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## Regional dimensions of liability of foreignness: between a rock and a hard place?

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# JENA ECONOMIC RESEARCH PAPERS



# 2007 – 023

## **Regional Dimensions of Liability of Foreignness: Between a Rock and a Hard Place?**

by

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## **Regional Dimension of Liability of Foreignness: Between a Rock and a Hard Place?**

June 2007

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### **Abstract**

In this paper we develop optimized localization strategies for multinational firms to overcome their liability of foreignness by adding a regional dimension. We explore conceptually whether economic stress in a region has a mitigating or reinforcing effect. We test his analytical framework empirically on the highly internationalized German car market and find that economically depressed regions are promising stepping stones into foreign markets.

JEL-classification: F23, L62, M10

Keywords: Liability of foreignness, multinational strategy, automotive market

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## 1 Introduction

Globalization has been an engine for growth and efficiency in almost every industry. Hence, many companies have become “multinational”, i.e. they operate procurement, production, sales and/or distribution activities abroad. These internationalization strategies have not been without fractional losses. The borderless world (Ohmae, 1990) has not materialized. Especially social and cultural borders remain sticky. The expertise and reputation of multinational corporations (MNC) is typically shaped by its home country environment. Their products and practices do not fit seamlessly in host countries with different cultural, social, economic, religious and regulatory traits and roots (Ghemawat, 2001, 2003). These stumbling blocks for MNCs materialize as more frequent mistakes and delays (Lord and Ranft, 2000). Several studies (Zaheer and Mosakowski, 1997, Mezas 2002, and Miller and Parkhe, 2002) have identified this “liability of foreignness” (Zaheer, 1995) and its effects.

We extend this existing research by focussing on countervailing strategies for practitioners to act successfully on foreign markets. More precisely, we argue that multinational firms can exploit regional differences within the host country to mitigate the effects from liability of foreignness. Mezas (2002a) and Nachum (2003) suspect such regional discrepancies. We embed their argumentation into a conceptual framework that makes regional leverage points for foreign firms predictable. We stress the importance of divergence in economic development among regions. However, our theoretical argumentation is not confined by a priori assumptions, i.e. an economic downturn in a region (e.g. high unemployment) may weaken existing customer loyalty with domestic firms but could also very well result in more narrow “patriotic” purchasing behaviour (e.g. “buy cheap” vs. “buy American”). Hence, we develop theoretical hypotheses for both lines of reasoning and test them empirically for a comprehensive sample (almost 1200 models) of the East and West German car market in 2003. The latter is a fitting object of analysis. The automotive industry is on the forefront of globalization and Germany is a major market with deeply rooted domestic car manufacturers and established foreign competitors. Additionally, significant economic differences between both parts of the country exist even 13 years after re-unification.

This study is directed at management practitioners and scholars. Academic discussion has so far mostly focussed on the effects of liability of foreignness. We aim at deepening these insights by providing contingencies. The later should be of interest for managers who can identify leverage points for overcoming their disadvantages from liability of foreignness.

The article is organized as follows. The next section presents a brief review on the concept of liability of foreignness. Section three further develops these fundamentals into an analytical framework. In section four we present our empirical study followed by results, and subsequently, in section six, our conclusions.

## **2 Liability of foreignness: A brief review**

Liability of foreignness is a relative concept (Hymer, 1976): Enterprises doing business abroad face certain unavoidable costs that companies operating in their own home environment do not. The main source of liability of foreignness is an interaction of social and cultural components that can create barriers for foreign companies (Granovetter, 1985; Zaheer and Mosakowski, 1997). In essence, liability of foreignness is a double-edged sword: foreign enterprises are “strangers in a strange”. An obvious point is the host consumers’ uncertainty stemming from a lack of knowledge about the foreign company and the quality of the offered product. In addition, foreign companies feel estranged because they lack the relevant tacit knowledge to interpret the daily business in the way natives do (Hymer, 1976). These disadvantages manifest themselves in more frequent errors or delayed decisions among foreign companies (Lord and Ranft, 2000; Sofka, 2006). They stem from spatial distance (e.g. travel, transportation, time zones), higher learning costs, a lack of host country reputation or legal home country export restrictions (Zaheer, 1995).

So far, research has systematically investigated and confirmed the existence of liability of foreignness, most notably Zaheer (1995), DeYoung and Nolle (1996), Hasan and Hunter (1996), Zaheer and Mosakowski (1997), and Miller and Parkhe (2002). A number of empirical studies have shown that multinational enterprises face enduring barriers in foreign countries (Hennart, 1982; Hymer, 1976) and a lack of embeddedness (Goshal and Bartlett, 1990; Granovetter, 1985; Zaheer and Mosakowski, 1997) compared to local firms. The most prominent sectoral studies on the topic focus on the banking industry, currency trading and labour lawsuits (DeYoung and Nolle, 1996; Mezas, 2002b; Miller and Parkhe, 2002; Miller and Richards, 2002; Zaheer and Zaheer, 1997). Still, DeYoung and Nolle (1996) add that foreign-owned enterprises may force growth more intensively than profitability.

## **3 Analytical framework**

### **3.1 Sources of Liability of Foreignness**

Domestic companies have an advantage over their foreign counterparts because of the intensive accumulation of tacit knowledge of their native economic, social, legal and cultural conditions. In contrast, foreign firms have problems developing a deep understanding of the host country’s sticky unwritten laws, the cultural and social regulations and their impact (Jensen and Szulanski, 2004). Natives have acquired relevant knowledge at no cost as part of their education and can therefore adopt the relevant information more easily, i.e., they know where to look (Mezas, 2002b). These capabilities are deeply rooted in continuous practice, feedback, interaction and shared experience. Foreign firms lack this form of embeddedness. They are not fully integrated into the local flow of information between customers and companies in the host country (Granovetter, 1985; Zaheer and Mosakowski, 1997).

Given these social and cultural roots of liability of foreignness it is unlikely that a foreign firm could readily acquire the necessary host country assets and capabilities to compensate for its disadvantages from being foreign. There are no markets for “hybrid” resources and competencies that provide consistency within host country environments, as well as home country headquarters. Hence, these assets have to be built, developed and refined over time, interaction and experience (Dierickx and Cool, 1989). Some authors have focused on this dynamic aspect of liability of foreignness (Petersen and Pedersen, 2002; Zaheer and Mosakowski, 1997). On the one hand, foreign enterprises seem to learn and adapt to the host country environment with time. On the other hand, their perceived legitimacy in the host country increases, too. Hence, moving operations abroad is typically more of a marathon than a sprint, i.e., it takes time to compete on the same level as local enterprises (Zaheer and Mosakowski 1997).

### **3.2 Regional discontinuities**

Most of the studies mentioned before assume at least implicitly that the country level is the relevant perspective to analyze liability of foreignness. This follows the basic assumption that the previously described sources of liability of foreignness are evenly distributed across a nation (e.g. same language, legal system etc.). Mezas (2002a), however, cautions that regional aberrations may exist and the results of Nachum (2003, 2006) could be interpreted as a first empirical hint. She finds no measurable effect for liability of foreignness for her sample of financial service firms in the city of London.

We extend this discussion by returning to its starting point. Liability of foreignness can only be measured relative to host country competitors. While the potential factors behind liability of foreignness may be ubiquitous within a nation, environmental forces may hinder domestic competitors from realizing this “home turf advantage.” We propose that this favourable strategic context for foreign firms can be identified on a regional level which allows multinational firms to develop targeted regional strategies.

We argue that the amount of economic stress in a host country region influences the impact of liability of foreignness. Two mechanisms are possible. On the one hand, economic downturns may force host country customers to re-evaluate existing consumption patterns which provides windows of opportunities for foreign firms and their products. On the other hand, economic stress may propel customers to return to their national core beliefs and makes their purchasing behaviours in effect more “patriotic.” We explore both routes theoretically.

#### **Economic stress as a mitigating factor of liability of foreignness**

Dierickx and Cool (1989) argue that the degree of imitability of strategic assets, i.e. the social and cultural embeddedness of host country competitors, depends on the presence of time compression diseconomies. Put simply, the latter implies whether it is possible to take a shortcut in accumulating similar stocks of host country knowledge as domestic competitors. We argue that economic stress provides such leverage points. Given the socio-cultural nature of liability of foreignness and related deeply rooted mechanisms in a country, economic stress in a society

invalidate the established social network and opens the chance for newcomers from abroad to develop local embeddedness at rates equal to domestic competitors.

These mechanisms have typically been investigated with a focus on the demand side. Consumer preferences are related to the processes, functions and structures of a social system. Preferences and preference formation are closely related to social stability and change (Zinam, 1974). Various authors show that when consumers experience disruptive events that signify transitions into new roles and create stress, they also modify their consumption patterns. Such events could have personal or social/political character (Mathur, et al., 2003; Wan, 1998). Two theoretical perspectives apply: the role transition perspective and the stress perspective. The role transition perspective suggests that as people change roles, assume new roles or relinquish old roles, their behaviour changes. As people enact new roles or relinquish old ones they experience a need to redefine their self-concept (Mehta and Belk, 1991). Since possessions are integral to the definition of self and the expression and performance of roles (e.g. Belk, 1988), role transitions are associated with disposal of products relevant to previous roles and acquisition of products relevant to new roles. Stress theory and research provides the second perspective on behavioural changes. Stress is often defined as environmental, social or internal demands that disrupt existing psychological states and require the individual to readjust his or her usual behaviour patterns (Thoits, 1995). Major life transitions are often considered "stressors." By virtue of the newness of these preferences they are relatively weak, but the weaker the preference is the more likely it is that switching can be induced (for example see Weber and Hansen, 1972). This is especially evident in markets that have experienced disruptive changes or economic stress and in untapped markets when preferences are relatively weak.

Wan (1998) illustrates this line of argument for China: Economic reforms have brought tremendous change. The economic transition in China becomes most visible in economic development and institutional transformations. The impacts on lifestyle and westernization through these channels are tremendous. Wan (1998) shows that these impacts are essentially reflected in changes in consumers' preferences for the consumption of commodities and services.

In essence, we argue that economic stress in a society forces the evaluation of existing patterns of behaviour, consequently weaken the existing networks of knowledge flows (Thoits, 1995). Readjusting their preferences consumers put domestic and foreign competitors back to the same "starting point." They judge the importance of each product relying on their personnel criteria, current economic situation and less on their established paradigms. That opens a window of opportunity for foreign firms. Product characteristics become much more important than established procedures, paradigms and social pressure. At this time foreign firms have the same chance as domestic competitors to communicate their product advantage. This readjustment enables foreign competitors to enter host country networks. Thus, long learning engagements and the absorption of tacit knowledge is no more a precondition to success in a foreign market. The economic stress acts as a 'time-compressor' for foreign companies as consumers reweight their priorities. Such an argument would predict that the liability of foreignness decreases in regions with high levels of economic stress. Hence, we derive our first hypothesis:

**Hypothesis 1:** Economic stress in a society weakens social and cultural host country networks and provides windows of

opportunities for foreign competitors to overcome their liability of foreignness.

### **Economic stress as a reinforcing factor of liability of foreignness**

On the opposite side, there is another research stream established in the literature. Events such as unemployment and political and or economic upheaval often involve significant personal loss and place people in "between" stages. As stresses occur, people attempt to restore balance while relieving the frustrations and tensions accompanying disequilibrium (Lazarus and Folkman, 1984; Pearlin, 1982). Actions and thoughts that enable the individual to handle difficult situations, solve problems and reduce stress dominate (Lazarus and Folkman, 1984). At stressful times, aspects of life otherwise taken-for-granted may be reassessed (O'Donohoe and Turley, 1999). When people feel that they lack knowledge or the ability to process information during the crisis they rely on established patterns from the past where they feel trust (Earl, 1986).

For example, during economic crisis of winter 1996-1997, consumer stress significantly affected the consumption practices of Bulgarian consumers. The uncertainty about future incomes and unemployment made people more cautious about their spending. In this case, consumer preferences shifted from foreign to Bulgarian brands, particularly in the food, apparel and footwear product categories (Milanova, 1999).

Examining the impact of economic stress on consumer preferences we argue that uncertain consumers rely more intensively on past patterns (Earl, 1986). Therefore they prefer established home market brands compared to unknown foreign ones when economic stress occurs. We suggest that disruption and crisis actually lead to increased centralization and greater demarcation between insiders and outsiders. Such an argument predicts that the liability of foreignness actually increases during times of economic stress. Hence, we derive our second hypothesis:

**Hypothesis 2:** Economic stress in a society weakens social stability and increases uncertainty. Relying on past experience host country consumers prefer home market products. Therefore, the disadvantage of foreign firms increases.

## **4 Empirical study**

### **4.1 Empirical setting**

We test our hypotheses using the German car market. Since liability of foreignness has been defined as a competitive disadvantage for foreign multinationals compared to their host country competitors, we propose that the differences in sales quantity of comparable cars between German and foreign producers can be interpreted as the degree of liability of foreignness. The German car market is an especially good setting since it features several large, domestic car manufacturers as well as established presences from almost all international car producers.



Relying on samples of different regions within the host country helps to determine if a liability of foreignness is a national effect or influenced by regional characteristics (Shaver, 1998). To estimate the regional economic effect on liability of foreignness we have to control for all other liability-specific criteria (Mezias, 2002a). Moreover, as both regions, West and East Germany, belong to the same country there should be no difference in the general political and social structure that could bias the results. Thus, estimating the degree of liability of foreignness separately for West and East Germany we can compare the estimation results and interpret the difference as the outcome of the different regional economic performance. If our theoretical outline holds, the effect of liability of foreignness should be significantly different between West and East Germany.

Germany offers the opportunity to investigate the impact of a different regional economic situation on liability of foreignness. Before reunification in 1990 the East German car market was largely closed to western producers and its citizens were not directly targeted by western marketing efforts. Hence, in Eastern Germany existed a whole regional buyer group within Germany that had little or indirect ties to West German car manufacturers. When the Berlin Wall fell, East Germany had to fulfil an economic restart. Meanwhile, West Germans relied on established patterns and experience. Thus, the West German economy had an advantage compared to East Germany. Since reunification, both parts of Germany have developed a common sense of nationality. Therefore, and because of the failure of East German competitors (sales of the native Trabant and Wartburg models collapsed immediately after the border opening and the firms closed), West German car manufacturers became more and more established as home brands in East Germany. Furthermore, facing a 13 year time lag, East Germans have had time to handle the short term effects of the disruptive change and established their new preferences and routines. What is more, the East German states are by now fully integrated into a unified German institutional setting. This includes the legal and regulatory framework, finance system, taxation as well as the road infrastructure.

Nevertheless, while East and West Germany share historic, cultural and societal traits and similarities, significant differences in economic structure, behaviour and living conditions remain. There exist significant differences in economic performance between the East and West German economies. Comparing the standard economic indicators between the regions shows a strong economic advantage for the West German states (summarized in Table 1). Relying on the German GDP, we find that the growth rate in West Germany is 160 times greater than in East Germany in 2005. Moreover, the unemployment rate in East Germany is more than 40% higher than in West Germany. Hence, we find significant lower rates of per capita consumption, saving rates and gross fixed investments in East Germany. In essence, the East German economy suffers from much more economic stress than the West German economy.

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Insert Table 1 about here

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To implement the empirical strategy outlined above we rely on German car market data. This approach has several advantages. Car models are the actual item of competition in the

automotive market. Automotive companies do hardly compete on individual cars but rather on lines of equally equipped car models. Market data is broadly available for all relevant competitors. It allows benchmark comparisons between foreign and domestic competitors, instead of hypothetical, normative targets. What is more, using market data enables us to judge liabilities of foreignness from the most relevant perspective: Through the eyes of the consumer. Furthermore, using market data delivers value estimations (so called shadow prices) for important company and product characteristics which can subsequently be used to validate the model.

## 4.2 Data

We rely on a cross sectional dataset for the year 2003 which was specifically generated by combining several major data sources. Table 2 provides an overview.

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Insert Table 2 about here  
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We derive a final dataset of 1263 observations (480 German and 783 foreign models) from 23 domestic and foreign car manufacturers.

## 4.3 Variables

Dependent variables

The dependent variables in our study are sales quantities of a particular car model (in logs) in West and East Germany respectively. By choosing the logarithmic form, we rely on the experience of several authors from hedonic price analysis. Using sales quantity as dependent variable, we can control for price. High unit sales could be the result of discount pricing or vice versa. Thus, the causal direction could be problematic. We will address this issue methodologically.

Liability of foreignness variables.

We add a dummy variable for the foreign manufacturer under consideration as proposed by Mezias (2002a). The coefficient will be the focal point of interest in the following discussion and conclusion. Our theoretically developed research question can be tested by comparing the coefficients of this dummy variable in East and West Germany.

Zaheer and Mosakowski (1997) discuss a number of concepts that would indicate whether a company can be considered foreign: location of international headquarters, nationality of the majority of workers, share of foreign shareholders, nationality of the largest single shareholder or

the perception of a company in a particular country. We chose the latter concept. The reference groups in all further estimations are the car models with a traditional German background: Audi, BMW, Mercedes (DaimlerChrysler), Smart and Volkswagen.<sup>1</sup>

We classify the following brands as foreign: Citroen, Daewoo, Chrysler, Fiat, Ford, Honda, Hyundai, Mazda, MG Rover, Nissan, General Motors (Opel), Peugeot, Renault, Saab, Seat, Skoda, Toyota, Volvo. The engagements of General Motors and Ford in Germany run deep and date back to the pre World War II era. General Motors has owned Opel since 1929 (the company was founded 1862 by German engineer Adam Opel), and the German branch of Ford was established in 1925. Hence, one could certainly argue that these companies should be considered German (i.e. domestic) instead of foreign. Still, we fear that by doing so, we would severely neglect the internalization activities and subsequently liabilities of foreignness of two of the largest car producers in the world.<sup>2</sup>

Control variables.

As suggested by Mezas (2002a), measuring liability of foreignness implies controlling for the effects of other liabilities and contextual aberrations. We address the former through a broad set of firm specific variables and the latter through model specific items.

With regards to other liabilities we capture the effects newness (both on the brand and model level), distribution networks, advertising and R&D expenditures as well as size. Additionally, we control for differences in model price and quality. We rely on previous findings from marketing research<sup>3</sup> and hedonic price analysis<sup>4</sup> to derive four broad quality factors that influence the

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<sup>1</sup> Porsche is excluded because of data availability issues.

<sup>2</sup> Nevertheless, we test additional model specifications empirically for robustness treating Opel and Ford as domestic and adding an additional dummy variable for German owned foreign brands (Skoda and Seat). The significance levels and differences between our liability of foreignness variables in both regions remain stable. Full regression results of these additional specifications are available from the authors upon request.

<sup>3</sup> Marketing research focuses largely on consumer preferences. Consumers have individual preferences through which they evaluate the quality of a car, which enables them to decide if and what kind of car they should buy. Hence, it is important for car manufacturers to produce cars that meet these preferences. The prevailing methods employed to evaluate the preferences are conjoint analyses and joint stated/revealed preferences models (Berkovec and Rust, 1985; Brownstone et al., 2000; Bunch et al., 1993; Train and Sonnier, 2002). The dominant quality characteristics in these studies are price, performance, engine type, convenience and operating costs (Brownstone et al., 2000; Bunch et al., 1993).

<sup>4</sup> The basic idea behind hedonic price analysis is in the assumption that changes in prices can only be correctly assessed once they have been adjusted for changes in quality. Based on the hypotheses that goods are valued for their value-creating characteristics, hedonic prices are defined as the implicit prices of these attributes (Rosen, 1974). Basic work with hedonic prices arise from studies of Court, 1939 and Griliches, 1961. The hedonic approach has been used in recent years in the automotive sector to investigate a variety of research topics (see for example Goldberg and Verboven, 2001, 2004; Verboven, 1998, 2002). Their prevailing goal has been to achieve segmentation in the car market largely based on performance and size.

product evaluation of prospective car buyers: performance, economic and ecological efficiency, safety and convenience/amenity. Table 3 provides a detailed overview.

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Insert Table 3 about here  
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#### 4.4 Description

The following section gives a brief overview of the average car characteristics and the differences between German and foreign cars. A detailed list of the means and standard deviations for the variables used in this study is provided in Table 4.

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Insert Table 4 about here  
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Judging from our central success indicator, sales quantity per car model, German manufacturers perform better than foreign ones. The average quantity of sales realized by German manufacturers (354 158 units) is more than three times the average sales quantity of foreign producers (116 437). Comparing East and West Germany we find that the share of cars sold by domestic producers is higher in West Germany (49.4%) than in East Germany (34.6%). Thus, foreign producers are more successful in East Germany. German and foreign producers are more equal when it comes to marketing expenditures in Germany. The same can also be said for the “age” of domestic and foreign car models since market introduction. However, there are differences in R&D intensity. On a global scale, German producers invest a higher share of sales in R&D (4.74%) than their foreign counterparts (4.01%).

With an eye on performance, the average German car sold has a bigger engine (125 kw) than the foreign counterpart (91 kw). The former also have a slight advantage when it comes to environmental friendliness but the difference is less pronounced. That is not the result of German manufacturers offering more diesel fuelled cars. Roughly a third of the models in our sample run on diesel fuel and these shares are almost identical for both German and foreign brands. Then again, foreign car models experience a slightly higher value loss during the first year.

When it comes to safety (measured as the number of airbags) German models are only slightly ahead of their foreign competitors. Interestingly enough, we find quite the opposite when it comes to convenience. Foreign models are more likely to have a navigation system, here used as indicator for convenience: 6% of foreign models offer such a system while only 2% of the German models do. Still, German models dominate on the luxury side. They frequently have more luxurious interiors and are more likely to offer convertibles than foreign models.

## 4.5 Model and method

For estimating the effects of foreignness and various control variables we use seemingly unrelated regression (SUR) models. The major advantage of SUR models compared to ordinary least squares (OLS) models is that car demand in West and East Germany is estimated simultaneously with correlated error terms for both equations. Hence, the effects of unobserved quality characteristics captured in the error term of one equation influence the error term of the other equation and vice versa. We achieve a joint variance-covariance matrix for both demand equations by applying SUR. This allows us to directly compare the effects of various factors (including foreignness) on demand in West and East Germany, which immediately reflects the hypothesis testing strategy outlined before. Moreover, we compare the demand equations in East and West Germany to examine whether they are significantly different. That would underline our assumption that regional effects exist.

Another issue needs to be addressed methodologically: Price is endogenous to demand as both consumers and producers know the unobserved (to the econometrician) quality components and producers take its value into account in its pricing decision which, in turn, induces a positive correlation between car prices and unobserved model quality. This leads to a downward bias in the estimate for the parameter corresponding to price, i.e. it is estimated "too small" in absolute value. Obviously, the impact of pricing on car purchasing behavior is too important to be neglected. Hence, we instrument the price variable. Valid instruments have to be highly correlated with the endogenous variable price while uncorrelated with unobserved car quality. Instrument variables with the combination of these particular properties are necessarily rare. We therefore rely on a technique suggested by Berry et al. (1995). It is built around the idea that the price of any car is a function of the characteristics of other cars. Consequently, these characteristics are valid instruments for car price. We use the average specification of all cars in the relevant car segment of the following quality characteristics as instrument variables: car height, cylinder capacity, power steering, brilliant varnish, all-wheel drive and convertible.

We conduct a "first stage" regression analysis with these instrument variables. The table in appendix A shows the results. These indicate that the instrument variables are highly correlated with the endogenous variable price. Most instrument variables are individually significant, all of them are jointly highly significant. We find no evidence for correlation between the unobserved quality characteristics and the instruments, as "J-tests" for over-identifying restrictions cannot reject the validity of our instruments at any conventional significance level.

In conclusion, we estimate the following formal model:

$$\ln q_{iwest} = \beta_{0west} + \sum_{j=1}^l \beta_{jwest} \times X_{ij} + \beta_{jwest} \times D_i + \varepsilon_{iwest}$$

$$\ln q_{ieast} = \beta_{0east} + \sum_{j=1}^l \beta_{jeast} \times X_{ij} + \beta_{jeast} \times D_i + \varepsilon_{ieast}$$

$$i = 1, \dots, N$$

$$\text{cov}(\varepsilon_{iwest}, \varepsilon_{ieast}) = \rho$$

where

$q_{iwest}$  : Quantity sold of model  $i$  to customers in West Germany

$q_{ieast}$  : Quantity sold of model  $i$  to customers in East Germany

$X_{ij}$  : Quality characteristic  $j$  of model  $i$

$D_i$  : Foreign producer dummy of model  $i$

$\rho$  : Correlation between the error terms  $\varepsilon_{iwest}$  and  $\varepsilon_{ieast}$  ( to be estimated )

$\beta$  : parameters to be estimated

Finally, we use a two-sample mean comparison test to estimate if the degrees of liability of foreignness are significant different between East and West Germany.

## 5 Results

Our empirical analysis yields some interesting insights. Table 5 presents the results. We find considerable degrees of correlation between the error terms of the two individual regressions. Thus, our estimation procedure did in fact produce superior results versus estimating two separate OLS regression. Additionally, we confirm that regional effects exist. We conduct a likelihood-ratio test on whether a constrained estimation model imposing homogeneous preferences across regions would be equally suitable. This hypothesis is rejected at the 99% significance level. Therefore, we show that the demand equations of East and West Germany are significantly different.

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 Insert Table 5 about here  
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In the conceptual part of this analysis we highlighted the dangers of misinterpreting other deficiencies as liabilities of foreignness. Thus, the control variables that have entered our estimation are important. Nevertheless, they are not the main focus of our research. We refer to a discussion of major control variable findings in appendix B.

The results for our variables of interest (i.e., foreign dummy variables) are more important. At first, foreign companies face a significant disadvantage in firm performance (measured as quantity of sales). The coefficients of the foreign variables are negative and significant in both submarkets (East and West Germany). Foreign car manufacturers face a significant competitive disadvantage compared to their German competitors. Therefore, we identify liability of foreignness in the German car market. These results support the existing research outlined in the literature review.

More importantly, we extend this existing research by proposing that the degree of liability of foreignness differs between regions. We argue that the regional economic performance influences the consumer perception of foreign products. Comparing the coefficients of the foreignness variable in the East and West German market we find actual differences. The coefficient in West Germany is higher than the one for the East German market. We use a Wald test to evaluate if there is a significant difference between the degree of liability of foreignness in East and West Germany and find it supported at the 99% significance level. Therefore, we conclude that foreign car manufacturers face a lower degree of liability of foreignness in East Germany than in the West German market.

How does this empirical finding relate to our conceptual argumentation? Following the idea of region-specific degrees of liability of foreignness (Mezias 2002a), we test two competing hypotheses. We propose that economic stress would lead either to more rational decisions by host country consumers or reinforce their patriotic sentiments. As a result, the effects of liability of foreignness would be, respectively, more or less severe. Based on our empirical findings we conclude that a lower economic performance reduces the degree of liability of foreignness. Low regional economic performance becomes reflected in individual decision making. People reconsider their habitual buying behaviour. Thus, potential customers in economically depressed regions evaluate products more objectively and rely less intensive on country of origin stereotypes. They rationally choose the product that fits best with their personal preferences and needs. We argue that economic stress propels the degree of rationality in these purchasing decisions which mitigates the effects of liability of foreignness.

These results are somewhat surprising since the country affiliation of automotive brands is very visible compared to other products (Samiee et al., 2005). Hence, customers who want to make a “patriotic” statement through their purchasing behavior could achieve high visibility by “buying German.” However, buying a new car is typically a large investment and financial burden with high levels of personal involvement in terms of information gathering and comparison prior to the purchasing decision. This may reduce the necessity of host country customers to rely on country stereotypes as an indicator for expected quality (Gurhan-Canli and Maheswaran, 2000). In essence, relying on our analytical framework we can conclude that economic stress in a region may act as a reinforcing factor for making the most educated choices possible, when it comes to expensive purchases, since budgets are more restricted and economic prospects more uncertain (e.g. through unemployment).

## 6 Conclusions

The core of this study is to identify regional differences in the degree of liability of foreignness in a host country. We argue theoretically that economic stress in a region has a mitigating or reinforcing effect. We consider this a valuable contribution to the field. While the existence of liability of foreignness is very well documented, countervailing strategy recommendations for practitioners remain scarce (Mezias, 2002a). Luo et al. (2002) suggest a choice between offensive and defensive strategies which multinational firms can typically only meaningful conduct after they entered the host market. We add a spatial dimension to this discussion and stress the importance of economic stress. Firms can assess these regional differences between regions based on publicly available information before their entry decision. Adding a regional contingency to the concept of liability of foreignness allows managers to develop targeted, ex-ante strategies.

During the conceptual part of this study we explore both paths of the potential impact of economic stress on liability of foreignness, i.e. whether economically depressed regions become more or less “patriotic” in their purchasing decisions. Our empirical study allowed us to investigate the effects of economic stress under the shared cultural and institutional framework of East and West Germany. It reveals that higher levels of economic stress translate into lower levels of liability of foreignness. We conclude that customers in these regions have higher incentives to invest in information processing prior to the purchasing decision which reduces the need to rely on country-of-origin stereotypes.

We have no means to assure whether this leads to a more foreigner-friendly environment or simply reduces the home field advantage of domestic producers, since we measure only the relative disadvantage between the two. Albeit, this differentiation may be more relevant for academic discussion. What may be more important is the argument that these economically depressed regions may be more accessible to foreign producers but also less profitable. We do not suggest that multinational firms should limit their host country engagements to areas under severe economic stress. Economically depressed regions may also be less profitable. Instead we support the notion of using them as a stepping stone before entering the full market.

Additionally, one could very easily extend our regional approach towards more fine grained concepts, like urban centres versus rural areas. We consider this a fruitful road for further research initiatives. Notably, our study suffered from several limitations which may also propel new projects. First of all, our empirical study is limited to German data. Given the tradition and importance of automotive production in Germany comparative studies of other countries would certainly be interesting. Additionally, the differences in economic performance between East and West Germany may be especially pronounced and regionally confined which also warrants comparison with other countries. What is more, the underlying concepts of economic stress, e.g. the social implications of unemployment, may be explored in more detail which may result in further contingences for dealing with liability of foreignness. Finally, studies with other high or low involvement purchasing decisions may strengthen our results or put them into perspective.



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**Table 1: Comparison of key economic indicators between East and West Germany**

<b>Indicator</b>	<b>West Germany</b>	<b>East Germany (incl. Berlin)</b>
Population (as of December 31st 2005)	65 698 000	16 740 000
Unemployment rate (as of August 2006) <sup>a</sup>	7.7%	11.4%
Gross domestic product (2005, current prices, in billion Euro)	1907.97	337.54
GDP growth (2005, current prices)	1.6%	0.1%
Per capita GDP (2005, current prices, in Euro)	29,045	20,117
Per capita consumption (2004, current prices, in Euro)	16,584	13,281
Savings rate	10.7%	9.3%
Gross fixed investment (2003, current prices, in million Euro)	319,081	65,299

Source: Federal Statistical Office Germany.

<sup>a</sup> Ratio of unemployed persons to total labor force.

**Table 2: Data sources**

<b>Content</b>	<b>Data source</b>
Sales volume and major quality features by model and region	Kraftfahrt-Bundesamt (KBA, Federal Bureau of Motor Vehicles and Drivers)
Prices and enhanced quality features	German car evaluation company EurotaxSchwacke
Advertising expenditure	Automotive intelligence provider B&D Forecast GmbH
Distribution network of licensed dealers	Central associations of German vehicle manufacturers (ZDK/VDA/VDIK)
R&D expenditures	EU industrial R&D investment scoreboard report (European Commission, 2004)
Environmental friendliness ranking EcoTest and breakdown frequency statistics	German automobile assistance association (ADAC)

**Table 3: Control variables**

<b>Other liabilities</b>	<b>Quality differences</b>				
	<i>Basic outfit</i>	<i>Performance</i>	<i>Economic/ ecolog. efficiency</i>	<i>Safety</i>	<i>Convenience/ amenity</i>
Months since model introduction <sup>b</sup>	Price (€ instrumented)	Engine power (logs, kw)	EcoTest ranking (points) <sup>c</sup>	Airbags (no.)	Leather interior (dummy)
Time since brand introduction (years)	Model mid-size segment (dummy)	Diesel engine (dummy)	Average value loss after first year (%)	Anti skid system	On-board computer (dummy)
Licensed dealerships per 1,000 cars sold (ratio)	Model upper-size segment (dummy)		Breakdown frequency (no.)	Immobilizer (dummy)	Power windows (no.)
Advertising expenditures (%)	Station wagon (dummy)				
R&D expenditures (% of sales)	Convertible (dummy)				
Employment (no. worldwide)					

<sup>b</sup> Companies have to apply for a general production permit at the KBA (Federal Bureau of Motor Vehicles and Drivers) if they want to sell their product on the German market. We consider the date of this production permit a reliable proxy variable for market entry (for the company as well as a specific model).

<sup>c</sup> The EcoTest ranking is constructed by ADAC (German Automobile Assistance Association) as a composite point score of emissions and fuel efficiency. A car model can achieve 100 points at best. Toyota achieved the highest score of 89 with its hybrid powered Prius model.

**Table 4: Descriptive statistics**

<i>Variables</i>	<i>All brands</i>		<i>German brands</i>		<i>Foreign brands</i>	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Sales in West Germany units	1666.82	3744.02	2393.83	5207.00	1221.14	2343.29
Sales in East Germany units	313.15	626.58	316.86	701.67	310.87	576.20
Price €	26 718.56	14 222.95	34 627.88	18 501.16	22 143.87	8029.69
Months since model introduction	23.21	11.68	23.19	11.64	23.23	11.72
Years since brand introduction	45.78	11.77	52.00	9.10	41.97	11.60
Licensed dealerships per 1, 000 cars sold	8.17	5.92	4.57	1.74	10.37	6.47
Advertising expenditures % of total	5.63	2.88	6.32	2.49	5.21	3.02
R&D expenditures % of sales	4.32	0.76	4.69	0.66	4.09	0.72
Employment no., worldwide	245,475	106,861	303,151	86,286	210,118	102,833
Model mid-size segment dummy	0.41	0.49	0.49	0.50	0.36	0.48
Model upper-size segment dummy	0.13	0.33	0.20	0.40	0.09	0.28
Station wagon dummy	0.17	0.37	0.19	0.39	0.16	0.36
Convertible dummy	0.06	0.25	0.10	0.30	0.04	0.20
Engine power logs, kw	4.52	0.41	4.71	0.46	4.41	0.33
Diesel engine dummy	0.31	0.46	0.32	0.47	0.30	0.46
Av. value loss after first year, %	22.24	155.92	9.27	3.52	30.19	197.64
EcoTest ranking points	62.87	8.68	64.90	6.02	61.63	9.76
Airbags no.	4.78	1.87	4.72	2.02	4.81	1.76
Breakdown frequency no. in logs	3.12	0.38	2.96	0.13	3.23	0.44
Anti skid system dummy	0.51	0.50	0.63	0.48	0.44	0.50
Immobilizer dummy	0.91	0.29	0.90	0.29	0.91	0.29
On-board computer dummy	0.59	0.49	0.50	0.50	0.65	0.48
Leather interior dummy	0.42	0.49	0.30	0.46	0.50	0.50
Power windows no.	3.03	1.26	3.05	1.34	3.02	1.20
Observations	1263		480		783	

**Table 5: Estimation results of sales units from seemingly unrelated regression in West and East Germany**

<i>Variables</i>	<i>East Germany</i>		<i>West Germany</i>	
	Coef.	Std. err.	Coef.	Std. err.
Foreign brand (dummy)	-0.36***	(0.14)	-1.01***	(0.16)
Control variables	YES		YES	
Constant	22.38***	(2.11)	24.91***	(2.45)
Observations	1198		1198	
RMSE	1.47		1.71	
R2	0.22		0.21	
chi2	329.24		327.76	
P>0	0.00		0.00	

\*\*\* significant at 99%, \*\* significant at 95%, \* significant at 90%

Robust standard errors in parentheses

## 7 Appendix

### Appendix A: Instrument regression results of car prices

<i>Variables</i>	<i>Coefficient</i>	<i>Std. Err.</i>
Foreign brand (dummy)	-0.11 ***	(0.01)
Time since model introduction (months in logs)	0.01	(0.01)
Time since brand introduction (years in logs)	0.04 ***	(0.02)
Licensed dealerships per 1,000 cars sold (ratio)	0.00	(0.00)
Advertising expenditures (% of total)	0.01 ***	(0.00)
R&D expenditures (% of sales)	0.00	(0.01)
Employment (no., worldwide)	0.00 ***	(0.00)
Model from mid-size segment (dummy)	0.04 ***	(0.02)
Model from upper size segment (dummy)	0.07	(0.05)
Station wagon (dummy)	0.03 ***	(0.01)
Convertible (dummy)	0.18 ***	(0.02)
Engine power (logs, kw)	0.55 ***	(0.02)
Diesel engine (dummy)	0.09 ***	(0.01)
Average value loss after first year (normalized, %)	0.00 ***	(0.00)
EcoTest ranking (points)	0.00 *	(0.00)
Airbags (no.)	0.01 ***	(0.00)
Breakdown frequency (no. in logs)	0.03 **	(0.01)
Anti skid system (dummy)	-0.01	(0.01)
Immobilizer (dummy)	0.04 *	(0.02)
On-board computer (dummy)	0.02 **	(0.01)
Leather interior (dummy)	0.05 ***	(0.01)
Power windows (no.)	0.02 ***	(0.00)
Hight (cm, av. av segment)	0.00	(0.00)
Brilliant varnish (dummy, av. segment)	0.15	(0.10)
Cylinder capacity (ccm, av. segment)	0.00 ***	(0.00)
Power steering (dummy, av. segment)	-0.15 *	(0.08)
All-wheel drive (dummy, av. segment)	-0.11 *	(0.06)
EcoTest ranking (dummy, av. segment)	-0.14	(0.11)
Constant	6.58 ***	(0.34)
Observations	1198	
RMSE	0.13	
R2	0.90	
chi2	10 846.18	
P>0	0.00	
Test for instrument variables equaling zero can be rejected $F(6, 1169) = 50.04; \text{Prob} > F = 0.00$		

\*\*\* significant at 99%, \*\* significant at 95%, \* significant at 90%

Robust standard errors in parentheses

**Appendix B: Estimation results of sales units from seemingly unrelated regression in West and East Germany**

<i>Variables</i>	<i>East Germany</i>		<i>West Germany</i>	
	Coef.	Std. err.	Coef.	Std. err.
Foreign brand (dummy)	-0.36***	(0.14)	-1.01***	(0.16)
Time since model introduction (months in logs)	-0.82***	(0.09)	-1.20***	(0.10)
Time since brand introduction (years in logs)	0.74***	(0.16)	1.07***	(0.19)
Licensed dealerships per 1,000 cars sold (ratio)	-0.06***	(0.01)	-0.04***	(0.01)
Advertising expenditures (% of total)	-0.08***	(0.02)	-0.09***	(0.02)
R&D expenditures (% of sales)	-0.20***	(0.089)	-0.28***	(0.09)
Employment (no., worldwide)	0.00***	(0.00)	0.00***	(0.00)
Model from mid-size segment (dummy)	0.36***	(0.14)	0.21	(0.16)
Model from upper-size segment (dummy)	0.67***	(0.18)	0.69***	(0.21)
Station wagon (dummy)	0.15	(0.12)	0.12	(0.14)
Convertible (dummy)	-0.27	(0.19)	0.58***	(0.22)
Engine power (logs, kw)	-1.64***	(0.26)	-1.09***	(0.30)
Diesel engine (dummy)	-0.41***	(0.11)	0.10	(0.12)
Average value loss after 1st year (normalized, %)	0.00	(0.00)	0.00	(0.00)
EcoTest ranking (points)	-0.01	(0.01)	-0.01	(0.01)
Airbags (no.)	0.11***	(0.04)	0.12***	(0.04)
Breakdown frequency (no. in logs)	-0.41***	(0.14)	-0.54***	(0.17)
Anti skid system (dummy)	0.18*	(0.10)	0.12	(0.12)
Immobilizer (dummy)	0.15	(0.23)	0.34	(0.26)
On-board computer (dummy)	0.27***	(0.10)	0.25**	(0.12)
Leather interior (dummy)	0.10	(0.10)	0.17	(0.12)
Power windows (no.)	0.08	(0.05)	0.01	(0.06)
Price (€ in logs; instrumented)	-0.79***	(0.29)	-1.03***	(0.33)
Constant	22.38***	(2.11)	24.91***	(2.45)
Observations	1198		1198	
RMSE	1.47		1.71	
R2	0.22		0.21	
chi2	329.24		327.76	
P>0	0.00		0.00	

The variables in Table 7 are our control variables. We develop no individual a priori hypotheses on their influences and the discussion is explorative in nature. One would generally expect that better equipped car models produce larger sales numbers. Then again, customers make judgments based not just on quality but quality given the sales price. We control for the latter which means that predictions on significant coefficients and signs are much less obvious.

Most of the control variables show the same signs in both West and East Germany (see Table 7). First, we find that the time that a foreign firm has been active in the German market is positively linked to the success of its individual car models. This result is fully in line with Pedersen and Petersen (2003) and Zaheer and Mosakowski (1997). Foreign enterprises learn and adapt to the specific preferences of German customers over time. Additionally, the age of car models makes a significant difference in success. We find that customers prefer car models that

are more up to date and consequently reflect their expectations for a modern car more adequately. An announcement of a new model propels sales once the new model finally arrives. Interestingly enough, the overall advertising expenditures of a producer influence the quantity of sales negatively. We cannot observe advertising for a particular car model and it would therefore be farfetched to conclude that ad campaigns are per se useless or even counterproductive. Besides, an important argument for increased advertising expenditures is to balance weaknesses in sales. Considering the negative effect of R&D investments on model turnover we argue that these expenditures are necessary investments into the future and tie up resources in the short run while providing long term competitive potentials.

Not surprisingly, price elasticities for cars in West and East Germany are negative and significant. We find a significant negative impact of engine power on sales units in West and East Germany (see Table 7). Given that we already control for car price and segment, the room for variation in engine power is limited. We argue that average engine power within a certain price and size segment is sufficient for daily use. Cars with an engine power above this threshold are more likely for exclusive driving behaviour (like sports cars). We argue that these high powered cars are for niche markets with lower volumes. Thus, the overall effect of engine power on sales units is negative. Dealership network shows a significant negative effect. Some industry studies have indicated that the brand exclusive dealership network in Germany is too extensive and our results may also point in this direction (see Cleff et al., 2005). Then again, customers are willing to buy reliable car models with superior safety features (as captured by the breakdown frequency and the number of airbags). On-board computer systems make a significant positive difference when it comes to convenience. All other amenities may be considered standard given a certain price and size segment.

Few quality feature differences between the two German markets remain. West Germans are attracted by convertibles while there is no preference in East Germany. A diesel powered engine makes a car less attractive in East Germans while an anti-skid system has a positive impact there.

Generally spoken, we find no strong differences in purchasing patterns between East and West Germany. This may reflect the homogeneity of legal, tax and infrastructure environments in both sub-markets. However, the various significant results indicate that they are valuable control variables for the core theme of this study.

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