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The impact of the introduction of the Euro on firms' expectations concerning export behavior, product innovation and foreign competition - An empirical assessment of the German business-related services sector

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**The impact of the introduction of the
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export behavior, product innovation
and foreign competition**

An empirical assessment of the German
business-related services sector

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Non-technical summary

Does the EURO actually trigger firms to export some of their products? Does the EURO lead to increased foreign competition in home markets? And are firms able to develop new products due to the introduction of the Euro? These issues have only recently been addressed at an aggregated level. Researchers have put much effort in investigating trade patterns within the European Union and the effect of the introduction of the Euro on export and import flows. This macro-view is, of course, crucial for a discussion on advantages and disadvantages of the European Monetary Union (EMU). However, not much is known about the impact of the EURO on firm-level decisions. Also, most existing studies focus on manufacturing industries. In order to overcome these shortcomings, this ZEW study investigates how the EURO affects firms' export decisions, expected foreign competition and the ability of firms to develop new products. Business-related services, one of the fastest growing sectors in the German Economy, are the focus of this study.

We find that, on the one hand, almost half of the firms in our study expect the EURO to procure an increase in foreign competition. On the other hand, surprisingly only a quarter of firms expect the EURO to make it easier for firms to enter new foreign markets. Also only a quarter of the firms state they will be able to develop new products.

By turning to multivariate analysis, we show that the better prepared a firm is for the EURO, the more likely it expects to enter new markets and to develop new products.

Exporting firms have a much greater advantage from the introduction of the Euro than non-exporting firms in respect of their expectations of entering new foreign markets and developing new products. Other findings of the study are that a greater number of East German firms expect an increase in foreign competition, while at the same time they do not differ from their West German competitors in their expectations regarding new products and new markets. Interestingly, small and medium sized firms with up to 50 employees tend to be more optimistic with regard to new products entering new markets. This indicates the following: the introduction of the EURO actually yields the desired positive impact on small and medium sized firms' export decisions.

The impact of the introduction of the Euro on firms' expectations concerning export behavior, product innovation and foreign competition

An empirical assessment of the German business-related services sector

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August, 1998

Abstract: This paper analyses the degree to which firms expect to be able to enter new markets, to develop new products and to contend with new foreign competition after the introduction of the Euro. Panel data taken from a quarterly business survey in the service sector are used for the empirical analysis. East German firms do not differ from their West German competitors in their expectations that the Euro will increase export activity and product innovation, but significantly more East German firms expect new foreign competitors to enter the home market. The impact of the Euro on firms' expectations of entering new markets and developing new products is stronger for firms which already export than for those who do not. Further, the degree of preparation for the Euro plays a significant role in firms' market expectations.

Keywords: European Monetary Union, Euro, business-related services, binary probit model, export, foreign competition

JEL classification: C21, F14, F15

I. Introduction

While the bulk of studies focusing on issues related to the European Monetary Union (EMU) mainly deal with macroeconomic aspects of European integration, not much is known about the way individual firms are affected by the EMU. Researchers have put a lot of effort in investigating trade patterns within the European Union and the effects of introducing the Euro on export and import flows.¹ This aggregate view is of course crucial to the discussion on advantages and disadvantages of the EMU. However, according to the authors' knowledge, no reliable empirical analysis on the risks and rewards of the EMU for individual firms exists. Likewise, little is known about the Euro's impact on firms in the service sector.

Existing firm-level studies are mainly concerned with the degree to which firms are preparing for the Euro. Examples are made up by the studies of the DIHT² (1998) and the consulting firms Cap Gemini (1998), Andersen Consulting (1998) and KPMG (1997). A major shortcoming of these studies is that they do not provide any information on whether the introduction of the Euro will have a stimulating effect on firm export behaviour.³

Nerb (1998) analyses the effects of the Euro on different business departments such as sales, distribution, marketing or finance. Using data from a German business survey of manufacturing, construction and retail trade industries, he

¹ For an overview on new developments in the field of new real international trade theory and existing studies dealing with, for example, macroeconomic effects of the European integration, see Breuss (1997).

² The Deutscher Industrie- und Handelstag (DIHT) is the German Association of Chambers of Industry and Commerce (DIHT), and thus the central organisation for 83 chambers. All German companies registered in Germany, with the exception of handicraft businesses, free professions and farms, are required by law to join a chamber.

³ Moreover, the studies by Cap Gemini Consulting (1998), KPMG (1997) and Andersen Consulting (1998) have several weaknesses from a statistical point of view. In addition to the fact that very small samples are considered, the studies are likely to suffer from severe selection biases since all three consulting firms interviewed (a) their own customers and (b) interviewed only firms with more than 500 (Cap Gemini Consulting), 1,000 (Andersen Consulting) or 5,000 (KPMG) employees.

finds that firms expect the Euro to influence sales and distribution positively. Negative effects are present for electronic data processing and accounting, while indifference prevails with respect to finance and administration.

However, probably the most interesting aspect of the Euro is its impact on firms' export behaviour, since the main purpose of the EMU lies in completing the Common Market and stimulating intra-European trade. Thus, this paper aims to extend existing literature and uncover how the Euro affects the main strategic decisions of firms in the German business-related services sector. Panel data from a unique business survey is used in the empirical analysis. The data allows a thorough investigation of the direction in which firms expect the introduction of the Euro to influence (a) firms' export decisions, (b) the presence of foreign competition and (c) firms' ability to develop new products such as software, which can be used throughout the whole EMU, or which could be used for Euro conversion. Of course, it is difficult to differentiate between effects induced by the Common Market and those induced by the Euro itself, especially as the Euro is supposed to complete the Common Market. In order to catch the Euro-specific effects, the business survey asked firms directly what effects they might expect from the Euro, i.e. our investigation comes close to a *ceteris paribus* analysis of the Euro's impact.

This paper shows to what extent firms' judgements on whether they will enter new markets, develop new products and whether they will be confronted with new foreign competitors due to the EMU, have changed between 1997 and 1998. Information can be gained on the re-orientation of firms' long-term strategies. By using transition matrices, we find negative 'time-effects' for both their expectations on entering new markets and on developing new products.

Although the Common Market of the European Union has already more or less eliminated trade barriers, we find that a considerable number of firms expect the Euro to enable them to enter new foreign markets. The better prepared firms are for the Euro, the larger is the effect. Firms already exporting find it easier to enter additional foreign markets. As in many existing studies on firms' export behaviour, an inverse U-shaped firm size effect is found for the expectation of

entering new foreign markets.⁴ Despite the firm size effect, similar results are presented for the expectation of being able to develop new products. For firms' expectations with regard to new foreign competition, it turns out that another inverse U-shaped firm size effect exists. The degree of preparation for the Euro does not play a significant role here.

The paper proceeds as follows. Section II briefly discusses theoretical impacts of EMU on international trade. Section III describes the dataset used in this study. First descriptive results are presented in section IV. Multivariate analyses are conducted in section V. Finally, the conclusion as well as suggestions for further research are given in section VI.

II. Theoretical considerations

The impact of the EMU on export behaviour has been widely discussed from a theoretical point of view. In its report "One market, one money", the European Commission (1990) gives an overview of the anticipated effects on exports from the introduction of the Euro. According to the Commission, the Euro will drive down factors impeding export activity, such as transaction costs. This static gain will lead to efficiency gains, an optimal allocation of resources and, in the long run, to dynamic gains such as enhanced price stability and an increase in production, as well as in international trade. Thus, a higher level of export and economic growth could be reached.

Several aspects are said to be responsible for the decrease of transaction costs with the introduction of the Euro. Within EMU, currencies will not need to be converted any longer and exchange costs will thus be eliminated. Europe-wide financial transactions will proceed faster. In the long run, it will become less expensive for both firms and banks due to the expected development of the more cost-efficient international payment system TARGET⁵. Further, exchange

⁴ The inverse U-shaped effect means that the probability of expecting to enter new foreign markets first increases, then decreases with firm size.

⁵ TARGET is the abbreviation of "Trans-European Automated Real-Time Gross Settlement Express Transfer". To use TARGET currently is quite expensive relative to the use of national clearing systems. In the long run, costs of TARGET or/and charges might go down. Besides, banks are considering the installation of an alternative clearing system.

rate risks are eliminated, rendering hedging activities unnecessary. With the conversion of national currencies into the Euro, intra-EMU volatility of exchange rates is reduced to zero, hence profits from trans-European activities become more predictable even in the long run, while negative impacts of exchange rate volatility on the real sector, e.g. on exports, are eliminated.⁶

Another reason why the EMU might induce firms to commence or increase their export activity is that the risk of exchange rate appreciation no longer exists for firms exporting into "Euroland". Although the German Mark depreciated in real terms between 1972 and 1997 by seven percent⁷, some periods of real appreciation existed even in that time span. They led German exporting firms to complain of their loss of competitiveness with respect to other European countries. Furthermore, the Euro will improve price transparency in "Euroland". Price differentiation in different regions of the EMU will become more difficult. Due to different tax levels and the existence of transportation costs, differences in prices across European countries will not be fully eliminated, but reduced. As a consequence, there might be a tendency to lower input and output prices. The import of intermediate products or production factors, as well as their export, will *ceteris paribus* become more profitable.

Observing the extent to which firms in the service sector are involved in export activities is crucial to the analysis. The contribution by Licht et al. (1997) was among the first to shed light on export behaviour of the German service sector. According to Licht et al., 19 percent of firms from the service sector – in addition to business-related services, also including banking, insurance and retail trade - are involved in export activities. As a comparison, in German manufacturing industries 53 percent of all firms export. The data set used in our study indicates that roughly 40 percent of business-related service firms export. The business-related service sector evidently shows a generally higher level of

⁶ For a discussion of the impacts of exchange rate variability, see Buscher and Müller (1998).

⁷ This refers to the weighted external value of the German mark against 18 industrialized countries in real terms which is deflated by the different consumer price indices and is stated by the German Bundesbank in its monthly exchange rate statistics. This external value has been based to 100 in 1972 and has decreased to 93 % of its 1972 value in 1997.

export orientation than the service sector. The increased diffusion of information and communication technologies will lead to both improved export opportunities and to more rigorous foreign competition in the home market. Likewise, introducing the Euro will have an enhancing impact on foreign competition as it becomes apparent from this study. Despite the contribution by Licht et al. (1997), very few studies on export activities of German service firms exist.⁸ This is a severe shortcoming from the economic policy perspective, since the service sector is the most dynamic of the German economy in terms of employment gains.⁹

III. Data description

In this study we use data taken from the Service Sector Business Survey (SSBS). The SSBS is collected by the Centre for European Economic Research (ZEW) in co-operation with Germany's largest credit rating agency CREDITREFORM. Although the service sector is a fast growing part of the German economy (Klodt et al. 1997; Licht et al. 1997), it suffers from a very limited availability of data. Total employment in services has increased by 23.7 percent in West Germany between 1987 and 1995. While the number of employees in business-related services, which make up roughly a third of all employees in the service sector, has increased by 41.6 percent, the increase was considerably lower for social services (18.8 percent), private services (hairdressing etc.) (9.4 percent) and distributive services (14 percent). Employment in manufacturing decreased by 8.9 percentage points in the same period.¹⁰ The lack of appropriate data on the service sector has recently been criticized by various authors (Bullinger 1997; Sachverständigenrat 1997; Hax 1998). In the mean time, the ZEW and CREDITREFORM initiated the survey called SSBS.

⁸ Another notable exception is the study by Ebling and Janz (1998) who relate exports to innovative activity.

⁹ Also, current initiatives of the German Federal Ministry of Education, Research, Science and Technology aims to increase the focus of the service sector towards export activity.

¹⁰ Source: Institut für Arbeitsmarkt- und Berufsforschung, Nürnberg and ZEW (Mannheim Regions Monitor).

Some 4,000 firms from ten business-related service sectors have been interviewed on a quarterly basis since 1994. On average, the response rate is 25 percent. The SSBS is constructed as a panel, in the sense that the very same firms are asked to fill out the questionnaire every three months. The SSBS is a stratified random sample, stratified with respect to sectors, three employment classes and regions (East/West Germany). Data provided by CREDITREFORM served as the sampling frame.¹¹ The population of firms participating in the 17th SSBS, which is used in this study and is currently the last available wave, is shown in table A1 in the appendix.

The definition of business-related services is of controversial discussion in the literature.¹² To the authors' knowledge, no clear-cut and broadly accepted definition exists. Some authors (Hass 1995; Strambach 1995) define business-related services by a simple enumeration of sectors. Since it is probably not worthwhile having the definition appearing again for further discussion, we will follow their convention. The sectors defined as business-related services are (NACE-Rev. 1 codes in parenthesis): (1) software consulting and supply, data processing and database activities (72.20, 72.30, 72.40), (2) accounting, book-keeping, auditing, tax consulting (74.12), (3) business and management consulting activities (74.14), (4) architectural and engineering activities (74.20), (5) technical testing and analysis (74.30), (6) advertising (74.40), (7) renting of automobiles, renting of other transport equipment (71.10, 71.20), (8) renting of machinery and equipment (71.30), (9) cargo handling and storing, activities of other transport agencies (63.10, 63.4), (10) sewage and refuse disposal (90.00). By and large, these are "knowledge-based services" (Alic 1997).

The SSBS questionnaire consists of two parts. In the first part, firms are asked to indicate on a three point scale ("up", "unchanged", "down") whether their prices, profits, turnover, employment and demand increased, remained unchanged or decreased during the last quarter. While the first part of the questionnaire does not change quarterly, the second does. The second part is

¹¹ Further details on the SSBS can be found in Kaiser and Buscher (1998).

¹² See Homburg and Garbe (1996) for a survey.

used to cover topics of current economic interest. In the 13th and 17th waves, which are used in this paper, the second part was devoted to the preparation of the business-related services sector for the EMU. To answer questions raised by our analysis, firms were asked whether they anticipate (a) new foreign competitors to enter the home market, (b) they may enter new markets themselves and (c) they would develop new services *due to the introduction of the Euro*. That is, judgements on the impact of the Euro on trade flows were given, *everything else being equal*. For all of these three questions three answering categories were provided: "yes", "no" and "don't know". The identical questions were asked in the 13th and 17th wave of the SSBS. The 13th wave corresponds to the second quarter of 1997 and the 17th wave corresponds to the second quarter of 1998. The data were collected in June, 1997 and 1998, respectively.

The SSBS is an unbalanced panel. On average, 1,000 firms take part in the SSBS quarterly. 544 firms participated in both waves, wave 13 and wave 17. In addition, 482 firms participated in wave 13 only and 378 only in wave 17.

With regard to the questions asked, the fact that we have two comparable data sets available enables us to uncover whether the viewpoint of the firm has changed over time. During the data collection period of wave 13 it was unknown whether the EMU would start punctually and which countries would take part in it. Furthermore, during the data collection period immense and heated political debate occurred, covering areas such as the convergence criteria and the stability pact. The impact of the news on answering patterns of survey participants is elaborately described in Kaiser (1997). However, these uncertainties were removed on May 2, 1998 when it was announced that the EMU would start punctually on January 1, 1999 and that Austria, Belgium, Germany, Finland, France, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain would be the founding countries. Therefore, we can test whether firms changed their expectations with time and the level of information and preparation for the EMU.

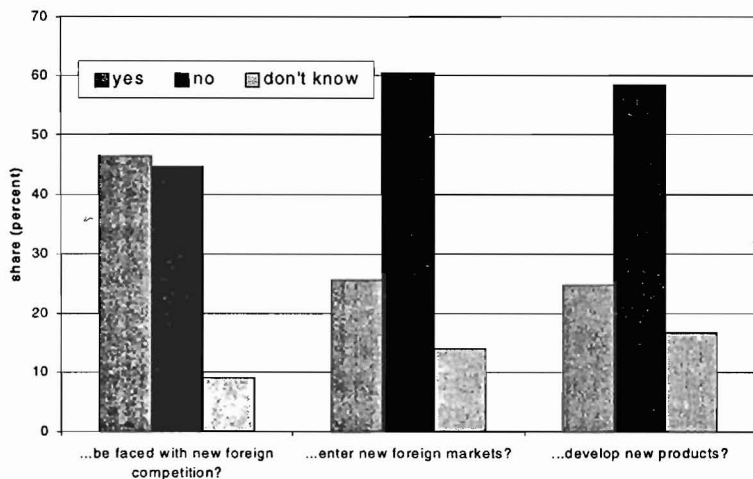
IV. Descriptive analysis

For a first view on the expected impact of introducing the Euro, we illustrate in Figure 1 the distribution of answering categories dating from 1998 for the three questions on EMU-induced changes. These include export activity, foreign competition, and new products.¹³ The data refer to the 17th wave of the SSBS and thus give an overview of present expectations. It becomes apparent that 46 percent of the firms at the moment expect new foreign competition due to the Euro. Almost as many expect international competition to remain unchanged because of the Euro and nine percent have not made up their mind so far. Surprisingly, far fewer firms anticipate being able to enter new markets. A priori, it could be assumed that if a firm expects new foreign competition, it might be capable of starting export activities or exporting more of its services as well. However, a broad majority of firms does not expect any changes in its export behaviour. This is also true for the expectation concerning the development of new products. But the effect of introducing the Euro is still considerable. A quarter of the firms in business-related services expect to enter new markets due to the existence of EMU. A quarter of the firms in this survey expect the potentiality of generating a product innovation. Thus, Figure 1 gives first evidence that the Euro actually affects import and export behaviour, as well as the development of new products. Positive effects, stemming from product innovation and improved export chances, are expected by about a quarter of firms; negative effects, stemming from increased foreign competition, are expected by almost half of the firms. This indicates that many firms are concerned about reinforced foreign competition in the Common Market and do not, as yet, see export opportunities for themselves.

When comparing the answering patterns of the data from June, 1997 and June, 1998, it turns out that the distribution of answers did not materially change in this one year period where a lot of uncertainties concerning the shape of the EMU were removed. There is only a five percentage points increase in the expectation of being faced with new foreign competition and a two percentage points decrease in contemplation of developing new products.

¹³ Data are expanded by firm-proportional weights. Details on that procedure are given in Kaiser and Buscher (1998).

Figure 1: Do you expect that - due to the Euro - you will...



Note: Figure 1 illustrates firms' expectations from 1998 on whether they expect that the Euro to induce new foreign competition, the possibility of entering new markets and their ability to develop new products. 46.33 percent of the firms expect new foreign competition to occur. The data are expanded by using firm weights.

However, in order to get more information on the time effect influencing the way firms responded in the questionnaire, a useful and standard device from panel data analysis - the calculation of transition probabilities - can be applied. By defining the three different possible answers as "states", transition probabilities represent the probability of a firm switching from state i in period $t-1$ to state j in period t given that it has reported to be in state i earlier.¹⁴

Such transition probabilities are shown in Table 1. First of all, it is striking that most firms did not change their opinion on the impact of the Euro on foreign competition, export activity and new product development between June, 1997 and June, 1998. For example, 69.17 percent of the firms which stated in 1997 that they would expect new competitors in the home market, stated the same

¹⁴ See Hamilton (1994: Chapter 22.2) for details on transition probabilities and Markov chains.

one year later. The probability of switching from not expecting foreign competition ("no") to expecting foreign competition ("yes") is six percentage points higher than the probability of switching the other way around. Considerably more changes are found for the expectation of entering new markets. The probability of switching from "yes" to "no" is 20 percentage points higher than the probability of switching from "no" to "yes". The same results are found for the expectation of being able to develop new products.

It thus seems that firms view their individual chances in a less optimistic way in 1998 than they did one year before. This can have been caused by two reasons: First, firms may have already benefited from general and individual preparation for the Euro and from the exchange rate stability reached in the EMS which is a kind of pre-EMU effect. Second, firms may have become more pessimistic during the one-year period about the way the Euro may actually influence their business prospects.

Table 1: Transition matrices

		Due you expect that due to the introduction of the EURO...								
		June 1998								
		...new foreign comp. occurs?			...you can enter new markets?			...you can develop new products?		
		yes	no	don't know	yes	no	don't know	yes	no	don't know
<i>June 1997</i>	yes	69.17	21.74	9.09	50.36	33.81	15.83	52.00	31.20	16.80
		<i>175</i>	<i>55</i>	<i>23</i>	<i>70</i>	<i>47</i>	<i>22</i>	<i>65</i>	<i>39</i>	<i>21</i>
	no	27.16	63.79	9.05	13.17	76.05	10.78	11.90	72.49	15.61
		<i>63</i>	<i>148</i>	<i>21</i>	<i>44</i>	<i>254</i>	<i>36</i>	<i>32</i>	<i>195</i>	<i>42</i>
	don't know	31.48	35.19	33.33	26.15	60.78	33.85	24.69	41.98	33.33
		<i>17</i>	<i>19</i>	<i>18</i>	<i>17</i>	<i>26</i>	<i>22</i>	<i>20</i>	<i>34</i>	<i>27</i>

Note: Table 1 indicates, for example, that the probability of a firm which stated in 1997 that it expected new foreign competitors to enter the home market, then changed its opinion in 1998 and stated that it would not expect new foreign competition is 21.74 percent. The values printed in italics show actual frequencies.

V. Multivariate analysis

The calculation of transition probabilities is a useful device for analyzing shifts in firms' answers over time. However, it is desirable to learn more about the characteristics of firms which indicate, for example, that they expect new foreign competitors to appear in the home market. In this section we use binary probit models to analyse the type of firm that would benefit most from the EMU.

The SSBS offered three alternative answers - "yes", "no" and "don't know" - to the questions on foreign competition, export activity and product innovation. In the following analysis, we discard the "don't know" category since this category offers little information to the focus of this study. For the empirical analysis, the data from the 13th and 17th wave are pooled together.

The decision of answering questions on the expected impacts of the Euro with either "yes" or "no" is modeled by a binary probit model.¹⁵ In our empirical model, we relate the "yes"/"no" decision to a set of firm-specific variables. These are (a) the status as an exporting firm, (b) sector affiliation, (c) regional affiliation (East/West Germany), (d) number of employees and (e) the degree of preparation for the Euro.

We include the status as an exporting firm because of two possible reasons. First, the decision whether to export can be regarded as a hurdle. If this hurdle - arising from, for example, the formation of a sales and distribution infrastructure, the adaptation of the product to meet foreign consumers' preferences and the associated marketing costs - is already overcome and experience is gained, it is more likely that the firm would extend its export activity to other countries, since it then can profit from existing foreign trade experience and economies of scale. Second, it is possible that firms which already export might not expect to enter additional foreign markets, since they are already present in all potential foreign markets. The Euro might then still have positive effects insofar as it makes it easier to export, but does not have a triggering effect on entering new markets.

¹⁵ See Greene (1997: Chapter 19.3) for details on the binary probit model.

Sector affiliation was added as an explanatory variable since there are, of course, sector-specific effects in export activity. It is clear that there are large differences even in the production and nature of services so that not all of them are tradable in an identical way.

The differentiation between East and West Germany is important since the East German economy still has severe transition problems. Before the fall of the iron curtain, the East German economy was oriented towards Eastern Europe. For various reasons such as a lack of language skills in Western languages, marketing issues and financial constraints, East German firms are still less export intensive than West German firms, even in services (Licht et al. 1997).

The status as an exporting firm (base category: non-exporting firm) as well as the sector affiliation (base category: sewage and refuse disposal) and the regional affiliation (base category: West Germany) are incorporated as dummy variables.

Firm size effects are taken into account by applying a Box-Cox transformation of the number of employees and its square.¹⁶ A Box-Cox transformation is a more flexible way of allowing for non-linearities. It turns out that the Box-Cox transformation comes close to taking the natural logarithm ($\lambda=-0.1225$). Earlier studies have found an inverse U-shaped impact of the number of employees on the export decision and on export intensity.¹⁷

The degree of preparation for the Euro is included in our estimation equation since firms with a higher degree of preparation become more aware of the opportunities and risks brought about by the Euro. The degree of preparation for the Euro is clearly not an exogenous variable for the expectations of entering new markets, being faced with new foreign competition and developing new products. Therefore, we introduced the degree of Euro-preparation and have used the fitted values of this regression in our empirical model. Since the degree of preparation is dependent on the financial capacities of a firm, we included -

¹⁶ Box and Cox (1964).

¹⁷ See, i.a., Wagner (1996) and Wakelin (1996).

as dummy variables - firms' expectations on turnover and demand. Our specification also included sector dummies which were interacted with the mean of the corresponding preparation for the Euro and three firm size dummy variables as well as a dummy variable for East German firms.¹⁸

A time dummy variable which is often included in pooled panel regressions is left out here. This is due to the fact that between 1997 and 1998 firms have become better prepared for the Euro so that an inclusion of both a time dummy and the degree of preparation would have led to co-linearity among the set of explanatory variables.

Table A2 in the appendix presents descriptive statistics of the variables used in the specification. Estimation results are given in Table 2 which displays both the coefficients and the marginal effects.¹⁹ For the dummy variables, the marginal effect is calculated as a discrete change from 0 to 1. Estimation results were obtained using STATA50. These results are very robust against alternative specifications.²⁰

It turns out that exporting firms show a significantly higher expectation probability of entering new markets and developing new products. No significant effects for exporting firms are found for the new foreign competition issue. The results support the hypotheses that firms which already export expect to gain most from the introduction of the Euro.

The sector-related dummy variables are equally significant in all equations. With regard to new markets, significant sector-related effects can be found for architectural activities, advertising and machinery rental firms. With regard to new foreign competition, the largest positive sector-related effects exist for the architectural services. The largest negative effects are observable for

¹⁸ The IV-estimates' results are available from the authors upon request.

¹⁹ Calculated at the mean of the explanatory variables.

²⁰ The results qualitatively hold even if estimations are run only for 1997 or only for 1998. Also, the results do not change qualitatively if heteroscedasticity robust standard errors are used (White 1980).

accountancy. Accountancy, architectural services and business consulting firms show the largest probability of expecting to develop new products.

Firm size plays a role in both the expectation of entering new markets and being faced with new foreign competitors. The effect is inversely U-shaped, a result which is often found in the empirical analysis of firms' export behaviour.

East German firms do not differ from their West German competitors in their expectation of entering new markets or their expectation of developing new products. However, they are considerably more pessimistic with regard to the anticipated increase in foreign competition. East German firms do not only see less opportunities of accessing new markets and of developing new products as a consequence of EMU, they are also more likely to expect new foreign competition. This result is a little puzzling since East German firms on the one hand expect new foreign competitors to enter the home market, but on the other hand do not expect to be able to export more themselves. This implies that with regard to own export activity tacit trade barriers still exist for East German firms.

We also find large effects for the - instrumented - degree of preparation for the Euro. The better firms are prepared for the Euro, the more likely it is they will expect to be able to enter new markets. The same is true for the expectation of developing new products. This shows that with increasing information and adaptation to the new European Market, firms realize individual opportunities in both exporting and developing new products. The degree of preparation appears to have no significant effect on the expectation of being faced with increased foreign competition. For this category the variables representing the degree of preparation are not even jointly significant.²¹

²¹ A Wald test for joint significance was conducted here.

Table 2: Binary probit estimation results

	New Markets			New competitors			New products				
	Coeff.	Std. Err.	Marg. Eff.	Coeff.	Std. Err.	Marg. Eff.	Coeff.	Std. Err.	Marg. Eff.		
east Germany	0.1087	0.0942	0.0377	0.3794	***	0.0863	0.1483	0.0700	0.0991	0.0253	
exporting firm	0.6556	***	0.0723	0.2287			0.0197	0.3064	***	0.0758	0.1110
<i>Sectoral dummies</i>											
software	-0.0474	0.1722	-0.0161	-0.3073	**	0.1559	-0.1220	0.1296	0.1777	0.0475	
accountancy	0.0664	0.1787	0.0231	-0.4557	***	0.1636	-0.1793	0.5506	***	0.1846	0.2111
business consultancy	0.2326	0.1621	0.0834	-0.2486	*	0.1491	-0.0989	0.5448	***	0.1699	0.2090
architectural activities	0.4717	***	0.1806	0.1750			0.2791	0.5494	***	0.1874	0.2107
technical testing and analysis	0.1252	0.1472	0.0439	0.1345	0.1290	0.0531	0.0290	0.1563	0.0105		
advertising	0.3368	**	0.1479	0.1225	0.0400	0.1321	0.0159	0.4624	***	0.1531	0.1760
renting of automobiles	0.2275	0.1673	0.0816	0.1449	0.1486	0.0571	0.3464	**	0.1757	0.1311	
renting of machinery	0.3291	**	0.1611	0.1198	0.1470	0.1459	0.0580	0.2235	0.1718	0.0831	
cargo handling	-0.1241	0.1609	-0.0413	0.1487	0.1415	0.0587	0.1410	0.1665	0.0518		
<i>Firm size</i>											
Box-Cox transf. of # of empl.	0.2582	0.2242	0.0884	0.4400	0.2088	0.1749	-0.1925	0.2346	-0.0691		
(Box-Cox transf. of # of empl.) ²	-0.0795	*	0.0458	-0.0272	-0.0861	**	0.0426	-0.0342	0.0035	0.0472	0.0012
Degree of preparation	0.5497	***	0.2142	0.1882	0.1580	0.1971	0.0628	0.5942	***	0.2213	0.2133
constant	-1.3148	***	0.3155	-0.6428	***	0.2903	-0.6680	**	0.3314		
Wald tests for joint significance											
sectoral dummies	21.58***			44.59***			34.05***				
firm size	5.0*			4.45			4.77*				
no. of obs.	1,634			1,691			1,451				

Note: Table 2 displays binary probit estimation results for the expectations of being able to enter new markets, being confronted with new foreign competition and being able to develop new products. Differences in the number of observations are due to item non-response and to differences in the population of the "don't know" category. The number of "*" indicates that the related coefficient is significantly different from zero at the one ("***"), five ("**") and ten ("*") percent significance level. The number of employees was transformed by applying a Box-Cox transformation ($\lambda=-0.1225$). Estimation results were obtained using STATA50.

VI. Conclusion

In this study we find considerable effects of the approaching EMU on both firms' strategic decisions and on firms' expectations of becoming faced with new foreign competition. By comparing panel data from 1997 and 1998 we show that firms became less optimistic with regard to their expectations of entering new foreign markets in that time span. Conversely, firms became more pessimistic with regard to their expectations of increased foreign competition.

Using binary probit models and taking into account the potential endogeneity problem, we find that firms which are better prepared for the Euro more often expect to be able to develop new products or to enter new foreign markets.

Firms which already export have a greater expectation of developing new products and of entering new foreign markets. The latter indicates that if a firm has already gained experience, it becomes less hesitant in entering an additional foreign market.

East German firms differ from West German ones only in their more pessimistic outlook with regard to their expectations of new foreign competition.

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Appendix:

Table A1 - The distribution of firms which participated in the 17th wave of the SSBS across region, sector and employment classes

	West			East			<i>Total</i>
	# of employees			# of employees			
	<50	50-99	>99	<50	50-99	>99	
Software	41	10	26	19	2	7	<i>105</i>
Accounting	39	10	10	17	2	2	<i>80</i>
Management consulting	36	13	19	14	1	1	<i>84</i>
Architectural activities	51	5	3	13	2	2	<i>76</i>
Technical analysis	30	10	26	22	13	10	<i>111</i>
Advertising	45	32	14	9	2		<i>102</i>
Renting of automobiles	46	2	1	12			<i>61</i>
Renting of machinery	44	13	9	13	4	1	<i>84</i>
Cargo handling and storing	34	11	24	22	9	4	<i>104</i>
Sewage and refuse disposal	37	12	21	29	5	11	<i>115</i>
Total	<i>403</i>	<i>118</i>	<i>153</i>	<i>170</i>	<i>40</i>	<i>38</i>	<i>922</i>

Table A1 shows the distribution of firms participating in the 17th wave of the SSBS. For example, 41 software consulting and supply firms with less than 50 employees from West Germany took part in the survey.

Table A2 - Descriptive statistics

Variable	Obs	Mean/Share	Std. Dev.	Min	Max	Type
<i>explained variables</i>						
new markets	1,674	0.3017	-	-	-	dummy
new foreign comp.	1,731	0.5269	-	-	-	dummy
new products	1,488	0.3306	-	-	-	dummy
Box-Cox transf. no. of employees	2,279	2.7254	0.8634	0	4.8775	continuous
(Box-Cox transf. no. of employees) ²	2,279	8.1729	4.8048	0	23.7904	continuous
instrumented degree of preparation	1,948	1.0380	0.4875	0	2.2947	continuous
<i>explanatory variables</i>						
exporting firm	2,330	0.3330	-	-	-	dummy
East German firm	2,330	0.2193	-	-	-	dummy
software consultancy	1,948	0.1191	-	-	-	dummy
accountancy	1,948	0.0898	-	-	-	dummy
management consultancy	1,948	0.0909	-	-	-	dummy
architectural activities	1,948	0.0893	-	-	-	dummy
technical planning	1,948	0.1217	-	-	-	dummy
advertising	1,948	0.1027	-	-	-	dummy
automobile renting	1,948	0.0739	-	-	-	dummy
machine renting	1,948	0.0955	-	-	-	dummy
cargo handling	1,948	0.0955	-	-	-	dummy

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