

The Effect of Technical Standards on Trade-Flows: Why Is Japan Different?

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Johannes Moenius
Kellogg School of Management / CIRJE

Some Personal Experience ...



What can we learn from that?

- Countries have differing product / process specifications which help to characterize the technical and economic environment of a country
- Some sort of product adaptation may be required to operate goods in a different country
- Precise information about the technical environment is required to properly adapt the product to the foreign market

My Previous Findings (Moenius 2002)

- Created a data-set of 14 countries, 16 years, 470 STIC industries for shared as well as country-specific standards
- Estimated effect of standards on trade-flows with large sample gravity-model
- Found that:
 - Shared standards promote trade
 - Country-specific importer standards hinder trade for simple goods
 - Country-specific exporter standards promote trade for complex goods

Explanation

- Shared Standards remove potential barriers
- Country specific standards provide Information about technical and economic environment
 - Lower search costs
 - Lower product adaptation costs through exact knowledge of specification
 - Lower variety, fewer specifications to adapt to
- Benefit only kicks in for complex products

Questions:

Japan has been blamed in the past for blocking market entry through standards

- Is that (statistically measurably) true?
- If yes, what can we learn about the mechanism?

Answers

- Japan's country-specific standards seem to hinder trade at first glance, but show similar effects as those in other countries if one controls for industry-specific effects
- These industry-specific effects seem to be caused by differences in coordination across industries.
- There also seems to be a Japan-specific-level effect

Motivation

- Billions of US-\$ spend on harmonization (EU, ISO)
- Japan under constant scrutiny from the US for allegedly closing its markets to foreign firms.
- Standardization in Japan differs from that in other countries

My Contribution:

- Econometric analysis of the effects of Japanese Standardization on Trade-Flows
- Identification of causes of these effects

Outline of the Presentation

- Introduction
- Theoretical Framework
- Empirical Specification
- Estimation Results
- Interpretation and Robustness

Some Definitions:

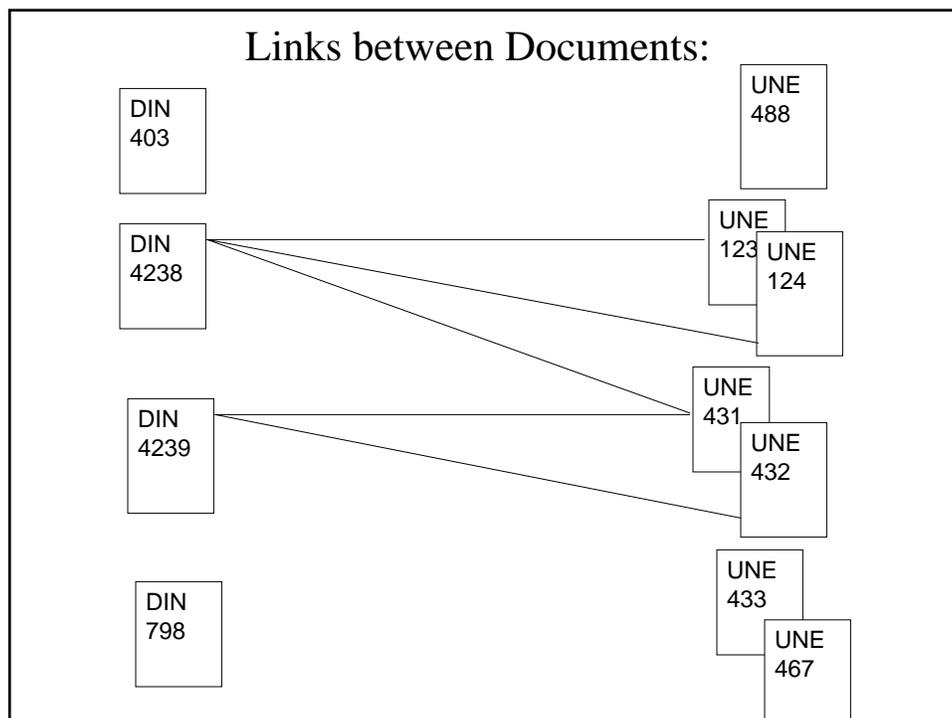
Standards are

- Product and process specifications
- They harmonize the treatment of intermediates or attributes of final goods
- Three types: de facto, de jure and institutional standards
- Here: institutional standards only

My measure of shared standards:

- Links between documents

Links between Documents:



Previous Research-Overview:

- Literature on standardization and trade has been growing over the last four years, largely sponsored by the World Bank and the DIN-Institute.
- General Literature on Non-Tariff-Barriers (NTBs) helpful
- The theoretical literature provides no clear prediction

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Data-Description:

- Sources:
 - Trade data: World Trade Database
 - Standards Data: filtered from PERINORM (DIN, AFNOR, BSI)
 - (National accounts and exchange rates: IMF)
- Specifics
 - 471 SITC industries
 - Countries: Japan, Austria, Australia, Belgium, Switzerland, Germany, Spain, France, UK, Netherlands, Norway, Poland, Turkey, US
 - Annual: 1980-1995

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Import-Equation – by Industry (Moenius 2002)

SITC	shared	importer	exporter	R ²	Observations
0 Food	-0.13 (-6.20)	-0.19 (-13.50)	0.27 (19.20)	0.39	102,136
1 Beverages	-1.35 (-16.33)	-1.24 (-20.10)	-0.21 (-3.59)	0.41	12,532
2 Crude Mat.	-0.014 (-0.95)	-0.026 (-2.25)	0.10 (8.75)	0.23	80,824
3 Fuels	0.36 (7.24)	-0.24 (-5.55)	0.43 (11.88)	0.37	16,538
4 Oils, Fats	-0.18 (-1.63)	0.066 (1.31)	-0.12 (-2.85)	0.36	9,964
5 Chemicals	0.12 (10.75)	0.19 (18.36)	0.36 (38.31)	0.55	70,096
6 Man. by Mat.	0.05 (6.72)	0.096 (14.07)	0.063 (9.18)	0.49	180,146
7 Machinery	0.15 (19.97)	0.24 (32.25)	0.25 (33.18)	0.61	133,780
8 Miscellaneous	0.28 (27.41)	0.084 (10.32)	0.38 (49.03)	0.57	106,020
9 not elsewhere classified	(none)	-0.092 (-1.41)	0.51 (10.12)	0.25	5,836

Imports – Evaluated by Industry:

- Simple manufacturing industries: country-specific standards reduce imports.
- Complex goods: country-specific standards increase imports!

Explanation

Entering foreign markets:

- **Step one:** gather information about the economic and technical environment in your potential export market: *information costs*
- **Step two:** adapt your product to the foreign market: *product adaptation costs*
- Both costs are likely to increase with complexity of products

Further Empirical Evidence

- The positive effect of country-specific standards increases with the size of the importing country => **fixed cost** of information and product adaptation
- Large countries benefit from their country-specific standards, small ones don't

Japan Versus Some Other Countries (Imports):

Country	Shared	Importer	Exporter	R ²	Observations
Japan	0.74 (8.95)	-0.07 (-4.36)	0.18 (14.42)	0.34	68,301
Germany	0.29 (25.75)	0.34 (37.86)	0.03 (2.78)	0.38	81,080
Netherlands	0.14 (11.00)	0.18 (15.31)	0.35 (30.12)	0.40	81,831
Turkey	-0.087 (-4.45)	-0.40 (-29.35)	0.93 (73.99)	0.21	54,316
US	0.25 (3.86)	0.82 (57.22)	0.15 (11.82)	0.22	83,959

(robust standard errors in parenthesis)

Import Equation – Japan

Shared Standards	0.74 (8.95)	-0.47 (-2.96)	0.42* (1.66)	-0.61* (-1.71)
Country-Specific Standards Importer	-0.067 (-4.36)	0.26 (10.76)	-0.12* (-1.77)	0.31* (3.30)
Country-Specific Standards Exporter	0.18 (14.42)	0.18 (9.41)	0.19* (3.68)	0.20* (3.01)
Lagged Dependent Var			0.89 (406)	0.87 (307)
Cntry-Pair-Year FE	Yes		Yes	
C-P-Y-2d Ind.-FE		Yes		Yes
Number of Obs.	68,301	68,301	60,810	60,810

(robust t-statistics in parenthesis)

* transformed

Japan Import-Equation by Industry-Group:

Controlling for Country-Pair-Year-Effects					
Industry-Group	shared	importer	exporter	R ²	Observations
0-4 Food, Bev., Fuels, Oils etc.	-1.50 (-5.74)	-0.25 (-6.42)	0.07 (2.45)	0.22	17,084
5-9 Manufacturing	0.20 (2.35)	-0.08 (-4.80)	0.12 (9.39)	0.45	51,217

Additionally Controlling for Two-digit-Industry-Effects					
Industry-Group	shared	importer	exporter	R ²	Observations
0-4 Food, Bev., Fuels, Oils etc.	-1.73 (-4.29)	-0.51 (-2.54)	0.32 (4.63)	0.31	17,084
5-9 Manufacturing	-0.35 (-2.10)	0.28 (11.55)	0.17 (8.71)	0.54	51,217

(robust t-statistics in parenthesis)

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Empirical Evidence Japan and all others:

		Shared Standards	Importer-specific Standards	Exporter-specific Standards
Japan across Industries	Non-Manufacturing	-	-	+
	Manufacturing	+	-	+
Japan within Industry	Non-Manufacturing	-	-	+
	Manufacturing	-	+	+
All others	Non-Manufacturing	[-]	-	[+]
	Manufacturing	+	+	+

Hypothesis

Industry-coordination in Japan differs from that in other countries: rules vs. relationships. Standards play only a minor role in industry-coordination in Japan, but a major rule in other countries

Further Evidence

- Interviews with Standards- Institutes
- Interviews with Trade Associations
- Interviews with Foreign Trade Associations

Robustness-check

- Maybe the trade-barrier effect was true for the past, but after the Action Program for Improved Market Access (1985), this has changed
- Maybe these results that are driven by comparative advantage: whenever Japan has a large comparative advantage, there will be less imports and the standards in these industries look like trade-barriers.

Effect of the 1985 – Act

Shared Standards	0.74 (8.95)	-0.47 (-2.96)	0.68 (4.19)	-1.06 (-2.95)
Country-Specific Standards Importer	-0.067 (-4.36)	0.26 (10.76)	-0.11 (-3.89)	0.28 (6.25)
Country-Specific Standards Exporter	0.18 (14.42)	0.18 (9.41)	0.17 (7.92)	0.19 (6.27)
Shared Standards x Period-Dummy			0.04 (0.42)	0.44 (1.96)
C-S Standards Imp x Period Dummy			0.03 (1.70)	-0.01 (-0.29)
C-S Standards Exp x Period Dummy			0.01 (0.62)	-0.02 (-0.71)
Cntry-Pair-Year FE	Yes		Yes	
C-P-Y-2d Ind.-FE		Yes		Yes
Number of Obs.	68,301	68,301	68,301	68,301

(robust t-statistics in parenthesis)

RCA and Standards

Shared Standards	0.74 (8.95)	-0.47 (-2.96)	0.73 (8.89)	-0.51 (-3.21)
Country-Specific Standards Importer	-0.067 (-4.36)	0.26 (10.76)	-0.10 (-6.00)	0.13 (4.55)
Country-Specific Standards Exporter	0.18 (14.42)	0.18 (9.41)	0.19 (8.35)	0.21 (9.13)
RCA-Importer			-0.17 (-7.60)	-0.40 (-15.05)
RCA-Importer x C-S Stan-Imp			0.12 (9.92)	0.18 (11.97)
RCA-Exporter			0.23 (5.68)	0.21 (6.69)
RCA-Exporter x C-S Stan-Exp			-0.03 (-1.72)	-0.03 (-2.87)
Cntry-Pair-Year FE	Yes		Yes	
C-P-Y-2d Ind.-FE		Yes		Yes
Number of Obs.	68,301	68,301	68,301	68,301

Summary:

- Japan's institutional standards seem to have a different effect on trade-flows than standards in other countries
- The most likely explanation is that standards play a different role in industry-coordination in Japan than in other countries.
- Overall low level of standards in Japan reduces transparency and acts as a barrier to trade