International division of labour and countries' competitiveness: the case of Italy and Germany

Matteo Gaddi, Nadia Garbellini

Introduction

- Germany's high trade surpluses due to higher competitiveness in high value added productions
- Higher competitiveness consequence of higher productivity growth thanks to a flexible labour market
- Italy should implement the corresponding 'structural reforms' (Hartz Reforms, 2003–2005) in order to improve labour productivity, increase international competitiveness and attract FDIs
  1. Did German labour productivity increase after the HR?
  2. Did German labour productivity increase more than in Italy, and if so in which sectors?
- Labour productivity growth measured as changes in unit labour costs is inappropriate for a set of reasons:
  1. Changes in unit labour costs also involve institutional factors like taxation and income distribution
  2. Aggregate measures incorporate the effect of price changes via the changing composition of GDP
  3. Productivity changes generated by improved *division of labour* which takes more and more place across national borders too

Italian and German exports (1995–2011)

- German exports grew more than Italian ones over the period considered (+177.4% versus +125.9%)
- In almost all sectors Germany over-performed Italy in terms of exports growth
- The two industries groups in which Italy's performance was closer to Germany's are the *medtech* (+157.0% versus +194.0%) and the *hitech* (+133.7% versus +150.2%) ones
- German export-to-Gdp ratio started increasing faster since 2005
- Industries with the best export performance in both countries are those in the hi-tech group–32.5% of exports for Italy, 37.0% for Germany in 2011. In Italy such proportion sightly increased from 1995, in Germany it decreased (-4 p.p.)
- In both countries imports consists mainly of the products of hi-tech industries—in 2011, 24.9% of the total in Italy, 32.2% in Germany. Such proportion decreased in Italy since 1995, while increased in Germany

Hi-tech imports and exports (2008)

- Hi tech exports:
  - Final goods for fixed capital formation: 32.5% of the total in Italy, 27.2% in Germany
  - Intermediates for other countries hi-tech industries: 19.6% consisted in Italy, 24.0% in Germany
- Hi tech imports:
  - Intermediates for hi-tech industries: 22.2% in Italy, 27.8% in Germany
  - Fixed capital: 27.3% in Italy, 23% in Germany
- Energy imports:
  - intermediates for the production of energy itself: 77.4% in Italy, 37.9% in Germany
  - Final consumption: 6.4% in Italy, 25.1% in Germany
- Automotive industry: Italy mainly imports for final consumption purposes, Germany's imports mainly consist of intermediates for the automobile industries itself, i.e. components produced to assembled within the borders

Labour productivity, national

	Italy					Germany				
	95-98	98-01	01-04	04-07	95-07	95-98	98-01	01-04	04-07	95-07
					lowtech					
Food	3.9	2.9	1.9	1.3	2.5	2.3	2.9	1.5	2.9	2.4
Leather	0.7	2.7	-0.4	1.7	1.2	3.1	3.1	3.3	4.8	3.6
Manufacturing nec	1.0	2.2	0.1	1.2	1.1	3.6	2.4	1.6	3.4	2.7
Paper, Printing	2.8	1.8	0.9	1.2	1.7	3.2	4.1	2.4	3.9	3.4
Textiles	2.1	3.5	-0.6	1.7	1.7	4.3	3.3	3.7	5.4	4.2
Wood	3.8	5.3	-0.2	1.7	2.6	4.3	3.3	2.4	2.0	3.0
					medtech					
Basic, Fabr.Metal	1.7	2.6	0.1	0.8	1.3	3.9	3.0	1.7	3.2	3.0
Non-Metal Mineral nec	1.5	1.8	0.7	0.2	1.1	2.7	2.1	3.2	2.6	2.7
Rubber and Plastics	2.5	1.2	2.2	0.4	1.6	3.9	1.4	3.7	3.5	3.1
					hitech					
Chemicals	3.5	1.0	2.3	0.7	1.9	4.7	3.7	2.5	3.2	3.5
Machinery nec	0.3	2.1	1.2	1.7	1.3	3.8	2.3	1.6	5.1	3.2
Optical Equipm.	1.7	2.9	2.0	0.8	1.9	5.1	5.1	6.1	11.0	6.8
					Automotive					
Transport Equipm.	2.0	2.5	0.2	1.4	1.5	4.3	2.1	2.9	5.9	3.8

- Higher productivity growth in Germany over the whole period
- Decline in Italian productivity growth from 2001
- After the introduction of the HR labour productivity grew faster in almost all sectors

Productivity and employment

	$\varrho > 0$, $r_E > 0$ ITA	$\varrho > 0$, $r_E > 0$ DEU	$\varrho > 0$, $r_E < 0$ ITA	$\varrho > 0$, $r_E < 0$ DEU	$\varrho < 0$, $r_E > 0$ ITA	$\varrho < 0$, $r_E > 0$ DEU	$\varrho < 0$, $r_E < 0$ ITA	$\varrho < 0$, $r_E < 0$ DEU
lowtech								
Food	2	2	8	10	2	0	0	0
Leather	1	3	6	7	1	0	4	2
Manufacturing nec	1	2	5	8	2	1	4	1
Paper, Printing	5	3	6	7	1	0	0	2
Textiles	2	1	7	11	1	0	2	0
Wood	5	2	6	8	1	0	0	2
medtech								
Basic, Fabr.Metal	8	2	2	10	1	0	1	0
Non-Metal Mineral nec	2	3	7	8	2	1	1	0
Rubber and Plastics	7	1	4	10	0	1	1	0
hitech								
Chemicals	5	3	5	9	1	0	1	0
Machinery nec	3	5	4	6	5	1	0	0
Optical Equipm.	6	2	4	9	0	1	2	0
automotive								
Transport Equipm.	5	6	3	6	1	0	3	0

- $\varrho > 0, r_E > 0$ was more frequent in Italy than in Germany
- *Basic and Fabricated Metal* (8 vs 2 periods), *Optical Equipment* (6 vs 2) and *Rubber and Plastics* (7 vs 1) have been particularly dynamic in Italy
- $\varrho > 0, r_E < 0$ most common pattern in Germany

- *Productivity increases* can be coupled with either increasing or decreasing employment levels
- In the second case, productivity increases might cover phenomena of labour expulsion, which can in turn be due to the fact that the sector under analysis is a declining one, or that processes with above-average labour-intensity are being outsourced
- *Productivity reductions* can be accompanied by either increasing or decreasing employment
- While in the second case we clearly are in front of a lagging sector, in the former we might observe the outcome of an expanding activity which might lead to following productivity increases.
- German productivity might have been increasing more than in Italy due to a modification of its international division of labour
- This conjecture can be tested by inspection of the dynamics of *international* vertically integrated labour productivity

Labour productivity, international

	Italy					Germany				
	95-98	98-01	01-04	04-07	95-07	95-98	98-01	01-04	04-07	95-07
					lowtech					
Food	3.3	5.3	-0.1	1.8	2.6	-1.3	5.1	0.2	2.1	1.5
Leather	1.8	0.2	-0.6	0.8	0.5	3.0	0.7	-8.3	1.6	-0.9
Manufacturing nec	-0.3	2.8	-1.7	0.7	0.4	2.3	1.7	-2.7	2.8	1.0
Paper, Printing	3.5	2.1	0.3	1.0	1.7	2.9	2.0	1.3	2.9	2.3
Textiles	1.6	1.4	-2.6	1.6	0.5	1.2	3.1	-5.5	1.8	0.1
Wood	1.6	6.6	-2.5	2.1	1.9	1.7	3.8	0.1	0.3	1.5
					medtech					
Basic, Fabr.Metal	1.7	3.1	-3.0	-1.5	0.0	4.2	3.0	-2.8	-1.6	0.7
Non-Metal Mineral nec	1.0	1.5	-0.7	0.9	0.7	2.1	2.0	1.1	1.8	1.8
Rubber and Plastics	1.9	2.0	0.2	-0.3	0.9	2.5	2.0	0.2	1.4	1.5
					hitech					
Chemicals	1.8	1.8	0.7	-0.3	1.0	2.3	3.3	0.3	0.5	1.6
Machinery nec	0.1	2.4	-0.6	0.2	0.5	3.3	1.4	-2.3	1.9	1.0
Optical Equipm.	1.6	2.9	-0.5	0.0	1.0	4.4	1.9	-0.9	7.3	3.1
					automotive					
Transport Equipm.	1.1	1.0	-2.0	-0.3	-0.1	2.2	2.1	-2.7	3.1	1.2

- In almost all sectors, both national and international productivity grew faster in Germany, the difference being smoother in the latter
- The gap is particularly huge in *Machinery nec* and *Optical Equipment*
- Huger performance gap registered in sub-periods 2001-2004 and 2004-2007, after introduction of the common currency and HR: the relative importance of off-shoring was particularly strong in Germany.
- Both Germany and Italy changed their productive structures off-shoring the most labour intensive stages. This process was faster and stronger in Germany than in Italy, and further accelerated with the introduction of the common currency and HR

Ratio of own to total labour in manufacturing

	Italy						Germany					
	95-97	98-00	01-03	04-06	2007	Diff	95-97	98-00	01-03	04-06	2007	Diff
lowtech												
Food	65.6	64.5	68.3	64.8	65.5	0.6	59.4	55.6	58.8	56.4	55.2	-6.3
Leather	65.4	65.2	60.4	59.5	58.3	-4.6	48.0	47.2	44.5	29.6	28.2	-19.2
Manufacturing nec	69.0	65.3	65.6	62.5	61.7	-5.9	61.6	57.0	56.2	49.9	49.7	-10.7
Paper, Printing	70.5	69.0	69.3	68.5	67.8	0.1	70.3	66.1	64.9	62.5	61.2	-8.3
Textiles	61.3	58.4	55.1	51.3	51.7	-7.7	43.8	39.6	38.5	28.7	27.1	-16.5
Wood	70.8	66.4	67.9	64.3	64.5	-5.7	61.1	54.5	55.6	51.9	50.6	-9.7
medtech												
Basic, Fabr.Metal	68.8	66.7	66.6	60.4	57.2	-8.8	57.2	55.6	55.0	47.2	43.0	-12.6
Non-Metal Mineral nec	72.5	69.4	68.4	67.2	67.7	-3.2	68.3	65.0	65.4	61.9	61.0	-6.5
Rubber and Plastics	63.5	61.8	61.7	58.8	58.0	-4.2	59.9	56.5	56.8	51.6	49.8	-9.7
hitech												
Chemicals	56.6	53.7	54.0	51.8	50.6	-5.5	54.4	49.2	49.7	46.1	43.7	-10.5
Machinery nec	69.6	67.5	67.0	63.8	61.5	-5.9	61.1	57.9	56.5	50.2	47.0	-13.0
Optical Equipm.	67.9	65.9	65.6	61.3	59.8	-6.2	59.6	55.2	50.9	42.1	39.0	-19.6
automotive												
Transport Equipm.	67.1	63.1	60.1	56.9	54.3	-11.1	50.8	47.2	46.3	40.2	38.1	-12.6

- *Domestic* component of German total labour is on average lower than the Italian one

Ratio of own to total labour in manufacturing

	Italy						Germany					
	95-97	98-00	01-03	04-06	2007	Diff	95-97	98-00	01-03	04-06	2007	Diff
						lowtech						
Food	65.6	64.5	68.3	64.8	65.5	0.6	59.4	55.6	58.8	56.4	55.2	-6.3
Leather	65.4	65.2	60.4	59.5	58.3	-4.6	48.0	47.2	44.5	29.6	28.2	-19.2
Manufacturing nec	69.0	65.3	65.6	62.5	61.7	-5.9	61.6	57.0	56.2	49.9	49.7	-10.7
Paper, Printing	70.5	69.0	69.3	68.5	67.8	0.1	70.3	66.1	64.9	62.5	61.2	-8.3
Textiles	61.3	58.4	55.1	51.3	51.7	-7.7	43.8	39.6	38.5	28.7	27.1	-16.5
Wood	70.8	66.4	67.9	64.3	64.5	-5.7	61.1	54.5	55.6	51.9	50.6	-9.7
						medtech						
Basic, Fabr.Metal	68.8	66.7	66.6	60.4	57.2	-8.8	57.2	55.6	55.0	47.2	43.0	-12.6
Non-Metal Mineral nec	72.5	69.4	68.4	67.2	67.7	-3.2	68.3	65.0	65.4	61.9	61.0	-6.5
Rubber and Plastics	63.5	61.8	61.7	58.8	58.0	-4.2	59.9	56.5	56.8	51.6	49.8	-9.7
						hitech						
Chemicals	56.6	53.7	54.0	51.8	50.6	-5.5	54.4	49.2	49.7	46.1	43.7	-10.5
Machinery nec	69.6	67.5	67.0	63.8	61.5	-5.9	61.1	57.9	56.5	50.2	47.0	-13.0
Optical Equipm.	67.9	65.9	65.6	61.3	59.8	-6.2	59.6	55.2	50.9	42.1	39.0	-19.6
						automotive						
Transport Equipm.	67.1	63.1	60.1	56.9	54.3	-11.1	50.8	47.2	46.3	40.2	38.1	-12.6

- *Domestic* component of German total labour is on average lower than the Italian one
- In both countries this proportion decreased in almost all sectors, though much faster in Germany with respect to Italy

Ratio of own to total labour in manufacturing

	Italy						Germany					
	95-97	98-00	01-03	04-06	2007	Diff	95-97	98-00	01-03	04-06	2007	Diff
						lowtech						
Food	65.6	64.5	68.3	64.8	65.5	0.6	59.4	55.6	58.8	56.4	55.2	-6.3
Leather	65.4	65.2	60.4	59.5	58.3	-4.6	48.0	47.2	44.5	29.6	28.2	-19.2
Manufacturing nec	69.0	65.3	65.6	62.5	61.7	-5.9	61.6	57.0	56.2	49.9	49.7	-10.7
Paper, Printing	70.5	69.0	69.3	68.5	67.8	0.1	70.3	66.1	64.9	62.5	61.2	-8.3
Textiles	61.3	58.4	55.1	51.3	51.7	-7.7	43.8	39.6	38.5	28.7	27.1	-16.5
Wood	70.8	66.4	67.9	64.3	64.5	-5.7	61.1	54.5	55.6	51.9	50.6	-9.7
						medtech						
Basic, Fabr.Metal	68.8	66.7	66.6	60.4	57.2	-8.8	57.2	55.6	55.0	47.2	43.0	-12.6
Non-Metal Mineral nec	72.5	69.4	68.4	67.2	67.7	-3.2	68.3	65.0	65.4	61.9	61.0	-6.5
Rubber and Plastics	63.5	61.8	61.7	58.8	58.0	-4.2	59.9	56.5	56.8	51.6	49.8	-9.7
						hitech						
Chemicals	56.6	53.7	54.0	51.8	50.6	-5.5	54.4	49.2	49.7	46.1	43.7	-10.5
Machinery nec	69.6	67.5	67.0	63.8	61.5	-5.9	61.1	57.9	56.5	50.2	47.0	-13.0
Optical Equipm.	67.9	65.9	65.6	61.3	59.8	-6.2	59.6	55.2	50.9	42.1	39.0	-19.6
						automotive						
Transport Equipm.	67.1	63.1	60.1	56.9	54.3	-11.1	50.8	47.2	46.3	40.2	38.1	-12.6

- *Domestic* component of German total labour is on average lower than the Italian one
- In both countries this proportion decreased in almost all sectors, though much faster in Germany with respect to Italy
- Highest decrease in Italy

Ratio of own to total labour in manufacturing

	Italy						Germany					
	95-97	98-00	01-03	04-06	2007	Diff	95-97	98-00	01-03	04-06	2007	Diff
						lowtech						
Food	65.6	64.5	68.3	64.8	65.5	0.6	59.4	55.6	58.8	56.4	55.2	-6.3
Leather	65.4	65.2	60.4	59.5	58.3	-4.6	48.0	47.2	44.5	29.6	28.2	-19.2
Manufacturing nec	69.0	65.3	65.6	62.5	61.7	-5.9	61.6	57.0	56.2	49.9	49.7	-10.7
Paper, Printing	70.5	69.0	69.3	68.5	67.8	0.1	70.3	66.1	64.9	62.5	61.2	-8.3
Textiles	61.3	58.4	55.1	51.3	51.7	-7.7	43.8	39.6	38.5	28.7	27.1	-16.5
Wood	70.8	66.4	67.9	64.3	64.5	-5.7	61.1	54.5	55.6	51.9	50.6	-9.7
						medtech						
Basic, Fabr.Metal	68.8	66.7	66.6	60.4	57.2	-8.8	57.2	55.6	55.0	47.2	43.0	-12.6
Non-Metal Mineral nec	72.5	69.4	68.4	67.2	67.7	-3.2	68.3	65.0	65.4	61.9	61.0	-6.5
Rubber and Plastics	63.5	61.8	61.7	58.8	58.0	-4.2	59.9	56.5	56.8	51.6	49.8	-9.7
						hitech						
Chemicals	56.6	53.7	54.0	51.8	50.6	-5.5	54.4	49.2	49.7	46.1	43.7	-10.5
Machinery nec	69.6	67.5	67.0	63.8	61.5	-5.9	61.1	57.9	56.5	50.2	47.0	-13.0
Optical Equipm.	67.9	65.9	65.6	61.3	59.8	-6.2	59.6	55.2	50.9	42.1	39.0	-19.6
						automotive						
Transport Equipm.	67.1	63.1	60.1	56.9	54.3	-11.1	50.8	47.2	46.3	40.2	38.1	-12.6

- *Domestic* component of German total labour is on average lower than the Italian one
- In both countries this proportion decreased in almost all sectors, though much faster in Germany with respect to Italy
- Highest decrease in Italy
- Highest decrease in Germany, the decline interested almost all manufacturing sectors in the same way, but was particularly strong in *Optical Equipment* (-19.6 p.p.) and *Leather* (-19.2 p.p.).

Ratio of own to total labour in manufacturing

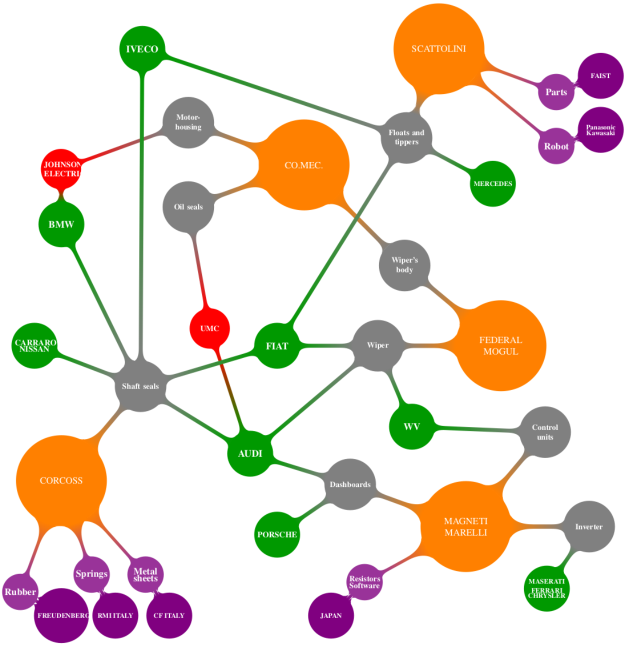
	Italy						Germany					
	95-97	98-00	01-03	04-06	2007	Diff	95-97	98-00	01-03	04-06	2007	Diff
lowtech												
Food	65.6	64.5	68.3	64.8	65.5	0.6	59.4	55.6	58.8	56.4	55.2	-6.3
Leather	65.4	65.2	60.4	59.5	58.3	-4.6	48.0	47.2	44.5	29.6	28.2	-19.2
Manufacturing nec	69.0	65.3	65.6	62.5	61.7	-5.9	61.6	57.0	56.2	49.9	49.7	-10.7
Paper, Printing	70.5	69.0	69.3	68.5	67.8	0.1	70.3	66.1	64.9	62.5	61.2	-8.3
Textiles	61.3	58.4	55.1	51.3	51.7	-7.7	43.8	39.6	38.5	28.7	27.1	-16.5
Wood	70.8	66.4	67.9	64.3	64.5	-5.7	61.1	54.5	55.6	51.9	50.6	-9.7
medtech												
Basic, Fabr.Metal	68.8	66.7	66.6	60.4	57.2	-8.8	57.2	55.6	55.0	47.2	43.0	-12.6
Non-Metal Mineral nec	72.5	69.4	68.4	67.2	67.7	-3.2	68.3	65.0	65.4	61.9	61.0	-6.5
Rubber and Plastics	63.5	61.8	61.7	58.8	58.0	-4.2	59.9	56.5	56.8	51.6	49.8	-9.7
hitech												
Chemicals	56.6	53.7	54.0	51.8	50.6	-5.5	54.4	49.2	49.7	46.1	43.7	-10.5
Machinery nec	69.6	67.5	67.0	63.8	61.5	-5.9	61.1	57.9	56.5	50.2	47.0	-13.0
Optical Equipm.	67.9	65.9	65.6	61.3	59.8	-6.2	59.6	55.2	50.9	42.1	39.0	-19.6
automotive												
Transport Equipm.	67.1	63.1	60.1	56.9	54.3	-11.1	50.8	47.2	46.3	40.2	38.1	-12.6

- *Domestic* component of German total labour is on average lower than the Italian one
- In both countries this proportion decreased in almost all sectors, though much faster in Germany with respect to Italy
- Highest decrease in Italy
- Highest decrease in Germany, the decline interested almost all manufacturing sectors in the same way, but was particularly strong in *Optical Equipment* (-19.6 p.p.) and *Leather* (-19.2 p.p.).
- In both cases decrease 1998-2000, slow down in 2001-2003, new acceleration from 2004 and 2007

Ratio of own to total labour in manufacturing

	Italy						Germany					
	95-97	98-00	01-03	04-06	2007	Diff	95-97	98-00	01-03	04-06	2007	Diff
						lowtech						
Food	65.6	64.5	68.3	64.8	65.5	0.6	59.4	55.6	58.8	56.4	55.2	-6.3
Leather	65.4	65.2	60.4	59.5	58.3	-4.6	48.0	47.2	44.5	29.6	28.2	-19.2
Manufacturing nec	69.0	65.3	65.6	62.5	61.7	-5.9	61.6	57.0	56.2	49.9	49.7	-10.7
Paper, Printing	70.5	69.0	69.3	68.5	67.8	0.1	70.3	66.1	64.9	62.5	61.2	-8.3
Textiles	61.3	58.4	55.1	51.3	51.7	-7.7	43.8	39.6	38.5	28.7	27.1	-16.5
Wood	70.8	66.4	67.9	64.3	64.5	-5.7	61.1	54.5	55.6	51.9	50.6	-9.7
						medtech						
Basic, Fabr.Metal	68.8	66.7	66.6	60.4	57.2	-8.8	57.2	55.6	55.0	47.2	43.0	-12.6
Non-Metal Mineral nec	72.5	69.4	68.4	67.2	67.7	-3.2	68.3	65.0	65.4	61.9	61.0	-6.5
Rubber and Plastics	63.5	61.8	61.7	58.8	58.0	-4.2	59.9	56.5	56.8	51.6	49.8	-9.7
						hitech						
Chemicals	56.6	53.7	54.0	51.8	50.6	-5.5	54.4	49.2	49.7	46.1	43.7	-10.5
Machinery nec	69.6	67.5	67.0	63.8	61.5	-5.9	61.1	57.9	56.5	50.2	47.0	-13.0
Optical Equipm.	67.9	65.9	65.6	61.3	59.8	-6.2	59.6	55.2	50.9	42.1	39.0	-19.6
						automotive						
Transport Equipm.	67.1	63.1	60.1	56.9	54.3	-11.1	50.8	47.2	46.3	40.2	38.1	-12.6

- *Domestic* component of German total labour is on average lower than the Italian one
- In both countries this proportion decreased in almost all sectors, though much faster in Germany with respect to Italy
- Highest decrease in Italy
- Highest decrease in Germany, the decline interested almost all manufacturing sectors in the same way, but was particularly strong in *Optical Equipment* (-19.6 p.p.) and *Leather* (-19.2 p.p.).
- In both cases decrease 1998-2000, slow down in 2001-2003, new acceleration from 2004 and 2007


IVECO
SCATTOLINI
FAIST
Parts
Panasonic Kawasaki
Robot
Motor-housing
CO.MEC.
Floats and tippers
JOHNSON ELECTRI
MERCEDES
Oil seals
BMW
Wiper's body
UMC
FIAT
Wiper
FEDERAL MOGUL
CARRARO NISSAN
Shaft seals
WV
Control units
AUDI
CORCOSS
Dashboards
MAGNETI MARELLI
Inverter
PORSCHE
Springs
Metal sheets
Resistors Software
MASERATI FERRARI CHRYSLER
Rubber
FREUDENBERG
RMI ITALY
CF ITALY
JAPAN

- From the point of view of ownership the presence of German shareholders does not play a crucial role in determining labour conditions
- The case of Magneti Marelli (FIAT) shows that labour conditions depend on productive specialisation and on the company's position along the value chain, rather than on ownership structure
- German companies adopted a specific strategy towards Italy which is implemented through FDIs. German investments mainly aim at acquiring Italian companies operating in the industrial sector, well integrated in international supply chains, and complementary to German industry's needs
- Secondly, the specific commodities produced range from very simple intermediate commodities (wipers) to technologically advanced components (dashboards). In their turn, these companies purchase simpler components from abroad which they then assembly
- The intensity of control exercised by German companies is extremely heterogeneous too
- Normally, German partners are extremely demanding in terms of quality of the product and timeliness in deliveries. The latter is particularly important in the case of geographically dispersed industrial productions where final production takes place in a single plant by assembly of components coming from different countries
- Labour relations are extremely heterogeneous too, since they basically depend on the history of each company