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The impact of massively increased shipping costs on global fashion value chains: A case study.

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Abstract:

In the past two years the costs associated with container transport have risen significantly, causing 1.5 percent point of the worldwide inflation. This paper investigates the impact of high transportation costs on companies in the fashion industry. It is investigated if production of fashion in Asia is still cost effective or that companies are considering reshoring their production to mitigate transport costs. This study is done through case research after five different companies active in this industry. The results show that companies indeed face far higher costs that they can fairly easily pass on to their customers. Companies are working on reshoring strategies, the main reason for this, however, is the promise of shorter lead-times giving them the ability to compete with fast fashion companies. Production in Asia is still the cheaper option for products that are not sensitive to trends.

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The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

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1. Introduction

As the world is recovering from the COVID-19 pandemic, inflation in the West is on a high. Increased spending now shops and restaurants are open again and increased energy prices as a result of the Russian aggression in Ukraine are only partly explaining current inflation. According to the International Monetary Fund (IMF) this time a more unconventional source of inflation arose: increased container shipping rates are expected to increase inflation this year by 1.5 percent point (Carriere Swallow et al., 2022).

With 54% of the worlds trade in monetary value transported in containers it is hardly surprising that when shipping rates rise, inflation is positively affected (Nagurney, 2022). Under normal circumstances that would not raise concerns as inflation is not necessarily undesirable. However, as shipping rates in January 2022 were up 636% compared to January 2020 a problem starts to emerge (Statista, 2022). The individual consumer might not directly feel the impact in the short term but as shipping costs stay high, companies will have to increase the price of their products or take other precautions to maintain profitability. This paper aims to explore to what extend companies will shift increased transport rates off to their customers and what other measures companies are considering or taking.

1.1 Problem Definition

Since the invention of the universal shipping container, world trade has become increasingly dependent on this form of transportation. The incredible reduction in shipping costs provided by containers meant that it became economically feasible to produce low value goods at the other side of the world. Now products could be made in countries where labor costs are low and shipped to rich markets in the west. This resulted in the number of TEU's transported in a year to be a reliable indicator of GDP growth (Michail et al., 2020).

Until COVID-19 hit container rates were always relatively low and stable. The significant fluctuations in demand for containerized goods that COVID-19 initiated upset global logistics. In the first few months of the pandemic demand decreased due to restrictions and lockdowns.

Shipping companies responded by idling vessels and cancelling sailings. When demand rapidly recovered in the third quarter of 2020, especially in North-America where it even increased to 20% above the initial state, carriers struggled to restart and fulfill demand (Dierker et al., 2022).

Adding to the problem was the fact that ports, factories and warehouses had to close down regularly as COVID rules changed or infection hotspots were discovered under employees. This meant that containers could not be loaded or offloaded leaving them stranded and unavailable for other shipments. This led to a shortage in physical containers which brought an enormous shock to a normally very efficient and relatively stable industry that it simply could not handle.

Already in the summer of 2020, when container rates did not yet rise significantly, concerns were raised around if the efficiency of the worlds' Global Value Chains (GVC's) was at odds with its resilience. Galston (2020) wrote in a column in the Wall Street Journal "What if the relentless pursuit of efficiency, which has dominated American business thinking for decades, has made the global economic system more vulnerable to shocks?". In this column, he argues that efficiency is a product of optimizing to the current existing environment. Resilience on the other hand requires (excess) capacity to deal with shocks in the economic environment.

1.2 Research Objective & Research Questions

This paper will investigate the impact of increased shipping rates on fashion companies, how they reimburse these extra costs and how it effects their long-term strategy. This paper explores how these companies deal with increased shipping time and decreased reliability in their GVC's. Besides that, we want to know if our case companies consider reshoring their production in order to reduce shipping costs and increase resilience.

To sum up, the main research question of this paper is:

What is the impact of increased container shipping rates on the global value chain and long-term strategy of fashion companies? Is clothing manufacturing reshoring?

To answer the main research-question, the following three sub-questions and their hypotheses are formulated:

1. *In what way did transport costs change during the COVID-19 crisis? What was the impact on product costs?*

Hypothesis 1: Transport costs for products coming from Asia increased significantly, companies cannot fully pass these costs on to their customers so they experience financial difficulties.

2. *How do companies cope with the increased uncertainty around shipping times and delays? Do they change their governance style?*

Hypothesis 2: Uncertainty forces companies to work more closely together with their suppliers increasing the degree of explicit coordination. Additionally, they might hold more stock and order sooner to be sure products arrive on time.

3. *Do companies consider reshoring their production in order to avoid high transport costs? Do they expect prices to stay high?*

Hypothesis 3: Companies expect the situation to last for some time. Consequently, companies consider reshoring their production to avoid high transportation costs.

2. Literature Review

This chapter discusses literature relevant to this paper and our research. Section 2.1 will discuss literature around globalization and global value chains. Section 2.2 will handle the tradeoff between efficiency and resilience and lastly section 2.3 handles literature around the concept of reshoring.

2.1 Global Value Chain and GVC Governance


A value-added chain, in its most basic form, is 'the process by which technology is combined with material and labor inputs, and then processed inputs are assembled, marketed, and distributed. A single firm may consist of only one link in this process, or it may be extensively vertically integrated...' (Kogut, 1985: 15).

As a result of better communication and transportation technology, production of goods and services has become less location dependent since the end of the 19th century. Consequently, allowing firms to move parts of their value chains to countries in which they can be executed in the most efficient way (Mudambi, 2008). As world markets integrate through trade, multinational companies tend to disintegrate as they find it advantageous to 'outsource' an increasing share of their non-core activities to other companies at home or abroad, leading to the creation of GVC's.

GVC's can be organized in roughly two ways: through markets or within transnational firms. Which of these models is chosen is determined by transaction costs, which is dependent on the complexity of inter-firm relationships and the investment in assets is specific to a particular transaction (Williamson, 1975). For standard products that are easily described and valued, the market approach may work fine. More complex or customized products require more specific investments by the manufacturer leading to risk of opportunism, which increases transaction costs as extensive contracts have to be written. In such cases, in-house production might be the better option (Gereffi et al., 2005).

These extremes are not the only approaches to global value chain governance, there are three types in between, all are listed in table 2.1. Three key variables determine which of the governance approaches is most useful in the given situation. They are: (1) complexity of inter-firm transactions; (2) the degree to which this complexity can be mitigated through codification; and (3) the capability of suppliers to meet requirements. The tradeoff between the benefits and risks of outsourcing is different for each governance type (Gereffi et al., 2005). The governance types comprise a spectrum running from low to high levels of power asymmetry between buyers and suppliers as can be seen in the last column of Table 2.1.

Table 2.1: GVC governance types and when to apply them

<i>Governance type</i>	<i>Complexity of transactions</i>	<i>Ability to codify transactions</i>	<i>Supplier Capabilities</i>	<i>Degree of explicit coordination and power asymmetry</i>
<i>Market</i>	Low	High	High	Low
<i>Modular</i>	High	High	High	
<i>Relational</i>	High	Low	High	
<i>Captive</i>	High	High	Low	
<i>Hierarchy</i>	High	Low	Low	High

Note. This table contains an overview of governance types that are common in GVC's and in which situations they are best applicable. Source: Gereffi et al., 2005

The clothing industry has been involved in global production and trade networks since the 1950's. The main focus of this industry has been East-Asia although the specific countries have shifted over time. Where textile production in the 1950's and 60's mainly took place in Japan, focus shifted first to Hong Kong, South-Korea and Taiwan in the 70's and 80's after which its shifted to China in the 90's (Gereffi et al., 2005).

The key to East-Asia's success was to evolve from more captive value chains, to a more value-added chain know as full-package supply. This new form of supply involved more complex forms of coordination and knowledge exchange and gave suppliers more autonomy, making the

form of governance more relational than captive. The main advantage for local economies is that this form of governance allows local firms to learn how to manufacture internationally competitive products on their own providing substantial value to their local economy (Gereffi et al., 2005).

For purchasing firms, the advantage is that they have to spend less on transaction costs and are more flexible in where they purchase their goods. Now they can provide a design and the full package manufacturer interprets it, makes a sample, source inputs and ship the full product to the customer. If one supplier fails to deliver it is much easier to switch to another one leading to increasing competition and lower prices.

2.2 Trade-off between efficiency and resilience

Since the 1970s research has been conducted after Just In Time (JIT) logistics. JIT is a way to minimize warehousing costs as parts or products are only stored for a short time before being shipped further down the value chain. To make JIT work, a close relationship between buyer and seller is needed as well as single or limited sourcing and small but frequent deliveries (Das & Handfield, 1997).

Global sourcing, conversely, is associated with big lot sizes, coordination problems due to language and cultural differences, and multiple suppliers (Das & Handfield, 1997). This principle is also used by companies to cut costs as they can “shop around” all over the world to acquire parts or products where they are cheapest.

Combining these two concepts used to be perceived as a bad idea as researchers deemed them incompatible. Nevertheless, supported by digitalization to help solve coordination problems (Das & Handfield, 1997), companies of all sorts and sizes have successfully implemented a JIT GVC.

Recently concerns have been raised if this system is not too susceptible to disruptions. Are resilience and efficiency at odds with each other in the end? As Pettit et al. (2010) pointed out,

maintaining more than strictly necessary stock or capacity might increase resilience in firms’ value chains. To determine the optimal tradeoff between reliability and cost, Sun et al. (2020) have developed models to guide manufacturers in their choices. They conclude that a more risk averse or risk neutral approach is for most companies the best long-term strategy.

2.3 Reshoring

Production offshoring is an effective strategy to reduce purchasing costs. However, some companies choose to reverse their offshoring decisions. This is called reshoring, moving your production closer to your home market. That can be within the companies’ home-country (back-shoring) or close to the home country (near-shoring) (Moretto et al., 2019).

There are various reasons for companies to reshore production. Aside from cost advantages there are several other drivers for companies to choose for resourcing. A summary of these reasons can be found in table 2.2.

Table 2.2: Drivers of reshoring decisions

<i>Drivers</i>	<i>Description</i>
<i>Costs</i>	Factors leading to lower supply chain costs (e.g.: Logistics, Quality Control, transaction costs)
<i>Operational</i>	Factors related to the improvement of company processes (e.g.: Flexibility, lead-time, integration production and R&D)
<i>Organizational</i>	Factors related to organizational cost reductions (e.g.: coordination and communication costs related to geographic and cultural distance)
<i>Brand Reputation</i>	Factors related to final customer perception of brand (e.g.: Made – In Effect, customer proximity, quality issues)
<i>Risk Reduction</i>	Factors related to the risks of geographical distance and country economic instability (e.g.: Supply disruptions, Currency value volatility)

<i>Government Policy</i>	Factors related to government policy and decisions (e.g.: taxation level, incentives, import/export duties)
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Note. This table contains drivers for reshoring and description of the driver. Adapted from Moretto et al., 2019

Reshoring is not as straight forward as just moving production back home. During the offshoring process many domestic supply networks have ceased to exist as new networks have developed in the new location (Fel and Griette, 2017). Reshoring companies may therefore have to continue relying on the supply network in the far away country. Alternatives are building a new supply network or convincing their original suppliers to follow them to their home country (Kinkel and Maloca, 2009).

A reshoring strategy has many advantages over offshoring, especially operationally. The decision to reshore is therefore dependent on offsetting increased purchasing costs that reshored production faces with it to these advantages. Now that transport costs are up, purchasing costs of offshore production are higher. This makes the difference in purchasing costs between off- and reshored production lower while keeping the advantages the same. This might lead companies to (re)consider reshoring their production.

3. Methodology

In section 3.1 and 3.2 the research strategy and process are discussed. In section 3.3 and 3.4 the case and data selection are explained. Section 3.5 deals with the measurement protocol. Section 3.6 elaborates on the data collection and 3.7 discusses validity and reliability of this research method.

3.1 Research Strategy

This research aims to map supply chains in the textile industry from China up until it is ready for sale in Western-Europe and specify costs made at each point in the distribution process and compare the costs made before COVID to the costs made during COVID. This research starts at the production location of the final product until it arrives at the warehouse in the Netherlands. It does not take transportation costs to the final customer into account as it differs per way of purchase, in a shop or online for instance, which is beyond the scope of this thesis.

This thesis will be a case study because it allows for capturing detailed information on contemporary situations (Benbasat, Goldstein, & Mead, 1987). This approach is most suited as the research question deals with a recent phenomenon and this research intends to map very detailed how transportation costs are built up and how they changed since 2019. This thesis will use a parallel single case study design where multiple cases are analyzed in parallel. In other words, the same case is replicated within two to five companies, enhancing robustness and generalizability of the results (Dul & Hak, 2008).

3.2 Research Process

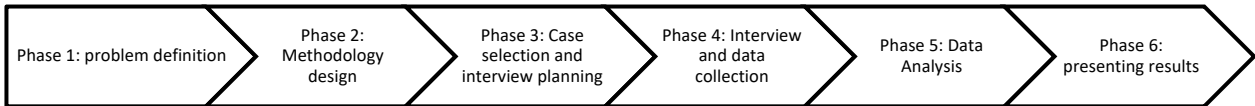


Figure 3.1: Research proces model

3.2.1 Phase 1

First, it is needed to investigate why this research is necessary and socially relevant and what is already known about the subject. To achieve this a literature review is done and as this thesis handles with a very contemporary problem the news outlets were checked for the latest updates on the problem. From here hypotheses have been developed to test during the research.

3.2.2 Phase 2 & 3

For this thesis a case study will be conducted. A case study is a research method that looks at a phenomenon in its natural context. To achieve this, it can use different techniques to gather data such as interviews, questionnaires and observations (Benbasat et al., 1987; Eisenhardt, 1989). Before starting it is determined which cases (companies) we use for our research and which techniques we use to collect data from them.

3.2.3 Phase 4 & 5

After determining which cases to use for our research people at these companies have to be approached with the question if they want to work with us and share their data. When they are found, an appointment is necessary to conduct the interview. After all data is gathered it needs to be analyzed.

3.2.4 Phase 6

This is the last phase, most of the work has been done and only needs to be presented.

3.3 Case Selection

As we want to select multiple cases that are in some way identical to each other it was first needed to choose a certain industry. As the researcher has contacts in the textile industry and the time to find companies wanting to participate was limited it was chosen to research the supply chain costs of textiles importing companies specifically on the route from Asia to Europe, which is by far the most used route for this type of product.

The conditions a case has to fulfill in order to be selected are as follows:

- The company has to produce products to their own standards. Operating an own factory is not necessary but the product has to have been designed by the importing company.
- The company has to import consumer products from China to Europe.
- The company has to be active in the textile industry.

The selected companies are:

- Anglo BV, the largest importer of legwear in the Netherlands located in Schijndel. They specialize in large quantities and good quality. They import their own medium-budget brands but they can also provide retailers with their own white-label brands.
- Marlies Dekkers BV (further M.D.), a company designing and importing luxury female underwear. They are specialized in designing underwear that combines design, fit and “feminine point of view”. (Marlies Dekkers, n.d.)

Unfortunately, during the data collection process the mentioned companies refused to cooperate. New companies had to be found which proved difficult. Fifteen companies were contacted of which only three agreed to give an interview but refused to share further data. The contacted companies and the reasons they gave for not joining can be found in appendix B. As reliability of this paper would be a problem when only interviewing three companies it was decided to also do online case research after companies that have been in the news for reshoring recently, the conditions for selecting a case did not change though.

In the end the five cases that were researched were:

- PVH Corp, PVH is an internationally operating holding company that owns, amongst others, Tommy Hilfiger and Calvin Kleijn. With their headquarters in New York and branch offices all over the world they are specialized in luxury brands. This company agreed to give an interview.

- Harco Socks BV, Harco is a Dutch wholesale for socks and underwear. They are based in Goirle, North Brabant. They value quality and sustainability in their products. Harco Socks agreed to give an interview.
- Anonymous, this company agreed to give an interview but does not want to be mentioned by name in this report. It is an internationally operating company that has a presence in more than 20 countries and employs over 2000 employees. They specialize in buying, designing and developing promotional, leisure and sports products. The company is listed in Sweden. The company will be referred to as Company D.
- C&A, A well-known Dutch household brand. This company operates 1328 department stores in Europe, 371 in Latin America and 83 in China. They mostly specialize in clothing in the middle segment. C&A did not want to give an interview a lot could be found about their reshoring strategy in high quality newspapers.
- Hugo Boss, A German luxury fashion house with global sales of 2.9 billion euros in 2019. The company sells clothing, accessories, footwear and fragrances. This case was also research through articles in high quality newspapers.

3.4 Data Collection

For this study, three data collection methods are used to obtain data. Table 2.1 shows an overview of the methods and in which cases they will be used and what the source of that data is going to be.

As it proved impossible to collect transport cost data, this form of data collection was replaced with online paper research in high quality newspapers. The reasons are time constraints and increasing the reliability of this paper.

Table 3.1: Data collection methods

<i>Collection method</i>	<i>Source</i>	<i>Which case</i>
<i>Interviews</i>	Financial/ logistics managers at case companies	PVH, Harco and “Company D”
<i>Transportation Cost data</i>	Year reports, datasets provided by companies	This method was not used as data proved unavailable
<i>Online article research</i>	Article in high quality newspapers about case companies	C&A and Hugo Boss

Note. This table contains the data collection methods used in this paper, the sources used for them and to which case they are applied.

3.4.1 Interviews

Interviews are a necessary part of this research as it can give insight into how the change in transport costs change the long-term strategies of these companies. To gain insight in how the supply chain of the researched company functions we interview purchasing/logistics managers. They are responsible for the supply chain so they will know the ins and outs about how it functions and what happened to the cost structure and strategies during the past two years.

Interviews will be semi-structured meaning that some questions will be set before the interview and that the researcher will try to ask additional questions that come up during the interview to obtain deeper insights regarding the answers and motivations of the interviewee. In Appendix B the list with interview questions can be found.

3.4.2 Cost Data Collection

In order to analyze where in the supply chain costs have risen and how these costs are labeled, bills, yearly reports and price calculations are needed. It is impossible at this moment to forecast how this data will be collected and how it is going to be analyzed as it is dependent on if and how the companies supply the data.

A major concern here is that it might entail confidential company data that is competition sensitive and fairly recent. Companies might therefore refuse to allow access to this data. Therefore, it might be necessary to come up with a value proposition for them: what is the benefit for the company to share their (confidential) data. The obvious answer is that our research gives them insights into their supply chain and its costs.

This form of data collection in the end proved unsuitable as companies were not willing to share data because of competitive concerns. More cases were selected to compensate for this missing data, for which online article research was conducted.

3.4.3 Online article research

In order to compensate for the cost data collection method and to be able to add more cases to the research to increase reliability, the interview questions were answered for some companies while doing research via the internet. Articles on case companies that were published in high quality newspapers such as the Washington Post and Financial Times. Television interviews with representatives of the case companies could also be a valuable source of information for this method.

3.5 Measurement Protocol

3.5.1 Dependent concept

The dependent concept is the price of a product when it reaches the retailers warehouse in the Netherlands. By this the manufacturing and transport costs are meant. Costs such as R&D and design are considered fixed in this paper as they are not affected by shipping rates.

3.5.2 Independent concepts

Shipping costs factors

Shipping costs are related to costs made while transporting the products. Examples included driver payments, container rental, fuel costs, container rental and tariffs of the

shipping company. These costs were meant to be measured through data analysis but as that proved impossible are now asked for in interviews.

Warehousing costs factors

These are costs related to storing the product in different places during transit. These may include fees from the factory that has to keep products in storage longer as they wait for a shipping container or a slot on a container ship. They also include port fees for containers left on the ports' premises for too long. Collecting this data proved impossible as companies refused to share this information, interviews with Harco & PVH suggested that they do not even have this data.

Transit time related factors

As the transit time has increased and the reliability has decreased (Sea Intelligence, 2022) importing companies might have to order their products earlier. This generally increases risk, especially in the textile industry, as certain trends can be very short-lived and products might not be relevant anymore once they hit the European market. These factors will be explored through interviews in purchasing departments and tried to quantify through data-analysis.

Strategic factors

These factors are not directly related to the current shipping costs but deal with the strategic choices managements of the researched companies face as a result of the supply-chain crisis. Do they for instance consider moving production back to (eastern) Europe, is this even possible? These factors will be investigated through an interview or looked up in articles.

3.6 Data Analysis

Interview answers and reports of online case research are compared to each other to investigate differences and similarities in how the current situation affects companies and if they think differently about strategies to cope with this problem. This will be done using a

scheme where answers are mapped out. Finally, when a pattern seems to be evolving a general conclusion could be drawn from the different cases.

3.7 Validity and Reliability

3.7.1 Internal Validity

This research explores the impact of increased shipping costs on global supply chains through case studies. This means research is done on five companies that have to deal with these increased costs. Interviews with someone involved with the supply chain or finances of the companies are compared to each other and to reports of online research. Internal validity is a little stronger for cases where an interview was held than for cases that we could only investigate using online sources as these might be less reliable than someone directly involved with the company.

3.7.2 External Validity

External validity is a concern while doing case research, as situations in one company (case) might not be comparable to other companies. By doing multiple cases using a replication strategy this problem could be tackled when a trend is discovered. Case research, however, will always run the risk of being difficult to extrapolate results to different cases, especially outside of the textile industry.

3.7.3 Reliability

Reliability means that a researcher doing the same study should get a similar result. That is the reason why the methodology has been described so intensively in this chapter. Additionally, all raw data, structured data, voice transcripts and interview questions can be found in the appendices. This is all done to guarantee how conclusions are drawn from the data. Reliability is expected to be relatively high, interviews with people directly involved should be relatively reliable although there is a risk of these people not being completely honest.

4. Results

As stated before, finding companies that were willing to cooperate in this study proved very challenging. In the end, sixteen companies were contacted resulting in three people willing to share their experiences on how their company copes with increased transport costs, the elaborate interviews can be found in Appendix C. Besides that, two companies were found on which sufficient information could be found in articles to answer sub question 3, these results can be found in Appendix D.

In this part the results of these interviews and articles will be presented schematically. This will be done per sub question. As not all cases were even informative and elaborate the schemes are not all fully complete.

Sub question 1: In what way did transport costs change during the COVID-19 crisis? What was the impact on product costs?

In table 4.1 the interview results of sub question 1 are discussed. Unfortunately, online article research did not produce results for this sub question. All of the remaining case companies were able to more or less pass all of the extra transportation costs on to their customers. The two companies with a strategy to tackle further costs do not agree on whether prices can be increased next year again.

Table 4.1: Schematic overview of case outcomes to sub question 1

Case	Total purchasing cost increase	Part passed on to customers	How to tackle further increases
PVH Corp	<i>Approx. 10%</i>	<i>100%</i>	<i>Increasing retail prices again not an option, there is a lot to gain in making the GVC more efficient.</i>
Harco Socks BV	<i>Approx. 20-30%</i>	<i>Little under 100%</i>	<i>No clear strategy</i>
“Company D”	<i>Approx. 25-30%</i>	<i>Over 100%</i>	<i>We can easily increase prices again.</i>
C&A	<i>No information regarding costs available</i>		
Hugo Boss	<i>No information regarding costs available</i>		

Note. This table visualizes interview results related to sub question 1.

Sub question 2: How do companies cope with the increased uncertainty around shipping times and delays? Do they change their governance style?

In table 4.2 the interview results of sub question 2 are visualized. Unfortunately, online article research did not produce results for this sub question. None of the case companies said to have started ordering products earlier in the year or have increased their lot sizes. PVH did increase contact with their suppliers to ensure the timely arrival of goods. Harco and “Company D” are not increasing the degree of explicit coordination. Harco mentioned that the relation with their Chinese supplier is good and that the supplier does whatever they can to supply products in time.

Table 4.2: Schematic overview of case outcomes to sub question 2

Case	Early ordering to ensure timely delivery	Increased lot sizes	Did you increase explicit coordination with suppliers?
PVH Corp	<i>No, we still work with the same development calendar</i>	<i>No</i>	<i>Yes, PVH increased contact with suppliers to ensure goods arrive timely</i>
Harco Socks BV	<i>No, sometimes containers do arrive timely</i>	<i>No</i>	<i>Contact with supplier is good, they do whatever they can to supply us</i>
“Company D”	<i>No, our stocks are sufficient to handle late arrivals</i>	<i>No, we already possess huge stocks</i>	<i>Unsure, did work with suppliers to replenish their stock when they had the opportunity</i>
C&A	<i>No information regarding shipping times and delays available</i>		
Hugo Boss	<i>No information regarding shipping times and delays available</i>		

Note. This table visualizes interview results related to sub question 2.

Sub question 3: Do companies consider reshoring their production in order to avoid high transport costs? Do they expect prices to stay high?

Table 4.3 visualizes interview and article results. All case companies see a stabilization in transport prices although they expect them to stay high for the foreseeable future. If companies consider reshoring their production is various and depending of different reasons. Reasons regularly mentioned are shorter lead times allowing shorter response times to trends, lowering transport costs and smaller batches.

Table 4.3: Schematic overview of case outcomes to sub question 3

Case	Expect transport prices to stay high	Working on reshoring?	Reason
PVH Corp	<i>They stabilize but will stay high</i>	<i>Yes, for fashion items.</i>	<i>Shorter lead times, respond to trends, too expensive for regular items.</i>
Harco Socks BV	<i>They stabilize but will stay high</i>	<i>90% production is reshored</i>	<i>Quality control, lead times, smaller batches, often cheaper. Good supplier for remaining 10% Asian production.</i>
“Company D”	<i>They stabilize but will stay high</i>	<i>No</i>	<i>Production in Asia is way cheaper, lead times are not important to us as we do not sell fashion.</i>
C&A	<i>No information</i>	<i>Yes, recently opened a new factory in Germany for 3% of jeans production</i>	<i>Reacting to trends (lead times), sustainability, marketing, experimenting with new technologies, (saving on transport costs mentioned as a plus but was not an initial reason)</i>
Hugo Boss	<i>No information</i>	<i>Currently 50% of products come from in or around Europe but that is going to increase</i>	<i>Combatting shortages, delays and high costs. Having a factory close to Europe has been “a massive competitive advantage”.</i>

Note. This table visualizes interview and article research results related to sub question 3.

5. Discussion

In this part the interpretations and analysis of the results from the previous section will be discussed, this will be done on the basis of the hypotheses formulated in the introduction.

Hypothesis 1: Transport costs for products coming from Asia increased significantly, companies cannot fully pass these costs on to their customers so they experience financial difficulties.

This hypothesis proved partly right for the cases that were researched for this paper. Transport costs did increase significantly. From the data available it was expected that these costs rose approximately with 636%. Our interviewees, on the other hand, mentioned all three that prices ten folded, even more than expected. An explanation for this discrepancy could be that the, relatively small, case companies in this paper have less negotiation power when prices rise. An exception to this phenomenon could have been PVH. PVH, however, puts its suppliers in charge of getting products to consolidation points in regions PVH sells the products.

Surprisingly all three interviewees proclaimed that they (almost) fully passed higher transport costs on to their customers. One of the companies even increased prices slightly more to increase profit and cover possible further price increases already. These companies therefore do not face severe financial difficulties although they are concerned about future results. In line with the IMF article (Carriere Swallow et al., 2022) that was referred to in the introduction of this paper this result does prove that container tariffs indeed contribute to inflation as companies pass extra costs directly on to their customers.

Validity for these outcomes is relatively weak. As there is only data available for three cases external validity is weak. These three case companies did give very similar answers on cost increase and the way they pass these costs on to customers. This does increase internal validity.

Hypothesis 2: Uncertainty forces companies to work more closely together with their suppliers, increasing the degree of explicit coordination. Additionally, they might hold more stock and order sooner to be sure products arrive on time.

PVH indeed explained that they increased the degree of explicit coordination, their market approach was lacking in a way that suppliers sometimes had other priorities than what PVH wanted. Therefore, they increased the number of check-ins with suppliers during the ordering process and went for a more relational governance approach. Harco said to have a good relation with its Asian supplier that helps them in doing business. Due to the relatively small scale of this company speaking of a governance type might not be so relevant. The interviewee at “Company D” was not so sure about relations with suppliers, he/she knew that they worked together quite closely when stocks had to be replenished but was not aware of a general policy regarding supplier governance.

None of the companies orders their products sooner now or hold larger stocks than they did in the past. They do have very different motivations though: PVH cannot order sooner as they cannot design clothing faster and changing the process is undesirable; Harco Socks is bounded by the size of its warehouse, ordering earlier can also mean stock arrives earlier and they do not have the capacity to store this and “Company D” already has huge stocks that were sufficient when the shortage was on its high so there is no need for them to further increase stocks.

Validity is a problem for this sub question as well. Data was only collected for 3 cases on this question, resulting in weak external validity. These three case companies do not order products earlier or in larger quantities, although, reasons for not doing so were different for all of them. This does make internal validity weak as well.

Hypothesis 3: Companies expect the situation to last for some time. Consequently, companies consider reshoring their production to avoid high transportation costs.

Companies reckon that the situation is stabilizing but they do not expect a decrease in shipping prices any time soon. PVH, Harco, C&A and Hugo Boss are all working on reshoring but Hugo Boss is the only one saying they are doing so in response to high shipping rates. The others all have other reasons to work on reshoring, some do mention transport rates as a small unexpected benefit.

The main reason for reshoring for these companies seems to be shorter lead times and the ability to respond to trends fast without running the risk of ordering too large quantities that only arrive after the trend has passed. For regular clothing, that is not subject to trends, manufacturing in Asia is still much cheaper, PVH therefore is only working on reshoring fashion items. Production of regular items is going to remain in Asia for the foreseeable future. This is also the main reason why “Company D” is not considering reshoring; they specifically do not engage in trends and almost only sell regulars. The 3% “specials” that they do sell are made specifically to the wishes of their customers and are manufactured in Europe because of smaller lot sizes.

Validity again is a concern for this sub question. Even though five cases were selected, external validity is quite low. The case companies are quite dissimilar in size and product range. Additionally, not all cases provided similar answers although some conflicting answers in some way confirmed each other, “Company D” not reshoring does for instance confirm PVH’s statement that reshoring is not a viable option for non-fashion items. This does increase internal validity.

Overall validity is a concern with these results. Internal validity regarding the individual case companies is quite strong, especially to the interviewed companies. External validity is a different story, cases are not abundant enough to draw industry wide conclusions. And the variety in cases is too large to draw strong conclusions about parts of the industry. Nevertheless, our research can give an idea on what is going on in the fashion industry and can in that way be a basis for further research.

6. Conclusion

This paper concludes that the impact of increased shipping rates on the global value chain and long-term strategy of fashion companies is fairly minimal. Transportation costs increased making production in Asia definitely more expensive. Companies lay-off these extra costs fully to their customers. For most items, especially regular and mass-produced articles, Asian production is still more cost efficient than reshoring. Reshoring is a big theme in the industry and is practiced to be able to respond quicker to trends and compete with fast-fashion companies. High transport rates are seen as a small, unexpected, benefit but it will not make a huge difference on the rate or extend to which reshoring is applied.

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Appendix A: Approached potential companies

During the case selection phase sixteen companies were contacted that fulfilled the criteria. Initial contact was tried to be laid using e-mail addresses on corporate websites or sometimes via customer service. For some potential interviewees LinkedIn profiles were found that messages were sent to.

Table A.1: Contacted companies and the outcomes

<i>Company</i>	<i>Joined</i>	<i>Reason</i>
<i>Angro</i>	No	Information too competition sensitive
<i>Marlies Dekkers</i>	No	Never replied
<i>C&A</i>	No	Never replied
<i>WE Fashion</i>	No	Too busy
<i>Kings of Indigo</i>	No	Never replied
<i>Coolcat</i>	No	Never replied
<i>Wibra</i>	No	Never join in research
<i>PME Legend</i>	No	Forwarded message, no reaction since
<i>Zeeman</i>	No	No specific reason
<i>G-Star</i>	No	Never join in research
<i>Hunkemöller</i>	No	Never replied
<i>PVH</i>	Yes	Interview, data sharing not possible
<i>Anonymous; "Company D"</i>	Yes	Wants to stay anonymous, no cost data
<i>Harco Socks</i>	Yes	Agreed to a short interview, no time to share cost data
<i>Het Atelier</i>	Yes	During short phone call became apparent that they are not a suitable case company
<i>Auckland New Zealand</i>	No	Never got a reply

Appendix B: Interview Questions

The following questions were merely guidelines. Some questions turned out not to be relevant to the specific company and the interviewees were very talkative so answered many questions already before they could be asked. As all interviewees were native Dutch speakers the questions were translated to and posed in Dutch.

- What is your function at [company name]?
- Which percentage of your products is produced in Asia approximately?
- Which part of the resale price of your company's products is determined by transport costs?
- Is your company self in charge of logistics or do you subcontract your logistics to a third party?
- Are you or your suppliers responsible for transport of the good to Europe?
- In what way do the current high shipping costs affect your company?
- At which point in your supply chain are costs rising? Shipping, last mile, warehousing?
- How much of these rising costs can be passed on to your customers?
- Apart from the rising costs also reliability of shipping lines declined and lead times increased, how does this affect your company?
- How do you anticipate on lower reliability? Do you place orders earlier or do you place larger orders?
- To what extent do you think your supply chain is resilient enough to handle shocks?
- Do you expect the current situation to last or will costs decrease or stabilize in the end?
- "Reshoring", moving production back closer to the final customer, is a trend recently in the fashion industry. Is that something that is also apparent in your company?

- If yes, do you think that this process has accelerated as a result of increased shipping costs?
- Any other business

Appendix C: Elaborate interviews

These are readable stories based on the interviews held with interviewees structured per sub question of this paper. As such these are not their exact words or answers to questions. These stories have been sent to the interviewees for them to confirm that this was indeed what they said and meant. They all confirmed.

C.1 PVH Corp. (Jacob Veerhuis)

PVH Corp is a fashion company known for luxury brands Tommy Hilfiger and Calvin Klein. They are a globally operating company with stores in over forty countries, work with over a thousand factories and have more than six thousand retail locations.

Jacob Veerhuis works since October 2021 at PVH as a Junior Manager Supply Chain Transformation. Before that he worked for ASML in different roles in their supply chain management. In his current role he has a lot to do with the increased transportation costs that his company faces and how they cope with this.

In what way did transport costs change during the COVID-19 crisis? What was the impact on product costs for your company?

At PVH the manufacturer of the final product makes sure that the product is transported to a consolidation point. In Netherlands they have a large one in Venlo. From there PVH transports the product to their stores and ships ecommerce orders directly to the consumer. Transport from the factories to Europe is paid for and organized by the manufacturer. These manufacturers faced a massive increase in their transportation costs that they directly passed on to PVH. Nowadays manufacturers also more often increase the price of a contract even after

the handshake deal because of increased transportation cost, something that rarely happened before. Furthermore, PVH decided, together with other brands as H&M to stop using Chinese cotton because the situation in the Xinjian province with the Uyghurs. This led to global shortages in cotton making the price of cotton very volatile and high.

Jacob explained that PVH could quite easily increase the prices of its products as their products are in the higher segment and their customers do not mind that much about a small increase in price. For a company working with a cost leadership model, such as Primark, this is much more difficult. He could not share the exact percentage that they increased their prices with but he gave the example of a 50-euro shirt now costing 55 euros. The problem is that they cannot easily raise prices again with this amount when prices increase further as that would even be too much for their customers.

Fortunately, there is a lot to win in the supply chain in order to reduce costs. Jacob told me that in his experience the way supply chains work in the textile industry is very immature to what he was used to at ASML. At PVH the focus is on the brand and the product and not so much on efficiency. Their products and raw materials are much lower costs compared to what is needed for the production of chip machines that makes the inputs less traceable until two layers in the production before is doable but which farm the cotton is from is mostly unknown. Furthermore, ASML employs a lot of engineers who have a much greater appreciation for efficiency and traceability than the marketeers and designers at PVH.

One of the things that PVH is now working on to reduce costs in their supply chain is an end-to-end costing model. This model will include procurement, transportation and warehousing costs as well as the weighted average cost of capital (WACC). The expectation is that this model will give the necessary insights to make smarter choices in the supply chain on when for instance to source cotton and where to produce t-shirts. Nowadays these choices are mostly made based on assumptions and feelings. To get this model right and use it to make the right decisions it is very important that the data they have now in the supply chain is accurate and abundant, something that needs a lot of improvement still.

How do companies cope with the increased uncertainty around shipping times and delays? Do they change their governance style?

Delivery reliability is a problem for PVH, the arrival date of orders is nowadays less reliable than before COVID. Jacob was recently in India and there they made a list of the most common reasons for order delay as they started documenting these reasons better recently. Availability of containers to ship orders in is a problem together with insufficient capacity at the factories. Often delays in the factory are not a matter of time but of priority.

To tackle this PVH intensified the contact they have with manufacturers. In the past they had contact at the moment of contracting and one intermediate status update, they now have weekly meetings to discuss progress and whether targets are going to be reached. The number of targets and controls also has increased. In short, they do more micromanaging of subcontractors. In addition, the process became more data driven, something that was first done decentral but is now consolidated per buying region.

The moment of ordering a collection has not been brought forward and batches also did not necessarily increase. PVH works with a development calendar and they did not change this because of increased uncertainty. This is because they need three months to design their products in a pretty inefficient process that they do not want to change as they value the quality of the designs. Companies as Inditex (Zara) are much better at this, Zara can develop a new product in twelve days.

Do companies consider reshoring their production in order to avoid high transport costs? Do they expect prices to stay high?

At the moment we see the procurement costs of cotton stabilizing, and even slightly decreasing, for the first time in a year. Regarding the transportation costs we are now dealing with a poisonous cocktail of Covid that shuts down harbors in the far east regularly, the Suez Canal that was blocked, high oil prices and the war in Ukraine that poses a problem as a lot of

ship captains are Ukrainian. Jacob therefore personally thinks that the situation will balance out in the long term as some of these issues resolve themselves.

Reshoring productions is something that PVH has been working on for a longer time, mostly for sustainability reasons but the current situation has definitely accelerated the process. They call this the Global Product Kitchen, in this program some production of end-products has already been moved back to Europe and now they want to start doing that for raw materials as well. PVHs value chain looks roughly like this: Level 1: Assembly; Level 2: fabrics; Level 3: yarn; level 4: cotton farmer. Reshoring is going pretty well for level 1 but level 3 and 4 proves a lot more difficult.

PVH roughly has two different kinds of product categories: Never Out of Stock and Fashion. The first category are basics that sell all year and every year (maybe seasonably a bit more or less), this is where PVH earns the profit, lead times are here not so important so even with high shipping prices producing these is much cheaper in Asia. Fashion items are items they sell one season or shorter, for these product lines reshoring is a viable option as lead times for these products are more important.

As PVH sells products globally they do not call this process reshoring but Local for Local, this means that products for Europe are manufactured in Europe and products for US customers in the America's. This does mean smaller order batches than when production is consolidated somewhere increasing costs.

C.2 Harco Socks (Marcel van Ballekom)

Harco Socks is a small-scale wholesale company specialized in socks and underwear. They employ seven people in their warehouse and office in Goirle, the Netherlands. Marcel van Ballekom, the interviewee, is the owner of the company and in charge of sourcing and logistics. They have customers all over Europe, 40% of sales comes from within the Netherlands with the rest coming from other European countries.

In the past Harco manufactured a lot of its products in China, in the last ten years however they moved a lot of their production back to factories in Europe. At this moment 90% of their product range is manufactured in Europe, particularly in Portugal, Turkey and Italy. The reason for this is that costs in China increased rapidly and quality was lacking and hard to control. If a product was supposed to contain a certain amount of cotton that proved to be rarely the case. Currently Harco only sources boxershorts in China as they have a reliable partner for this kind of product.

In what way did transport costs change during the COVID-19 crisis? What was the impact on product costs for your company?

As only 10% of their goods are still manufactured in China the impact of high container rates on Harco was not that huge. The costs to transport boxershorts from China to Europe, however, increased tenfold. As Harco organizes transport to Europe themselves these costs directly affected them. Transport within Europe also increased in price due to high fuel costs and a shortage in truck drivers.

Our costs have risen with between 20 to 30%, this resulted in disappointing financial results over 2021, the reason was not only transport costs but also raw materials like paper and cotton increased in price. Harco therefore decided to increase the price of its products by 20% in February. Customers already seemed to know what was coming and most of them understood the reasons behind the price change as Harco received very little complaints.

How do companies cope with the increased uncertainty around shipping times and delays? Do they change their governance style?

Sometimes a container with boxershorts arrives two or three weeks later than planned. That's very unfortunate as that means delays for our customers as well. Ordering earlier is not really an option because some containers also arrive perfectly in time or earlier and we do not

have enough space to store these products if they are too early. We cannot really do something about the uncertainty.

Do companies consider reshoring their production in order to avoid high transport costs? Do they expect prices to stay high?

At this moment we are balancing on a very thin line. It all started with the accident of the Ever Given that blocked the Suez Canal. Add COVID-19 and the war in Ukraine to that and you have a very poisonous mix for world trade. If all of this settles down everything will be alright. I am not so convinced, however, that prices will drop again as they normally tend to stay high, I do expect them to stabilize by then though. At this moment Harco is taking the price they get from suppliers and they do not negotiate too much as manufacturers are not willing to do so.

Harco is a great fan of reshoring, they have been doing it for the past ten years already and are on a point where only 10 percent of their goods are manufactured in Asia. Reshoring gave them better control over the quality of the goods, shorter lead times and smaller batches can be ordered, reducing capital costs. Moreover, producing a sock in Turkey is often cheaper than producing the same sock in China. For the remaining 10% that Harco sources out of China they cannot find a reliable and affordable partner close by that offers the same high quality.

C.3 Company D (interview)

This company wants to stay anonymous for competitive reasons, therefore the name of the interviewee will also not be disclosed. The name of the company and interviewee is known by the authors of this paper and can only be disclosed for academic reasons. The interviewee is the financial manager at the Dutch branch of the company.

The company is a Swedish listed company with a presence in most European countries. They specialize in wholesale of workwear, sportswear and promotional clothing as well as custom made clothing for large customers. Their customers are mostly organizations that order

their company attire and retailers. It is therefore important for them to keep product ranges available for long periods as companies might want to reorder the same products again for new colleagues.

In what way did transport costs change during the COVID-19 crisis? What was the impact on product costs?

As 97% of our products are manufactured in Asia, mostly China, Myanmar and Bangladesh, we were hit hard by the rising transportation costs. Our transportation costs approximately ten folded in the past two years. Before COVID; 3% of our purchasing price was made up of transportation costs, nowadays transportation costs account for 25 to 30% of the products' costs. The reason for this is not only the high transport prices but also the fact that we pay shippers in dollars and the dollar increased in value. Luckily production costs were constant.

To cover the extra costs Company D increased the prices of its products, in this way they reimbursed all of the extra costs and even a bit more. If necessary, they do not see a problem in doing so again. Their main benefit is that they have warehouses all over Europe in which they hold comparatively much stock on hand. Momentarily the shortages are such that if you can offer the needed goods, you will get the order.

How do companies cope with the increased uncertainty around shipping times and delays? Do they change their governance style?

The increased uncertainty and chaos around container shipping was actually in our advantage. We possessed so much stock all over Europe that we could deliver products long after our competitors were sold out, and we charged customers accordingly. After some months though even our stock was running low and we had to complete one order from sometimes up to three different warehouses all over Europe. This was not ideal as it increased costs and some of our customers complained about receiving orders in smaller pieces.

When the initial problems calmed down a bit, we had to order large quantities in order to bring our stock back up to normal levels again. At this moment our stock levels are normal and we do not order larger quantities or have more stock compared to before.

Do companies consider reshoring their production in order to avoid high transport costs? Do they expect prices to stay high?

Transport prices are currently stabilizing but are still very high, I do not see them going down in the near future as when prices are high, they tend to stay high. Reshoring is not so interesting for our kinds of products and the high volumes we order as we do not care so much about lead-times. For the specials that we make for one customer specifically they are important and that is why we produce those products in Europe. These mostly come in smaller quantities so then the price difference is also not so significant.

Appendix D: Article research results

The companies in our article research are companies in the textile industry that have recently announced to opening or expanding European factories as part of their reshoring strategy. As such we had to work with what could be found in articles on the internet. For C&A that is a lot more than for Hugo Boss as C&A really took the opportunity to speak to the media and use the attention, probably for marketing reasons.

D.1 C&A

Executive summary;

C&A opened a plant to manufacture jeans in Germany. Although they are very serious about the factory it is currently still more of an experiment than a serious operation. The reason to try this is merely to be able to be better in reacting to trends. Another reason mentioned is that the factory fits with C&A's sustainability goals. Transportation costs were not a factor in the decision to open the factory although it is mentioned as a way to close the costs gap between German and Asia production.

Recently C&A opened a new plant to produce jeans in Mönchengladbach, Germany. It is the first factory that C&A operates in Germany since the last one left in the early 2000's. Giny Boer, CEO of C&A, said in an interview with German newspaper Handelsblatt (Müller, 2022) that soon 800.000 jeans a year have to be produced in the new factory which will employ 300 people by then. Although the factory will only make 3% of the jeans C&A sells, she calls it a huge step for the company as it allows experimenting with new technologies and build a new supply chain in Europe to be able to increase production in the future.

In an interview with Dutch tv-program Tegenlicht (VPRO, 2022) the CEO of the factory in Mönchengladbach, Uwe Gansfort, explained why they decided to open a factory in Germany. The main reason to move production back to Germany is because they want to be closer to the retail market in order to respond quickly on sales results and trends. Production closer to the

customer reduces overproduction and overdistribution. This is the way C&A expects to recover most of the initial costs. Mr. Gansfort mentioned marketing reasons as another aspect of the move, according to him their younger customers demand a more sustainable and local product, this gave them the final push to just try it out. Giny Boer mentioned in her interview with Handelsblatt being able to swiftly react to trends as the main reason for opening the new factory (Müller, 2022).

According to Gansfort sustainability is a big theme in the new factory, the factory is carbon-neutral and all materials can be recycled (Cornelissen & Van der Velde, 2022). Moreover, materials are sourced from European suppliers to keep it a European product. The fabric needed to produce jeans is for instance sourced from an Italian supplier that uses a new, more sustainable, method of production. The pieces are then cut in a way that reduces waste as much as possible, and in turn also makes sure as few materials are used for a pair of jeans as possible, besides this being sustainable it also reduces costs.

In the Tegenlicht interview (VPRO, 2022) Uwe Gansfort explained that workers in C&A's German factory are paid ten to fifteen times what workers in Asia are paid. This of course is a huge difference that has to be made up somewhere. The factory is therefore planning to automate as much of the production process as possible in order to increase productivity of their workers.

Although C&A took the decision to open the factory in Germany before transport prices between Asia and Europe increased Mr. Gansfort mentioned it as a windfall; "we are saving an incredible amount of time and money here, these pants are in the shop tomorrow" while pointing at some newly finished jeans (Cornelissen & Van der Velde, 2022). This does still not make the production of jeans in Germany cheaper than in Asia but it helps close the gap.

D.2 Hugo Boss (Journal research)

Hugo Boss begun increasing capacity in its factory in Izmir, Turkey (Logistiek.nl, 2022). The company want to increase the number of employees with a thousand, increasing the workforce

at the factory with at third. The company also has locations in Germany, Poland and Italy that together produce approximately 20% of Hugo Boss' production. Another 30% is supplied by suppliers in or around Europe.

The companies CEO, Daniel Grieder, says in an interview with the Financial Times (Storbeck, 2021) the reason to increase capacity in Turkey are the "unbelievable challenges" that supply chain disruptions caused to the company as they shortages, delays and higher costs. As a response the company is planning to increase the share of European production in the coming years.

This is a permanent shift in strategy, Grieder says the following in the Financial Times interview: "Our future strategy is to produce even more garments close to the markets where they are sold" (Storbeck, 2021). This is referring to a local for local strategy. Additionally, Grieder tells the Financial Times that he views the local production sides as huge competitive advantage.