Estimating Illegal Activities in Denmark

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Executive summary

Background Both SNA 1993 and ESA 1995 state that all economic activity should be included in the national accounts – this includes illegal activity. One important argument for inclusion of these activities is that it will make comparison of national accounts between countries easier as some activities are legal in some countries while illegal in others.

Contents The following areas of illegal activities are considered in this report:

- smuggling of alcohol, tobacco and candy (supply side) (section 1)
- prostitution services (supply side) (section 2)
- drugs (demand side) (section 3)

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– Value added is estimated from the supply side as well as from the demand side in each of the three areas (except smuggling, which is only estimated from the supply side). However, the GDP effects are only calculated from either the demand side or the supply side, which is indicated in the parentheses above, depending on the quality of data on each topic.
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Sources of information The data and information used in the report have mainly been found in various reports by the police, the National Board of Health, the Danish Centre for Research on Social Vulnerability and the Ministry of Taxation. It has been difficult to find solid data on these activities due to their illegal nature, and the results of this report are consequently connected with some uncertainty. All estimates are made as price times quantities due to the nature of the information available.

GDP effects **Effect on GDP of the inclusion of illegal activities in the national accounts. Current prices, mill. DKK.**

		1998	1999	2000	2001	2002	2003	2004
	Effect on GDP							
	GDP, existing	1.163.616	1.213.473	1.293.964	1.335.611	1.362.409	1.401.808	1.460.386
	Value added:							
+	smuggling	207	181	203	257	335	281	241
+	prostitution	*1.057*	*1.083*	*1.115*	*1.141*	1.169	1.161	1.155
+	drugs	1.478	1.359	1.339	1.217	1.477	1.228	900
=	GDP including illegal activities	1.165.358	1.216.096	1.296.621	1.338.226	1.365.390	1.404.478	1.462.682
	Change in GDP, pct.	**0,24%**	**0,22%**	**0,21%**	**0,20%**	**0,22%**	**0,19%**	**0,16%**

The table above shows the effect on GDP of including value added from illegal activities in the national accounts in current prices for the period 1998-2004. The change in GDP varies between +0,16% and +0,24%. The table also shows value added from each group of illegal activities. Value added from drugs is the main contributor to the GDP effects with values ranging from 900 mill. DKK in 2004 to 1.478 mill. DKK in 1998, whereas value added from smuggling only amounts to 181-335 mill. DKK per year. Value added from prostitution, which amounts to approximately 1,2 billion DKK per year, is only estimated for 2002-2004 due to lack of data. For the period 1998-2001, the value is therefore assumed to equal the 2002 value, adjusted using the consumer price index.

Introduction

The guidelines in both SNA93 and ESA95 lay down that illegal activities must be included in estimating the total production of society. This appears from paragraph 3.08 from ESA95 which states, among other things, that "All these activities must be included even if they take place illegally or without registration at tax authorities, social authorities, statistical and other public authorities" and from paragraphs 6.30-6.36 in SNA93. Illegal activities cover:

1. Activity, where the activity itself is legal, but where the evasion of rules (tax rules, working environment rules) implies that the activity is illegal
2. Activity, where the activity itself is illegal

Item 1 covers "black work" or "hidden economy" and is already covered by the Danish national accounts.

Item 2 is currently not covered by the Danish national accounts.

The task of this report is to make estimates for the following illegal activities: Smuggling of alcohol and tobacco, etc. (section 1), prostitution (section 2) and trade of drugs (section 3).

1. Smuggling of alcohol and tobacco, etc.

1.1 Introduction

1.1.1 Consequences in the national accounts – method

At first, a more precise and operational definition of smuggling is required:

Definition   *Smuggling comprises imports of goods for reselling not subject to payment of Danish taxes and duties. The goods may have been imported subject to or not subject to duties paid abroad.*

Below, the activity thus defined is referred to as "smuggling". In this context, attention should be drawn to the difference between cross-border shopping and smuggling. Cross-border shopping is conducted entirely for own consumption – even if more goods than permissible are imported – while smuggling is imports of goods for the purpose of reselling without being subject to payment of Danish taxes and duties. The calculations apply to alcoholic beverages and tobacco and smuggling of soft drinks and candy/chocolate.

Price multiplied by quantity calculation   Basically, estimates will be made from the supply side. There is no information available on the demand. It can be argued that the household budget surveys contain some information on consumption of smuggled goods, and consequently, this may cause a risk of double counting. However, the household budget surveys are not used for calculating initial estimates for those consumer groups in the national accounts in which the smuggled goods are placed. In contrast, quantities subject to duties are used, and the risk of double counting can therefore be ruled out. The calculations are conducted as price multiplied by quantity calculations. Subsequently, values at constant prices are easily estimated.

Routing   The goods smuggled are assumed to come from European countries with lower commodity duties on the smuggled goods than in Denmark. Subsequently, import prices and thereby the basic price is equal to the purchasing price in the country in question. Furthermore, it is assumed that a "wholesale smuggler" exists, producing wholesale profits and a "retail smuggler" producing retail profits. This way, smuggled goods can easily be incorporated into the supply and use tables at the product level in the national accounts.

Consequences in the national accounts –supply side   There will be a supplement to imports corresponding to the value of smuggled goods. On the basis of the existing balance of payments statistics, which is based on the settlement statistics, a deduction should also be made in the part of imports relating to tourism expenditures. Alternatively, this correction can be omitted and the smuggled goods can be part of tourism expenditures (imports of services), and only add wholesale and retail profits. However, it seems appropriate to classify smuggled goods to a separate product in the national accounts, and a correction of tourism expenditures will therefore be preferred.

From 2005, a supplement is only to be made for imports, as illegal imports are assumed not to be included in the new balance of payments statistic.

There will also be a supplement to the production value, corresponding to the wholesale and retail profits produced in connection with smuggling activities. As

there is no information available, a ratio of 25 pct. for wholesale and 75 pct. for retail sale is generally assumed.

It is assumed that intermediate consumption by partly the "wholesale smuggler" and partly the "retail smuggler" is already incorporated into the national accounts – either as intermediate consumption in connection with legal activities or as private consumption. That is, value added will be equal to the production value of wholesale and retail sale profits. It is also assumed that any investments (e.g. in cars) are already included in gross fixed capital formation.

The supplement to private consumption will depend on how it is decided to calculate imports. If it is decided to make a correction of tourism expenditure, the effect on each individual consumer group will be a supplement, corresponding to the value of the purchasing price of the smuggled goods. Furthermore, there will be an effect on tourism expenditure, which is reduced by an amount, equal to the import value. If a correction of tourism expenditure is not made, the effect on each individual consumer group will be the value of the purchasing price of the smuggled goods less the import value (= wholesale and retail sale profits), as the existing balance of payments statistics, which form the basis for compiling tourism expenditure, already contain data on the import value. In other words, the import value is already covered by tourism expenditure. In both cases, the effect on total private consumption will be the wholesale and retail sale profits.

With the compilation of the new balance of payments statistics (from 2005), there will be a direct effect on each consumer group, as adjustments of tourism expenditures are no longer necessary.

It is assumed that changes in inventories are not affected. As there may be a certain risk involved in stocking smuggled goods, this seems to be a reasonable assumption. Although, smugglers probably have, to a minor extent, some smuggled goods in stock, this circumstance is consequently disregarded.

To the extent that alcoholic beverages and tobacco are bought in Denmark for illegal reselling abroad, values for exports of smuggled goods must also be estimated. It cannot be ruled out that such illegal sales can take place for alcoholic beverages and tobacco to Norway and Sweden, but we have no information on the scope of this. For the time being, it has been decided to disregard this, as the values are covered by the balance of payments statistics, and thereby included in income from tourism.

It is a realistic assumption that smuggling activities take place in the household sector. There is no split of value added into compensation of employees and mixed income, as it is assumed that all value added applies to mixed income. This implies that there is an implicit assumption that smuggling is carried out by individual smugglers, e.g. a wholesaler smuggler and a retail smuggler. This is probably a simplified assumption, but separating compensation of employees will only be based on assumptions.

The calculations in the following paragraphs cover the period 1998-2004.

1.1.2 Consequences in the national accounts – GDP effect

A report entitled *Rapport om grænsehandel* prepared by the Danish Ministry of Taxation, cross-border shopping of selected goods is discussed: spirits, tobacco, beer, wine, petrol, diesel, mineral water, chocolate and other goods. The report

discusses analyses of the scope and causes of cross-border shopping, e.g. in the form of price differentials between Denmark and abroad. The report explicitly outlines illegal trade (e.g. smuggling) of mineral water and soft drinks, candy and chocolate, but the Ministry of Taxation has indicated that illegal trade of alcoholic beverages (beer and wine) and tobacco takes place as well.

Tables 1.1 and 1.2 below show the general effects of including smuggling of alcoholic beverages and tobacco, mineral water and soft drinks, candy and chocolate in the national accounts. Sections 1.2-1.5 describe the calculations of each individual commodity group, while annexes 1.1 and 1.2 show the effect on GDP, respectively, at current and at constant prices at a more detailed level. The calculations are based on the assumptions from the previous sections. Adjustments are made to tourism expenditures in tables 1.1 and 1.2 and in annexes 1.1 and 1.2.

Table 1.1 **Level effect on GDP and private consumption as a result of including smuggling in the national accounts.**
Current prices, mill. DKK.

		1998	1999	2000	2001	2002	2003	2004
	Effect on GDP							
	GDP existing	1.163.616	1.213.473	1.293.964	1.335.611	1.362.409	1.401.808	1.460.386
+	Value added, smuggling	207	181	203	257	335	281	241
=	GDP incl. smuggling	1.163.823	1.213.654	1.294.167	1.335.868	1.362.744	1.402.089	1.460.627
	Change in GDP, pct.	**0,02**	**0,01**	**0,02**	**0,02**	**0,02**	**0,02**	**0,02**
	Effect on private consumption							
	Existing:							
	2030 total	590.289	599.132	616.682	631.687	651.448	673.142	710.111
	2030 1182	9.621	9.497	9.734	9.918	0	0	0
	2030 1220	6.314	6.394	6.711	6.906	6.935	6.852	6.473

		1998	1999	2000	2001	2002	2003	2004
	2030 2110	6.750	7.040	7.311	7.694	7.963	9.379	10.294
	2030 2130	5.887	5.621	5.855	5.616	5.418	5.220	4.853
	2030 2210	12.766	13.256	13.348	13.904	13.897	13.764	13.450
	2030 9990	22.870	26.770	28.966	31.359	36.607	35.158	35.279
	Private consumption of smuggled goods:							
+	2030 total	207	181	203	257	335	281	241
+	2030 1182	109	112	121	120	165	202	250
+	2030 1220	51	52	107	180	288	231	220
+	2030 2110	63	66	71	73	71	71	70
+	2030 2130	141	141	143	137	132	123	111
+	2030 2210	302	294	291	300	309	252	231
-	2030 9990	459	485	528	553	629	598	640
	Private consumption incl. smuggled goods:							
=	2030 total	590.496	599.313	616.885	631.944	651.783	673.423	710.352
=	2030 1182	9.730	9.609	9.855				
=	2030 1220	6.365	6.446	6.818	7.086	7.223	7.083	6.693
=	2030 2110	6.813	7.106	7.382	7.767	8.034	9.450	10.364
=	2030 2130	6.028	5.762	5.998	5.753	5.550	5.343	4.964
=	2030 2210	13.068	13.550	13.639	14.204	14.206	14.016	13.681
=	2030 9990	22.411	26.285	28.438	30.806	35.978	34.560	34.639
	Change in private consumption, pct.							
	2030 total	**0,04**	**0,03**	**0,03**	**0,04**	**0,05**	**0,04**	**0,03**
	2030 1182	**1,13**	**1,18**	**1,24**				
	2030 1220	**0,81**	**0,82**	**1,60**	**2,61**	**4,16**	**3,38**	**3,40**
	2030 2110	**0,94**	**0,94**	**0,96**	**0,95**	**0,89**	**0,76**	**0,68**
	2030 2130	**2,40**	**2,50**	**2,44**	**2,44**	**2,43**	**2,36**	**2,29**
	2030 2210	**2,36**	**2,22**	**2,18**	**2,16**	**2,22**	**1,83**	**1,71**
	2030 9990	**-2,01**	**-1,81**	**-1,82**	**-1,76**	**-1,72**	**-1,70**	**-1,82**

Note: 2030 1182: Ice cream, chocolate and sugar confectionery, 2030 1220 Mineral water and soft drinks 2030 2110 Wine and spirits, 2030 2130 Beer, 2030 2210 Tobacco, 2030 9990 Tourism expenditure.

Minimum effect on GDP and total private consumption

Table 1.1 shows the level effect on GDP and private consumption at current prices covering the period 1998-2004. An increase in GDP of between +0.01 and +0.02 pct. is not striking. The same applies to the total increase in private consumption of between 0.03 and 0.05 pct., which is also not striking. As far as the individual consumer groups are concerned the effect is somewhat higher and varies between the groups over the period. In 1998 for example, beer accounts for the highest effect of +2.40 pct., while mineral water and soft drinks account for the highest effect of +3.40 in 2004.

Table 1.2

Effect on GDP and private consumption as a result of including smuggling in the national accounts.
2000 prices, mill. DKK and annual change in pct.

		1998	1999	2000	2001	2002	2003	2004
	Effect on GDP growth							
	GDP existing	1.219.207	1.252.811	1.293.964	1.303.085	1.309.334	1.319.415	1.345.400
+	Value added, smuggling	274	268	293	322	373	321	326
=	GDP incl. smuggling	1.219.481	1.253.079	1.294.257	1.303.407	1.309.707	1.319.736	1.345.726
	Annual growth in GDP, pct., existing	**1,76**	**2,76**	**3,28**	**0,70**	**0,48**	**0,77**	**1,97**
	Annual growth in GDP, pct., incl. smuggling	**1,76**	**2,76**	**3,29**	**0,71**	**0,48**	**0,77**	**1,97**
	Effect on private consumption							
	Existing:							
	2030 total	590.289	599.132	616.682	631.687	651.448	673.142	710.111
	2030 1182	9.621	9.497	9.734				

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	2030 1220	6.610	6.494	6.711	6.395	6.164	6.152	6.137
	2030 2110	6.904	7.069	7.311	7.579	7.795	9.339	10.808
	2030 2130	6.090	5.925	5.855	5.705	5.662	5.465	5.109
	2030 2210	13.158	13.538	13.348	13.624	13.282	13.318	13.855
	2030 9990	25.665	28.822	28.966	30.788	35.360	34.503	34.253
Private consumption of smuggled goods:								
+	2030 total	274	268	293	322	373	321	326
+	2030 1182	99	100	107	103	138	164	201
+	2030 1220	43	43	85	128	196	160	160
+	2030 2110	61	62	65	66	64	64	63
+	2030 2130	131	129	126	123	121	114	104
+	2030 2210	288	279	270	270	270	225	225
-	2030 9990	347	344	360	368	415	405	426
Private consumption incl. smuggled goods:								
=	2030 total	590.563	599.400	616.975	632.009	651.821	673.463	710.437
=	2030 1182	9.720	9.597	9.841	103	138	164	201
=	2030 1220	6.653	6.537	6.796	6.523	6.360	6.312	6.297
=	2030 2110	6.965	7.131	7.376	7.645	7.859	9.403	10.871
=	2030 2130	6.221	6.054	5.981	5.828	5.783	5.579	5.213
=	2030 2210	13.446	13.817	13.618	13.894	13.552	13.543	14.080
=	2030 9990	25.318	28.478	28.606	30.420	34.945	34.098	33.827
Annual change in private consumption, pct., existing								
	2030 total	3,74	1,50	2,93	2,43	3,13	3,33	5,49
	2030 1182	4,51	-1,29	2,50				
	2030 1220	-5,36	-1,75	3,34	-4,71	-3,61	-0,19	-0,24
	2030 2110	0,57	2,39	3,42	3,67	2,85	19,81	15,73
	2030 2130	-5,36	-2,71	-1,18	-2,56	-0,75	-3,48	-6,51
	2030 2210	-0,16	2,89	-1,40	2,07	-2,51	0,27	4,03
	2030 9990	5,93	12,30	0,50	6,29	14,85	-2,42	-0,72
Annual change in private consumption, pct., incl. smuggling								
	2030 total	3,73	1,50	2,93	2,44	3,13	3,32	5,49
	2030 1182	4,58	-1,26	2,54	-98,95	33,60	18,40	22,93
	2030 1220	-5,32	-1,74	3,97	-4,02	-2,50	-0,76	-0,24
	2030 2110	0,54	2,39	3,44	3,65	2,79	19,65	15,61
	2030 2130	-5,35	-2,69	-1,20	-2,57	-0,76	-3,54	-6,57
	2030 2210	-0,22	2,76	-1,44	2,03	-2,46	-0,07	3,97
	2030 9990	6,02	12,48	0,45	6,34	14,88	-2,42	-0,79

Note: 2030 1182: Ice cream, chocolate and sugar confectionery, 2030 1220 Mineral water and soft drinks 2030 2110 Wine and spirits, 2030 2130 Beer, 2030 2210 Tobacco, 2030 9990 Tourism expenditure.

No effect on GDP growth and growth in private consumption

Table 1.2 shows the effect of including smuggling on GDP and private consumption at constant 2000 prices and the annual growth rates for the period 1998-2004. It appears that the inclusion of smuggling does not affect GDP growth or growth in total private consumption over the period of time concerned. However, there is a minor effect on each individual consumer group in which the smuggled goods are placed. It must be noted that growth can be both increased and reduced by the inclusion of smuggling.

1.2 Mineral water and soft drinks

Scope

In the report *Rapport om grænsehandel 2001* prepared by the Danish Ministry of Taxation, it is stated that illegal imports of soft drinks are increasing (paragraph 9 of chapter 12). Inspection visits made by the Danish tax authorities at Nørrebro (Copenhagen) and information from Danish manufacturers of soft drinks indicate an increasing trend. Danish manufacturers of soft drinks have stated that their sales of Coca Cola at Nørrebro decreased by 28 pct. from 2000 to 2001. However,

the Danish tax authorities state that some of the illegal imports actually can be legal, parallel imports of Coca cola, i.e. where duties are paid to the Danish state.

Routing   Smuggling of soft drinks is to a great extent organized, Retail sales are conducted from kiosks, particularly in Greater Copenhagen. The import itself takes place mainly from Eastern Europe.

Quantities   The Danish Ministry of Taxation does not have own estimates of the scope of illegal sales, but base their estimates on information from the Danish Brewers' Association. Consequently, estimates made by the Danish breweries (i.e. Danish manufacturers of soft drinks) are used, and illegal sales were estimated to have reached at least 20 million litres in 2001. On their website, the Danish breweries have compiled a time series for illegal imports, which show that illegal imports in 2001 were 15 million litres. Since the Danish Ministry of Taxation finds the estimate of 15 million litres very low, the figure of 20 million litres in 2001 is used in the national accounts, which are subsequently extrapolated forwards and backwards using the figures prepared by the Danish Brewers' Association.

Table 1.3   **Consumption of mineral water and soft drinks. (Million litres)**

Year	Legal	Illegal	Cross-Border	Total
1995	443,7	6,7	*6,9*	457,3
1996	461,8	6,7	6,9	475,4
1997	505,7	6,7	*9,9*	522,3
1998	488,1	6,7	*12,9*	507,7
1999	493,5	6,7	16,6	516,8
2000	512,1	13,3	33,8	559,2
2001	464,9	20,0	45,2	530,1
2002	459,3	20,0	40	519,3
2003	427,4	25,0	55	507,4
2004	430,0	25,0	70	525,0

Source: Danish Ministry of Taxation *(Rapport om grænsehandel 2001, tables XII.1 and XII.13; Rapport om grænsehandel 2004 tables XII.2 and XII.27),* Danish Brewers' Association and own estimates *(italic)*

Table 1.3 shows the consumption of mineral water and soft drinks which consists of legal domestic sales, illegal sales and cross-border shopping. The table shows that illegal domestic sales and cross-border shopping have increased a lot over the period of time in question.

If total consumption is assumed to remain unchanged between 2000 and 2001, then illegal consumption and cross-border shopping should have been about 30 million litres higher than the figure appearing in table 1.3. The estimate of 20 million litres in 2004 made by the Danish Ministry of taxation is therefore considered not to overstate illegal sales, and consequently it can be used in the national accounts. Attention should here be drawn to the fact that cross-border shopping is not included in private consumption of soft drinks in the national accounts (2030 1220), but is implicitly included in tourism expenditures instead. By means of a supplement of 20 million litres, illegal sales will make up 4,1 pct. of total domestic sales in 2001 ((20/(464,9+20)).

Table 1.4   **Duties on mineral water 1973-**

Year	DKK per litres
1973-84	0,80
1984-91	1,60
1991-98	0,80
1998-01	1,00
2001-okt.03	1,65
okt.2003-	1,15

Duties   Table 1.4 shows the development in duties on mineral water since 1973. The sharp increase in duties in 2001 is assumed to have implied an increase in the smuggling of mineral water and soft drinks. It is also possible that the reduction of duties in 2003 can lead to a fall in smuggling, but this is not likely as long as the price differential is of a magnitude, which makes smuggling worthwhile.

Prices for illegal   In the report *Rapport om grænsehandel 2004* by the Danish Ministry of taxation,
soft drinks   prices for Coca-Cola sold illegally are stated (2004), see table 1.5 below:

Table 1.5   **Price elements per litre of Coca-Cola in connection with legal and illegal sales in 2004. DKK.**

	Legal	Half legal 1)	Illegal
Retail price	13	13	10
VAT	2,6	0	0,66
Duties	1,65	1,65	0,38
Wholesale price	6,55	6,55	3,5
Profit	2,2	4,8	5,46

Source: Danish Ministry of Taxation. *Rapport om grænsehandel 2004. Table XII.35.*
1) It is assumed that VAT and duties are paid every third time.

It appears from table 1.5 that there is a saving of about 30 pct. when a Coca-Cola is bought illegally. The illegal retail price of DKK 10,00 per litre in the table is used for calculating the value of the purchasing price, while the illegal wholesale price of DKK 3,50 is used for calculating the value of imports and thereby the basic price value. Profits of DKK 5,46 are equally divided between wholesale and retail sale profits on an assumed ratio of 25/75.

Using 2004 as a benchmark, prices have been extrapolated forwards on the basis of developments in the consumer price index. Concerning the retail price, the Danish consumer price index for soft drinks, etc. has been used, as it is assumed that the development in illegal prices follows the development in legal prices. For the wholesale price, i.e. the import price, the consumer price index for soft drinks, etc. in Poland has been used, as it is assumed that the majority of smuggled soft drinks are imported from Poland. Fluctuations in the differential between the two prices (positive or negative), are assumed to accrue to the smuggler, and ends up in the profits as a consequence thereof[1].

Table 1.6   **Smuggling of mineral water and soft drinks. Current prices, mill. DKK.**
Effect on private consumption of mineral water and soft drinks in the case of full purchasing price and sales margins only.

Year	2030 1220	Illegal (purchasing prices)	Total incl. illegal	**% illegal**	Illegal (sales margins)	Total incl. illegal	% illegal
	(1)	(2)	(3)=(1)+(2)	**(4)=(2)/(3)**	(5)	(6)=(1)+(5)	(7)=(5)/(6)
1995	4970	43	5.013	**0,85**	29	4.999	0,59
1996	5267	45	5.312	**0,85**	29	5.296	0,55
1997	6194	47	6.241	**0,76**	28	6.222	0,45
1998	6314	51	6.365	**0,81**	31	6.345	0,48
1999	6394	52	6.446	**0,81**	30	6.424	0,47
2000	6711	107	6.818	**1,57**	61	6.772	0,91
2001	6906	180	7.086	**2,54**	110	7.016	1,57
2002	6935	188	7.123	**2,64**	119	7.054	1,69
2003	6852	188	7.040	**2,67**	119	6.971	1,71
2004	6473	188	6.661	**2,82**	119	6.592	1,80

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[1] It could be considered to adjust price trends in Poland in accordance with trends in the exchange rate.

Table 1.6 shows the effect of smuggling of soft drinks on the consumption group 2030 1220 Mineral water and soft drinks. The effect of full impact on the purchasing price (i.e. correction of tourism expenditures) is shown as well as the effect of profits only (i.e. no correction of tourism expenditures). Table 1.6 shows that smuggling of mineral water and soft drinks takes place to some extent, but it is not a dominant feature of the consumption group. For example, the consumption group is increased by 2,64 pct. in 2002 (i.e. correction of tourism expenditures).

1.3 Tobacco

Extent and routing
Only very limited information on the smuggling of tobacco is available. The Danish Ministry of Taxation estimates that about 300 million cigarettes (including cigars, smoking tobacco, and hand rolling tobacco) are sold illegally every year in Denmark. The estimate is connected with some uncertainty. This concerns cigarettes sold at major workplaces, pubs, markets and by "special persons". A majority of the smuggled cigarettes come from Eastern Europe.

Table 1.7

Consumption of cigarettes, mill. of cigarettes.

Year	Legal	Illegal	Total	% Illegal
1992	6.512	380	6.892	5,51
1993	6.215	370	6.585	5,62
1994	6.323	360	6.683	5,39
1995	6.239	350	6.589	5,31
1996	6.466	340	6.806	5,00
1997	6.570	330	6.900	4,78
1998	6.632	320	6.952	4,60
1999	6.843	310	7.153	4,33
2000	6.745	300	7.045	4,26
2001	6.838	300	7.138	4,20
2002	7.038	300	7.338	4,09
2003	6.791	250	7.041	3,55
2004	7.678	250	7.928	3,15

Source: *Legal*: quantities subject to duties according to the national accounts, *Illegal:* Danish Ministry of Taxation.

Quantities
Table 1.7 shows the consumption of cigarettes sold legally as well as illegally in millions of cigarettes. In addition to this comes cross-border shopping, which is estimated by the Danish Ministry of Taxation to account for 850 million in 2000 (including tax free). In the years 2000, 2001 and 2002, the number of cigarettes sold illegally is estimated at 300 million, while the number of cigarettes is increased by 10 million units per year back in time as from 1999, which implied that the number of smuggled cigarettes was 400 million units in 1990. As a result of reduction in taxes on cigarettes, the number of smuggled cigarettes is reduced to 250 million in 2003 and 2004. In 2004 smuggled cigarettes account for about 3,15 pct. of total sales.

Ten years ago, approximately 100 million more units of illegal cigarettes were sold as this is a declining market. "Gangs of smugglers" look for the markets where the greatest profits can be gained, i.e. countries with high duties, which are, at the moment, United Kingdom and Norway, see table 1.8.

Table 1.8 **Retail prices and duties in price groups which account for the greatest demand in EU25 and Norway in May 2004, and Denmark from August 2004**

DKK / 20 units	Retail price	Duty per unit	Ad valorem tax	VAT	Price without duties
Belgium	26,49	3,12	12,14	4,60	6,63
Denmark	31	12,73	4,22	6,20	7,85
Germany	31,33	11,25	7,78	4,32	7,98
Greece	20,09	0,73	10,82	3,06	5,47
Spain	15,62	0,59	8,44	2,15	4,44
France	37,20	2,24	21,57	6,10	7,30
Ireland	46,5	19,85	8,52	8,07	10,06
Italy	20,83	0,78	11,40	3,47	5,17
Cyprus	21,33	3,10	9,49	2,78	5,95
Malta	26,86	2,53	13,80	4,10	6,43
Luxembourg	18,45	2,12	8,64	1,98	5,72
Netherlands	27,38	10,00	5,63	4,37	7,38
Austria	22,32	3,50	9,60	3,72	5,50
Portugal	17,86	6,89	4,11	2,85	4,00
Finland	29,76	2,25	14,88	5,37	7,26
Sweden	31,73	3,30	12,44	6,35	9,65
UK 1)	51,90	21,49	11,42	7,73	11,26
Poland	9,04	2,33	2,57	1,63	2,50
Estonia	8,56	2,28	2,14	1,31	2,83
Latvia	4,01	1,54	0,42	0,61	1,44
Lithuania	6,68	2,05	1,00	1,02	2,61
Czech Republic	10,36	2,26	2,38	1,65	4,06
Slovakia	13,00	3,38	2,60	2,08	4,94
Slovenia	13,02	1,92	5,51	2,17	3,42
Hungary	12,54	3,90	2,88	2,51	3,25
Bulagria	5,97	0,95	1,90	1,00	2,13
Romania	5,24	0,85	1,62	1,00	1,77
Norway	58,63	33,16	0,00	11,73	13,74

Ave. EU-15 + Norway	30,38	8,38	9,47	5,12	7,42
Ave. EU-15	26,49	3,12	12,14	4,60	6,63

Source: Danish Ministry of Taxation, *Rapport om grænsehandel 2004, table VII.11.*
1) Great Britain and Northern Ireland.

Duties After the reduction of duties in October 2003, Danish prices will approach those of other EU member states (except from United Kingdom), and the incentive to smuggle is therefore assumed to be reduced, see table 1.8.

Table 1.9 **Duty rates for tobacco products from 2001 to 2004**

Type of tobacco product	From 2001 to October 1st 2003	After October 1st 2003
Cigarettes	60,68 ore/unit.+ 21,22 pct. of retail price, incl. VAT	48,92 ore/unit.+ 21,22 pct. of retail price, incl. VAT
Pibe tobacco	DKK 402,50 per kg.	DKK 402,50 per kg.
Twist tobacco	DKK 452,50 per kg.	DKK 452,50 per kg.
Cigars	19,8 ore/unit + 10 pct .of retail price	19,8 ore/unit + 10 pct .of retail price
Cigarette paper	4 ore/unit	4 ore/unit
Chewing tobacco and snuff	DKK 63 per kg.	DKK 63 per kg.
Other smoke-free tobacco products	DKK 229 per kg.	DKK 229 per kg.

Source: Danish Ministry of Taxation, *Rapport om grænsehandel 2004, table VII.1.*

The duty rate for cigarettes has applied since 1st of April 1986. From October 1st 2003, the duty rate was reduced by 11,76 ore per unit from 60,68 ore per unit to 48,92 ore per unit. From January 9th 2005 the duty rates will be changed to 63,66 ore per unit and 13,61 pct. of retail price, incl. VAT. This change in the composition of the duty rate on cigarettes may have an influence on the amounts of illegal cigarettes as well as border shopping.

Prices According to the Danish Ministry of Taxation, the price of producing 20 cigarettes is about DKK 2, and in the illegal market a packet of 20 cigarettes can be bought at a price of DKK 15-20 (2001). The national accounts are compiled on the basis of an import price of DKK 15 for 20 cigarettes and a domestic illegal purchasing price of DKK 20. The 2001 benchmark with respect to the import price is extrapolated forwards and backwards using the Polish consumer price index for cigarettes, as it is assumed that smuggled cigarettes come from Eastern Europe[2]. The domestic sales price is extrapolated with the development in the Danish consumer price index for cigarettes.

Table 1.10 **Smuggling of cigarettes, etc. Current prices, mill. DKK.**
Effect on private consumption of tobacco in the case of full purchasing price and sales margins only.

	2030 2210	Illegal (purchasing prices)	Total incl. illegal	% illegal	Illegal (sales margins)	Total incl. illegal	% illegal
Year	(1)	(2)	(3)=(1)+(2)	(4)=(2)/(3)	(5)	(6)=(1)+(5)	(7)=(5)/(6)
1995	11.856	314	12.170	**2,58**	221	12.077	1,83
1996	12.371	311	12.682	**2,45**	181	12.552	1,44
1997	12.554	306	12.860	**2,38**	150	12.704	1,18
1998	12.766	302	13.068	**2,31**	118	12.884	0,91
1999	13.256	294	13.550	**2,17**	87	13.343	0,65
2000	13.348	291	13.639	**2,13**	68	13.416	0,51
2001	13.904	300	14.204	**2,11**	75	13.979	0,54
2002	13.897	309	14.206	**2,17**	75	13.972	0,54
2003	13.764	252	14.016	**1,80**	53	13.817	0,38
2004	13.450	231	13.681	**1,69**	18	13.468	0,13

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[2] It could perhaps be considered to adjust price trends in Poland in accordance with trends in the exchange rate.

Table 1.10 shows the effect on private consumption of tobacco by inclusion of smuggling of cigarettes, etc. It can be seen that with the selected developments in prices, profits decrease more than purchasing prices. That is, the profit of the smugglers has been declining. This tendency is in accordance with the view of the Danish Ministry of Taxation that the number of smuggled cigarettes has been declining over the last 10 years, as other markets have proved to be more attractive. The effect on purchasing prices for private consumption of tobacco was 1,69 pct. in 2004. If tourism expenditures are not adjusted, the effect on private consumption of tobacco is equal to profits, i.e. 0,13 pct.

1.4 Alcohol

1.4.1 Beer

Scope It is estimated by the Danish Ministry of Taxation that smuggled beer makes up 2-3% of the quantities subject to duties. This estimate is connected with some uncertainty. In 2001, this was equal to 14 million litres. A great majority of smuggled beer come from Germany. This is due to the adequate price differential and the distance to Germany not being too long for transporting goods of this kind, which are both heavy and take up a lot of space.

Routing Smuggling of beer is typically carried out by the "small grocer" (kiosk-owner), who crosses the border and collects Danish beer, which he resells in his kiosk. As beer bottles or beer cans do not have any stamped revenue label, they can be sold unnoticed. After the abolishment of the ban on beer cans on 23 January 2002, beer bottles as well as beer cans are smuggled.

Table 1.11 **Consumption of beer. Million litres.**

Million litres	Legal	Cross-border shopping	Illegal	Total
1992	624	77	16	716
1993	623	77	16	715
1994	632	77	16	725
1995	628	77	16	720
1996	616	77	15	708
1997	619	82	15	716
1998	588	87	15	689
1999	577	97	14	688
2000	565	100	14	679
2001	549	95	14	658
2002	542	100	14	656
2003	509	100	13	622
2004	463	95	12	570

Source *Legal*: Quantities subject to duties according to the national accounts, *Cross-border shopping:* Rapport om grænsehandel 2001 and own estimates (italics), *Illegal:* Danish Ministry of Taxation.

Quantities Table 1.11 shows total consumption of beer consisting of legal shopping (domestic quantities subject to duty), cross-border shopping and illegal shopping (smuggled beer). Smuggled beer is estimated as 2,5 pct. of the quantities subject to duty. In 2001, smuggled beer accounted for 1,8 pct. of total consumption, including cross-border shopping.

Table 1.12	**Price elements for branded beer in the EU and Norway on 1 May 2004**				
Country	Sales price	Of which duties	Of which VAT	VAT and duties	Price excl. VAT and duties based on Danish trade margins
Denmark	100,00	26,58	20,00	46,58	53,42
Denmark 1)	100,02	26,60	20,00	46,60	53,42
Germany	69,02	6,09	9,52	15,61	53,42
Sweden	135,28	54,81	27,06	81,86	53,42
Norway	244,49	143,75	47,32	191,07	53,42
Austria	83,40	16,08	13,90	29,98	53,42
Belgium	80,64	13,23	14,00	27,22	53,42
Greece	73,34	8,74	11,19	19,93	53,42
Spain	69,23	6,26	9,55	15,81	53,42
Finland	145,55	65,88	26,25	92,13	53,42
France	74,42	8,81	12,20	21,00	53,42
UK 2)	133,89	60,53	19,94	80,47	53,42
Irland	146,08	67,31	25,35	92,66	53,42
Italy	78,85	12,29	13,14	25,44	53,42
Luxembourg	68,49	6,13	8,93	15,07	53,42
Netherlands	80,08	13,87	12,79	26,66	53,42
Portugal	74,43	9,12	11,88	21,01	53,42
Cyprus	80,09	16,23	10,45	26,67	53,42
Estonia	77,10	11,92	11,76	23,69	53,42
Latvia	70,55	6,37	10,76	17,13	53,42
Lithuania	71,15	6,88	10,85	17,73	53,42
Malta	69,84	5,77	10,65	16,42	53,42
Poland	79,32	11,60	14,30	25,90	53,42
Slovakia	74,70	9,36	11,93	21,28	53,42
Slovenia	92,47	23,64	15,41	39,06	53,42
Czech Republic	72,26	5,81	13,03	18,85	53,42
Hungary	82,76	12,79	16,55	29,34	53,42

Source: Danish Ministry of Taxation. *Rapport om grænsehandel 2004, table VIII.3.*
1) Denmark's situation after implementing a planned change in duties October 2004.
2) Great Britain and Northern Ireland.

Duties   Table 1.12 shows price elements for a box of branded beer (30 bottles) in the EU member states, with Denmark set at 100. The table shows that due to different rates of VAT and duty, there is a considerable price difference between Denmark and Germany.

Prices   A benchmark in 2001 has been used for the prices. As import price for smuggled beer, the bargain price for a box of beer south of the border (Germany) has been applied. It is assumed that only Danish branded lager beer (Tuborg or Carlsberg) is smuggled, i.e. the price of lager beer is used. The bargain price for a box of lager beer in Germany was about DKK 85 in 2001. Furthermore, the price for bottled beer is applied, due to the circumstance that until 23 January 2002, there was a ban on cans in Denmark. It is thus assumed that smugglers prefer to sell

their goods in small grocer's shops (kiosks), so that the goods cannot be recognized as smuggled goods so easily. The German consumer price index for beer has been applied when extrapolating the benchmark price in 2001.

The bargain price for a box of Tuborg or Carlsberg lager beer in Denmark is used as illegal sales price in Denmark. In 2001, the typical bargain price for a box of lager beer in Denmark was DKK 99,95. The price is extrapolated using the Danish consumer price index for beer. The argument in favour of using the bargain price is that small grocers are not able to buy beer in large quantities and thereby obtain a favourable price in Denmark. In order to enable them to sell beer at bargain prices in Denmark, they smuggle beer from Germany.

Table 1.13

Smuggling of beer. Current prices, mill. DKK.
Effect on private consumption of beer in the case of full purchasing price and sales margins only.

Year	2030 2130	Illegal (purchasing prices)	Total incl. illegal	% illegal	Illegal (sales margins)	Total incl. illegal	% illegal
	(1)	(2)	(3)=(1)+(2)	**(4)=(2)/(3)**	(5)	(6)=(1)+(5)	(7)=(5)/(6)
1995	6.408	140	6.548	**2,14**	11	6.419	0,17
1996	6.282	141	6.423	**2,19**	13	6.295	0,20
1997	6.097	147	6.244	**2,35**	17	6.114	0,28
1998	5.887	141	6.028	**2,34**	18	5.905	0,30
1999	5.621	141	5.762	**2,44**	19	5.640	0,34
2000	5.855	143	5.998	**2,38**	24	5.879	0,41
2001	5.616	137	5.753	**2,38**	21	5.637	0,37
2002	5.418	132	5.550	**2,37**	14	5.432	0,27
2003	5.220	123	5.343	**2,30**	11	5.231	0,20
2004	4.853	111	4.964	**2,24**	8	4.861	0,15

Value
Table 1.13 shows the effect from smuggled beer on private consumption of beer in the national accounts. As a consequence of the calculation method, the effect on private consumption remains more or less constant at approximately 2 pct., if smuggled beer were included in the purchasing prices, i.e. by means of correcting tourism expenditures. If tourism expenditures are not corrected, the effect will be equal to the profits, i.e. approximately 0,2-0,4 pct (column 7).

1.4.2 Wine

Scope
It is estimated by the Danish Ministry of Taxation that smuggled wine accounts for about 1 pct. of the quantities subject to duty. As for tobacco and wine, this estimate is connected with some uncertainty. In 2001, this corresponds to 1.6 million litress. A great majority of smuggled wine comes – similar to smuggled beer - from Germany. The reason is that the price differential is sufficient for making it worthwhile, and that the distance is not too far for transporting the goods. The reason why the quantity of smuggled wine is lower compared to beer is that wine in Denmark has a stamped duty label, and it is therefore easier to recognize if it is smuggled. This makes it, consequently, more "dangerous".

Routing
Smuggling of wine is carried out in the same way as smuggling of beer. That is, the "small grocer" (kiosk-owner) crosses the border and buys some wine, which he then resells in his grocer shop (kiosks).

Table 1.14 **Consumption of wine, million litres.**

Million litres	Legal	Cross-border shopping 1)	Illegal	Total
1993	127,8	*25,5*	1,3	154,6
1994	133,2	*25,5*	1,3	160,0
1995	140,8	*25,5*	1,4	167,7
1996	144,0	25,5	1,4	170,9
1997	153,8	*30,5*	1,5	185,8
1998	150,1	*35,5*	1,5	187,1
1999	153,8	*40,5*	1,5	195,9
2000	161,2	25,0	1,6	187,9
2001	164,0	27,5	1,6	193,1
2002	157,9	28,5	1,6	188,0
2003	159,5	30,0	1,6	191,1
2004	155,8	24,0	1,6	181,4

Source: *Legal*: Quantities subject to duties according to the national accounts, *Cross-Border Shopping: Rapport om grænsehandel 2004* and own estimates (*italic*), *Illegal:* Estimates based on information from Danish Ministry of Taxation.
1) In consistency in data from 1999 to 2000.

Table 1.14 shows total consumption of wine consisting of legal (domestic quantities subject to duty), cross-border shopping and illegal shopping (smuggled wine). Smuggled wine is estimated as 1 pct. of the quantities subject to duty. In 2001, smuggled wine accounted for 0,7 pct. of total consumption, including cross-border shopping. It must be noted that cross-border shopping is estimated by the Danish Institute of Border Region Studies. The figures for 2000 and especially 2001 are considered by the Danish Ministry of Taxation to be too high. It is estimated by the Danish Ministry of Taxation that cross-border shopping accounts for 25 million litres in 2000 and the same figure in 2001.

Table 1.15 **Price elements for table wine (12 pct. vol.) in EU member states and Norway on May 1st 2004.**

DKK per bottle	Sales price	Of which duties	Of which VAT	VAT and duties	Price excl. VAT and duties based on Danish trade margins
Denmark	40,00	5,29	8,00	13,29	26,71
Germany	30,99	0,00	4,27	4,27	26,71
Sweden	50,34	13,56	10,07	23,63	26,71
Norway	69,28	29,16	13,41	42,57	26,71
Austria	32,06	0,00	5,34	5,34	26,71
Belgium	35,50	2,63	6,16	8,79	26,71
Greece	31,52	0,00	4,81	4,81	26,71
Spain	30,99	0,00	4,27	4,27	26,71
Finland	47,02	11,83	8,48	20,31	26,71
France	32,18	0,19	5,27	5,46	26,71
UK 1)	46,59	12,94	6,94	19,88	26,71
Irland	50,75	15,23	8,81	24,04	26,71
Italy	32,06	0,00	5,34	5,34	26,71
Luxembourg	29,92	0,00	3,21	3,21	26,71
Netherlands	35,71	3,29	5,70	8,99	26,71
Portugal	29,92	0,00	3,21	3,21	26,71
Cyprus	30,72	0,00	4,01	4,01	26,71
Estonia	35,90	3,71	5,48	9,18	26,71
Latvia	34,56	2,58	5,27	7,85	26,71
Lithuania	34,38	2,42	5,24	7,67	26,71
Malta	31,52	0,00	4,81	4,81	26,71
Poland	34,61	1,66	6,24	7,90	26,71
Slovakia	31,79	0,00	5,08	5,08	26,71
Slovenia	32,06	0,00	5,34	5,34	26,71
Czech Republic	32,59	0,00	5,88	5,88	26,71
Hungary	33,61	0,18	6,72	6,90	26,71

Source: Rapport om grænsehandel 2004. Danish Ministry of Taxation. Table IX.3
1) Great Britain and Northern Ireland.

Duties Table 1.15 shows price elements for table wine in the EU member states and Norway with the same basic price and sales price in Denmark fixed at DKK 40 per bottle. The table shows that there is a significant difference in prices between Denmark and Germany due to VAT and duties.

Prices A benchmark in 2001 has been used for the prices. The bargain price for the purchase of 6 bottles of wine in Germany is used as import price, see *Rapport om grænsehandel 2001*. The bargain price for 6 bottles of table wine is DKK 140, i.e. DKK 23,33 per bottle. This is an average price for a table wine of reasonable quality, as the normal price for a bottle of wine of the same type in Denmark is DKK 40. The German consumer price index for wine has been used for extrapolation.

The bargain price for the above-mentioned wine is used as smuggler price in Denmark. The bargain price for the purchase of 6 bottles is DKK 200, i.e. DKK 33,33 per bottle. The argument in favour of using the bargain price in Denmark is – similar to the argument used for beer – that the "small grocers" (kiosk-owners) are not able to buy large quantities of wine and thereby obtain a favourable wholesale price in Denmark. In order to enable them to sell wine at bargain prices in Denmark, they smuggle wine from Germany.

Table 1.16 **Smuggling of wine. Current prices, mill. DKK.**
Effect on private consumption of wine in the case of full purchasing price and sales margins only.

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Year	2030 2110	Illegal (purchasing prices)	Total incl. illegal	**% illegal**	Illegal (sales margins)	Total incl. illegal	% illegal
	(1)	(2)	(3)=(1)+(2)	**(4)=(2)/(3)**	(5)	(6)=(1)+(5)	(7)=(5)/(6)
1995	6.462	57	6.519	**0,87**	15	6.477	0,23
1996	6.602	59	6.661	**0,88**	16	6.618	0,23
1997	6.847	64	6.911	**0,92**	17	6.864	0,25
1998	6.750	63	6.813	**0,93**	17	6.767	0,25
1999	7.040	66	7.106	**0,93**	18	7.058	0,26
2000	7.311	71	7.382	**0,96**	21	7.332	0,28
2001	7.694	73	7.767	**0,94**	22	7.716	0,28
2002	7.963	71	8.034	**0,88**	21	7.984	0,26
2003	9.379	71	9.450	**0,76**	21	9.400	0,23
2004	10.294	70	10.364	**0,67**	20	10.314	0,20

Value Table 1.16 shows the effect of including smuggling of wine on private consumption of wine and alcoholic beverages in the national accounts. If smuggling is included in the purchasing prices (i.e. by correcting tourism expenditures), the effect is between 0,67 and 0,97 pct. which follows from the calculation method's estimation of 1 pct. of quantities. If only profits are included, the effect is only about 0,2 pct.

1.5 Candy and chocolate

Scope Denmark is the only country in the EU where candy and chocolate are subject to duty. Norway is the only country which also has a duty on chocolate. It is estimated with some uncertainty by the Danish Ministry of Taxation that smuggled candy and chocolate make up 1,5 pct. of consumption subject to duty up to 2001. In 2002 and 2003 the rate is assumed to increase linearly from 1,5% in 2001 to 2,77% in 2004, which implies that the rates for 2002 and 2003 becomes 1,92% and 2,35% respectively.

Routing Smuggling of candy and chocolate is carried out by the "small grocer" (kiosk-owner), who brings candy and chocolate for resale, when he has made efforts to cross the border in order to buy beer and wine anyways. Furthermore, a more systematic type of smuggling of candy and chocolate products is also carried out, e.g. in the form of full loads of chocolate products transported in vans or by truck drivers who bring back the goods without the consent of the haulage contractor.

Table 1.17 **Consumption of candy and chocolate, 1000 kg.**

Year	Legal	Cross-border shopping	Illegal	Total
1993	64.085	4.000	961	69.046
1994	66.338	4.000	995	71.333
1995	66.620	4.000	999	71.619

1996	68.662	4.000	1.030	73.692
1997	70.211	4.000	1.053	75.264
1998	78.873	4.000	1.183	84.056
1999	79.789	4.000	1.197	84.986
2000	84.859	4.750	1.273	90.882
2001	82.324	5.000	1.235	88.559
2002	85.775	*5.238*	1.650	92.663
2003	83.239	*5.488*	1.953	90.681
2004	86.690	5.750	2.400	94.841

Source: *Legal:* Estimated sales tax and duty rate; *Cross-border shopping: Rapport om grænsehandel 2001, chapter XIII.5* + own estimates (*italic*); *Illegal:* Danish Ministry of Taxation, about 1,5 pct. of total legal sales.

Quantities   Table 1.17 shows total consumption of candy and chocolate. Legal sales are estimated as quantities subject to duty on the basis of sales tax and rate of duty. In the *Rapport om grænsehandel 2001*, cross-border shopping is estimated at 4 million kg in 2000. As there is no existing information, the estimate is assumed to be constant over the years 1993-1999. In the *Rapport om grænsehandel 2004,* cross-border shopping in 2001 is estimated at 5 million kg and 5,5 million kg in 2004. The figure for 2001 in the later report from the Ministry of Taxation is much higher than the figure for 2000 in the report from 2001. It is assumed that the latest report contains the most accurate information available, and it is therefore assumed that cross-border shopping in 2000 amounts to 4,75 million kg.

Own estimates have been made for the years 2002 and 2003, since no information was available for that period of time. Cross-border shopping for these two years is estimated on the basis of the figure of 2001 and the figure of 2004 as a linear increase is assumed. Consequently, cross-border shopping is estimated at 5,238 million kg in 2002 and 5,488 million kg in 2003.

Illegal shopping of smuggled candy and chocolate is estimated as 1,5 pct. of legal sales in the years 1993-2001. The Ministry of Taxation has estimated illegal sales of candy and chocolate to 2,4 million kg in 2004. On the basis of this figure, the rate of illegal sales can then be calculated to 2,77% in 2004. In 2002 and 2003 the rate is assumed to increase linearly from 1,5% in 2001 to 2,77% in 2004. This implies that the rates for 2002 and 2003 becomes 1,92% and 2,35% respectively.

Table 1.18   **Price elements for a bar of chocolate (200g) in Denmark, Germany, Sweden and Norway.**

	Denmark	Germany	Sweden	Norway
Intermediate price				
Retail price, incl. VAT and duty	20,00	14,08	14,75	17,83
Of which VAT	4,00	0,92	1,58	1,91
Of which duty	2,84	-	-	2,76
Of which price, excl. VAT and duty	13,16	13,16	13,16	13,16
High price				
Retail price, incl. VAT and duty	30,00	22,64	23,70	26,79
Of which VAT	6,00	1,48	2,54	2,87
Of which duty	2,84	-	-	2,76
Of which price, excl. VAT and duty	21,16	21,16	21,16	21,16

Low price				
Retail price, incl. VAT and duty	10,00	5,52	5,78	8,87
Of which VAT	2,00	0,36	0,62	0,95
Of which duty	2,84	-	-	2,76
Of which price, excl. VAT and duty	5,16	5,16	5,16	5,16

Source: Rapport om grænsehandel 2004. Danish Ministry of Taxation. Table XIII.5

Duties Table 1.18 shows the price difference for a bar of chocolate in, respectively, Denmark, Germany, Sweden and Norway in the same price category without duties. It appears that prices in Denmark are considerable higher than, especially those in Germany but also in Sweden and Norway. There is a saving of 40 pct. for the cheapest chocolate, if it is bought in Germany. Due to the price differences, an incentive to smuggle candy and chocolate exists.

The duty on chocolate and sugar confectionery is a quantity duty, which since January 1st 1998 amounted to DKK 14,20 per kg. In addition to this is a duty on raw materials imposed on various nuts and seeds and a general duty on goods imported from abroad, which are not in themselves subject to duty, but which contain constituents that are subject to duty. About 93 pct. of the revenue comes from quantity duties, about 5 pct. from the duty on raw materials and about 2 pct. from the general duty.

Distribution by candy and chocolate In calculating the quantities subject to duty on the basis of sales taxes and rates of duty, a total quantity of candy and chocolate (kg) is achieved. Due to the price differential between candy and chocolate, the quantity is to be distributed in connection with calculating the value. As the duty makes up a greater part of the price for candy than for chocolate, the Danish Ministry of Taxation holds the view that more candy than chocolate is being smuggled. A ratio of 25 pct. chocolate and 75 pct. candy is assumed in the national account calculation.

Prices In the report *Rapport om grænsehandel 2001*, it is stated that the price differential between Denmark and Germany or Sweden is, among other factors, dependent on the brand and where it is bought. Some brands are discount-brands in one country and not in other countries, and conversely. At the same time, the product may be cheaper in a Danish supermarket than in a border shop. Consequently, the prices in table 1.18 will not be representative for the estimates, as prices without VAT and duties are often not comparable. The report shows in a table, prices for different brands of candy and chocolate in 2001, dependent on whether they are bought in a German border shop or a Danish supermarket. For candy, it has been decided to use the bargain price for a bag of *Katjes* (3x100g. for DKK 20) as the import price and the price for a bag of *Matadormix* bought in Fakta (100 g. for DKK 9,95) as the sales price in Denmark. It is obvious that these are not identical products, but close substitutes instead. In the case of chocolate, the price of a bar of *Rittersport* (100g.) is used, which costs DKK 6,95 in a German border shop and DKK 8,95 in a Danish supermarket. The benchmark prices for 2001 for, respectively, candy and chocolate are extrapolated using relevant Danish and German consumer price indices.

Table 1.19 **Smuggling of candy and chocolate. Current prices, mill. DKK.**
Effect on private consumption of ice cream, chocolate and sugar confectionary in the case of full purchasing prices and sales margins only.

Year	2030 1182	Illegal (purchasing prices)	Total incl. illegal	% illegal	Illegal (sales margins)	Total incl. illegal	% illegal
	(1)	(2)	(3)=(1)+(2)	**(4)=(2)/(3)**	(5)	(6)=(1)+(5)	(7)=(5)/(6)
1993	7.992	77	8.069	**0,95**	10	8.002	0,12
1994	8.257	81	8.338	**0,98**	12	8.269	0,15

1995	8.778	84	8.862	**0,94**	14	8.792	0,16
1996	8.994	88	9.082	**0,97**	16	9.010	0,17
1997	9.206	93	9.299	**1,00**	19	9.225	0,20
1998	9.621	109	9.730	**1,12**	24	9.645	0,25
1999	9.497	112	9.609	**1,17**	26	9.523	0,27
2000	9.734	121	9.855	**1,22**	29	9.763	0,30
2001	9.918	120	10.038	**1,19**	30	9.948	0,30
2002	*10.334*	165	10.498	**1,57**	42	10.376	0,41
2003	*10.028*	202	10.230	**1,97**	51	10.079	0,50
2004	*10.444*	250	10.694	**2,34**	63	10.507	0,60

Note: In 2002-2004, 2030 1182 is extrapolated on the basis of the development in sales duties for chocolate and sugar confectionery.

Values Table 1.19 shows the effect on private consumption of ice cream, chocolate sugar confectionery in the national accounts. The effect remains – as a result of the assumption of a constant quantity – reasonably constant, but increasing from almost 1 pct. in 1995 to 2,3 pct. in 2004 if purchasing prices are considered, that is, by correction of tourism expenditures. If only the effect on profits is included, i.e. tourism expenditures are not adjusted, the effect is then increasing from 0,2 pct. in 1995 to 0,6 pct. in 2004.

1.6 References

Bryggeriforeningen [Danish Brewers' Association]. www.bryggeriforeningen.dk

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Danmarks Statistik [Statistics Denmark]. Skatter og afgifter – oversigt 2003.

GNIC/024 Measurement of Illegal Activities. 2nd meeting of the GNI Committee 25-26 March 2004

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Skatteministeriet [Danish Ministry of Taxation]. Rapport om grænsehandel 2004.

Skatteministeriet [Danish Ministry of Taxation]. Status over grænsehandel juni 2005.

2. Prostitution

2.1 Introduction

In this section an attempt is made to estimate value added from prostitution in Denmark. Prostitution is defined as follows:

Definition *Prostitution is a transaction between at least two involved parties who buy and sell respectively services which are of sexual character. The trade of services takes place in a short limited period of time, and the payment of the service takes place immediately before or after the sexual service has been delivered.*

Law concerning prostitution It is legal to work as a prostitute in Denmark, and prostitutes are required to pay income taxes and should also be registered as individual businesses in terms of sales tax. If prostitutes are registered and pay taxes, they are included in the national accounts. However, it is assumed in this report that no prostitutes in Denmark are registered and they all fail to pay taxes. At the same time, the business of prostitution is not a legal profession, which among other things implies that prostitutes are not entitled to unemployment benefits. However, it is illegal to buy sexual services from young people under 18 of age. It is also considered illegal to lure a person into prostitution, and so is procuring or keeping a brothel.[3]

Social problem Prostitution is considered to be a social problem in Denmark. The government therefore aim at securing a continuous development of social and health measures towards prostitutes as well as securing that such efforts are being implemented on a regional and local basis.

2.2 Magnitude

The Danish Centre for Research on Social Vulnerability[4] published a report on prostitution in Denmark in 2004 titled *Redegørelse om prostitution i Danmark*. This report is used as the primary data source here as it has been very difficult to find other reliable data sources on this topic.

Most prostitutes in Denmark are women. There are male prostitutes as well, but the number is so limited that they are assumed to be without economic significance in connection to these calculations.

Types of prostitution The following types of prostitution are found in Denmark:
- street prostitution
- clinic prostitution
- escort services
- individuals working from home (private prostitution)
- club prostitution
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[3] Webpage of the Ministry of Social Affairs: www.social.dk.

[4] The Danish Centre for Research on Social Vulnerability is a private foundation under the Ministry of Social Affairs. The aim of this institution is to collect, elaborate and communicate knowledge and experience on social vulnerable groups in the Danish society.

- Prostitution is no longer only found in the large cities, but takes place all over the country. However, prostitution has become less visible since the 1970's and massage prostitution, bar prostitution and escort-services usually takes place indoor and discretely. This means that only about 15% of the prostitution can be found on the streets thereby being visible to people passing by.

Street prostitution Street prostitution is limited to the greater cities – Odense, Århus, and Copenhagen. There are no indications of men in street prostitution, and the number of women on the streets seems to be decreasing. The reason for this development can to some extent be found in the increasing use of mobile phones. Street prostitutes can easily get in contact with customers over the phone and are therefore no longer obligated to stand on the street in order to obtain contact.

Table 2.2.1

Number of women in street prostitution

	2002	2003	2004
Copenhagen	440	*395*	350
Odense	150	*150*	150
Århus	75	*75*	75
Total	665	*620*	575

Source: Danish Centre for Research on Social Vulnerability (2004). *Redegørelse om prostitution i Danmark, p. 19* & own estimates (*italic*).

Table 2.2.1 shows the minimum number of women in street prostitution in the three largest cities in Denmark. As previously mentioned, there is a decreasing tendency in the number of street prostitutes, although this may be a direct result of the increased use of mobile phones for communication with customers.

Massage clinics Table 2.2.2 below shows the minimum number of prostitutes in massage clinics. The number of prostitutes in one clinic may vary quite some. Some clinics only have one prostitute, whereas other clinics have 20-25 persons working as prostitutes. However, it is estimated by Tema Prostitution[5] that a massage clinic on average has 4 prostitutes employed. The table below also states whether the prostitutes working in the clinics are women only, men only, both women and men or transvestites.

Table 2.2.2

Number of prostitutes in massage clinics

	2002	2003	2004
Women	2396	*2402*	2408
Men	7	*8*	10
Both women and men	24	*24*	24
Transvestites	26	*21*	17
Total	2453	*2455*	2459

Source: Danish Centre for Research on Social Vulnerability (2004). *Redegørelse om prostitution i Danmark, p. 20* & own estimates (*italic*).

Table 2.2.3

Number of persons in escort prostitution

	2002	2003	2004
Women	363	*320*	276
Men	57	*47*	36
Both women and men	44	*41*	38
Transvestites	2	*2*	2
Total	466	*410*	352

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[5] Tema Prostitution is a subdivision of the Danish Centre for Research on Social Vulnerability.

Escort prostitution   The minimum number of persons in escort prostitution is shown in table 2.2.3. The estimations of the number of prostitutes made by Tema Prostitution are based on advertisements in newspapers and on specific web pages.[6] It is very difficult to make a precise estimation of how many people are involved in escort prostitution in that an add can cover everything from one person to 20-25 persons, whereas an accurate number almost never occurs in the adds. However, in about 20% of the adds, it is obvious from the text that it concerns more than one person.

In order to minimize overestimation, it is assumed by Tema Prostitution that there are at least two persons behind the adds for an escort bureau, whereas only one person is associated with the individual adds.

Prostitutes working from home   Table 2.2.4 shows the number of prostitutes working from home - also referred to as private prostitutes. Again, this estimation is considered to be the minimum number. It is somewhat easier to identify prostitutes working from home from the adds in that the word "private" often is stated. In most of these adds, it is clearly stated that services are offered by only one prostitute, although a few adds for couples are seen as well.

Table 2.2.4

Number of prostitutes working from home

	2002	2003	2004
Women	57	*69*	80
Men	0	*1*	2
Both women and men	0	*1*	2
Transvestites	1	*3*	4
Total	58	*74*	88

- Besides the types of prostitution mentioned above, the following combinations are also found:
- clinic and escort prostitution
- individuals working from home and escort prostitution

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Table 2.2.5

Number of persons in both clinic and escort prostitution

	2002	2003	2004
Women	66	*71*	75
Men	0	*0*	0
Both women and men	8	*5*	2
Transvestites	4	*5*	5
Total	78	*81*	82

Table 2.2.6

Number of persons in both escort and private prostitution

	2002	2003	2004

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[6] For further details see Danish Centre for Research on Social Vulnerability (2004). *Redegørelse om prostitution i Danmark.*

	10	*12*	13
Women	10	*12*	13
Men	4	*5*	5
Both women and men	4	*6*	8
Transvestites	0	*0*	0
Total	18	*23*	26

Source: Danish Centre for Research on Social Vulnerability (2004). *Redegørelse om prostitution i Danmark, p. 22* & own estimates (*italic*).

The minimum number of persons in both clinic and escort prostitution is given in table 2.2.5, whereas table 2.2.6 shows the minimum number of persons in both escort and private prostitution. As in the previous cases, it is difficult to get an accurate estimate of these figures.

Table 2.2.7

Minimum number of persons in prostitution

	2002	2003	2004
Street prositution	665	*620*	575
Clinic prostitution	2.453	*2.456*	2.459
Escort prostitution	466	*409*	352
Prostitutes working from home	58	*73*	87
Club prostitution	148	*148*	148
Clinic- and escort prostitution	78	*80*	82
Private and escort prostitution	18	*22*	26
Total	3.886	*3.808*	3.733

Source: Danish Centre for Research on Social Vulnerability (2004). *Redegørelse om prostitution i Danmark, p. 23* & own estimates (*italic*).

Table 2.2.7 gives an overview of the minimum number of persons in prostitution in Denmark divided into types of prostitution.

In the calculations to follow, half of the number of prostitutes in clinic and escort prostitution is added to the number of prostitutes in clinics and the other half is added to the number of persons in escort prostitution. The same method is used in the case of the combination of escort and private prostitution.

Table 2.2.8

Breakdown of prostitutes on types of prostitution

	2002	2003	2004
Street prostitution	17%	16%	15%
Massage clinics	64%	66%	67%
Escort prostitution	13%	12%	11%
Prostitutes working from home	2%	2%	3%
Club prostitution	4%	4%	4%

Source: Own estimates based on table 2.2.7.

Table 2.2.8 shows the distribution of prostitutes on the different types of prostitution seen in Denmark. These percentage figures are calculated on the basis of the number of prostitutes shown in table 2.2.7 above. Since the number of prostitutes is only a minimum number, it is assumed that this breakdown of prostitutes on types of prostitution is also valid for the number of prostitutes not known to authorities.

In table 2.2.9, the average number of contacts per year per prostitute is shown for each type of prostitution service. These figures are assumptions based on the assumption made in the Swedish report on illegal activities.[7]

Table 2.2.9

Average number of contacts per year per prostitute

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[7] Statistiska Centralbyrån [Statistics Sweden]. 2005. *Illegal versamhet – försöksberäkninger av prostitution, droger samt smuggling av alkohol och tobak.*

Type of prostitution	Number of contacts
Street prostitution	250
Clinic prostitution	400
Individuals working from home	400
Escort services	150
Club prostitution	150

In the calculations to follow, it is assumed that street prostitutes provide one service per contact, clinic prostitutes and individuals working from home provide ½ hour of service per contact, and escort services and club prostitutes on average are hired for two hours per contact.

2.3 Foreign prostitutes in Denmark

Migrant prostitution Migrant prostitution is the international term for foreign women, who travels to countries like Denmark in their search for a better life and then more or less intentionally end up in prostitution. There is an increasing tendency in the number of foreign prostitutes in Europe.

It has been estimated that approximately 45% of the prostitutes in Denmark are foreigners.[8] This is equal to a minimum of 1750 foreign prostitutes. However, this figure is only a minimum number as it is difficult to get an accurate estimate as many of these women stay in the country illegally.

Previous surveys have established that about 50% of the foreign prostitutes in Denmark come from Thailand. This figure can be confirmed by counting of adds as well as information from PRO-Vejle[9] based on research of the foreign prostitutes in the first quarter of 2004. Many foreign prostitutes come from other countries in South East Asia as well. Foreign prostitutes in Denmark for the most part come from countries which are not members of the European Union. The foreign prostitutes typically stay in Denmark on a tourist visa or on grounds of marriage.

Research on prostitutes and information provided by the police indicate that most of the women from Thailand have a residence permit - usually due to marriage to a Danish citizen. In some cases women will contract a marriage in order to obtain residence permit. Some Thai women have migrated to Denmark because of marriage to a Danish man and has then lost their entire foundation of support due to divorce and has ended up in prostitution as a consequence thereof. The Thai prostitution environment is considered to be a sub culture which is a very important part of these women's everyday life, and often these women do not have any other network.

The social network of the African prostitutes is often spread over several countries, and the women do not live in one specific country, but rather between countries. This also implies that these women are situated at the edge of society. The women from Eastern Europe usually travel in and out of the country on a tourist visa.

The foreign prostitutes often come from countries where the police and public authorities can not be trusted, and as a result they are very sceptical to any sort of authority. The consequence of this is that many women, who are in the need of

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[8] Danish Centre for Research on Social Vulnerability (2004). *Redegørelse om prostitution i Danmark*, p. 22.
[9] PRO-Vejle is a subdivision of Tema Prostitution.

and entitled to help, do not necessarily get any help, because it is difficult for them to get relevant information, and the environment in which they have their everyday life is influenced by creation of myths about authorities.

The general tendency in Europe has been towards an increasing number of foreign prostitutes. The development in Denmark in this matter has been seen in Germany, Italy, Belgium and Holland as well. Information indicates that these women migrate on their own initiative, but it is uncertain, how many women that are being sold to prostitution in Denmark.

In the calculations to follow, it is assumed that 45% of the prostitutes in Denmark are foreigners as mentioned previously in this section. Many of these prostitutes come from Eastern European countries and usually stay in Denmark on a tourist visa for the maximum of three months. Another large group of foreign prostitutes come from Asia – mainly Thailand. These prostitutes usually stay in Denmark for a long time – longer than one year. It is therefore assumed that 50% of the foreign prostitutes stay in Denmark for more than one year, which implies that half of the foreign prostitutes should be included in value added from prostitution in Denmark, whereas the other half should be counted as import.

2.4 Customers

It is assumed that all customers are men. Surveys have shown that all types of men are represented when looking at prostitution customers. Most men who have purchased services from a prostitute have only been a client once, while a small group of men purchase prostitution services on a regular basis. See table 2.4.1-2.4.4 below for further details.

Number of clients As mentioned in section 2.2, data on the number of clients is associated with great uncertainty. One reason for this is that purchase of services from a prostitute is still considered to be breaking the norm of society and many men can therefore not be expected to be willing to give honest answers to questions concerning experiences with prostitutes. The results of different surveys must be seen as an indication more than an accurate estimate as a consequence thereof.

Danish Health Survey A Danish health survey from 1987 has shown that 14% of the men participating in the survey have purchased services from a prostitute at least once in their life. Another Danish survey focusing on prostitution customers has shown that 13.1% of the 1.466 men participating have been prostitution clients at least once. Danish men do not differ substantially from other Scandinavian men in that this figure is 14% for Swedish men and 13% for Norwegians.

Prostitution is a social and cultural constitution, which evolves differently from society to society, and whose forms of expression changes along with changes in gender roles and the structure of society. There are great differences in the use of prostitution services in different parts of Europe. International surveys have shown that 40% of all men in Spain have purchased services from a prostitute, while that same figure is 16% in the USA, 14.3% in Holland, and 7% in the United Kingdom.[10]

Table 2.4.1 shows the frequency of purchases of prostitution services by customers within the past 12 months, whereas table 2.4.2 shows the frequency of purchases of prostitution services in total, that is, how many times the person

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[10] Danish Centre for Research on Social Vulnerability (2004). *Redegørelse om prostitution i Danmark, p. 102-103.*

questioned has purchased prostitution services in his life. Both tables show that most men, who have been prostitution customers, have only purchased these services once or a few times. However, the tables also show that there exists a group of men who purchase prostitution services on a more frequent basis.

Table 2.4.1 **The frequency of purchases of prostitution services by customers within the past 12 months**

Number of services purchased	Total
One time	35%
2-5 times	19%
6-12 times	9%
More than 12 times	37%

Source: Claus Lautrup. Danish Centre for Research on Social Vulnerability (2005). *"Det skal ikke bare være en krop mod krop oplevelse", Table 3.*

Table 2.4.2 **Frequency of purchases of prostitution services in total**

Number of services purchased	Total
One time	25%
2-5 times	35%
6-12 times	12%
More than 12 times	28%

Source: Claus Lautrup. Danish Centre for Research on Social Vulnerability (2005). *"Det skal ikke bare være en krop mod krop oplevelse", Table 4.*

A breakdown of prostitution customers into different age groups is given in table 2.4.3. Most prostitution customers are between 30 and 49 years of age. From this table, it seems that most clients are older and more experienced, as the smallest group of customers are men aged between 18 and 29 years.

Table 2.4.3 **Breakdown of prostitution customers in age groups**

Age	Total
18-29 years	16%
30-49 years	46%
50-59 years	20%
60 years and above	18%

Source: Claus Lautrup. Danish Centre for Research on Social Vulnerability (2005). *"Det skal ikke bare være en krop mod krop oplevelse", p. 50.*

As mentioned earlier, different studies have shown that prostitution customers can be found in all groups of men. Table 2.4.4 below shows a distribution of prostitution clients according to their marital status. The table shows that most prostitution customers are actually married men, whereas single men only amounts to the second largest group. The smallest group of clients are found among those still living at parents' home, which is in line with table 2.4.3, which showed that young men are less likely to purchase prostitution services compared to older men.

Table 2.4.4 **Breakdown of prostitution customers according to marital status**

Marital status	Total
Married	45%
Lives with a partner	23%
Single	31%
Lives at parents' home	1%

Source: Claus Lautrup. Danish Centre for Research on Social Vulnerability (2005). *"Det skal ikke bare være en krop mod krop oplevelse", p. 50.*

2.5 Prices

It is a difficult task to find prices of different types of prostitution services as data in this field is almost nonexistent. The prices used in the calculations in this report have all been found by using the contact adds in the Danish newspaper "Ekstra Bladet" as of June 21st 2005 as information sources. Many of the adds in this paper refer to different homepages on which a price list often can be found. In some limited cases the price per service will be stated directly in the add.

Table 2.5.1 below shows the prices for massage clinics. Prices are shown for ½ hour and 1 hour of service respectively. The webpage on which the prices are found is stated in the first column. The second and third column shows the prices for ½ hour and 1 hour of service respectively. In the last row, average prices have been calculated for both ½ hour and 1 hour of service.

Table 2.5.1 **Prices for ½ hour and 1 hour of service in different massage clinics (DKK)**

	½ hour	1 hour
www.citygirls.dk	1.000	1.800
www.mon-cherie.dk	1.000	1.800
www.stargirls.dk	900	1.500
www.miabolletrold.dk	1.000	2.000
www.amorpigerne.dk	1.000	2.000
www.hvidovrepigerne.dk	1000	1800
www.clubheaven.dk	1200	2000
Average	*1.014*	*1.843*

The prices for one hour of escort services are given in table 2.5.2. The first column states the source of information, whereas the prices are given in the second column. The average price is calculated in the last row.

Table 2.5.2 **Prices of 1 hour of escort service (DKK)**

	1 hour
www.wildcats.dk	1500
www.miabolletrold.dk	2200
Ekstra Bladet 21.6.2005	1200
Ekstra Bladet 21.6.2005	1200
Ekstra Bladet 21.6.2005	1200
Ekstra Bladet 21.6.2005	2000
Average	*1550*

Table 2.5.3 **Price of different types of prostitution from 2000-2005 (DKK)**

	2000	2001	2002	2003	2004	2005
Price per service (approx. 15 min):						
Street prostitution	460	472	481	487	493	500
Price for ½ hour service:						
Clinic prostitution	934	956	976	988	1.001	1.014
Individuals working from home	934	956	976	988	1.001	1.014
Price for 1 hour of service:						
Escort services	1.427	1.462	1.493	1.510	1.530	1.550
Club prostitution	1.427	1.462	1.493	1.510	1.530	1.550
Consumer price index (2000=100)	100	102,35	104,83	107,03	108,27	109,70

Table 2.5.3 above show the prices for different types of prostitution services for the period 2000-2005. All prices are found for year 2005 only and then estimated for the former years by using the consumer prices index, which is shown in the last row of the table.

The price per service for street prostitution is assumed to be 500 DKK in 2005. It has not been possible to acquire any data on the price of street prostitution. This assumption is made on the basis of the price for ½ hour service in massage clinics, where it is assumed that the price per service of street prostitutes is approximately 50% of that of massage clinics. As it was only possible to find price data on massage clinics and escort services, it is also assumed that clinic prostitutes and individuals working from home charge the same price per service, and it is assumed as well that club prostitutes charge the same price per service as escort prostitutes.

2.6 Double counting

Intermediate consumption

It is assumed that intermediate consumption is already included in the national accounts. The reason for this is that intermediate consumption for prostitutes consists of items, which women usually would acquire in spite of their profession, and it is therefore already included in household final consumption expenditure. This results in value of production having a direct impact on value added.

There is also a risk of double counting concerning the earnings of the prostitutes. However, this risk is considered to be insignificant as it is assumed that only few prostitutes pay income tax and VAT. It is assumed as well that prostitution is not so well organized that money laundering should be considered in this context.

Another risk of double counting occurs when men purchase prostitution services while on business trips. These expenses may be charged as drinks, hotel rooms or other things, which are already included in the national accounts. However, no information is available on this matter, and it is beyond the scope of this report to investigate this problem further.

2.7 Demand side estimates

In this section an attempt to estimate total value added from prostitution in Denmark is made from the demand side.

Table 2.7.1 shows an estimation of value added from prostitution in Denmark made from the demand side for the period 2002-2004. On the basis of the survey made by the Danish Centre for Research on Social Vulnerability mentioned earlier, it is assumed that 14% of all males in Denmark, who are between 18 and 65 years of age (both included), have purchased prostitution services at least once in their lives.

The first row in the table shows the number of males in Denmark between 18 and 65 years of age. The second row shows 14% of this number due to the assumption made, that is, how many males in this age interval has purchased prostitution services at least once in their lives. The third row shows the number of generations calculated as (65-18+1)=48.

The number of persons who have been prostitution customers is then distributed according to how many times they have purchased these services, which are the percentage figures shown in table 2.4.2. It is then assumed, that all persons, who

have answered that they have purchased prostitution services once in their lives, have not necessarily been customers within the past year. This assumption is also valid for half of the people, who have been customers "2-5 times". It is assumed that this assumption holds for each generation, so that each year a new average generation has a "one time" experience with a prostitute. The average number of visits per year for this group of people is then calculated as (2002):

$$(60.917*1+0,5*85.284*3,5)/48 = 4.378 \text{ visits}$$

It is assumed that persons answering "2-5 times" have purchased services 3,5 times on average. For the rest of the 14%, it is assumed that they visit prostitutes on a regular basis, that is, we assume that each year they visit prostitutes according to table 2.4.1.

The number of persons who have purchased prostitution services within the past 12 months can then be calculated by summing up the persons who have been prostitution customer more than 5 times adding to that half of the persons answering "2-5 times". The calculation will therefore be as follows for 2002:

$$(0,5*85.248+29.740+68.227)=140.109 \text{ persons}$$

This number of persons is distributed according to how many times they have been customers within the past 12 months using to the percentages in table 2.4.2.

In the next paragraph, the number of visits within the past 12 months is estimated in that the following average number of visits per year is assumed for each interval:

One time	1 visit
2-5 times	3,5 visits
6-12 times	9 visits
More than 12 times	24 visits

The total number of visits is then calculated by taking the sum of the above results and adding the average number of visits per year for people not assumed to have purchased prostitution services within the past year. The total number of visits within the past 12 months therefore becomes (2002):

$$49.038+93.172+113.488+1.244.165+4.378 = 1.504.242$$

This total number of visits within the past year is distributed between the different types of prostitution in Denmark according to the breakdown of prostitutes into prostitution types given in table 2.2.8. Value added can then be determined for each type of prostitution by multiplying the number of visits within the past year by the price for that particular type of prostitution which were stated in table 2.5.3.

The last row shows value added from prostitution in Denmark for a given year. As table 2.7.1 shows, value added from prostitution in Denmark estimated from the demand side amounts to approximately 1.850 mill. DKK.

Table 2.7.1 **Demand side estimation of value added from prostitution.**

	2002	2003	2004
18-65 year olds	1.740.481	1.739.428	1.738.544
14% visits prostitutes (assumption)	243.667	243.520	243.396

34

Number of generations	48	48	48
Average size of generation			
Number of persons distributed by number of visits during the life (table 2.4.2):			
One time	60.917	60.880	60.849
2-5 times	85.284	85.232	85.189
6-12 times	29.240	29.222	29.208
More than 12 times	68.227	68.186	68.151
Average number of visits by men in one generation visiting prostitutes once in their lives	4.378	4.376	4.374
Number of persons who have purchased services within the past 12 months	140.109	140.024	139.953
This number of persons is distributed according to table 2.4.1:			
One time	49.038	49.008	48.983
2-5 times	26.621	26.605	26.591
6-12 times	12.610	12.602	12.596
More than 12 times	51.840	51.809	51.783
Number of contacts within the past 12 months:			
One time	49.038	49.008	48.983
2-5 times	93.172	93.116	93.069
6-12 times	113.488	113.419	113.362
More than 12 times	1.244.165	1.243.413	1.242.781
Total number of visits wiithin the past 12 months	1.504.242	1.503.332	1.502.568
Number of visits within the past 12 months:			
Street prostitution	257.417	244.669	231.443
Massage clinics	964.635	985.779	1.007.884
Escort prostitution	397.931	363.277	327.202
Prostitutes working from home	25.935	32.951	40.251
Club prostitution	114.579	116.880	119.276
Value added (mill. DKK):			
Street prostitution	124	119	114
Massage clinics	942	974	1.009
Escort prostitution	594	548	501
Prostitutes working from home	25	33	40
Club prostitution	171	176	182
Total (mill. DKK)	1.856	1.850	1.846

2.8 Supply side estimations

In many reports on illegal activities concerning prostitution, it has been stated that data on the number of prostitutes is considered to be more reliable than the data on the number of clients. The supply side estimates in this section will therefore be preferred above the demand side estimates.

The output from prostitution can basically be calculated as follows:

number of prostitutes
* average number of services rendered per year
* average price per service

This calculation should be done separately for each type of prostitution, which was listed in section 2.2.

As mentioned in section 2.3, approximately 45% of the prostitutes in Denmark are foreigners. A large part of these prostitutes come from Eastern Europe and stay on a tourist visa for the maximum of three months. Another large group of foreign prostitutes come from Asia – mainly Thailand. These prostitutes usually stay in Denmark for a long time – longer than one year. It is therefore assumed that half of the foreign prostitutes should be included in value added from prostitution in Denmark, whereas the other half should be counted as import, cf. section 2.3.

Table 2.8.1 below shows the estimation of value added from street prostitution in current prices. The number of prostitutes is given in the first row, whereas the second row shows the number of contacts per year. Below that the retail price as well as the basic price and the import price is given. It is assumed that the retail price is equal to the basic price and the import price for all types of prostitution.

For basic prices, the calculations are as follows:

1010 Danish production	= (1- 0,5 * 0,45) * number of prostitutes * number of contacts per year * basic price
1020 Import	= 0,5 * 0,45 * number of prostitutes * number of contacts per year * basic price
2030 Consumption	= number of prostitutes * number of contacts per year * basic price

2030 Consumption in purchasing prices is calculated as follows:

| 2030 Consumption | = number of prostitutes * number of contacts per year * retail price |

It is assumed that the basic price is the same for import and domestic production. It is also assumed that the purchasing price is equal to the basic price so that there are no trade margins.

Table 2.8.1
Street prostitution

Estimation of value added from street prostitution. Current prices.

		2002	2003	2004
Quantities				
Number of prostitutes		665	620	575
Number of contacts per year		250	250	250
Prices				
Retail price (=price per contact)	DKK	481	487	493
Basic price = import price	DKK	481	487	493
Values				
Basic prices				
1010 Danish production	MDKK	62	59	55
1020 Import	MDKK	18	17	16
2030 Consumption	MDKK	80	75	71

Purchasing prices				
2030 Consumption	MDKK	80	75	71
Value added	MDKK	62	59	55

Value added from street prostitution in 2000 prices can be found in annex 2.1. The calculations are similar to those performed in table 2.8.1, although here the price is fixed at year 2000, and that price is then used for all years.

Over the period of time concerned, the number of persons in street prostitution has decreased. Even though the prices have increased slightly over these years, value added from street prostitution has decreased from 2002 to 2004. Value added in 2004 was approximately 55 million DKK in current prices and 51 million DKK in 2000 prices.

Table 2.8.2 shows the estimation of value added from clinic prostitution in current prices, whereas the similar calculation in 2000 prices can be found in annex 2.2. It can be seen from the table that the number of persons in clinic prostitution in 2002-2004 as well as the prices has increased. As a result, value added has also increased over the time period. In 2004, value added from clinic prostitution amounted to 763 million DKK in current prices and 712 million DKK in 2000 prices.

Table 2.8.2
Clinic prostitution

Estimation of value added from clinic prostitution.
Current prices.

		2002	2003	2004
Quantities				
Number of prostitutes		2.453	2.456	2.459
Number of contacts per year		400	400	400
Prices				
Retail price (=price per contact)	DKK	976	988	1.001
Basic price = import price	DKK	976	988	1.001
Values				
Basic prices				
1010 Danish production	MDKK	743	752	763
1020 Import	MDKK	216	218	221
2030 Consumption	MDKK	958	970	984
Purchasing prices				
2030 Consumption	MDKK	958	970	984
Value added	MDKK	743	752	763

The estimation of value added from private prostitution in current prices can be found in table 2.8.3, whereas the same estimation in 2000 prices is given in annex 2.3. Private prostitution consists of individual prostitutes who work from their private homes. The table shows that the number of persons in this type of prostitution has increased from 58 persons in 2002 to 87 persons in 2004. Since the prices have also increased, this implies that value added has increased as well. Value added from private prostitution accounted for 27 mill. DKK in 2004 in current prices and 25 mill. DKK in 2000 prices.

Table 2.8.3
Private prostitution

Estimation of value added from private prostitution.
Current prices.

		2002	2003	2004
Quantities				
Number of prostitutes		58	73	87
Number of contacts per year		400	400	400
Prices				
Retail price (=price per contact)	DKK	976	988	1.001
Basic price = import price	DKK	976	988	1.001
Values				
Basic prices				
1010 Danish production	MDKK	18	22	27
1020 Import	MDKK	5	6	8
2030 Consumption	MDKK	23	29	35
Purchasing prices				
2030 Consumption	MDKK	23	29	35
Value added	MDKK	18	22	27

Table 2.8.4 shows the estimation of value added from escort prostitution in Denmark in current prices, whereas annex 2.4 shows the same estimation in 2000 prices. The number of prostitutes providing escort services has decreased from 466 persons in 2002 to 352 persons in 2004. As a result, value added has also decreased from 162 million DKK in 2002 to 125 million DKK in 2004. The same tendency is found in annex 2.4 when looking at value added in 2000 prices.

Table 2.8.4
Escort prostitution

Estimation of value added from escort prostitution.
Current prices.

		2002	2003	2004
Quantities				
Number of prostitutes		466	409	352
Number of contacts per year		150	150	150
Prices				
Retail price (=price per contact)	DKK	2.985	3.020	3.060
Basic price = import price	DKK	2.985	3.020	3.060
Values				
Basic prices				
1010 Danish production	MDKK	162	144	125
1020 Import	MDKK	47	42	36
2030 Consumption	MDKK	209	185	162
Purchasing prices				

2030 Consumption	MDKK	209	185	162
Value added	MDKK	162	144	125

Value added from club prostitution is estimated in current prices in table 2.8.5 and in 2000 prices in annex 2.5. Unlike the other types of prostitution in Denmark, the number of persons in club prostitution has been the same for the whole period of time in question, which implies that value added in 2000 prices is also the same for all years, that is, 49 mill. DKK. Due to price increases, an increase is also seen in value added from club prostitution from 51 mill. DKK in 2002 to 53 mill. DKK in 2004, both in current prices.

Estimation of value added from club prostitution. Current prices.

		2002	2003	2004
Quantities				
Number of prostitutes		148	148	148
Number of contacts per year		150	150	150
Prices				
Retail price (=price per contact)	DKK	2.985	3.020	3.060
Basic price = import price	DKK	2.985	3.020	3.060
Values				
Basic prices				
1010 Danish production	MDKK	51	52	53
1020 Import	MDKK	15	15	15
2030 Consumption	MDKK	66	67	68
Purchasing prices				
2030 Consumption	MDKK	66	67	68
Value added	MDKK	51	52	53

An overview of the consumption and value added from different types of prostitution in Denmark as well as a total for each of the two kinds of estimates is given in table 2.8.6 in current prices. A similar overview table in 2000 prices can be found in annex 2.6. Consumption in purchasing prices amounts to approximately 1,3 billion DKK, while value added is lower with an average value of about 1 billion DKK.

Overview of the consumption of and value added from different types of prostitution. Current prices, mill. DKK.

	2002	2003	2004
Purchasing prices - 2030 Consumption:			
Street prostitution	80	75	71
Clinic prostitution	958	970	984
Individuals working from home	23	29	35
Escort service	209	185	162
Club prostitution	66	67	68
Total	1.336	1.327	1.320
Value added:			
Street prostitution	62	59	55
Clinic prostitution	743	752	763
Individuals working from home	18	22	27

	162	144	125
Escort service	162	144	125
Club prostitution	51	52	53
Total	1.035	1.028	1.023

Table 2.8.7
Overview + 10%

Overview of the consumption of and value added from different types of prostitution + 10%. Current prices, mill. DKK.

	2002	2003	2004
Purchasing prices - 2030 Consumption:			
Street prostitution	88	83	78
Clinic prostitution	1.054	1.067	1.083
Individuals working from home	25	32	38
Escort service	230	204	178
Club prostitution	73	74	75
Total	1.469	1.459	1.452
Value added:			
Street prostitution	70	66	62
Clinic prostitution	838	849	861
Individuals working from home	20	25	30
Escort service	183	162	141
Club prostitution	58	59	59
Total	1.169	1.161	1.155

Table 2.8.7 gives an overview of the consumption of and value added from prostitution as well as table 2.8.6, the difference being that 10% is added to consumption in this table here.

Demand side estimates of value added from prostitution are given in table 2.7.1, which amounts to approximately 1,8 billion DKK per year. Our supply side estimate of consumption in table 2.8.6 is only about 1,3 billion DKK per year. Hence, a difference of 500 mill. DKK between estimated supply and demand. All sources indicate, the supply side information is more reliable than demand side information, and therefore, as a starting point, the supply side estimate is preferred. On the other hand, it is also indicated by the sources that the number of prostitutes estimated is at the lower end. This is supported by the demand side estimate.

The difference therefore calls for a supplement to the supply side estimate, where we have considered 10% to be relevant. The figure of 10% of the total consumption is also added to value added according to the breakdown of prostitution into the five types of prostitution listed.

2.9 Consequences in the national accounts – GDP effects

Tables 2.9.1 and 2.9.2 below show the general effects of including street prostitution, clinic prostitution, private prostitution, escort services and club prostitution in the national accounts. The calculations for each type of prostitution is described in the previous sections, while annexes 2.8 and 2.9 show the effect on GDP at a more detailed level in both current prices and 2000 prices. The calculations are based on the same assumptions as those made in the previous sections.

Level effect on GDP and private consumption as a result of including prostitution in the national accounts.
Current prices, mill. DKK.

		2002	2003	2004
	Effect on GDP			
	GDP, existing	1.362.409	1.401.808	1.460.386
+	Value added, prostitution	1.169	1.161	1.155
=	GDP including prostitution	1.363.578	1.402.969	1.461.541
	Change in GDP, pct.	**0,09%**	**0,08%**	**0,08%**
	Effect on private consumption			
	Existing:			
	Total private consumption	651.448	673.142	710.111
	9911 Hairdressers etc.	5.243	5.568	6.045
	Private consumption of prostitution:			
	Total private consumption	1.469	1.459	1.452
	Street prostitution	88	83	78
	Clinic prostitution	1.054	1.067	1.083
	Individuals wokring from home	25	32	38
	Escort service	230	204	178
	Club prostitution	73	74	75
	Privat consumption including prostitution:			
	Total private consumption	652.917	674.601	711.563
	9911 Hairdressers etc.	6.712	7.027	7.497
	Change in private consumption, pct.			
	Private consumption total	**0,23%**	**0,22%**	**0,20%**
	9911 Hairdressers etc.	**28,02%**	**26,21%**	**24,01%**

Table 2.9.1 shows the level effect on GDP and private consumption in current prices covering the period 2002-2004. The increase in GDP is 0,08-0,09%, which is not significant, whereas the increase in total private consumption is between 0,20% and 0,23%. The effect on the individual consumer group, in this case is hairdressers etc., is between 24,01% and 28,02%, which is considered to be a very large effect.

Table 2.9.2

Level effect on GDP and private consumption as a result of including prostitution in the national accounts.
2000 prices, mill. DKK.

		2002	2003	2004
	Effect on GDP growth			
	GDP, existing	1.309.334	1.319.415	1.345.400
+	Value added, prostitution	1.118	1.097	1.077
=	GDP including prostitution	1.310.452	1.320.512	1.346.477
	Annual growth in GDP, existing		**0,77%**	**1,97%**
	Annual growth in GDP including prostitution		**0,77%**	**1,97%**
	Effect on private consumption			
	Existing:			
	Total private consumption	622.572	630.747	655.661
	9911 Hairdressers etc.	4.819	4.884	5.121
	Private consumption of prostitution:			
	Total private consumption	1.405	1.380	1.354
	Street prostitution	84	79	73
	Clinic prostitution	1.008	1.009	1.010
	Individuals wokring from home	24	30	36
	Escort service	219	193	166
	Club prostitution	70	70	70
	Privat consumption including prostitution:			
	Total private consumption	623.977	632.127	657.015
	9911 Hairdressers etc.	6.224	6.264	6.475
	Annual change in private consumption, pct., existing			
	Total private consumption		1,31%	3,95%
	9911 Hairdressers etc.		1,35%	4,85%
	Annual change in private consumption, pct., incl. prostitution			
	Total private consumption		1,31%	3,94%
	9911 Hairdressers etc.		0,64%	3,38%

Table 2.9.2 shows the effect on GDP and private consumption of including prostitution at constant 2000 prices as well as the annual growth rates for the period 2002-2004. It appears from the table that the inclusion of prostitution does not have any significant effect on GDP growth or growth in total private consumption over the period of time.

2.10 References

GNI Committee (2004). *Measurement of Illegal Acitvities*. Eurostat.

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Statistiska Centralbyrån [Statistics Sweden] (2005). *Illegal versamhet – försöksberäkninger av prostitution, droger samt smuggling av alkohol och tobak.*

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3. Trade of drugs

3.1 Introduction

Gross Domestic Product

The production and distribution of illegal narcotics have a large influence on the economy in some countries in Latin America and Asia, which results in the Gross Domestic Product (GDP) being grossly understated if these activities are not included in the national accounts. Moreover, much of the value of illegal narcotics exists only because their illegality makes prices high. If drugs were legalized, there value would most likely drop significantly and they would consequently be of trivial importance economically. That situation would have a great impact on the behaviour of economic actors. Naturally, this influence by production and distribution of illegal narcotics is very limited within the EU, but should still be included in the national accounts for comparison reasons.

Value added

Value added from drugs can be divided into two groups – domestic production of drugs and trade in drugs. According to the police, there are no significant production of drugs in Denmark, and this section will therefore only concern trade in drugs. Estimates will be made from the demand side, but also from the supply side.

3.2 Magnitude

According to the report on organized crime in Denmark written by the police, smuggling and trade of drugs was a significant problem of crime in 2004. On the other hand, production of narcotics is very limited in Denmark.

Number of drug users

In 2003, the National Board of Health made an estimation of the number of drug users in Denmark. The result can be found in table 3.2.1 below. This number is only a minimum number as not all drug users are registered by the Health Authorities. In this section, all types of drug users should be included, which means that an estimate of the number of recreational users must be made as well. However, an estimate of the number of drug users in Denmark will be associated with great uncertainty in terms of the factors depending on the definition of drug users, but also the method and data material on which the estimates are based.

The estimates made by the National Board of Health are based on the capture-recapture model, which is a method applied within population studies to estimate the size of an unknown population. The National Board of Health defines drug users as follows:

Definition

Drug users are characterized as individuals using drugs on a constant basis, which leads to physical, mental and social damage.

Experimental use of drugs is not included in this estimate, but cannabis users and users of central stimulants, opioids etc. are included. This means that the number of drug users given in table 3.2.1 consists of hard users only. The number of recreational users will have to be determined as well and added to the number given in table 3.2.1 in order to obtain the total number of drug users in Denmark.

Table 3.2.1

Number of drug users in Denmark

Year	1998	1999	2000	2001	2002	2003	2004
Number of drug users	24.500	*24.829*	*25.162*	25.500	*25.842*	*26.189*	26.541

As the number of drugs users in Denmark is only available for some years, the figures for the years missing have been estimated by extrapolation. It can be seen from the table that the number of drug users has been increasing since 1998. However, according to the report "Denmark Drug Situation 2003", the number of drug users is considered to be stagnating.

Table 3.2.2

Number of drug-related deaths in Denmark

	1998	1999	2000	2001	2002	2003	2004
Men	211	201	197	211	216	197	n.a.
Women	40	38	50	47	36	48	n.a.
Total	251	239	247	258	252	245	n.a.

Source: Danish National Police (2004). *Rapport om organiseret kriminalitet i Danmark 2003* & National Board of Health. *Statistik 2003: alkohol, narkotika og tobak.*

The total number of drug-related deaths in Denmark per year is given in table 3.2.2. The number for men is 197-216, while the number for women is 36-50. However, the total number of drug-related deaths is approximately 250 per year.

Table 3.2.3

Breakdown of drug types on user level (pct.)

	1998	1999	2000	2001	2002	2003	2004
Heroin	56%	45%	44%	45%	40%	39%	*39%*
Amphetamine	17%	23%	17%	22%	24%	20%	*20%*
Cocaine	23%	27%	24%	22%	30%	32%	*32%*
Ecstasy	< 1%	3%	7%	9%	2%	-	-
Other euphoriant	1%	1%	5%	1%	3%	4%	*4%*
Non-euphoriant	1%	< 1%	3%	1%	2%	1%	*1%*
Metamphetamine	-	-	-	-	-	4%	*4%*

Source: National Board of Health (2004). *Narkotikasituationen i Danmark 2004, Table 10.3.2* & own estimates (*italic*).

Breakdown of drug types on user level

Table 3.2.3 above shows the percentage of drug users who uses the various kinds of drugs listed. The figures show a clear tendency of decreasing use of heroin and increasing use of cocaine. For amphetamine there is no clear tendency as the percentage has been both increasing and decreasing over the past six years. However, the level seems to stabilize around 20%. The tendency for ecstasy use is shown in the table as well. From 1998 to 2001, there was a large increase in the use of ecstasy, although this use decreased rapidly thereafter. Methamphetamine has not been seen much until 2002-2003, where there has been a large increase in the amount of methamphetamine found. This is also the reason for listing methamphetamine from 2003 by itself in the table.

Table 3.2.4

Purity of illicit drugs on a user level

	1998	1999	2000	2001	2002	2003	2004
Heroin chloride	70%	69%	59%	52%	50%	64%	*64%*
Heroin base	31%	30%	40%	48%	25%	25%	*25%*
Amphetamine sulphate	15%	9%	12%	9%	13%	9%	*9%*
Cocaine chloride	51%	54%	37%	43%	36%	37%	*37%*

Source: National Board of Health (2004). *Narkotikasituationen i Danmark 2004, Table 10.3.4* & own estimates (*italic*).

Purity

The purity of illicit drugs on a user level is given in table 3.2.4 above. The overall picture from this table is that there are great variations in the purity of different types of narcotics as well as fluctuations over time in the purity of a given drug.

Drug seizures　The quantities of drugs seized and the number of seizures are registered by the police and customs authorities on a regular basis. These statistics provide some indication of the supply of drugs on the illegal market. However, the authorities do not distinguish between seizures of large quantities for reselling abroad and quantities sold at a street level when registering the drug seizures made at the borders, airports and harbours.

Table 3.2.5 below shows drug seizures in Denmark from 1998 to 2004. Major fluctuations are seen in both the number of seizures and the amounts seized, which implies that no tendencies can be concluded on the basis of these figures.

Table 3.2.5

Number of drugs seizures and amounts seized

	1998	1999	2000	2001	2002	2003	2004
Heroin							
Kg	55,1	96	32,1	25,1	62,5	16,3	37,5
Number of seizures	2.199	1.230	1.499	1.304	966	894	1.041
Cocaine							
Kg	44,1	24,2	35,9	25,6	14,2	104	32,3
Number of seizures	885	744	780	815	881	1.095	1.207
Amphetamine							
Kg	25,2	31,6	57,1	160,6	34,9	65,9	63,1
Number of seizures	1.609	1.250	1.152	954	1.134	1.264	1.388
Ecstasy							
Number of pills	27.039	26.117	21.608	150.080	25.738	62.475	38.096
Number of seizures	143	197	444	331	340	322	505
LSD							
Kg	105	83	1.108	156	38	22	0
Number of seizures	24	15	18	29	8	7	0
Cannabis							
Kg	1.572	14.021	2.914	1.763	2.635	3.829	1.385
Number of seizures	5.904	4.569	5.561	5.788	5.234	5.942	7.313

Source: National Board of Health (2004). *Narkotikasituationen i Danmark 2004, Table 10.3.1* & Danish National Police (2005). *Rapport om organiseret kriminalitet i Danmark 2004, Table 1*.

3.3 Routing

The trade of narcotics is very well organized internationally. According to the police, it is especially persons from Lithuania, Serbia, Albania and Lebanon along with persons from Africa and South America, who are involved in drugs related crime in Denmark.

Cannabis　Morocco is the main producing country of cannabis, which is being smuggled into Denmark, whereas Holland and Spain are the primary distributors. The smuggling of cannabis into the country typically takes place by car or truck, but it is assumed that smuggling to a certain extent takes place by sea as well.

The Outlaw Motorcycle Gangs seem to play a central role in connection with the planning of smuggling cannabis into the country, but also in regards of the distribution of the drug within the country. There are also indications that other groups of criminals and networks – Polish citizens and persons relating to the street gang environment – are trying to establish themselves on the cannabis market.

Most of the heroin being seized in Denmark is assumed to arrive from South West Asia. The Serbian criminal network is very powerful in connection with smuggling heroin into the country. Information detained by the police implies that the Serbian network delivers large parties of heroin to the other countries in Scandinavia as well as Switzerland and Germany.

Cocaine It is assumed that a large part of the cocaine on the Danish market is provided by people from South America. Most of the cocaine seized in Denmark was found in airports with international flight connections, but there is an increasing tendency of smuggling cocaine into the country across the land border. Denmark often serves as a transit country for smuggling cocaine into Sweden and Norway. A large part of this illegal business is run by people from West Africa, who has their base in Denmark and direct contact to their networks in Europe and South America.

Amphetamine Amphetamine is primarily produced in Holland or Belgium and to a lesser extent also in Central- and Eastern Europe. The drug is typically smuggled into Denmark across the land border. The trade and distribution of amphetamine is dominated by people affiliated with the Outlaw Motorcycle Gangs in Denmark.

Ecstasy The ecstasy seized in Denmark is primarily produced in Holland. There are no indications of specific groups dominating the smuggling and distribution of this drug, although the distribution to some extent can be referred to persons with relations to the Outlaw Motorcycle Gangs in Denmark.

3.4 Prices

The prices of drugs used in this section are mainly given by the police in the annual reports on organized crime in Denmark. Some wholesale prices have also been found in the "World Drug Report 2005" published by the United Nations Office on Drugs and Crime. As the tables in this section shows, the street prices of various types of drugs have only varied slightly, whereas larger variations can be found in the wholesale prices.

In this report, it is assumed that street prices are equal to retail prices, that is, the price at which people buy different types of drugs at on the street. It is assumed as well that wholesale prices are equal to basic prices and import prices, which implies that this is the price, which the drug dealer pays for the drugs. Prices will be used in accordance to these assumptions in all calculations to follow.

Table 3.4.1

Street prices on different types of drugs (DKK per gram)

Price per gram	1998	1999	2000	2001	2002	2003	2004
Amphetamine	265	258	250	250	250	250	220
Hash	44	44	45	60	50	50	45
Ecstasy	153	138	125	88	88	88	77
Heroin - white	1.421	1.333	1.250	1.200	1.300	1.300	900
Heroin - brown	975	883	800	600	600	600	500
Cocaine	667	925	800	700	700	600	636

Source: Danish National Police. *Rapport om organiseret kriminalitet i Danmark 2002*; *Rapport om organiseret kriminalitet i Danmark 2003; Rapport om organiseret kriminalitet i Danmark 2004.*

Street prices = retail prices Street prices of various narcotics in Denmark are shown in table 3.4.1. Regional price differences and various rebates for the purchase of large quantities are not taken into account. However, an average price is used in those cases where a

price interval is given for a specific drug. It is assumed that all consumption of drugs in Denmark is supplied by imports only.

The average price of amphetamine has been constant at approximately 250 DKK per gram for the period 1998-2004, although major price fluctuations have been reported around the country. The street price on cannabis has also been steady for the period of time in question at around 50 DKK per gram. The price on ecstasy seems to have stabilized at the level of 50-125 DKK per tablet. The lowest prices are found in Southern and Northern Jutland.

The average price of heroin on the street is 800-1000 DKK per gram for white heroin and 500 DKK per gram for brown heroin. However, there are major fluctuations in the price for heroin around the country. The prices on heroin have decreased somewhat from 2003 to 2004.

The price of cocaine has shown a decreasing tendency from 1999. The average price per gram is 500-600 DKK, although there are great differences in prices depending on the part of the country. The decreasing price of cocaine along with the increasing number of seizures over the past years indicates an increase in the supply and use of cocaine in Denmark. This tendency is also seen internationally and has been recognized in several reports on the topic. Cocaine is the drug with the largest growth rates among abusers in Denmark.

Table 3.4.2

Wholesale prices on drugs (DKK per kg)

	1998	1999	2000	2001	2002	2003	2004
Amphetamine	*54.174*	*52.596*	*51.064*	*51.064*	*51.064*	51.064	58.750
Cannabis	*13.054*	*13.275*	13.500	13.500	*17.881*	17.881	19.227
Ecstasy (per 1000 pills)	*30.429*	*27.538*	*24.921*	*19.170*	*19.170*	19.170	9.984
Heroin - white	*645.659*	*605.633*	*568.088*	546.239	*595.897*	595.897	*524.389*
Heroin - brown	*356.813*	*323.151*	292.665	*234.132*	*234.132*	234.132	248.750
Cocaine	249.530	442.256	243.617	268.151	212.008	297.976	325.000

Source: Danish National Police. *Situationsrapport om organiseret kriminalitet i Danmark 2000; Rapport om organiseret kriminalitet i Danmark 2002*; *Rapport om organiseret kriminalitet i Danmark 2003; Rapport om organiseret kriminalitet i Danmark 2004* & data from *www.politi.dk* and own estimates (*italic*).

Wholesale prices

Table 3.4.2 above shows the wholesale prices from 1998 to 2004 for various types of drugs. The estimates are based on the growth in street prices for each type of drug. Common for all types of drugs is the fact that wholesale prices varies quite some from one year to another. However, the wholesale price of cannabis has shown an increasing tendency for the whole time period, whereas the wholesale price of ecstasy has been decreasing quite a lot.

3.5 Double counting

There is a risk of double counting due to the cost of reselling drugs. It is assumed that intermediate consumption is already included in the national accounts, but it cannot be ruled out that there exists costs, which are not included, but these are assumed not to be significant. Also, gross fixed capital formation in fx. cars, are assumed to be included already.

There is also a risk of double counting due to money laundering. It is likely that this illegal activity takes place, but no information is available on this matter. Since the estimates in this section are in the lower end, it is assumed that money laundering and hence the possible double counting is without economic significance in this context.

3.6 Demand side estimations

Value added from the sale of drugs in Denmark can be calculated in two different ways, that is, from the demand side and the supply side. However, both methods depend strongly on the assumptions made. In this section, an estimation of value added from the sale of drugs will be made from the demand side -the starting point being the number of drug users in Denmark.

From the report "Denmark Drug Situation 2003", the number of drug addicts is found. As this information is only available for some years, estimates have been made for the reminder of the years in the time period. These figures are estimated by simple forward/backward extrapolation in terms of linear interpolation. The result is shown in table 3.2.1.

However, this number of drug addicts consists solely of hard drug users, so a supplement must be made of the number of recreational drug users. This group of drug users are made up of mainly young people, who use drugs occasionally, but still not on such a consistent basis as to create the demand and consumption of the hard drug users.

Table 3.6.1

Different scenarios for estimating the number of recreational users.

Average amount of cannabis seized (kg)	3.277						
Amount of cannabis destined for other countries	60%						
Amount of seized cannabis destined for Denmark	1.311						
Seizure rate	10%	17%	25%	30%	35%	**40%**	50%
Amount of cannabis supplied in the market (kg)	13.109	7.711	5.244	4.370	3.745	**3.277**	2.622
Number of hard cannabis users	1.258						
Average consumption per year per hard user	0,200						
Amount of cannabis used by hard cannabis users (kg)	252						
Amount of cannabis for recreational users	12.857	7.459	4.992	4.118	3.494	**3.026**	2.370
Average consumption per year per recreational user	0,018						
Number of recreational cannabis users	714.288	414.413	277.328	228.777	194.097	**168.088**	131.674

Follwing the Swedish report on illegal activities,

it is assumed that recreational users are distributed in the following way:

Cannabis	95%

49

Amphetamine	2%						
Ecstasy	2%						
Other types of drugs	1%						
Number of recreational amphetamine users	15.038	8.724	5.838	4.816	4.086	**3.539**	2.772
Number of recreational ecstasy users	15.038	8.724	5.838	4.816	4.086	**3.539**	2.772

Recreational users   Table 3.6.1 shows different scenarios for estimating the number of recreational users in Denmark based on the seizure rate for cannabis. The first line in the table shows the average amount of cannabis seized in the period 1998-2004. These figures can be found in table 3.2.5.

As mentioned in section 3.2, the authorities do not distinguish between seizures of drugs for reselling abroad and drugs sold at a street level when registering the seizures made at the border, airports and harbours. It is therefore assumed that the amount of cannabis seized in Denmark which was originally destined for other countries amounts to 60% of the amount of cannabis seized. The amount of cannabis destined for the Danish market can then be determined as follows:

$$(1-0,60) * 3.277 \text{ kg} = 1.311 \text{ kg}$$

The fourth row in table 3.6.1 shows the seizure rate, whereas the amount of cannabis supplied in the market for each seizure rate is shown in the following row. If the seizure rate is assumed to be 25%, then the amount of cannabis supplied in the market is given by

$$1/0,25 * 1.311 \text{ kg} = 5.244 \text{ kg}$$

where 1.311 kg is the amount of cannabis destined for the Danish market, which was calculated in the previous paragraph.

In the next row, the number of hard cannabis users is given. This number as well as the number of hard users of other drug types is calculated by multiplying the number of hard drug users in table 3.2.1 with the percentages given in table 3.2.3. The number used in this calculation is the maximum number of hard cannabis users for the period 1998-2004.

In the World Drug Report 2005 assumptions are made on the average consumption per year per drug user of different drugs. These figures are made for pure drugs. These amounts are then divided by the purity of the various drugs in Denmark in order to determine the average consumption per year per user of each drug type at street purity. The purities are shown in table 3.4.2.

The next row in table 3.6.1 shows the assumed average consumption of cannabis per year per hard user. The total amount of cannabis used per year by hard users can then be determined by simply taking the number of hard users and multiply it by the average amount of cannabis used per year per hard user.

The amount of cannabis consumed by hard users is then subtracted from the amount of cannabis supplied to the Danish market in order to obtain the amount of cannabis used by recreational users. It is assumed that recreational users on average consume 18 grams of cannabis per year. The number of recreational users can then be calculated as the amount of cannabis for recreational users divided by the assumed average consumption per year per recreational user. For an assumed seizure rate of 40%, the calculation becomes:

$$3.026 \text{ kg} / 0{,}018 \text{ kg/user} = 168.088 \text{ users}$$

Table 3.6.1 shows the estimated number of recreational users for different seizure rates. In the Swedish report on illegal activities, it is assumed that the seizure rate for cannabis is 17%. In our calculations, this amounts to 414.413 recreational users. This implies that approximately 12% of the Danish population between 18 and 65 years of age are recreational users of cannabis, which we find highly unlikely. After evaluating each scenario, it has been decided that the 40% seizure rate is the assumption, which is considered to be the most realistic. The seizure rate of 40% amounts to 168.088 recreational users, which is 4,8% of the Danish population between 18 and 65 years of age.

In the Swedish report on illegal activities, it is assumed that recreational users are distributed as follows:

Cannabis	95%
Amphetamine 2%	
Ecstasy	2%
Narcotic medicine	1%

The number of recreational users of amphetamine and ecstasy can then be found on the basis of the number of recreational cannabis users in the following way:

$$168.088 \text{ users} * 1/0{,}95 * 0{,}02 = 3.539 \text{ users}$$

There is no information on users of narcotic medicine in Denmark, and these are therefore not included in the calculations to follow. On the other hand, it is assumed that there are also recreational users of white heroin, brown heroin and cocaine. The number of recreational users for each of these types of drugs is assumed to be equal to 10% of the number of hard users of each specific drug.

Table 3.6.2
Amphetamine

Estimation of value added from the sale of amphetamine.
Current prices.

	1998	1999	2000	2001	2002	2003	2004
Quantities							
Number of hard users	4.165	5.711	4.278	5.610	6.202	5.238	5.308
Ave. consumption per year (g)	80	133	100	133	92	133	133
Number of recreational users	3.539	3.539	3.539	3.539	3.539	3.539	3.539
Ave. consumption per year (g)	10	10	10	10	10	10	10
Prices (DKK)							
Retail price (=street price) (g)	265	258	250	250	250	250	220
Import price (Kg)	54.174	52.596	51.064	51.064	51.064	51.064	58.750
Values (mill. DKK)							
Basic prices							
1020 Import	20	42	24	40	31	37	44
2030 Consumption	20	42	24	40	31	37	44
Purchasing prices							
2030 Consumption	98	205	116	196	152	183	163
Trade margin = value added	78	163	92	156	121	146	120

Table 3.6.2 above shows the estimation of value added from the sale of amphetamine for the period 1998-2004 at current prices. An estimation of value

added from the sale of amphetamine in fixed 2000 prices can be found in annex 3.1.

The first row shows the number of hard users for each year. This number is calculated in the same way as that in table 3.6.1, that is, the number of hard drugs users equals the total number of hard users multiplied by the percentage of drug addicts which use amphetamine. The total number of hard users is given in table 3.2.1, while the percentage of addicts which use a given drug is given in table 3.2.3. For 1998 the calculation is as follows:

$$24.500 \text{ hard users} * 0{,}17 = 4.165 \text{ hard users}$$

The second row shows the average consumption per year per hard user. The assumption used here is the same as that in "World Drug Report 2005", which was also described in further details earlier in this section. The next row shows the number of recreational users, which was determined in table 3.6.1. The average consumption per year per recreational user is then given in the fourth row. In this report we have used the same assumptions for recreational users as those given in the Swedish report on illegal activities.

The next subsection shows the retail price as well as the wholesale price for each year in the period concerned. The retail prices, which in this report are assumed to be equal to the street prices, are given in table 3.4.1, whereas import prices, which are assumed to be equal to wholesale prices, are given in table 3.4.2.

Import in basic prices is determined by first calculating the total consumption per year. This is done by taking the number of hard users multiplied by average consumption per year per hard user plus the number of recreational users multiplied by the average consumption per year per recreational user. This number is then multiplied by the import price in order to obtain import in basic prices. The calculation is as follows for 1998:

$$(4.165 * 0{,}080 \text{ Kg} + 3.539 * 0{,}010 \text{ Kg}) * 54.174 \text{ DKK/Kg} = 20 \text{ mill. DKK}$$

Consumption in basic prices is calculated in the same way as import in basic prices, and consequently the two figures are identical.

Consumption in purchasing prices are given by first determining the total consumption of amphetamine in the same way as described earlier in this paragraph, that is, the number of hard users multiplied by average annual consumption per hard user plus the number of recreational users multiplied by the average annual consumption per recreational user. This number is then multiplied by the retail price in order to obtain the figure for consumption in purchasing prices. For 1998 the calculation becomes:

$$(4.165 * 80 \text{ g} + 3.539 * 10 \text{ g}) * 265 \text{ DKK/g} = 98 \text{ mill. DKK}$$

The trade margin, which is equal to value added, can then be calculated as the consumption in purchasing prices minus import in basic prices. For 1998 this amounts to:

$$98 \text{ mill. DKK} - 20 \text{ mill. DKK} = 78 \text{ mill. DKK}$$

As table 3.6.2 shows, there are great variations in value added from one year to another from a low of 78 mill. DKK in 1998 to a high of 163 mill. DKK in 1999. These variations are due to annual changes in both retail prices and wholesale prices as well as variations in the average consumption per year per hard user,

which is due to annual changes in the purity of the drug as this assumption of average annual consumption is adjusted according to purity. The values for purity can be found in table 3.2.4.

Estimation of value added from the sale of cannabis.
Current prices.

	1998	1999	2000	2001	2002	2003	2004
Quantities							
Number of hard users	245	248	1.258	255	775	1.048	1.062
Ave. consumption per year (g)	200	200	200	200	200	200	200
Number of recreational users	168.088	168.088	168.088	168.088	168.088	168.088	168.088
Ave. consumption per year (g)	18	18	18	18	18	18	18
Prices (DKK)							
Retail price (=street price) (g)	44	44	45	60	50	50	45
Import price (Kg)	13.054	13.275	13.500	13.500	17.881	17.881	19.227
Values (mill. DKK)							
Basic prices							
1020 Import	40	41	44	42	57	58	62
2030 Consumption	40	41	44	42	57	58	62
Purchasing prices							
2030 Consumption	134	136	147	185	159	162	146
Trade margin = value added	94	95	103	143	102	104	83

An estimation of value added from the sale of cannabis is given in table 3.6.3. The number of hard users is given in table 3.2.1 and the number of recreational users was found in table 3.6.1. The assumptions of average consumption per year for the two types of users are again given in "World Drug Report 2005" and the Swedish report on illegal activities. However, in the case of cannabis, average consumption is not adjusted according to purity as it is assumed that import purity of the drug is equal to the purity at street level.

Prices as well as calculations stated in the rest of the table are found and performed in the same way as in the case of table 3.6.2. As in the case of amphetamine, value added from the sale of cannabis also varies quite some from 83 mill. DKK in 2004 to 143 mill. DKK in 2001. Similar estimations of value added from the sale of cannabis in 2000 prices can be found in annex 3.2.

Table 3.6.4

Ecstasy

Estimation of value added from the sale of ecstasy.
Current prices.

	1998	1999	2000	2001	2002	2003	2004
Quantities							
Number of hard users	245	745	1.761	2.295	517	0	0
Ave. consumption per year (g)	100	100	100	100	100	100	100
Number of recreational users	3.539	3.539	3.539	3.539	3.539	3.539	3.539
Ave. consumption per year (g)	75	75	75	75	75	75	75
Prices (DKK)							
Retail price (=street price) (g)	153	138	125	88	88	88	77
Import price (Kg)	30.429	27.538	24.921	19.170	19.170	19.170	9.984
Values (mill. DKK)							
Basic prices							
1020 Import	9	9	11	9	6	5	3
2030 Consumption	9	9	11	9	6	5	3
Purchasing prices							
2030 Consumption	44	47	55	43	28	23	20
Trade margin = value added	35	38	44	34	22	18	18

The estimation of value added from the sale of ecstasy in current prices can be found in table 3.6.4, whereas the same estimation in 2000 prices is given in annex 3.3. As in the previous two tables, the number of recreational users of ecstasy was estimated in table 3.6.1. As in the case of cannabis, average consumption is not adjusted according to purity as it is assumed that import purity of the drug is equal to street level purity.

Value added from the sale of ecstasy varies quite some. The lowest trade margin is found in 2003 and 2004 with a value of 18 mill. DKK, whereas the largest trade margin of 44 mill. DKK. is seen in 2000. There are no information on hard ecstasy users in 2003 and 2004 and only recreational users are considered in these years as a result.

Table 3.6.5
White heroin

**Estimation of value added from the sale of white heroin.
Current prices.**

	1998	1999	2000	2001	2002	2003	2004
Quantities							
Number of hard users	6.860	5.587	5.536	5.738	5.168	5.107	5.175
Ave. consumption per year (g)	115	117	117	116	155	130	130
Number of recreational users	686	559	554	574	517	511	518
Ave. consumption per year (g)	10	10	10	10	10	10	10
Prices (DKK)							
Retail price (=street price) (g)	1.421	1.333	1.250	1.200	1.300	1.300	900
Import price (Kg)	645.659	605.633	568.088	546.239	595.897	595.897	524.389
Values (mill. DKK)							
Basic prices							
1020 Import	513	400	372	367	479	400	356
2030 Consumption	513	400	372	367	479	400	356
Purchasing prices							
2030 Consumption	1.129	880	818	806	1.046	872	612
Trade margin = value added	616	480	446	439	566	472	255

Table 3.6.6
Brown heroin

**Estimation of value added from the sale of brown heroin.
Current prices.**

	1998	1999	2000	2001	2002	2003	2004
Quantities							
Number of hard users	6.860	5.587	5.536	5.738	5.168	5.107	5.175
Ave. consumption per year (g)	115	117	117	116	155	130	130
Number of recreational users	686	559	554	574	517	511	518
Ave. consumption per year (g)	10	10	10	10	10	10	10
Prices (DKK)							
Retail price (=street price) (g)	975	883	800	600	600	600	500
Import price (Kg)	356.813	323.151	292.665	234.132	234.132	234.132	248.750
Values (mill. DKK)							
Basic prices							
1020 Import	284	213	191	157	188	157	169
2030 Consumption	284	213	191	157	188	157	169
Purchasing prices							
2030 Consumption	775	583	523	403	483	402	340
Trade margin = value added	492	370	332	246	294	245	171

Table 3.6.5 shows the estimation of value added from the sale of white heroin in current prices for the period 1998-2004, whereas table 3.6.6 shows the same calculations for brown heroin. Similar estimations of value added for the two drugs in 2000 prices can be found in annexes 3.4 and 3.5

It is assumed in this report that the total amount of heroin consumed is equally divided between white heroin and brown heroin. Due to lack of information, it is assumed that the number of recreational users for the two drugs equals 10% of the number of hard users. The calculations in tables 3.6.5 and 3.6.6 are performed using the same method as that described previously in this section. As for amphetamine, the average consumption per year per hard user is adjusted according to purity given in table 3.2.4.

The trade margin of both white heroin and brown heroin varies like in the previous cases. For white heroin, the lowest value added of 255 mill. DKK is found in 2004, whereas the largest value of 616 mill. DKK is seen in 1998. The same tendency is seen in the case of brown heroin, where the largest value of 492 mill. DKK is also seen in 1998, whereas the lowest value of 171 mill. DKK occurs in 2004. For both drugs, these large changes from year to year are mainly due to significant variations in the number of hard users as well as wholesale prices.

Table 3.6.7
Cocaine

Estimation of value added from the sale of cocaine.
Current prices.

	1998	1999	2000	2001	2002	2003	2004
Quantities							
Number of hard users	5.635	6.704	6.039	5.610	7.753	8.381	8.493
Ave. consumption per year (g)	69	65	95	81	97	95	95
Number of recreational users	564	670	604	561	775	838	849
Ave. consumption per year (g)	10	10	10	10	10	10	10
Prices (DKK)							
Retail price (=street price) (g)	667	925	800	700	700	600	636
Import price (Kg)	249.530	442.256	243.617	268.151	212.008	297.976	325.000
Values (mill. DKK)							
Basic prices							
1020 Import	98	195	141	124	161	239	264
2030 Consumption	98	195	141	124	161	239	264
Purchasing prices							
2030 Consumption	262	408	462	324	533	481	516
Trade margin = value added	164	213	321	200	372	242	252

The estimation of value added from the sale of cocaine is given in table 3.6.7 in current prices for the period 1998-2004, whereas the similar estimation in 2000 prices can be found in annex 3.6. The calculations in both table 3.6.7 and annex 3.6 are made according to the method described previously.

As in the case of white and brown heroin, it is assumed that the number of recreational users for cocaine equals 10% of the number of hard users due to lack of information. As in the cases of amphetamine and white and brown heroin, the average consumption per year per hard user is adjusted according to purity given in table 3.2.4.

The trade margin for cocaine varies from 164 mill. DKK in 1998 to 372 mill. DKK in 2002 mainly due to fluctuations in wholesale prices and variations in the number of hard users.

Overview of the consumption and value added of different types of drugs.
Current prices, mill. DKK.

	1998	1999	2000	2001	2002	2003	2004
Purchasing prices							
- 2030 Consumption:							
Amphetamine	98	205	116	196	152	183	163
Cannabis	134	136	147	185	159	162	146
Ecstasy	44	47	55	43	28	23	20
White heroin	1.129	880	818	806	1.046	872	612
Brown heroin	775	583	523	403	483	402	340
Cocaine	262	408	462	324	533	481	516
Total	2.442	2.259	2.121	1.956	2.400	2.123	1.798
Value added:							
Amphetamine	78	163	92	156	121	146	120
Cannabis	94	95	103	143	102	104	83
Ecstasy	35	38	44	34	22	18	18
White heroin	616	480	446	439	566	472	255
Brown heroin	492	370	332	246	294	245	171
Cocaine	164	213	321	200	372	242	252
Total	1.478	1.359	1.339	1.217	1.477	1.228	900

Table 3.6.8 gives an overview of the consumption of drugs in purchasing prices and value added from the sale of different types of drugs, both in current prices for the period 1998-2004. Similar overview in constant 2000 prices can be found in annex 3.7.

The table shows that total consumption of drugs varies from 1.798 mill. DKK to 2.442 mill. DKK. White heroin accounts for the largest consumption, whereas ecstasy accounts for the smallest. A decreasing tendency in consumption of drugs is seen from 2002 to 2004.

There are fluctuations when looking at value added as well. The lowest value of 900 mill. DKK is seen in 2004, whereas the largest value of 1.478 mill. DKK is found in 1998. Value added follows the trends of consumption in that value added decreases from 1998 to 2001, rises in 2002, and then decreases again from 2002 to 2004.

3.7 Supply side estimations

In section 3.6 value added from the sale of drugs was estimated from the demand side on the basis of the number of drug addicts. In this section an estimate is made from the supply side on the basis of drugs seizures made by the authorities. The results are shown in table 3.7.1 for the period 1998-2004.

Table 3.7.1

Estimation of value added from the sale of various types of drugs.

	1998	1999	2000	2001	2002	2003	2004
Seizure rate:							
Amphetamine	3,5%	3,5%	3,5%	3,5%	3,5%	3,5%	3,5%
Cannabis	17,0%	17,0%	17,0%	17,0%	17,0%	17,0%	17,0%
Ecstasy	10,0%	10,0%	10,0%	10,0%	10,0%	10,0%	10,0%
Heroin – white	1,5%	1,5%	1,5%	1,5%	1,5%	1,5%	1,5%
Heroin - brown	1,5%	1,5%	1,5%	1,5%	1,5%	1,5%	1,5%
Cocaine	10,0%	10,0%	10,0%	10,0%	10,0%	10,0%	10,0%
Drug seizures: (Kg)							
Amphetamine	25	32	57	161	35	66	63
Cannabis	1.572	14.021	2.914	1.763	2.635	3.829	1.385
Ecstasy (pills)	27.039	26.117	21.608	150.080	25.738	62.475	38.096
Heroin – white	28	48	16	13	31	8	19
Heroin - brown	28	48	16	13	31	8	19
Cocaine	44	24	36	26	14	104	32
Total amount of drugs supplied per year: (Kg)							
Amphetamine	720	903	1.631	4.589	997	1.883	1.803
Cannabis	9.247	82.476	17.141	10.371	15.500	22.524	8.147
Ecstasy (1000 pills)	270	261	216	1.501	257	625	381
Heroin – white	1.837	3.200	1.070	837	2.083	543	1.250
Heroin - brown	1.837	3.200	1.070	837	2.083	543	1.250
Cocaine	441	242	359	256	142	1.040	323
Wholesale prices on drugs: (TDKK per Kg)							
Amphetamine	54	53	51	51	51	51	59
Cannabis	13	13	14	14	18	18	19
Ecstasy (per 1000 pills)	30	28	25	19	19	19	10
Heroin – white	646	606	568	546	596	596	524
Heroin - brown	357	323	293	234	234	234	249
Cocaine	250	442	244	268	212	298	325
Street prices: (TDKK per Kg)							
Amphetamine	265	258	250	250	250	250	220
Cannabis	44	44	45	60	50	50	45
Ecstasy (per 1000 pills)	153	138	125	88	88	88	77
Heroin – white	1.421	1.333	1.250	1.200	1.300	1.300	900
Heroin - brown	975	883	800	600	600	600	500
Cocaine	667	925	800	700	700	600	636
Value added: (mill. DKK)							
Amphetamine	152	185	325	913	198	375	291
Cannabis	282	2.555	540	482	498	723	210
Ecstasy	33	29	22	103	18	43	26
Heroin – white	1.423	2.326	730	547	1.467	383	470
Heroin - brown	1.136	1.793	543	306	762	199	314
Cocaine	184	117	200	111	69	314	100

Total (mill. DKK)	3.210	7.004	2.358	2.461	3.012	2.036	1.410

The first section in table 3.7.1 shows the assumed seizure rate for each type of drug. The assumptions for amphetamine, cannabis and heroin are taken from the Swedish report on illegal activities, whereas the seizure rate for ecstasy and cocaine is assumed to be equal to 10%. In the estimations of the number of recreational users, different scenarios were set up in terms of the seizure rate.

For cannabis, we assumed in table 3.6.1 that the seizure rate was 40% and not the 17%, which are used in table 3.7.1. The reason for this is that the number of recreational users in the 17% scenario amounted to more than 400.000 people, which we considered to be highly unrealistic in Denmark. One must also be aware, that the seizure rate will vary from year to year, reflecting the "luck" and effort of the police. This can also be seen from the amounts seized. The constant seizure rates in table 3.7.1 will therefore not reflect reality in each year, and the use of it should merely be seen as illustrative for an estimate from the supply side.

The amount of drugs seized for each type of drug is given in the next section of the table. This information, which is also shown in table 3.2.5, is taken from the annual report on organized crime written by the police. The following section shows the amount of drugs supplied per year for each type of drug. These figures are calculated by using the assumed seizure rate and the amount seized for each type of drug.

Amount of drug supplied = amount of drug seized * 1 /seizure rate

Wholesale prices on drugs are shown in the next section of table 3.7.1. These prices are the same as those used in the previous section for demand side estimations and can be found in table 3.4.2. This is also the case for street prices, which are shown for each type of drug in the next section. The prices are taken from the annual report by the police on organized crime in Denmark, and these figures can be found in table 3.4.1 as well.

The last section of table 3.7.1 shows value added from the sale of each type of drug. Value added is calculated as follows:

Amount of drug supplied * (street price – wholesale price)

The total value added from the types of drugs considered in this estimation is shown in the last row of table 3.7.1. The largest value of 7.004 mill. DKK is seen in 1999, whereas the lowest value of 1.410 mill. DKK occurs in 2004. Value added estimated on the basis of drug seizures clearly show the large variations in the amount of drugs seized from one year to another. The estimates calculated by using this method are therefore connected with some uncertainty, and will not be used as the basis for inclusion in the national accounts.

3.8 Consequences in the national accounts – GDP effects

The consequences in the national accounts of the inclusion of drugs and hence the GDP effects are all based on the demand side estimates. Detailed descriptions of the calculations involved in this matter can be found in section 3.6.

Table 3.8.1 and 3.8.2 below show the general effects of including the sale of white heroin, brown heroin, cocaine, amphetamine, ecstasy and cannabis in the national accounts. Table 3.8.1 shows the effects in current prices, whereas 2000

prices are used for the estimates made in table 3.8.2. Detailed descriptions of the calculations for each type of drug is given in section 3.6, while annexes 3.8 and 3.9 show the effect on GDP at a more detailed level in both current prices as well as in 2000 prices. The calculations are based on the same assumptions as those made in the previous sections.

As has been explained in the section on smuggling of alcohol and tobacco etc., the estimated values of smuggling will have a direct impact on household consumption from 2005 as the imports will no longer be covered by tourist expenditures from the balance of payments. This also counts for smuggling of drugs. Before 2005, the effect on total household consumption expenditure is equal to the value added (trade margin), as the import value in basic prices is deducted from tourism expenditure. These corrections are made in table 3.8.1.

Table 3.8.1

Level effect on GDP and private consumption as a result of including drugs in the national accounts.
Current prices, mill. DKK.

		1998	1999	2000	2001	2002	2003	2004
	Effect on GDP							
	GDP, existing	1.163.616	1.213.473	1.293.964	1.335.611	1.362.409	1.401.808	1.460.386
+	Value added, drugs	1.478	1.359	1.339	1.217	1.477	1.228	900
=	GDP including drugs	1.165.094	1.214.832	1.295.303	1.336.828	1.363.886	1.403.036	1.461.286
	Change in GDP, pct.	**0,13%**	**0,11%**	**0,10%**	**0,09%**	**0,11%**	**0,09%**	**0,06%**
	Effect on private consumption							
	Existing: Total private consumption	590.289	599.132	616.682	631.687	651.448	673.142	710.111
	2210 Tobacco	12.766	13.256	13.348	13.904	13.897	13.764	13.450
	9990 Tourism expenditure	22.870	26.770	28.966	31.359	36.607	35.158	35.279
	Private consumption of drugs: Total private consumption	1.478	1.359	1.339	1.217	1.477	1.228	900
	White heroin	1.129	880	818	806	1.046	872	612
	Brown heroin	775	583	523	403	483	402	340
	Cocaine	262	408	462	324	533	481	516
	Amphetamine	98	205	116	196	152	183	163
	Ecstasy	44	47	55	43	28	23	20
	Cannabis	134	136	147	185	159	162	146
-	9990 Tourism expenditure	964	900	783	739	923	896	898
	Private consumption including drugs: Total private consumption	591.767	600.491	618.020	632.904	652.925	674.369	711.011
	2210 Tobacco	15.208	15.515	15.469	15.860	16.297	15.887	15.248
	9990 Tourism expenditure	21.906	25.870	28.183	30.620	35.684	34.262	34.381
	Change in private consumption, pct. Private consumption total	**0,25%**	**0,23%**	**0,22%**	**0,19%**	**0,23%**	**0,18%**	**0,13%**
	2210 Tobacco	**11,58%**	**10,25%**	**10,03%**	**8,75%**	**10,63%**	**8,92%**	**6,69%**

Table 3.8.1 shows the level effect on GDP and private consumption in current prices covering the period 1998-2004. The increase in GDP is 0,06-0,13%, which is not significant, whereas the increase in total private consumption is between +0,13% and +0,25%. The effect on the individual consumer group, which in this case is 2210 Tobacco, is between 6,69% in 2004 and 11,58% in 1998. This is considered to be a significant large effect.

Table 3.8.2

Level effect on GDP and private consumption as a result of including drugs in the national accounts.
2000 prices, mill. DKK.

		1998	1999	2000	2001	2002	2003	2004
	Effect on GDP growth							
	GDP, existing	1.219.207	1.252.811	1.293.964	1.303.085	1.309.334	1.319.415	1.345.400
+	Value added, drugs	1.363	1.320	1.339	1.358	1.633	1.518	1.536
=	GDP including drugs	1.220.570	1.254.131	1.295.303	1.304.443	1.310.967	1.320.933	1.346.936
	Annual GDP growth, existing	**1,76%**	**2,76%**	**3,28%**	**0,70%**	**0,48%**	**0,77%**	**1,97%**
	Annual GDP growth including drugs	**1,77%**	**2,75%**	**3,28%**	**0,71%**	**0,50%**	**0,76%**	**1,97%**
	Effect on private consumption							
	Existing:							
	Total private consumption	621.224	617.668	616.682	617.185	622.572	630.747	655.661
	2210 Tobacco	13.158	13.538	13.348	13.624	13.282	13.318	13.855
	9990 Tourism expenditure	25.665	28.822	28.966	30.788	35.360	34.503	34.253
	Private consumption of drugs:							
	Total private consumption	1.363	1.320	1.339	1.358	1.633	1.518	1.536
	White heroin	993	825	818	839	1.006	838	850
	Brown heroin	636	528	523	537	644	537	544
	Cocaine	314	353	462	370	609	641	650
	Amphetamine	92	199	116	196	152	183	186
	Ecstasy	36	42	55	62	40	33	33
	Cannabis	138	138	147	138	143	146	146
-	9990 Tourism expenditure	847	766	783	784	960	860	871
	Private consumption including drugs:							
	Total private consumption	622.587	618.988	618.020	618.543	624.205	632.265	657.198
	2210 Tobacco	15.368	15.624	15.469	15.766	15.875	15.696	16.263
	9990 Tourism expenditure	24.818	28.056	28.183	30.004	34.400	33.643	33.382
	Annual change in private consumption, pct., existing							
	Total private consumption	1,92%	-0,57%	-0,16%	0,08%	0,87%	1,31%	3,95%
	2210 Tobacco	-0,16%	2,89%	-1,40%	2,07%	-2,51%	0,27%	4,03%
	Annual change in private consumption, pct., including drugs							
	Total private consumption	1,82%	-0,58%	-0,16%	0,08%	0,92%	1,29%	3,94%
	2210 Tobacco	1,52%	1,67%	-0,99%	1,92%	0,69%	-1,13%	3,61%

Table 3.8.2 shows the level effect on GDP and private consumption of the inclusion of drugs in constant 2000 prices as well as the annual growth rates for the period 1998-2004. It appears from the annex that there is no significant effect on GDP growth or growth in total private consumption of including drugs in the national accounts in the time period concerned.

3.9 References

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4. Appendix

Annex 1.1: Effect on GDP as a result of including smuggling.
Current prices, mill. DKK.

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	GDP(S)	**1.019.545**	**1.069.488**	**1.125.641**	**1.163.616**	**1.213.473**	**1.293.964**	**1.335.611**	**1.362.409**	**1.401.808**	**1.460.386**
	Value added, smuggling (=profits)										
	Alkohol, beer	11	13	17	18	19	24	21	14	11	8
	Alkohol, wine	15	16	17	17	18	21	22	21	21	20
	Tobacco	221	181	150	118	87	68	75	75	53	18
	Mineral water and soft drinks	29	29	28	31	30	61	110	182	146	133
	Candy and chocolate	14	16	19	24	26	29	30	42	51	63
+	Total value added, smuggling	290	254	232	207	181	203	257	335	281	241
-	*Intermediate consumption in connection with smuggling = 0*										
+	*Taxes on products, net = 0*										
=	**GDP(S) incl. smuggling**	**1.019.835**	**1.069.742**	**1.125.873**	**1.163.823**	**1.213.654**	**1.294.167**	**1.335.868**	**1.362.744**	**1.402.089**	**1.460.627**
	GDP(U)	**1.019.545**	**1.069.488**	**1.125.641**	**1.163.616**	**1.213.473**	**1.293.964**	**1.335.611**	**1.362.409**	**1.401.808**	**1.460.386**
	Private consumption smuggled goods (purchasing prices)										
	Alkohol, beer	140	141	147	141	141	143	137	132	123	111
+	Alkohol, wine	57	59	64	63	66	71	73	71	71	70
+	Tobacco	314	311	306	302	294	291	300	309	252	231
+	Mineral water and soft drinks	43	45	47	51	52	107	180	288	231	220
+	Candy and chocolate	84	88	93	109	112	121	120	165	202	250
-	Tourism expenditures	348	390	425	459	485	528	553	629	598	640
+	= Total private consumption of smuggled goods	290	254	232	207	181	203	257	335	281	241
+	*Public consumption of smuggled goods = 0*										
+	*Gross fixed capital formation in connection with smuggling = 0*										
+	*Changes in stocks of smuggled goods = 0*										
+	*Exports of smuggled goods = 0*										
	Imports of smuggled goods (basic prices)										
	Alkohol, beer	129	128	129	123	121	119	117	117	113	104
+	Alkohol, wine	42	43	47	46	48	50	51	50	50	49
+	Tobacco	94	130	156	184	207	223	225	234	199	213
+	Mineral water and soft drinks	13	16	19	21	22	46	70	106	86	87
+	Candy and chocolate	70	72	74	84	86	91	90	123	151	187
-	Tourism expenditures	348	390	425	459	485	528	553	629	598	640

-	Total imports of smuggled goods	0	0	0	0	0	0	0	0	0	0
=	**GDP(U) incl. smuggling**	**1.019.835**	**1.069.742**	**1.125.873**	**1.163.823**	**1.213.654**	**1.294.167**	**1.335.868**	**1.362.744**	**1.402.089**	**1.460.627**
	GDP(I)	**1.019.545**	**1.069.488**	**1.125.641**	**1.163.616**	**1.213.473**	**1.293.964**	**1.335.611**	**1.362.409**	**1.401.808**	**1.460.386**
+	*Compensation of employees in connection with smuggling = 0*										
+	*Taxes on production and imports, net = 0*										
	Gross operating surplus and mixed income in connection with smuggling (=profits)										
	Alkohol, beer	11	13	17	18	19	24	21	14	11	8
	Alkohol, wine	15	16	17	17	18	21	22	21	21	20
	Tobacco	221	181	150	118	87	68	75	75	53	18
	Mineral water and soft drinks	29	29	28	31	30	61	110	182	146	133
	Candy and chocolate	14	16	19	24	26	29	30	42	51	63
+	Total gross operating surplus and mixed income in connection with smuggling	290	254	232	207	181	203	257	335	281	241
=	**GDP(I) incl. smuggling**	**1.019.835**	**1.069.742**	**1.125.873**	**1.163.823**	**1.213.654**	**1.294.167**	**1.335.868**	**1.362.744**	**1.402.089**	**1.460.627**

Annex 2: Effect on GDP as a result of including smuggling.
2000 prices, mill. DKK.

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	2000 prices, million DKK.										
	GDP(S)	**1.138.817**	**1.166.956**	**1.198.093**	**1.219.207**	**1.252.811**	**1.293.964**	**1.303.085**	**1.309.334**	**1.319.415**	**1.345.400**
	Value added, smuggling (=profits)										
	Alkohol, beer	11	11	11	10	10	10	10	10	9	8
	Alkohol, wine	15	15	16	16	16	17	17	17	17	17
	Tobacco	221	214	208	202	195	189	189	189	158	158
	Mineral water and soft drinks	29	29	29	29	29	59	88	135	110	110
	Candy and chocolate	14	14	15	17	17	18	17	23	27	34
+	Total value added, smuggling	290	284	279	274	268	293	322	373	321	326
-	*Intermediate consumption in connection with smuggling = 0*										
+	*Taxes on products, net = 0*										
=	**GDP(S) incl. smuggling**	**1.139.107**	**1.167.240**	**1.198.372**	**1.219.481**	**1.253.079**	**1.294.257**	**1.303.407**	**1.309.707**	**1.319.736**	**1.345.726**
	GDP(U)	**1.138.817**	**1.166.956**	**1.198.093**	**1.219.207**	**1.252.811**	**1.293.964**	**1.303.085**	**1.309.334**	**1.319.415**	**1.345.400**
	Private consumption smuggled goods (purchasing prices)										
	Alkohol, beer	140	138	138	131	129	126	123	121	114	104
+	Alkohol, wine	57	58	62	61	62	65	66	64	64	63
+	Tobacco	314	306	297	288	279	270	270	270	225	225
+	Mineral water and soft drinks	43	43	43	43	43	85	128	196	160	160
+	Candy and chocolate	84	86	88	99	100	107	103	138	164	201
-	Tourism expenditures	348	346	348	347	344	360	368	415	405	426
+	Total private consumption of smuggled goods	290	284	279	274	268	293	322	373	321	326
+	*Public consumption of smuggled goods = 0*										
+	*Gross fixed capital formation in connection with smuggling = 0*										
+	*Changes in stocks of smuggled goods = 0*										
+	*Exports of smuggled goods = 0*										
	Imports of smuggled goods (basic prices)										
	Alkohol, beer	129	127	127	121	119	116	113	112	105	95
+	Alkohol, wine	42	43	46	45	46	48	49	47	47	46
+	Tobacco	94	91	89	86	83	81	81	81	67	67
+	Mineral water and soft drinks	13	13	13	13	13	26	40	61	50	50
+	Candy and chocolate	70	72	73	83	84	89	86	115	136	168
-	Tourism expenditures	348	346	348	347	344	360	368	415	405	426
-	Total imports of smuggled goods	0	0	0	0	0	0	0	0	0	0
=	**GDP(U) incl. smuggling**	**1.139.107**	**1.167.240**	**1.198.372**	**1.219.481**	**1.253.079**	**1.294.257**	**1.303.407**	**1.309.707**	**1.319.736**	**1.345.726**
	GDP(I)	**1.138.817**	**1.166.956**	**1.198.093**	**1.219.207**	**1.252.811**	**1.293.964**	**1.303.085**	**1.309.334**	**1.319.415**	**1.345.400**

+	*Compensation of employees in connection with smuggling = 0*									
+	*Taxes on production and imports, net = 0*									
	Gross operating surplus and mixed income in connection with smuggling (=profits)									
	Alkohol, beer	11	11	11	10	10	10	10	10	9	8
	Alkohol, wine	15	15	16	16	16	17	17	17	17	17
	Tobacco	221	214	208	202	195	189	189	189	158	158
	Mineral water and soft drinks	29	29	29	29	29	59	88	135	110	110
	Candy and chocolate	14	14	15	17	17	18	17	23	27	34
+	Total gross operating surplus and mixed income in connection with smuggling	290	284	279	274	268	293	322	373	321	326
=	**GDP(I) incl. smuggling**	**1.139.107**	**1.167.240**	**1.198.372**	**1.219.481**	**1.253.079**	**1.294.257**	**1.303.407**	**1.309.707**	**1.319.736**	**1.345.726**

Annex 2.1: Estimation of value added from street prostitution.
2000 prices.

		2002	2003	2004
Quantities				
Number of prostitutes		665	620	575
Number of contacts per year		250	250	250
Prices				
Retail price (=price per contact)	DKK	460		
Basic price = import price	DKK	460		
Values				
Basic prices				
1010 Danish production	MDKK	59	55	51
1020 Import	MDKK	17	16	15
2030 Consumption	MDKK	77	71	66
Purchasing prices				
2030 Consumption	MDKK	77	71	66
Value added	MDKK	59	55	51

Annex 2.2: Estimation of value added from clinic prostitution.
2000 prices.

		2002	2003	2004
Quantities				
Number of prostitutes		2.453	2.456	2.459
Number of contacts per year		400	400	400
Prices				
Retail price (=price per contact)	DKK	934		
Basic price = import price	DKK	934		
Values				
Basic prices				
1010 Danish production	MDKK	710	711	712
1020 Import	MDKK	206	206	207
2030 Consumption	MDKK	916	917	918
Purchasing prices				
2030 Consumption	MDKK	916	917	918
Value added	MDKK	710	711	712

Annex 2.3: Estimation of value added from private prostitution.
2000 prices.

		2002	2003	2004
Quantities				
Number of prostitutes		58	73	87
Number of contacts per year		400	400	400
Prices				
Retail price (=price per contact)	DKK	934		
Basic price = import price	DKK	934		
Values				
Basic prices				
1010 Danish production	MDKK	17	21	25
1020 Import	MDKK	5	6	7
2030 Consumption	MDKK	22	27	32
Purchasing prices				
2030 Consumption	MDKK	22	27	32
Value added	MDKK	17	21	25

Annex 2.4: Estimation of value added from escort prostitution.
2000 prices.

		2002	2003	2004
Quantities				
Number of prostitutes		466	409	352
Number of contacts per year		150	150	150
Prices				
Retail price (=price per contact)	DKK	2.855		
Basic price = import price	DKK	2.855		
Values				
Basic prices				
1010 Danish production	MDKK	155	136	117
1020 Import	MDKK	45	39	34
2030 Consumption	MDKK	200	175	151
Purchasing prices				
2030 Consumption	MDKK	200	175	151
Value added	MDKK	155	136	117

Annex 2.5: Estimation of value added from club prostitution.
2000 prices.

	2002	2003	2004
Quantities			

Number of prostitutes		148	148	148
Number of contacts per year		150	150	150

Prices

Retail price (=price per contact)	DKK	2.855
Basic price = import price	DKK	2.855

Values

Basic prices

1010 Danish production	MDKK	49	49	49
1020 Import	MDKK	14	14	14
2030 Consumption	MDKK	63	63	63

Purchasing prices

2030 Consumption	MDKK	63	63	63
Value added	MDKK	49	49	49

Annex 2.6: Overview of consumption of and value added from different types of prostitution. 2000 prices, mill. DKK.

	2002	2003	2004
Purchasing prices - 2030 Consumption:			
Street prostitution	77	71	66
Clinic prostitution	916	917	918
Individuals working from home	22	27	32
Escort service	200	175	151
Club prostitution	63	63	63
Total	1.277	1.254	1.231
Value added:			
Street prostitution	59	55	51
Clinic prostitution	710	711	712
Individuals working from home	17	21	25
Escort service	155	136	117
Club prostitution	49	49	49
Total	990	972	954

Annex 2.7: Overview of consumption of and value added from different types of prostitution + 10%.
2000 prices, mill. DKK.

	2002	2003	2004
Purchasing prices - 2030 Consumption:			
Street prostitution	84	79	73

Clinic prostitution	1.008	1.009	1.010
Individuals working from home	24	30	36
Escort service	219	193	166
Club prostitution	70	70	70
Total	1.405	1.380	1.354
Value added:			
Street prostitution	67	62	58
Clinic prostitution	802	803	804
Individuals working from home	19	24	28
Escort service	175	153	132
Club prostitution	55	55	55
Total	1.118	1.097	1.077

Annex 2.8: Effect on GDP as a result of including prostitution.
Current prices, mill. DKK.

		2002	2003	2004
	GDP(S)	1.362.409	1.401.808	1.460.386
	Value added prostitution (=Danish production)			
	Street prostitution	70	66	62
	Clinic prostitution	838	849	861
	Individuals working from home	20	25	30
	Escort service	183	162	141
	Club prostitution	58	59	59
+	Total value added prostitution	1.169	1.161	1.155
-	*Intermediate consumption in connection with smuggling = 0*			
+	*Taxes on products, net = 0*			
=	**GDP(S) including smuggling**	1.363.578	1.402.969	1.461.541
	GPD(U)	1.362.409	1.401.808	1.460.386
	Private consumption prostitution (purchasing prices)			
	Street prostitution	88	83	78
	Clinic prostitution	1.054	1.067	1.083
	Individuals working from home	25	32	38
	Escort service	230	204	178
	Club prostitution	73	74	75
=	Total private consumption prostitution	1.469	1.459	1.452
+	*Public consumption of prostitution = 0*			
+	*Gross fixed capital formation in connection with prostitution = 0*			
+	*Changes in stock of prostitution = 0*			
+	*Export of prostitution = 0*			
	Import of prostitution (basic prices)			
	Street prostitution	18	17	16
	Clinic prostitution	216	218	221
	Individuals working from home	5	6	8
	Escort service	47	42	36
	Club prostitution	15	15	15
-	Total import of prostitution	301	299	297
=	**GDP(U) including prostitution**	1.363.578	1.402.969	1.461.541
	GDP(I)	1.362.409	1.401.808	1.460.386
+	*Compensation of employees in connection with prostitution = 0*			
+	*Taxes on production and imports, net = 0*			
	Gross operating surplus and mixed income in connection with prostitution (=Danish production)			
	Street prostitution	70	66	62
	Clinic prostitution	838	849	861
	Individuals working from home	20	25	30
	Escort service	183	162	141
	Club prostitution	58	59	59
+	Total gross operating surplus and mixed income	1.169	1.161	1.155
=	**GDP(I) including prostitution**	1.363.578	1.402.969	1.461.541

Annex 2.9: Effect on GDP as a result of including prostitution.
2000 prices, mill. DKK.

		2002	2003	2004
	GDP(S)	1.309.334	1.319.415	1.345.400
	Value added prostitution (=Danish production)			
	Street prostitution	67	62	58
	Clinic prostitution	802	803	804
	Individuals working from home	19	24	28
	Escort service	175	153	132
	Club prostitution	55	55	55
+	Total value added prostitution	1.118	1.097	1.077
-	*Intermediate consumption in connection with smuggling = 0*			
+	*Taxes on products, net = 0*			
=	**GDP(S) including smuggling**	1.310.452	1.320.512	1.346.477
	GPD(U)	1.309.334	1.319.415	1.345.400
	Private consumption prostitution (purchasing prices)			
	Street prostitution	84	79	73
	Clinic prostitution	1.008	1.009	1.010
	Individuals working from home	24	30	36
	Escort service	219	193	166
	Club prostitution	70	70	70
=	Total private consumption prostitution	1.405	1.380	1.354
+	*Public consumption of prostitution = 0*			
+	*Gross fixed capital formation in connection with prostitution = 0*			
+	*Changes in stock of prostitution = 0*			
+	*Export of prostitution = 0*			
	Import of prostitution (basic prices)			
	Street prostitution	17	16	15
	Clinic prostitution	206	206	207
	Individuals working from home	5	6	7
	Escort service	45	39	34
	Club prostitution	14	14	14
-	Total import of prostitution	287	282	277
=	**GDP(U) including prostitution**	1.310.452	1.320.512	1.346.477
	GDP(I)	1.309.334	1.319.415	1.345.400
+	*Compensation of employees in connection with prostitution = 0*			
+	*Taxes on production and imports, net = 0*			
	Gross operating surplus and mixed income in connection with prostitution (=Danish production)			
	Street prostitution	67	62	58
	Clinic prostitution	802	803	804
	Individuals working from home	19	24	28
	Escort service	175	153	132
	Club prostitution	55	55	55
+	Total gross operating surplus and mixed income	1.118	1.098	1.079
=	**GDP(I) including prostitution**	1.310.452	1.320.512	1.346.477

Annex 3.1: Estimation of value added from the sale of amphetamine.
2000 prices.

	1998	1999	2000	2001	2002	2003	2004
Quantities							
Number of users	4.165	5.711	4.278	5.610	6.202	5.238	5.308
Ave. consumption per year (g)	80	133	100	133	92	133	133
Number of users	3.539	3.539	3.539	3.539	3.539	3.539	3.539
Ave. consumption per year (g)	10	10	10	10	10	10	10
Prices (DKK)							
Retail price (=street price) (g)			250				
Import price (Kg)			51.064				
Values (mill. DKK)							
Basic prices							
1020 Import	19	41	24	40	31	37	38
2030 Consumption	19	41	24	40	31	37	38
Purchasing prices							
2030 Consumption	92	199	116	196	152	183	186
Trade margin = value added	73	159	92	156	121	146	148

Annex 3.2: Estimation of value added from the sale of cannabis.
2000 prices.

	1998	1999	2000	2001	2002	2003	2004
Quantities							
Number of hard users	245	248	1.258	255	775	1.048	1.062
Ave. consumption per year (g)	200	200	200	200	200	200	200
Number of recreational users	168.088	168.088	168.088	168.088	168.088	168.088	168.088
Ave. consumption per year (g)	18	18	18	18	18	18	18
Prices (DKK)							
Retail price (=street price) (g)			45				
Import price (Kg)			13.500				
Values (mill. DKK)							
Basic prices							
1020 Import	42	42	44	42	43	44	44
2030 Consumption	42	42	44	42	43	44	44
Purchasing prices							
2030 Consumption	138	138	147	138	143	146	146
Trade margin = value added	97	97	103	97	100	102	102

Annex 3.3: Estimation of value added from the sale of ecstasy.
2000 prices.

	1998	1999	2000	2001	2002	2003	2004
Quantities							
Number of hard users	245	745	1.761	2.295	517	0	0
Ave. consumption per year (g)	100	100	100	100	100	100	100
Number of recreational users	3.539	3.539	3.539	3.539	3.539	3.539	3.539
Ave. consumption per year (g)	75	75	75	75	75	75	75
Prices (DKK)							
Retail price (=street price) (g)			125				
Import price (Kg)			24.921				
Values (mill. DKK)							
Basic prices							
1020 Import	7	8	11	12	8	7	7
2030 Consumption	7	8	11	12	8	7	7
Purchasing prices							
2030 Consumption	36	42	55	62	40	33	33
Trade margin = value added	29	34	44	50	32	27	27

Annex 3.4: Estimation of value added from the sale of white heroin.
2000 prices.

	1998	1999	2000	2001	2002	2003	2004
Quantities							
Number of hard users	6.860	5.587	5.536	5.738	5.168	5.107	5.175
Ave. consumption per year (g)	115	117	117	116	155	130	130
Number of recreational users	686	559	554	574	517	511	518
Ave. consumption per year (g)	10	10	10	10	10	10	10
Prices (DKK)							
Retail price (=street price) (g)			1.250				
Import price (Kg)			568.088				
Values (mill. DKK)							
Basic prices							
1020 Import	451	375	372	381	457	381	386
2030 Consumption	451	375	372	381	457	381	386
Purchasing prices							
2030 Consumption	993	825	818	839	1.006	838	850
Trade margin = value added	542	450	446	458	549	457	464

Annex 3.5: Estimation of value added from the sale of brown heroin.
2000 prices.

	1998	1999	2000	2001	2002	2003	2004
Quantities							
Number of hard users	6.860	5.587	5.536	5.738	5.168	5.107	5.175
Ave. consumption per year (g)	115	117	117	116	155	130	130
Number of recreational users	686	559	554	574	517	511	518
Ave. consumption per year (g)	10	10	10	10	10	10	10
Prices (DKK)							
Retail price (=street price) (g)			800				
Import price (Kg)			292.665				
Values (mill. DKK)							
Basic prices							
1020 Import	233	193	191	196	235	196	199
2030 Consumption	233	193	191	196	235	196	199
Purchasing prices							
2030 Consumption	636	528	523	537	644	537	544
Trade margin = value added	403	335	332	341	408	340	345

Annex 3.6: Estimation of value added from the sale of cocaine.
2000 prices.

	1998	1999	2000	2001	2002	2003	2004
Quantities							
Number of hard users	5.635	6.704	6.039	5.610	7.753	8.381	8.493
Ave. consumption per year (g)	69	65	95	81	97	95	95
Number of recreational users	564	670	604	561	775	838	849
Ave. consumption per year (g)	10	10	10	10	10	10	10
Prices (DKK)							
Retail price (=street price) (g)			800				
Import price (Kg)			243.617				
Values (mill. DKK)							
Basic prices							
1020 Import	96	107	141	113	186	195	198
2030 Consumption	96	107	141	113	186	195	198
Purchasing prices							
2030 Consumption	314	353	462	370	609	641	650
Trade margin = value added	218	245	321	257	424	446	452

Annex 3.7: Overview of consumption and value added of different types of drugs. 2000 prices, mill. DKK.

	1998	1999	2000	2001	2002	2003	2004
Purchasing prices							
- 2030 Consumption:							
Amphetamine	92	199	116	196	152	183	186
Cannabis	138	138	147	138	143	146	146
Ecstasy	36	42	55	62	40	33	33
White heroin	993	825	818	839	1.006	838	850
Brown heroin	636	528	523	537	644	537	544
Cocaine	314	353	462	370	609	641	650
Total	2.210	2.086	2.121	2.142	2.593	2.378	2.408
Value added:							
Amphetamine	73	159	92	156	121	146	148
Cannabis	97	97	103	97	100	102	102
Ecstasy	29	34	44	50	32	27	27
White heroin	542	450	446	458	549	457	464
Brown heroin	403	335	332	341	408	340	345
Cocaine	218	245	321	257	424	446	452
Total	1.363	1.320	1.339	1.358	1.633	1.518	1.536

	1998	1999	2000	2001	2002	2003	2004
Purchasing prices							
- 2030 Consumption:							

Annex 3.8: Effect on GDP as a result of including drugs in the national accounts.
Current prices, mill. DKK.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
GDP(S)	**1.019.545**	**1.069.488**	**1.125.641**	**1.163.616**	**1.213.473**	**1.293.964**	**1.335.611**	**1.362.409**	**1.401.808**	**1.460.386**
Value added drugs (=profit)										
White heroin	544	563	631	616	480	446	439	566	472	255
Brown heroin	483	482	522	492	370	332	246	294	245	171
Cocaine	104	121	49	164	213	321	200	372	242	252
Amphetamine	87	92	103	78	163	92	156	121	146	120
Ecstasy	53	49	39	35	38	44	34	22	18	18
Cannabis	89	90	92	94	95	103	143	102	104	83
+ Total value added, drugs	1.359	1.398	1.435	1.478	1.359	1.339	1.217	1.477	1.228	900
- *Intermediate consumption in connection with drugs = 0*										
+ *Taxes on products, net = 0*										
= **GDP(S) including drugs**	**1.020.904**	**1.070.886**	**1.127.076**	**1.165.094**	**1.214.832**	**1.295.303**	**1.336.828**	**1.363.886**	**1.403.036**	**1.461.286**
GDP(U)	**1.019.545**	**1.069.488**	**1.125.641**	**1.163.616**	**1.213.473**	**1.293.964**	**1.335.611**	**1.362.409**	**1.401.808**	**1.460.386**
Private consumption of drugs (purchasing prices)										
White heroin	998	1.032	1.157	1.129	880	818	806	1.046	872	612
+ Brown heroin	761	760	823	775	583	523	403	483	402	340
+ Cocaine	157	167	76	262	408	462	324	533	481	516
+ Amphetamine	109	116	129	98	205	116	196	152	183	163
+ Ecstasy	66	61	49	44	47	55	43	28	23	20
+ Cannabis	127	129	131	134	136	147	185	159	162	146
- Tourism expenditure	859	867	929	964	900	783	739	923	896	898
= Total private consumption, drugs	1.360	1.398	1.436	1.478	1.359	1.338	1.217	1.477	1.227	900
+ *Public consumption of drugs = 0*										
+ *Gross fixed capitalformation in connection with drugs = 0*										
+ *Changes in stock, drugs = 0*										
+ *Export of drugs = 0*										
Import of drugs (basic prices)										
White heroin	453	469	526	513	400	372	367	479	400	356
+ Brown heroin	278	278	301	284	213	191	157	188	157	169
+ Cocaine	54	46	27	98	195	141	124	161	239	264
+ Amphetamine	22	24	26	20	42	24	40	31	37	44
+ Ecstasy	13	12	10	9	9	11	9	6	5	3
+ Cannabis	38	39	39	40	41	44	42	57	58	62
- Tourism expenditure	859	867	929	964	900	783	739	923	896	898

-	Total imports of drugs	0	0	0	0	0	0	0	0	0	0
=	**GDP(U) including drugs**	**1.020.905**	**1.070.886**	**1.127.077**	**1.165.094**	**1.214.832**	**1.295.302**	**1.336.828**	**1.363.886**	**1.403.035**	**1.461.286**
	GDP(I)	**1.019.545**	**1.069.488**	**1.125.641**	**1.163.616**	**1.213.473**	**1.293.964**	**1.335.611**	**1.362.409**	**1.401.808**	**1.460.386**
+	*Compensation of employees in connection with drugs = 0*										
+	*Taxes on production and imports, net = 0*										
	Gross operating surplus and mixed income in connection with drugs (=profits)										
	White heroin	544	563	631	616	480	446	439	566	472	255
	Brown heroin	483	482	522	492	370	332	246	294	245	171
	Cocaine	104	121	49	164	213	321	200	372	242	252
	Amphetamine	87	92	103	78	163	92	156	121	146	120
	Ecstasy	53	49	39	35	38	44	34	22	18	18
	Cannabis	89	90	92	94	95	103	143	102	104	83
+	Total gross operating surplus and mixed income	1.359	1.398	1.435	1.478	1.359	1.339	1.217	1.477	1.228	900
=	**GDP(I) including drugs**	**1.020.904**	**1.070.886**	**1.127.076**	**1.165.094**	**1.214.832**	**1.295.303**	**1.336.828**	**1.363.886**	**1.403.036**	**1.461.286**

Annex 3.9: Effect on GDP as a result of including drugs in the national accounts.
2000 prices, mill. DKK.

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	GDP(S)	**1.138.817**	**1.166.956**	**1.198.093**	**1.219.207**	**1.252.811**	**1.293.964**	**1.303.085**	**1.309.334**	**1.319.415**	**1.345.400**
	Value added drugs (=profit)										
	White heroin	395	436	521	542	450	446	458	549	457	464
	Brown heroin	294	324	388	403	335	332	341	408	340	345
	Cocaine	89	98	70	218	245	321	257	424	446	452
	Amphetamine	75	82	94	73	159	92	156	121	146	148
	Ecstasy	32	33	29	29	34	44	50	32	27	27
	Cannabis	96	97	97	97	97	103	97	100	102	102
+	Total value added, drugs	982	1.070	1.198	1.363	1.320	1.339	1.358	1.633	1.518	1.536
-	*Intermediate consumption in connection with drugs = 0*										
+	*Taxes on products, net = 0*										
=	**GDP(S) including drugs**	**1.139.799**	**1.168.026**	**1.199.291**	**1.220.570**	**1.254.131**	**1.295.303**	**1.304.443**	**1.310.967**	**1.320.933**	**1.346.936**
	GDP(U)	**1.138.817**	**1.166.956**	**1.198.093**	**1.219.207**	**1.252.811**	**1.293.964**	**1.303.085**	**1.309.334**	**1.319.415**	**1.345.400**
	Private consumption of drugs (purchasing prices)										
	White heroin	725	799	955	993	825	818	839	1.006	838	850
+	Brown heroin	464	511	611	636	528	523	537	644	537	544
+	Cocaine	128	141	101	314	353	462	370	609	641	650
+	Amphetamine	94	103	118	92	199	116	196	152	183	186
+	Ecstasy	40	41	36	36	42	55	62	40	33	33
+	Cannabis	138	138	138	138	138	147	138	143	146	146
-	Tourism expenditure	606	664	761	847	766	783	784	960	860	871
=	Total private consumption, drugs	982	1.069	1.198	1.363	1.320	1.338	1.358	1.633	1.518	1.537
+	*Public consumption of drugs = 0*										
+	*Gross fixed capitalformation in connection with drugs = 0*										
+	*Changes in stock, drugs = 0*										
+	*Export of drugs = 0*										
	Import of drugs (basic prices)										
	White heroin	329	363	434	451	375	372	381	457	381	386
+	Brown heroin	170	187	224	233	193	191	196	235	196	199
+	Cocaine	39	43	31	96	107	141	113	186	195	198
+	Amphetamine	19	21	24	19	41	24	40	31	37	38
+	Ecstasy	8	8	7	7	8	11	12	8	7	7
+	Cannabis	41	41	41	42	42	44	42	43	44	44
-	Tourism expenditure	606	664	761	847	766	783	784	960	860	871

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=	Total import of drugs	0	0	0	0	0	0	0	0	0	0
	GDP(U) including drugs	**1.139.799**	**1.168.026**	**1.199.291**	**1.220.570**	**1.254.131**	**1.295.303**	**1.304.443**	**1.310.967**	**1.320.933**	**1.346.936**
+	**GDP(I)**	**1.138.817**	**1.166.956**	**1.198.093**	**1.219.207**	**1.252.811**	**1.293.964**	**1.303.085**	**1.309.334**	**1.319.415**	**1.345.400**
+	*Compensation of employees in connection with drugs = 0*										
	Taxes on production and imports, net = 0										
	Gross operating surplus and mixed income in connection with drugs (=profits)										
	White heroin	395	436	521	542	450	446	458	549	457	464
	Brown heroin	294	324	388	403	335	332	341	408	340	345
	Cocaine	89	98	70	218	245	321	257	424	446	452
	Amphetamine	75	82	94	73	159	92	156	121	146	148
	Ecstasy	32	33	29	29	34	44	50	32	27	27
+	Cannabis	96	97	97	97	97	103	97	100	102	102
=	Total gross operating surplus and mixed income	982	1.070	1.198	1.363	1.320	1.339	1.358	1.633	1.518	1.536
	GDP(I) including drugs	**1.139.799**	**1.168.026**	**1.199.291**	**1.220.570**	**1.254.131**	**1.295.303**	**1.304.443**	**1.310.967**	**1.320.933**	**1.346.936**