.

In the Netherlands the total effect on employment is estimated at a loss of 5,120 FTEs. In ornamental horticulture 2,810 FTEs are lost (the number of jobs affected is estimated at 5,600). Furthermore, employment decreases with 725 FTEs in wholesale and 1,585 FTEs in retail trade (920 and 2,510 jobs respectively). The loss of turnover in Dutch horticulture is estimated at €340m.

Table 6

Effects of a VAT rate increase on turnover in ornamental horticulture in the EU-27

	Production		Wholesale		Retail	
	Million euro	%	Million euro	%	Million euro	%
Austria	-20	-7.9	-65	-7.7	-105	-7.7
Belgium	-60	-11.7	-190	-11.9	-210	-12.9
Czech Republic	-5	-4.8	-20	-4.9	-25	-4.2
France	-220	-12.7	-540	-12.1	-900	-12.2
Germany	-250	-9.6	-690	-9.4	-1,075	-9.7
Greece	-5	-7.2	-10	-6.1	-20	-7.5
Ireland	-5	-6.4	-10	-6.5	-15	-7.2
Italy	-265	-9.8	-490	-9.8	-735	-9.9
Luxembourg	0	0.0	-5	-13.0	-5	-6.7
Netherlands	-340	-6.3	-460	-6.1	-290	-12.9
Poland	-80	-11.4	-145	-11.6	-235	-12.3
Slovenia	-5	-8.5	-10	-9.2	-15	-10.1
Spain	-50	-8.7	-130	-8.7	-185	-8.5
Rest of EU-27	-25	-0.9	-15	-0.3	20	0.2
Total	-1,330		-2,780		-3,795	

Source: LEI calculations based on Hortus model and FADN and Eurostat structural business statistics.

Table 7

Effects of a VAT rate increase on employment in ornamental horticulture in the EU-27, in FTE

	Production	Wholesale		Retail	
	FTEs	FTEs	Number of jobs	FTEs	Number of jobs
Austria	-545	-170	-200	-785	-1,030
Belgium	-705	-330	-380	-470	-620
Czech Republic	-240	-185	-190	-185	-180
France	-4,710	-1,475	-1,560	-4,920	-5,340
Germany	-4,095	-1,795	-2,370	-9,060	-12,450
Greece	-180	-50	-60	-130	-130
Ireland	-70	-35	-40	-135	-180
Italy	-5,405	-1,330	-1,540	-2,350	-2,710
Luxembourg	0	-10	-10	-30	-30
Netherlands	-2,810	-725	-920	-1,585	-2,510
Poland	-3,855	-445	-480	-1,670	-2,010
Slovenia	-255	-95 a)	-80	-110	-150
Spain	-1,370	-810	-860	-1,200 b)	-1,230 b)
Rest of EU-27	-455	-80	-90	160	210
Total	-24,695	-7,535	-8,780	-22,470	-28,360

a) Based on turnover per FTE for Slovakia. b) based on turnover per FTE and employee for Greece.

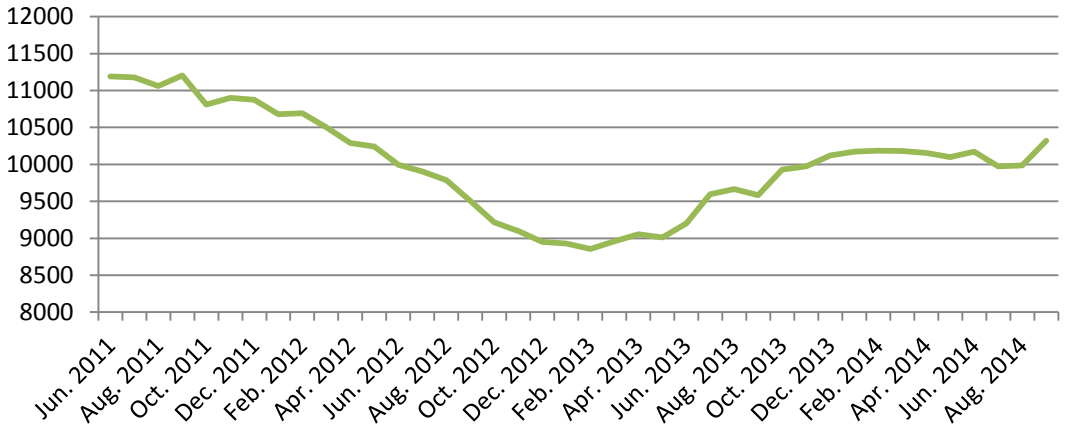
Source: LEI calculations based on Hortus model and FADN and Eurostat structural business statistics.

Exhibit 1 A real life experiment: the case of Spain

In July 2012, Spain abolished the VAT regulation for ornamentals. The VAT rate for ornamentals increased from 8% to 21%.[1] This rise had a strong negative effect on turnover of Spanish florists. Average turnover decreased by 25% from 2012 to 2014. Of course, this is also due to the economic and financial crisis, but the deterioration has been particularly sharp.[2] According to AEFI, 23% of the associated florists went bankrupt in 2013.

The decrease in demand has also impacted demand for ornamentals from the Netherlands. A dip in Spanish imports of ornamentals from the Netherlands can be observed in the winter of 2012-2013 (Graph 1).[3] After this dip, imports from the Netherlands have gradually increased, partly because of a recovering economy and partly because of substitution of Spanish ornamental products with Dutch ornamentals. The Spanish ornamentals sector has suffered considerably from the economic crisis and the VAT increase and production has decreased significantly. Note that imports already started to decline before 2012. This is caused by the economic recession starting in 2008. However, in 2012, the largest income effects of the crisis had passed and it seems reasonable to assume that a large part of the dip in 2012-2013 is caused by the VAT increase. Spain has reintroduced the lower VAT rate in 2015. Currently the lower rate of 10% applies.

Graph 1: Dutch export of ornamentals to Spain
(x 1.000 euro, 12-month average)



Source: AEFI 2014 and Eurostat 2015.

[1] 2-3% of the raise in the VAT rate was due to a general increase in VAT rates.
[2] Florists' sales already fell by 10.5% each two years from 2006 till 2012.
[3] We determined a 12-month average in order to remove seasonal fluctuations from the long run (trend) development.

Exhibit 2 A real life experience: the case of France

In August 1991, the VAT rate applied to ornamentals in France changed from the low to the regular rate: from 5.5% to 18.6%. Retail sales excluding VAT decreased from 17.5bn francs in 1991 to 15.3bn francs in 1992. Retail sales including VAT increased slightly from 18.5bn to 18.8bn francs. Consumers spent about the same amount on ornamentals in 1991 and 1992. The government simply took a bigger chunk out of consumer expenses. Because of the decrease of net retail turnover, employment in the ornamental supply chain decreased by 5.000 persons in 1992 and 6.000 persons in 1993. The government raised its VAT revenues, but at the detriment of lower income taxes and probably higher unemployment expenses. Therefore, the measure was reversed in 2013. The lower VAT rate was again applied to ornamentals in France.

Source: ADAVF 1993.

4.3 Effect on government revenue in the Netherlands

One of the main reasons to change the VAT rate for ornamentals from the lower rate to the general rate is to raise government income. If one presumes that consumers do not react to the price increase – a standard assumption of the Ministry of Finance - government income would rise by €249m (Table 8, difference between column 5 and 6). The price elasticity of the demand for ornamentals is, however, relatively high. Retail net sales are expected to fall by 12.4%. If demand falls, government revenues do not rise by €249m, but by €187m (Table 8, difference between column 5 and 8).

People get unemployed. Unemployed people pay less taxes and social insurance premiums. There are, in scenario 1, about 5,150 jobs at stake (3,010 FTEs) in the Netherlands. Social insurance premiums per employee are 5,235 euro per employee in Dutch wholesale and retail in 2013 (Eurostat, Structural business statistics). Average salaries are €22,650 in Dutch wholesale and retail. On average, households with an income of €10,000-25,000 pay about 25% taxes (www.cbs.nl). This implies that the government loses €17.0m income taxes[4] and society €27.0m in social insurance premiums.[5] So, net revenues for the government increase by €143m only (if one deducts social insurance premiums as well).

Moreover, unemployed people receive benefits. These people are not likely to find other jobs straightaway as a result of which social security expenses rise by €36.5m (€9.460 unemployment benefit (WW) per unemployed).[6] Taken these effects into account, government revenues rise by only €106.5m.

The decrease in demand also has a negative on revenues from corporate taxes. If we presume that corporate taxes equal 0.5% of turnover in wholesale and retail trade (CBS Statline) and that income taxation equals 1% in horticulture (LEI Binternet), government revenues go down by another €3.75m leaving a net revenue increase of €103m.

It is not likely that the decrease in government revenues due to unemployment and a reduction of economic activities in the horticultural supply chain continues in the long run, because other sectors will create employment and economic activities when the governments spends more money in other sectors or lends less money. In economic theory the expression the long run is used to indicate the time the economy needs to adjust to for instance changes in the tax structure. Economic theory does not indicate how much time the economy needs to realize a new long run equilibrium. In the short run government revenues rise by €103m and in the long run by €187m.

[4] Employees have a gross income of €22,650 and unemployed persons have a gross income of €9,460 (www.cbs.nl). The tax loss then equals 25%*(€22,650-€9,460)*5,150 = €17m.

[5] 5,150 jobs times €5,235.

[6] 75%*(€22,650-€9,460)*5,150 jobs. The 25% not included is tax income.

Finally, part of the extra government revenues will be a redistribution from local governments to the national government, because local governments will have to pay more VAT for the ornamentals they buy for parks.

If all European countries apply the high VAT rate for ornamentals, unemployment rises by at least 6,240 persons in the Netherlands. Income taxes and social insurance premiums fall by 53 million euro. If people do not find employment elsewhere, unemployment benefits rise by €44m. Government income from corporate taxes fall by €7m. This implies that the government gains only €83m in the short run. Again, the loss of government revenues due to unemployment and loss of economic activities is not likely to continue forever. People look for jobs in other sectors. Because the government is able to put more money in other sectors (or needs to lend less money) and people get a job in other sectors, economic activities are promoted with positive effects on government revenues (Bunte and Kuiper, 2008). In the long run government revenues are expected to increase by €187m.

Table 8

Revenues from VAT

	Gross turnover	Gross turnover consumer market	Net turnover consumer market	6% VAT	21% VAT, no change in buying behaviour	Net turnover consumer market change in buying behaviour	21% VAT, change in buying behaviour
Cut flowers	780	585	552	33	116	462	97
Nursery material & bulbs	970	728	686	41	144	575	121
Pot plants	500	450	425	25	89	330	69
Total	2.250	1.763	1.663	100	349	1.367	287

Source: Own calculations.

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