

**Bachelor Thesis**  
**Bachelor Public Health and Society**

**Development of the Dutch diet pattern from 1960 until 2010**



Economics of Consumers and Households  
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## Summary

In this thesis the development of Dutch diet pattern from 1960 until 2010 is mapped and explained. Based on data of the Dutch statistics institute, *Centraal Bureau voor de Statistiek* (CBS), tables about food consumption and tables about expenditures on nutrition are composed. The trends, which are showed by these tables, are explained by data of a literature study.

Over the measured period, an increase in consumption of luxury foods and a decrease in consumption of staple foods can be noted. Further, expenditures on foreign food, convenience food and food-away-from home have increased. The increase of luxury food consumption and the decrease of staple food consumption are caused by an increase in disposable income of Dutch households. The trends of convenience food and food-away-from-home are stimulated by the increased income as well and are further explained by demographic factors, like the labour participation of women and the increase of one-person households. Migration and travel behaviour have led to an increased consumption of foreign food by Dutch population. Finally, some contradictions can be noted in Dutch diet pattern. On the one hand, Dutch population has increasingly become aware of health and societal issues, which has increased consumption of diet products and sustainable foods. On the other hand, overconsumption increasingly occurs and snacks and alcoholic drinks are increasingly consumed. Furthermore, consumption has become more individually during weekdays, with an increased consumption of convenience food and food-away-from-home, while in the weekends extensive attention is paid to preparing and consuming meals.

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## Introduction

When grocery shopping in a supermarket in the Netherlands, the diversity in product offerings can easily be seen. Products are offered in several price categories or propositions to meet different customer demands. For example, in 2006 large Dutch supermarket chains introduced halal meat in their assortment for the Dutch inhabitants with an Islamic background (Distrifood, 2006). Besides the change in the supply of Dutch supermarkets, the variety in food supply has changed because of the emergence of foreign eating occasions. In 1965 the first Italian restaurants were located in Amsterdam (Van Otterloo, 1990) and many restaurants of several exotic origins followed. Nowadays international food and snacks are offered everywhere; the Vietnamese spring roll stand at the shopping street, the kebab stand next to the bar and the sushi shop at the train station. Thus, the Dutch population has increasingly started to consume foreign foods.

Another development in the Dutch food supply is the increasing amount of convenience meals that are offered. From 2002 until 2008 the turnover of convenience food has increased with 51 percent in the Netherlands. Convenience food consists of frozen food, like pizza and complete pasta dishes, chilled food, like meal salads and pre-cut vegetables, and ambient food, like the meal boxes of *Knorr Wereldgerechten* (Distrifood, 2008). Besides the convenience food supply in supermarkets, cheap snacks and meals are offered outdoors, such as the international food mentioned above, sandwiches or French fries. Thus, an increasingly greater variety of convenience food and complete meals are offered in supermarkets and on the streets.

Several developments can be noticed; a) the Dutch supply of food products adapts to a situation with an increased number of inhabitants of non-Dutch ethnicity, b) the ethnical food influence has become available to all inhabitants of the Netherlands and c) convenience food is offered in supermarkets and outdoors. Due to such developments can be assumed that the Dutch diet pattern has changed the past decennia. The question arises whether these developments are healthy for Dutch society. The percentage of Dutch people with overweight, above 20 years old, has increased from 30 percent to 40 percent for women and from 37 percent to 52 percent for men from 1981 until 2007 (POLS in RIVM, 2011). This increase may partly be influenced by a changing diet pattern. For example, it has turned out that convenience food is often unhealthy, as 60 percent of the meals contain a too high fat content and too little carbohydrates (Distrifood, 2009).

This thesis will examine the developments in Dutch diet pattern from 1960 until 2010. This period has been chosen, because since World War II welfare has increased and a greater consumer budget has become available for nutrition. The diet pattern will be explained by income and household composition, as these two factors are assumed to be important indicators for expenditures on nutrition (Engel, 1957, in Drewnowski, 2003; Horton & Campbell, 1991; Lanjouw & Ravallion, 1995). Further, demographic and social-cultural factors will be taken into account, since a changing Dutch society with developments like migration and labour participation of women, will have influenced the Dutch diet pattern. The thesis will be written from an economic perspective and from a health perspective.

The aim of this thesis *to map and explain Dutch diet pattern from 1960 until 2010*.

The following question will be answered to achieve the aim: *In which way can the development of the Dutch diet pattern from 1960 until 2010 be explained?*

To answer this main question, the following questions will be elaborated:

- (1) In what way has the Dutch diet pattern developed from 1960 until 2010?
- (2) In what way do income and household composition explain the trends in Dutch diet pattern?
- (3) In what way do demographic and social-cultural factors explain the trends in Dutch diet pattern?

## Chapter 1. Research Methodology

Two research methods will be used to answer the research questions, a literature study and a data analysis. A literature study will be conducted to gain information about developments in Dutch diet pattern, relationships between income, household composition and nutrition expenditures and Dutch demographic and social-cultural developments. Furthermore, data of the Dutch statistics institute, *Centraal Bureau voor de Statistiek* (CBS), will be used to develop tables which will map the developments of Dutch diet pattern from 1960 until 2010. These tables will give an overview of consumption of several foodstuffs, expenditures on foreign food, convenience food and food-away-from-home and other expenditures. Tables about the development of income and give data per household size are developed, to gain insight in the relationship of diet pattern with income and household size.

### Literature study

Literature study will be conducted to explain the developments which are found in the tables. In chapter four food consumption trends will be explained by demographic and social-cultural factors. For each foodstuff and for foreign food, convenience food and food-away-from-home, a small conclusion will be drawn and will be explained whether the trend is positive or negative from a health point of view. These health explanations will mainly be based on data of the *Voedingscentrum*, the Dutch authority which “provides scientifically based and independent information to consumers about a healthy, safe and sustainable food choice”, as cited by Voedingscentrum (2011).

### Development of tables

Tables will be developed to create an overview of changes in Dutch diet pattern over the years. The tables provided in this thesis, are mainly based on data of the CBS. Data from 1960 until 1980 are retrieved from hard copy CBS reports, available at the Wageningen University Library. Data from the 1990s are retrieved from the web site of the CBS. At the CBS web site data sets can be individually composed by selecting desired themes and dates. After collecting the appropriate data, the tables were developed.

### Categories

In chapter two three tables are showed, which give an insight in the Dutch diet pattern development. A general overview of consumed foodstuffs is given by table 2.1. This table shows several foodstuffs and liquids which are common in the Dutch kitchen. An additional focus is put on Oriental food, convenience food and food-away-from-home, as it seems to be an important trend of the last decades and it has influence on the fat and calorie intake of Dutch population. Figures about the expenditures on these categories are shown in table 2.2. To make a comparison in the expenditures on nutrition and other expenditures, table 2.3 shows the expenditures on the categories nutrition, housing, clothing and footwear, hygiene and medical care, development, recreation and travel and other expenditures. Further, chapter three shows some tables covering income and expenditure, categorized by household compositions.

Table 2.1, 2.2 and 2.3 are the main tables in this thesis and are used to show developments in Dutch diet patterns, with additional literature study and with additional data of other sources. It has been chosen to use mainly data of the CBS, as these data can mostly be compared. When other data are compared to data of the CBS biases might occur. Thus, data of other sources are solely used when no data of the CBS were available or as an addition.

It is important to notice that table 2.1 provides data about the *consumption* of several foodstuffs and table 2.2 and 2.3 provide data about *expenditures* on several categories. Further, table 2.1 provides data of consumption *per capita in absolute figures*. Data in table 2.2 and 2.3 are expressed as percentage of total expenditures.

## Time periods

To provide a time pattern of developments in Dutch diet pattern, the diet pattern will be examined per decade. Although, some exceptions are made, because data of the CBS are not measured consistently over time.

Firstly, the hard copy CBS reports are not published periodically. Therefore, the tables consist, when possible, of periodic data and are complemented by available data. This is for example the case for table 2.1 about the consumption of foodstuffs. CBS reports of the 1960s and 1970s were only available for 1960, 1969 and 1972. From 1985 data have periodically been available and thus is chosen for data per decade; 1985, 1995 and 2005.

Secondly, figures in the budget reports of the CBS are not reported similar each year. The hard copy budget reports do not contain the same categories over the years and therefore some data are missing. When data were missing in the hard copy reports, it was tried to find the missing data in the online CBS database. Table 2.1 is complemented by figures of a report of the Dutch Ministry of Agriculture, which was published by the CBS. Still, some data are missing. In Table 3.1, describing net household income, data misses for 1963/63, as information of these years was not available in the CBS reports. Data of other sources have not been used to finish this table, as for all other years, data of the CBS have been used and a bias could have occurred when other sources had been used.

Another inconsistency in CBS reporting among years was found in measuring data for different household compositions. Households were sometimes categorized in one-person, two-person, three-person and four-person or more households. In other reports households were categorised until five-person or more households and in other reports until six-person or more households. To be able to compare the data in reports among different years, in this thesis tables are composed with the categories one-person, two-person, three-person and four-person or more households. When the used CBS reports had another format, the average data on four-person, five-person (and more) and, if necessary, six-person and more were calculated.

Furthermore, CBS reporting has changed over the years. For meat (table 2.1), vegetables (table 2.1) and other expenditures (table 2.3) different categories are used over the years. In some hard copy CBS reports net income was provided and in other hard copy CBS reports disposable income. Some hard copy CBS reports used the category expenditures on spices, soups and other and other hard copy CBS reports used spices, soups and Oriental food. Although, it is assumed that these are the same categories and the data are used for table 2.2 in this thesis. Expenditures on Oriental food, convenience food and food-away-from-home (table 2.2) and expenditures of all households (table 2.3) were measured for rental values with old and new definitions. To make the data of the old rental value definition and new rental value definition comparable, data for both definitions are included in the tables for the year in which the definition has changed. Data for 2000 and 2005 in table 3.1 and 3.2 are given for both Dutch guilders and Euros, as the Euro was introduced in 2002.

Finally, some categories of CBS reports have not been measured at all after a certain time. For example, the consumption of fish has only been measured by the CBS until 1980.

The inconsistencies in CBS reporting, due to different measuring systems, might lead to biases when data of different years are compared. An increase or a decrease in consumption can be showed, while this increase or decrease is mainly caused by a change in measuring. When the data of that year are compared with data of another year, an exaggerated trend might be noticed.

Further, biases might occur when data of one year are replaced by data of another year. For example, data of 1961 are used for wine, beer and spirits in table 2.1, as data of 1960 were not available. The increase or decrease in the might seem more or less substantial, while the period between the data is shorter than for the other foodstuffs.

In this thesis is mostly chosen to complete the missing data with data of other measuring systems or of other years, to achieve general comparisons. When other data are used to complement tables, this is indicated in the table and in the explanation of the foodstuff, to avoid biased conclusions.



## Chapter 2. Trends in Food Consumption

In this chapter three tables will be showed, to give insight into the trends of food consumption. Table 2.1 will show often used foodstuffs in the Dutch diet and will give an overview of the consumption developments from 1960 until 2005. The development of expenditures on Oriental food, convenience food and food-away-from-home will be given in table 2.2. Finally, table 2.3 will give an overview of expenditures on different categories, to show in what way expenditures on nutrition have developed in relation to other expenditure categories.

### Consumption of food

Table 2.1 is composed of common foodstuffs in the Netherlands and shows the development of consumption from 1960 until 2005.

**Table 2.1 Quantities delivered for consumption per capita per year in kilograms (liquids in l)**

	1960	1969	1972	1985	1995	2005
<i>Total meat</i> <sup>1</sup>	37.9	47.6	53.6	77.3	87.0	85.6
<i>Fish</i>	9.2	11.8	12.5	-	-	-
<i>Chicken eggs</i>	200	211	187	200	175	183
<i>Total liquid milk</i>	177.7	153.1	144.9	-	132.0	127.0
<i>Cheese</i>	7.4	8.0	9.1	13.5	14.2	17.1
<i>Butter</i>	4.7	2.8	1.9	4.0	3.5	3.2
<i>Margarine</i>	19.9	18.4	18.2	11.7	8.1	5.3
<i>Cream</i>	1.4	1.7	-	2.7	2.4	1.9
<i>Bread grains, like flour or meal</i>	76.5	62.0	57.0	53.0	62.0	-
<i>Potatoes</i>	100.2	87.7	84.8	83.0	83.0	-
<i>Rice</i>	2.2	3.0	-	3.5	3.4	-
<i>Vegetables</i> <sup>2</sup>	67.4	80.6	77.9	56.0	94.0	-
<i>Total fresh fruit</i>	59.1	77.2	77.9	66.0	64.0	-
<i>Fresh subtropical fruit</i>	21.3	26.4	30.0	32.0	-	-
<i>Other fresh fruit</i>	37.8	50.8	47.9	34.0	-	-
<i>Coffee roasted</i>	3.6	5.6	-	7.8	7.9	6.8
<i>Tea</i>	0.8	0.6	-	0.6	0.7	0.8
<i>Wine</i> <sup>3</sup>	2.3	4.9	7.8	15.0	16.6	21.3
<i>Beer</i> <sup>3</sup>	26.4	50.0	65.9	85.0	86.0	78.0
<i>Spirits</i> <sup>3</sup>	2.4	3.8	4.5	2.2	1.7	1.3
<i>Soft drinks</i> <sup>4</sup>	32.0	49.1	54.0	66.0	81.0	94.0
<i>Sugar in terms of refined</i>	42.9	44.6	43.8	-	-	-
<i>Dressing fats and oils</i>	1.8	3.0	10.3	10.5	21.8	24.3

<sup>1</sup> In 1960 and 1969 total meat measured as meat without bone, edible fats and poultry. In 1972 as beef, pork and poultry and in 1985 until 2005 as beef, pork, poultry and other meat

<sup>2</sup> From 1980 measured excl. consumption of private gardens and until 1990 only 'fresh' vegetables

<sup>3</sup> Data for 1960 unknown, data of 1961 used

<sup>4</sup> Data for 1960 unknown, data of 1965 used

- Data which are unknown

Sources:

Centraal Bureau voor de Statistiek (1972) (1973) (1988) (1997) (2010)

Ministerie van Landbouw en Visserij (1973)



## Meat, fish and chicken eggs

The measuring system of total meat consumption is different for certain periods. In 1960 en 1969 meat was divided into the subgroups meat without bone (fatbacks (bacon etc.) excluded), edible fats and pressed table poultry. In 1972 the division was beef, pork and poultry, with the category other meat added in 1985, 1995 and 2005. Therefore, a comparison of data can lead to a biased conclusion. However, overall a substantial increase in meat consumption can be noted. Between 1960 and 1969, where consumption has been measured in the same way, the consumption increased with almost 10 kilograms per capita. The same development can be seen between 1985 and 1995, where also a kilograms meat was consumed more per capita per year. Noticeable is the decline in meat consumption in 2005.

Consumption figures of meat divided into beef, pork and poultry have been available in 1985, 1995 and 2005. The consumption of beef (in kilograms per capita per year) was 19.1 in 1985, 20.3 in 1995 and 19.1 in 2005. For pork this was respectively 43.3, 44.2 and 41.9 and for poultry respectively 12.7, 20.4 and 22.2 (CBS, 2010). Thus, the consumption of beef has stayed stable in general and from 1995 a decline of the consumption of pork can be noticed. The consumption of poultry has grown, especially between 1985 and 1995.

Unfortunately, the consumption of fish has not been measured after 1980. In the period from 1960 until 1980 an increase in fish consumption can be noticed, with a small growth from 1972 on. Eventually, the consumption was 12.6 kilograms per capita per year in 1980.

The consumption of chicken eggs has fluctuated over the years; after each increase a decrease followed and so on. Noticeable is that the percentages of growth are significantly smaller than the percentages of decrease. The increases were 5.5 percent in 1969 compared to 1960, 7.0 percent in 1985 compared to 1972 and 4.6 percent in 2005 compared to 1995. On the other hand, the decreases were 11.4 percent in 1972 compared to 1969 and 12.5 percent in 1995 compared to 1985.

Thus, overall meat consumption has increased, segmented by an increase in poultry consumption, a similar level of beef consumption and a decline in pork consumption. The consumption of fish has increased until 1980 and egg consumption has fluctuated over the entire period.

## Dairy

The consumption of milk has declined over the whole measured period. Especially a big decline (13.8 percent) can be noticed between 1960 en 1969. The decline of 3.8 percent between 1995 en 1985 has been relatively modest.

For 1985 the total liquid milk consumption data are not available, although the figures of the consumption of wholly, semi-skimmed and skimmed milk are available. The consumption of wholly milk (in litres per capita per year) was 30.3 in 1985, 13.0 in 1995 and 4.8 in 2005 (CBS, 2010). This implies a substantial decline over a period of twenty years, with a big decline between the decades as well. In 1985 the consumption of semi-skimmed milk was 34.8, in 1995 44.2 and in 2005 44.7 (CBS, 2010). In the period between 1985 and 1995 the difference in consumption was substantial, however the consumption from 1995 on stayed quite stable. At last, the consumption of skimmed milk was respectively 1.2, 1.1 and 1.3 (CBS, 2010), which refers to a quite stable consumption pattern over the last two decades.

Over the years, the consumption of cheese has been increasing. Special about the development of cheese consumption, is that consumption increased with a high percentage among all points of time; with 8.1 percent in 1969, 13.8 percent in 1972, 48.4 percent in 1985, 5.2 percent in 1995 and 20.4 percent in 2005.

Butter consumption has declined with almost 60 percent in the period from 1960 until 1972. Hence, the doubling of consumption between 1972 and 1985 is noticeable. After 1985 the consumption of butter has decreased again.

The consumption of margarine has declined over the whole period. Especially the gap between 1972 and 1985 is outstanding. After 1985 the decline per decade is substantial as well.

Cream consumption has grown quite stable until 1985, but has declined after that point of time. Cream consumption figures of 2006 and 2007 are available as well and in both years the consumption (in litres per capita per year) of cream was 2.0, thus consumption has slightly increased after 2005.

Concluding for dairy, milk consumption has decreased and wholly milk might be substituted by semi-skimmed milk. Consumption of cheese has increased over the whole period. Consumption of butter in general has declined and consumption of margarine has declined as well. Cream consumption has been fluctuating over the measured period.

### **Bread, potatoes and rice**

Until 1985 the consumption of bread grains has decreased, with the largest decrease between 1960 and 1969. Between 1985 and 1995 consumption has increased substantial, namely with 17.0 percent. Data about bread grains are not available anymore after 2001. However, from 1980 data about bread consumption are available. In both 1985 and 1995 bread consumption (in kilograms per capita per year) was 59 and in 2005 consumption was 62. Although this may imply that bread consumption has grown, figures of 2006 until 2009 show that consumption has stayed quite stable: 57 in 2006, 59 in 2007 and 2008 and 58 in 2009.

Consumption of potatoes declined over the years, but has stayed stable from 1985. However, in 2000 consumption (in kilograms per capita per year) declined again to 77, which increased to 89 in 2001 and 2002 (CBS, 2010). The decline of 7.2 percent is substantial after almost 3 decades of nearly stable consumption. Further, the increase of 15.6 percent in 2001 and equal consumption quantity in 2001 and 2002 are remarkable. After 2002 no data are available about consumption of potatoes.

In 1969 and from 1969 until 1985 rice consumption has increased. The measurement of consumption rice has stopped after 2001, so no quantity can be given for 2005. From 1985 to 1995 a small decline in rice consumption has occurred, which has resulted in a consumption (in kilograms per capita per year) of 3.4 in 1995. Remarkably, rice consumption has raised to 7.0 in 2000, but declined to 4.5 in 2001 (CBS, 2010). Hence, the consumption of rice has varied substantially from 1995 until 2001.

Thus, consumption of bread grains has decreased and consumption of bread has stayed quite stable from the 1980s. The consumption of potatoes decreased in the 1960s and has stayed stable since 1972. In general, rice consumption has increased in the period of 1960 until 2001.

### **Vegetables and fruit**

Data about vegetables are reported in different ways and hence comparisons of these data will lead to biased conclusions. The data of 1960, 1969 and 1972 are inclusive consumption of vegetables from private gardens and data from 1985 are exclusive consumption from private gardens. Additionally, the data until 1985 are about fresh vegetables and the data about 1995 also about pre-packaged vegetables. After 1995 no data are available. However, the consumption of vegetables has grown from 1960 until 1969 and has slightly decreased in 1972. In comparison to 1972, consumption of 1985 has decreased substantial. Although, this decrease is probably exaggerated and thus biased, because data of 1972 are included vegetables from private gardens and data of 1985 are excluded

vegetables from private gardens. From 1985 until 1995 vegetable consumption has grown substantial, but this comparison can be biased as well. This is because the quantity of 1985 is only about fresh vegetables and the quantity of 1995 also about other than fresh vegetables, like frozen and canned vegetables. Because of differences in reporting, conclusions based on these data will lead to biased outcomes. Therefore, the data about vegetables in table 2.1 will not be solely used to draw conclusions in this thesis.

The consumption of fresh fruit has grown until 1972. Especially between 1960 en 1969 a large consumption growth occurred. In 1985 and 1995 fresh fruit consumption decreased and no data are available for 2005. For 1995 the distinction between subtropical and other fresh fruit was not available as well. Remarkable is the continuing growth of the consumption of subtropical fruit. The consumption of other fresh fruits has fluctuated, but finally this consumption was less in 1985 than in 1960.

Data about fresh fruit in 1990 turn out that the total fresh fruit consumption has increased over the period from 1985 until 1990. In 1990 the consumption of total fresh fruit (in kilograms per capita per year) was 73, with 39 for subtropical fruit and 34 for other fresh fruit (CBS, 2010). The growth of total fresh fruit consumption is remarkable, as in 1995 this consumption has declined to 64.

Eventually, no comparisons in the development of consumption of vegetables can be made based on the figures in table 2.1. However, the differences in reporting vegetable consumption might indicate the kinds of consumed vegetables. In the first two decades private gardens were relatively important for obtaining vegetables. Since the 1980s private gardens have become less important and mainly fresh vegetables were consumed. After the 1990s not solely fresh vegetables were reported, which demonstrates the upcoming importance of pre-packaged vegetables. For fruit, a varying pattern of consumption is recognized. Noticeable is the increase of subtropical fruit.

## Drinks

From 1960 until 1969 and from 1969 until 1985 substantial increases have occurred in the consumption of roasted coffee. However, the increase between 1960 until 1969 refers to a period of 9 years and the increase between 1969 and 1985 refers to a period of 16 years, as no data were available for 1972. The consumption of roasted coffee has increased until 1995. Consumption of 1985 and 1995 were quite similar and therefore it is noticeable that the consumption of 2005 has declined with 13.9 percent.

As shown in the table, the consumption of tea has stayed generally stable over the last fifty years. Of all foodstuffs handled in this thesis, this is the only product of which consumption has not changed substantially over the years.

With a total increase of 826.1 percent, the consumption of wine has increased enormously over the last fifty years. The increase was 113.0 percent in 1969, 59.2 percent in 1972, 92.3 percent in 1985, 10.7 percent in 1995 and 28.3 percent in 2005. Data for 1960 were not available, therefore data of 1961 are used.

Consumption of beer has increased substantially as well. In eight years of time, from 1961 until 1969, the consumption has almost doubled. Between 1969 and 1972 the consumption increased with 31.8 percent. In 1985 and 1995 consumption stayed stable and in 2005 consumption has decreased with 9.3 percent.

Spirits were consumed more every decade until 1972. After that point of time, the consumption has declined each decade and the consumption in 2005 has eventually been less than the consumption in 1960. Data about 1960 were not available and thus data about 1961 are used in the table.

From 1965 (32.0) until 1969 (49.1) the consumption of soft drinks (in litres per capita per year) has increased by 53.4 percent. The consumption has kept increasing; with 10.0 percent in 1972, with 22.2 percent in 1985, with 22.7 percent in 1995 and with 16.0 percent in 2005.

Thus, coffee consumption has increased from 1960 until 1995 and has decreased in 2005, while tea consumption has stayed quite similar over the years. Noticeable are the increases of wine and beer and the decline of spirit consumption. Finally, a growing number of soft drinks can be noticed.

### **Dressing fats and oils**

The consumption of dressing fats and oils has substantially increased between 1960 and 2005. In three years of time, from 1969 until 1972, consumption has got almost 3.5 times higher. Further, consumption has doubled from 1985 until 1995.

### **Sugar**

Since 1980 the consumption of sugar has not been published anymore by the CBS. As showed in the figure, overall consumption has stayed stable from 1960 until 1972.

### **Conclusion table 2.1**

As highlighted in table 2.1 it can be concluded that for most foodstuffs consumption patterns have changed from 1960 until 2005. The only exception is for tea, of which consumption has stayed stable. Consumption has increased for cheese, meat, dressing fats and oils, rice, total fruits, coffee, wine, beer and soft drinks. A decrease in consumption has occurred for milk, butter, margarine, bread grains, potatoes and spirits. Chicken eggs and cream show other patterns.

Within the chosen foodstuffs some noticeable developments can be recognized. The foodstuff meat showed an increased consumption, with an increased consumption of poultry, stable consumption of beef and a decreased consumption of pork. At milk a substitution of wholly milk by semi-skimmed milk might be noticed. Consumption of bread grains has decreased, but consumption of bread has stayed stable since 1980.

## Expenditures on foreign foods, convenience foods and food-away-from-home

As mentioned in the introduction, the diet pattern of Dutch population might be changed due to the increasing supply of foreign food, convenience food and food-away-from-home. In table 2.2 the trends of these kinds of food will be showed. For foreign food, only the category spices, soups and Oriental food will be studied, as this category has been available since 1963/65. Thus, other foreign influences on diet pattern are not given in this table. Convenience food contains in this table the category main dishes frozen and canned. Although, more convenience food is available, which will be discussed in chapter four. Finally, the expenditures on food-away-from-home are showed by digestions outdoors, beverages outdoors, meals outdoors and delivered and take away meals.

The numbers in table 2.2 are percentages of the total expenditures of Dutch households, which contains of expenditures on nutrition, housing, clothing and footwear, hygiene and medical care, development, recreation and traffic and other expenditures, which will be showed at table 2.3.

**Table 2.2 Expenditures; Oriental food, convenience food and eating outdoors of all households (as percentage of total expenditures)**

	1963/65 <sup>1</sup>	1978	1980	1985	1990	1992 <sup>2</sup>	1995 <sup>2</sup>	2000 <sup>2</sup>	2000 <sup>3</sup>	2007 <sup>3</sup>
<i>Spices, soups and Oriental food</i>	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.6
<i>Main dishes frozen and canned</i>	-	-	-	-	0.1	0.2	0.2	0.3	0.3	0.3
<i>Digestions outdoors</i>	-	2.7	2.9	2.6	3.4	3.6	3.7	4.4	4.5	3.9
<i>Beverages outdoors</i>	0.7	-	-	-	0.6	0.6	0.6	0.6	0.7	0.4
<i>Meals outdoors</i>	0.5	-	-	-	1.8	1.1	0.6	1.4	1.5	1.7
<i>Delivered and take away meals</i>	-	-	-	-	-	0.3	0.4	0.4	0.4	0.4

<sup>1</sup> Calculated from average use per household of manual workers, head labourers and farmers with a similar consumption per person to amount of persons

<sup>2</sup> Rental value old definition

<sup>3</sup> Rental value new definition

- Data which are unknown

Sources:

Centraal Bureau voor de Statistiek (1972) (1984) (1988) (1992) (1997) (2010)

The terms used in the CBS reports differ over the years. In the report of 1963/65 a topic is called meals and such outdoors. This is not exactly the same term as digestions outdoors or meals outdoors. However, in 1978 the term which was included in the report was digestions outdoors. Eventually is chosen to put meals and such outdoors for 1963/65 in the meals outdoors row, because the terms are more similar and it seems more logical due to figures of following decades. The number 1.8 for meals outdoors in 1990 is more close to 0.5 than the number 2.7 for digestions outdoors in 1978.

In 2000 a new definition for rental value was introduced, which affected the data of expenditures measurement. Therefore, small differences can be noticed between 2000 old definition and new definition. The data of both definitions are included in the table.

### **Spices, soups and Oriental food**

In 1963/65 the expenditures on spices, soups and Oriental food were 20 percent higher than in 1978. From 1978 until 1990 the expenditures on this category have stayed the same. In 1992 the expenditures (as percentage of total expenditures) have increased with 20 percent from 0.5 to 0.6. In 2000 expenditures have increased again and became 0.7. Finally, the expenditures have decreased to 0.6 in 2007. Thus, the expenditures on spices, soups and Oriental food have stayed quite stable, with increases in 1992 and 2000.

### **Main dishes frozen and canned**

The expenditures on frozen and canned main dishes are measured since 1990, which might indicate that this category has got common since the 1990s. The expenditures on main dishes frozen and canned have tripled in 27 years. From 1990 until 1992 the expenditures (as percentage of total expenditures) doubled from 0.1 to 0.2. In 2000 the expenditures increased with 50 percent to 0.3 and have stayed stable from then on. Hence, expenditures on frozen and canned main dishes have increased since 1990s and have stayed stable since 2000.

### **Digestions outdoors**

In thirty years of time, the expenditures on digestions outdoors have increased with 44.4 percent. In 1990 digestions outdoors increased with 30.8 percent in comparison to 1985. From then on, expenditures on digestions outdoors kept increasing, but finally the expenditures have decreased with 13.3 percent in 2007. So, expenditures on digestions outdoors have increased with a noticeable decrease in 2007.

### **Beverages outdoors**

No data are available for beverages outdoors between 1965 and 1990. Although, expenditures on this topic were quite similar in 1965 and 1990 and even a bit higher in 1965. The expenditures on beverages outdoors stayed the same from 1990 until 2000. However, the expenditures in 2007 have decreased with 42.9 percent in comparison with 2000. Thus, expenditures on beverages have stayed stable with eventually a decrease in 2007.

### **Meals outdoors**

For meals outdoors no data are available between 1965 and 1990 as well. The difference between these years is noticeable, as the expenditures on meals outdoors are 3.6 times higher in 1990 than in 1963/65. Between 1990 and 1992 the expenditures on meals outdoors decreased with 38.9 percent. In the three years after 1992, expenditures on meals outdoors decreased again, this time with 45.5 percent. However, in 2000 the expenditures on meals outdoors doubled compared to 1995 and in 2007 the expenditures slightly increased. Concluding, a varying pattern can be noticed for meals outdoors, with increases from 1963/65 until 1985 and from 2000 until 2007.

### **Delivered and take away meals**

Data about expenditures on delivered and take away meals are available since 1992, which might indicate that delivered and take away meals have become a more common consumption good in the 1990s. The expenditures on this category (as percentage of total expenditures) increased from 0.3 to 0.4 from 1992 until 1995. From 1992 until 2007 the expenditures on delivered and take away meals have been stable. Therefore, it can be concluded that the expenditures on this item have stayed stable over the last two decades.

### **Conclusion table 2.2**

Expenditures on spices, soups and Oriental food have stayed relatively stable over the last fifty years, with increases in 1992 and 2000. An increase can be noticed for expenditures on frozen and canned main dishes over the last twenty years.

Digestions outdoors expenditures have increased from 1978 until 2000 and noticeably have decreased starting 2007. Expenditures on beverages outdoors have stayed stable and have decreased in 2007, as digestions outdoors. Thus, a noticeable decrease in expenditures for both digestions and beverages outdoors has occurred in 2007.

On the contrary, expenditures on meals outdoors have increased in 2007. Furthermore, the expenditures on meals outdoors varied over the years and the expenditures on delivered and take away meals have stayed stable over the last twenty years.



## Total expenditures

To gain insight in which way the expenditures on nutrition have developed in relation to other expenditures, CBS data on Dutch household expenditures is studied. Table 2.3 contains the categories nutrition, housing, clothing and footwear, hygiene and medical care, development, recreation and traffic and other expenditures. The data in this table are expressed as percentage of total expenditures.

**Table 2.3 Expenditures of all households (as percentage of total expenditures)**

	1963/65 <sup>1</sup>	1978	1980	1985	1990	1995 <sup>2</sup>	2000 <sup>2</sup>	2000 <sup>3</sup>	2005 <sup>3</sup>	2009 <sup>3</sup>
<i>Nutrition</i>	26.7	21.3	21.4	19.1	18.5	18.2	17.3	17.6	15.7	15.4
<i>Housing</i>	18.3	29.2	30.3	33.3	32.0	36.7	34.4	33.5	34.8	35.4
<i>Clothing and footwear</i>	12.2	8.8	8.5	7.0	7.0	6.6	6.8	6.9	6.0	6.0
<i>Hygiene and medical care</i>	6.6	12.3	12.7	14.0	13.9	5.5	6.3	6.4	7.8	7.8
<i>Development, recreation and traffic</i>	16.9	27.0	25.6	25.1	27.0	30.6	32.8	33.2	32.9	32.4
<i>Other expenditures</i>	19.4	1.4	1.5	1.5	1.6	2.4	2.3	2.4	2.8	3.1

<sup>1</sup> Calculated from average use per household of manual workers, head labourers and farmers with a similar consumption per person to amount of persons

<sup>2</sup> Rental value old definition

<sup>3</sup> Rental value new definition

Sources:

Centraal Bureau voor de Statistiek (1972) (1984) (1988) (1992) (1997) (2010)

In 2000 a new definition for rental value has been introduced, which affected the data of expenditures measurement. Therefore, small differences can be noticed between 2000 old definition and new definition. The data of both definitions are included in the table.

## Nutrition

In general, the expenditures on nutrition in relation to total expenditures have declined since 1963/65. In 1963/65 was spent 20.2 percent more on nutrition than in 1978. From 1978 until 1980 a small increase of 0.5 percent occurred. In 1985 the expenditures on nutrition declined with 10.8 percent, in 1990 with 3.1 percent, in 1995 with 1.6 percent and in 2000 with 4.9 percent. From 2000 until 2005 (new definition) the decrease in expenditures was 10.8 percent and from 2005 until 2009 the decrease was 1.9 percent. Hence, the largest decreases have occurred in 1978, 1985 and in 2005, with a total decrease in expenditures on nutrition of 42.3 percent.

## Housing

Although a decline of relative expenditures has occurred at nutrition, the expenditures on housing have almost doubled (93.4 percent). Especially the increase of 59.6 percent in 1978 compared to 1963/65 is noticeable. With an exception of 1990, the expenditures on housing have increased every period.

## Clothing and footwear

The relative expenditures on clothing and footwear have decreased by 50 percent over the last thirty years. Remarkable are the decreases between 1963/65 and 1978, 1980 and 1985, 2000 and 2005 (new definition), which were respectively 27.9 percent, 21.4 percent and 13.0 percent.

## Hygiene and medical care

The data on hygiene and medical care are biased. From 1963/65 until 1978 the expenditures almost doubled, from 1978 until 1985 the expenditures increased and from 1990 until 1995 a sudden large decline occurred. The large decline can be attributed to the way of measurement. All the subcategories of hygiene and medical care have stayed the same, except the subcategory medical care. In 1995 the category name changed to medical care and insurance and hereby other factors were measured. Therefore, data before 1995 and from 1995 cannot be compared.

After the large decline the expenditures have increased with 14.5 percent between 1995 and 2000 (old version) and with 21.9 percent between 2000 and 2005 (new version). After 2005 expenditures have been stable.

## Development, recreation and traffic

Compared to 1963/65 the expenditures on development, recreation and traffic increased with 59.8 percent in 1978. From 1978 until 1985 the expenditures on development, recreation and traffic declined. After this point in time, the expenditures increased until 2000 and slightly decreased after 2000. Over all years, expenditures on development, recreation and traffic have increased with 91.7 percent.

## Other expenditures

Other expenditures include, for example, private insurances and collections and donations. These expenditures increased with 121.4 percent from 1978 until 2009, but have stayed a relatively small category. As showed in the table 2.3, the percentage of other expenditures of the period 1963/65 is extremely high. This is because the reporting system of this period had an additional, thus seven, categories. The category societal obligations, insurances and taxes was a separate category and in this table this category has been put under other expenditures to maintain the six categories which are used in this thesis. The percentage for societal obligations, insurances and taxes was 19.0 percent and for other expenditures 0.3 percent.

## Conclusion table 2.3

Over the last decades, expenditures on nutrition have decreased with 42.3 percent, on housing have increased with 93.4 percent, on clothing and footwear have decreased with 50.8 percent, on development, recreation and traffic have increased with 91.7 percent and on other expenditures have increased by 121.4 percent (from 1978 until 2009).

The categories on which relatively little money has been spent are nutrition and clothing and footwear. More money is relatively spent on housing, on development, recreation and traffic and on other expenditures.

## Chapter 3. Food consumption trends explained by income and household composition

In chapter two several trends in food consumption have been discussed. Consumption of cheese, meat, dressing fats and oils, rice, total fruits, coffee, wine, beer and soft drinks has increased and consumption of milk, butter, margarine, bread grains, potatoes and spirits has decreased. A relation with the increase or decrease of several foodstuffs with income will be showed in this chapter. Hereafter, the influence of income on expenditures on convenience food and food-away-from home (table 2.2) will be described. Both expenditures on convenience food and expenditures on food-away-from-home have increased over the measured period. Further, chapter two has showed the relative expenditures of households divided into several categories (table 2.3). The relative expenditures on nutrition have decreased with 42.3 percent from 1963/65 until 2009, while expenses on housing and development, recreation and traffic have increased. This chapter will discuss the expenditures on nutrition in relation to income. Finally, the influence of household composition on expenditures will be explained.

### Income and consumption/expenditures

Table 3.1 shows the disposable income of different sizes of households for the period 1978 until 2005. Data of 1963/65 were not available in CBS reports and no data of other sources has been used to complement the table, as explained in chapter one.

From this table can be derived that the disposable income has increased every period of time. The average disposable income increased with 8.8 percent in 1980, 8.5 percent in 1985, 25.0 percent in 1990, 5.0 percent in 1995, 21.5 percent in 2000 and 17.8 percent in 2005. The expenditures of the years 2000 and 2005 in table 3.1 and 3.2 were reported by the CBS in Euros instead of guilders. These expenditures are calculated in guilders as well to be able to make comparisons.

**Table 3.1 Net household income in guilders/ disposable income<sup>1</sup>**

	1963/65	1978 <sup>2</sup>	1980 <sup>2</sup>	1985 <sup>3</sup>	1990	1995 <sup>3</sup>	2000 <sup>4</sup> €/f	2005 <sup>4</sup> €/f
1 person	-	18200	20400	23700	27500	28100	14600/32174	17200/37904
2 person	-	31800	34000	38400	47800	50500	27200/59941	32000/70519
3 person	-	34000	37900	39900	53700	57200	31800/70078	37300/82198
4+ person	-	43967	46867	49050	59800	62400	35700/78672	42250/93107
Average	-	31992	34792	37763	47200	49550	27325/60216	32188/70932

<sup>1</sup> In some CBS reports net income is provided and in some CBS reports provide disposable income is provided

<sup>2</sup> Categories of 4-person, 5-person and 6-person or more summed and divided by three to get the average for the category 4-person or more

<sup>3</sup> Categories of 4-person and 5-person or more summed and divided by two to get the average for the category 4-person or more

<sup>4</sup> Categories of 4-person and 5-person or more summed and divided by two to get the average for the category 4-person or more, in Euros in stead of guilders and rental value new definition

- Data which are unknown

1 EUR = 2.20371 f (Dutch guilder)

Sources:

Centraal Bureau voor de Statistiek (1972) (1984) (1988) (1992) (1997) (2010)

First, the trend of consumption of several foodstuffs will be discussed by income. Table 2.1 shows a decrease in consumption of cheese, meat, dressing fats and oils, rice, total fruits, coffee, wine, beer and soft drinks from 1963/65 until 2005. These foodstuffs can be categorised as luxury products and thus an increase in consumption of luxury products can be noticed. Consumption of milk, butter, margarine, bread grains, potatoes and spirits have decreased. Foodstuffs like milk, bread grains and potatoes can be indicated as staple foods and hence, the consumption of staple foods has decreased. Thus, table 2.1 shows an increase in luxury food and a decrease in staple food, while Dutch disposable income has increased. This is in line with Bennet's law, which states that people

will spend less on staple goods and more on luxury goods when income rises (Cirera & Masset, 2010).

Second, a relation between income and expenditures on convenience food and food-away-from-home can be noticed. Table 2.2 has showed that, in general, expenditures on convenience food and food-away-from home have increased over the measured period. As disposable income over the measured period has increased as well, it might be assumed that an increased income leads to an increased use of convenience food and food-away from home.

The assumption that a higher income leads to a higher use of convenience food is confirmed by Capps et al. (1985) and by Bonke (1993, in Warde, 1999), who also found a positive relation between income and the use of convenience food. Further, a positive influence of income on food-away-from home has been demonstrated by Nayga & Capps (1992) and Stewart et al. (2004). Thus, it might be assumed that the increased Dutch disposable income has led to an increased use of convenience food and food-away-from-home.

Third, a relationship between income and the trend in total expenditures and nutrition expenditures will be showed. The total expenditures, categorised per capita in a household, from 1963/65 until 2005 are showed in table 3.2. This table shows that for each period the absolute total expenditures have increased from 1963/65 on. The average increases are 140.5 percent in 1978, 6.9 percent in 1980, 13.1 percent in 1985, 15.0 percent in 1990, 14.2 percent in 1995, 22.0 percent in 2000 and 18.8 percent in 2005. Especially the large increase from 1963/65 until 1978 is noticeable. However, this increase has occurred in a longer period than the period of five years between most other periods and this explains a higher increase.

**Table 3.2 Total expenditures**

	1963/65 <sup>1</sup>	1978 <sup>2</sup>	1980 <sup>2</sup>	1985 <sup>3</sup>	1990	1995 <sup>3</sup>	2000 <sup>4</sup> €/f	2005 <sup>4</sup> €/f
1 person	-	16149	18242	23001	24337	27365	14851/32727	18392/40531
2 person	-	28643	30297	35457	41773	46642	26864/59200	31239/68842
3 person	8054	32538	35135	39049	46601	55372	28712/63273	35064/77271
4+ person	16648	41472	43383	46197	52489	59347	34054/75045	39412/86853
Average	12351	29701	31764	35926	41300	47182	26120/57561	31027/68375

<sup>1</sup> For the period 1963/65 only 3-person, 4-person, 5-person, 6-person and 7-person or more households are documented. Therefore, no data can be provided about 1-person and 2-person households. The categories 4-person, 5-person, 6-person and 7-person or more are summed and divided by four to get the average for the category 4-person or more

<sup>2</sup> Categories of 4-person, 5-person and 6-person or more summed and divided by three to get the average for the category 4-or more-person

<sup>3</sup> Categories of 4-person and 5-or more-person summed and divided by two to get the average for the category 4-person or more

<sup>4</sup> Categories of 4-person and 5-or more-person summed and divided by two to get the average for the category 4-person or more, in Euros in stead of guilders and rental value new definition

1 EUR = 2.20371 f (Dutch guilder)

Sources:

Centraal Bureau voor de Statistiek (1972) (1984) (1988) (1992) (1997) (2010)

Table 3.3 shows the expenditures on nutrition (as percentage of total expenditures). Considering the average of these numbers, it can be concluded that each period has seen a decline in the relative expenditures on nutrition. The average decreases were 23.6 percent in 1978, 0.5 percent in 1980, 11.0 percent in 1985, 1.6 percent in 1990, 1.6 percent in 1995, 3.3 percent in 2000 and 10.3 percent in 2005. Thus, the largest decrease occurred from 1963/65 until 1978, although this decrease has occurred over a longer period than the other measured periods. Other substantial decreases took place from 1980 until 1985 and from 2000 until 2005.

**Table 3.3. Expenditures on nutrition (in percent of total expenditures)**

	1963/65 <sup>1</sup>	1978 <sup>2</sup>	1980 <sup>2</sup>	1985 <sup>3</sup>	1990	1995 <sup>3</sup>	2000 <sup>4</sup>	2005 <sup>4</sup>
1 person	-	19.2	19.0	15.7	17.4	17.0	16.4	14.8
2 person	-	20.1	20.3	18.1	17.9	18.2	17.9	15.8
3 person	29.1	22.0	21.4	20.0	18.9	17.6	17.2	15.3
4+ person	26.1	22.9	23.3	20.8	19.4	19.7	18.3	16.7
Average	27.6	21.1	21.0	18.7	18.4	18.1	17.5	15.7

<sup>1</sup> For the period 1963/65 only 3-person, 4-person, 5-person, 6-person and 7-person or more households are documented. Therefore, no data can be provided about 1-person and 2-person households. The categories 4-person, 5-person, 6-person and 7-person or more are summed and divided by four to get the average for the category 4-person or more

<sup>2</sup> Categories of 4-person, 5-person and 6-person or more summed and divided by three to get the average for the category 4-or more-person

<sup>3</sup> Categories of 4-person and 5-or more-person summed and divided by two to get the average for the category 4-person or more

<sup>4</sup> Categories of 4-person and 5-or more-person summed and divided by two to get the average for the category 4-person or more, in Euros in stead of guilders and rental value new definition

Sources:

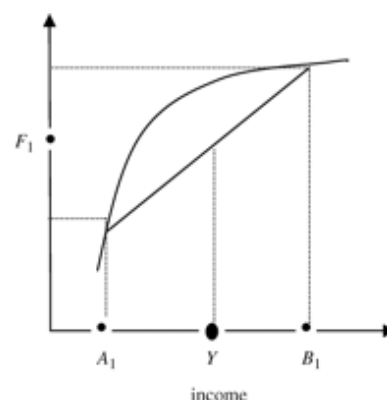
Centraal Bureau voor de Statistiek (1972) (1984) (1988) (1992) (1997) (2010)

As shown by table 3.1 and 3.2, disposable income and total absolute expenditures have grown each period of time from 1963/65 until 2005. On the other hand, relative expenditures on nutrition have declined each period of time from 1963/65 until 2005. The phenomenon that by an increase of disposable income the demand for food increases less than proportionally is also claimed by the German economist Engel. According to Engel, demand for all goods increases when income increases and some categories of expenditures increase more than other categories (Cirera & Masset, 2010). This is also the case with the categories mentioned in this thesis, as absolute expenditures have increased along with the increased income (table 3.1 and 3.2) and differences can be noted between expenditures on different categories (as percentage of total expenditures), as showed in table 2.3.

Expenses on the categories housing and development, recreation and traffic have increased more than the categories nutrition and clothing and footwear. Engel states that relative expenditures on nutrition keep decreasing until a saturation point is reached. After this point, food demand does barely respond to income increases.

Graph 3.1 shows the Engel Curve for food consumption and income. The vertical line represents the food demand and the horizontal line represents income. The minimum consumption level of food is showed by A and the income is showed by Y. The nonlinear Engel curve also demonstrates a relation between food and income distribution; poor tend to spend more on food than the rich (Cirera & Masset, 2010) .

Thus, the increase of income has led to an increase of consumption of luxury food, an increase of expenditures on convenience food and food-away-from home and a decrease in consumption of staple food. Further, the decreased expenditures on nutrition can be explained by Engel, who states that expenditures on nutrition increase with an increase of income until a saturation point.



**Graph 3.1 Engel Curve food consumption and income:  
Average food demand in a two-individual economy**

Source: Cirera & Masset (2010)

## Household composition and expenditures

Besides the relation between income and expenditures, the relation between household composition and expenditures will be explained. The tables 3.4 until 3.8 can be found in the appendix.

Table 3.1 shows that the disposable income of households in guilders increases per additional capita in a household. More persons in a household lead in general to more expenditures in guilders as well (table 3.2). Table 3.3 shows that the number of persons in a household influences the relative expenditures on nutrition. Unless a few exceptions, the percentage spent on nutrition increases with each capita a household consists of. In 1963/65, less money is spent in four-person or more households than in three-person households. Three-person households have relatively spent less on nutrition than two-person households in 1995, 2000 and 2005. These four cases, showed in table 3.3, are the only exceptions on the conclusion above.

The expenditures on housing (table 3.4) relatively decrease with each additional capita per household. An opposite trend is demonstrated for the expenditures on clothing and footwear (table 3.5), where relatively more is spent for each additional capita per household. The expenditures on hygiene and medical care (table 3.6) are various over the years and for the amount of members a household consist of. Therefore no coherent pattern can be distinguished for this topic. Furthermore, an incoherent pattern is showed for expenditures on development, recreation and traffic (table 3.7) and for other expenditures (table 3.8).

Thus, disposable income and expenditures in guilders increase along with each additional capita per household. Furthermore, for three categories a clear pattern can be noticed between household composition and expenditures. This is the case for nutrition, housing and clothing and footwear. In general, expenses increase per capita of a household for the categories nutrition and clothing and footwear. The opposite can be remarked for housing, where expenses decrease per capita of a household.

These findings might be explained by Barten's theory about the influence of the number of persons in a household on the demand for food and for public goods. He made a distinction between entirely individual goods, like food, and shared goods, like housing. When two one-person households will go together to one two-person household, the price of the private good (food) will remain the same per person and the price of the shared good (housing) will halve per person. Because the price of housing will halve per person, this will lead to a positive income effect. For the demand on the private good a negative substitution effect will occur. However, the substitution effect will be small if the private good is a necessary good, like food, and the consumption per capita of the household will rise (Deaton & Paxson, 1998).

Hence, the data about expenditures on nutrition and the expenditures on housing match with Barten's theory, as per each additional capita in a household expenditures on nutrition increase and expenditures on housing decrease. Although the data found in this thesis confirm the findings of Barten, also theories exist which state the opposite. For example, Deaton & Paxson (1998) show that when total household expenditures are constant, expenditures per capita on food fall with the number of persons in a household.

## Conclusion

The disposable income and total expenditures of Dutch households have increased from 1963/65 until 2005. First, the increase of income of Dutch population has caused an increase of consumption of luxury food and a decrease in the consumption of staple foods. This partly explains the development of consumption shown in table 2.1. Second, the increase of income has led to an increase in convenience food and food-away-from-home and therefore partly explains the development of expenditures on foreign food, convenience food and food-away-from-home in table 2.2. The trends, which are showed table 2.1 and 2.2, will be discussed more extensively in relation with demographic and social-cultural factors in chapter four.

Third, the relative expenditures on nutrition have decreased, while most other categories of expenditures have increased from 1963/65 until 2005. This trend in Dutch nutrition expenditures complies with the findings of Engel, who states that with an increase of income all expenditures will increase as well. This also counts for expenditures on nutrition, until a certain saturation point is reached. Further, it can be concluded that relative expenditures on nutrition increase per capita in a household. This can be explained by Barten's theory, which states that nutrition is a an individual and necessary good and hence, expenditures will increase per person in a household.



## Chapter 4. Food consumption trends explained by demographic and social-cultural factors

From 1800 until 1960 Western European countries, except the Mediterranean countries, have gone through a nutritional transition. Because of the possibility to trade food and the rise of income, the diet in Western Europe changed from a diet that mainly consisted of starchy staples into a more diverse diet, which contained more animal foods, sugar, fruits, vegetables, oils and fats (Grigg, 1995). By Dutch household school the idea was spread that dinner should consist of three components, namely one carbohydrate source (potatoes, rice, pasta) with vegetables and a protein source (meat, fish, or meat substitute), which had large influence on the whole Dutch population (Den Hartog, 2001). Furthermore, Dutch diet pattern includes two bread based meals, one as breakfast and one as lunch (De Roos, 2008).

The previous chapter about income and household composition pointed out that Dutch households have become richer since 1960 and that therefore more luxury food and less staple food are consumed. Consumption of cheese, meat, dressing fats and oils, rice, total fruits, coffee, wine, beer and soft drinks has increased and consumption of milk, butter, margarine, bread grains, potatoes and spirits has decreased.

In this chapter will be sought for demographic and social-cultural explanations for the consumption trends of the foodstuffs in table 2.1 and for the expenditures on Oriental food, convenience food and food-away-from-home in table 2.2. These explanations will be complemented by health implications of the trends.

### Foodstuffs with decreased consumption

First, the foodstuffs with a decreased consumption from 1963/65 are discussed. The foodstuffs which lost relative share in the diet are milk, butter, margarine, bread grains and potatoes. Dressing fats and oils, which have an increased consumption, are added to butter and margarine as they can be consumed in similar way. Furthermore, bread is added to the category bread grains as in this way information about consumption of bread can be extended.

#### Milk

Overall consumption of milk has decreased in every period from 1963/65 until 2005. Within milk is seen that consumption (in litres per capita per year) of wholly milk has decreased (30.3 in 1985 to 4.8 in 2005), consumption of semi-skimmed milk has increased (34.8 in 1985 to 44.7 in 2005) and consumption of skimmed milk has stayed stable. According to De Bakker & Dagevos (2010), milk consumption was mainly introduced by promotion campaigns about its health benefits in the 1950s. In the 1960s semi-skimmed and skimmed milk were developed as one of the first foodstuffs with a lighter composition, which improved the image of milk and other milk products (Van Kreijl & Knaap, 2004). The development of semi-skimmed and skimmed milk has eventually led to a proportionally large consumption of semi-skimmed milk, but consumption of skimmed milk has stayed low over the years. The increased consumption of semi-skimmed milk might have had a substitution effect on wholly milk (De Bakker & Dagevos (2010). Although the consumers' perception of milk and milk products has improved in the 1960s (Van Kreijl & Knaap, 2004), consumption of milk in general has kept decreasing. In this thesis data about milk product like yoghurt, quark and yoghurt drinks are not included, while it could be that the consumption of these products has increased by the improved image. Finally, the decline of milk consumption can partly be ascribed to the substitution effect of sweet dairy drinks and soft drinks (Van Otterloo, 1990).

Thus, consumption of wholly milk might be substituted by semi-skimmed milk, which was introduced in the 1960s. The overall decline of milk consumption might be caused by an increase in the

consumption of sweet dairy drinks and soft drinks. From a health perspective, the substitution of wholly milk by semi-skimmed milk is positive, as semi-skimmed milk contains less saturated fat than wholly milk. The substitution of sweet dairy drinks and soft drinks for milk is unhealthy, as these products contain more sugar which will lead to a higher calorie intake and which might eventually lead to overweight. Furthermore, the acids in soft drinks are bad for the teeth (Voedingscentrum, 2011).

### **Butter, margarine, dressing fats and oils**

The major decrease of the consumption of butter and especially of margarine is noticeable. However, in the 1960s diet margarine was developed, which has influenced the consumption of wholly butter and wholly margarine. Diet or 'light' products are "foodstuffs whereby a part of the fat or carbohydrates (sugar) are replaced by less or no energy supplying ingredients", as defined by Van Kreijl & Knaap (2004). Diet margarine has become more popular since the 1980s and thus consumption of diet margarine has increased since the 1980s (Van Kreijl & Knaap, 2004). The gap in margarine consumption between 1972 and 1985 (from 18.2 to 11.7) might be explained by the increased consumption of diet margarine in the 1980s and might refer to a substitution effect. This substitution effect might have continued in the following periods, where substantial decreases of margarine consumption have continuously taken place.

Since the 1990s, consumers have increasingly become interested in the scientifically proven physiological effects of nutrition components. This food trend, which is spread via the Japanese and other Asian cultures, is called functional food (Van Kreijl & Knaap, 2004). Functional foods can be defined as "foods that are consumed as part of a normal food pattern and that have beneficial effects on body functions that go beyond adequate nutritional effects and that are relevant to an improved state of health and well-being and/or a reduction of the risk (not prevention) of disease", as cited by Binns (2009). The trend of functional food, has led to the development of margarines with health claims. An example is Becel pro-activ, which will lower bad cholesterol, in case of regular use (Becel, 2011).

As noticeable as the decrease of butter and margarine, is the major increase of dressing fats and oils in each period. Since 1965 the popularity of the Italian kitchen has increased (Van Otterloo, 1990), including Italian ingredients as olive oil. Therefore, oils might have functioned as a substitute for butter and margarine and might have affected the consumption of butter and margarine.

Thus, butter and margarine consumption might partly have been replaced by consumption of diet margarine, functional margarine and oils. The trend of consumption of functional food and olive oils can be addressed to Japanese and Italian eating habits.

Wholly butter, wholly margarine and meat dressing fats are sources of saturated fat and olive oils and other vegetable oils of unsaturated fat (Hartstichting, 2011). It is recommended to avoid consumption of saturated fat to prevent cardiovascular diseases. Vegetable oils contain fatty acids, which are important for a healthy diet. (Voedingscentrum, 2011). Therefore, the substitution of wholly margarine and butter by olive oils is a positive trend.

Since the 1980s the lowering of fat consumption, and especially the lowering of saturated fat, has become an important topic of the Dutch *Voedingsraad*, Nutrition Council, which has led to an increase of diet products consumption (Van Kreijl & Knaap, 2004). The substitution by diet variants of butter and margarine fits to the health ideas of the Heath Council and is positive, as diet variants contain less fat than wholly variants (Voedingscentrum, 2011). Because dressing fats are sources of saturated fat, which is unhealthy, the increase of dressing fat consumption is a negative trend in a health-perspective.

## Bread and bread grains

The consumption of bread grains has decreased from 1960 until 1985 and consumption of bread has stayed stable since 1980. Van Ours (1985) describes that slices of bread became thinner until 1985 and that the spreads became thicker. The thinner bread slices and increase of spread might is a good metaphor to describe the decrease of bread grains consumption until 1985.

Bread is an important basic foodstuff in the Dutch diet pattern, as breakfast and lunch mostly are bread based in the Dutch diet pattern (De Roos, 2008). The consumption of bread is healthy, as it contains relatively many nutrients and little calories. Furthermore, the consumption of breakfast is important to stimulate the digestion, to increase energy during the day and to prevent snacking the rest of the day (Voedingscentrum, 2011).

In 1988 the percentage of people who had breakfast was 85 percent and in 1998 this declined to 81 percent. It is expected that the percentage of skipping breakfast will keep increasing, especially at the population with a lower socioeconomic-status (Van Kreijl & Knaap, 2004). The decreases in Dutch breakfast consumption have caused a grown attention on the importance of having breakfast for Dutch health promotion. In 2003 the campaign *Nationaal Schoolontbijt*, National School Breakfast, was launched. By offering breakfasts at primary schools is aimed to show the fun and importance of having breakfast to pupils, their parents and their teachers (Nationaal Schoolontbijt, 2011).

Thus, the decrease in bread grain consumption might be explained by thinner bread slices and increased spread per slice. Although, bread consumption has stayed stable since 1985, consumption of breakfast has decreased. This is a negative trend from health-perspective and therefore more attention is paid to skipping breakfast and the importance of having breakfast in Dutch health promotion.

## Potatoes

Potatoes consumption firstly decreased and has stayed quite stable from 1972 on. This trend is noticeable, as nowadays also many rice and pasta dishes are cooked and thus a decrease of potatoes consumption could be expected. The NOS (2010) acknowledges this expectation and states that fifty years ago potatoes were the main carbohydrate source in warm meals and that this position is nowadays increasingly replaced by pasta and rice (NOS, 2010). Thus, the findings in this thesis do not match the findings of the NOS about the substitution of potatoes. Moreover, potatoes are with 51 percent still the most eaten basic ingredient for dinner (Van Kreijl & Knaap, 2004). Besides the old-fashioned cooked potatoes, potato products like frites, potato croquettes, potato slices and potato wedges are often consumed in the Netherlands. These potato products are often pre-cut and therefore more convenient to prepare than raw potatoes, which have to be peeled before preparation.

Concluding, consumption of potatoes has stayed stable, although other sources state that potatoes are substituted by rice and pasta. There are several potato products and convenient pre-cut potato products have become more common in the Netherlands. However, cooked potatoes are more healthy than other potato products, as often additional fat or salt is added to the potato products and they have to be baked or fried in fat (Voedingscentrum, 2011). Therefore, the consumption of potato products instead of boiled potatoes is a less healthy trend.

## Foodstuffs with increased consumption

The foodstuffs with an increased consumption from 1960 until 2005 will be described in this section. The consumption of cheese, meat, rice, fruit, coffee, soft drinks, wine and beer has increased the last decades. Coffee, tea and soft drinks are put together, as they are all non-alcoholic drinks. Coffee and soft drinks consumption has increased, while tea consumption has stayed stable. Finally, wine, beer and spirits form a group of alcoholic drinks. The consumption of wine and beer has increased and the consumption of spirits has decreased.

### Cheese

The consumption of cheese has kept increasing every decade. Cheese can be consumed for several purposes, like sandwich spread, in warm meals and as snack. At the section bread and bread grains is described that slices of bread have become thinner and spread has become thicker (Van Ours, 1985). As spread has become thicker, this might have led to more cheese consumption at breakfast and lunch and thus an increase of cheese consumption in general. Although, according to the Dutch Health Council (Gezondheidsraad, 2002), cheese consumption for breakfast has decreased with 2 percent, for lunch decreased with 2 percent, for warm meal increased with 6 percent and for snack decreased with 2 percent from 1987/88 until 1997/98. Thus, the increase in cheese consumption of the last decades can probably be ascribed to the increasing use of cheese at warm meals.

The variation of cheese is extended by foreign cheeses, like Brie and Camembert from France, Feta from Greece, Danish Blue from Denmark and Parmesan from Italy. These cheeses are often used in Greek or Italian meals or are consumed as snack with toast or bread. According to the Dutch Health Council (Gezondheidsraad, 2002), population with a higher socioeconomic status have consumed more cheese than population with a lower socioeconomic status.

Thus, cheese consumption might have increased because of thicker sandwich spread and consumption in warm meals. Cheese consumption is also influenced by foreign cheeses, which are used in meals or consumed as snack. Cheese contains important nutrients, but also saturated fat and salt, which can increase the chance of cardiovascular diseases and high blood pressure. Therefore, it is recommended to eat cheese on a moderate basis (Voedingscentrum, 2011). The increase of cheese consumption might be unhealthy, if too much cheese per person is consumed.

### Meat

Meat consumption has increased significantly over the last fifty years. However, differences in consumption can be noticed between several kinds of meat. Since 1985 beef consumption has stayed stable, pork consumption has slightly decreased and poultry consumption has almost doubled until 2005. Noticeable is that meat consumption increased every decade, but decreased little from 1995 until 2005.

The increase of meat in general, can be ascribed to the increase of real income of Dutch households. In general, meat has a good image as many people associate meat with masculinity, toughness and power (De Bakker & Dagevos, 2010). Although, since the 1970s and 1980 Dutch population has increasingly become aware of the damage meat and meat consumption can bring to health and environment. Because of differences in measurement of meat consumption by the CBS it is not possible to compare the exact data among decades. However, it can be assumed that meat consumption has kept increasing until 1995 and thus the awareness in the 1970s and 1980s did not immediately affect the Dutch meat consumption.

Growing scientific, political and societal awareness since 2000, might have resulted in the decrease of meat consumption of 2005 and might lead to a further decrease in the coming years. Worldwide an increased focus on sustainable production and consumption of food and particularly meat has developed. In 2008 Dutch government introduced a sustainable approach, with production and

consumption of meat and milk as focus points. A year later, the Dutch Ministry of Agriculture, Nature and Food Quality announced the desire to become the worldwide leader in achieving more sustainable food production. Furthermore, Dutch government wants to achieve a transition to an increasing consumption of sustainable and vegetable proteins, instead of consuming animal proteins (De Bakker & Dagevos, 2010). Besides the government, also food producers and retailers have expressed their concerns about food safety, environmental damage and animal welfare since 1985. Although, this might mainly be a part of marketing strategy to improve their image (Van Trijp & Meulenberg, 2001).

A study by De Bakker & Dagevos (2010) has shown that 17.6 percent of the respondents considered to eat less meat in the near future. The main reasons for this were animal welfare, unhealthy, expensive, unsafe and the environment. The respondents who indicated that they were not willing to lower meat consumption, gave reasons as good taste and bite and necessity for health.

Among the respondents 11.57 percent had a meat consumption of 0 to 2 times a week, 27.57 percent of 2.1 to 4 times a week, 30.30 percent of 4.1 to 6 times a week and 26.66 percent of more than 6 times a week. The vegetarians, 3.90 percent of the respondents, gave societal awareness of the dangers and ethical aspects of meat consumption as main reasons for the decision to eat no meat. Fish is the most popular meat replacer and home consumption of fish has grown with 17 percent from 1995 until 2001 (Van Kreijl & Knaap, 2004). The popularity of textured meat replacers, like vegetarian burgers, has increased as well; in 2001 the turnover for this product category was 27 million euro and in 2009 62 million euro. Thus, growing awareness might have lead to a decrease in meat consumption and a substitution effect by meat replacers and fish.

Besides the general increase of meat consumption and the eventual decrease of meat consumption, differences in consumption can be noticed between beef, poultry and pork. The increasing popularity of poultry can be ascribed to the increasing consumption of rice and pasta, as dishes with rice and pasta often contain poultry. As a result, the typical Dutch meal containing potatoes, vegetables and meat has consumed less, which might have contributed to the decline in pork consumption (Gezondheidsraad, 2002).

Concluding, meat consumption has increased most decades, because of the increase in income and the positive image of meat. Eventually, the consumption of meat has declined as a result of public awareness of the negative influences meat consumption can have on peoples' health and the environment. An increase in consumption of rice and pasta dishes has probably led to an increase of poultry consumption and a decrease of pork consumption.

Dependent on the kind of meat, and thus the amount of saturated fat, meat consumption is healthy. Poultry, lean beef and lean pork are rather recommended for consumption than normal beef and pork. Furthermore, fish consumption and skipping dishes with meat now and then is positive. Therefore, the current trend can be positively evaluated from a health-perspective.

## Rice

Rice consumption has increased until 1985. After 1985 an incoherent development can be noticed. In 1990 the consumption (in kilograms per capita per year) increased from 3.5 to 4.1, in 1995 the consumption decreased to 3.4 and in 2000 it doubled to 7.0. In 2001, one year later, consumption declined to 4.5. Unfortunately, no data about rice are available since 2001. The NOS (2010) has provided data about the total amount of kilograms of rice consumed by Dutch population. According to these data, 29.5 million kilograms is consumed in 2000 and 27.2 million kilograms in 2010, which refers to a decrease in rice consumption the last decade.

According to the Dutch Health Council (Gezondheidsraad, 2002), rice and pasta have increasingly replaced the typical Dutch triad of potatoes, vegetables and meat in the period from 1988 until 1998, which can be confirmed by the numbers about rice consumption of 1990 and 2000. This development complies with the often mentioned trend of foreign food, which might be influenced by the popularity of Asia as travel location for Dutch population. Although, this development is in conflict with the decreases in consumption of 1995 and 2001 and the decrease reported by the NOS. Furthermore, the data about potatoes do not show a decline in potato consumption and thus no substitution effect. Therefore, no clear pattern and explanation for rice consumption can be given.

Thus, rice consumption has generally increased and it is unclear to what extent it has substituted the consumption of potatoes. Rice provides important nutrients, although brown rice and potatoes contain more fibres than white rice (Voedingscentrum, 2011). Hence, substitution of potatoes by white rice is less healthy than by brown rice. Further, rice and pasta meals are often prepared with poultry and minced meat and with less vegetables than in the Dutch triad of potatoes, vegetables and meat (Gezondheidsraad, 2002). Because of the decline in vegetable consumption, the increase in rice dishes might be a less healthy development.

### Fruit

Until 1972 consumption of total fruit has increased and after 1972 the consumption has decreased again. Especially the share of subtropical fresh fruit became larger and larger, while the amount of other fresh fruit consumption has fluctuated and has eventually turned out lower than in 1960.

The increase of total fruit consumption might be ascribed to the influence of household school and innovations. Further, the increased disposable income of Dutch households led to an increase of expenditures on luxury products, like fruit. At household school girls learned that fruit should be eaten each day, which might have increased the fruit consumption (Den Hartog, 2001). Further, diet pattern became less season dependent since the 1960s (Den Hartog, 1996). Fresh foodstuffs became available throughout the whole year, due to innovations in farming, conservation methods and mass transport from different climate zones (Van Ours, 1985). The availability of fresh foodstuffs, like fresh fruit, has led to an increase of the consumption of fresh food.

The increase in consumption of subtropical fruits, can be explained by the innovation in mass transport from different climate zones explains. The supply of subtropical fruit was an important development in the 20<sup>th</sup> century, as it made it possible to cook vitamin rich meals as in the winter (Van Ours, 1985). Innovation in conservation methods might explain the decrease of other fresh fruit since 1985, if canned or pre-packaged fruit do not belong to the measured products in the table.

Thus, after an increase in fruit consumption, the consumption has decreased since 1972. The decrease in fruit consumption involves a negative health trend, as fruit contains important nutrients and little calories and might reduce the chances for obesity, cardiovascular and cancer (Voedingscentrum, 2011). The decrease in fruit consumption is noticeable, as it can be assumed that nowadays everyone in the Netherlands knows that fruit is important for health. Even at some packages is indicated that two pieces of fruit should be consumed each day. According to Van Kreijl & Knaap (2004) the recommendations on vegetables, fruits and fibres are followed by less than 25 percent of the Dutch population. From a health perspective, it is necessary to increase the fruit consumption in the Netherlands.



## Non-alcoholic drinks

The consumption of coffee has increased until 1995 and has declined with 13.9 percent in 2005. Tea consumption has stayed quite stable since 1960, with increases in 1995 and 2005. Finally, consumption of soft drinks has substantially increased every period from 1960 until 2005.

According to the Dutch Health Council (Gezondheidsraad, 2002), coffee and tea during meals are increasingly substituted by fruit juices and soft drinks from 1988 until 1998. Although, the findings in this thesis show an increase in consumption of both coffee and tea in 1995 and thus not match with the data of the Dutch Health Council. The increase in soft drinks, found in this thesis, does match with these data. The decrease in coffee consumption in 2005 might be ascribed to a substitution of soft drinks.

Further, coffee consumption increases when income increases, but smoothens at the highest income levels (Van Dijk, in Ponte, 2002). Van Dijk recognizes a stable consumption of coffee from 1987-1997 and states that the Dutch coffee market in this stage can be seen as a mature market, which means that the consumption per capita has stabilized. Although the findings in this thesis are slightly different, the positive relation of coffee with income might explain the increases of coffee consumption. Then, the decrease in 2005 might be explained by the mature state.

As explained above, soft drinks are consumed more often and might substitute other drinks (Gezondheidsraad, 2002). Further, the portion size of soft drinks in America has increased over the years, which has led to a higher consumption of soft drinks in America (Nielsen & Popkin, 2004). Moreover, the American study turned out that American population aged 19 until 39 consumed the highest amount of soft drinks from 1977 until 2001. Hereafter, the American population aged 2 until 18 consumed the most soft drinks. Although these data are not available for the Netherlands, it might be assumed that they will be quite similar.

Thus, coffee consumption has increased along with the increased Dutch income. In the last decade a mature state can be noticed and a substitution effect by soft drinks. This trend has not occurred for tea. Soft drink consumption has increased by substitution of other drinks and an increase in portion sizes. Coffee and tea, without additional milk and sugar, both contain no calories and contribute to the necessary moisturising of human body (Voedingscentrum, 2011). Thus, an increase of coffee and tea consumption contributes to a healthy lifestyle, unless sugar and wholly milk is used as an addition to the coffee. Consumption of soft drinks involves more negative effects for health. Soft drinks provide many calories and sugar, which can lead to overweight. Furthermore, consumption of soft drinks is bad for teeth (Voedingscentrum, 2011). As soft drinks are mostly consumed by the younger population, the negative effects of the consumption can affect their whole lives. Hence, an increased or excessive consumption of soft drinks is a negative trend. Especially the substitution of coffee and tea is negative, as coffee and tea are in principle healthy.

## Alcoholic drinks

The substantial increase of consumption of wine for every period is a noticeable trend. Beer consumption has increased every period as well. Although, consumption of these two alcoholic drinks has increased, the consumption of spirits has decreased.

The increase of wine consumption can be ascribed to the taboo of drinking at home, wine health claims and the increase of income, which stimulated purchase of luxury foodstuffs. Occasions to drink have changed over the years and the taboo to drink at home, which was influenced by Christianity, has disappeared. Nowadays drinking moments vary from restaurant dining to at home with a partner (Nielsen, 2011). The disappearance of the wine taboo can be partly explained by the health claims of red wine. In several media is written about the positive influence of red wine on diseases like cancer and Alzheimer (SYNC, 2007; InfoNu.nl, 2009). Research of Nielsen (2011) has turned out that 45 percent of the respondents drank weekly and 29 percent daily, with a



consumption of two to three glasses (by 70 percent). Relatively little wine is consumed by people with low incomes, which complies with the trend that a higher income will lead to a higher purchase of luxury food, like wine.

The consumption of beer has increased as well, although the consumption of spirits has decreased over the years. The increased consumption of beer can be partly ascribed to the disappearance of the taboo to drink at home and at other occasions. The decline of spirits might be explained by the often mentioned relationship between alcohol consumption and poverty. Bad working conditions and few leisure opportunities increase pub visits and alcohol consumption, especially of spirits (CBS, 2010). Thus, the increased welfare in the Netherlands could have led to a decline in spirits consumption. However, in the Netherlands total alcohol consumption has increased while welfare has increased as well. According to the CBS (2010), the increase of alcohol from 1970 can be ascribed to the increased welfare and the possibility to spend money on alcohol drinks. Moreover, as described above, increased income will lead to an increased purchase of luxury goods, which includes several alcoholic drinks.

According to the Trimbos Institute (2010), alcohol consumption per person has stayed stable the last years in the Netherlands. The percentage of the population, aged 15 to 64, who have drunk alcohol has decreased from 87 percent to 85 percent from 1997 until 2001. This decrease can particularly be assigned to the alcohol consumption of women and respondents, aged 25 to 44.

Thus, the increase in wine consumption and beer consumption can be ascribed to the increased welfare and the possibility to spend money on luxury goods, like these alcoholic drinks. On the other hand, poverty has decreased in the Netherlands and this might have led to a decrease of spirits consumption. Further, wine and beer consumption is increased by the disappearance of the taboo to drink and wine consumption has increased by its health claims. Although alcohol has some health claims by moderate consumption, it has negative effects, like an increased risk of cardiovascular diseases, cancer and diabetes. Furthermore, alcohol includes calories which can eventually lead to overweight (Voedingscentrum, 2011). Thus, the increased alcohol consumption is not a positive development.

The alcohol consumption of youngsters has gained substantial attention last decades and has become an important topic in Dutch health promotion. Several campaigns were launched to prevent alcohol consumption under the age of 16 and to prevent overconsumption of alcohol. These campaigns seem to have effect, as the consumption of youngsters, aged 12 to 14, has decreased and the consumption of youngsters, aged 15-18, has stayed stable from 2003 until 2007 (Trimbos, 2010). Last year the alcohol consumption of elderly people has got media attention. The Dutch 'babyboom generation' has the money and leisure time to enjoy life with a good glass of wine and therefore their alcohol consumption is increasing (Volkskrant, 2010).

## Other foodstuffs

Increased and decreased consumption of several foodstuffs is described in the sections above. In this section chicken eggs, cream, vegetables and pasta will be discussed. Chicken eggs and cream both have had no clear consumption pattern and hence, do not belong to the categories foodstuffs with increased consumption and foodstuffs with decreased consumption. Vegetables were measured in different ways over the years, which would have led to biases if data would be compared. Therefore, vegetable consumption is placed in this section. Finally, pasta consumption will be explained in this section. Pasta consumption has not been taken into account in table 2.1, as it was not a common foodstuff in 1963/65. Although, nowadays it has become an often consumed foodstuff in the

Netherlands and many literature has referred to the consumption of pasta. Thus, pasta consumption has to be added to this thesis and will be explained below.

### Chicken eggs and cream

For chicken eggs and cream no clear consumptions pattern have emerged. Consumption of chicken eggs has fluctuated between the decades. Cream consumption has grown quite stable until 1985, but has declined after that point of time. These foodstuffs will not be explained more extensive in this thesis.

### Vegetables

The CBS used several measuring methods for vegetables and therefore biases will occur if the data about vegetables are compared. However, it is important to discuss vegetables in this thesis, as it is one of the three components of the typical Dutch dinner triad of potatoes, vegetables and meat.

The data of Dutch vegetable consumption of 1960, 1969 and 1972 are measured in a similar way and thus can be compared. These data show an increase in vegetable consumption in 1969 and a decrease in 1972. Although, vegetable consumption is higher in 1972 than in 1960.

To give an impression of Dutch vegetable consumption of last decades, data of the Dutch Health Council (Gezondheidsraad, 2002) are used. The data provide product use (percentage of users) per meal (of the total population). In the period of 1987/88 until 1997/98 the use of vegetables for lunch has increased from 11 to 13, for dinner has decreased from 93 to 90 and for snack has decreased from 8 to 7. Thus, in general a decline in use of vegetables can be noticed.

The increased vegetable consumption from 1960 until 1972 might be ascribed to the same reasons as the increased fruit consumption. Innovations in farming, conservation methods and mass transport made it possible to store and supply vegetables throughout the whole year (Den Hartog, 1996). Moreover, in 1966 a national campaign was launched to promote unknown vegetables like paprika, mushroom and asparagus (Den Hartog, 2001). Further, the household school has had a substantial influence on the distribution of new ideas about nutrition and especially on the promotion of vegetables. Vegetables were promoted by stating that every warm meal should consist of vegetables. Besides that, attention was paid to a healthy preparation of vegetables. At school was learned that vegetables should be cooked with a small quantity of water and not too long, because of the vitamins. Also raw vegetables as salads were introduced by household school (Den Hartog, 1996).

In the period of 1987/88 until 1997/98 the consumption of vegetables has declined. The decline might relate to some other developments in Dutch diet pattern, like the trend of rice and pasta meals and convenience food. Rice and pasta meals are often prepared with less vegetables than the traditional Dutch dinner with potatoes, vegetables and meat (Gezondheidsraad, 2002). Moreover, convenience food often contains less vegetables than the daily recommended amount (Van Kreijl & Knaap, 2004). Thus, an increase in rice and pasta meals and convenience food might have led to a decrease in vegetable consumption.

Although data about vegetables are hard to compare, it can be assumed that vegetable consumption has first increased and has eventually decreased. Vegetables provide many vitamins and minerals and decrease the risk of cardiovascular diseases and other diseases (Voedingscentrum, 2011). Therefore the decrease in vegetable consumption is a negative health trend. For both fruit and vegetables it is noticeable that their consumption decreases, as most Dutch people know that fruit and vegetables are necessary for a healthy diet pattern. Furthermore, it has become more easy to eat vegetables, because they are increasingly pre-cut and therefore convenient and quickly to prepare.

## Pasta

Table 2.1 does not contain figures about the development of pasta consumption over the years. In the sections about potatoes and rice is mentioned that potatoes have increasingly be replaced by rice and pasta (Gezondheidsraad, 2002; NOS, 2010). The Dutch Health Council (Gezondheidsraad, 2002) has noticed that rice and pasta consumption has increased from 1988 until 1998. The NOS (2010) has reported that Dutch population consumed 36 million kilograms of pasta in 2000 and almost 44 million kilograms in 2010. For these data pasta is defined as spaghetti, macaroni, lasagne, ravioli, Oriental pastas like Chinese noodles and excluded ready-to-eat pasta. Furthermore, consumption of fresh pasta has increased from 0.4 million kilograms in 2000 to 3.4 million kilograms in 2010.

The increase in pasta consumption might be explained by the increased interest in foreign food, holidays to Italy, immigration of Italian people who opened restaurants and Italian recipes in cooking books and magazines (Van Otterloo, 1990). This topic will be discussed more extensively in the section foreign food.

Thus, pasta consumption has increased and partly substituted consumption of potatoes. The increased contact of Dutch population with the Italian culture might have led to the increased pasta consumption. Pasta contains fibres, vitamins, proteins and minerals and fits to a healthy diet (Voedingscentrum, 2011). Although, as mentioned at the section rice, rice and pasta meals often contain less vegetables than the Dutch triad of potatoes, vegetables and meat (Gezondheidsraad, 2002). Therefore the trend of pasta, which partly substitutes potatoes, might be a less healthy trend.

## Foreign food, convenience food and food-away-from-home

The patterns of expenditures on foreign food, convenience food and food-away-from-home from 1963/65 until 2007, found in table 2.2, will be discussed in this section.

### Foreign food

Expenditures on spices, soups and Oriental food were noticeably higher in 1963/65 than in 1978. Further, expenditures on this topic stayed quite stable, with increases in 1992 and 2000 and finally a decrease in 2007.

The high amount of expenditures on spices, soups and Oriental food in 1963/65 might be explained by assortments in supermarkets, innovations in food technology and arrival of Indonesian immigrants. The Dutch food retailer Albert Heijn introduced foreign ingredients, like spices, in their assortment in 1952 (De Roos, 2008), which might have increased the use of spices in 1963/65. Innovations in food technology have made it possible to produce pre-prepared foodstuffs, like ready-to-eat soups and ready-to-eat desserts. These innovations played an important role in the 20<sup>th</sup> century and changed the way of cooking for Dutch population (Van Ours, 1985). The introduction of the ready-to-eat soups might partly explain a relatively high amount of expenditures on soups. Furthermore, Indonesian immigrants arrived in the Netherlands the decades after the Second World War and introduced exotic food to the Dutch population (Van Otterloo, 1990). The first introduction to exotic food might have increased the expenditures on Oriental food in the Netherlands.

From 1963/65 other developments have taken place, which increased the interest in foreign food. These developments are travelling, immigration of other ethnicities and foreign recipes in cooking books. The increased Dutch welfare and the concomitant travel behaviour to countries like Germany, France, Italy, Spain and Yugoslavia have increased the interest in foreign food since the 1960s. Besides the trend of travelling outside the Netherlands, more immigrants moved into the Netherlands. Especially, the arrival of the Italian and the Chinese had an important influence on the

Dutch diet pattern. In 1965 the first Italian restaurants were located in Amsterdam, followed by locations in Utrecht ten years later. Also Chinese immigrants started to establish Chinese restaurants in the Netherlands. In this stadium, mainly adolescents and people with a high socioeconomic status were interested in foreign food. People with a lower socioeconomic status and elderly people refused to try this new food (Van Otterloo, 1990). Nowadays, all kinds of foreign food have integrated in the Dutch diet pattern and are consumed by the whole population. The increased foreign influences have led to foreign recipes in cooking books and magazines, which made preparing foreign food accessible to everyone in the Netherlands (Van Otterloo, 1990).

Thus, an increase in interest in foreign food can be remarked, although the figures of spices, soups and Oriental food do not show substantial increases in expenditures on Oriental food. This might be explained by the narrow category, as only Oriental food is measured and not other foreign food. Furthermore, soups and spices are also included in this category. A decline in expenditures on these foodstuffs and an increase in expenditures on Oriental food might result in a stable figure for the overall category.

Thus, figures for spices, soups and Oriental food in table 2.1 might underestimate the impact of foreign food on Dutch diet pattern, as many developments have taken place which have increased the interest of Dutch population in foreign food. Main developments which increased the interest in foreign food are assortments in supermarkets, innovations in food production, immigration, travel behaviour and foreign recipes in Dutch cooking books and magazines (De Roos, 2008; Van Ours, 1985; Van Otterloo, 1990).

The trend of foreign food has positive and negative health outcomes. For example, the foreign food trend led to an increase of olive oil which is a healthy alternative for wholly butter. Moreover, stir-frying has become a popular way to prepare meals and for this preparation method less oil has to be used (Voedingscentrum, 2011). But negative health outcomes can be noticed as well. Earlier is mentioned that rice and pasta meals often contain less vegetables than the traditional Dutch meals (Gezondheidsraad, 2002). Further, dishes like hamburgers, kebab and pizza are often consumed as dinner without additional vegetables and hence are less healthy than Dutch meals. Thus, examples can be given for both healthy and unhealthy influences of foreign food.

### **Convenience food**

The category main dishes frozen and canned has been measured since 1990. An increase can be noticed for expenditures on frozen and canned main dishes over the last twenty years, with a stable consumption the last decade.

Products which take little time to prepare and products which are ready-to-eat are increasingly preferred for dinner (Gezondheidsraad, 2002; De Roos, 2008). These kinds of food are often called convenience food, which is defined by Van Kreijl & Knaap (2004) as “food which is easy to take out, to store, to prepare and to consume”. Thus, the increase of frozen and canned mains dishes fits to trend of convenience food. Besides frozen and canned dishes, other convenience foods are offered; chilled food, like meal salads and pre-cut vegetables, and ambient food, like the meal boxes of *Knorr Wereldgerechten* (Distrifood, 2008).

Over the years the considerations which are made at food purchase have changed. In the 1960s price was the most important determinant for food choice and nowadays factors, like production method and convenience, have become increasingly important. The changes in food consumption particularly apply to one-person households, two-earners and people who live and work at a different town. By mentioning these groups, some development in society can be noticed.

First, the amount of one-person households has increased and the amount of more-person households has decreased. The percentage of one-person households was 28.9 in 1987, 30.2 in 1992 and 32.2 in 1997. More-person households decreased from 71.1 percent in 1987 to 69.8 percent in 1992 and 67.8 percent in 1997 (Gezondheidsraad, 2002). When people have to cook solely for

themselves, they might have less motivation to cook than when they cook for more persons. This might lead to a choice for convenience food.

Second, an increase in two-earners can be noticed, which indicates that women increasingly participate in the labour market (Gezondheidsraad, 2002). Labour participation of Dutch women has increased from 25 percent in 1960 to 56 percent in 1991 and has resulted in a change of the traditional Dutch role model. Besides the trend of working women, men increasingly have part time jobs and spend time on household tasks, like doing groceries and cooking. Although, in general the increase in two-earners has caused a decrease in available time for household tasks and an increase in available money. The decrease in available time for household task means that time has to be used more efficient and has led to an increasing demand for convenience food, like ready-to-eat or pre-treated food. The increase in available money has enabled a pattern of outsourcing food in the form of convenience food and eating out (Den Hartog, 1996). Third, people nowadays spend more time on travelling for work (Gezondheidsraad, 2002). The increasing travelling time leads to less available household time which increases the efficiency and eventually increases the demand for convenience food (Den Hartog, 1996).

Thus, the consumption of frozen and canned main dishes and other convenience food has increased over the last two decades. The trend of convenience food might be explained by the increase of one-person households, the increase of two-earners and the increase of travel time. These developments have led to less motivation to cook, less time to cook and more money to spend on food.

Frozen and canned vegetables contain an almost similar amount of nutrients as fresh vegetables and hence are a healthy choice (Voedingscentrum, 2011). Thus, if the increase in consumption of frozen and canned main dishes includes frozen and canned vegetables, this is a healthy development. Further, the emergence of convenience food is not always seen as healthy, as the amount of vegetables in these meals are often less than the daily recommended amount. However, it is expected that healthy convenience food will be increasingly developed (Van Kreijl & Knaap, 2004). High educated two-earners are often interested in healthy food and functional food and market experts expect that this will be increasingly taken over by other people (Gezondheidsraad, 2002).

### **Food-away-from-home**

At this section the categories digestions outdoors, meals outdoors and delivered and take away meals will be discussed. Expenditures on beverages outdoors will not be discussed extensively, as this thesis focuses mainly on diet pattern. For digestions outdoors and meals outdoors increased expenditures can be noticed, although expenditures on meals outdoors have decreased as well over the measured period. Expenditures on beverages outdoors and delivered and take away meals have stayed quite stable. The sudden decrease in expenditures on digestions and beverages outdoors in 2007 is remarkable.

Eating outdoors, which was first seen as something for the elite (Mennell et al., 1992), has in general increased since the 1960s. Den Hartog (1996) states that in 1960 84 percent of the respondents of a study was seldom or never eating out, in 1978 44 percent and in 1980 20 percent. Thus, eating out has become more and more common. Several factors have influenced the eating out behaviour of the Dutch population. According to Den Hartog (1996) these factors are: “the separation of living- and work place, a larger allocation of welfare among the population, more leisure time, increasing level of development which stimulates the openness for other ideas, holidays abroad, ethnic restaurants with relatively cheap menus and demographic shifts of family households to one- or two person households”. Some further factors can be recognized, like more eating moments during the day and an increase in dual earners.

The separation of living place and work place is mentioned earlier at the section convenience food. Because people increasingly need time to travel between work place and living place, the time for household tasks is reduced, which has led to an increase in convenience food and eating outdoors

(Gezondheidsraad, 2002). Convenience as reason to eat outdoors can also be noticed for dual earners. Eating out is often easier and less time consuming than doing groceries, cooking and doing dishes and since two incomes are earned, more money is disposable to be outsourced in the form of ready-to-eat food and eating out (Den Hartog, 1996; Van Kreijl & Knaap, 2004). The positive effect the increased disposable income on eating outdoors can be linked to a larger allocation of welfare among the population as well. Further, high educated people with high incomes eat out more often than people with a lower income. Although, people with lower incomes can increasingly afford to eat out as well, as many (ethnic) restaurants have relatively cheap menus.

The openness to new ideas and holidays abroad have increased eating outdoors, by visiting restaurants with foreign food. The development of foreign food is earlier explained in this thesis.

The decline in household size has increased eating outdoors as well (Den Hartog, 1996). Table 4.1, which shows the development of expenditures on digestions outdoors for several household composition from 1963/65 until 2005, confirms this finding. One-person and two-person household have substantially spent more on digestions outdoors than three-person and four-person or more households. The explanation for this trend might be that households without children eat out more often. As explained at convenience food, the amount of one-person households has increased and the amount of more-person households has decreased in the Netherlands (Gezondheidsraad, 2002). An increase in one-person households might lead to a further increase of expenditures on food-away-from-home.

Table 4.1 Digestions outdoors (in percent of total expenditures)

	1963/65 <sup>1</sup>	1978 <sup>2</sup>	1980 <sup>2</sup>	1985 <sup>3</sup>	1990	1995 <sup>3</sup>	2000 <sup>4</sup>	2005 <sup>4</sup>
1 person	-	3.7	3.6	3.0	4.4	4.5	5.1	5.0
2 person	-	3.0	3.1	2.4	3.7	4.1	5.0	4.1
3 person	0.3	3.0	2.6	2.9	3.2	3.3	3.8	3.7
4+ person	0.6	2.3	3.1	2.5	2.6	2.8	3.5	3.2

<sup>1</sup> For the period 1963/65 only 3-person, 4-person, 5-person, 6-person and 7-person or more households are documented. Therefore, no data can be provided about 1-person and 2-person households. The categories 4-person, 5-person, 6-person and 7-person or more are summed and divided by four to get the average for the category 4-person or more

<sup>2</sup> Categories of 4-person, 5-person and 6-person or more summed and divided by three to get the average for the category 4-or more-person

<sup>3</sup> Categories of 4-person and 5-or more-person summed and divided by two to get the average for the category 4-person or more

<sup>4</sup> Categories of 4-person and 5-or more-person summed and divided by two to get the average for the category 4-person or more, in Euros in stead of guilders and rental value new definition

Sources:

Centraal Bureau voor de Statistiek (1972) (1984) (1988) (1992) (1997) (2010)

The most common meal to consume away-from-home has often been dinner. However, Dutch population increasingly has breakfast and lunch outdoors for leisure and convenience purposes. According to the Dutch Health Council (Gezondheidsraad, 2002), consumption of breakfast, lunch and main meals outdoors increased from 3 percent until 5 percent from the period 1988 until 1998. The amount of adults who consume meals outdoors has increased from 6 to 11 percent from 1995 until 1999 (Gezondheidsraad, 2002).

An increased amount of eating moments during the day has increased consumption outdoors. More eating moments during the day are caused by lack of time to eat, individualism of Dutch society and the extensive offer of food. During weekdays, people are more often in a hurry or are travelling and grab something to eat when they have time for it. Less often time is made to eat and also time is less often is made to eat with the family at a fixed time. Therefore, during weekdays often is eaten food-away-from-home at canteens, restaurants, eateries and on the road (Gezondheidsraad, 2002).

Besides digestions and meals which are bought outdoors, meals are also more often prepared at home and consumed outdoors, for example at work or school (De Roos, 2008). Thus, during the weekdays eating is often a matter of convenience and time pressure. Although, in the weekends people like to enjoy their food and spend many time in the kitchen to prepare special and exotic dishes (Gezondheidsraad, 2002)

The trend of grabbing something to eat when you have time for it, which has increased the eating moments during the day is called grazing; the phenomenon of eating more often besides the three main meals. Grazing has been substantially influenced by the supply of food during the whole day (Van Kreijl & Knaap, 2004). Food products are sold at gas stations, rail stations, canteens, stalls on streets, at sports clubs etc. (Van Trijp & Meulenberg, 2001), and the chance to be tempted by these offers is high. The increase in skipping breakfast has increased grazing as well (Voedingscentrum, 2011).

Besides the increase of meals outdoors and digestions outdoors, the demand for food via internet and the demand for delivered food and frozen food, is expected to rise due to the trend of convenience (Van Kreijl & Knaap, 2004).

Concluding, an increase in expenditures on digestions and meals outdoors is influenced by several developments in the Dutch society; separation of work and living place, increased welfare, more leisure time, openness to foreign influences, cheaper occasions for eating out, smaller household sizes, more dual earners and more eating moments during the day. These factors might explain the increased expenditures on meals outdoors. However, it is noticeable that digestions outdoors have decreased from 2000 to 2007, as it would be expected that the trend of grazing would have led to an increase of digestions outdoors. Further, it would be expected that expenditures on delivered and take-away meals would have increased more substantial due to the trend of convenience. The stable development of this category might be explained by the increased assortment in ready-to-eat meals in the supermarket, which offer the same benefits as delivered and take-away meals.

The trend of increasing expenditures on food-away-from-home might have implications for health. According to the Dutch Health Council (Gezondheidsraad, 2002), the increase in convenience food and food-away-from-home will result in a decrease of consumption of vegetables, fruit and several micronutrients in the Netherlands. This decrease will be negative for the health of Dutch population. An American study (Lin et al., 1999) found that consumption of food-away-from-home contributes to a more negative intake of nutrients than consumption of foods at home. Food-away-from-home provides more fat, saturated fat, cholesterol and sodium, which are nutrients that are overconsumed in America. Furthermore, the away-from-home-foods provide less fibres, calcium and iron, which are nutrients that are underconsumed in America. Thus, with an increase of consumption of food-away-from-home, the intake of bad nutrients increases and the intake of good nutrients decreases in America. Moreover, in Canada a study has been conducted about the relationship between wife's employment, food expenditures and apparent nutrient intake. This study also founds that wife's employment, thus the trend of dual earners, has directly led to an increase in restaurant food consumption and has indirectly led to an increase in the likelihood of dietary inadequacy for several nutrients (Horton & Campbell, 1991).

If the Dutch food-away-from-home trend has similar negative effects on nutrient intake, as the findings of the American and Canadian studies claim, the Dutch trend in food-away-from-home is a negative trend for Dutch overall health. Furthermore, often unhealthy snacks are consumed at the additional meal moments of grazing (Van Kreijl & Knaap, 2004). Thus, in general can be concluded that the trend of food-away-from-home is negative for Dutch health. Although, the extent to which food-away-from-home is unhealthy, is dependent on the food itself, the preparation of the food and the portion size of the food.



## Discussion

At the beginning of writing this thesis, it was expected that consistent data about Dutch food consumption would be available for each decade. However, it turned out that no clear overview of Dutch diet pattern is available and hence several information has to be used to map the Dutch diet pattern. Further, for the development of the tables, some pitfalls occurred which were not expected. First, the foodstuffs are not periodically reported by the CBS. Therefore, it was not possible to develop tables per decade with similar periods of time between the data. For example, table 2.1 consists of data of 1960, 1969, 1972, 1985, 1995 and 2005 in stead of 1965, 1975, 1985, 1995 and 2005. Because the periods between the reported decades are not similar, it is more difficult to provide a clear overview of the Dutch diet pattern development.

Second, the CBS has stopped reporting consumption data of several foodstuffs. For example, data about fish consumption have not been reported since 1985 and hence no pattern of fish consumption can be showed, although it seems an important foodstuff in Dutch diet pattern.

Third, several methods of measuring are used by the CBS for measuring one foodstuff. Therefore, some data about meat and vegetables consumption cannot be compared and hence no clear pattern can be reported.

Finally, the CBS has been inconsistent in reporting. Several names are used for one category. For example, the category spices, soups and Oriental food has also been reported as spices, soups and other. Further, for data segmented per household size, the final category has differed over several years. Sometimes four-person or more was the final category and sometimes five-person or more, six-person or more or seven-person or more. It is recommended to the CBS to be consistent in the used names and sizes for categories to avoid confusions.

Initially, was planned to develop a table about the intake of calories and nutrients per head per day. This table could show the relationship between the changing diet pattern and the corresponding pattern in calories and nutrients intake. Often is mentioned that the current diet pattern contains more calories and fat than the diet pattern decades ago. Further, increasingly attention is paid to the consumption of vegetable proteins instead of animal proteins. It would be interesting to look at the development of these and other nutrients to examine the effects of the Dutch diet pattern trends on Dutch health. The development of this table has been started, shown at table 5.1, but unfortunately no data about intake of calories and nutrients could be found about the 1970s and further. Eventually, the table is not included in the thesis, as many data are missing. It would be recommended to start with measuring the calories and nutrients intake per head per day from now on, as it shows the effects of the current diet pattern. Overconsumed and underconsumed nutrients could be mapped and this information could be used for target points in health promotion.

In this thesis, tables are showed which provide expenditures for several topics, like expenditures on spices, soups and Oriental food in table 2.2. The disadvantage of showing expenditures, is that expenditures do not directly show the consumption of a certain category. For example, in chapter four is discussed that ethnic restaurants offer relative cheap menus which made it affordable for people with lower incomes to eat out. Thus, for the same amount of money people can eat out more often, as prices of eating out have declined. When only considering the expenditures on the topic meals outdoors, the actual consumption of meals outdoors might be underestimated.

The data in this thesis are provide findings for whole Dutch population. It might be interesting to investigate the diet pattern per ethnicity, per income category or per region. When differences in diet pattern and thus health effects are substantial, health promotion can be segmented to certain target groups and therefore be more effective.

**Table 5.1 Conversion of quantities delivered in calories and nutrients per head per day**

	1960	1969	1972	1979	1989	1999
<i>Calories</i>	2945	2957	3027			
<i>Animal protein</i>	47.0	52.9				
<i>Vegetable protein</i>	30.3	30.8				
<i>Total protein</i>	77.3	83.7	86.9			
<i>Fat</i>	128.9	138.7	138.0			
<i>Carbohydrate</i>	369.0	343.7	358.6			
<i>Calcium</i>	984	991				
<i>Phosphorus</i>	1472	1472				
<i>Iron</i>	13.9	11.3				
<i>Sodium</i>	2216	2124				
<i>Potassium</i>	3878	3827				
<i>Vitamin A</i>	0.86	0.80				
<i>Carotene</i>	2.28	2.95				
<i>Thiamine</i>	1.1	1.23				
<i>Riboflavin</i>	1.9	1.82				
<i>Nicotinic acid</i>	13.1	13.6				
<i>Ascorbic acid</i>	93	96				

Sources:

Centraal Bureau voor de Statistiek (1973)

Ministerie van Landbouw en Visserij (1973)

In this thesis is tried to map and explain Dutch diet pattern from 1960 until 2010. To achieve this aim, tables are made in which the development of common foodstuffs are showed. However, it seems impossible to map all important foodstuffs for Dutch society. The category pasta has been added to the section other foodstuffs in chapter four, as this foodstuff was often mentioned in data about the Dutch diet pattern. However, still some foodstuffs are not included in this thesis. For example, an important phenomenon in Dutch diet pattern, is the consumption of snacks. The assortment and consumption of candy, chocolate, chips and other snacks seems to have increased enormously over the decades. The amount and moments of consuming snacks differs per socioeconomic status. In the 1990s the middleclass mainly consumed snacks in the weekend and the lower classes during the whole week. The children of the middle class are less often allowed to have snacks and soft drinks and consume smaller portion when they are allowed to snack (Van Otterloo, 1990). Besides pasta and snacks, other foodstuffs are excluded in this thesis, which might have an important role in Dutch diet pattern. Eventually, the chosen foodstuffs determine the conclusion and hence, if other foodstuffs were chosen the conclusion could be different.

Furthermore, some societal trends, which have influenced Dutch diet pattern are not discussed extensively. An important trend is the upcoming awareness on qualitative food from the 1990s. In the earlier decades mass consumption and large supermarkets were introduced, which caused the emergence of large quantities of food with little differences per region or per store. As a reaction, a health trend has occurred since the 1990s, accompanied by movement towards more culinary meals. Local food and dishes have been reinvented and attention has been paid to quality products of the region rather than mass production. Moreover, a huge amount of cooking books, culinary journalism, items in magazines and cooking courses are available (Den Hartog, 1996). Further, quality is nowadays indicated by production method besides good taste. Topics like fair trade, animal welfare and sustainability have become important and attention has been paid to food packaging (De Roos, 2008). The culinary movement was also adopted by men and hence cooking has not been solely a task for women since the 1990s (Den Hartog, 1996).

For the consumption development of each foodstuff, health implications are given in chapter four. The health implications show opposites for almost each foodstuff. For example, the substitution of wholly milk by semi-skimmed milk is positive, but the substitution of total milk by sweet dairy drinks and soft drinks is negative. The increased consumption of luxury foodstuffs has led to a more diverse diet with consumption of meat, fish, vegetables and fruit, which all contribute to a healthy lifestyle (Voedingscentrum, 2011). However, cheese and meat are healthy when they are consumed moderate, but overconsumption can lead to negative health effects. Furthermore, health implications have to be done in a broader perspective. Basically, the substitution of potatoes by pasta or rice is not negative, but if it leads to a decrease in vegetable consumption, which is stated by the Dutch Health Council (Gezondheidsraad, 2002), this trend is negative. However, white rice is less healthy than brown rice or potatoes and potato products, like frites and wedges, are less healthy than boiled potatoes etc. Thus, the distinction between healthy and unhealthy foodstuffs is dependent on the substitution effect of other foodstuffs, the amount of consumption, the way of preparing and the combination with other food, and therefore no sharp distinctions about healthy or unhealthy foodstuffs and developments can be made.

The development of convenience food seems to have positive and negative effects on Dutch diet pattern. The assortment of pre-cut, frozen and canned vegetables and fruit can stimulate consumers to purchase vegetables and fruit, as it is easy to prepare and therefore fits to the demand of convenience food. Hence, the consumption of these healthy foodstuffs can be stimulated by convenience food. On the other hand, the amount of vegetables in convenience meals are often less than the daily recommended amount and contain many fat, which is unhealthy. It would be interesting to investigate the positive and negative effects of convenience food more extensively. Furthermore, government has to make agreements with food manufacturers about the amount of vegetables, calories and nutrients in ready-to-eat meals to make sure that ready-to-eat meals will be more healthy in the future. Moreover, recipes on packages, provided by food manufacturers, should be more healthy as well. For example, at packages of ready-to-eat pasta sauce often recipes are provided about how to prepare a meal with this sauce. In these recipes often a too low amount of vegetables is suggested, which can lead to a decline in vegetable consumption by Dutch population, when the recipe is strictly followed. Thus, Dutch government should maintain a more strict policy on the supply of convenience food by food manufacturers.

## Conclusion

The Dutch diet pattern has changed in the period from 1960 until 2010; a) a consumption of mainly staple foods has developed into a consumption of many luxury foods, b) foreign food and convenience food have been introduced and consumed increasingly, c) food-away-from-home consumption has increased and d) expenditures on nutrition have decreased (as percentage of total expenditures).

The development of consumption and expenditures can be explained from an economic point of view. Disposable income of Dutch households has increased every decade, which has led to increased expenditures every decade. When income raises, people will spend more on luxury food and less on staple foods, as noted by Bennet (Cirera & Masset, 2010) and as showed in this thesis. While in absolute figures is spent more on nutrition, the expenditures on nutrition, as percentage of total expenditures, have decreased in comparison to other categories of expenditures. This matches with the findings of Engel (in Cirera & Masset, 2010), who states that with an increase of income all expenditures will increase as well. For expenditures on nutrition the expenditures will increase, until a certain saturation point is reached. Besides a relationship between income and food, consumption of drinks is dependent on income. Consumption of coffee, wine and beer increases when income increases, while consumption of spirits decreases when income increases (Van Dijk, in Ponte, 2002; CBS, 2010). Further, the increased income has established a trend of spending money on convenience food and eating food-away-from-home (Capps et al., 1985; Nayga & Capps, 1992; Bonke, 1993, in Warde, 1999; Den Hartog, 1996; Van Kreijl & Knaap, 2004; Stewart et al., 2004).

The increased income can be partly explained by the contribution of women at the labour market. The amount of dual earners has increased over the years and has led to a decrease in available time for household tasks. Because less time is available for household tasks, Dutch population has developed a need for convenience food and food-away-from-home. This need can be fulfilled since more money is available due to the income of women (Den Hartog, 1996; Gezondheidsraad, 2002). Another demographic factor which has influenced the Dutch diet pattern is the change in household size. The amount of one-person households has increased while the amount of more-person households has decreased over the measured period. This has led to an increased demand for convenience food (Gezondheidsraad, 2002) and an increased demand for food-away-from-home (Den Hartog, 1996). The expenditures on digestions outdoors are higher for one-person and two-person households than for more-person households, as showed by table 4.1. If the trend of more one-person households and less more-person households continues, the trend of convenience food and food-away-from-home will continue as well.

Furthermore, many ethnicities have moved into the Netherlands en Dutch population is increasingly travelling worldwide. These foreign influences have caused an increasing interest in foreign food and have resulted in many foreign restaurants and foreign recipes (Van Otterloo, 1990). To what extent foreign food has substituted typical Dutch food is not clear. The Dutch butter and margarine consumption is probably substituted partly by olive oils and other oils. The Dutch Health Council (Gezondheidsraad, 2002) and the NOS (2010) report an increased consumption of rice and pasta dishes, which causes a decrease in consumption of the typical Dutch triad of potatoes, vegetables and meat. Data provided in the tables of this thesis, show a diverse pattern of rice consumption and no decline in potato consumption, and thus do not fully comply with data of the Dutch Health Council and NOS. For cheese, the foreign influences are probably an addition to the traditional Dutch cheese consumption, as cheese consumption has increased every decade. Therefore, no substitution of Dutch cheese by foreign cheeses can be noted.

The development of Dutch diet pattern shows some contradictories. On the one hand, people are more aware of healthy food and on the other hand, a substantial amount of snacks is consumed and grazing has become a phenomenon. Over the last five decades, Dutch population has become more aware of health and societal topics, like sustainability and animal welfare. This awareness is caused by (governmental) campaigns about health benefits of milk, lowering of saturated fat, sustainable meat production and consumption and promotion of unknown vegetables (Den Hartog, 2001; Van Kreijl & Knaap, 2004; De Bakker & Dagevos, 2010). The awareness is further influenced by education about fruit and vegetables at the Dutch household school (Den Hartog, 2001), corporate social responsibility as marketing strategy of companies (Van Trijp & Meulenberg, 2001) and as a reaction to mass production (Den Hartog, 1996). This awareness has initially led to an increase of vegetables and fruit consumption, although this consumption has eventually decreased. Further, the awareness has caused an increased substitution of wholly products by diet products, and hence a decrease in consumption of wholly milk, butter and margarine and an increase of semi-skimmed milk, diet margarine, functional margarine and olive oil.

Although a health trend has occurred and wholly products are substituted by diet variants, also less healthy substitution has occurred. The consumption of soft drinks has increased substantially and has partly replaced consumption of milk and coffee (Van Otterloo, 1990; Gezondheidsraad, 2002). Further, the increase of luxury foodstuffs is healthy to a certain extent. When foodstuffs like cheese, oils and meat are overconsumed, consumption is not healthy anymore (Voedingscentrum, 2011). The phenomenon of grazing leads in general to a less healthy food choice (Van Kreijl & Knaap, 2004). Moreover, the trend of an increased consumption of wine, beer and soft drinks and the trend of a decreased consumption of vegetables and fruit is noticeable. It can be assumed that Dutch population in general knows that wine, beer and soft drinks are unhealthy and that vegetables and fruit are healthy. Although people are aware of differences in health, they do not act in this way.

Another contradiction in Dutch diet pattern can be noted for the social role of food. During weekdays little time is made for preparing and consuming food, which leads to consumption of convenience food and food-away-from-home. The meals are more often consumed individually rather than with a family (Den Hartog, 1996; Gezondheidsraad, 2002; Van Kreijl & Knaap, 2004). On the other hand, in the weekends many time is spent on cooking by both men and women. The culinary moment has increased the attention for quality food and the preparation of exotic dishes and other special recipes. Thus, spending time on cooking and eating together has become a weekend activity in stead of a daily activity (Den Hartog, 1996; Gezondheidsraad, 2002; De Roos, 2008).

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## Appendix

Table 3.4. Expenditures on housing (in percent of total expenditures)

	1963/65 <sup>1</sup>	1978 <sup>2</sup>	1980 <sup>2</sup>	1985 <sup>3</sup>	1990	1995 <sup>3</sup>	2000 <sup>4</sup>	2005 <sup>4</sup>
1 person	-	34.5	35.2	37.3	36.1	41.7	39.7	41.8
2 person	-	29.8	32.1	34.3	32.1	37.5	33.0	34.4
3 person	22.7	28.8	30.0	32.6	30.8	33.8	32.2	31.6
4+ person	17.1	27.3	27.3	31.1	30.3	33.7	30.5	31.0

Table 3.5 Expenditures on clothing and footwear (in percent of total expenditures)

	1963/65 <sup>1</sup>	1978 <sup>2</sup>	1980 <sup>2</sup>	1985 <sup>3</sup>	1990	1995 <sup>3</sup>	2000 <sup>4</sup>	2005 <sup>4</sup>
1 person	-	7.6	7.6	5.9	5.8	5.1	5.7	4.9
2 person	-	8.1	7.8	6.5	6.9	6.4	6.8	5.5
3 person	11.5	9.1	8.7	6.7	7.3	6.9	7.0	6.5
4+ person	12.3	9.6	9.5	8.1	7.7	7.8	8.1	7.3

Table 3.6 Expenditures on hygiene and medical care (in percent of total expenditures)

	1963/65 <sup>1</sup>	1978 <sup>2</sup>	1980 <sup>2</sup>	1985 <sup>3</sup>	1990	1995 <sup>3</sup>	2000 <sup>4</sup>	2005 <sup>4</sup>
1 person	-	12.7	12.4	13.8	12.5	5.2	6.0	7.3
2 person	-	12.6	13.4	14.4	13.7	5.1	5.7	7.0
3 person	6.4	12.3	12.8	14.5	15.2	5.8	7.2	8.3
4+ person	6.8	12.2	12.5	13.6	14.0	5.9	7.0	8.9

Table 3.7 Expenditures on development, recreation and traffic (in percent of total expenditures)

	1963/65 <sup>1</sup>	1978 <sup>2</sup>	1980 <sup>2</sup>	1985 <sup>3</sup>	1990	1995 <sup>3</sup>	2000 <sup>4</sup>	2005 <sup>4</sup>
1 person	-	25.2	25.0	25.9	26.9	28.5	29.7	28.7
2 person	-	28.7	25.3	25.4	27.7	30.2	33.9	34.4
3 person	13.0	26.4	25.4	24.8	26.3	33.7	34.1	35.2
4+ person	17.9	25.8	25.4	24.7	26.7	30.7	34.2	33.4

Table 3.8 Other expenditures (in percent of total expenditures)

	1963/65 <sup>1</sup>	1978 <sup>2</sup>	1980 <sup>2</sup>	1985 <sup>3</sup>	1990	1995 <sup>3</sup>	2000 <sup>4</sup>	2005 <sup>4</sup>
1 person	-	0.8	1.0	1.4	1.3	2.6	2.4	2.5
2 person	-	0.7	1.1	1.4	1.7	2.6	2.6	2.8
3 person	17.3**	1.4	1.8	1.4	1.5	2.2	2.3	3.1
4+ person	19.9**	2.1	1.8	1.8	1.9	2.3	2.2	2.8

<sup>1</sup> For the period 1963/65 only 3-person, 4-person, 5-person, 6-person and 7-person or more households are documented. Therefore, no data can be provided about 1-person and 2-person households. The categories 4-person, 5-person, 6-person and 7-person or more are summed and divided by four to get the average for the category 4-person or more

<sup>2</sup> Categories of 4-person, 5-person and 6-person or more summed and divided by three to get the average for the category 4-or more-person

<sup>3</sup> Categories of 4-person and 5-or more-person summed and divided by two to get the average for the category 4-person or more

<sup>4</sup> Categories of 4-person and 5-or more-person summed and divided by two to get the average for the category 4-person or more, in Euros in stead of guilders and rental value new definition

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