Risk or Resilience? The Role of Trade Integration and Foreign Ownership for the Survival of German Enterprises during the Crisis 2008–2010

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Motivation

- Germany is one of the economies most integrated into the international division of labor
- Trade integration generally enables welfare-increasing effciency gains but the recent crisis shed light also on the negative aspects of economic internationalization (e.g., the transmission of schocks within MNE affiliate networks (Kleinert et al. 2012))
- The recent economic crisis is an appropriate event for evaluating whether internationalization increases an individual firm's vulnerability in times of economic deterioration
- Survival chances are a key aspect of firm performance which is of high importance to all stakeholders
- New new trade theory has given an additional incentive to study firm survival, since it predicts a considerable impact of trade on industry structure (Melitz 2003 and Helpman 2013)

Internationalization and firm closure

- **Exporting** can be considered a form of risk diversification (Hirsch and Lev 1971) $\Rightarrow$ negative link
- **Imported** intermediate inputs might be cheaper and/or technically more advanced (Gibson and Graciano 2011) $\Rightarrow$ negative link
- Firms that both export and import (**two-way trader**) can be expected to benefit from the positive effects of both forms of international trade on firm survival
- No clear link for **foreign ownership** (Baldwin and Yan 2011): On the one hand, foreign owned firms may have access to superior technologies (provided by parent or through own R&D) that might increase their effciency $\Rightarrow$ negative link
- On the other hand, they can be less rooted in the host country and shift their activities to another country when the local economy deteriorates $\Rightarrow$ positive link

Previous evidence

- **Narjoko and Hill (2007)** investigate firm survival during the 1997/1998 Indonesian crisis and find export orientation and foreign ownership to be highly significant determinants of both survival and recovery
- **Alfaro and Chen (2012)** find multinational subsidiaries worldwide to have been more resilient during the 2008/2009 global crisis
- **Godart, Görg, and Hanley (2012)** find that foreign firms in Ireland were not more likely to exit than domestically owned firms during the crisis
- **Amendola, Ferragina, Pittiglio, and Reganati (2012)** bring together the aspects of trade and FDI and their findings point to more volatile MNE subsidiaries and more resilient exporters in Italy
- Our contribution: i) first study adding importing activities to FDI and export status, ii) first evidence for Germany

Data

1. **Monthly and annual reports for establishments in mining, quarrying, and manufacturing industries** which cover all establishments that employ at least 20 people $\Rightarrow$ exit, exporter status and controls
2. **Turnover Tax Statistics Panel** which covers all enterprises with a turnover that exceeds a low threshold of 17,500 EUR $\Rightarrow$ importer status
3. **Survey of products** (*Produktionsstatistik*) $\Rightarrow$ number of products
4. **Enterprise group database** based on BvD data (FATS) which is available since 2007 $\Rightarrow$ foreign ownership (majority definition)

- We start our analysis in 2008, immediately before the crisis unfolded its real economic impact, and cover the years until 2010

Exit identification

- A firm is identified as an exit if it has reported to either the monthly report or the annual report for establishments in mining, quarrying, and manufacturing industries in 2008 but not in the recovery year 2010

- The definition of firm exit used here is not without problems:

  i) Relocation outside Germany or change of main activitiy $\Rightarrow$ rarely the case

  ii) Industry calssification of monthly reports and Turnover Tax Statistics changed in 2009 $\Rightarrow$ exclusion of publishing and recycling sector

  iii) Shrinking below threshold of 20 employees $\Rightarrow$ exclusion of firms below a treshold of 30 employees

Descriptive results for 2008 (handout Table 1)

	Survivors		Exits	
	Number of firms	Share (%)	Number of firms	Share (%)
All firms	35,895	99.20	288	0.80
Number of employees				
<50	16,101	44.86	218	75.69
50–249	15,893	44.28	62	21.53
$250<$	3,901	10.87	8	2.78
International trade				
No trade	7,365	20.52	70	24.31
Exports only	10,235	28.51	97	33.68
Imports only	3,557	9.91	24	8.33
Exports and imports	14,738	41.06	97	33.68
Ownership				
Foreign owned	3,437	9.58	20	6.94
Domestic independent	16,837	46.91	163	56.60
Domestic dependent	14,160	39.45	101	35.07
domestic group head	1,461	4.07	4	1.39
Firm age				
Founded before 1996	17,594	49.02	122	42.36
Founded after 1996	18,301	50.98	166	57.64
Labor productivity				
Bottom 1/3	11,855	33.03	137	47.57
Middle 1/3	11,960	33.32	80	27.78
Top 1/3	12,080	33.65	71	24.65
Number of products				
One	13,859	38.61	138	47.92
Two and more	22,036	61.39	150	52.08
Region				
Western	29,360	81.79	242	84.03
Eastern	6,535	18.21	46	15.97

Probit estimates of exits - AME (handout Table 2)

	Western Germany			Eastern Germany		
	(1)	(2)	(3)	(1)	(2)	(3)
Only exporters	0.002	0.004**	0.004**	-0.001	-0.0004	-0.0004
	(1.00)	(2.25)	(2.20)	(0.27)	(0.12)	(0.12)
Only importers	-0.006**	-0.005**	-0.005*	0.0002	0.001	0.001
	(2.26)	(1.98)	(1.95)	(0.05)	(0.11)	(0.16)
two-way traders	-0.002*	0.001	0.001	-0.003	-0.002	-0.002
	(1.89)	(0.49)	(0.52)	(0.74)	(0.47)	(0.42)
foreign owned	-0.002	0.001	0.001	-0.007	-0.007	-0.005
	(1.11)	(0.61)	(0.51)	(1.11)	(1.03)	(0.80)
independent	-	-	-0.0001	-	-	0.003
			(0.08)			(0.95)
domestic group head	-	-	-0.002	-	-	omitted
			(0.73)			
50–249 employees	-	-0.007***	-0.007***	-	-0.008***	-0.008***
		(4.84)	(4.84)		(3.06)	(2.88)
250$<$ employees	-	-0.012***	-0.012***	-	-0.003	-0.002
		(2.98)	(2.87)		(0.52)	(0.37)
established before 1996	-	-0.001	-0.001	-	0.001	0.002
		(1.55)	(1.52)		(0.36)	(0.44)
Multi-product firms	-	-0.002**	-0.002**	-	-0.004*	-0.004
		(2.01)	(2.01)		(1.68)	(1.62)
Labor productivity	-	-8.72e-06*	-8.58e-06*	-	-9.78e-07	-2.57e-07
		(1.78)	(1.83)		(0.34)	(0.10)
2-digit industry dummies	yes	yes	yes	yes	yes	yes
Number of firms	23,603	23,603	23,603	3,918	3,918	3,810

Notes: Reported are estimated average marginal effects (AME) with |z-values| in parentheses; Statistical significance at the 10% (*), 5% (**) and 1% (***) level; Standard errors are adjusted for 2-digit industry clusters.

Probit estimates of exits - MEM (handout Table 3)

	Western Germany			Eastern Germany		
	(1)	(2)	(3)	(1)	(2)	(3)
Only exporters	0.001	0.003**	0.003**	-0.001	-0.0003	-0.0003
	(1.01)	(2.32)	(2.25)	(0.27)	(0.12)	(0.12)
Only importers	-0.006**	-0.004**	-0.004**	0.0002	0.0004	0.001
	(2.39)	(2.03)	(2.00)	(0.05)	(0.11)	(0.16)
two-way traders	-0.002*	0.001	0.001	-0.003	-0.002	-0.001
	(1.92)	(0.49)	(0.52)	(0.75)	(0.47)	(0.41)
foreign owned	-0.002	0.001	0.001	-0.006	-0.005	-0.004
	(1.14)	(0.62)	(0.51)	(1.15)	(1.06)	(0.82)
independent	-	-	-0.0001	-	-	0.002
			(0.08)			(0.96)
domestic group head	-	-	-0.002	-	-	omitted
			(0.72)			
50–249 employees	-	-0.005***	-0.005***	-	-0.006***	-0.006***
		(5.95)	(6.03)		(4.00)	(3.59)
$250<$ employees	-	-0.009***	-0.009***	-	-0.002	-0.001
		(3.51)	(3.34)		(0.51)	(0.36)
established before 1996	-	-0.001	-0.001	-	0.001	0.001
		(1.50)	(1.47)		(0.37)	(0.45)
Multi-product firms	-	-0.002*	-0.002*	-	-0.003*	-0.003
		(1.95)	(1.96)		(1.76)	(1.64)
Labor productivity	-	-6.67e-06*	-6.54e-06*	-	-7.41e-07	-1.92e-07
		(1.85)	(1.89)		(0.34)	(0.10)
2-digit industry dummies	yes	yes	yes	yes	yes	yes
Number of firms	23,603	23,603	23,603	3,918	3,918	3,810

Notes: Reported are estimated marginal effects at the sample mean (MEM) with |z-values| in parentheses; Statistical significance at the 10% (*), 5% (**) and 1% (***) level; Standard errors are adjusted for 2-digit industry clusters.

Summary and conclusion

- The most striking result is the demonstration of a disadvantage of exporting for the survival chances of a firm during a global economic recession
- Importing instead reveals a positive correlation with survival
- A plausible explanation is that in a global recession, deteriorating markets abroad cause demand losses for exporters and improved conditions in factor markets, which results in an advantage for firms sourcing abroad and a disadvantage for exporters
- Firms that both export and import do not show a different exit risk relative to non-traders because they can outweigh their losses from exporting with their gains from importing ("export-import hedge")
- However, these findings apply only to western Germany
- Furthermore, we cannot support the hypothesis that foreign firms are more volatile during times of economic crisis