The hemline and the economy: is there any match?

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Abstract

Urban legend has it that the hemline is correlated with the economy. In times of decline, the hemline moves towards the floor (decreases), and when the economy is booming, skirts get shorter and the hemline increases. We collected monthly data on the hemline, for 1921-2009, and evaluate these against the NBER chronology of the economic cycle. The main finding is that the urban legend holds true but with a time lag of about three years. Hence, the current economic crisis predicts ankle length shirts around 2011 and 2012.

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1. Introduction

In 1926 an economist called George Taylor introduced a "theory" that is called the hemline index. This theory says that hemlines on women's dresses fluctuate with the economy, measured by stock prices or gross domestic product. When the economy is flourishing, hemlines increase, meaning one would see more miniskirts, and when the economic situation is deteriorating the hemlines drop, perhaps even to the floor.

A Google search (June 2010) on the hemline index (or its Dutch translation) gives a range of articles in fashion magazines and newspapers. Interestingly, observations made to the contrary of the above hemline theory are also reported. Indeed, at present (June 2010), women's skirts are rather short, while the economy has still not yet recovered from the 2008-2009 recession.

In the present paper we put the hemline index (theory) to an empirical test, and we examine if there is any validity in this urban legend. We collected monthly data on the hemline, where our sample starts as early as 1921 and ends in 2009. These data are correlated with an economic cyclical chronology, in this case the NBER dates. Because today's fashion was designed one or more years ago and also as it takes time for new fashion to become ready-to-wear, we explicitly incorporate leads and lag effects. So, it may be found that it is not today's recession that dictates the hemline, but perhaps the boom in 2006 and 2007.

In Section 2 we describe the data. As the monthly data can fluctuate quite heavily, we first aggregate the monthly data to annual data, and examine the dynamic links between the hemline and the business cycle. The results are presented in Section 3. The main findings are that the hemline increases over the years, with a non-linear trending pattern, and that the economy leads the hemline with about 3 to 4 years. A relation in the other direction is not found.

2. The data

Urban legends are interesting to read and discuss, but if possible it is even challenging to see if they can be falsified or not. The so-called hemline index theory provides a unique opportunity as actual data on the hemline can be collected, as will become clear below. A Google search revealed the presence of synthetic data, based on the data for the 1920's to the 1970's, but we could not find any actual data.

We therefore reverted to the website of the French publications which appear under the header of "Jalou". This involves a range of publications and amongst them is the magazine called "L'Officiel". This magazine had its first issue on 1921, and it is still running today. The editors have put all past magazines on the internet[1], so it is possible to scroll all past magazines and compile a database.

In many years, the magazine had 12 monthly editions. In some years if was just 10, and it also happened that there were years with only 5 editions. At first we decided to collect the monthly data. When data are missing, we entered the value of the most recent issue. So, when there were 10 editions per year, we gave the months 11 and 12 the same value as that of the month 10.

There are 5 distinct dress lengths. We distinguish Mini (1), Ballerina length (above the knee cocktail) (2), below the knee (3), Full length (ankle) (4) and Floor length (5).

Insert Figure 1 about here

The data we compiled are presented in Figure 1. It is clear that over the years the hemline seems to increase, meaning dresses seem to get shorter over the years. Second, there seems to be quite some variation, certainly in more recent years.

We aim to correlate this variable with "the world economy", and of course this is not well-defined. We could then look at all kinds of countries and variables, but this

[1] http://partimoine.jalougallery.com/lofficiel-de-la-mode-sommairepatrimoine-13.html

would not robustify any potential conclusions. Hence, we decided to just look at the NBER business chronology and take that as a kind of "world business cycle". The monthly data appear in Table 1 and in Figure 2.

Insert Table 1 about here

Insert Figure 2 about here

3. Analysis

The data in Figure 1 are rather noisy. Therefore, we start our analysis with annual data. We simply aggregate the monthly data into annual data (by averaging) and these appear in Figure 3.

Insert Figure 3 about here

Now the data are less noisy. We also aggregate the monthly chronology in Table 1 into annual data by assigning a value of 0 to a year with 0 or 1 month with a recession, a value of 0.25 when a year has 2, 3 or 4 months with a recession, a value of 0.5 when there are 5, 6 or 7 months with a recession, a value of 0.75 when there are 8. 9 or 10 months with a recession and a value of 1 when there are 11 or 12 months with a recession. The resultant data appear in Figure 4.

Insert Figure 4 about here

We first analyze the annual data. The variable to be explained is the length, as it is given in Figure 3. The autocorrelation function indicates a first-order autoregressive effect. So, our model for the annual data looks like

$$(1) \qquad Length_t = \mu + \rho Length_{t-1} + \tau \log(trend) + \beta NBER_{t-k} + \varepsilon_t$$

We take the natural log of the trend (t = 1, 2, …) to allow for a pattern that levels off to some value, which seems more appropriate than a linear trend. We experiment with values 0, 1, 2, 3 and 4 for k, and also with values -1, -2, -3 and -4 to see if there are any lead effects. The best fitting model turns out to occur when k = 3, and in that case the estimate of μ is 4.620 (with Newey-West HAC standard error 0.669), the estimate of τ is -0.416 (0.170) and the estimate for β is 0.584 (0.203). The R^2 of this model is 0.310. So, we conclude that the economic cycle leads the hemline with 3 years, and this effect is positive, which means that a current economic recession makes the 3-year ahead hemline to decrease (meaning that women's dresses get longer).

Taking this finding to the monthly data, we find that a model with two lags and twelve seasonal dummies and a log trend provides an adequate fit. The seasonal dummies indicate that the hemline dips in winter time, which is of course not unexpected. Again the log trend variable is relevant, and so is the NBER zero-one dummy as it is displayed in Figure 2. The parameter estimate for the equivalent of β in (1), where we now include a 36 months lagged length variable, obtains a value of 0.073 with HAC standard error 0.027. So, also at the monthly level we see a three year lag in the effect of the economy on the hemline.

4. Conclusion

Based on the analysis of actual data on the hemline, which goes back to January 1921, we found that the economic cycle leads the hemline with about three years. Supporting the urban legend, we find that poor economic times make the hemlines to decrease, which means that women's dresses get lower, and that prosperity is correlated with a reduced hemline (more miniskirts). At the same time, and this is new to the available evidence, we find that there is a time lag of around three years. This explains why at present, in an economic downturn, the skirts are short, as this is simply due to the fact that the economy was in a boom about three years ago (2007-2008).

We also analyzed the reverse relation, that is, whether the hemline had any impact on the NBER chronology, this time using a logit model. Reassuringly, we found that no such relation exists, not a current one, nor that there are any lagged effects.

Table 1: NBER chronology with recession periods (the last date is not yet known at the time of writing, June 2010, so it may be earlier than 2009M12)

1920M01 - 1921M07
1923M05 - 1924M07
1926M10 - 1927M11
1929M08 - 1933M03
1937M05 - 1938M06
1945M02 - 1945M10
1948M11 - 1949M10
1953M07 - 1954M05
1957M08 - 1958M04
1960M04 – 1961M02
1969M12 – 1970M11
1973M11 – 1975M03
1980M01 – 1980M07
1981M07 – 1982M11
1990M07 – 1991M03
2001M03 – 2001M11
2007M12 – 2009M12

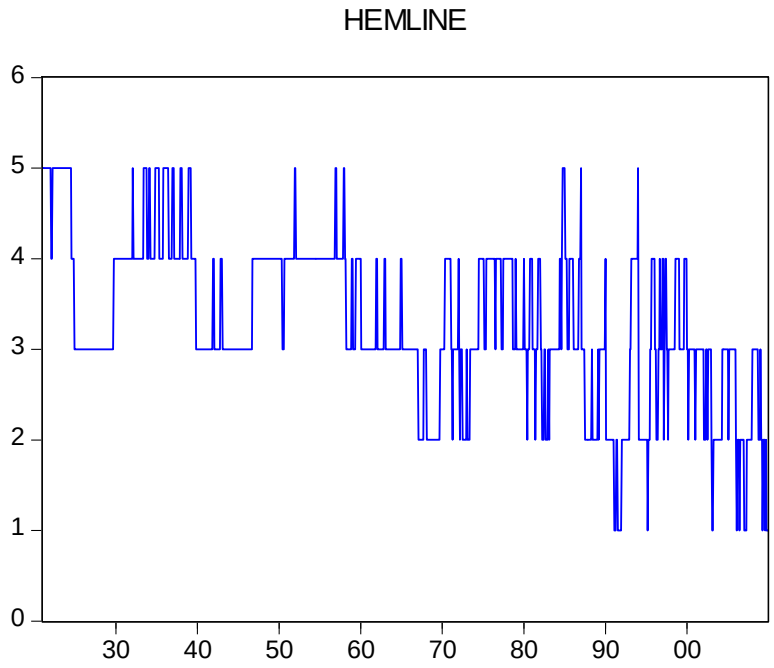

Figure 1: The hemline index, with 5 is floor length and 1 is mini. The data run from 1921 January to December 2009.

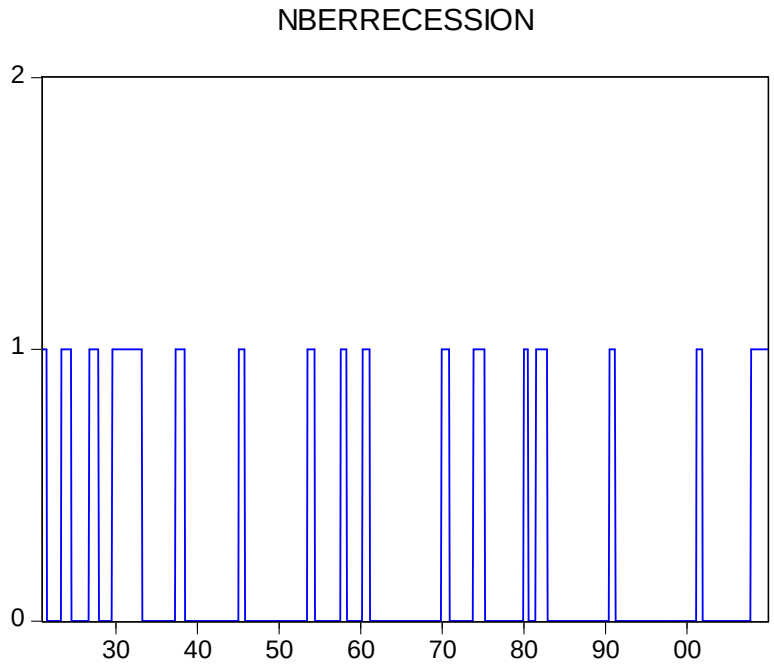

Figure 2: NBER recession chronology. A 1 is a month with a recession, and a 0 is not. The data are taken from Table 1.

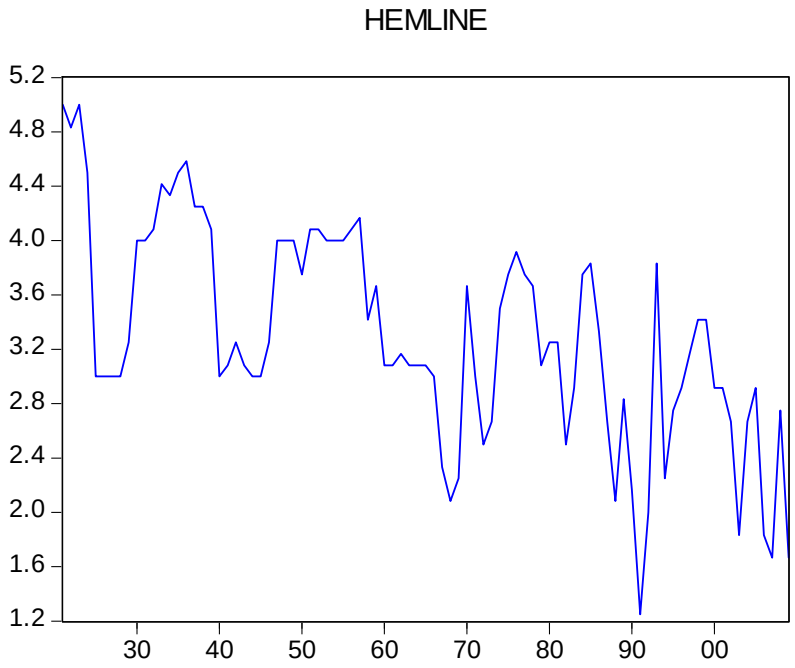

Figure 3: The hemline index, when the data in Figure 1 are aggregated to annual data for 1921-2009.

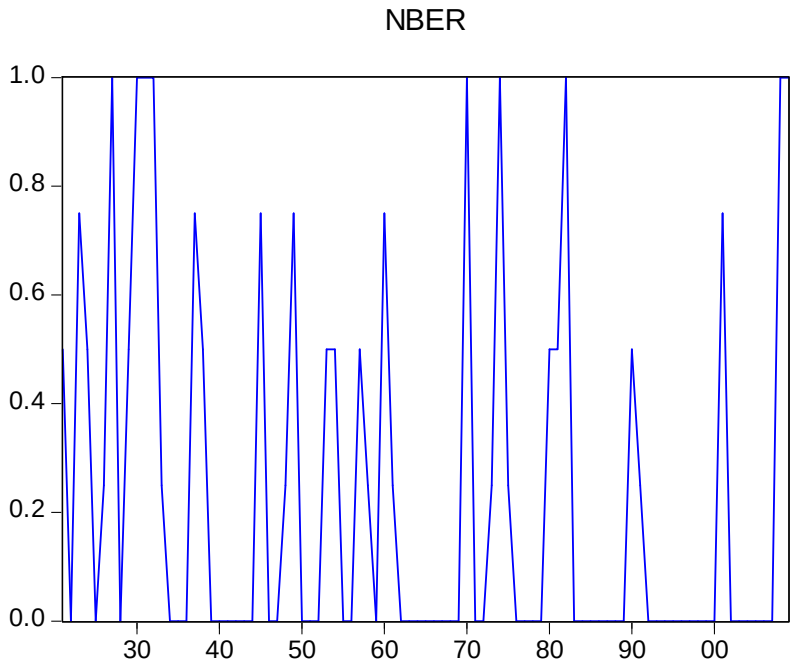

Figure 4: NBER recession chronology when the data in Figure 2 are compressed to annual data. A 0.25 means 2, 3 or 4 months of that year in a recession, 0.5 means 5, 6 or 7 months, and 0.75 means 8, 9 or 10 months in recession. A 0 is associated with 0 or 1 month in recession, and a 1 with 11 or 12 months in a recession.