



HEMLINE THEORY: TESTING THE RELATIONSHIP BETWEEN FASHION  
TRENDS AND THE STOCK MARKET

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by

Gabriella Humes

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Thesis written by  
Gabriella Humes

Approved by

\_\_\_\_\_  
Advisor

\_\_\_\_\_, Chair, Department of Finance

Accepted by

\_\_\_\_\_, Dean, Honors College



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## Chapter 1: Introduction

Fashion is a phenomenon that transcends time and culture. Fashion derives from human's universal instinct to decorate one's self, and therefore can encompass clothing, makeup, hairstyles, etc. (Welters, L., & Lillethun, A., 2018, p. 1-10). However, for the purpose of this thesis, I will focus solely on the clothing part of fashion. According to Linda Welters and Abby Lillethun, fashion can be defined as "changing styles of dress and appearance that are adopted by a group of people at any given time and place" (Welters, L., & Lillethun, A., 2018, p. 16). This definition encompasses the reality of fashion being dynamic and ever changing. These changes in fashion can be the direct or indirect result of numerous influences including social, cultural, and economic characteristics as well as matters of class, gender, and sexuality (Gilbert, D., 2017, pgs. 487-488). Fashion also acts as an influence on numerous outside factors. Oscar Wilde sums up the innovative nature of fashion well: "After all, what is fashion? It is usually a form of ugliness so intolerable that we have to alter it every six months" (Laver, J., 1969 p. 25).

There are several theories that relate to the evolution of fashion and how it moves through society. According to Robert Elms: "It [fashion] is cyclical, but the circle is never completed because it is also evolutionary, therefore patterns repeat but they are never quite the same" (Gilbert, D., 2017, p. 493). In 1937, Agnes Brooks Young claimed that fashion has its own laws and cycles, free from external forces.

On the other side, James Laver embraced the notion that designers are not the masters of their own fate and “can only introduce an innovation if it happens to be in accordance with the spirit of the age” (Gilbert, D., 2017, p. 487). Laver also popularized the “erogenous-zone” theory, first advanced by psychologist J.C. Flügel, in his book *Modesty in Dress* (Welters, L., & Lillethun, A., 2018, p. 38). This theory suggested that women’s fashion trends follow whichever part of the body attracted the most sexual interest at that point in time. For example, the 1920s focused on the legs, the 1930s on the back, the 1940s on the waist, the 1950s on the bust, and circled back around to the legs again in the 1960s (as cited in Mabry, 1971, p. 3). The most commonly accepted theory is that fashion is cyclical but is also impacted by numerous external forces. An example of fashion’s cyclical nature is shifts in hemlines. Midi skirts, which fall a little higher than mid-calf, were a woman’s uniform in the 40s, and the length came back into style recently in 2018 and 2019. New fashions may be introduced that are considered novel, but over time, they too become part of fashion’s cycle. For example, it was a shock when women began to wear pants outside the house in the 1960s. However, as years passed, women’s pants became common and were eventually accepted as part of the fashion cycle.

As for the flow of fashion trends through society, three theories are most commonly assumed; the trickle-up theory, trickle-down theory, and trickle-across theory. The trickle-up theory states that fashion trends start as street wear and travel up until the trend is considered high fashion. The concept of the trickle-down theory is that trends start on the runways as high fashion, move through the classes, and trickle down until the trend is considered street wear. The trickle-across theory assumes that trends move

horizontally across groups of similar status with little lag time between them. The trickle-down theory is the oldest and most widely accepted fashion flow theory. An example of the trickle-down theory would be if a silhouette or pattern appeared on the runway for Gucci and then appeared in fast fashion stores a few weeks later. Despite the widely accepted trickle-down theory, some fashion historians believe that change can move upwards, downwards, or crosswise, with no theory being distinctly superior (Welters, L., & Lillethun, A., 2018, p. 40). These theories on the fashion cycle are an important influence on how we look at fashion innovation in society.

As Oscar Wilde so eloquently stated, fashion is constantly evolving from one trend to the next, and one of the most common and noticeable changes in fashion is shifts in hemline length. With these changes occurring so frequently, outside variables have sometimes been suggested to have a relationship with hemlines. One such variable is the stock market, which has been hypothesized to have a relationship with shifts in hemline length. This theory is popularly referred to as the hemline theory, skirt length theory, hemline index, and other similar names. George Taylor, an economist at Wharton School of Business, was the first one to observe the relationship between hemlines and the stock market in 1926 (Cole, D. J., & Deihl, N., 2015, p. 139). During his studies on women's silk hosiery, Taylor noted women's skirts were shorter in thriving financial times so they could show off their silk stockings. In economic downturns, women's skirts fell lower to hide the fact that some women could not afford stockings. By noticing these patterns in his studies, Taylor became credited for the suggestion that hemline lengths were correlated with the stock market, even though it was not his area of study (Cole, D. J., &

Deihl, N., 2015, p. 139). There are a few instances of this supposed correlation that seem to support the theorized relationship between hemlines and stocks, the most commonly known in the late 1920s, early 1930s. In the 1920s, hemlines rose to the knee, showing off more leg than had ever been acceptable before. Women began to defy societal norms by showing skin, drinking, clubbing, and fully embracing the new flapper culture. The economy was doing well, as insinuated by the decade's title: "The Roaring Twenties," and consumers were happy to indulge. Next came the Crash of 1929, which led to the Great Depression. The new lavish fashions of the early 20s were left behind for plainer, and therefore cheaper, styles, prompting hemlines to drop again. Despite the little evidence seen in recent decades, this theoretical link between hemlines and the stock market continues to fascinate people.

Due to the hemline index being more of an observation than a hard theory, there are multiple interpretations of the supposed relationship between stock movements and hemline trends. Some people believe that hemlines predict the stock market. Others believe that the stock market predicts shifts in hemlines. The hemline theory remains a point of interest in the fashion industry and studies have been conducted on the correlation between these two variables. One study, completed in 2012 by Marjolein van Baardwijk and Philip Hans Franses, looks at the stock market as the predictor of hemline changes and the lag time that occurs between movements in the two variables (Van Baardwijk, M., & Franses, P.H., 2012, p. 25-26). The other study, a master's thesis, completed by Mary Ann Mabry, looks at the relationship between the stock market and

hemlines and how it relates to the upper and middle classes (Mabry, M.A., 1971, p. 1-101). These two studies will be discussed at further length in the next chapter.

The original purpose of this thesis was to research and test the relationship between hem length and the stock market from 1925 to 2010. However, through the process of gathering data, which will be discussed more in detail later, a pattern emerged around the 1960s, where pants became a large part of women's fashion and skirts fell to the wayside. Due to this shift, trends in pant length were also studied from 1960 to 2010 alongside the original analysis of hemlines and the stock market. The stock returns for fashion companies specifically, were also gathered and investigated, as the fashion trends may exhibit a closer correlation to stock returns within their own industry. Given the existing research on the hemline theory, the goal of this thesis is to determine whether there is a relationship between hemline or pant lengths and the returns of either the entire stock market or fashion company stocks. This thesis also explores whether fashion trends or the stock market are reliable predictors of the other. As will be discussed later in chapter 5, the results of the analysis and testing did indicate that there is no causal relationship with stocks or hemlines as the dependent variable.

These relationships will be graphed by each decade and tested through a regression analysis. To examine the effect of fashion changes on stock movements, the independent variable or "x" will be annual hemline and pants data. The dependent variable or "y" will be the stock returns. To assess the opposite side of the theory, the independent variable will be stock returns, and the dependent variable will be hemlines and pants data. Pant and hemline data will be collected from the fashion illustration

*Vogue* magazine, which has an archive of issues dating back to the 1890s (Vogue, n.d.). *Vogue* is a well-known fashion publication and is revered at the forefront of high fashion trends in the industry for representing fashion innovation. *Vogue* showcases new trends early in its lifecycle. The publication can breathe life into trends, sometimes launching them into the mass market and shortening their time to adoption by consumers. Macroeconomic controls will also be included in the regression analyses as variables that may have impacts on the main variables, hemlines, pants, and stocks. Some examples of macroeconomic controls include unemployment rate, gross domestic product, annual Treasury yields, and similar economic measures.

Chapter 2 of this thesis will discuss previous studies completed, their results, and explain how my study will be different by researching new areas that have not been previously examined. Chapter 3 will explain how I collected and utilized my raw data for hemline trends, pant length trends, overall stock returns, fashion companies' stock returns, and macroeconomic control variables. Chapter 4 will include all the graphs created to visually represent the data for the fashion trends and stock return movements. This chapter will also include explanations of what is being observed in the graphs. Chapter 5 will discuss the regression model further in depth and report the regression test results. Chapter 6 will summarize the ending conclusions.

## Chapter 2: Previous Studies

Several studies have been conducted on the hemline theory and the relationship between hemlines and the economy or stock market. A study was completed on the hemline theory by Mary Ann Mabry as a master's thesis in 1971. The purpose of Mabry's thesis was to investigate the relationship between hemline and stock market fluctuations from 1921 to 1970, and how both are affected by underlying economic factors. Mabry also explored any time lag present in the acceptance of hemline fluctuations by the middle and upper classes. The hemline data was collected from four fashion publications: *Vogue*, *Harper's Bazaar*, *Good Housekeeping*, and *Ladies' Home Journal*. Stock market data was collected from examination of the Dow Jones Stock Average Chart 1921 – 1970. Economic events that occurred during the 50-year period were also analyzed, including recessions, depressions, inflationary periods, and wars (Mabry, M.A., 1971, p. 1-101).

Mabry graphed the hemline and stock market movements during the 1921-1970 period. Stock movements were graphed using the Dow Jones' monthly highs and lows. Hemline data from *Vogue* and *Harper's Bazaar* were combined as the upper-class publications, and *Good Housekeeping* and *Ladies' Home Journal* were combined as the middle-class publications. Mabry discovered through mathematical testing and visual comparison that hemline fluctuations of both the upper and middle classes and stock market movements did not correspond to each other. As for the hypothesized time lag for

hemline acceptance in the middle and upper classes, no such lag was found in Mabry's study except for the 1950s and 1960s, the last two decades that were studied (Mabry, M.A., 1971, p. 1-101).

Another one of the most referenced studies was completed by Marjolein van Baardwijk and Philip Hans Franses and published in 2012 in *Foresight: The International Journal of Applied Forecasting* (Van Baardwijk, M., & Franses, P.H., 2012, p. 25-26). Baardwijk and Franses realized that although the hemline theory remained prevalent in the news and in the fashion industry, there had not been extensive research completed on the supposed connection between hem lengths and the stock market. They set out to change this in 2010. The pair collected monthly hemline data from the French fashion magazine, *L'Officiel*. In the years where less than 12 issues were published, the missing months were assumed to be the same figure as the previous month. Hem lengths were recorded and grouped in 5 distinct lengths, and they are as follows: 1 – Mini, 2 – Ballerina-length (above-the-knee, cocktail), 3 – Below the knee, 4 – Full-length (ankle), and 5 – Floor-length. The monthly hemline data was then annualized for analysis by taking an average. For the economic data, instead of using stock return fluctuations, the pair investigated recessions, using the U.S. business chronology as provided by the National Bureau of Economic Research (NBER). The monthly NBER chronology was annualized by assigning values of 0-1 to a year depending on the months with a recession. A value of 0 was assigned if a year had 0 or 1 month with a recession, a value of 0.25 if a year had 2, 3, or 4 months with a recession, 0.5 if a year had 5, 6, or 7 recession months, 0.75 when there are 8, 9, or 10 months with a recession, and a value of

1 if a year had 11 or 12 months with a recession (Van Baardwijk, M., & Franses, P.H., 2012, p. 25-26).

Baardwijk and Franses then created a regression model in order to explain the hem length as a function of the prior year's length, a trend logged to allow for leveling off over time, and the NBER economic-cycle metric for a few years before and after. In the last term of the equation, the symbol  $k$  was included to determine the length of the lag. If  $k$  was a positive value, that indicates that the economic cycle led the hemline length index. If  $k$  was a negative value, then the hem length leads the economy. By experimenting with various values between -3 to 3 for  $k$ , the pair was able to examine results for leading and lagging issues. The best model was where  $k$  was equal to 3. This model had an R-squared of 0.310 and the coefficient on the NBER variable was substantially positive. With this output, Baardwijk and Franses were able to conclude that the economic cycle leads hemline trends by three years (Van Baardwijk, M., & Franses, P.H., 2012, p. 25-26). By finding the economic cycle to be ahead of hemlines, it shows that stock movements may be more predictive of hemline changes than the reverse. However, this study looked only at the surface correlation, not the possible causality of the relationship between the two variables. This correlation could be due to changes in underlying variables that stocks and hemlines react similarly to, not necessarily one variable directly affecting the other.

Both of the studies discussed above found different results on the relationship between hemline and economic measures. Mabry found that the hemline and stock return fluctuations analyzed did not correspond to each other's movements (Mabry, M.A., 1971,

p. 1-101). Baardwijk and Franses found that hemline changes lag behind economic movements by three years (Van Baardwijk, M., & Franses, P.H., 2012, p. 25-26). Due to the results of these previous studies, the hemline theory may seem like a redundant topic for this thesis. However, these studies looked only at hemlines and the overall stock market. There are other facets to this theory that have yet to be studied.

The relationship between hemlines and the overall stock market will still be investigated in this thesis, but it will not end there. The 85-year period that is being investigated in this thesis can be split into two parts. The first part is from 1925 to 1959. This is a time when the fashion industry abided by many rules. One example of these unspoken rules was that women did not wear pants as a fashion choice. Pants for women were first introduced as beachwear and loungewear, but they were not worn on the street, less they cause a scandal. Another example rule is that hemlines stayed below the knee to maintain modesty. Even the below-the-knee skirt length was novel in the 20s, as hemlines had never risen high enough to show that much leg before. Due to these traditional rules, the fashion industry did not see much unprecedented change. Hemlines fluctuated, but only to lengths that were below the knee or longer.

The second part of the time period is 1960 to 2010. This was a time of significant change. The fashion industry began to evolve in the 60s, throwing the old rules out the window and allowing for individuality. This is seen in hemlines through the shocking development of the miniskirt, which will be discussed further in chapter 4. This change is also seen as women begin wearing pants. Women began to embrace the practicality and comfort of a silhouette that was traditionally menswear during this time. However, this

practice was still shocking to some, and women that chose to wear pants often ran into problems from others, sometimes even being refused entry into formal establishments (Worsley, H., 2011, p. 42). This movement started to gain traction in 1966 when Yves Saint Laurent designed “Le Smoking,” a sleek-tailored pantsuit. Although still controversial at first, Le Smoking would eventually be recognized as the garment that sealed the acceptability of pants as an alternative fashion choice for women (Worsley, H., 2011, p. 42).

As pants became more popular as a women’s fashion choice, skirts began to fall slightly behind. This trend, coupled with the new emphasis on individuality instead of following macro-trends, caused hemline data to become more scattered after 1960. The rise of numerous micro-trends made it difficult to discern specific hemline movements. Due to this fundamental shift in the fashion industry, and that pant length has never been studied before, I thought it was important to include pant lengths in the analysis. Pants also change length based on trends, so this proposed relationship between trends and the stock market could have been present. Pant length data was thus collected from 1960 to 2010 and was included in the final regression testing to see if there is a relationship between pant lengths and the stock market.

Another interesting facet of the hemline theory is the stock market itself. The overall stock market, which has been included in previous studies of the hemline theory, can be broken down into different categories of companies. Virtually every industry in the world has at least one publicly held company that will be a part of the whole stock market, including the fashion industry. As the topic of hem and pant length is directly

associated with fashion and the fashion industry, I decided to gather data on the stock of fashion companies as well. The relationship between hemlines, pants, and the return on fashion companies' stocks will also be investigated and tested. While the overall stock market performance has been analyzed in previous studies and shown to have a weak correlation with hemlines, there might be a closer correlation between fashion trends and the stock of fashion companies.

### Chapter 3: Data Collection

Data was collected in order to graph and test the relationship between stocks, stocks for fashion companies, hemlines, and pants. Monthly data for hem length shifts from 1925 to 2010 were collected from *Vogue* magazine's digital archives. For the months where multiple issues were published, the first issue of the month was used. Hemlines were obtained by observing primarily editorial images. In the early issues, photographs were rare, so fashion drawings were used to observe hemline trends. Advertisements were not included in the data collection. Images and drawings were found mainly in the fashion and lifestyle sections of the magazine. If there was more than one hem length trend in the same month, the average was taken as the monthly figure. Pant length trends were observed in monthly issues of *Vogue* magazine from 1960 to 2010. The data collection process was the same as for the hemline data. By the time pants data was being collected, editorial images had replaced fashion drawings, therefore only editorial photographs were used to collect pant length data. Only images with easily discernable hem and pant lengths were used. If models were posed in a way that obstructed the view of the length, the image was not used. Both hem and pant length data were based on women's street dress. Clothing categories such as sportswear, sleepwear, and evening wear were excluded from the analysis. Hemline and pant fluctuation data was collected through stratified sampling. In each *Vogue* issue examined, the first four fashion illustrations that met the specified requirements were used.

Stock returns were available only as far back as 1926, so the stock data was collected from 1926 to 2010. Stock data was collected using the monthly historical returns from the S&P 500 Index as it is considered a proxy to the overall market in the finance industry. Due to this proxy relationship, whenever ‘overall stock market’ or ‘stock market returns’ or similar terms are used, it is referencing the S&P 500 Index and its historical stock returns. This data was pulled from the Center for Research in Security Prices (CRSP). Stock return data was also collected for fashion companies as another facet to the relationship between stocks, hemlines, and pants. Fashion companies’ stock returns were also collected from 1926 to 2010 from the Center for Research in Security Prices. In order to find the fashion stocks, all the securities were filtered by Standard Industrial Classification (SIC) codes. The stocks with a two-digit SIC code of 22, 23, and 56, which roughly translate to textiles, apparel, and specialty apparel were included in the fashion companies.

Monthly data for hemlines, pants, and stock returns were converted to annual data for graphing purposes. Annual data makes the graphs easier to read and helps bring attention to the macro-trends in stocks and fashion. Hemline and pant length data was annualized by taking the average of the length figures for the 12 months in the specific year. Stock returns were annualized on a rolling 12-month basis. Essentially, the annualized stock return was found for each month by taking the past 12 months’ returns plus 1, multiplied by each other, minus one. Thus, the formula for November of 1927 would be as follows:  $((1 + \text{Oct. 1927}) * (1 + \text{Sept. 1927}) * (1 + \text{Aug. 1927}) \dots * (1 + \text{Jan. 1927}) * (1 + \text{Dec. 1926}) * (1 + \text{Nov. 1926})) - 1$ . This formula for the previous 12

months was used for each month starting from December of 1926, as that is how far back the stock return data went. The annual return was then taken from December, the twelfth month of that year. Stock returns for fashion companies specifically were annualized with the same formula on a similar rolling 12-month basis. The annual data for stock returns for fashion companies and the S&P 500 Index as well as hem and pant lengths can be seen in the graphs in chapter 4. Monthly data for hemlines and pants can be seen in exhibits 11 and 12 in the appendix.

Macroeconomic variables are important to the regression testing and act as a control in the equation. A total of 14 macroeconomic variables were included in the regression analysis. The specific macroeconomic variables were chosen based on the core variables found in “The Impact of Macroeconomic Variables on the Stock Market: A Taxonomic Approach,” which will be discussed further in depth in Chapter 5. The core variables were as follows: industrial production index, producer price index, consumer credit, consumer price index, corporate profits, real gross domestic product, unemployment rate, civilian labor rate, bank prime loan rate, capacity utilization, M1 money stock, vehicle sales, retail sales, and the 1-month Treasury Bill rate (Chang, S. J., & Ha, D., 1997, p. 111). Table 9 in the appendix has a list of all the definitions for the macroeconomic variables used. Macroeconomic data was collected monthly from the Federal Reserve Economic Data (FRED) database published by the Federal Reserve Bank of St. Louis. Only the Industrial Production Index and Producer Price Index had data available from 1925 (Federal Reserve Bank of St. Louis, n.d.). For the other variables, data was collected as far back as recorded. Due to not all of the data being

available over the whole period, the regression tests needed to be staggered to be able to include what controls were available. This will be discussed further in chapter 5. The macroeconomic controls are only used for empirical testing and are not included in the graphs.

#### **Chapter 4: Graphical Representation of the Hemline Theory**

In this section, hemline and pant trends will be graphed along with the returns of the S&P 500 Index and the mean stock returns of fashion companies. The first graph consists of all the years from 1925 to 2010. Each graph thereafter will correspond to a decade within the 1925-2010 period studied. Influences of trends and returns will be discussed after each graph. The hemline data is based on a scale from 1 to 9 and can be interpreted as follows: 1 – Micro, 2 – Mini, 3 – Above Knee, 4 – Knee, 5 – Below Knee, 6 – Midi, 7 – Ballerina, 8 – Maxi, 9 – Floor. As touched on in the introduction, pant length is also being studied as a potential component in the relationship between fashion trends and the stock market. The hemline theory only discusses dresses and skirts, most likely because women did not wear pants in 1925, when the theory was first suggested. However, in today's society, pants have replaced skirts and dresses as the dominant attire for women. Due to this change, the correlation between pant length and the stock market will also be investigated, graphed, and tested in this thesis. The pant length data was collected on a similar 1 to 9 scale and can be interpreted as follows: 1 – Boy Shorts, 2 – Jamaica, 3 – Bermuda, 4 – Surfer, 5 – Pedal Pushers, 6 – Clam Diggers, 7 – Seven-eighths, 8 – Classic, 9 – Stirrup. Reference images of hem lengths and pant lengths are included in the appendix. Hem and pant length correspond to the left-hand scale on the graphs. Both stock returns correspond to the right-hand scale on the graph from positive 150% to negative 150%. This range was chosen in order to incorporate the majority of the stock return fluctuations in both the S&P 500 Index and the fashion companies.

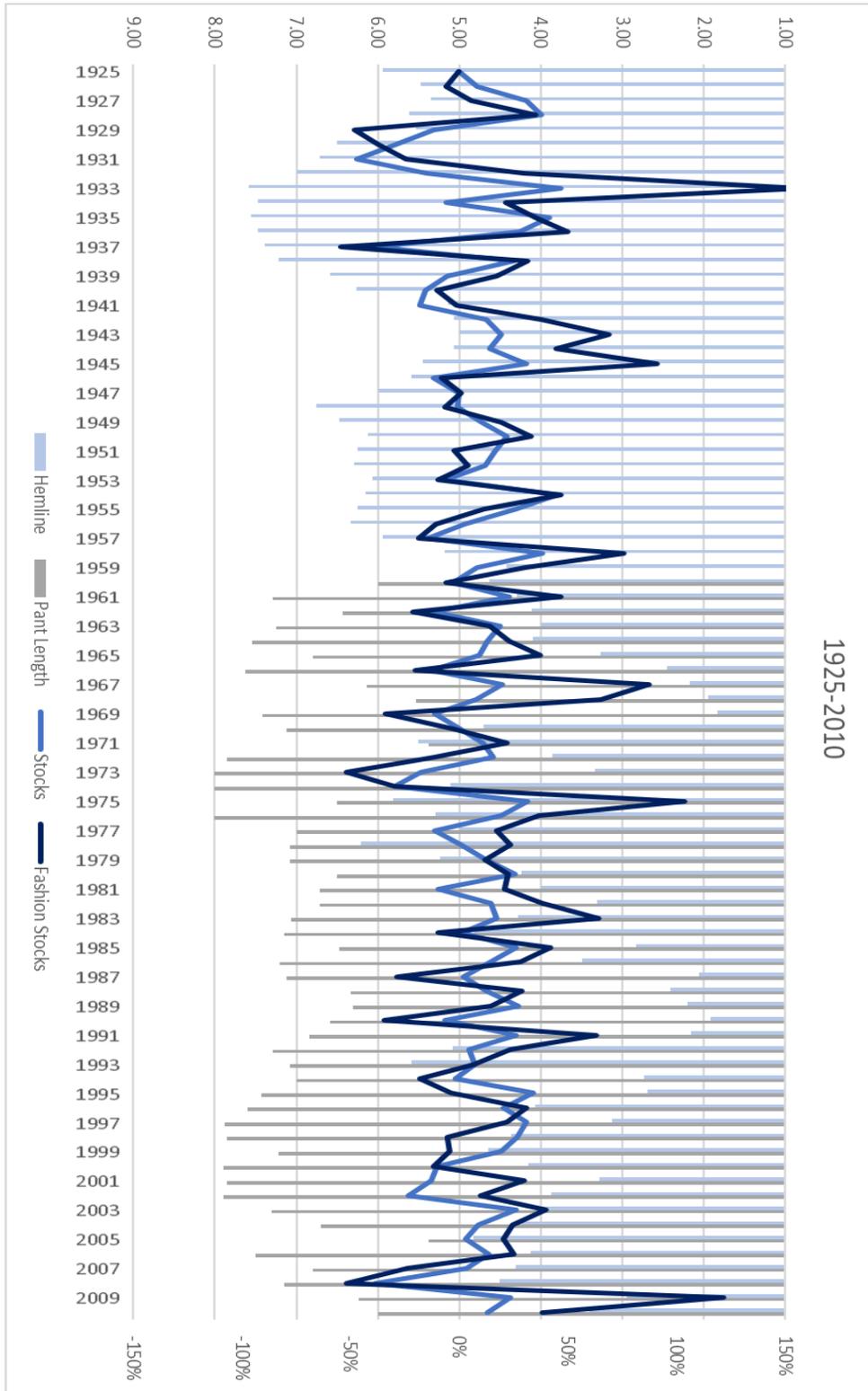
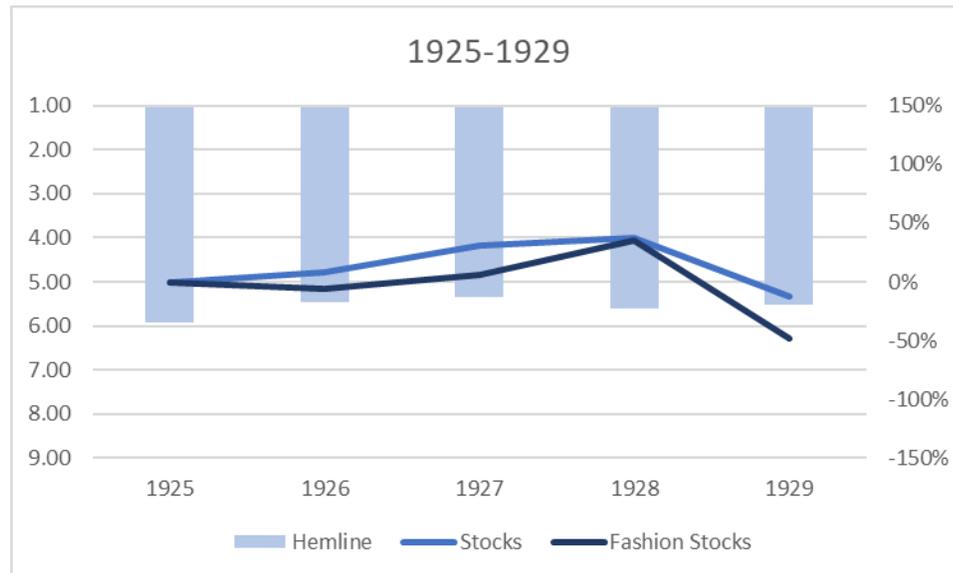


Exhibit 1: Hemlines, pants, and stock returns from 1925 to 2010.

Exhibit 1, shown above, is a graph of the data gathered from 1925 to 2010. Each year is included in the graph, but the bottom axis only includes a label for every other year due to the lack of space. By observing the graph, it is clear to see that fashion companies' stock returns follow the same direction as the stock market returns, but they usually demonstrate larger movements. There are a few things that can be assumed from this observation. The first assumption that can be made is that fashion stock returns and the overall stock market returns react to market changes in similar ways. Observation of the graph also indicates that it is safe to assume that fashion stocks have a relatively higher volatility than the market, which causes the large spikes and dips in returns. The fluctuations in stock returns and fashion trends will be a little clearer once broken down into decades.

*1920s*



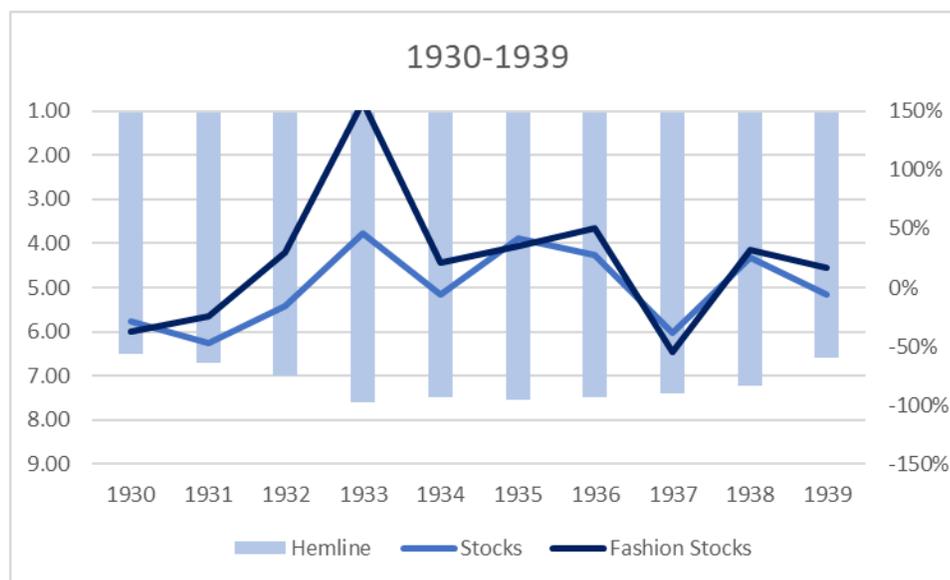
**Exhibit 2: Hemlines and stock returns from 1925 to 1929.**

The graph above shows the annual hem lengths, fashion stock returns, and overall stock market returns for 1925 to 1929. Hemline length only saw subtle shifts during this time frame. Although the shorter hemline is recognized as the attire of the 20s, this style only prevailed for a few years within the decade and was not readily accepted by the majority of society. Hemlines were longer earlier in the decade, falling below the knee almost to midi length. There was the slightest rise in hem length before approaching midi length again during the late 20s. However brief its time was, and however niche the market was, the shorter hem length was novel for its time. These supposed shorter hemlines, though considered modest today, generated significant media and social attention in their time, even provoking legislation attempts (Cole, D. J., & Deihl, N., 2015, p.139). This was also the time when the hemline theory was first introduced. George Taylor, who was studying the use of quality silk hosiery as an expression of affluence, noticed a correlation between hemlines and economic times. In times of economic prosperity, shorter hemlines were more popular as women showed off their silk stockings. In more difficult economic times, hems lengthened to hide holes or the lack of stockings altogether (Cole, D. J., & Deihl, N., 2015, p. 139). This observation was the birth of the hemline theory and has continued to fascinate fashion scholars since.

Both the overall market and fashion companies saw similar movements in returns from 1925 to 1929. Overall stock returns were positive in the first few years before hitting their peak in 1928 at about 50%. Overall returns dropped dramatically the next year, falling into the negatives as the market crashed. Fashion stock returns were slightly negative in 1926 before rising up to a similar peak as the overall market at about 50% in

1928. Stock returns for fashion companies saw the same crash in 1929 as the market, but on a larger magnitude. Where the market returns dipped to about a negative 10%, fashion stocks fell to around a negative 50% return. This market crash was the initial event that would lead the economy into the Great Depression. Due to the relative stability of hemlines, there does not appear to be a strong correlation between hemlines and stock movements. The gradual rise of hem length in 1925, 1926, and 1927 follows a similar rise in overall and fashion stock returns; however, hemlines fell slightly in 1928 when stocks hit their peak.

*1930s*



**Exhibit 3: Hemlines and stock returns from 1930 to 1939.**

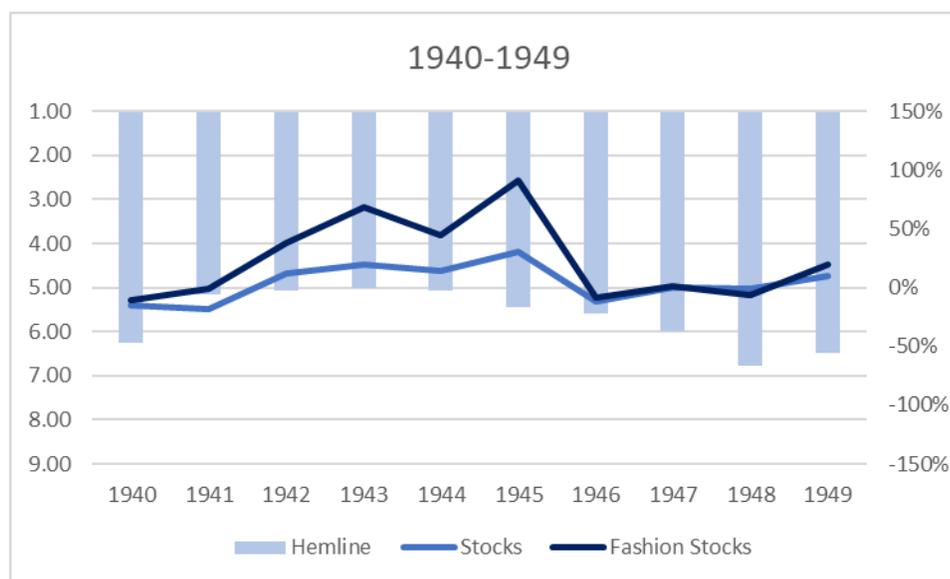
As the Great Depression took hold over the economy in the early 1930s, hemlines dropped significantly. People began to realize that the economy was not in just another recession, but that times were going to be more difficult than ever before. The hemlines' reaction to this event acted as a form of evidence to support Taylor's inference of longer

hemlines in times of hardship to hide the lack of quality hosiery. Skirt lengths were still a little short early in the decade following the below the knee style from the late 20s. Starting in 1933, hemlines fell into the ballerina length area, even approaching the maxi length. This longer style prevailed for a large portion of the decade up until 1938. In the last year of the decade, as the national economy healed from the Great Depression, hemlines began to rise again, leaving behind the long, sleek style for a midi look accentuated with fluttery details (Cole, D. J., & Deihl, N., 2015, pp. 165-167).

Stock returns were very volatile during the 1930s. There were plenty of ups and downs in returns as the market attempted to correct itself after the initial crash of 1929. Both the market and fashion stocks started the decade off in the red, at about a negative 50% return. The market return dipped even further to below negative 50% in 1931 before gradually moving into the black mid-1932. Fashion stocks continued to rise after 1930, moving out of the negative numbers in mid-1931 and reaching almost a 50% return in 1932. The overall market spiked up in 1933 reaching a 50% return. Fashion stocks also saw a spike, reaching a peak of 158% return, which is off the scale in exhibit 3. Both the overall market and fashion stocks saw an equally aggressive drop in the next year, with the market dipping slightly below 0% again and fashion stocks bottoming out around 22%. The market recovered quickly and saw a positive 50% return in 1935 before gradually falling over the next two years to hit negative 50% again in 1937. Fashion stocks grew slowly up to a 50% return in 1936 before falling sharply in 1937, hitting a low of almost negative 60%. Both fashion stocks and the market jumped up again in 1938 before finishing the decade with fashion stocks in the black at about a 16% and the

market in the red at about a negative 5%. Hemlines and overall stock market returns moved in sync in 1930 and 1931, but shifts did not move together for the rest of the decade. Most notably, hemlines dropped in 1933 when the market was at its all-time high for the decade. Fashion stock returns and hemlines did not demonstrate any correlation at all in the 30s.

### *1940s*



**Exhibit 4: Hemlines and stock returns from 1940 to 1949.**

In this first half of this decade, the world was captivated with World War II. This great conflict had a tremendous impact on the economy and the fashion industry in the United States. The war was proving to be an enormous boost to the economy, and for the first time, the inspiration for American fashion stayed within its own borders (Cole, D. J., & Deihl, N., 2015, p. 197). Before World War II, Paris was the fashion capital of the world, inspiring the trends in American fashion. This was interrupted from 1940-1944

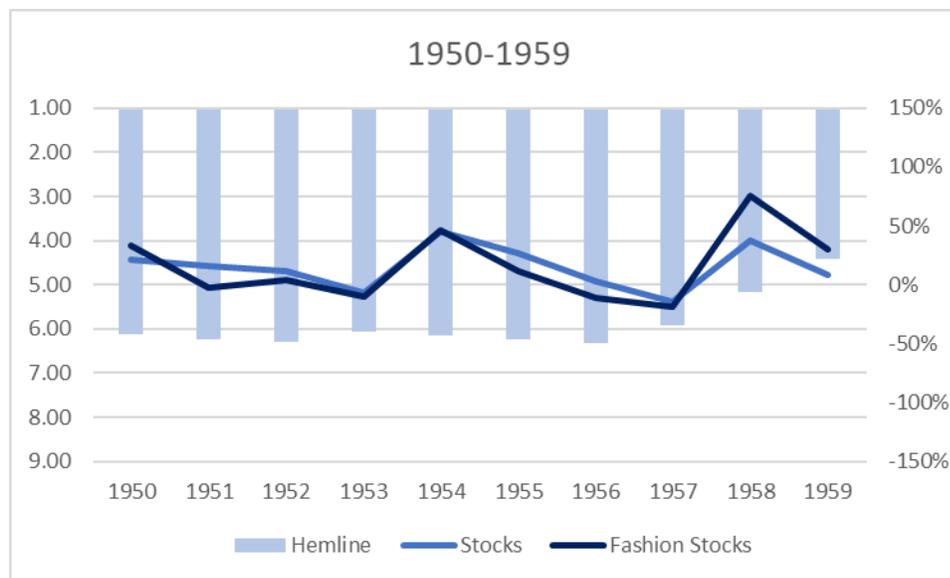
when German forces occupied Paris. Due to this newfound self-sufficiency, the American fashion industry witnessed a time of unprecedented development and expansion, only fueled more by the economic boom (Cole, D. J., & Deihl, N., 2015, p. 197). Now that the fashion industry in the United States was self-sufficient, limitations were placed on designers in an effort to conserve resources during the war. General Limitation Order L-85 went into effect on April 8, 1942, regulating the amount of materials that clothing manufacturers could use. An example of these restrictions was that wool skirts could be no longer than 28 inches or 71 centimeters (Cole, D. J., & Deihl, N., 2015, pp. 202-203). Despite these restrictions, fashion became an expression of nationalism and propaganda. Publications like *Vogue* encouraged women to do their part to support the United States during the war. For example, the September 1<sup>st</sup> issue in 1943 implored women to “Take a Job! Release a Man to Fight!” (Vogue, 1943).

Hemlines in 1940 had not yet left the midi range that was popular in the late 30s, but the following year, skirt lengths jumped up to directly below the knee. This shift could be the result of textile restrictions as well as the promising economic landscape of the day. This below-the-knee skirt trend lasted from 1941 to 1944 before falling slightly in 1945 and 1946. 1945 also marked the end of World War II. As the world began to heal from the fallout of the war, designers were free to create without limitations. Gone were the restrictions previously imposed. A French designer, Christian Dior, was shot to fame in the late 40s. By creating his famous “New Look” in 1947, Dior placed not only himself at the center of international fashion but revived Paris as the fashion capital of the world. Dior’s New Look is characterized by a fuller, midi length skirt (Cole, D. J., & Deihl, N.,

2015, pp. 209-210). This length became the dominant hemline trend for 1947 and inspired even longer lengths in 1948 and 1949, with hemlines falling below midi length and approaching the ballerina style range.

Stocks were relatively calm during the 1940s compared to the previous decade. There were a few spikes seen in the market and fashion stocks, but not nearly as many or as substantial. The market started in the red in 1940, still struggling to bounce back from the negative return in the previous year. The market finally found its way to the black in 1942 and remained there, reaching its peak for the decade in 1945 at about a 30% return. The following year, the market plummeted, toeing the line between 0% and a negative return until finally returning to positive territory in 1949. Fashion stocks followed a similar direction, starting off negative but rising into positive returns in 1941. Returns stayed positive and reached a peak of about 90% in 1945. Once again, stocks crashed in 1946 and remained between 0% and slightly negative until reaching a 20% return in the last year of the decade. Hemlines shifted similarly to fashion companies' and overall stock returns up until 1944. In 1945, all stocks hit their peak while hemlines dropped. From 1946 to 1949, all stocks remained stable; however, hemlines continued to drop.

1950s



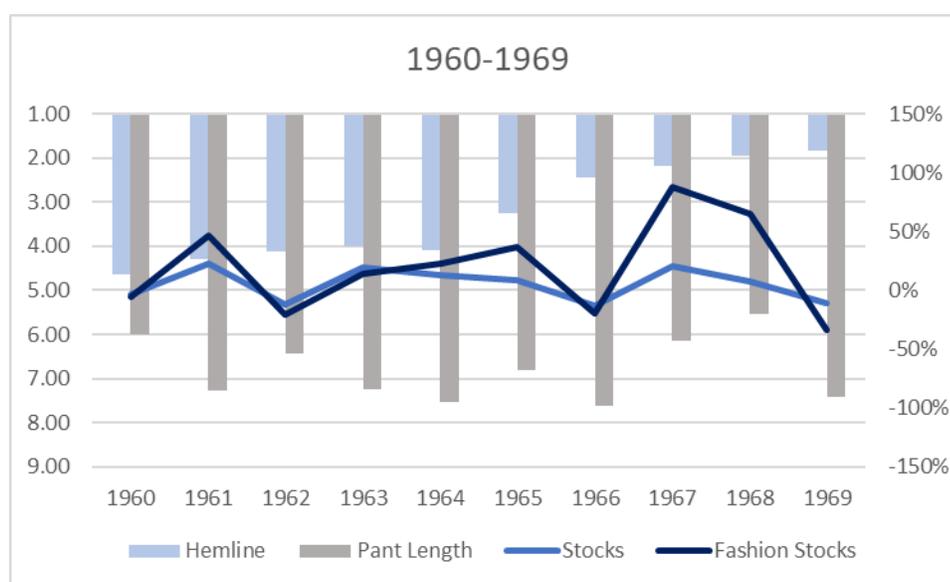
**Exhibit 5: Hemlines and stock returns from 1950 to 1959.**

Once Paris was catapulted into the spotlight by Christian Dior's New Look, American fashion began to look to them again for trend direction. Skirt suits became exceedingly popular for women early in the decade, showcasing a tailored look with a longer hemline. This tailored style dominated the fashion industry for almost the whole decade (Cole, D. J., & Deihl, N., 2015, pp. 235-240). Hemlines hovered around the midi length from 1950 to 1957. The last two years of the decade saw hemlines shortened to unprecedented lengths. In 1959, the accepted length was at the knee, shorter than any of the styles seen in the years prior. This novel length was only the beginning of the changes in fashion, as we will see when we reach the 1960s.

Stocks saw some considerable changes in returns during this decade. The S&P 500 Index and fashion stocks had similar movements early to mid-decade, until 1957,

when fashion stocks began to react more strongly to changes than the overall market. In 1950, returns for the market and fashion stocks were in positive territory, registering around 20% and 30% returns, respectively. Both gradually declined to slightly negative figures in 1953 before spiking to more than 50% in returns in 1954. Returns for all stocks fell again from 1955 to 1957, ending with around negative 15% returns. The overall market quickly increased again to a 50% return in 1958 before falling to an 8% return at the end of the decade. Fashion stocks saw a bigger jump in 1958, reaching a high point of almost 80%, before decreasing again to a 30% return to close the 50s. Hemlines did not see much movement from 1950 to 1957, whereas stocks saw quite a bit of activity. However, from 1957 to 1958, hemlines and stocks jumped upwards together, but this is the only time in the 50s where the variables alluded to a correlation.

### 1960s



**Exhibit 6: Hemlines, pants, and stock returns from 1960 to 1969.**

The 1960s were a time of substantial change in the fashion industry. There were several significant shifts, the most groundbreaking being the gradual introduction of pants as part of women's everyday wear. Up to this point, pants were mainly confined to sportswear, beachwear, or pajamas. It was very uncommon to see a woman wearing pants outside of these confines. Due to this shift in fashion, I began to collect the pants data in 1960, which is shown in gray on the graph. Another shift that took place was a movement with more emphasis on individualized style rather than macro fashion trends (Cole, D. J., & Deihl, N., 2015, pp. 273-275). Macro fashion trends still occurred in the 60s, such as the "Mod" and hippie style. However, the spotlight slowly moved from macro-trends to individual style, which became even more prevalent in the next few decades. One trend from this decade that stands out is the miniskirt (Cole, D. J., & Deihl, N., 2015, p. 278). Despite the 60s being well known for this style, the miniskirt did not become mainstream until later in the decade. During the early 60s, there was a struggle between youthfulness and maintaining the status quo as the dominant fashion trend (Cole, D. J., & Deihl, N., 2015, p. 278). By 1965, youthfulness had won, and the miniskirt became a mainstay of the 60s.

In the early part of the decade, hemlines were at or below the knee, still being dictated by the seemingly unbreakable tradition of fashion. From 1962 to 1964, hemlines did not budge from knee-length. This was a time of conflicting interests in fashion, and the industry waited to see if youthful rebellion would win out over tradition. Skirt lengths hiked up above the knee in 1965, proving that the youthful, "mod" fashion style was here to stay. By 1966, women embraced this new trend and began to show off their thighs.

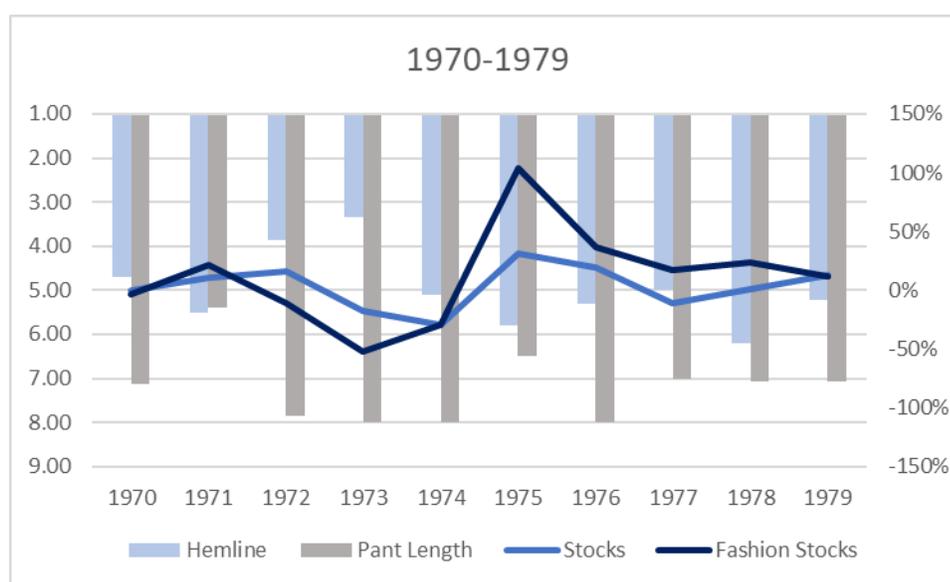
The miniskirt held a dominant position in the industry until the end of the decade and was effectively carved into fashion history (Cole, D. J., & Deihl, N., 2015, pp. 273-278).

Pants saw quite a few changes in lengths over the course of the 1960s. These changes stayed above the classic length, focusing primarily on the clam digger and seven-eighths lengths. In 1960, pant length was dominated by the clam digger style, which lands a little above mid-calf, before falling in 1961 to a seven-eighths length, which hits above the ankle. These two lengths continue to duel one another as the dominant trend for the remainder of the decade. Some outliers came into play in 1964 and 1966, when pant lengths began to approach the classic style, which lands at or slightly below the ankle, as well as in 1968, when lengths creep toward pedal pusher area, which falls right below the knee.

Fashion stock returns were a little unpredictable in this decade, with several spikes and dips as seen in exhibit 6. The overall market was slightly less volatile. The S&P 500 Index return started off slightly negative before increasing to around 25% in 1961. Overall market returns took a hit in 1963, falling back into negative territory in 1962 before going, and staying positive in 1963 through 1965. 1966 saw another negative dip before finding positive returns from 1967 to 1968. The overall market ended the decade with a negative return of about 11%. Fashion stocks saw a similar spike in 1961, reaching over a 50% return before dipping to negative 20% in 1962. Fashion stocks saw positive returns once again in 1963 and remained positive until the market took another dip, reaching negative 20% in 1966. The next year saw a substantial spike to an 87% return before falling slightly to a 65% return in 1968. The end of the decade saw more

negative returns for fashion stocks, finishing with a negative 33% return. 1960 and 1961 saw a slight correlation between all stock returns and hemlines as both saw a movement upwards. However, the two do not remain in sync throughout the rest of the decade. There was a slight correlation between stocks and pants in 1965 to 1966 and 1968 to 1969, but there is no other apparent correlation.

*1970s*



**Exhibit 7: Hemlines, pants, and stock returns from 1970 to 1979.**

The 1970s continued to pave the way for individualized styles over macro-trends. This new focus on individuality allowed for overlapping micro-trends in both pant and hem lengths. As the rules of fashion went out the window, the emphasis was no longer on trends, but on dressing based on personal style. This new outlook on fashion has carried through to the present and will be seen in the upcoming decades discussed. The late 1960s and early 70s ushered in many micro-trends including hippie, peasant, ethnic,

retro, and unisex styles (Cole, D. J., & Deihl, N., 2015, pp. 273-278). These trends, especially the hippie style, continued to dominate the 70s. Casual dressing became widely accepted which allowed fashions like crop tops, t-shirts, and tank tops to become acceptable streetwear (Cole, D. J., & Deihl, N., 2015, p. 310). Unisex and casual dressing trends of the 70s were crucial in helping women's pants become widely accepted in the fashion industry (Cole, D. J., & Deihl, N., 2015, p. 316). The 1970s also saw growing popularity of denim, especially jeans, which represented a way of life through sexual equality and cutting across the social classes. Jeans also fueled the sexual liberation movement as they were considered a "sexy" garment by emphasizing the hips, crotch, thighs, and rear (Cole, D. J., & Deihl, N., 2015, p. 315). The 60s and 70s formed the foundation upon which the present-day fashion industry was built.

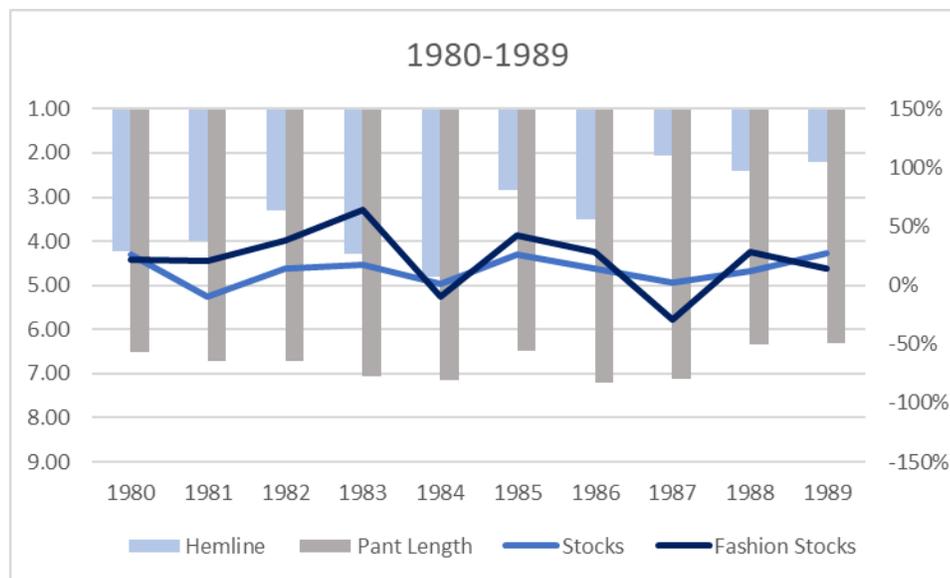
Keeping these societal changes in mind, we can analyze the hemlines and pants of the 70s. The prevailing miniskirt style of the late 60s found itself clinging to retailers in the early part of the decade as longer lengths gradually grew in popularity. 1973 saw a brief revival in shorter skirts, but lengths only rose to above-the-knee, not nearly as high as the 60s style. The shift from short to long skirts was slow moving but had finally hit full swing in the middle of the decade. The second half of the 70s competed between below-the-knee and midi hemlines with midi winning out in 1978 before rising to below-the-knee lengths by the end of the decade.

The 70s were dominated by two pant length styles: seven-eighths and classic. The decade started off with a seven-eighths length before experiencing a significant jump closer to the pedal pusher length in 1971. From 1972 through 1974, pants lengths

dropped to a classic length before another hike to clam digger length in 1975. There was a brief return to the classic length for pants in 1976 before the seven-eighths style won out for the last three years of the decade.

The overall stock market started off slightly negative in 1970 before rising to a positive return in 1971 and 1972. The next two years saw a large dip in market returns, hitting a low point of almost negative 30% in 1974. In 1975, the market jumped up significantly to a positive 30% return and remained in the black until mid-1976. The market fell slightly, straining to find positive ground, finally returning to a positive figure in 1978 and finishing out decade with a 12% return. Fashion stocks were more volatile throughout the decade. Starting off slightly negative, there was a slight increase in 1971 to a 20% return. The next year saw returns drop into negative territory, bottoming out at negative 52% before finding its way back to a remarkable 103% return in 1975. Fashion stocks remained below a 50% return, but still positive until the end of the 70s. Hemlines did not appear to have any correlation with fashion stock or stock market returns. However, pants and both types of stock returns seemed to move in tandem for a few years. From 1970 to 1976, movements in all stock returns and pant lengths mirrored each other. From 1976 to 1977, stocks fell, but pant length rose and stayed at that length for the rest of the decade.

1980s



**Exhibit 8: Hemlines, pants, and stock returns from 1980 to 1989.**

Early 80s fashion was still influenced by the 70s style. However, as the decade began to develop its own identity, several styles emerged that would characterize the 80s. One of these styles was “power dressing” (Cole, D. J., & Deihl, N., 2015, pp. 352-353). Power dressing played a large part in the skirt and pant trends seen in this decade. Blazers were paired with a variety of bottoms. The 80s were a time of continued personalization in style that was popularized in the previous decade, allowing many trends and hem lengths to overlap. This decade became one of excess. Bigger and bolder was always better, which set the tone for all the individual trends throughout the 80s (Cole, D. J., & Deihl, N., 2015, pp. 352-353).

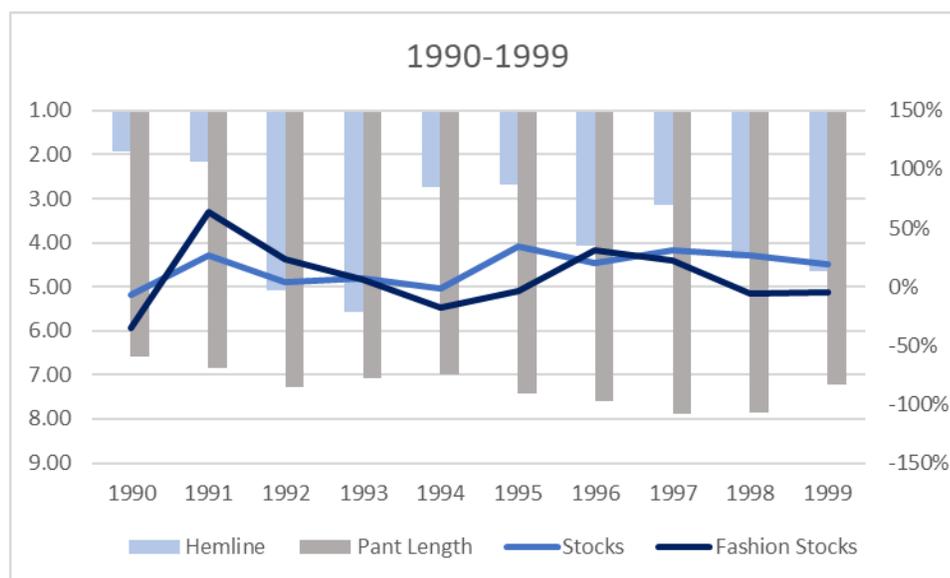
Hemlines in the early 1980s were still affected by the loose, flowing style and longer hemlines characterized by the dominant hippie style of the 70s. Hem lengths hit at

or slightly below the knee in the early 80s, before rising above the knee shortly in 1982. Skirts dropped below the knee again in 1983-1984 as fashion staged a revival of the 40s style (Cole, D. J., & Deihl, N., 2015, pp. 352-353). 1985 saw a significant movement upwards to above-the-knee lengths before falling closer to the knee in 1986. The last three years of the decade were dominated by the miniskirt, falling at or above mid-thigh, reminiscent of the 60s. Pant lengths in the 80s were heavily influenced by the “power dressing” trend. Suit jackets were paired mainly with cropped styles, causing pants to remain above the ankle for the entire decade (Cole, D. J., & Deihl, N., 2015, pp. 352-353). For the majority of the 80s, pant lengths vacillated between the clam digger and seven-eighths styles. However, the seven-eighths style dominated the decade from 1981 to 1987. The only exceptions are seen in 1980, 1985, and 1988-89, where lengths start to creep upwards towards the clam digger length.

The stock market stayed relatively calm during the 80s. Market returns started off around 25% in 1980 before tanking to a negative 10% return in 1981. The market picked itself up, returning to positive territory again the next year and remained positive for the rest of the decade. There were a few close calls in 1984 and 1987 where returns dipped dangerously close to the red again but managed to remain positive at about a 2% return. Fashion stock returns remained positive for the majority of the decade, save a few downward spikes. 1980 through 1983 saw positive figures reaching a peak in 1983 at almost 65%. Returns plummeted downward the next year to negative 10% before rebounding in 1985 with a 42% return. 1986 also experienced positive returns before another sharp drop to a negative 30% return in 1987 in the fashion market. Both 1988 and

1989 returned to positive territory with fashion stocks ending the decade with a 15% return. 1983 to 1986 saw similar movements in hemlines and stock returns. Overall stock return movements were minimal, whereas fashion stock returns were a little more volatile, making their movements more obvious. However, both fashion and overall returns moved synchronously with hemlines. Outside this three-year period, there is no correlation revealed between the returns and hemlines. As for pants, the only areas where similar shifts can be seen is in a rise in pant length and stock returns from 1984 to 1985, as well as a slight decrease in both variables in 1986.

### *1990s*



### **Exhibit 9: Hemlines, stocks, and stock returns from 1990 to 1999.**

The 1990s are characterized by a mix of several different, sometimes opposite styles, overlapping each other. Some trends seen in this era include goth, grunge, postmodernism, minimalism, “business casual,” as well as a 1970s revival, with looks

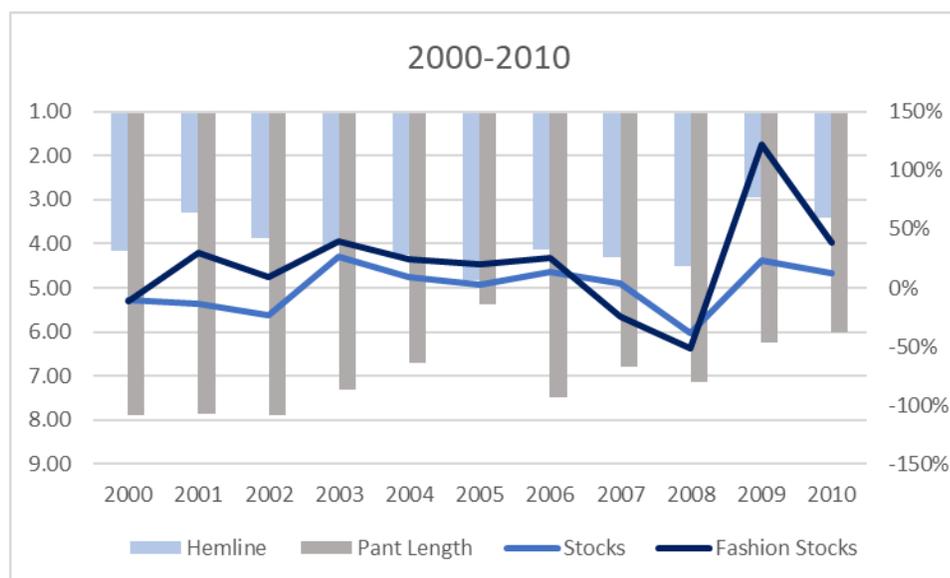
from only two decades earlier already being considered retro (Cole, D. J., & Deihl, N., 2015, pp. 393-395). Due to the increasing emphasis placed on individual designers instead of macro-trends, women's fashion was remarkably diverse and segmented, especially in hem lengths. Denim was still popular, and trousers became increasingly prevalent among women as well aligning with the "business casual" movement, which heavily influenced the pant trends seen in this decade (Cole, D. J., & Deihl, N., 2015, pp. 352-353).

Hemlines saw both ends of the spectrum during this decade. 1990 and 1991 were dominated by miniskirts before dropping significantly to a length below the knee in 1992. Skirt lengths began to approach a midi length in 1993 before bouncing back to above the knee lengths in 1994 and 1995. Hems fell to the knee and lower at the end of the decade, with one exception in 1997 where lengths rose to an above-the-knee style. Pants saw competing trends as well. Pant lengths were cropped in the early 90s, hovering around the seven-eighths style. Later in the decade, around 1995 to 1998, pants began to approach the classic length. At the end of the decade, pants sprang upwards to the seven-eighths length which finished out the decade.

The 90s was another decade of overwhelmingly positive returns for the market overall. Only 1990 and 1994 saw negative market returns of 6% and 1%, respectively. 1991 had a positive 26% return before dropping to lower returns of 4% and 7% in 1992 and 1993. Market returns topped out at 35% in 1995 and stayed positive until 1999. Fashion stock returns started the decade off in the red with a negative 35% return before catapulting in 1991 to an almost 65% return, the highest return seen in the 90s. Returns

fell gradually into the negatives in 1994 achieving a negative 18% return and remained negative through 1995. Both 1996 and 1997 saw favorable returns of 31% and 22%, respectively, before falling and staying in the negatives through the end of the decade. Hemlines and overall stock market returns did not see any similarities in movements during this decade. However, hemlines and fashion companies' stock returns did appear to move together from 1991 to 1993 and again from 1997 to 1999. Pants did not demonstrate any correlated movements with either the overall stock market or fashion stocks.

*2000s*



**Exhibit 10: Hemlines, stocks, and stock returns from 2000 to 2010.**

The 2000s era was a time of multiple divergent, sometimes contradictory, fashion niches. These styles included hipster, so called “geek chic,” steampunk, and the largest of the trends, “boho-chic” (Cole, D. J., & Deihl, N., 2015, pp. 431-434). These different

trends generated many shifts in hemline and pant lengths as exhibited from the graph above. The early part of the decade saw similar hem lengths as that of the late 90s, lingering around the knee. In 2001, hemlines rose to above-the-knee lengths before dropping again to the knee in 2004 and below the knee in 2005. Hemlines hovered around the knee again in 2006 before moving below-the-knee in 2007 and 2008. The last few years of the decade saw a big jump to above-the-knee hemlines in 2009 before sliding down the knee again in 2010. Pant lengths were static throughout the first few years of the 2000s, hovering around the classic length until 2002. 2003 through 2005 saw a significant rise from the seven-eighths length, below mid-calf, to the pedal pushers length, which lands right below the knee. Lengths fell dramatically again in 2006, approaching the classic length, before slowly climbing to the clam digger length at the end of the decade.

The overall market suffered negative returns in the first few years of the decade, finally attaining positive ground again in 2003 with a 26% return. Returns fell gradually, dipping dangerously close to negative territory in 2005, but managed to stay positive until 2007. However, in 2008, market returns sank to an all-time low for the decade, realizing a negative 38% before bouncing back to 23% in 2009. The stock market maintained its positive return to 2010, ending at 12%. Fashion stock returns also began the decade in negative territory but had pulled itself into positive numbers again in 2001 with a 30% return. Fashion stocks fell slightly to a 9% return in 2002 before managing to maintain returns in the range of 20-30% from 2003 to 2006. The next two years saw a significant decline in fashion stock returns, bottoming out at a negative 51% return in 2008. Fashion

stocks experienced an extraordinary spike skyward landing returns at 121% in 2009 before settling back down to a solid 38% return in 2010. Hemlines and fashion companies' stock returns seemed to follow each other throughout the decade. The only divergence occurred in 2003 as stock returns rose and hem lengths fell. Hemlines and the overall stock market return also seemed to move in tandem from 2004 to 2010. Pant lengths, on the other hand, did not reveal any movement in accordance with overall stock returns or fashion stock returns.

## Chapter 5: Regression Testing

Empirical testing was needed in order to analyze the relationship between hem and pant length trends and stock returns to discover if there is any relationship present between the variables. This type of testing required a regression model, which included the two variables being tested, stocks and fashion trends, as well as some control variables. The control variables were chosen based on “The Impact of Macroeconomic Variables on Stock Market Performance: A Taxonomic Approach” (Chang, S. J., & Ha, D., 1997, pp. 104-114). This study was completed by S.J. Chang and Daesung Ha to answer the question of which of the numerous economic variables prevalent in the market have the most significant impact on stock portfolios. Chang and Ha investigated 27 different economic activity measures and ran a correlation analysis among the economic measures and the market (Chang, S. J., & Ha, D., 1997, pp. 104-114). This correlation analysis showed which variables were considered “core variables,” or the ones that were closest related to the market. As mentioned in Chapter 3, there were 14 core variables found in this study: industrial production index, producer price index, consumer credit, consumer price index, corporate profits, real gross domestic product, unemployment rate, civilian labor rate, bank prime loan rate, capacity utilization, M1 money stock, vehicle sales, retail sales, and the 1-month Treasury Bill rate (Chang, S. J., & Ha, D., 1997, p. 111). With all the monthly data collected and organized, regression testing began.

All the regression analyses were ran through the statistical software, R. There were four different types of regression analyses completed. The first type was with the market returns and hemlines, the second with fashion companies stock returns and hemlines, the third with market returns and pants, and the fourth with fashion companies stock returns and pants. Each type of regression was ran with the stock returns as the dependent variable and then the hemline/pant data as the dependent variable. By switching the different variables out as the dependent variable, I was able to examine any correlation between hemlines/pants and stock returns going either way. For the regressions that were ran with the hemlines and pants as the dependent variable, the fashion trends were tested with the prior year's stock return data. This lag was intentionally included with the thought that fashion trends would take more time to adjust to any changes possibly caused by the stock market movements. The regression analyses also needed to be staggered as a result of not all the chosen macroeconomic variables being available back to 1925. Tests were completed for the following years: 1926, 1948, 1955, 1960, 1976, 1992, and 2001.

A multiple regression model was used to incorporate all the necessary variables. The formula includes the dependent variable, the one that is being changed, the independent variable, the one supposedly causing those changes, and the control variables. For example, to test if hemlines caused changes in stock returns in 1926, the formula would be:  $\text{lm}(\text{Stocks} \sim \text{Hemlines} + \text{Industrial Production Index} + \text{Producer Price Index})$ . Lm is the regression formula in R, stocks is the dependent variable, hemlines is the independent variable, and Industrial Production Index and Producer Price Index are

the macroeconomic control variables. The formula is very similar for testing if stock movements caused changes in hemlines in 1926:  $\text{lm}(\text{Hemlines} \sim \text{Stocks} + \text{Industrial Production Index} + \text{Producer Price Index})$ .

Due to the staggered nature of the calculations and the different types of analysis needed, a total of 44 regression analyses were ran. The results of the regression analyses, including coefficients, corresponding t-values, coefficients' significance, adjusted r-squared, and observations are outlined in Tables 1 through 8. Each coefficient's corresponding t-value is reported directly under the coefficient and is italicized for distinction. The adjusted r-squared and observations are reported at the bottom of each column. The significance codes are as follows: '\*\*\*' 0.001, '\*\*' 0.01, '\*' 0.05, '.' 0.1, ' ' 1. These codes are also listed at the bottom of each table for ease of referencing. The significance of the coefficients is what is most important in this type of testing. These codes will reveal if the coefficients are statistically significant enough to indicate a causal relationship between the variables being tested. In the tests where hemlines and pants were the independent variable, only the hem and pant lengths that were recorded will appear in the regression results. Therefore, if a particular length was not recorded as a trend in a specific year, that length will not have any output.

Stocks and Hemlines							
	1926	1948	1955	1960	1976	1992	2001
(Intercept)	1.2546	-1.552	-4.1090	-4.8785	-12.5600	-24.7600	101.0000
	<i>1.35</i>	<i>-0.44</i>	<i>-1.07</i>	<i>-1.15</i>	<i>-0.39</i>	<i>-0.32</i>	<i>0.63</i>
Hemlines - 1	0.0586	-0.0731	0.0600	0.0798	1.1470	-1.0090	1.6000
	<i>0.05</i>	<i>-0.08</i>	<i>0.07</i>	<i>0.08</i>	<i>1.00</i>	<i>-0.65</i>	<i>0.31</i>
Hemlines - 2	-0.6501	-0.6552	-0.5146	-0.4899	-0.7602	-1.4060	-1.5100
	<i>-0.71</i>	<i>-0.94</i>	<i>-0.72</i>	<i>-0.67</i>	<i>-0.91</i>	<i>-1.20</i>	<i>-0.85</i>
Hemlines - 3	-0.1903	-0.2274	-0.1067	-0.0881	0.0533	-0.4628	0.7200
	<i>-0.21</i>	<i>-0.33</i>	<i>-0.15</i>	<i>-0.12</i>	<i>0.07</i>	<i>-0.47</i>	<i>0.48</i>
Hemlines - 4	-0.2474	-0.4216	-0.2444	-0.2230	0.4858	-0.1304	0.1340
	<i>-0.28</i>	<i>-0.62</i>	<i>-0.35</i>	<i>-0.31</i>	<i>0.59</i>	<i>-0.13</i>	<i>0.09</i>
Hemlines - 5	-0.3337	0.0489	0.2525	0.1459	0.3889	0.6865	0.5680
	<i>-0.37</i>	<i>0.07</i>	<i>0.33</i>	<i>0.18</i>	<i>0.43</i>	<i>0.60</i>	<i>0.33</i>
Hemlines - 6	-0.8978	-0.1456	-0.1282	-0.0421	-0.3158	-0.5347	-0.8640
	<i>-0.99</i>	<i>-0.20</i>	<i>-0.17</i>	<i>-0.05</i>	<i>-0.33</i>	<i>-0.43</i>	<i>-0.40</i>
Hemlines - 7	-0.4210	-1.616	-1.1680	-1.1465	-2.0900	-1.5030	-3.7400
	<i>-0.41</i>	<i>-1.66</i>	<i>-1.09</i>	<i>-1.05</i>	<i>-1.65</i>	<i>-0.88</i>	<i>-1.10</i>
Hemlines - 8	-0.0208	-0.5479	-0.4914	-0.5062	-0.5378	-0.8235	0.3980
	<i>-0.01</i>	<i>-0.25</i>	<i>-0.22</i>	<i>-0.23</i>	<i>-0.24</i>	<i>-0.36</i>	<i>0.11</i>
IPI	-0.0266	-0.0702	-0.1321	-0.1357	-0.1203	-0.1294	-0.2910
	<i>-1.14</i>	<i>-0.97</i>	<i>-1.59</i>	<i>-1.55</i>	<i>-0.98</i>	<i>-0.50</i>	<i>-0.29</i>
PPI	0.0140	-0.0742*	-0.1081**	-0.1087**	-0.0929	-0.0962	0.1550
	<i>1.06</i>	<i>-2.51</i>	<i>-2.79</i>	<i>-2.75</i>	<i>-1.26</i>	<i>-0.72</i>	<i>0.55</i>
ConsumerCredit		-0.0036*	-0.0021	-0.0020	-0.0042	0.0018	0.0215
		<i>-2.30</i>	<i>-1.17</i>	<i>-1.06</i>	<i>-1.06</i>	<i>0.17</i>	<i>0.81</i>
CPI		0.0806*	0.0844*	0.0790*	0.0493	0.0987	-0.6930
		<i>2.40</i>	<i>2.25</i>	<i>1.99</i>	<i>0.32</i>	<i>0.27</i>	<i>-0.78</i>
CorporateProfits		0.0047**	0.0048**	0.0049**	0.0068*	0.0027	0.0004
		<i>2.92</i>	<i>2.93</i>	<i>2.87</i>	<i>2.44</i>	<i>0.67</i>	<i>0.08</i>
GDP		0.1226**	0.1699***	0.1770**	0.1953*	0.3797*	0.6461*
		<i>3.04</i>	<i>3.31</i>	<i>3.08</i>	<i>2.33</i>	<i>2.28</i>	<i>2.21</i>
UnempRate		0.1614	0.09731	0.0792	-0.0988	0.6054	1.5900
		<i>0.90</i>	<i>0.47</i>	<i>0.36</i>	<i>-0.15</i>	<i>0.58</i>	<i>0.67</i>
LaborForce		4.40E-05	0.0001	0.0001	0.0003	0.0001	-0.0003
		<i>0.47</i>	<i>1.06</i>	<i>1.15</i>	<i>0.93</i>	<i>0.12</i>	<i>-0.23</i>
LoanRate			0.1432	0.1534	0.0307	0.5667	0.0564
			<i>1.44</i>	<i>1.50</i>	<i>0.20</i>	<i>1.34</i>	<i>0.03</i>
CapacityUtilization					-0.0403	0.1064	-0.2800
					<i>-0.20</i>	<i>0.35</i>	<i>-0.23</i>
M1					-0.0043	0.0019	0.0013
					<i>-0.75</i>	<i>0.21</i>	<i>0.07</i>
VehicleSales					-0.1003	0.2725	0.4620
					<i>-0.55</i>	<i>0.55</i>	<i>0.62</i>
RetailSales						-2.57E-05	0.0001
						<i>-0.23</i>	<i>0.47</i>
Tbill							0.7810
							<i>0.57</i>
Adjusted R-squared	-0.0063	0.0348	0.0350	0.0316	0.0388	0.0538	0.1262
Observations	1,020	756	665	612	420	228	114

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

**Table 1: Regression Results for Stock Market Returns and Hemlines.**

This table reports the results from the regression analyses of the overall stock market returns and hemline lengths. The dependent variable, overall stock returns, are the annualized figures for returns on the S&P 500 Index from 1926 to 2010. The independent variables are the hemline lengths, 1 through 8, that were collected through stratified sampling from *Vogue*. Other independent variables were the various macroeconomic controls that were closely related to the stock market. The limited availability of the macroeconomic control data during the time period caused the need for staggered regression analyses. Each column corresponds to a regression analysis run with new variables included each time. T-values are reported in italics under the estimated coefficients. Number of observations and the adjusted r-squared is reported at the bottom of each column. Significance codes are shown at the bottom of the table. Definitions of macroeconomic controls are included in Table 9 in the appendix.

Table 1 shows the results for each regression analysis conducted between stock market returns and hemlines. The regression results for 1926, 1955, 1960, 1992, and 2001 do not show statistical significance for any of the hemline lengths. In the 1948 and 1976 results, hemline length 7 (ballerina length) shows a statistical significance of 0.1, as indicated by the ‘.’ significance code. Several of the macroeconomic controls have statistically significant relationships with the overall stock market. The producer price index shows a negative statistically significant relationship with stocks in the 1948, 1955, and 1960 regression results. Consumer credit also indicates a negative relationship with stocks in the 1948 results with a statistical significance of 0.05. The consumer price index showed a positive relationship with the stock market in the years 1948, 1955, and 1960. Corporate profits also showed a positive statistically significant relationship in the 1948, 1955, 1960, and 1976 regression results. The stock market and gross domestic product also appear to have a statistically significant positive relationship shown in each regression output from 1948 to 2001.

Fashion Stocks and Hemlines							
	1926	1948	1955	1960	1976	1992	2001
(Intercept)	1.3226	-9.0516	-11.3800	-11.4400	15.7950	4.4240	321.5000
	0.97	-1.68	-1.93	-1.73	0.32	0.03	1.14
Hemlines - 1	-0.0400	0.4829	0.8616	0.8267	0.5430	-2.5500	-7.1460
	-0.02	0.35	0.60	0.56	0.31	-0.99	-0.80
Hemlines - 2	0.0730	0.1195	0.4400	0.4192	-0.8332	-0.4900	-1.0320
	0.05	0.11	0.40	0.37	-0.66	-0.25	-0.33
Hemlines - 3	0.0098	-0.4443	-0.2192	-0.2254	0.0195	0.4096	2.6160
	0.01	-0.42	-0.20	-0.20	0.02	0.25	0.99
Hemlines - 4	-0.0368	-0.7375	-0.5119	-0.6412	-0.0634	-0.7329	0.1221
	-0.03	-0.72	-0.47	-0.57	-0.05	-0.46	0.04
Hemlines - 5	0.7899	1.0832	1.4560	1.541	0.8983	1.6800	1.9840
	0.59	0.97	1.24	1.25	0.65	0.89	0.66
Hemlines - 6	-0.7771	0.2755	0.7888	1.222	1.0570	0.2924	4.2100
	-0.58	0.25	0.66	0.93	0.72	0.14	1.11
Hemlines - 7	1.1936	-1.1557	-0.1217	-0.03224	0.0051	2.5390	4.2700
	0.80	-0.79	-0.07	-0.02	0.00	0.91	0.71
Hemlines - 8	0.1587	-1.5690	-1.3830	-1.406	-1.6858	-1.8600	2.1610
	0.07	-0.48	-0.41	-0.40	-0.49	-0.50	0.35
IPI	-0.0423	-0.1441	-0.2589*	-0.2977*	-0.2556	-0.4800	-1.2020
	-1.23	-1.32	-2.03	-2.18	-1.37	-1.12	-0.68
PPI	0.0236	-0.1093*	-0.1891**	-0.1916**	-0.1025	-0.0102	0.4804
	1.22	-2.46	-3.17	-3.11	-0.91	-0.05	0.98
ConsumerCredit		0.0015	0.0048	0.0056	-0.0026	-0.0019	0.0513
		0.61	1.71	1.90	-0.44	-0.11	1.09
CPI		0.0298	0.0664	0.06662	-0.0472	-0.2469	-2.9350
		0.59	1.15	1.08	-0.20	-0.40	-1.87
CorporateProfits		0.0027	0.0026	0.002413	0.0083	0.0024	-0.0047
		1.11	1.00	0.91	1.96	0.36	-0.47
GDP		0.2228***	0.3299***	0.3754***	0.3594**	0.6120*	0.7973
		3.66	4.17	4.19	2.82	2.23	1.55
UnempRate		0.7518**	0.7381*	0.6443	-0.4900	1.1300	7.5770
		2.78	2.33	1.85	-0.48	0.66	1.82
LaborForce		0.0002	0.0002	0.000246	0.0005	0.0006	-1.96E-06
		1.17	1.50	1.55	1.03	0.50	0.00
LoanRate			0.3363*	0.3764*	0.1128	1.2320	-0.6440
			2.19	2.36	0.47	1.76	-0.22
CapacityUtilization					-0.4954	-0.5932	-0.6433
					-1.59	-1.19	-0.29
M1					-0.0006	-0.0021	-0.0244
					-0.07	-0.14	-0.81
VehicleSales					0.1232	0.5848	-0.9207
					0.45	0.72	-0.71
RetailSales						0.0001	0.0008
						0.65	1.97
Tbill							2.8830
							1.18
Adjusted R-squared	-0.0019	0.0557	0.0616	0.0583	0.0590	0.0633	0.2006
Observations	1,020	756	665	612	420	228	114

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

**Table 2: Regression Results for Fashion Companies Stock Returns and Hemlines.**

This table reports the results from the regression analyses of the stock market returns for fashion companies and hemline lengths. The dependent variable, fashion stock returns, are the mean annualized figures for returns on stocks with an SIC code of 22, 23, and 56 from 1926 to 2010. The independent variables are the hemline lengths, 1 through 8, that were collected through stratified sampling from *Vogue*. Other independent variables were the various macroeconomic controls that were closely related to the stock market. The limited availability of the macroeconomic control data during the time period caused the need for staggered regression analyses. Each column corresponds to a regression analysis ran with new variables included each time. T-values are reported in italics under the estimated coefficients. Number of observations and the adjusted r-squared is reported at the bottom of each column. Significance codes are shown at the bottom of the table. Definitions of macroeconomic controls are included in Table 9 in the appendix.

Table 2 displays the regression output for each test completed between fashion companies stock returns and hemlines. None of the hem lengths in any of the years demonstrate a statistically significant relationship with fashion companies stock returns. However, several of the macroeconomic controls do reflect a statistically significant relationship with fashion companies' stock returns. The industrial production index indicated a negative relationship with fashion stock returns in the 1955 and 1960 output. The producer price index also showed a negative relationship with fashion stock returns in the years 1948, 1955, and 1960. Consumer credit revealed a positive relationship to fashion stocks in 1960 with a statistical significance of 0.1. The consumer price index showed a slight significance in its negative relationship with fashion stocks. Corporate profits also illustrated a positive relationship in 1976 with 0.1 statistical significance. Gross domestic profit reflected a positive relationship with fashion stocks in the 1948, 1955, 1960, 1976, and 1992 results. Unemployment rate indicated a positive relationship with diminishing statistical significance in the years 1948, 1955, 1960, and 2001. Fashion stocks and loan rate were shown to have a positive relationship in the 1955, 1960, and 1992 outputs. The last macroeconomic variable to exhibit a positive relationship with fashion stocks was retail sales in 2001 with a 0.1 statistical significance.

Stocks and Pants				
	1960	1976	1992	2001
(Intercept)	-5.5370	-9.5147	-45.4100	59.9500
	-1.34	-0.29	-0.59	0.38
Pants - 1	-1.9450	-1.2852	-0.7064	-0.0983
	-1.32	-0.63	-0.23	-0.03
Pants - 2	0.5068	0.4177	0.5836	-0.0796
	0.36	0.21	0.27	-0.03
Pants - 3	-1.4700	-1.7140	-	-
	-0.34	-0.39	-	-
Pants - 4	0.0683	0.2267	1.7210	3.3450
	0.07	0.20	1.02	1.56
Pants - 5	-0.4287	-1.1833	-5.6750	-2.7490
	-0.43	-0.88	-1.28	-0.59
Pants - 6	0.8994	1.0664	0.1373	1.1690
	0.94	0.99	0.09	0.61
Pants - 7	-0.0769	-0.0620	1.504.	3.2710*
	-0.14	-0.09	1.77	2.50
Pants - 8	-0.1439	0.0961	0.0564	0.8725
	-0.32	0.17	0.08	0.75
IPI	-0.1374.	-0.1330	-0.0687	-0.0433
	-1.65	-1.10	-0.27	-0.05
PPI	-0.1113**	-0.0973	-0.0665	0.2153
	-2.80	-1.31	-0.50	0.81
ConsumerCredit	-0.0017	-0.0033	0.0049	0.0189
	-0.90	-0.85	0.48	0.73
CPI	0.0739.	0.0481	0.0083	-1.1940
	1.87	0.31	0.02	-1.41
CorporateProfits	0.0048**	0.0065*	0.0026	0.0028
	2.81	2.29	0.66	0.50
GDP	0.1768**	0.1922*	0.3466*	0.4931.
	3.12	2.31	2.13	1.72
UnempRate	0.0723	-0.1690	0.9029	1.9070
	0.35	-0.26	0.88	0.86
LaborForce	0.0001	0.0002	0.0002	0.0005
	1.28	0.83	0.33	0.37
LoanRate	0.1685	0.1055	0.6814	0.8847
	1.67	0.67	1.63	0.55
CapacityUtilization		-0.0404	0.1620	-0.6084
		-0.20	0.54	-0.51
M1		-0.0026	0.0018	0.0033
		-0.45	0.20	0.21
VehicleSales		-0.0868	0.4299	0.2626
		-0.47	0.88	0.36
RetailSales			-5.96E-05	0.0002
			-0.53	0.73
Tbill				-0.0515
				-0.04
Adjusted R-squared	0.0331	0.0237	0.0712	0.1784
Observations	612	420	228	114

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

**Table 3: Regression Results for Stock Market Returns and Pants.**

This table reports the results from the regression analyses of the overall stock market returns and pant lengths. The dependent variable, overall stock returns, are the annualized figures for returns on the S&P 500 Index from 1960 to 2010. The independent variables are the pant lengths, 1 through 8, that were collected through stratified sampling from *Vogue*. Other independent variables were the various macroeconomic controls that were closely related to the stock market. The limited availability of the macroeconomic control data during the time period caused the need for staggered regression analyses. Each column corresponds to a regression analysis ran with new variables included each time. T-values are reported in italics under the estimated coefficients. Number of observations and the adjusted r-squared is reported at the bottom of each column. Significance codes are shown at the bottom of the table. Definitions of macroeconomic controls are included in Table 9 in the appendix.

Table 3 presents the results of the regression analyses run between stock market returns and pants. Due to the fact that pants data was collected starting in the 1960s, the regression analyses are only conducted in the years 1960, 1976, 1992, and 2001. The results in the years 1960 and 1976 do not show statistical significance for any of the pant lengths. In the 1992 results, only pant length 7 (seven-eighths) is shown to have a statistical significance of 0.1 as indicated by the ‘.’ next to the coefficient. The 2001 results demonstrate a stronger statistical significance of 0.05 for pant length 7 as indicated by the ‘\*’ next to the coefficient. The macroeconomic variables also indicated some relationships of varying significance. The industrial production index showed a negative relationship to stocks with 0.1 statistical significance in the 1960 output. Producer price index and stocks also reflected a negative relationship in the 1960 output, but with a statistical significance of 0.01. The consumer price index showed a positive relationship with stocks in the 1960 regression results with a significance of 0.1. Corporate profits revealed a stronger positive relationship with the stock market in the years 1960 and 1976. Gross domestic profit indicated a positive relationship with decreasing statistical significance in each year’s output from 1960 to 2001.

Fashion Stocks and Pants				
	1960	1976	1992	2001
(Intercept)	-14.2900*	15.4930	19.5300	328.7000
	-2.21	0.32	0.15	1.15
Pants - 1	1.0680	2.2366	2.3600	2.6670
	0.46	0.73	0.46	0.44
Pants - 2	1.3680	-1.0665	-2.0750	-4.9140
	0.62	-0.35	-0.57	-1.01
Pants - 3	-0.0743	-0.5658	-	-
	-0.01	-0.08	-	-
Pants - 4	0.9296	0.7074	1.9240	2.3960
	0.62	0.41	0.69	0.61
Pants - 5	2.4290	0.7585	-11.6600	-7.1850
	1.57	0.37	-1.59	-0.85
Pants - 6	1.2030	0.6075	0.7183	0.5121
	0.81	0.37	0.30	0.15
Pants - 7	0.3848	-0.2578	0.1034	1.1390
	0.46	-0.25	0.07	0.48
Pants - 8	0.4033	0.0792	0.5955	1.1970
	0.58	0.09	0.51	0.56
IPI	-0.2693*	-0.2203	-0.2660	-1.4240
	-2.07	-1.21	-0.62	-0.81
PPI	-0.1911**	-0.1246	0.0403	0.4810
	-3.07	-1.10	0.18	1.00
ConsumerCredit	0.0052.	-0.0016	0.0023	0.0531
	1.79	-0.27	0.14	1.13
CPI	0.0455	-0.0108	-0.4128	-3.046.
	0.74	-0.05	-0.68	-1.98
CorporateProfits	0.002185	0.0075.	0.0028	-0.0047
	0.82	1.75	0.43	-0.46
GDP	0.3389***	0.3242*	0.5422*	0.7292
	3.82	2.57	2.00	1.40
UnempRate	0.6760*	-0.2327	1.6610	6.7730.
	2.11	-0.23	0.97	1.68
LaborForce	0.0003.	0.0004	0.0004	0.0000
	1.80	0.82	0.40	0.01
LoanRate	0.3220*	0.1036	1.1310	-0.3366
	2.04	0.44	1.63	-0.12
CapacityUtilization		-0.4142	-0.5992	-0.3976
		-1.35	-1.21	-0.18
M1		-0.0011	-0.0017	-0.0170
		-0.13	-0.11	-0.57
VehicleSales		0.1284	0.5829	-1.0050
		0.46	0.72	-0.75
RetailSales			0.0001	0.0008.
			0.51	1.95
Tbill				2.1210
				0.85
Adjusted R-squared	0.0525	0.0548	0.0656	0.1937
Observations	612	420	228	114

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

**Table 4: Regression Results for Fashion Companies Stock Returns and Pants.**

This table reports the results from the regression analyses of the stock market returns for fashion companies and pant lengths. The dependent variable, fashion stock returns, are the mean annualized figures for returns on stocks with an SIC code of 22, 23, and 56 from 1960 to 2010. The independent variables are the pant lengths, 1 through 8, that were collected through stratified sampling from *Vogue*. Other independent variables were the various macroeconomic controls that were closely related to the stock market. The limited availability of the macroeconomic control data during the time period caused the need for staggered regression analyses. Each column corresponds to a regression analysis ran with new variables included each time. T-values are reported in italics under the estimated coefficients. Number of observations and the adjusted r-squared is reported at the bottom of each column. Significance codes are shown at the bottom of the table. Definitions of macroeconomic controls are included in Table 9 in the appendix.

Table 4 includes the regression results for fashion companies' stock returns and pants. There was no statistical significance recorded for any of the pant lengths in any of the regressions completed. There were a few statistically significant coefficients for the macroeconomic variables. Both the industrial production index and the producer price index indicated a negative relationship with fashion stocks in the 1960 regression output. The consumer credit coefficient showed a positive correlation to fashion companies' stock returns in 1960 with a statistical significance of 0.1. The consumer price index had a 0.1 statistically significant coefficient in the 2001 results. Corporate profits indicated a positive relationship with fashion stocks in the 1976 output. Gross domestic profit also revealed a positive relationship of varying significance with fashion stocks in the 1960, 1976, and 1992 regression results. Unemployment rate signaled another positive relationship with fashion stocks in the 1960 and 2001 outputs. Finally, loan rate and labor force both showed a positive relationship with fashion stocks in 1960.

Hemlines and Stocks							
	1926	1948	1955	1960	1976	1992	2001
(Intercept)	5.8177*** 70.36	10.4500*** 7.82	7.2190*** 5.15	1.4790 1.01	-4.5332 -0.40	56.6500* 1.98	-17.5000 -0.37
Stocks	-0.0013 -0.15	-0.0003 -0.02	0.0000 0.00	-0.0049 -0.33	-0.0112 -0.64	0.0154 0.59	0.0016 0.05
IPI	-0.0519*** -8.19	0.0555* 2.03	0.1363*** 4.38	0.1913*** 6.41	0.1941** 4.66	0.1012 1.08	-0.0693 -0.24
PPI	0.0138*** 3.64	-0.0125 -1.09	-0.0201 -1.38	-0.0377** -2.72	-0.0243 -0.92	-0.0004 -0.01	-0.1599. -1.91
ConsumerCredit		-0.0018** -2.72	-0.0025*** -3.44	-0.0026*** -3.80	-0.0004 -0.30	-0.0032 -0.83	-0.0086 -1.09
CPI		0.0518*** 3.88	0.0349* 2.44	0.0105 0.75	0.0559 1.04	0.0245 0.18	0.5521* 2.15
CorporateProfits		0.0022** 3.25	0.0024*** 3.51	0.0025*** 3.86	0.0002 0.22	0.0023 1.59	-0.0014 -0.83
GDP		-0.0169 -1.09	-0.0500** -2.61	-0.0464* -2.31	-0.0655* -2.16	-0.1414* -2.23	0.0169 0.18
UnempRate		0.2138** 3.20	0.4683*** 6.22	0.6887*** 9.23	0.7632** 3.27	0.1626 0.42	-1.3730. -1.87
LaborForce		-0.0001*** -3.70	-0.0001*** -3.53	-0.0001* -2.37	-0.0002. -1.70	-0.0004 -1.56	-2.00E-04 -0.58
LoanRate			-0.0384 -1.01	-0.0252 -0.69	-0.1216* -2.14	-0.2763. -1.73	-1.3220* -2.59
CapacityUtilization					0.1750* 2.39	-0.0858 -0.73	0.0757 0.20
M1					-0.0047* -2.34	-0.0092** -2.67	-0.0015 -0.28
VehicleSales					-0.0576 -0.91	-0.2675 -1.48	0.0722 0.32
RetailSales						0.0001 1.49	0.0000 0.29
Tbill							0.7447. 1.76
Adjusted R-squared	0.2577	0.1354	0.0879	0.1976	0.2121	0.1326	0.1241
Observations	954	690	600	547	360	183	88

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

**Table 5: Regression Results for Hemlines and Stock Returns.**

This table reports the results from the regression analyses of the overall stock market returns and hemline lengths. The dependent variables are the hemline lengths, 1 through 8, that were collected through stratified sampling from *Vogue*. The independent variable, overall stock returns, are the annualized figures for returns of the S&P 500 Index from 1926 to 2010. Other independent

variables were the various macroeconomic controls that were closely related to the stock market. The limited availability of the macroeconomic control data during the time period caused the need for staggered regression analyses. Each column corresponds to a regression analysis ran with new variables included each time. T-values are reported in italics under the estimated coefficients. Number of observations and the adjusted r-squared is reported at the bottom of each column. Significance codes are shown at the bottom of the table. Definitions of macroeconomic controls are included in Table 9 in the appendix.

Table 5 contains the regression results between stock returns and hemlines with hemlines as the dependent variable. The stock returns coefficient was not statistically significant in any of the tests ran from 1926 to 2001. However, almost all of the macroeconomic variables were statistically significant enough to indicate a relationship to hemlines. The industrial production index showed a negative correlation to hemlines in the 1926 output, but a positive correlation in 1948, 1955, 1960, and 1976. The producer price index indicated a positive relationship with hemlines in 1926, but a negative correlation in later outputs from the 1960 and 2001 tests. The coefficients for consumer credit revealed a negative correlation with hemlines in the 1948, 1955, and 1960 regressions. Consumer price index and hemlines also showed a positive correlation in 1948, 1955, and 2001. Moreover, corporate profits signaled a positive relationship with hemlines in the first three regression tests. Gross domestic profit indicated a statistically significant negative correlation in 1955, 1960, 1976, and 1992. Hemlines and unemployment rate were shown to have a positive correlation from 1948 to 1976 and a negative correlation in 2001. The labor force coefficient suggested a negative relationship of declining statistical significance from 1948 to 1976. Loan rate coefficients implied a negative relationship with hemlines in the last three years. Capacity utilization and hemlines indicated a positive statistically significant relationship in 1976, while the M1

money stock showed a negative indication with hemlines in 1976 and 1992. The 30-day T-bill maturity rate implied a positive correlation with a statistical significance of 0.1.

Hemlines and Fashion Stocks							
	1926	1948	1955	1960	1976	1992	2001
(Intercept)	5.8206*** 70.18	10.3600*** 7.74	7.0834*** 5.05	1.3370 0.92	-4.5050 -0.40	55.7300. 1.95	-25.7800 -0.55
Fashion Stocks	-0.0026 -0.43	-0.0123 -1.29	-0.0135 -1.38	-0.0136 -1.46	0.0096 0.82	0.0179 1.11	0.0224 1.24
IPI	-0.0520*** -8.20	0.0540* 1.97	0.1335*** 4.29	0.1886*** 6.32	0.1980*** 4.75	0.1066 1.14	-0.0451 -0.16
PPI	0.0138*** 3.65	-0.014 -1.23	-0.0226 -1.54	-0.0397** -2.86	-0.0214 -0.81	-0.0022 -0.04	-0.1703* -2.05
ConsumerCredit		-0.0018** -2.74	-0.0025*** -3.41	-0.0026*** -3.72	-0.0004 -0.27	-0.0032 -0.84	-0.0103 -1.31
CPI		0.0525*** 3.96	0.0359* 2.53	0.0109 0.79	0.0556 1.04	0.0336 0.24	0.6104* 2.37
CorporateProfits		0.0023*** 3.34	0.0025*** 3.61	0.0025*** 3.92	0.0001 0.08	0.0023 1.61	-0.0012 -0.69
GDP		-0.0143 -0.93	-0.0461* -2.41	-0.0427* -2.12	-0.0696* -2.30	-0.1459* -2.30	0.0019 0.02
UnempRate		0.2240*** 3.34	0.4795*** 6.35	0.6984*** 9.34	0.7632** 3.27	0.1361 0.35	-1.5670* -2.12
LaborForce		-0.0001*** -3.66	-0.0001*** -3.47	-0.0001* -2.29	-0.0002. -1.76	-0.0004 -1.59	-2.00E-04 -0.51
LoanRate			-0.0355 -0.93	-0.0222 -0.61	-0.1257* -2.22	-0.2907. -1.82	-1.3180* -2.61
CapacityUtilization					0.1794* 2.45	-0.0731 -0.62	0.0761 0.21
M1					-0.0047* -2.33	-0.0092** -2.65	-0.0012 -0.23
VehicleSales					-0.0594 -0.94	-0.2773 -1.53	0.0718 0.32
RetailSales						0.0001 1.42	0.0000 0.13
Tbill							0.6641 1.57
Adjusted R-squared	0.2579	0.1375	0.0908	0.2006	0.2127	0.1369	0.1397
Observations	954	690	600	547	360	183	88

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

**Table 6: Regression Results for Hemlines and Fashion Companies Stock Returns.**

This table reports the results from the regression analyses of the stock market returns for fashion companies and hemline lengths. The dependent variables are the hemline lengths, 1 through 8, that were collected through stratified sampling from *Vogue*. The independent variable, fashion stock returns, are the mean annualized figures for returns of stocks with an SIC code of 22, 23, and 56 from 1926 to 2010. Other independent variables were the various macroeconomic controls that were closely related to the stock market. The limited availability of the macroeconomic control data during the time period caused the need for staggered regression analyses. Each column corresponds to a regression analysis ran with new variables included each time. T-values are reported in italics under the estimated coefficients. Number of observations and the adjusted r-squared is reported at the bottom of each column. Significance codes are shown at the bottom of the table. Definitions of macroeconomic controls are included in Table 9 in the appendix.

Table 6 shows the regression output for hemlines and fashion companies' stock returns with hemlines as the dependent variable. The fashion companies' stock returns did not indicate any statistically significant relationship with hemlines in the regression outputs from 1926 to 2001. However, all the macroeconomic variables other than vehicle sales, retail sales, and T-bill maturity rate, indicated a statistically significant relationship with hemlines. The industrial production index showed a negative correlation in the 1926 output and a positive correlation in the 1948 through 1976 results. The producer price index implied a positive correlation in the 1926 results, but a negative correlation in the 1960 and 2001 outputs. Consumer credit showed a negative relationship with hemlines in 1948, 1955, and 1960. The consumer price index coefficients indicated a positive correlation in 1948, 1955, and 2001. Corporate profits also suggested a positive relationship with hemlines in the first three test outputs. Gross domestic product and hemlines showed a negative correlation in the 1955, 1960, 1976, and 1992 outputs. Unemployment rate implied a positive relationship with hemlines from 1955 to 1976 and a negative relationship in 2001. The labor force and loan rate coefficients also indicated negative correlations with hemlines. Capacity utilization suggests a statistically

significant relationship with hemlines in 1976. The M1 money stock coefficient also indicated a negative correlation to hemlines in the 1976 and 1992 regression outputs.

Pants and Stocks				
	1960	1976	1992	2001
(Intercept)	8.777***	33.2980**	7.9400	3.2019
	5.05	2.66	0.24	0.03
Stocks	-0.0156	-0.0246	-0.0057	0.0011
	-0.90	-1.26	-0.19	0.02
IPI	0.1082**	0.0233	-0.2253.	0.6556
	3.18	0.44	-1.70	1.02
PPI	-0.0025	-0.0367	-0.0591	-0.1688
	-0.16	-1.20	-1.08	-1.23
ConsumerCredit	-0.0018*	-0.0020	-0.0049	-0.0247
	-2.20	-1.31	-1.09	-1.52
CPI	0.0236	0.1489*	0.1619	0.2718
	1.44	2.30	1.07	0.61
CorporateProfits	-0.0003	0.0012	0.0001	0.0004
	-0.35	1.08	0.06	0.12
GDP	0.0147	-0.0297	0.0482	-0.0004
	0.60	-0.92	0.69	0.00
UnempRate	0.2036*	-0.2787	-0.6407	-1.6226
	2.36	-1.08	-1.35	-1.33
LaborForce	-0.0001*	-0.0003*	0.0001	0.0001
	-2.15	-2.35	0.27	0.18
LoanRate	-0.0336	-0.0497	0.1475	-0.8308
	-0.81	-0.85	0.82	-1.07
CapacityUtilization		-0.0537	-0.0470	-1.1595
		-0.70	-0.39	-1.66
M1		-0.0026	-0.0064	0.0020
		-1.01	-1.46	0.16
VehicleSales		0.0322	-0.1179	-0.3974
		0.48	-0.61	-1.04
RetailSales			4.75E-05	0.0002
			1.04	1.43
Tbill				0.3263
				0.54
Adjusted R-squared	0.0212	0.0361	0.0949	-0.0409
Observations	446	314	149	74
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				

**Table 7: Regression Results for Pants and Stock Returns.**

This table reports the results from the regression analyses of the overall stock market returns and pant lengths. The dependent variables are the pant lengths, 1 through 8, that were collected through stratified sampling from *Vogue*. The independent variable, overall stock returns, are the annualized figures for returns of the S&P 500 Index from 1960 to 2010. Other independent variables were the various macroeconomic controls that were closely related to the stock market. The limited availability of the macroeconomic control data during the time period caused the need for staggered regression analyses. Each column corresponds to a regression analysis ran with new variables included each time. T-values are reported in italics under the estimated coefficients. Number of observations and the adjusted r-squared is reported at the bottom of each column. Significance codes are shown at the bottom of the table. Definitions of macroeconomic controls are included in Table 9 in the appendix.

The above table shows the regression output between pants and stock returns with pants as the dependent variable. The stock return coefficient did not indicate any statistically significant relationship with pant length trends. Only a few of the macroeconomic variables were revealed to have a correlation with pants that was statistically significant. The industrial production index implied a relatively strong positive correlation with pants in the 1960 output but implied a negative correlation in the 1992 result. The consumer credit coefficient showed a negative relationship with pants in 1960 with a statistical significance of 0.05. Consumer price index indicated a positive correlation in the 1992 output. Unemployment rate also implied a positive relationship with pants in 1960 with a 0.05 statistical significance. The labor force coefficient revealed a negative statistically significant correlation in the 1960 and 1976 outputs.

Pants and Fashion Stocks				
	1960	1976	1992	2001
(Intercept)	8.7420***	33.5092**	7.3760	-15.9100
	5.02	2.67	0.22	-0.16
Fashion Stocks	-0.0060	-0.0085	0.0150	0.0252
	-0.54	-0.67	0.88	0.88
IPI	0.1079**	0.0229	-0.2273.	0.7259
	3.16	0.44	-1.72	1.13
PPI	-0.0019	-0.0358	-0.0611	-0.1828
	-0.12	-1.17	-1.12	-1.35
ConsumerCredit	-0.0018*	-0.0019	-0.0050	-0.0280.
	-2.10	-1.25	-1.11	-1.71
CPI	0.0224	0.1480*	0.1655	0.3483
	1.37	2.28	1.10	0.79
CorporateProfits	-0.0003	0.0011	0.0000	0.0003
	-0.43	1.01	-0.02	0.10
GDP	0.0140	-0.0337	0.0407	-0.0131
	0.56	-1.04	0.59	-0.09
UnempRate	0.2048*	-0.2759	-0.6529	-1.7930
	2.36	-1.06	-1.38	-1.47
LaborForce	-0.0001*	-0.0003*	0.0001	0.0002
	-2.13	-2.35	0.26	0.28
LoanRate	-0.0342	-0.0513	0.1272	-0.8349
	-0.82	-0.88	0.71	-1.08
CapacityUtilization		-0.0554	-0.0320	-1.1680.
		-0.71	-0.26	-1.69
M1		-0.0026	-0.0065	0.0034
		-1.00	-1.48	0.27
VehicleSales		0.0372	-0.1370	-0.3895
		0.55	-0.71	-1.03
RetailSales			5.01E-05	0.0002
			1.10	1.31
Tbill				0.2660
				0.44
Adjusted R-squared	0.0200	0.0325	0.0997	-0.0276
Observations	446	314	149	74
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				

**Table 8: Regression Results for Pants and Fashion Companies' Stock Returns.**

This table reports the results from the regression analyses of the stock market returns for fashion companies and pant lengths. The dependent variables are the pant lengths, 1 through 8, that were collected through stratified sampling from *Vogue*. The independent variable, fashion stock returns, are the mean annualized figures for returns of stocks with an SIC code of 22, 23, and 56 from 1960 to 2010. Other independent variables were the various macroeconomic controls that were closely related to the stock market. The limited availability of the macroeconomic control data during the time period caused the need for staggered regression analyses. Each column corresponds to a regression analysis ran with new variables included each time. T-values are reported in italics under the estimated coefficients. Number of observations and the adjusted r-squared is reported at the bottom of each column. Significance codes are shown at the bottom of the table. Definitions of macroeconomic controls are included in Table 9 in the appendix.

Table 8 reflects the results of the regression analyses ran between pants and fashion companies' stock returns with pants as the dependent variable. The coefficient for fashion stock returns did not indicate a statistically significant relationship with pant trends in any of the regression results. However, 6 out of the 14 macroeconomic variables showed a statistically significant correlation with pants in at least one of the regression results. Industrial production index indicated a similar relationship with fashion stock returns as it did with overall stock returns, with a positive coefficient in 1960 and a negative coefficient in 1992. Consumer credit also showed a similar negative relationship with fashion stocks with a statistical significance of 0.05 in the 1960 result. The consumer price index coefficient implies a positive correlation with fashion stock returns in the 1976 output. Unemployment rate also indicates a positive relationship in 1960 with a 0.05 statistical significance. Labor force again reveals a negative correlation with fashion stocks in the 1960 and 1976 returns. Capacity utilization shows a negative relationship in 2001 with a statistical significance of 0.1.

## Chapter 6: Conclusions

After completing several regression analyses which revealed no statistical significance, and a thorough observation of graphed movements between hem lengths, overall stock returns, and fashion companies' stock returns, it is clear that there is no causal relationship indicated between these variables. The same can be said between pants, stock returns, and fashion companies' stock returns. Due to the fact that there is no causality between the variables, neither one of the variables can successfully predict the other for extended periods of time. These results, reflective of Mabry's study results of no correlation (Mabry, M. A., 1971, pp. 1-101), provide evidence against the hemline theory.

Although there were a few instances where a hemline or pant coefficient was found to be slightly statistically significant, there were not enough significant coefficients in order to indicate a pattern between the variables. There were also points on the graphs where it appeared that hem and pant length trends moved together with stock returns. However, these points were few and far between, and there are not enough of these instances to indicate a pattern. These occurrences could be purely coincidental. There could also be a reason to these seemingly in sync movements. Both fashion trends and stock returns could be reacting in similar ways to changes in underlying variables. Looking into these possible underlying variables could be an area for future research.

Another possible area for future research would be to look into a longer lag time between stock movements and hem or pant length changes. As mentioned in chapter 2, the study completed by Marjolein van Baardwijk and Philip Hans Franses found that hemlines lag behind economic cycles for 3 years (Van Baardwijk, M., & Franses, P.H., 2012, p. 25-26). This thesis only looked into a 1-year lag between stock and hemline fluctuations. While this short lag time did not reveal any causality or apparent correlation between the two variables, perhaps something different could be identified by moving hemline data out further to test a longer lag time. Looking into a 3-year lag to compare to Baardwijk and Franses' results would be an interesting addition to this study and a noteworthy area for potential future research.

Along with a longer lag time, Baardwijk and Franses' study examined the relationship between hemlines and economic cycles, instead of stock market movements. As their study found a correlation between these two variables, it would be valuable to test hemlines with overall economic movements as an area of future research. Stock market movements are not always indicative of what is going on with the economy. As was found in the regression test results, there were several economic measures that were statistically significant in the tests with hemlines. This indicates that there could be a correlation between the economy and hemline movements.

## References

- Chang, S. J., & Ha, D. (1997). The impact of macroeconomic variables on stock market performance: A taxonomic approach. *American Business Review*, 15(2), 104.
- Cole, D. J., & Deihl, N. (2015). *The History of Modern Fashion From 1850*. (F. Maunder, Ed.). Laurence King Publisher Ltd.
- Fashion Design Body Drawing. (n.d.). [Photograph]. Pixy Org. <https://pixy.org/957767/>.
- Federal Reserve Bank of St. Louis. (n.d.) *FRED Economic Data*.  
<https://fred.stlouisfed.org/>.
- Gilbert, D. (2017). The looks of austerity: Fashions for hard times. *Fashion Theory, The Journal of Dress, Body & Culture*, 21(4), 477-499. <https://doi-org.proxy.library.kent.edu/10.1080/1362704X.2017.1316057>.
- Laver, J. (1969). *Modesty in Dress*. Houghton Mifflin Company.
- Mabry, M. A. (1971). *The relationship between fluctuations in hemlines and stock market averages from 1921 to 1971*. (Publication No. 12-1971). [Master's thesis, University of Tennessee]. Trace: Tennessee Research and Creative Exchange.
- Milford-Cottam, D. (2018). *Fashion in the 1970s*. Bloomsbury Publishing Plc.
- Van Baardwijk, M., & Franses P.H. (2012). Hemlines and the economy: Which goes down first? *Foresight: The International Journal of Applied Forecasting*, 26, 25-26.

Vogue. (n.d.). *Vogue Archive*. Vogue Archive. <https://archive.vogue.com/>.

*Vogue*. 1, Sept. 1943, <https://archive.vogue.com/issue/19430901>.

Welters, L., & Lillethun, A. (2018). *Fashion History: A Global View*. (J.B. Eicher, Ed.).

Bloomsbury Academic.

Worsley, H. (2011). *100 Ideas That Changed Fashion*. Laurence King Publishing Ltd.

## Appendix

Monthly Hemline Data												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1925	6	6	6.5	6	6	6	6	6	6	5.5	6	5.5
1926	5	5.5	5	6	5.5	5	6	5.5	5	6	5.5	5.5
1927	5	5	5	5.5	5	5	5	5.5	5.5	5.5	6	5.5
1928	5	5.5	6	5.5	5.5	5.5	6	6	6	5.5	5.5	6
1929	5.5	5	6	5	6	5.5	6	5.5	5	6	5.5	5.5
1930	6	6	6	6.5	6.5	7.33	7	6.5	6.5	6.5	6.5	6
1931	7	7	6.5	6.5	7.5	6.5	6.5	6	6.5	6.5	7.5	6.5
1932	6.5	7.5	7	6.5	7.5	6.5	7.5	7	7	6	7	7.5
1933	7.5	7	7	7.5	7.5	8	7.5	8	7.5	8	8	8
1934	7.5	7.5	7	7.5	7.5	7.5	7	7.5	7.5	7.5	7.5	8
1935	8	7.5	7.5	7.5	7.5	8	8	7	7	7.5	8	7.5
1936	8	7.5	7	7.5	7	7.5	7.5	7	7.5	7.5	7.5	8
1937	7.5	7.5	7	7	7.5	7.5	7	7	7	7.5	7.5	8
1938	7	7	8	7	7	7	7.5	7	7	7	7	7.5
1939	6	6.5	6.5	7	7.5	6	6.5	7	6	7	6	6.5
1940	6.5	6.5	7	6	6	6.5	6	6	6	6	6	6
1941	5	5	5	5	5	5	5	5	5	5	5.5	5.5
1942	5	5	5	5	5	5	4.5	5	5	5.5	5	5.5
1943	5	4.5	5	5.5	6	5	5	5.5	4.5	5	4.5	5
1944	5	5	5	5.5	5	4.5	5	6	5	5	5.5	4.5
1945	5.5	5.5	5	5.5	5.5	5	5.5	5	5.5	5.5	5	6
1946	4.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	6.5	6	5.5	6
1947	5	6	6	6	5.5	6	5.5	5.5	6.5	6.5	7	6.5
1948	6.5	6.5	6.5	6.5	6.5	7	7	6.5	7	6.5	7.5	7.5
1949	6.5	6.5	6	6.5	6	6.5	7	6.5	6.5	6.5	6.5	6.5
1950	6	6	6.5	6.5	6	6.5	6	6	6.5	6	6	6
1951	6	6	6.5	6	6	6.5	6.5	6	6	6.5	6	6
1952	6	6	6	6.5	6	6	6	6.5	6	6.5	6.5	6.5
1953	6	6	6.5	6	6	6	6	6	5.5	6	6.5	6
1954	6	6	6.5	6	6	6	-	6	6	6	6	6.5
1955	6	6	6	6	6	6.5	6	6.5	6.5	6.5	6	6
1956	6.5	6	6	6.5	6.5	6	6	6	6	6.5	6.5	6.5
1957	6	6	6	6	6.5	6	6	6	6	5.5	5.5	6
1958	5.5	5.5	5	5.5	5	5	5	5	5	5.5	5	4.5
1959	4	4.5	4.5	4.5	4.5	4.5	4.5	4	4.5	4.5	4	4.5
1960	4.5	4.5	4.5	5	4.5	5	5	5	4.5	4.5	4.5	5
1961	3.5	4	4.5	4	4.5	4.5	4	4.5	4.5	4.5	4	4.5
1962	5	4.5	4	4.5	4	4.5	3.5	4	4	4	3.5	4
1963	5	4	4	4	3	4	4	4	4	4	4	-
1964	4.5	3.5	5	5.5	4.5	3.5	3.5	3	3.5	4	4.5	4
1965	3.5	2.5	4	6	3.5	2	2.5	2.5	3.5	2.5	3	-

1966	2.5	2.5	2.5	2	2	2.5	2	2.5	2.5	2.5	3	2.5
1967	2.5	2.5	2	2	2	2	1.5	2	2	2.5	2.5	2
1968	1.5	1.5	2.5	2.5	1.5	3.5	1	1.5	2	1.5	2	2
1969	1.5	2	2	2.5	1.5	1.5	1	1.5	2	2	2.5	2
1970	1.5	2	2	3	6	4	6.5	6	5.5	6.5	7	6
1971	4	6.5	7	6.5	7	6	5	4.5	4	4.5	4	7
1972	6	4.5	4	5	3.5	-	3	4	3.5	3	3	3
1973	3	2.5	3	3.5	3	3	4.5	4	3	3	3.5	-
1974	5	4.5	5	5	4.5	4.5	5.5	4.5	5.5	5.5	6	7
1975	5.5	6	5.5	6	7	6	5.5	5	6	-	6	6
1976	6.5	5.5	4.5	4.5	4.5	3.5	5.5	6	6	6	5.5	6.5
1977	2.5	2.5	5.5	6	6.5	3.5	5	5.5	5.5	6	7	7
1978	6	7	6	-	5.5	7	5.5	6.5	-	7	6.5	6
1979	5.5	6	6	6	5	5	4.5	5	5	5	5	4.5
1980	4.5	5	-	4	5	4	4	4.5	4.5	4.5	3.5	3.5
1981	-	3	4.5	2.5	4	2.5	4	5.5	6	5	5	3
1982	3	3.5	-	3	2.5	2.5	2	2.5	6.5	5	-	2.5
1983	2.5	4.5	3.5	3.5	4.5	4.5	3	5	3.5	4	6	6.5
1984	7	5.5	7	3.5	4.3	7	6	4.5	4.5	5.5	3.7	3
1985	2.5	3	4	3	-	3	2.5	2.5	2.5	2.5	-	3
1986	2	3.5	4	2.5	2.5	3	3	4	5	3	2.5	5.5
1987	2.5	2	2	-	2.5	2	2	2.5	2	2	2	1.5
1988	3.7	1.5	2.5	2	1	-	2	3	2.5	2	2	3
1989	4	-	1.5	1	2	-	1	1.5	1.5	3	2	3
1990	2	2	1.5	2	2	1	2	2.5	2	2	2	-
1991	1	2	2	1.5	6	-	2	2.5	2	-	2	1.5
1992	4	4.5	7	6	5.3	6	4.7	6	3	4.5	7	6.5
1993	7	7	7	6	6.5	-	-	8	2	4.5	7	1
1994	1.5	3.5	1	4	1	4.5	1.5	2.5	1.5	3.7	3.5	2.5
1995	3	3	-	2.5	1.5	-	-	4	4	3.5	-	1.5
1996	4	3	3.5	2	2	4	-	5	6	3	6	6
1997	5	3.5	3.5	4	-	-	2	3	5	1	2	1
1998	4.5	-	4	-	-	5	6	3	4	-	6	-
1999	5	8	4.5	3.5	7	4	-	4.5	-	5	-	3
2000	5	4.5	3	2	2	3	5	5	6	4.5	5	4
2001	4.5	2.5	3	3	-	-	4	3.7	-	4	2.5	-
2002	5	2.5	6	7	-	2.5	-	3	2.5	4.5	3	-
2003	5	3	2	5	-	3.5	3	2	5	5	4.5	-
2004	3.5	3	5.3	4	5	-	3	3.5	5	4.7	3	-
2005	6	5	4.5	5	3.5	6	6.5	4	4	7	3.5	-
2006	4.5	4	6	4	2	3	4.5	-	5	4	2.5	5
2007	4	8	4	8	3.7	-	3	3	3	4.5	4	-
2008	3	6	5.5	-	4	5	4	5	6	3	4	3.5
2009	3	4	4	3.5	1.5	3	3	2.5	2	2.5	4	3
2010	4.5	2	3	2	2.5	4.5	3	4.5	2.5	4	4	3

**Exhibit 11: Monthly Hemline Data from 1925 to 2010.**

## Monthly Pants Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1960	7	8	-	5	2	5	7	7	-	-	7	-
1961	7	-	-	-	-	7	-	7	-	7.5	7	8
1962	1	7	7	-	-	-	7	-	8	-	7	8
1963	7.5	-	-	-	6.5	-	6	8	-	8	8	-
1964	7.5	8	8	8	7	8	8	8	8	6.5	7	-
1965	-	7	8	8	-	7.5	-	8	5	4	8	-
1966	-	7	-	8	7.5	7	-	8	-	8	8	-
1967	8	7	8	8	-	2	5	5	-	7.5	5	8
1968	1	-	-	8	2	4.5	8	5.5	8	4.5	8	8
1969	8	8	8	8	8	4.5	8	-	8	8	8	8
1970	-	-	8	-	-	8	-	7	5	7	8	-
1971	8	8	-	2	2.5	8	1	4	8	7	8	-
1972	8	7.5	-	-	-	-	-	8	8	8	8	-
1973	8	-	8	8	8	-	-	8	8	8	8	-
1974	8	8	8	8	8	8	8	8	8	-	8	-
1975	-	-	-	-	1	8	8	-	8	8	8	5.5
1976	-	8	8	8	8	8	8	8	8	8	-	8
1977	8	8	8	4.5	8	8	8	7	8	7	-	6
1978	7	8	8	8	8	4.5	-	8	8	8	5	8
1979	5.7	8	-	5.5	8	8	8	8	8	8	8	-
1980	8	7	8	8	8	4.5	8	8	8	6.5	4	4
1981	5.5	-	8	8	7.5	7.5	7	7.5	5	7.5	6.5	6
1982	5	8	5.5	6	7	-	7	8	7	8	-	8
1983	8	7	7	6	4.5	8	-	8	8	8	7.5	8
1984	-	7	8	8	-	4.5	7.5	8	8	8	8	7
1985	-	7.5	6	7	6	4	7.5	8	8	5	8	7
1986	5	8	7	-	8	-	8	8	7.5	-	-	8
1987	-	5	-	8	8	-	8	7	8	-	-	8
1988	2	8	5	5.5	8	8	8	8	8	8	7.5	1
1989	8	4.5	1	6.5	7	7	-	-	8	7.5	8	6
1990	7	7	7	4.5	-	3	8	7	7.5	-	8	8
1991	7	7	7	8	7.5	1	8	7	8	8	-	6.5
1992	-	7	6	8	-	8	-	7	8	-	7	-
1993	-	7	8	7.5	-	8	8	7	7	8	4.5	8
1994	8	8	8	7	-	-	2	-	8	-	8	-
1995	7	-	-	8	6.5	8	-	-	8	8	-	-
1996	7	8	-	8	-	7.5	8	-	8	7	-	7.5
1997	8	8	-	8	8	7	-	8	8	-	8	-
1998	8	8	-	8	-	-	7	8	-	8	8	-
1999	8	7.5	7	7	6.5	4	8	-	7.5	8	8	8
2000	8	-	8	8	-	8	-	8	8	8	8	7

2001	8	8	-	-	-	-	7	8	-	8	8	8
2002	8	8	-	8	8	8	8	8	-	8	7	-
2003	-	8	7.5	7.5	8	-	7.5	-	8	-	6	7
2004	-	7	6	-	7.5	2	-	7	7	7.5	7	-
2005	8	4	-	2	8	-	8	-	-	6	1	-
2006	8	7	-	-	-	8	6	8	-	8	-	-
2007	8	1	8	7	6	-	8	8	-	7	8	-
2008	-	8	8	7.5	8	7.5	6	8	4.5	8	7	8
2009	8	8	7	8	7	2.5	8	7.5	7	4.5	4.5	8
2010	-	8	4	6.5	8	7	7	5	4	7.5	4.5	7.5

**Exhibit 12: Monthly Pants Data from 1960 to 2010.**

Macroeconomic Variables					
Variable Name		Description	Measure	Time Period	Source
Industrial Production Index	IPI	Economic indicator that measures real output for all facilities located in the United States manufacturing, mining, and electric, and gas utilities (excluding those in U.S. territories).	Units of output	1925 - 2010	Federal Reserve Economic Data
Producer Price Index	PPI	Producer price index: all commodities (1982 = 100).	Price, in dollars	1925 - 2010	Federal Reserve Economic Data
Consumer Credit	-	Total consumer credit owned and securitized, outstanding.	Billions of dollars	1943 - 2010	Federal Reserve Economic Data
Consumer Price Index	CPI	Measure of the average monthly change in the price for goods and services paid by urban consumers between any two time periods.	Price, in dollars	1947 - 2010	Federal Reserve Economic Data
Corporate Profits	-	Corporate profits after tax.	Billion of dollars	1947 - 2010	Federal Reserve Economic Data
Real Gross Domestic Product	GDP	Inflation adjusted value of the goods and services produced by labor and property located in the United States.	Billions of chained 2012 dollars	1947 - 2010	Federal Reserve Economic Data
Unemployment Rate	UnempRate	The number of unemployed as a percentage of the labor force.	Percent	1948 - 2010	Federal Reserve Economic Data
Labor Force	-	Civilian labor force level including persons 16 years of age and older.	Thousands of persons	1948 - 2010	Federal Reserve Economic Data
Loan Rate	-	Prime loan rate posted by a majority of top 25 insured U.S.-chartered commercial banks.	Percent	1955 - 2010	Federal Reserve Economic Data

Capacity Utilization	-	Percentage of resources used by corporations and factories to produce goods in manufacturing for all facilities located in the United States.	Percent	1972 - 2010	Federal Reserve Economic Data
M1 Money Stock	M1	M1 money stock in billions of dollars.	Billions of dollars	1975 - 2010	Federal Reserve Economic Data
Vehicle Sales	-	Total vehicle sales in millions of units.	Units sold	1976 - 2010	Federal Reserve Economic Data
Retail Sales	-	Total retail sales including e-commerce sales (excluding food services).	Millions of dollars	1992 - 2010	Federal Reserve Economic Data
Treasury Bill Rate	Tbill	4-week Treasury Bill: secondary market rate.	Percent	2001 - 2010	Federal Reserve Economic Data

**Table 9: Macroeconomic Variable Descriptions.**

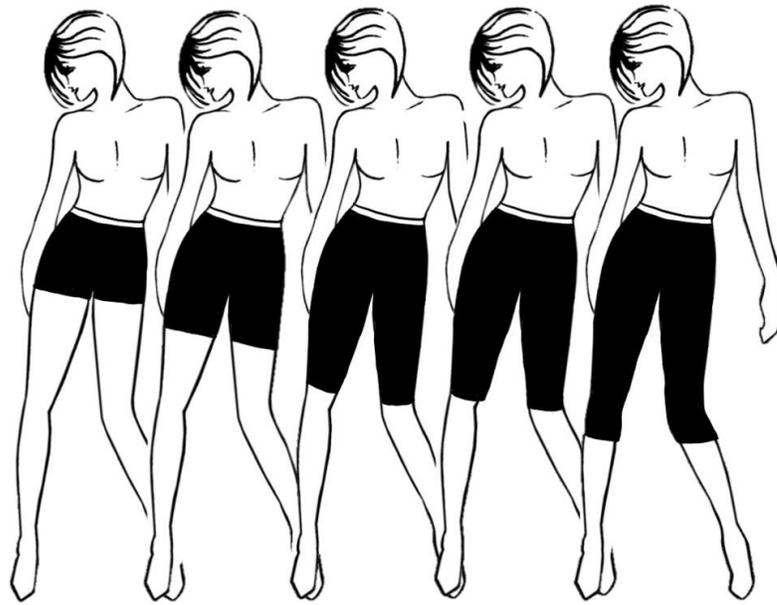


Micro      Mini      Above-the-Knee      Knee      Below-the-Knee



Midi      Ballerina      Maxi      Floor

**Exhibit 13: Reference Images for Hemline Lengths.**



Boy Shorts      Jamaica      Bermuda      Surfer      Pedal Pusher



Clam Digger      Seven-Eighths      Classic      Stirrup

**Exhibit 14: Reference Images for Pant Lengths.**