ITMF Textile Machinery Workshop

May 8, 2014
VDMA, Frankfurt, Germany

Presentations – Overview

Mr. Greig Fleming, Senior Analyst, Global Research, Credit Suisse
Global Economic Situation & Outlook

Mr. Shutian Wang, President, China Textile Machinery Association (CTMA)
China’s Textile Industry – An Update

Ms. Meike Tilebein, Professor and Director, DITF-MR Denkendorf, Fibre Research Denkendorf
Making Knowledge Productive

Dr. Christian Schindler, ITMF Director General
International Textile Machinery Shipment Statistics, 2014

Powervote Results
ITMF
Textile Machinery Workshop: Global Economic Outlook

Greig Fleming

8th May 2014
Easy money still underpins growth into 2015

Last data point: 24.04.2014

Source: listed forecasts Credit Suisse / Global Research; other forecasts IMF
## GDP Growth Forecasts

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014F</th>
<th>2015F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US</strong></td>
<td>1.9</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Eurozone</strong></td>
<td>-0.4</td>
<td>1.2</td>
<td>1.6</td>
</tr>
<tr>
<td><strong>Switz.</strong></td>
<td>2.0</td>
<td>2.0</td>
<td>1.8</td>
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<tr>
<td><strong>Japan</strong></td>
<td>1.5</td>
<td>1.5</td>
<td>1.4</td>
</tr>
</tbody>
</table>

All figures in percent growth Year over Year. 2013 figures actuals as far as already released.

Source: Credit Suisse
Advanced economy growth stronger

US data confirm the rebound following winter weakness and Eurozone business surveys remained upbeat

Last data point: 30.04.2014
Global Manufacturing PMI levels

Purchasing Managers’ Index (PMI)

Advanced Economies

Emerging Markets

- Expansion
- Contraction

Global

Denmark
New Zealand
UK
Ireland
Switzerland
USA
Germany
Italy
Netherlands
Eurozone
Spain
Austria
France
Greece
Japan
Australia

Czech Republic
Taiwan
Poland
India
Mexico
Singapore
Turkey
South Korea
Brazil
Russia
China
South Africa

Last data point: 30.04.2014

Source: Datastream, PMIpremium
The “V” recovery stabilized:
Global capacity utilisation (output gap)
US - inflation - capacity utilization vs. CPI

Last data point: 02.05.2014
Corporate revival: M&A activity

Global M&A deal volume in February & March of each year

Last data point: 31.03.2014

Source: Datastream, Credit Suisse & IDC
Global GDP Growth - Emerging markets & Industrialized countries

Moderating EM growth and stabler demand elsewhere – uncertainty finally fading

Source: Bloomberg, Datastream, IMF, Credit Suisse / IDC
Last data point: 02.05.2014
G3 industrial production growth closing in on BRIC rate

Last data point: 02.05.2014

Source: Bloomberg, Datastream, Credit Suisse / IDC
## Busy EM election schedule in 2014

<table>
<thead>
<tr>
<th>Country</th>
<th>Date</th>
<th>Type of Elections</th>
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</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>October 5th</td>
<td>Presidential elections</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>General and local elections</td>
</tr>
<tr>
<td>India</td>
<td>May</td>
<td>General elections</td>
</tr>
<tr>
<td>Indonesia</td>
<td>April 9th</td>
<td>General and local elections</td>
</tr>
<tr>
<td></td>
<td>July 9th</td>
<td>Presidential elections</td>
</tr>
<tr>
<td>South Africa</td>
<td>April</td>
<td>Parliamentary elections</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>Presidential elections (elected by parliament)</td>
</tr>
<tr>
<td>Turkey</td>
<td>July</td>
<td>Presidential elections (elected by the people)</td>
</tr>
<tr>
<td>Ukraine</td>
<td>May 25th</td>
<td>Presidential elections (public)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If on, possible «unity referendum» added to ballot</td>
</tr>
</tbody>
</table>

Source: Bloomberg, Credit Suisse / IDC
Shipping costs are still extremely low...

Last data point: 05.05.2014

Source: Bloomberg, Credit Suisse / IDC
Exports: BRIC vs. G3

...but watch renewed Export weakness for Emerging Market exporters

% YoY (GDP PPP Weighted)

BRIC Exports vs. G3 Exports

Last data point: 15.04.2014

Source: Bloomberg, Datastream, IMF, Credit Suisse / IDC
Japanese Exports - China vs. US

China had become Japan's largest export market, but dropped back recently

Last data point: 31.03.2014

Source: Bloomberg, Credit Suisse / IDC
US unemployment just dipped below DE

Last data point: April 2014, Value: US unemployment rate: 6.3%; Germany: 6.7%
European developments
EMU & German industrial sentiment

2003/04 and 2013/14 similar confidence levels - In 2003, Germany began “Agenda 2010”

Source: Bloomberg, Datastream, PMIPremium, Credit Suisse / IDC
EUR expansion “pulled along” by Germany

Business sentiment (PMI) in Germany has dipped after a better year

Source: Bloomberg, Datastream, PMIPremium, Credit Suisse / IDC

Last data point: 28.02.2014
EMU credit growth still in reverse

Currently, credit extended to businesses is actually being withdrawn.

Source: Bloomberg, Datastream, Credit Suisse / IDC
ECB lending survey: factors in loan policy

Banks are reporting economic and competitor concerns for restricting their lending.

Factors contributing to tighter/easier credit conditions

- cost of funds
- access to finance
- liquidity position
- competition from other banks
- economic expectations
- industry/firm outlook
- risk on collateral

Q4 2013 Q1 2014 Q2 2014

Source: Datastream, Credit Suisse / IDC
Eurozone Retail Sales vs Consumer Confidence

Consumers a great deal less cautious in EU, in the last 6 months.

% in comparison to last year, 6M moving average

Last data point: 30.04.2014

Source: Bloomberg, Credit Suisse / IDC
France to seek euro devaluation

By Hugh Carnegy in Paris

France will push for action to lower the value of the euro after European Parliament elections next month, Manuel Valls, prime minister, said yesterday.

Paris has long agitated against German resistance for a looser monetary policy by the European Central Bank, arguing that the eurozone’s recovery – and that of France – is being held back by the relative strength of the euro, which has appreciated against the dollar.

The premier, appointed to implement the economy package “a moment of truth”, he said the result would “condition the legitimacy of the government, its capacity to govern and above all the credibility of France”.

He won the vote by a margin of 265-232 but 40 an unprecedented €50bn of savings in France’s sky-high public spending bill.

Last week, the government slowed the pace of its plan to reduce the budget deficit as it sought to make room to enhance growth. But committed itself to sti...
EUR/USD and the ECB

Draghi: “The strengthening of the exchange rate would require further monetary policy accommodation.”

Last data point: 29.04.2014
EUR/USD and the ECB

Draghi:
"The strengthening of the exchange rate would require further monetary policy accommodation."

Last data point: 29.04.2014
May 2014: “Italian bond yields 3.2%”

Last data point: 09/04/2013; Value: Italy, 10Y government bond yield: 4.35;

Source: Bloomberg, Credit Suisse / IDC
“Uno Anno” in Italy & Spain – the three “M”s: Matteo Renzi, Mariano Rajoy, Mario Draghi

Last data point: 01.05.2014

Source: Bloomberg, Credit Suisse / IDC

Italy, 10Y government bond yield
Spain, 10Y government bond yield

Source: Bloomberg, Credit Suisse / IDC
Italian bond yields **well** below 5% at 3.2%
Geopolitical developments
China: Growth transition dynamics
### Key reform initiatives endorsed by the Third Plenary Session

<table>
<thead>
<tr>
<th>Reform agenda</th>
<th>Reform details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SOE reform</strong></td>
<td>Emphasize the <strong>coexistence between SOEs and private sector</strong>. No mention of breaking down the key state-owned monopolies.</td>
</tr>
<tr>
<td><strong>Rural land reform</strong></td>
<td>Endorsing the <strong>rights of farmers in their ownership of their land</strong>, still needs implementation details.</td>
</tr>
<tr>
<td><strong>Market vs. Government</strong></td>
<td>The <strong>market will play a “decisive role” in resource allocation</strong>. Less government approval, more free-trade zones.</td>
</tr>
<tr>
<td><strong>Fiscal and tax reform</strong></td>
<td>Clarification of expenditure <strong>relationship between central and local government</strong>. Early warning system for government debt.</td>
</tr>
<tr>
<td><strong>Financial sector reform</strong></td>
<td><strong>Interest rate liberalization &amp; internationalization of the Renminbi.</strong></td>
</tr>
<tr>
<td><strong>“Hukou” reform</strong></td>
<td>“Hukou” (residentship) reform for medium-sized cities, mega cities still tightly controlled.</td>
</tr>
<tr>
<td><strong>Anti-corruption</strong></td>
<td>Reduce the influence of local government on anti-corruption investigations.</td>
</tr>
<tr>
<td><strong>One Child policy</strong></td>
<td>For urban couples, <strong>if either husband or wife (instead of both as currently) is a single child, they will be allowed to have 2 children.</strong></td>
</tr>
<tr>
<td><strong>Legal system</strong></td>
<td>Reduce the influence of local government law court’s judgment.</td>
</tr>
</tbody>
</table>

Source: “Decision on Key Questions Regarding the Comprehensive Deepening of Reforms” endorsed by the Third Plenary Session,

Picture source: Wikimedia, Public Domain
Latest fiscal stimulus measures

- **2014 - 20 urbanization master plan**
  Boost domestic consumption, public infrastructure and services demand as well as housing

- **Acceleration of key investment projects**
 Expand domestic demand, massive railway construction

- **Private property developers allowed to sell shares**
  Prevent further escalation of financial risks, Yuan-denominated “A” shares to ease funding pressures
National People’s Congress March 5th - 13th: government sets growth target for 2014 at 7.5%
## Emerging markets GDP growth forecasts

<table>
<thead>
<tr>
<th>Country</th>
<th>2013</th>
<th>2014F</th>
<th>2015F</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>7.7</td>
<td>7.2</td>
<td>7.0</td>
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<tr>
<td>Brazil</td>
<td>2.3</td>
<td>1.7</td>
<td>2.5</td>
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<tr>
<td>Indon.</td>
<td>5.8</td>
<td>5.3</td>
<td>5.5</td>
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<tr>
<td>Turkey</td>
<td>4.0</td>
<td>2.2</td>
<td>3.7</td>
</tr>
</tbody>
</table>

All figures in percent growth Year over Year. 2013 figures actuals as far as already released.

Source: Credit Suisse
CNY spot vs. moving band allows lower Yuan

CNY/USD

Last data point: 30.04.2014

Source: Bloomberg, Credit Suisse / IDC
Chinese off-balance sheet financing picks up
Commodity price revival draws back investors

News analysis
Agriculture, energy and bullion are leading a sector recovery with $6bn inflows this year, writes Neil Hume

But sentiment has begun to improve following a strong start to the year on commodity markets, where the Dow Jones UBS commodity index had outperformed the S&P 500 by more than 8 percentage points. “It’s got commodities back on the radar screens of investors,” says Kevin Norrish, head of commodities research at Barclays. He said one of the main reasons investors are looking at commodities again is declining correlation with other asset classes. Investors are also becoming concerned about their exposure to equities and bonds and looking for contrarian bets. During and after the global financial crisis commodi-
Commodities versus global PMIs

Commodities broad index returned +8.2% in the year to April.
Commodity prices: energy cost rise dominates

Primary commodities comprise food, industrial raw materials, agricultural raw materials, non-ferrous metals, iron ore and steel scrap. Latest 3 months are an estimation based on readily available commodity prices.

Last data point: 30.04.2014

Source: CBP, Bloomberg, Credit Suisse
Global oil consumption

Oil consumption growth is rising again, though China’s share static.

Source: EIA, Credit Suisse / IDC
European gas imports from Russia

<table>
<thead>
<tr>
<th>Country</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
<th>80%</th>
<th>100%</th>
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<td>Finland</td>
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<td>Euro Area</td>
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<td>Sweden</td>
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<td>Switzerland</td>
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<td>Norway</td>
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<td>UK</td>
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<tr>
<td>Denmark</td>
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</tbody>
</table>

Gas imports from Russia as a percentage of total gas imports

Last data point: 30.09.2013

EU-27 imports of natural gas - by country of origin

Source: Eurostat, Credit Suisse / IDC
Market developments

U.S. cotton ends up, hits 5-week high, after stronger jobs data

Fri May 2, 2014 5:22pm EDT

* July cotton sets new 5-week high above 95 cents/lb

* Market awaits USDA April crop report due May 9

May 2 (Reuters) - U.S. cotton futures closed higher on Friday after hitting a five-week high, spurred by stronger-than-expected U.S. jobs data for April, although traders remained wary of government crop data due out in a week.

The most-active July cotton contract on ICE Futures U.S. settled up 0.12 cent at 94.32 cents a lb. The peak for the day, 95.10 cents, was the highest for the contract since March 26.
Textile-related financial investments
European Apparel, Textiles, & Luxury performing weaker than the European index, just in last year

Share market worried about the “Emerging Market Impulse Shopper”

Last data point: 06.05.2014
Currencies
Benchmark Policy Interest Rates

“Carry” environment: Higher or rising interest rates attracting flows again
BRL, IDR, AUD, NZD

Benchmark Policy Rate (%)
Global FX performance vs. USD in 2014 YTD

“Carry” and “Commodity” currencies have been performing best

YTD performance vs. USD in %

Appreciation vs. USD

Depreciation vs. USD

Source: Bloomberg, Credit Suisse / IDC

Last data point: 06.05.2014
In 2014, CNY dipping against USD year-to-date

YTD performance of Asian currencies

% returns YTD

- IDR
- INR
- KRW
- THB
- SGD
- MYR
- HKD
- PHP
- TWD
- CNY

Source: Bloomberg, Credit Suisse

Last data point: 15.03.2014
FX Market Positioning for May-June

Short JPY, CAD positions remain substantial.
Higher-yielding currencies (GBP, NZD, MXN) are in favor, & Swiss franc for safety.

IMM speculative positions as a % of total open interest

Last data point: 06.05.2014

Source: Datastream, Credit Suisse / IDC
EUR/USD IMM Net Positioning (Contracts)

When we last met was the last speculator net short position in EUR/USD.

Last data point: 05.05.2014

Source: Bloomberg, Credit Suisse / IDC
Thank you for your interest!

Source: Financial Times
Commodity Forecasts

<table>
<thead>
<tr>
<th>Units</th>
<th>Current price 06.05.2014</th>
<th>3M Forecast*</th>
<th>12M Forecast*</th>
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<tbody>
<tr>
<td><strong>Precious Metals</strong></td>
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<tr>
<td>Gold</td>
<td>USD/ oz</td>
<td>1307.48</td>
<td>1300.00</td>
</tr>
<tr>
<td>Silver</td>
<td>USD/ oz</td>
<td>19.64</td>
<td>19.00</td>
</tr>
<tr>
<td>Platinum</td>
<td>USD/ oz</td>
<td>1455.25</td>
<td>1450.00</td>
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<tr>
<td>Palladium</td>
<td>USD/ oz</td>
<td>818.55</td>
<td>780.00</td>
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<tr>
<td><strong>Industry Metals</strong></td>
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<tr>
<td>Aluminum</td>
<td>USD/t</td>
<td>1750.25</td>
<td>1750.00</td>
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<tr>
<td>Copper</td>
<td>USD/t</td>
<td>6756.00</td>
<td>6500.00</td>
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<tr>
<td>Nickel</td>
<td>USD/t</td>
<td>18535.50</td>
<td>15500.00</td>
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<tr>
<td>Zinc</td>
<td>USD/t</td>
<td>2043.50</td>
<td>1990.00</td>
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<tr>
<td>Lead</td>
<td>USD/t</td>
<td>2076.75</td>
<td>2050.00</td>
</tr>
<tr>
<td>Tin</td>
<td>USD/t</td>
<td>23194.00</td>
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<tr>
<td><strong>Energy</strong></td>
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<tr>
<td>WTI Crude oil</td>
<td>USD/bbl</td>
<td>99.50</td>
<td>101.00</td>
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<tr>
<td>Brent Crude oil</td>
<td>USD/bbl</td>
<td>107.06</td>
<td>106.00</td>
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<tr>
<td>US Natural gas</td>
<td>USD/mmbtu</td>
<td>4.80</td>
<td>4.60</td>
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<td><strong>Agriculture</strong></td>
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<tr>
<td>Corn</td>
<td>US cents/ bu</td>
<td>513.00</td>
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<tr>
<td>Wheat</td>
<td>US cents/ bu</td>
<td>731.75</td>
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<td>Soybeans</td>
<td>US cents/ bu</td>
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<tr>
<td>Sugar</td>
<td>US cents/ lb</td>
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<td>Cocoa</td>
<td>USD/ t</td>
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<tr>
<td>Coffee</td>
<td>US cents/ lb</td>
<td>199.55</td>
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<tr>
<td>Cotton</td>
<td>US cents/ lb</td>
<td>93.70</td>
<td>90.00</td>
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*Forecast date: 21.03.2014

Last data point: 06.05.2014

Source: Bloomberg, Credit Suisse / IDC
## Forecast Table GDP and inflation

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<tr>
<td>Global</td>
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<td>3.5</td>
<td>3.7</td>
<td>2.8</td>
<td>3.3</td>
<td>3.2</td>
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<td>Non-Japan Asia</td>
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<td>5.9</td>
<td>6.0</td>
<td>3.8</td>
<td>3.9</td>
<td>4.2</td>
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<td>G-3</td>
<td>1.2</td>
<td>2.1</td>
<td>2.3</td>
<td>2.0</td>
<td>1.6</td>
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<td>BRIC</td>
<td>5.8</td>
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<td>USA</td>
<td>1.9</td>
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<td>3.0</td>
<td>1.5</td>
<td>1.7</td>
<td>1.8</td>
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<tr>
<td>EM-8</td>
<td>5.6</td>
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<td>4.7</td>
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<tr>
<td>Canada</td>
<td>2.0</td>
<td>2.3</td>
<td>2.5</td>
<td>0.9</td>
<td>1.6</td>
<td>1.9</td>
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<tr>
<td>South Korea</td>
<td>2.8</td>
<td>3.7</td>
<td>3.7</td>
<td>1.3</td>
<td>2.0</td>
<td>2.5</td>
</tr>
<tr>
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G-3: EMU, Japan, USA. EM-8: Brazil, China, India, Indonesia, South Korea, Mexico, Turkey and South Africa.

GCC: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE. Regional figures are PPP-weighted.

Source: Credit Suisse
China’s Textile & Textile Machinery Industry Overview
Overview:

In 2013, the Situation of China’s textile industry was stable and improved:

- The total value of industrial output reached 6384.8 billion Yuan, has risen 7.7% over the previous year.
- The profit reached 360.5 billion Yuan, by 17%

Feature: Growth will remain stable & moderate for an extended period.
China’s Textile Industry

The growth of main output (%)

- **Feature:** The output of yarn, cloth, chemical fiber and garments lacked increasing power.
Feature: In 2013, the export value reached US$292 billion, by 11.2%, over 5–year average growth rate (9.7%).
China’s Textile Industry

The Proportion of the Textile and Garment Import Value from China in USA, EU and Japan (%)

Feature: The proportion in slow decline
The market size of China’s textile machinery

In 2013, the market size of China's textile machinery was 125.94 billion yuan.

The market size of China’s textile machinery

- 100.2; 80% - Domestic Textile Machinery
- 25.7; 20% - Imported Textile Machinery
Feature: In 2013, the revenue from 726 companies reached 115.6 billion yuan, by 5.69%, below the 5-year average growth rate (14.08%).
Feature: In 2013, the profit reached 8.2 billion Yuan.
The growth rate of profit reached its highest level since 2010.
China’s Textile Machinery Industry

The main production shipment statistics
Feature: In 2013, the import value reached US$4220 million, the growth of import fallen since 2011.
Feature: The value of import from Germany, Japan, and Italy has fallen since 2012.
Feature: In 2013, the export value reached US$2519 million, the 5-year average growth rate of export reached 21.26%.
Feature: The export value to leading countries has solid increased since 2009, except export to India & Vinamem in 2012.
Trend of textile machinery development:

1. Automation, Intelligence, Information & Network
2. Energy saving and Anti-pollution
3. Applicability and Universality.
CHINA
TEXTILE MACHINERY ASSOCIATION
SINCE 1990

www.ctma.net
ctma@ctma.net
German Institutes for Textile and Fiber Research Denkendorf  
Center for Management Research

Making Knowledge Productive

Intelligent Manufacturing and New Business Models in the New Industrial Era

Director: Prof. Dr. rer. pol., Dipl.-Ing. Meike Tilebein
Europe’s largest Textile Research Center

German Institutes for Textile and Fiber Research Denkendorf (DITF)

1 Institute for Textile Chemistry and Chemical Fibers
2 Institute of Textile Technology and Process Engineering
3 Center for Management Research
4 ITV Denkendorf Product Service Ltd.
Key Facts

German Institutes for Textile and Fiber Research Denkendorf (DITF)

- Founded in 1921
- Foundation under public law
- approx. 310 employees (50% scientists)
- 75% application oriented research with industry, 25% production
- Patents: 70
- QM-Systems to DIN EN ISO 17025 (DAkkS) and DIN EN ISO 13485
**DITF-MR – Competences and EU Projects**

### Innovation Management
- Innovation and creativity techniques
- Trends, scenarios and business development
- Integration of customers in the innovation process
- Collaborative innovation in networks

### Design and Development
- Digital printing
- Customer-specific product design
- Communities and Open Innovation
- Web 2.0 technologies

### Management of Value Networks
- Work organisation, working time and shift models
- Process-oriented knowledge management
- Value creation for niche markets
- Dynamic value networks

### Sustainability and Intelligent Energy Management
- Energy monitoring
- Life Cycle Assessment and energy balancing
- Resource-efficient process management

### Development and Adaptation of Management Techniques and IT-based Tools for the Textile Industry
- IT services
- Training and e-learning
- Organisational learning and knowledge management
- Risk, quality and environmental management
- Service orientation
- New business models
- Process modelling and simulation
Agenda

- A New Industrial Era
- Perspectives on Intelligent Manufacturing
- The New World of Business Ecosystems
- Coping with the New Industrial Era
The Fourth Industrial Revolution

- The Internet of Things and Services: Real and Virtual World Combine to Cyber-Physical Systems
- Individualized Customer-Specific (Hybrid) Products, Lot-Size One
- Highly Flexible Production
- Resource Productivity and Efficiency
- New Business Models and New Ways of Creating Value
- Demographic Change and Work-Life Balance

# Germany’s Agenda for Industry 4.0

## Needs
- Horizontal Integration through Value Networks
- End-to-end Digital Integration of Development and Production Processes
- Networked Manufacturing Systems

## Key Areas for Action
- Comprehensive Broadband Infrastructure for Industry
- Safety and Security
- Regulatory Framework
- Standardisation and Reference Architecture
- Managing Complex Systems
- Work Organisation and Design
- Training and Professional Development
- Resource Efficiency

---

http://www.bmbf.de/pubRD/Umsetzungsempfehlungen_Industrie4_0.pdf

© DITF-MR Denkendorf  Prof. Dr. Meike Tilebein, ITMF Textile Machinery Workshop  May 8, 2014
Stairway to Competitiveness

Competitiveness

- Competence  + Uniqueness
- Acting  + Right Actions
- Capability  + Motivation
- Knowledge  + Context

Knowledge

- Information  + Linkage
- Data  + Semantic
- Symbols  + Syntax

Large share of implicit Knowledge

Large share of explicit Knowledge
Challenge: „Managing“ Knowledge

Knowledge Goals

Knowledge Identification

Knowledge Acquisition

Knowledge Development

Knowledge Utilization

Knowledge Division/Sharing

Knowledge Maintenance

Feedback

Probst, Raub, Romhardt (1997)
Cross-sectoral Collaboration as Innovation Driver

Traditional Sector, for instance Textile Sector

External Business Processes:
Cross-sectoral Supply Chains & Collaborative Networks

Internal Business Processes
Production Processes &
Material
Product
Services

Cross-sectoral Technology & Material Suppliers
E.g. Metal Processing, Carbon Fibre Producer

Cross-sectoral Customers
E.g. Automotive, Aerospace

Other Sectors
Challenge: Managing Collaboration

Integration of Management Tasks
- Concepts
- Methods
- Tools

Management of Collaborative Innovation Projects

Network Management
Innovation Management
Knowledge Management
Agenda

- A New Industrial Era
- Perspectives on Intelligent Manufacturing
- The New World of Business Ecosystems
- Coping with the New Industrial Era
"We do not document all machine settings. But our employees remember most of them. If they are still around."

Our production is becoming more and more complex, as we have smaller lot sizes and need to manage diverse processes.

We need to readjust recipes again and again due to small variations in the raw material. This is expensive.

**Understanding of Challenges of the Industry**

**Alignment with open Research Calls**

**Nanosciences, Nanotechnologies, Materials and New Production Technologies - NMP**

NMP-2009-3.2-2 Adaptive control systems for responsive factories

**Technical content/scope:** One of the main strategic goals for the development of the manufacturing industry is the implementation of intelligent factories, which are able to manage complex and variant production processes.
Approach: “Intelligent” Machinery and Hierarchical Control Structures

- Warp
- Loom
  - Change Settings
  - Efficiency (Breaks)
- QC Raw Fabric
- Defects
- Finish
- QC Finish
- Modify Process: Piece-dye first piece
- Start mark
Solution: Case-based Reasoning System Proposes Settings for New Product

**PROBLEM = QUERY**
New Yarn Specification
Count: Nm 1/12.6
Sector: TECNICI - OPEN END
Composition: 100% MODACRILICO

**EXPECTED OUTCOME**

- ~ 12 Machine Settings (Carding and Spinning)
- Expected Efficiency

### Cases

**Case 1**
Nm 1/15
RETTLINEA - OPEN END
0,920 Efficiency
50% COTONE 50% MODACRILICO

**Case 2**
Nm 1/12
TESSITURA - OPEN END
0,920 Efficiency
20% COTONE 20% MODACRILICO

**Case 3**
Nm 1/10
TECNICI - OPEN END
0,940 Efficiency
55% MODACRILICO 45% COTONE 0

**Case 4**
Nm 1/11,8
TECNICI - OPEN END
0,970 Efficiency
100% MODACRILICO

**Retrieval in Case Base (similar existing products) and Adaptation**
### Approach: Technology Enhanced Learning

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### E-learning, Class rooms, Virtual Simulators, Real Simulators

- **AgustaWestland Training Academy**

**Repositories**:
- LCMSs
- OutStart
- VMT
- Amerigo

- CBT Multimedia Repositories
- Training Manual Repositories
- Virtual Simulator Repository
- Techn. Publications Repository
Smart Nets - from Development to Production

Creation of ideas ➔ Conceptualisation ➔ Prototyping ➔ Sampling ➔ Production and Marketing

Development ➔ Smart Nets Transformation ➔ Production

Activity-oriented ➔ Organisation ➔ Process-oriented

Implicit, unstructured ➔ Knowledge ➔ Explicit, structured

Ad-hoc IT-Services ➔ ICT ➔ Application System
Levels of Knowledge Access

Public-domain knowledge
Conscious dissemination of knowledge
Marketing

Sharing of domain-specific knowledge
Exchange of knowledge

Documentation of sensitive knowledge
Development of core competences
Intellectual Property Rights

Public Area
Website
Social Media
Service Desc.

Community Area
Content Man. System
Wikis
Groupware

Internal Area
Document Management
Databases
Intranet

Rehm (2011)
Emerging structures

Structures for production

Creation of ideas

Conceptualisation

Prototyping

Sampling

Production and Marketing

Descriptive text

Hybrid Wiki for Knowledge Management

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Agenda

- A New Industrial Era
- Perspectives on Intelligent Manufacturing
- The New World of Business Ecosystems
- Coping with the New Industrial Era
1. Photo from enduser
2. CAD patterns
3. Match photo on cuff
4. Define cutline
5. Prepare print job RIP
6. Print photo on paper in cuff cutline
7. Cut contour paper
8. Put cuff paper on white cuff and termal fix
9. Personalized cuff from shirt

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May 8, 2014
A **MSE** is defined as [1]: “... a **non-hierarchical form of collaboration** where various organizations and individuals work together with common or complementary objectives on new value added combinations of manufactured products and product-related services.”
Range of Hybrid Products

Product

Service to support the product

Service to differentiate the product

Service is the product

Hybrid Products support new Business Models

- Adressing new customers
- Using new channels
- Integrating new partners and complementors from the ecosystem
- ...
Real-world Cutting Machine

Virtualized Cutting Machine

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Virtualization Process

Tangible Asset Ontology

Cutting Machine as a Service in USDL-notation

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Agenda

- A New Industrial Era
- Perspectives on Intelligent Manufacturing
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- Coping with the New Industrial Era
Future Checklist

- New Trends and Technologies
- Cyber Physical Systems
- Innovation Management
- Knowledge Management
- Cooperation and Networks
- Servitisation
- Digitalisation
- New Business Models

✓ Your Strategy
Key Challenges on Firm Level

**Identification**
- relevant knowledge
- collaboration partners
- business opportunities
- …

**Integration**
- new knowledge
- new partners
- new products and services
- …

**Balance**
- innovation
- efficiency
Making Knowledge Productive

www.ditf-mr-denkendorf.de
info@ditf-mr-denkendorf.de
Dr. Christian Schindler
Director General
ITMF

International Textile Machinery Shipments Statistics 2013

ITMF Textile Machinery Workshop
Thursday, May 8, 2014
Frankfurt - Germany
Global Shipments of new Textile Machinery (2004-2013)

- Spinning Machines
- Texturing Machines
- Weaving Machines
- Circular Knitting Machines
- Flat Knitting Machines
- Finishing Machines
Shipped Short-staple Spindles 2004 - 2013
- World & Regions -

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- + 10%

12.05.2014
Shipped Short-staple Spindles 2004 - 2013

- China’s Share -

millions of spindles

2004: 10.50 (67%)
2005: 9.94 (59%)
2006: 11.74 (57%)
2007: 12.80 (47%)
2008: 8.64 (43%)
2009: 7.11 (71%)
2010: 7.86 (63%)
2011: 14.33 (62%)
2012: 8.90 (65%)
2013: 10.51 (54%)

World: 11.56
China: 6.21

12.05.2014
Investments in Short-staple Spindles 2004 - 2013
- China vs. India -

million spindles


China

India
Installed Short Staple Capacity
1974 - 2012

Million Spindles


12.05.2014
Shipped Open-end Rotors
2004 - 2013
- World & Regions -

World:
2004: 415.0 (76%)
2005: 374.0 (78%)
2006: 352.0 (76%)
2007: 575.9 (68%)
2008: 391.7 (68%)
2009: 195.7 (73%)
2010: 143.4 (73%)
2011: 144.5 (83%)
2012: 120.3 (83%)
2013: 391.7 (68%)

Asia:
2004: 317.0 (76%)
2005: 293.0 (78%)
2006: 267.0 (76%)
2007: 391.7 (68%)
2008: 195.7 (73%)
2009: 143.4 (73%)
2010: 120.3 (83%)
2011: 120.3 (83%)
2012: 120.3 (83%)
2013: 120.3 (83%)

Europe:
2004: 450.5 (81%)
2005: 373.9 (83%)
2006: 352.0 (76%)
2007: 575.9 (68%)
2008: 391.7 (68%)
2009: 195.7 (73%)
2010: 143.4 (73%)
2011: 120.3 (83%)
2012: 120.3 (83%)
2013: 120.3 (83%)

Americas:
2004: 450.5 (81%)
2005: 373.9 (83%)
2006: 352.0 (76%)
2007: 575.9 (68%)
2008: 391.7 (68%)
2009: 195.7 (73%)
2010: 143.4 (73%)
2011: 120.3 (83%)
2012: 120.3 (83%)
2013: 120.3 (83%)

Africa:
2004: 0
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2009: 0
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2013: 0

- 2%

12.05.2014
Shipped Open-end Rotors
2004 - 2013
- China’s Share -

World  China

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<tr>
<th>Year</th>
<th>World</th>
<th>China</th>
<th>World Share (%)</th>
<th>China Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>415</td>
<td>249</td>
<td>60%</td>
<td>55%</td>
</tr>
<tr>
<td>2005</td>
<td>374</td>
<td>246</td>
<td>66%</td>
<td>55%</td>
</tr>
<tr>
<td>2006</td>
<td>352</td>
<td>195</td>
<td>55%</td>
<td>51%</td>
</tr>
<tr>
<td>2007</td>
<td>576</td>
<td>292</td>
<td>51%</td>
<td>72%</td>
</tr>
<tr>
<td>2008</td>
<td>196</td>
<td>89</td>
<td>45%</td>
<td>55%</td>
</tr>
<tr>
<td>2009</td>
<td>144</td>
<td>79</td>
<td>45%</td>
<td>55%</td>
</tr>
<tr>
<td>2010</td>
<td>451</td>
<td>323</td>
<td>72%</td>
<td>81%</td>
</tr>
<tr>
<td>2011</td>
<td>572</td>
<td>388</td>
<td>68%</td>
<td>81%</td>
</tr>
<tr>
<td>2012</td>
<td>451</td>
<td>364</td>
<td>72%</td>
<td>81%</td>
</tr>
<tr>
<td>2013</td>
<td>443</td>
<td>272</td>
<td>61%</td>
<td>81%</td>
</tr>
</tbody>
</table>
Investments in Open-end Rotors 2013
- 5 Biggest Investors -

<table>
<thead>
<tr>
<th>Country</th>
<th>Investments (rotors)</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>443.2</td>
</tr>
<tr>
<td>Asia</td>
<td>351.4</td>
</tr>
<tr>
<td>China</td>
<td>271.7</td>
</tr>
<tr>
<td>India</td>
<td>31.0</td>
</tr>
<tr>
<td>Turkey</td>
<td>28.6</td>
</tr>
<tr>
<td>Brazil</td>
<td>13.8</td>
</tr>
<tr>
<td>Vietnam</td>
<td>13.7</td>
</tr>
</tbody>
</table>
Installed OE-Rotors Capacity
1974 - 2012

Million Rotors

Shipped Texturing Spindles 2004 - 2013
- China’s Share -

1,000 spindles

2004: 406.0 (86%)
2005: 349.8 (84%)
2006: 315.0 (84%)
2007: 263.5 (69%)
2008: 231.0 (53%)
2009: 253.5 (53%)
2010: 159.7 (53%)
2011: 135.6 (53%)
2012: 168.1 (53%)
2013: 250.7 (53%)

Chinese Investments - 25%
Investments in Texturing Spindles 2013
- 5 Biggest Investors -

<table>
<thead>
<tr>
<th>Country</th>
<th>Spindles</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>507.5</td>
</tr>
<tr>
<td>Asia</td>
<td>457.6</td>
</tr>
<tr>
<td>China</td>
<td>367.4</td>
</tr>
<tr>
<td>Japan</td>
<td>30.9</td>
</tr>
<tr>
<td>India</td>
<td>21.6</td>
</tr>
<tr>
<td>Vietnam</td>
<td>8.6</td>
</tr>
<tr>
<td>Egypt</td>
<td>7.9</td>
</tr>
</tbody>
</table>

12.05.2014
Shipped Shuttle-less Looms 2004 - 2013
- World & Regions -

Since 2010 more Chinese participants

- 4%
Shipped Shuttle-less Looms 2004 - 2013
- China’s Share -

Since 2010 more Chinese participants

Chinese Investments - 7 %

World

China


0  20'000  40'000  60'000  80'000  100'000  120'000  140'000  160'000  180'000

units

63'800 (73%)  46'450 (61%)  42'150 (63%)  46'236 (68%)  44'754 (64%)  28'597 (59%)  25'600 (58%)  58'886 (68%)  54'828 (66%)

12.05.2014

16
Shipped Water-Jet Looms 2004 - 2013
- China‘s Share -

Since 2010 more Chinese participants

<table>
<thead>
<tr>
<th>Year</th>
<th>World</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>18,988</td>
<td>17,733 (93%)</td>
</tr>
<tr>
<td>2005</td>
<td>17,473</td>
<td>16,856 (90%)</td>
</tr>
<tr>
<td>2006</td>
<td>13,930</td>
<td>12,406 (82%)</td>
</tr>
<tr>
<td>2007</td>
<td>16,780</td>
<td>15,182 (90%)</td>
</tr>
<tr>
<td>2008</td>
<td>12,106</td>
<td>11,599 (88%)</td>
</tr>
<tr>
<td>2009</td>
<td>9,718</td>
<td>9,718 (84%)</td>
</tr>
<tr>
<td>2010</td>
<td>73,344</td>
<td>69,691 (95%)</td>
</tr>
<tr>
<td>2011</td>
<td>112,933</td>
<td>105,955 (94%)</td>
</tr>
<tr>
<td>2012</td>
<td>39,916</td>
<td>34,401 (86%)</td>
</tr>
<tr>
<td>2013</td>
<td>34,579</td>
<td>30,593 (88%)</td>
</tr>
</tbody>
</table>

12.05.2014
Shipped Shuttle-less Looms 2004 – 2013
- World -

Since 2010 more Chinese participants

units


Rapier/Projectile  Air-Jet  Water-Jet

12.05.2014
Investments in Shuttle-less Looms 2013 (prov.)
- 5 Biggest Investors -
Installed Shuttle-less Looms Capacity
1974 - 2012

12.05.2014
Shipped Circular Knitting Machines 2004 - 2013
- World & Regions -
Shipped Circular Knitting Machines 2004 - 2013
- China’s Share -

Chinese Investments
- 3%

World  China

<table>
<thead>
<tr>
<th>Year</th>
<th>World</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>23,100</td>
<td>16,600 (72%)</td>
</tr>
<tr>
<td>2005</td>
<td>30,550</td>
<td>22,500 (74%)</td>
</tr>
<tr>
<td>2006</td>
<td>28,250</td>
<td>19,600 (69%)</td>
</tr>
<tr>
<td>2007</td>
<td>26,615</td>
<td>17,960 (67%)</td>
</tr>
<tr>
<td>2008</td>
<td>21,152</td>
<td>14,404 (68%)</td>
</tr>
<tr>
<td>2009</td>
<td>25,436</td>
<td>17,586 (69%)</td>
</tr>
<tr>
<td>2010</td>
<td>34,492</td>
<td>26,440 (77%)</td>
</tr>
<tr>
<td>2011</td>
<td>28,916</td>
<td>21,211 (73%)</td>
</tr>
<tr>
<td>2012</td>
<td>36,626</td>
<td>28,281 (77%)</td>
</tr>
<tr>
<td>2013P</td>
<td>36,575</td>
<td>27,458 (75%)</td>
</tr>
</tbody>
</table>

Units
0  5,000  10,000  15,000  20,000  25,000  30,000  35,000  40,000


12.05.2014
Investments in Circular Knitting Machines 2013 (prov.)

- 5 Biggest Investors -

<table>
<thead>
<tr>
<th>Country</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>36'575</td>
</tr>
<tr>
<td>Asia</td>
<td>33'440</td>
</tr>
<tr>
<td>China</td>
<td>27'458</td>
</tr>
<tr>
<td>India</td>
<td>1'598</td>
</tr>
<tr>
<td>Turkey</td>
<td>1'489</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>913</td>
</tr>
<tr>
<td>Indonesia</td>
<td>851</td>
</tr>
</tbody>
</table>
Shipped electr. Flat Knitting Machines 2004 - 2013
- World & Regions -

Since 2010 more Chinese participants

- 24%
Shipped electr. Flat Knitting Machines 2004 - 2013
- China‘s Share -

Since 2010 more Chinese participants

- 37%

units

<table>
<thead>
<tr>
<th>Year</th>
<th>World</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>11'560</td>
<td>3,120 (27%)</td>
</tr>
<tr>
<td>2005</td>
<td>10'520</td>
<td>2,800 (27%)</td>
</tr>
<tr>
<td>2006</td>
<td>13'820</td>
<td>7,450 (54%)</td>
</tr>
<tr>
<td>2007</td>
<td>21'774</td>
<td>12,219 (56%)</td>
</tr>
<tr>
<td>2008</td>
<td>20'311</td>
<td>8,974 (44%)</td>
</tr>
<tr>
<td>2009</td>
<td>17'838</td>
<td>10,688 (60%)</td>
</tr>
<tr>
<td>2010</td>
<td>51'128</td>
<td>37,806 (74%)</td>
</tr>
<tr>
<td>2011</td>
<td>69'964</td>
<td>54,791 (78%)</td>
</tr>
<tr>
<td>2012</td>
<td>46'105</td>
<td>33,044 (72%)</td>
</tr>
<tr>
<td>2013</td>
<td>35'183</td>
<td>20,802 (59%)</td>
</tr>
</tbody>
</table>

World vs China

12.05.2014
Investments in electr. Flat Knitting Machines 2013
- 5 Biggest Investors -
Investments in Finishing Machinery 2008 - 2013
- Wovens Continuous -

machines

comparable basis companies

2008 2009 2010 2011 2012 2013P
Mercericing
Dyeing
Bleaching
Washing
Stentering
Sanforicing
Investments in Finishing Machinery 2008 - 2013
- Knits Continuous -

machines

comparable basis companies

Washing
Stentering
THANK YOU
FOR YOUR ATTENTION!

www.itmf.org
From which continent are you?

1) Africa

2) Americas

3) Asia

4) Europe
From which continent are you?

1) Africa  
2) Americas  
3) Asia  
4) Europe  

- Africa: 4%  
- Americas: 4%  
- Asia: 16%  
- Europe: 77%
How do you assess the current order intake? (1st quarter 2014/2013 year-on-year)

1 - Very good > +10%

2 - Good +1 to +10%

3 - Moderate +/- 0

4 - Bad -1 to -10%

5 - Very bad > -10%
How do you assess the current order intake? (1st quarter 2014/2013 year-on-year)

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very good &gt; +10%</td>
<td>7%</td>
</tr>
<tr>
<td>Good +1 to +10%</td>
<td>28%</td>
</tr>
<tr>
<td>Moderate +/- 0</td>
<td>37%</td>
</tr>
<tr>
<td>Bad -1 to -10%</td>
<td>15%</td>
</tr>
<tr>
<td>Very bad &gt; -10%</td>
<td>13%</td>
</tr>
</tbody>
</table>
How do you assess the perspectives for the order intake in the 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%

2 - Good +1 to +10%

3 - Moderate +/- 0

4 - Bad -1 to -10%

5 - Very bad > -10%
How do you assess the perspectives for the order intake in the 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%
2 - Good +1 to +10%
3 - Moderate +/- 0
4 - Bad -1 to -10%
5 - Very bad > -10%

- 7%
- 25%
- 38%
- 23%
- 7%
Perspectives for the order intake from China 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%

2 - Good +1 to +10%

3 - Moderate +/- 0

4 - Bad -1 to -10%

5 - Very bad > -10%
Perspectives for the order intake from China 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%
2 - Good +1 to +10%
3 - Moderate +/- 0
4 - Bad -1 to -10%
5 - Very bad > -10%

2 %
23 %
38 %
28 %
9 %
Perspectives for the order intake from Turkey 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%

2 - Good +1 to +10%

3 - Moderate +/- 0

4 - Bad -1 to -10%

5 - Very bad > -10%
Perspectives for the order intake from Turkey 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%
2 - Good +1 to +10%
3 - Moderate +/- 0
4 - Bad -1 to -10%
5 - Very bad > -10%

- 4%: 1 - Very good > +10%
- 51%: 2 - Good +1 to +10%
- 32%: 3 - Moderate +/- 0
- 11%: 4 - Bad -1 to -10%
- 2%: 5 - Very bad > -10%
Perspectives for the order intake from India 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%

2 - Good +1 to +10%

3 - Moderate +/- 0

4 - Bad -1 to -10%

5 - Very bad > -10%
Perspectives for the order intake from India 2nd half 2014 (2014/2013 year-on-year)?

- Very good: > +10% (7%)
- Good: +1 to +10% (35%)
- Moderate: +/- 0 (37%)
- Bad: -1 to -10% (15%)
- Very bad: > -10% (7%)
Perspectives for the order intake from the USA 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%

2 - Good +1 to +10%

3 - Moderate +/- 0

4 - Bad -1 to -10%

5 - Very bad > -10%
Perspectives for the order intake from the USA 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%
2 - Good +1 to +10%
3 - Moderate +/- 0
4 - Bad -1 to -10%
5 - Very bad > -10%

52% for Very good
24% for Moderate
11% for Very bad
11% for Very good
2% for Bad
Perspectives for the order intake from Indonesia 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%

2 - Good +1 to +10%

3 - Moderate +/- 0

4 - Bad -1 to -10%

5 - Very bad > -10%
Perspectives for the order intake from Indonesia 2nd half 2014 (2014/2013 year-on-year)?

- Very good > +10%: 0%
- Good +1 to +10%: 27%
- Moderate +/- 0: 64%
- Bad -1 to -10%: 7%
- Very bad > -10%: 2%
Perspectives for the order intake from Bangladesh 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%

2 - Good +1 to +10%

3 - Moderate +/- 0

4 - Bad -1 to -10%

5 - Very bad > -10%
Perspectives for the order intake from Bangladesh 2nd half 2014 (2014/2013 year-on-year)?

- Very good > +10%: 9%
- Good +1 to +10%: 35%
- Moderate +/- 0: 35%
- Bad -1 to -10%: 20%
- Very bad > -10%: 2%
Perspectives for the order intake from Pakistan 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%

2 - Good +1 to +10%

3 - Moderate +/- 0

4 - Bad -1 to -10%

5 - Very bad > -10%
Perspectives for the order intake from Pakistan 2nd half 2014 (2014/2013 year-on-year)?

- Very good > +10%: 2%
- Good +1 to +10%: 33%
- Moderate +/- 0: 44%
- Bad -1 to -10%: 13%
- Very bad > -10%: 7%
Perspectives for the order intake from Brazil 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%

2 - Good +1 to +10%

3 - Moderate +/- 0

4 - Bad -1 to -10%

5 - Very bad > -10%
Perspectives for the order intake from Brazil 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%
2 - Good +1 to +10%
3 - Moderate +/- 0
4 - Bad -1 to -10%
5 - Very bad > -10%

- 0 %
- 17%
- 40 %
- 36%
- 6 %
Perspectives for the order intake from Russia 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%

2 - Good +1 to +10%

3 - Moderate +/- 0

4 - Bad -1 to -10%

5 - Very bad > -10%
Perspectives for the order intake from Russia 2nd half 2014 (2014/2013 year-on-year)?

- 2% Very good > +10%
- 19% Good +1 to +10%
- 30% Moderate +/- 0
- 19% Bad -1 to -10%
- 30% Very bad > -10%
Perspectives for the order intake from Myanmar 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%

2 - Good +1 to +10%

3 - Moderate +/- 0

4 - Bad -1 to -10%

5 - Very bad > -10%
Perspectives for the order intake from Myanmar 2nd half 2014 (2014/2013 year-on-year)?

1 - Very good > +10%
2 - Good +1 to +10%
3 - Moderate +/- 0
4 - Bad -1 to -10%
5 - Very bad > -10%

- 12%
- 12%
- 52%
- 6%
- 18%
Business perspectives in sub-Saharan Africa in the next 3 years?

1 - Very good

2 - Good

3 - Moderate

4 - Bad

5 - Very bad
Business perspectives in sub-Saharan Africa in the next 3 years?

- Very good: 14%
- Good: 43%
- Moderate: 24%
- Bad: 16%
- Very bad: 3%