# THE HEMLINE AND ECONOMY

by

Nataliia Legka

A thesis submitted in partial fulfillment of
the requirements for the degree of

MA in Economic Analysis

Kyiv School of Economics

2013

Thesis Supervisor: ________________________________ Professor Tom Coupe

Approved by ______________________________________________
Head of the KSE Defense Committee, Professor Wolfram Schrettl

______________________________________________

______________________________________________

______________________________________________

Date ______________________________

Kyiv School of Economics

Abstract

THE HEMLINE AND ECONOMY

by Nataliia Legka

Thesis Supervisor: Professor Tom Coupe

This paper investigates whether hemlines fluctuate with the economy, that is whether in bad times dresses are getting longer while when the economy is strong miniskirts prevail and the hemline decrease. This study uses monthly data from a German fashion magazine and finds that the economic situation today leads the length of skirts in three years. Therefore, the fashion for floor length skirts in 2011 can be explained by the world crisis of 2008.

To my parents

TABLE OF CONTENTS

## LIST OF FIGURES

LIST OF TABLES

## ACKNOWLEDGMENTS

It is a pleasure to thank those who made this thesis possible. I would like to express my sincere gratitude to my thesis advisor, Professor Tom Coupe, for his encouragement, guidance and support in the process of working on this research. I am grateful for his optimistic view on my thesis. His thorough reviewing and valuable comments always made me work hard but also provided with enthusiasm.

I would like to thank all research workshop faculty of KSE for their collaboration and support. Special words are directed to Olena Nizalova for her advices and readiness to help and to Volodymyr Vakhitov for a good mood and faith in me.

I would like to express my special gratitude and thanks to my best friend Violetta Skrypnykova for incomparable teamwork, warm friendship and always having the right advice at the right time. Also, I am indebted to Kirill Zima for helping me with data collection process.

I give my special thanks to my parents and sister for the continuous support and help during the study at KSE.

.

*Chapter 1*

# INTRODUCTION

*Fashion is a mirror of history*
*French King Louis XIV*

Fashion is one of the most powerful tools used in everyday life and sometimes it seems that it rules the world. It is everywhere and permanently influences most of us. You can swear or praise the modern fashion, but nobody remains indifferent. Today fashion is truly unique and is a very popular topic for discussion as well as an original area for economic research.

Fashion has been changing over time due to different reasons, like cultural, religious, political, economical, etc. The famous fashion critic Alexander Vasiliev gave as examples of cultural and religious influences the demonstration of a naked belly (belly dance) and the Muslim motives in the shoes with sharp tips (Suprun, 2010). In some countries women should cover their head and bodies because of religion. Politicians and royalty have always moved the seasonal trends of fashion. As an example, Michelle Obama generates an outstanding value for those fashion brands which clothes she wears (Yermack, 2010).

Fashion trends are also claimed to be significantly influenced by the prevailing economic situation. There is a variety of indicators relate fashion to the economy. Eric Platt (2012) suggested various number of odd and bizarre indexes. The Skinny Tie Width Indicator suggests that men will buy ties in bad times more often in order to show that they are working harder. In addition, ties get thinner during the difficult economic periods and brighter when the economy gets better. The decrease in purchases of men`s underwear in order to save money is captured by the Men's Underwear Index (Platt, 2012). “Usually, in an economic downturn, heels go up and stay up – as consumers turn to more flamboyant fashions as a means of fantasy and escape,” IBM's Dr. Trevor Davis said about the High Heel Index (Dahncke, 2011). The famous lipstick index, which was established by Leonard Lauder in 2001, chairman of the board of Estee Lauder, argued that there is an inverse relationship between sales of cosmetics and the health of the economy. Lipstick and high heel indices are sometimes noted as indices of flirting. Also, there is an indicator of the Japanese haircut showing that in hard times women`s haircut become shorter (Platt, 2012). Unfortunately for most of the above mentioned indices there is no empirical evidence supporting these indicators.

For this research, I will focus on the hemline index. The hemline is “the line formed by the lower edge of a garment, such as a skirt, dress or coat, measured from the floor”, considered as the most variable style line in vogue. The hemline index was introduced in 1926 by Professor George Taylor from Wharton School of the University of Pennsylvania. His theory is based on the idea that “hemlines on women`s dresses fluctuate with the economy, measured by stock prices or gross domestic product”. The explanation is simple: ladies tend to raise the length of their dresses and skirts in order to boast that they have silk stockings in good times, but when it turns bad they have nothing to show, they make their skirts longer. On the other side, skirts can be shorter in order to save on material costs which are higher in good times (Shils, 1995).

Many fashion watchers as well as economists have discussed about the hemline theory and this relationship between fashion and the economy. So does the hemline index fluctuate with the economy as was suggested and in which direction? Both negative and positive relationships can be explained in this case.

On the one hand, when times become worse, women hide that they aren`t wearing any stockings by lowering their skirts. Supporting this statement, economists also refer to the cost and availability of fabrics which affected the hemline and can explain positive relationship between length of skirts and economical situation. “In boom times, when producers typically charge more for their yarn or textiles, designers would make skirts shorter to cut costs.” (Valenti, 2012).

On the other hand, in bad times there have been established a system of rationing material usage per one garment and prohibition on silk, which particularly means that hemlines can be shorter due to the savings of fabric and costs as well (Nersesov, 2002). Another possible explanation of negative relationship can be linked to the desire of women to be more attractive at bad times in order to fascinate men, which means that they will tend to shorten their skirts to show their beauty. Such a situation can be also linked to the indices of flirting: lipstick and high hill indices.

But even if the hemline theory held true at the one point, fashion watchers argue that it is not correct nowadays due to differentiation in fashion trends and availability of different fabrics as well as techniques of manufacturing it in the inexpensive way. Variety in fashion magazines today allows consumers to express their individuality no matter what the economic situation prevail.

All things considered, the purpose of the current research is to determine whether there is a relationship between hemline and economy, as this topic has become very popular recently. The work is devoted to the robustness check of the previous study by Baardwijk and Franses (2012) about hemline using different data set, model specification and various independent variables. Findings can be useful for forecasting and further research which can be implicated for fashion and textile industries. For example, designers can predict fashion and prepare new models, producers of fabrics can anticipate growth of the demand (as skirts are getting longer, more fabrics are needed).

The rest of the paper is organized in such a manner: Chapter 2 contains literature review, methodology in Chapter 3 provides different models and specifications for testing, Chapter 4 contains data description and its sources, Chapter 5 contains the empirical results, and Chapter 6 provides discussion and conclusions.

*Chapter 2*

# LITERATURE REVIEW

This literature review is divided into two main parts where the first one considers relationship between fashion and economy, while the second part discusses a study on hemline and its drawbacks.

Fashion has become a very popular topic for the research recently and has been used much more often as an indicator for the economic trends.

Nersesov (2002) provides an example that describes a law in England after the World War II which prohibited wearing accordion-pleated cloth, cuffs with flaps and making patch pockets, that is to use fashionable silhouettes and trimmings which required usage of a huge amount of fabric. Such a law was established only in order to make the cloth as simple as possible and save money on materials introducing a system of expenditure normalization of materials per one garment and taboo on silk. This example depicts how the economy can influence fashion. There are also examples of the opposite kind when fashion can influence the economy. Hamermesh (2011) examines how beauty influence income and labor markets and provides an overview of all previous studies on this topic. He finds that beauty plays a significant role and attractive people earn more on average. In his earlier work he also looks at clothes spending (women's purchases of clothing and cosmetics) and find that on average such spending does have some small earnings-enhancing effect (Hamermesh, 2002).

There are a number of papers investigating fashion trends, and providing evidence on existence of the relationship between economics and fashion. In the recent one, Hasan et al. (2012) demonstrates that per capita income and inflation do matter in shaping up the various fashion trends in clothing production and consumption for several countries (Pakistan, India, United States and Australia). They test and confirm the following two hypotheses: (1) there is a positive association between per capita income and fashion trends and (2) there is a negative association between inflation rate and fashion trends. Their findings are corroborated for Pakistan, India and United States, but not for Australia (because of other factors that can influence consumer behavior, not on the basis of earnings), which can be explained by different socio-economical conditions and lifestyle modes of these nations. They use two-tailed Pearson product-moment correlation which is reliable in measuring of the strength of linear dependence between two variables and can be suggested for this research.

Some observers argue that recessions appear to enhance women's spending on beauty products, although consumer spending particularly diminishes during economic decline on everything from groceries to homes (Katona,1974); (Bohlen et al., 2010); (Dibaji et al., 2010). Such a situation is called the lipstick effect, "…whereas economic recessions should decrease spending on most products, economic recessions should increase women's spending on products that are perceived to effectively enhance their attractiveness to mates" (Hill et al., 2012).

The lipstick index can correlate with the hemline and economy and explain negative relationship between them. Hill at al. (2012) examine how and why economic recession influence women consumer behavior. Obtained results based on monthly data for United States reveal a positive correlation between unemployment and spending on beauty products, such as cosmetics, clothing and accessories. Also the authors find that in bad times there is a decline in purchasing products that do not function to enhance appearance. So it can be suggested, that miniskirts can be used to enhance appearance in bad times and depict a negative relationship (bad times – shorter hemline) due to a adaptive and rational shift in women`s behavior. As described by the authors, "women's psychologies may have been shaped to respond to economic resource scarcity by allocating more effort into securing a financially secure mate in an environment where such mates are scarce".

Referring to the academic validation of the hemline theory there is only one paper by Baardwijk and Franses (2012) on this topic. They find that in bad times hemlines decrease, dresses are getting longer and if the economy is strong the miniskirts prevail. In addition, a three years time lag was found. Empirical evidence was based on monthly data of hemline collected for 88 years from French fashion magazine "L`Officiel" estimated against U.S. business chronology from the National Bureau of Economic Research (NBER), as a proxy for a "world economy". They also analyzed the reverse dependence whether the hemline had any impact on the business cycles, but no confirmations were found. At one point, it can explain why there was a considerable fashion trend on long skirts in 2011 which still lasts nowadays. It was simply due to the effect of the world crisis of three years ago (2008-2009).

However, the study by Baardwijk and Franses (2012) has some drawbacks. First of all, they treat hemline as a continuous variable, while in nature it was collected as a categorical one. Secondly, they estimate French hemline with U.S. cycles, but do not try other independent variables (European cycles, French macroeconomic variables, for example, GDP). Finally, the period that was used includes war time which can bias results (as the relationship between fashion and economy in that period is likely to be different from the relationship in non-war times).

Taking into account all the information mentioned above, this study will contribute to existing literature by focusing on how robust previous findings are. Firstly, I use a different data source for the dependent variable hemline which comes from a German magazine for sewing Burda Moden (sewing models can be considered more up-to-date, then fashion, which needs longer time to be ready-to-wear). Also, I use different independent variables: not only U.S. business cycles as a proxy for a world economy, but also recession indicators for Germany and Euro Area, and German GDP and unemployment rate. And, I do estimations using both OLS and ordered probit model, treating hemline as a continuous and categorical variable as well.

*Chapter 3*

# METHODOLOGY

The main question of the paper is to investigate whether it is true that hemline index fluctuates with the economy (world or local) as was suggested theoretically, and to do robustness check for existing study on this question. To tackle this issue several different models and specification can be tested.

First, I start the analysis with annual data and estimate the model suggested by Baardwijk and Franses (2012) with my dataset on hemlines and compare obtained results. They use a French fashion magazine "L`Officiel" to measure the hemline, while I propose to use Burda Moden, German magazine for sewing, as fashion takes time to be ready-to-wear (fewer people wear high-level fashion), while sewing models from Burda is assumed to be more up-to-date (represents what people actually wear), so I can expect smaller or no lag.

The authors provide a model with U.S. recession indicators using NBER business chronology as a proxy for "world economy", as for this variable there is no clear and well defined data. They use an autocorrelation function with first-order autoregressive effect:

$$\mathrm{Hemline_i} = \beta_0 + \mathrm{pHemline_{i-1}} + \gamma \log(\mathrm{trend}) + \beta_1 \mathrm{NBER_{i-k}} + \varepsilon_i \qquad (1)$$

Hemline is stated for length of the skirt, which takes values from 1 to 6 (miniskirt, above the knee, knee, below the knee, full length (ankle) and floor length). Also, provided model takes into account prior year length[1] (to capture other factors that can influence hemline by adding previous year value) and

[1] also see Figure A1 for correlogram in Appendix A

natural logarithm of trend (where trend=1, 2, 3…) which allows capturing a possible trend over time. NBER is an indicator for recessions, which takes values from 0 (zero or one month with recession) to 1 (eleven or twelve months with recession). A more detailed description is given in Chapter 4. It is estimated with different lags k (from 0 to 4) to verify possible temporal effects.

Secondly, hemline data might be more related to the area of its origin, so it is good to replace cycles for the US with ones for Euro Area and Germany and verify if there is any relationship between them.

Also, for annual data I will use Baardwijk and Franses`s hemline from French fashion magazine L'Officiel to replicate and compare the results (using the same periods for comparison).

As hemlines and recession indicators are consolidated from the monthly data (a more detailed description is given in Chapter 4), I also check all mentioned models on this level trying different specifications with and without lags for hemline, logarithm of trends, and seasonal dummies (eleven for month) and find the best adequate fit.

For independent variables in above mentioned models I expect positive signs which will state that when there is a recession in economy hemline increase (skirts become longer).

Finally, I check the initial theoretical statement about link of gross domestic product and hemline for Germany, as my hemline data might be more related to the country of its origin. In addition, this model can be checked using unemployment rate as an independent variable to estimate is there any relationship between such macroeconomic index and fashion. The model is the same:

$$\mathrm{Hemline}_i = \beta_0 + p\mathrm{Hemline}_{i-1} + \gamma \log(\mathrm{trend}) + \beta_1 \mathrm{MacroVar}_{i-k} + \varepsilon_i \quad (2)$$

For the GDP I expect negative sign meaning that increase in GDP makes skirts shorter (hemline decreases). As for the unemployment rate the same as for the recession indicators is true: when unemployment level increases, hemline increases as well (skirts become longer), so sign should be positive.

In addition, data should be checked for the following problems:

1. Stationarity. The Dickey-Fuller test is used with the null hypothesis that the series has a unit root. If there is a unit root (non-stationary), I take the first difference of the variable.

2. Heteroskedasticity. An important assumption is that the variance in the residuals has to be homoskedastic or constant (if not, estimates of the standard errors for the coefficients and therefore their t-values could be wrong). The Breusch-Pagan test is used with the null hypothesis that residuals are homoskedastic. If heteroskedasticity is present, I use heteroskedasticity-robust standard errors.

3. Serial correlation in residuals. One of the assumptions is that the error terms are independent from one another, meaning that they are uncorrelated. If this assumption is violated, then model is not correctly specified. Durbin-Watson is used to test for serial correlation with the null hypothesis that there is no serial correlation. If errors terms are serially correlated, model specification should be revised.

So far, hemlines were assumed as a continuous variable, but in reality it is a categorical one. As hemline index has clear order in its categories, I can use ordered probit model with monthly data and compare if there are any difference with the OLS results. Probability of different categories related to the explanatory variables can be found and marginal effects computed, as difference between categories in ordered models is not necessarily the same, while in OLS it is assumed to be equal.

*Chapter 4*

# DATA DESCRIPTION

The data for the hemline come from the German magazine Burda Moden. The grounds for this choice are arising from specificity of edition: Burda presents patterns and models for sewing which are more up-to-date, while pure fashion magazines are more future-oriented and fashion need some time to be ready-to-wear.

The hemline variable is categorical and takes 6 specified values:

(1) Miniskirt – higher than the knee for more than the size of a palm;

(2) Above the knee;

(3) Knee – when it is covered;

(4) Below the knee;

(5) Full length (ankle) – when you can see shoes;

(6) Floor length – shoes are covered.

The first magazine was published in 1950 and Burda Moden is still running today on monthly bases. Monthly data for hemlines were taken one-by-one from the magazine`s archive available online. In each edition a lot of different clothes models are present, so I took value for most frequently appeared length (in case of ties averaged values were used). For some years there were less than 12 monthly editions, therefore extrapolating of the data was done (approximately for 10% of the data). Missing observations can be replaced by the most recent issue, for example, for missing value in May we can take value from April. Descriptive statistics for hemline are represented in the Table 2. For yearly aggregation I take the mode. Complete data set contains 760 observations from February of 1950 till April 2013. Table 1 presents summary statistics for hemline. The historical movement of hemline is shown in the Figure 1.

Table 1. Summary statistics for hemline.

| | (1) | (2) | (3) |
|---|---|---|---|
| Hemline | freq. | percent | cum. |
| 1 | 4 | .5263158 | .5263158 |
| 2 | 129 | 16.97368 | 17.5 |
| 3 | 392 | 51.57895 | 69.07895 |
| 4 | 190 | 25 | 94.07895 |
| 5 | 43 | 5.657895 | 99.73684 |
| 6 | 2 | .2631579 | 100 |
| Total | 760 | 100 | |

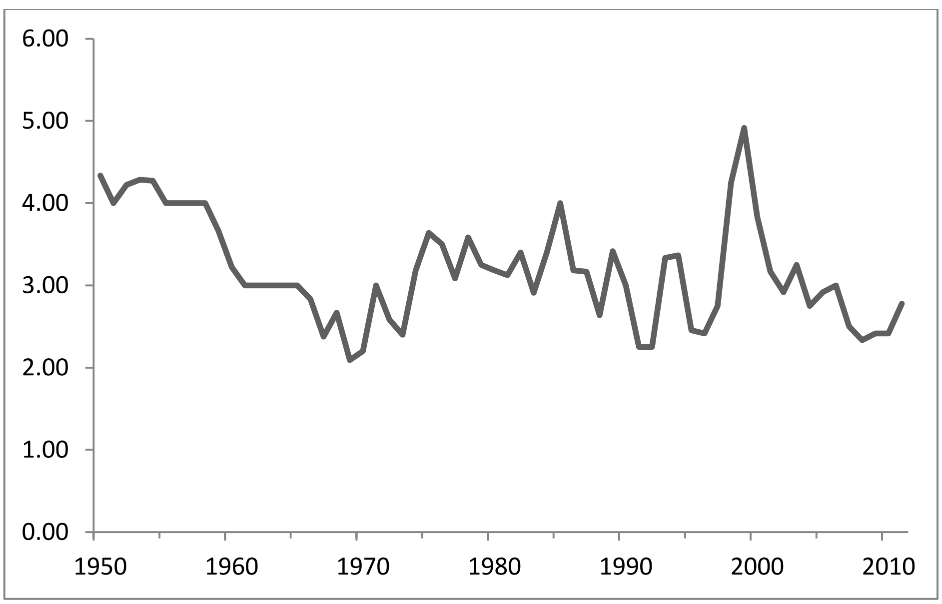


Figure 1. Average annual historical values for the hemline

For comparison data for hemlines from Burda Moden and L'Officiel Pearson correlation coefficient was found. It is equal to 0.5669 meaning that two series are positively correlated but far from perfectly correlated.

For the business cycles I use business chronologies from National Bureau of Economic Research (NBER) for U.S. from January 1950 till April 2013 and from Organization for Economic Co-operation and Development (OECD) for Euro area (from January 1964) and Germany(from January 1961), both till April 2013. Monthly data shows recession indicators as a dummy variable with value 1 for recessionary period and value 0 for an expansionary one. The Euro area covers the Europe 16 area excluding Denmark, Sweden, and United Kingdom. Monthly data is consolidated to yearly by setting a value from zero to one using an approach provided be Baardwijk and Franses:

(0) zero or one month with recession;

(0.25) from two to four months with recession;

(0.50) five or seven months with recession;

(0.75) from eight to ten months with recession;

(1) eleven or twelve months with recession.

Observations for Germany GDP are taken from central bank of the Federal Republic of Germany, Deutsche Bundesbank, statistics. Yearly data for GDP is available from 1950 to 2011 in percentages with a year 2005 as a base. Data for unemployment rates comes from U.S. Department of Labor: Bureau of Labor Statistics for adults in Germany from 1970 and is adjusted by excluding career military and unpaid family workers who worked less than 15 hours per week.

The descriptive statistics for the monthly data are presented in Table 2 and for the yearly data in Table 3. Description of each variable can be found in Table B1.

Table 2. Descriptive statistics for monthly data

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Variable | N | mean | sd | min | max |
| hemline | 760 | 3.190789 | .8094758 | 1 | 6 |
| NBER | 760 | .1592105 | .3661132 | 0 | 1 |
| Euro | 592 | .5253378 | .4997799 | 0 | 1 |
| Germany | 628 | .4490446 | .4977933 | 0 | 1 |

Table 3. Descriptive statistics for annual data

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Variable | N | mean | sd | min | max |
| hemline | 63 | 3.063492 | .6926577 | 2 | 5 |
| NBER | 63 | .1626984 | .2983784 | 0 | 1 |
| Euro | 49 | .5204082 | .4531048 | 0 | 1 |
| Germany | 52 | .4519231 | .4201962 | 0 | 1 |
| GDP | 63 | 64.09 | 29.27171 | 14.14 | 110.94 |
| Unempl | 42 | 5.952381 | 2.88801 | .6 | 10.7 |
| hemlinefr | 60 | 3.040278 | .7144743 | 1.25 | 4.166667 |

*Chapter 5*

# EMPIRICAL RESULTS

This section contains empirical estimates of the relationship between hemline and economy and associated tests.

Dickey-Fuller test results reject the null hypothesis that the series has a unit root, except for GDP and unemployment rate (Table 4). In this case, to make them stationary I generate new variables that states first differences (period-to-period change). All other variables are stationary both on annual and monthly levels.

Table 4. Dickey-Fuller test for unit root.

| Variable | (1)<br>N | (2)<br>test statistic | (3)<br>p-value |
|---|---|---|---|
| | Annual | | |
| hemline | 62 | -4.577 | 0.0001 |
| NBER | 62 | -6.760 | 0.0000 |
| Euro | 48 | -5.955 | 0.0000 |
| Germany | 51 | -5.490 | 0.0000 |
| GDP | 62 | -0.662 | 0.8564 |
| Unempl | 41 | -1.928 | 0.3189 |
| dGDP | 61 | -7.425 | 0.0000 |
| dUnempl | 40 | -3.147 | 0.0233 |
| | Monthly | | |
| hemline | 759 | -10.627 | 0.0000 |
| NBER | 759 | -6.256 | 0.0000 |
| Euro | 591 | -4.778 | 0.0001 |
| Germany | 627 | -4.794 | 0.0001 |

Starting from the annual data, Table 5 presents the results for hemline with US recession indicators as a proxy for a "world economy", using OLS estimation techniques, while Table 6 – using ordered probit with robust-standard errors. The main independent variable (NBER) have expected positive signs only with 3 and 4 year time lag in both OLS and ordered probit, and only in ordered probit with 4 years lag the main independent variable is significant at 5% level.

Table 5. OLS: US cycles (NBER), annual.

| | (1)<br>hemline | (2)<br>hemline | (3)<br>hemline | (4)<br>hemline | (5)<br>hemline |
|---|---|---|---|---|---|
| L.hemline | 0.351* | 0.359* | 0.366* | 0.371* | 0.344* |
| | (0.005) | (0.005) | (0.005) | (0.004) | (0.007) |
| ltrend | -0.250** | -0.239** | -0.235** | -0.223*** | -0.213*** |
| | (0.019) | (0.027) | (0.044) | (0.071) | (0.099) |
| NBER | -0.322 | | | | |
| | (0.197) | | | | |
| L.NBER | | -0.0751 | | | |
| | | (0.768) | | | |
| L2.NBER | | | -0.00802 | | |
| | | | (0.975) | | |
| L3.NBER | | | | 0.260 | |
| | | | | (0.308) | |
| L4.NBER | | | | | 0.411 |
| | | | | | (0.113) |
| _cons | 2.839* | 2.737* | 2.692* | 2.589* | 2.610* |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *N* | 62 | 62 | 61 | 60 | 59 |
| $R^2$ | 0.335 | 0.316 | 0.293 | 0.282 | 0.276 |
| Hettest | (0.5935) | (0.4468) | (0.4810) | (0.8276) | (0.7605) |
| Serial corr. | (0.5537) | (0.2520) | (0.2347) | (0.6244) | (0.3767) |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

Significant result occurs in the ordered probit (Table 6, column (5)) where the model has pseudo $R^2$=0.16 and the estimate for NBER with 4 year lag is equal to 0.897 (with p-value 0.039), meaning that economic cycle positively leads the length of skirt by four years.

Table 6. Oprobit: US cycles (NBER), annual.

| | (1) hemline | (2) hemline | (3) hemline | (4) hemline | (5) hemline |
|---|---|---|---|---|---|
| L.hemline | 0.721** | 0.726** | 0.730** | 0.741** | 0.689** |
| | (0.025) | (0.024) | (0.020) | (0.019) | (0.034) |
| ltrend | -0.486** | -0.456*** | -0.441*** | -0.418 | -0.413 |
| | (0.045) | (0.059) | (0.078) | (0.109) | (0.140) |
| NBER | -0.693 | | | | |
| | (0.106) | | | | |
| L.NBER | | -0.179 | | | |
| | | (0.621) | | | |
| L2.NBER | | | -0.0216 | | |
| | | | (0.948) | | |
| L3.NBER | | | | 0.539 | |
| | | | | (0.337) | |
| L4.NBER | | | | | 0.897** |
| | | | | | (0.039) |
| cut1 | -0.582 | -0.364 | -0.271 | -0.0704 | -0.176 |
| | (0.705) | (0.815) | (0.860) | (0.964) | (0.913) |
| cut2 | 1.470 | 1.648 | 1.743 | 1.975 | 1.944 |
| | (0.348) | (0.299) | (0.265) | (0.208) | (0.234) |
| cut3 | 3.292** | 3.452** | 3.448** | 3.567** | 3.424** |
| | (0.018) | (0.015) | (0.013) | (0.011) | (0.020) |
| *N* | 62 | 62 | 61 | 60 | 59 |
| pseudo $R^2$ | 0.191 | 0.177 | 0.163 | 0.159 | 0.160 |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

Replacing US recession indicators with ones for the European area I find significant results for a three year time lag at 10% significance level both in OLS

(Table 7) and ordered probit (Table 8). The main independent variable Euro also has positive sign as was expected only with several lags included in the model. The OLS model with three year lag for Euro (Table 7, column (4)) has $R^2$=0.158 and coefficient for Euro is equal to 0.399 (with p-value 0.061).

Table 7. OLS: European cycles (Euro), annual.

| | (1)<br>hemline | (2)<br>hemline | (3)<br>hemline | (4)<br>hemline | (5)<br>hemline |
|---|---|---|---|---|---|
| L.hemline | 0.260*** | 0.291** | 0.277*** | 0.269*** | 0.269*** |
| | (0.080) | (0.048) | (0.069) | (0.066) | (0.087) |
| ltrend_euro | 0.0254 | 0.0907 | 0.0605 | 0.158 | 0.0291 |
| | (0.809) | (0.450) | (0.660) | (0.279) | (0.860) |
| Euro | -0.0852 | | | | |
| | (0.685) | | | | |
| L.Euro | | 0.276 | | | |
| | | (0.190) | | | |
| L2.Euro | | | -0.101 | | |
| | | | (0.639) | | |
| L3.Euro | | | | 0.399*** | |
| | | | | (0.061) | |
| L4.Euro | | | | | 0.0367 |
| | | | | | (0.870) |
| _cons | 2.098* | 1.625* | 1.944* | 1.399** | 2.008* |
| | (0.001) | (0.008) | (0.002) | (0.028) | (0.003) |
| *N* | 49 | 48 | 47 | 46 | 45 |
| R2 | 0.080 | 0.114 | 0.086 | 0.158 | 0.081 |
| Hettest | (0.2927) | (0.5229) | (0.2892) | (0.0687 ) | (0.2776 ) |
| Serial corr | (0.0948) | (0.1145) | (0.0630) | (0.0754) | (0.0691) |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

The ordered probit model with three year lag for Euro (Table 8, column (4)) has pseudo $R^2$=0.085 and coefficient for Euro is equal to 0.754 (with p-value 0.051).

Table 8. Oprobit: European cycles (Euro), annual.

| | (1) hemline | (2) hemline | (3) hemline | (4) hemline | (5) hemline |
|---|---|---|---|---|---|
| L.hemline | 0.484 | 0.537 | 0.494 | 0.500 | 0.492 |
| | (0.127) | (0.102) | (0.128) | (0.121) | (0.116) |
| ltrend_euro | 0.0411 | 0.163 | 0.117 | 0.298 | 0.0373 |
| | (0.816) | (0.442) | (0.635) | (0.310) | (0.895) |
| Euro | -0.133 | | | | |
| | (0.744) | | | | |
| L.Euro | | 0.487 | | | |
| | | (0.230) | | | |
| L2.Euro | | | -0.128 | | |
| | | | (0.757) | | |
| L3.Euro | | | | $0.754^{***}$ | |
| | | | | (0.051) | |
| L4.Euro | | | | | 0.0550 |
| | | | | | (0.879) |
| cut1 | 0.722 | 1.560 | 1.020 | 2.042 | 0.829 |
| | (0.520) | (0.182) | (0.329) | (0.137) | (0.474) |
| cut2 | $2.765^{**}$ | $3.617^{*}$ | $3.008^{*}$ | $4.108^{*}$ | $2.823^{**}$ |
| | (0.018) | (0.004) | (0.006) | (0.006) | (0.019) |
| cut3 | $3.604^{*}$ | $4.509^{*}$ | $3.861^{*}$ | $5.043^{*}$ | $3.668^{*}$ |
| | (0.001) | (0.000) | (0.000) | (0.001) | (0.001) |
| *N* | 49 | 48 | 47 | 46 | 45 |
| pseudo $R^2$ | 0.042 | 0.058 | 0.044 | 0.085 | 0.043 |

Note: p-values in parentheses, *** $p < 0.10$, ** $p < 0.05$, * $p < 0.01$

Hence, it can be concluded that recession in Europe lead hemline to increase in three years making skirts longer. In order to see the difference between estimates from OLS and ordered probit models, marginal effects are computed for the Euro with three year time lag (Table 9). As can be seen from the table, difference between categories in ordered models is not the same, while in OLS it is assumed to be equal. Marginal effects show how does the chance to fall in a given category change when independent variable is increased by one.

Table 9. Marginal effects for Euro with 3 year lag.

| Outcome | Pr | (dy/dx) L.hemline | (dy/dx) ltrend_euro | (dy/dx) L3.Euro |
|---|---|---|---|---|
| 2 | 0.2385 | -0.1550 | -0.0922 | -0.2337 |
| 3 | 0.6736 | 0.0753 | 0.0448 | 0.1135 |
| 4 | 0.0767 | 0.0653 | 0.0389 | 0.0984 |
| 5 | 0.0110 | 0.0145 | 0.0086 | 0.0219 |
| X | | 2.8696 | 3.1038 | 0. 5217 |

Finding that European cycles lead hemline in a three year supports the results received by Baardwijk and Franses (2012) that there is a relationship between hemline and recession cycles. For comparison, estimations with hemline form L'Officiel and US cycles for the same period are presented in the Table 10. While in the model with European cycles $R^2$=0.158 and estimate for Euro is 0.399 (p-value 0.061), in the model with hemline from L'Officiel and US cycles for the same period $R^2$=0.312 and estimate for NBER is 0.688 (p-value 0.026), which is two times higher.

As for the hemline from L'Officiel and European cycles, there were no significant results found (Table B2). Hence, there is no relationship between hemline from French magazine and recession cycles for Euro area.

Table 10. OLS: Hemline from L'Officiel, annual.

| | (1) |
|---|---|
| | hemlinefr |
| L.hemlinefr | 0.421* |
| | (0.003) |
| ltrend_euro | -0.0890 |
| | (0.369) |
| L3.NBER | 0.688** |
| | (0.026) |
| _cons | 1.798* |
| | (0.001) |
| *N* | 46 |
| $R^2$ | 0.312 |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

Using the same model, I find no evidence for connection between hemline and recession indicators for Germany (Table B3-B4), as well as between hemline and GDP of Germany (Table B5-B6). But still, the main pattern is that in almost all models I find expected signs for the main independent variable. That is why we can argue that initial statement provided by Professor George Taylor that "hemlines on women`s dresses fluctuate with the economy, measured by gross domestic product" should be restated and GDP can be replaced by recession cycles. Also, one of the reasons for such results is that Germany is a small open economy comparing to the rest of the world or Europe, so its GDP time series cannot clearly provide a good picture for connection between economy and vogue on a specific fashion trend for Europe.

But at the same time, unemployment rate for adults in Germany significantly affect the hemline level with two year lag. Table 11 represents the results for unemployment rates, stating that there is a heteroskedasticity problem present in a model with two year lag, so robust-standard errors are used in this case (Table 12).

Table 11. OLS: Unemployment rate (dUnempl), annual.

| | (1) hemline | (2) hemline | (3) hemline | (4) hemline | (5) hemline |
|---|---|---|---|---|---|
| L.hemline | 0.243 | $0.314^{***}$ | 0.215 | 0.223 | $0.340^{**}$ |
| | (0.133) | (0.053) | (0.151) | (0.208) | (0.044) |
| ltrend_unemp | -0.0925 | 0.00162 | 0.0360 | -0.162 | -0.227 |
| | (0.502) | (0.991) | (0.814) | (0.368) | (0.246) |
| dUnempl | -0.0893 | | | | |
| | (0.541) | | | | |
| L.dUnempl | | 0.176 | | | |
| | | (0.216) | | | |
| L2.dUnempl | | | $0.386^{*}$ | | |
| | | | (0.007) | | |
| L3.dUnempl | | | | 0.106 | |
| | | | | (0.515) | |
| L4.dUnempl | | | | | -0.243 |
| | | | | | (0.102) |
| _cons | $2.497^{*}$ | $1.982^{*}$ | $2.129^{*}$ | $2.770^{*}$ | $2.685^{*}$ |
| | (0.000) | (0.007) | (0.002) | (0.001) | (0.002) |
| *N* | 41 | 41 | 40 | 39 | 38 |
| $R^2$ | 0.092 | 0.121 | 0.253 | 0.126 | 0.183 |
| Hettest | (0.2354) | (0.3401) | (0.0038) | (0.5307) | (0.9706) |
| Serial corr | (0.0754) | (0.7930) | (0.2109) | (0.0667) | (0.0692) |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

In the Table 12 it can be seen that in the OLS model  (second column)the effect of unemployment rate on hemline is positive as expected and equal to 0.386 (with a p-value 0.012) and $R^2$=0.253, which means that increase in unemployment rise hemline in two years (skirts are getting longer). The same conclusions are consistent to the ordered probit model with robust standard errors (third column in Table 12), where pseudo $R^2$=0.156 and effect of unemployment is 0.828.[2] Marginal effects are presented in the Table 13, where we can see that difference between categories in ordered models is not the same, they show how does the chance to fall in a given category change when independent variable is increased by one.

Table 12. Unemployment rate (dUnempl) for two year lag, annual.

| | (OLS) | (Oprobit) |
|---|---|---|
| | hemline | hemline |
| L.hemline | 0.215 | 0.421 |
| | (0.218) | (0.239) |
| ltrend_unemp | 0.0360 | 0.0110 |
| | (0.824) | (0.973) |
| L2.dUnempl | 0.386** | 0.828** |
| | (0.012) | (0.019) |
| _cons | 2.129** | |
| | (0.011) | |
| *N* | 40 | 40 |
| $R^2$ | 0.253 | |
| pseudo $R^2$ | | 0.156 |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

[2] also see Table B6 for complete table of ordered probit regressions

Table 13. Marginal effects for unemployment rate with 2 year lag.

| Outcome | Pr | (dy/dx) L.hemline | (dy/dx) ltrend_euro | (dy/dx) L3.Euro |
|---|---|---|---|---|
| 2 | 0. 1880 | -0.1136 | -0.003 | -0.2233 |
| 3 | 0. 7261 | 0.0476 | 0.0012 | 0.0934 |
| 4 | 0. 0764 | 0.0553 | 0.0014 | 0.1087 |
| 5 | 0. 0095 | 0.0107 | 0.0003 | 0.0211 |
| X | | 2.9250 | 2.9935 | 0. 155 |

As for the monthly data, different models were tested. Models without serial correlation turn out to occur in regression that include three lags for hemline[3], natural logarithm of trend and twelve seasonal dummies. Seasonal dummies for twelve months shows that skirts goes down in winter (hemline increases) as expected.

For the US recession indicators, best fitting results occurs with 39-month lag for the main variable both in OLS and ordered probit model at 10% significance level (Table 14). Finding for annual European recession indicators are also consistent on the monthly level: best fitting model occurs with 35-month lag both in OLS at 5%significanse level and ordered probit at 10% significance level (Table 15). Also significant result for Germany recession indicators are present at 10% level in ordered probit for 35 month-lag (Table 16).[4]

[3] also see Figure A2 for correlogram in Appendix A

[4] complete tables including all variables are available upon request

Table 14. US cycles (NBER), monthly.

| | (OLS) hemline | (OLS) hemline | (OLS) hemline | (Oprobit) hemline | (Oprobit) hemline | (Oprobit) hemline |
|---|---|---|---|---|---|---|
| L.hemline | 0.525* | 0.525* | 0.523* | 1.204* | 1.202* | 1.197* |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| L2.hemline | 0.116* | 0.116* | 0.116* | 0.261** | 0.260** | 0.262** |
| | (0.006) | (0.006) | (0.006) | (0.032) | (0.032) | (0.031) |
| L3.hemline | 0.176* | 0.175* | 0.175* | 0.452* | 0.452* | 0.452* |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| ltrend | -0.053*** | -0.054*** | -0.054*** | -0.119*** | -0.124** | -0.124** |
| | (0.057) | (0.050) | (0.053) | (0.053) | (0.045) | (0.047) |
| L38.NBER | 0.0569 | | | 0.148 | | |
| | (0.256) | | | (0.219) | | |
| L39.NBER | | 0.0850*** | | | 0.221*** | |
| | | (0.090) | | | (0.069) | |
| L40.NBER | | | 0.0803 | | | 0.214*** |
| | | | (0.111) | | | (0.071) |
| _cons | 0.600* | 0.611* | 0.612* | | | |
| | (0.006) | (0.006) | (0.006) | | | |
| *N* | 722 | 721 | 720 | 722 | 721 | 720 |
| $R^2$ | 0.600 | 0.600 | 0.599 | | | |
| pseudo $R^2$ | | | | 0.383 | 0.384 | 0.383 |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

Table 15. European cycles (Euro), monthly.

| | (OLS) hemline | (OLS) hemline | (OLS) hemline | (Oprobit) hemline | (Oprobit) hemline | (Oprobit) hemline |
|---|---|---|---|---|---|---|
| L.hemline | 0.504* | 0.501* | 0.501* | 1.032* | 1.028* | 1.026* |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| L2.hemline | 0.111** | 0.110** | 0.110** | 0.225** | 0.224** | 0.223** |
| | (0.038) | (0.039) | (0.041) | (0.040) | (0.041) | (0.042) |
| L3.hemline | 0.174* | 0.175* | 0.176* | 0.401* | 0.403* | 0.403* |
| | (0.001) | (0.001) | (0.001) | (0.000) | (0.000) | (0.000) |
| ltrend_euro | 0.0459 | 0.0483 | 0.0447 | 0.0912 | 0.0970 | 0.0899 |
| | (0.165) | (0.154) | (0.195) | (0.220) | (0.203) | (0.244) |
| L34.Euro | 0.0782 | | | 0.136 | | |
| | (0.100) | | | (0.189) | | |
| L35.Euro | | 0.0964** | | | 0.174*** | |
| | | (0.045) | | | (0.097) | |
| L36.Euro | | | 0.0797 | | | 0.140 |
| | | | (0.105) | | | (0.190) |
| _cons | 0.0272 | 0.0102 | 0.0416 | | | |
| | (0.902) | (0.964) | (0.854) | | | |
| N | 558 | 557 | 556 | 558 | 557 | 556 |
| $R^2$ | 0.532 | 0.533 | 0.532 | | | |
| pseudo $R^2$ | | | | 0.316 | 0.317 | 0.316 |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

Table 16. German cycles (Germany), monthly.

| | (OLS) hemline | (Oprobit) hemline |
|---|---|---|
| L.hemline | 0.503* | 1.052* |
| | (0.000) | (0.000) |
| L2.hemline | 0.115** | 0.239** |
| | (0.030) | (0.033) |
| L3.hemline | 0.175* | 0.420* |
| | (0.001) | (0.000) |
| ltrend_ger | 0.0244 | 0.0334 |
| | (0.373) | (0.605) |
| L35.Germany | 0.0623 | 0.169*** |
| | (0.165) | (0.094) |
| _cons | 0.168 | |
| | (0.404) | |
| *N* | 593 | 593 |
| $R^2$ | 0.528 | |
| pseudo $R^2$ | | 0.320 |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

To sum up, all findings are consistent with the previous study on this topic and general pattern depicts the existence of the relationship between economy and hemline.

*Chapter 6*

# CONCLUSIONS

Using annual data for hemlines from the Germany fashion magazine Burda Moden I find that economical cycle in Europe leads hemline in three years and US cycles as a proxy for a world economy – in four years, which confirm the statement that hemline increases in bad times (but with a large lag), meaning that skirts are getting longer. Also I find that increase in unemployment rate today affect the hemline in two years.

To explain the existence of a time lag, it should be mentioned that designers start to work on the new collection in advance, for example a half of a year (sometimes it even takes a whole year). So when there is a recession and things go wrong, first it needs some time to make people fell themselves bad and get pessimistic, then when designers are in the bad mood as everybody, they prepare their collections which also takes time as mentioned above. Hence, there is a time lag between the period when there is a recession and a moment when collection is issued and hemlines is observed in publications.

Main findings are consistent with those provided by Baardwijk and Franses (2012) and also can explain that a fashion boom for long skirts in 2011-2012 is due to the world crisis of 2008-2009.

To sum up, there is no place for worry as "rising economy leads us to predict that hemlines will start to modestly recover –although perhaps "immodestly uncover" would be a more apt description – in the next few years" (Baardwijk and Franses, 2012).

## WORKS CITED


Baardwijk, Marjolein, and Philips H. Franses. 2012. Hemlines and the Economy: Which Goes Down First?, *Foresight: The International Journal of Applied Forecasting,* International Institute of Forecasters, issue 26: 27-28.

Bohlen, Betsy, Steve Carlotti, and Liz Mihas. 2010. How the recession has changed US consumer behavior. *McKinsey Quarterly*, 1: 17–20.

Dahncke, Pasha Ray, 2011. IBM Social Media Analysis Points to Lower Heels, Bucking Economic Trend. IBM News release. November 17, 2011, http://www-03.ibm.com/press/us/en/pressrelease/35985.wss

Dibaji, A., S. Powers, and P. Keswani, 2010 . U.S. household and personal products: The "great recession" and shifts in consumer behavior. New York, NY: *AllianceBernstein*, 2010.

Hamermesh, Daniel. 2011. "Beauty pays : why attractive people are more successful" Princeton University Press, 2011.

Hamermesh, D. S., X. Meng, and J. Zhang. 2002 . Dress for success–does primping pay? *Labour Economics*, 9(3): 361–373.

Hasan, Dr. Syed Akif and Subhani, Dr. Muhammad Imtiaz, and Osman, Ms. Amber. 2012. Do economic players shape up fashion trends? Archives Des Sciences,65(4): 83-90.

Hill, S. E., C. D., Rodeheffer, V., Griskevicius, K., Durante, and A. E., White. 2012. Boosting Beauty in an Economic Decline: Mating, Spending, and the Lipstick Effect. *Journal of Personality and Social Psychology*, Vol 103(2), August 2012: 275-291. doi:10.1037/a0028657

Katona, George. 1974. Psychology and consumer economics. *Journal of ConsumerResearch*, 1: 1–8. doi:10.1086/208575

Nersesov, Yakov. 2002. *Journey to the world. Fashion*. AST, Moscow: 162

Platt, Eric. 2012. The 29 Most BIZARRE Economic Indicators in the World, Business Insider, http://www.businessinsider.com/the-29-most-bizarre-economic-indicators-in-the-world-2012-2?op=1

Shils, Edward B. 1995. George W. Taylor: Industrial Peacemaker. *Monthly Labor Review*. December, 1995: 29-34

Suprun, Elena. 2012. Guru of podiums: Alexander Vasiliev about the intricacies of the fashion, http://livenmagazine.com/news/71/18/analiz-mody/d,article.html

Valenti, Catherine. 2012. Do Short Skirts Really Mean Better Times? ABCnews, January 15, 2003,http://abcnews.go.com/Business/story?id=86787&page=1

Yermack, David. 2010. Vision Statement: How This First Lady Moves Markets. *Harward Business Review*, November, 2010, http://hbr.org/2010/11/vision-statement-how-this-first-lady-moves-markets/ar/1

APPENDIX A

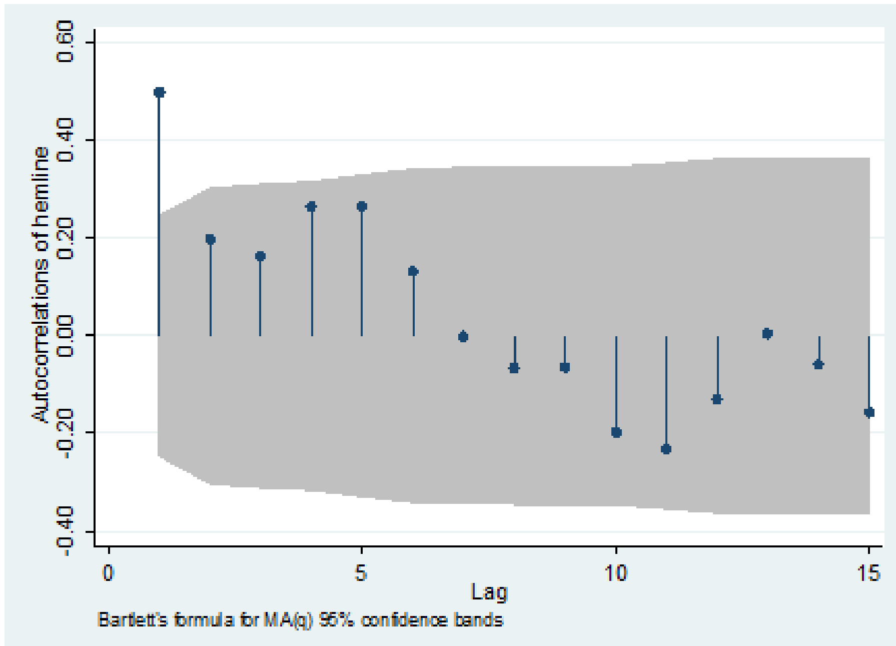


Figure A1. Correlogram for annual hemline.

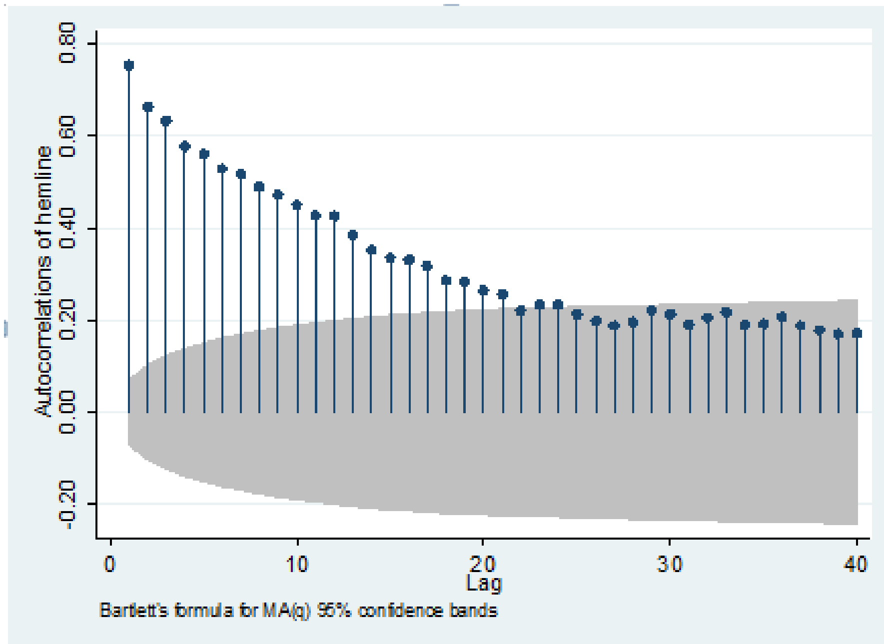


Figure A2. Correlogram for monthly hemline.

# APPENDIX B

Table B1. Description of database variables.

| Variable | Label |
|---|---|
| hemline | Length of the skirt from Burda Moden |
| NBER | 1 for recessionary period, for US |
| Euro | 1 for recessionary period, for Euro area |
| Germany | 1 for recessionary period, for Germany |
| GDP | GDP of Germany, 2005=100% |
| Unempl | Unemployment rate for adults in Germany |
| hemlinefr | Length of the skirt from L'Officiel |
| dGDP | first difference of GDP |
| dUnempl | first difference of Unempl |

Table B2. Hemline from L'Officiel (hemlinefr) and Euro cycles (Euro), annual.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | hemlinefr | hemlinefr | hemlinefr | hemlinefr | hemlinefr |
| L.hemlinefr | 0.454* | 0.468* | 0.452* | 0.458* | 0.436* |
| | (0.002) | (0.003) | (0.004) | (0.003) | (0.005) |
| ltrend_euro | -0.0645 | -0.121 | -0.120 | -0.0909 | -0.212 |
| | (0.543) | (0.330) | (0.400) | (0.556) | (0.209) |
| Euro | 0.234 | | | | |
| | (0.251) | | | | |
| L.Euro | | -0.140 | | | |
| | | (0.505) | | | |
| L2.Euro | | | -0.0304 | | |
| | | | (0.887) | | |
| L3.Euro | | | | 0.254 | |
| | | | | (0.241) | |
| L4.Euro | | | | | 0.0812 |
| | | | | | (0.711) |
| _cons | 1.601* | 1.924* | 1.913* | 1.664** | 2.205* |
| | (0.008) | (0.003) | (0.007) | (0.025) | (0.004) |
| *N* | 46 | 45 | 44 | 43 | 42 |
| $R^2$ | 0.249 | 0.232 | 0.222 | 0.249 | 0.252 |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

Table B3. OLS: German cycles (Germany), annual.

| | (1) hemline | (2) hemline | (3) hemline | (4) hemline | (5) hemline |
|---|---|---|---|---|---|
| L.hemline | 0.261*** | 0.293** | 0.274*** | 0.269*** | 0.264*** |
| | (0.067) | (0.042) | (0.060) | (0.064) | (0.079) |
| ltrend_ger | 0.00389 | 0.0272 | 0.0305 | 0.0526 | 0.0647 |
| | (0.968) | (0.805) | (0.806) | (0.697) | (0.666) |
| Germany | -0.146 | | | | |
| | (0.478) | | | | |
| L.Germany | | 0.198 | | | |
| | | (0.349) | | | |
| L2.Germany | | | -0.0158 | | |
| | | | (0.941) | | |
| L3.Germany | | | | 0.227 | |
| | | | | (0.294) | |
| L4.Germany | | | | | 0.0546 |
| | | | | | (0.806) |
| _cons | 2.185* | 1.867* | 2.003* | 1.836* | 1.885* |
| | (0.000) | (0.002) | (0.001) | (0.003) | (0.004) |
| *N* | 52 | 51 | 50 | 49 | 48 |
| $R^2$ | 0.085 | 0.093 | 0.076 | 0.100 | 0.079 |
| Hettest | (0.3727) | (0.7388) | (0.2148) | (0.1454) | (0.2449) |
| Serial corr. | (0.0738) | (0.1042) | (0.0997) | (0.1273) | (0.1158) |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

Table B4. Oprobit: German cycles (Germany), annual.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | hemline | hemline | hemline | hemline | hemline |
| L.hemline | 0.499 | 0.547*** | 0.507 | 0.504 | 0.485 |
| | (0.125) | (0.097) | (0.111) | (0.117) | (0.118) |
| ltrend_ger | -0.00840 | 0.0338 | 0.0442 | 0.0858 | 0.107 |
| | (0.953) | (0.840) | (0.823) | (0.705) | (0.680) |
| Germany | -0.261 | | | | |
| | (0.482) | | | | |
| L.Germany | | 0.330 | | | |
| | | (0.430) | | | |
| L2.Germany | | | 0.0325 | | |
| | | | (0.933) | | |
| L3.Germany | | | | 0.493 | |
| | | | | (0.180) | |
| L4.Germany | | | | | 0.0723 |
| | | | | | (0.854) |
| cut1 | 0.522 | 1.066 | 0.875 | 1.208 | 1.063 |
| | (0.609) | (0.335) | (0.415) | (0.311) | (0.364) |
| cut2 | 2.655** | 3.164* | 2.940* | 3.290* | 3.076** |
| | (0.014) | (0.008) | (0.009) | (0.009) | (0.012) |
| cut3 | 3.490* | 4.006* | 3.765* | 4.121* | 3.916* |
| | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) |
| *N* | 52 | 51 | 50 | 49 | 48 |
| pseudo $R^2$ | 0.046 | 0.048 | 0.041 | 0.057 | 0.041 |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

Table B5. OLS: GDP of Germany (dGDP), annual.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | hemline | hemline | hemline | hemline | hemline |
| L.hemline | 0.370* | 0.370* | 0.359* | 0.352* | 0.362* |
| | (0.004) | (0.004) | (0.005) | (0.007) | (0.006) |
| ltrend | -0.235** | -0.236** | -0.234*** | -0.227*** | -0.192 |
| | (0.029) | (0.042) | (0.061) | (0.089) | (0.169) |
| dGDP | -0.0108 | | | | |
| | (0.839) | | | | |
| L.dGDP | | -0.0365 | | | |
| | | (0.489) | | | |
| L2.dGDP | | | -0.0357 | | |
| | | | (0.510) | | |
| L3.dGDP | | | | -0.0415 | |
| | | | | (0.465) | |
| L4.dGDP | | | | | 0.00480 |
| | | | | | (0.950) |
| _cons | 2.691* | 2.737* | 2.759* | 2.761* | 2.539* |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) |
| *N* | 62 | 61 | 60 | 59 | 58 |
| $R^2$ | 0.316 | 0.299 | 0.274 | 0.249 | 0.215 |
| Hettest | (0.3295) | (0.3670) | (0.8233) | (0.7318) | (0.9431) |
| Serial corr | (0.2436) | (0.3794) | (0.3858) | (0.2546) | (0.3029) |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

Table B6. Oprobit: GDP of Germany (dGDP), annual.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | hemline | hemline | hemline | hemline | hemline |
| L.hemline | 0.748** | 0.743** | 0.710** | 0.691** | 0.697** |
| | (0.021) | (0.019) | (0.023) | (0.027) | (0.029) |
| ltrend | -0.444*** | -0.443*** | -0.438*** | -0.425 | -0.358 |
| | (0.066) | (0.079) | (0.094) | (0.122) | (0.188) |
| dGDP | -0.0193 | | | | |
| | (0.854) | | | | |
| L.dGDP | | -0.0762 | | | |
| | | (0.510) | | | |
| L2.dGDP | | | -0.0740 | | |
| | | | (0.440) | | |
| L3.dGDP | | | | -0.0861 | |
| | | | | (0.421) | |
| L4.dGDP | | | | | 0.00372 |
| | | | | | (0.984) |
| cut1 | -0.260 | -0.366 | -0.426 | -0.451 | -0.0567 |
| | (0.864) | (0.814) | (0.784) | (0.782) | (0.974) |
| cut2 | 1.750 | 1.666 | 1.598 | 1.584 | 1.974 |
| | (0.258) | (0.290) | (0.310) | (0.334) | (0.255) |
| cut3 | 3.555* | 3.375** | 3.200** | 3.097** | 3.372** |
| | (0.010) | (0.016) | (0.022) | (0.038) | (0.037) |
| *N* | 62 | 61 | 60 | 59 | 58 |
| pseudo $R^2$ | 0.177 | 0.167 | 0.153 | 0.139 | 0.119 |

Note: p-values in parentheses, *** p < 0.10, ** p < 0.05, * p < 0.01

Table B7. Oprobit: Unemployment rate (dUnempl), annual.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | hemline | hemline | hemline | hemline | hemline |
| L.hemline | 0.449 | 0.601 | 0.421 | 0.432 | 0.641 |
| | (0.172) | (0.102) | (0.239) | (0.271) | (0.127) |
| ltrend_unemp | -0.207 | -0.0293 | 0.0110 | -0.392*** | -0.546*** |
| | (0.354) | (0.913) | (0.973) | (0.098) | (0.063) |
| dUnempl | -0.155 | | | | |
| | (0.486) | | | | |
| L.dUnempl | | 0.388 | | | |
| | | (0.114) | | | |
| L2.dUnempl | | | 0.828** | | |
| | | | (0.019) | | |
| L3.dUnempl | | | | 0.174 | |
| | | | | (0.577) | |
| L4.dUnempl | | | | | -0.492*** |
| | | | | | (0.071) |
| cut1 | -0.126 | 0.878 | 0.509 | -0.800 | -0.780 |
| | (0.906) | (0.535) | (0.737) | (0.523) | (0.589) |
| cut2 | 1.908*** | 2.982** | 2.761 | 1.331 | 1.361 |
| | (0.089) | (0.047) | (0.105) | (0.311) | (0.380) |
| cut3 | 2.761* | 3.821* | 3.739** | 2.198*** | 2.236 |
| | (0.007) | (0.006) | (0.024) | (0.050) | (0.104) |
| *N* | 41 | 41 | 40 | 39 | 38 |
| pseudo $R^2$ | 0.051 | 0.075 | 0.156 | 0.075 | 0.113 |

Note: p-values in parentheses, *** $p < 0.10$, ** $p < 0.05$, * $p < 0.01$