



**Industry Trends
Information and Communication
Technology (ICT)**

**Focus on sector business
performance and credit risk**

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ICT industry performance per market

June 2022

Austria		Slovakia		Australia	
Belgium		Spain		China	
Czech Rep.		Sweden		Hong Kong	
Denmark		Switzerland		India	
France		Turkey		Indonesia	
Germany		United Kingdom		Japan	
Hungary				New Zealand	
Ireland		Brazil		Singapore	
Italy		Canada		South Korea	
The Netherlands		Mexico		Taiwan	
Poland		USA		Thailand	
Portugal				United Arab Emirates	

On the following pages we indicate the general outlook for each sector featured using these symbols:



Excellent

The credit risk situation in the sector is strong / business performance in the sector is strong compared to its long-term trend



Poor

The credit risk in the sector is relatively high / business performance in the sector is below its long-term trend



Good

The credit risk situation in the sector is benign / business performance in the sector is above its long-term trend



Bleak

The credit risk in the sector is poor / business performance in the sector is weak compared to its long-term trend



Fair

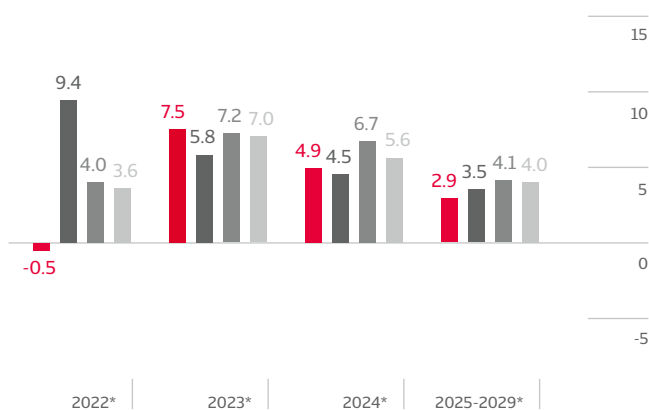
The credit risk situation in the sector is average / business performance in the sector is stable

Global ICT/electronics – performance at a glance

Global high-tech goods output

Solid growth rates expected in the coming years

y-on-y, % change



*forecast

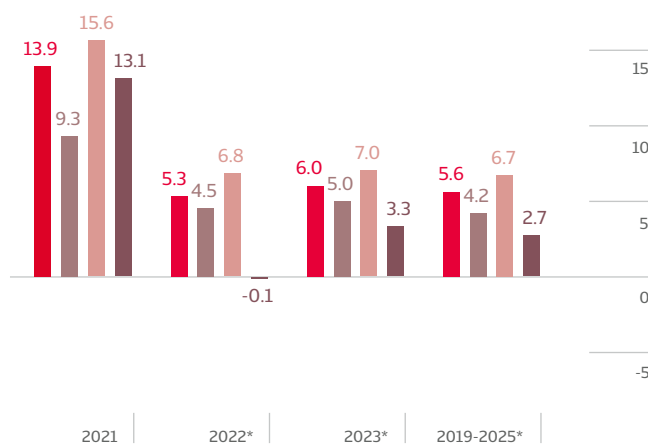
Source: Oxford Economics

- Computers & office equipment
- Electronic components & boards
- Telecommunication equipment
- Consumer electronics

Electronics & computers output per region

Asia remains the global centre of production for semiconductors, computers and communications equipment

y-on-y, % change



*forecast

Source: Oxford Economics

- World
- Americas
- Asia-Pacific
- Europe

Global ICT/electronics

Short-term outlook: strengths and growth drivers

- **Resilient sector performance:** ICT businesses have largely expanded production and sales during the pandemic. In 2021, main subsectors recorded double-digit output growth rates: computers up 14.2%, electronic components up 19.6% and telecommunications up 10.4%.
- **Financial strength:** The profit margins of ICT businesses have increased in many key markets, and most companies have been able to pass on higher prices for semiconductors to end-customers so far.
- **Chip availability:** While semiconductor supply still remains tight for the time being, the worst of the chip shortage seems to be over because chip producers are increasing supply. Major investments to ramp up chip production as of 2024 are underway. Output growth of chip-consuming sectors such as computers, telecommunications equipment and consumer electronics should accelerate again in 2023.

Short-term outlook: downside risks

- **Persistent high inflation and interest rates:** Longer-lasting high inflation in the US and in Europe could further erode real incomes, leading to decreasing sales of consumer electronics. Sharply rising interest rates and deteriorating investor sentiment could weigh on ICT investments of businesses in other industries.
- **Long Covid:** Another wave of the pandemic and subsequent lockdowns could negatively affect ICT investments from businesses and consumers alike. Ongoing lockdowns in China due to Beijing's zero-Covid policy could severely impact ICT supply chains around the globe.
- **War in the Ukraine:** Ukraine is the world's largest producer of semiconductor-grade neon (a by-product from steelmaking). While silicon remains the primary component of chips, neon gas is highly utilized in the etching of silicon. A longer-lasting war could lead to neon gas shortages if chip-makers are unable to source key raw materials from elsewhere. This would impact (still strained) semiconductor production and supply.

Global ICT/electronics

Mid- and long-term outlook: strengths and growth drivers

- **High-tech expansion:** ICT electronics is an innovative and technology-driven industry. In particular, the semiconductor segment is highly value-added – and provides robust margins for manufacturers. Expanding semiconductor production is a strategic target in both the US and the EU. US Congress recently passed a “Chips Act” worth USD 52 billion in order to prop up domestic leading edge semiconductor production. In February 2020, the EU Commission announced it will invest a total of EUR 45 billion in chip-related R&D, infrastructure and production until 2030.
- **Solid future growth rates:** Over the coming years, ICT/electronics performance prospects are benign. The industry is expected to be among the fastest growing sectors in manufacturing, driven by accelerating digitalisation, industrial automation, and increased demand for semiconductors from new growth segments like electric vehicles.

Mid- and long-term outlook: constraints and downside risks

- **Market saturation:** In some advanced economies, the market for certain ICT products (e.g. personal computers, tablets and smartphones) is nearing saturation, which affects growth prospects.
- **US-China tensions:** Trade issues have spilled over to technology, with both the Trump and Biden administrations imposing regulations to prevent Chinese companies from acquiring US semiconductor manufacturing technologies and equipment. Both sides, meanwhile, perceive high-tech leadership as a strategic asset. A further deterioration of the Sino-US relationship could negatively affect global ICT/electronics supply chains and potentially lead to technological divergences (e.g. in the 5G deployment) and lower productivity.
- **Taiwan issue:** Given the global importance of Taiwanese semiconductor production, an escalation of the current tensions in the Taiwan Strait could severely affect chip supply for chip-consuming ICT segments and other industries across the world.

China

Government aims to accelerate the digital transformation



After a 15% increase in 2021, we expect Chinese ICT output growth to slow down in 2022 and 2023, but to remain solid. Production of electronic components and boards are the main growth driver, and chip manufacturers have started to ramp up production to overcome supply shortages. Nevertheless, we expect that chip supply bottlenecks will persist into 2023. This affects ICT production and sales, particularly in the PC, laptop, smartphones, and consumer electronics segments. Another issue has been the lockdowns in several regions and large cities like Shenzhen and Shanghai. These have been partially lifted, but another wave of the pandemic with subsequent new restrictions remains a downside risk for local sales as well as domestic and international supply chains.

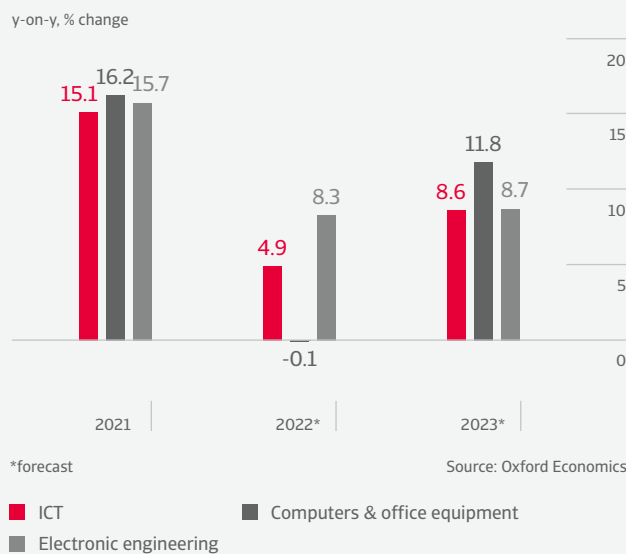
During the coming years, increasing internet penetration and high-speed internet will sustain demand for related IT-infrastructure and services. Rising disposable incomes will continue to drive domestic demand for consumer-related ICT products.

Restrictions imposed by the US aimed at blocking or limiting the delivery of high-tech goods to China (in particular semiconductors and chip-making equipment) will spur ICT investment. Digital transformation is a core economic target mentioned in the 14th Five-Year Plan (2021-2025). The mid and long-term target is to boost China's global competitiveness in advanced technologies such as semiconductors and artificial intelligence. In January 2022, the State Council published a blueprint for the future development of the digital economy. It aims to increase the contribution of core digital industries to 10% of GDP by 2025. The government has set a target to produce 70% of semiconductors domestically by 2025.

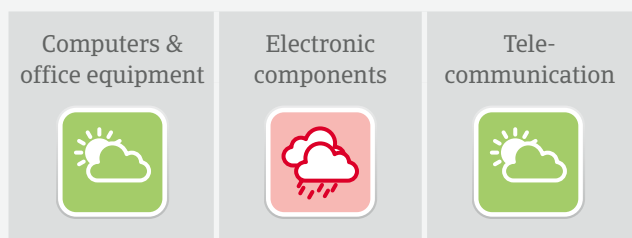
We expect that profit margins of Chinese ICT businesses will remain stable in the coming twelve months, because in most cases both producers and retailers are able to pass on increased input prices for chips to end-customers. Additionally, many companies have reduced other expenses. Payment terms in the Chinese ICT industry take 60 days on average, and the amount of non-payment cases is low. When payment delays occur, the reasons are mainly administrative issues or disputes about product quality. We expect no substantial increase in payment delays and insolvencies in the coming twelve months.

Our underwriting stance is open for the IT production and telecommunication subsectors, as both mainly consist of state-owned businesses. However, we are restrictive for electronic component producers, because local chip producers currently face financial strains due to sizable investment in R&D. Most high-end chips are produced by foreign companies and remain irreplaceable for the time being. We are neutral for ICT wholesalers and retailers. These are mainly private-owned and susceptible to higher external financing costs, due to thin margins.

China ICT/electronics output



Performance forecast along subsectors



China ICT - credit risk assessment

Fair



Business conditions	Financing conditions	Default assessment
+ Demand situation (sales)	Overall indebtedness of the sector average	Non-payments over the last 12 months
Profit margins: trend over the next 12 months	Dependence on bank finance average	Non-payments over the next 12 months
	Willingness of banks to provide credit average	Insolvencies over the last 12 months
		Insolvencies over the next 12 months



Source: Atradius

France

Smaller ICT retailers face more problems in the coming months



The French ICT market recorded robust growth in 2021, driven by the surge in remote working and digitalisation needs. However, demand is slowing down after peaking during the pandemic. The market for computers and smartphones is more mature, and we expect a 4% decrease in value this year. Ongoing supply chain issues (transportation bottlenecks, semiconductor shortages) have a strong impact on French ICT businesses, leading to sharp input price increases and less product offerings. Recent lockdowns in China have exacerbated this effect.

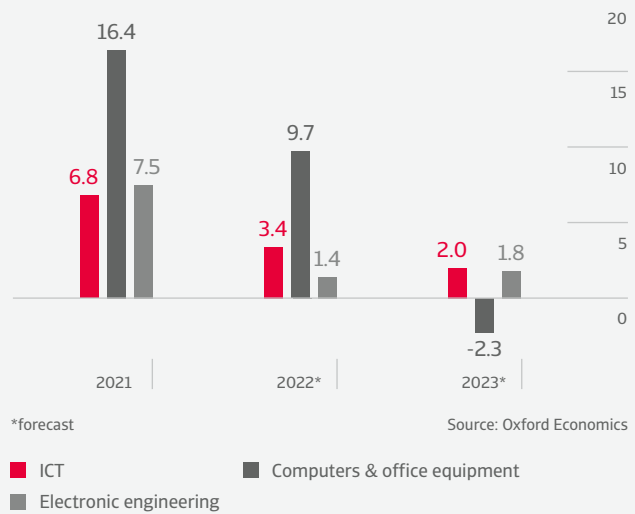
Larger producers at the upper end of the value chain (particularly in the electronic component segment) can pass on higher prices, but this is more difficult for businesses at the lower end. At the same time, manufacturers of computer equipment have difficulties in producing high value-added products due to chip shortages and destock mid-range and low-end products. This negatively affects the product offering of distributors, and hence their margins. Therefore, we expect profit margins of larger producers to remain stable while those of ICT wholesalers and retailers are shrinking, particularly smaller businesses.

According to the French Ministry of the Economy, payments in the ICT sector take 68 days on average, compared to 49 days for all industries. Public institutions and large telecommunication

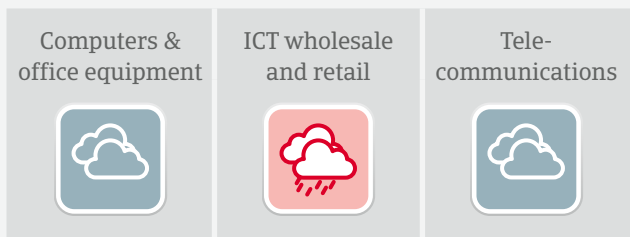
businesses, for example, demand extended payment terms for administrative reasons. In 2021, ICT insolvencies started to increase modestly from the historically low level seen in 2020. In Q1 of 2022 business failures were back to “normal” levels recorded in Q1 of 2019, and we expect further increases in the coming twelve months. Mainly affected will be ICT service providers and ICT wholesale/retail. Smaller businesses in those segments face higher gearing because fiscal measures have expired, while working capital requirements have increased with the ongoing supply chain issues. At the same time margins are shrinking as demand slows down, semiconductor shortages hamper product offering, and higher inputs cost are difficult to pass on to end-customers. Our underwriting stance is neutral to cautious for ICT wholesale/retail and computer producers/services, while we are open for the electronic components and telecommunications subsectors.

France ICT/electronics output

y-on-y, % change



Performance forecast along subsectors



France ICT - credit risk assessment

Fair



Business conditions	Financing conditions	Default assessment
Demand situation (sales)	Overall indebtedness of the sector? high	Non-payments over the last 12 months
Profit margins: trend over the next 12 months	Dependence on bank finance average	Non-payments over the next 12 months
	Willingness of banks to provide credit high	Insolvencies over the last 12 months
		Insolvencies over the next 12 months



Source: Atradius

Germany

Ongoing domestic sales growth, but there are downside risks



According to the German digital association Bitkom, domestic spending on information technology and telecommunication increased by 4.2% in 2021. In 2022, sales are forecast to grow by 4%, up to EUR 176 billion. As in 2020 and 2021, sales of IT software and hardware will remain robust. Businesses and the public sector made IT purchases at short notice during the pandemic and are now strategically investing in new equipment. At the same time, telecommunication and consumer electronics sales have slowed down to normal levels after a sharp increase at the height of the pandemic.

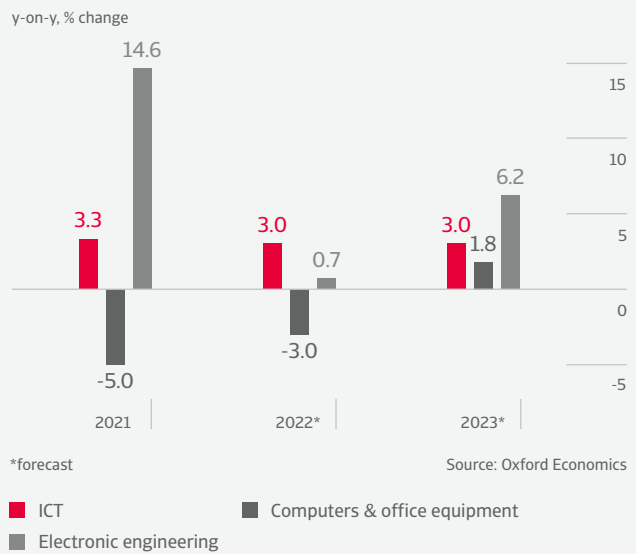
After a marked deterioration in March 2022 due to economic impact of the war in the Ukraine, ICT business confidence rebounded again in April, driven by full order books. However, German ICT and electronics production remains impacted by semiconductor shortage, leading to less output in the computers & office equipment and electronic engineering segments. Production of electronic components has decelerated since 2021 due to supply-side bottlenecks and labour shortages.

Semiconductor bottlenecks will remain an issue, at least until the end of 2022. While higher costs for chips, commodities and transport have driven production prices upwards, ICT businesses are able to pass on those price increases to end-customers due to ongoing solid demand. Profit margins of most companies therefore continue to improve.

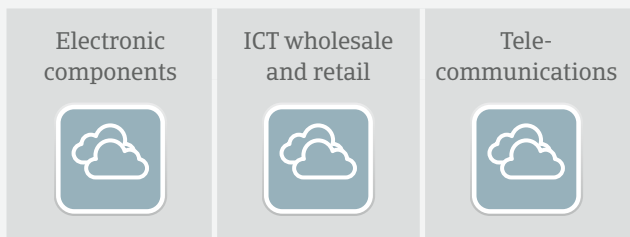
Payments take 30-60 days on average, and payment behavior in the industry has been good during the past two years. The number of payment delays and insolvencies has been low in the past 12 months. However, with the expiry of Covid-related fiscal support measures, we expect that business failures will increase in the coming twelve months – from an artificially low level in 2021 back to normal levels seen in 2019.

Across all main subsectors, our underwriting stance is generally open. However, a marked deterioration of consumer and business confidence caused by the economic impacts of the war in the Ukraine remains a downside risk for domestic sales growth. At the same time, semiconductor shortage is still an issue that could affect production even beyond 2022.

Germany ICT/electronics output



Performance forecast along subsectors



Source: Atradius

Germany ICT - credit risk assessment

Fair



Business conditions	Financing conditions	Default assessment
+ Demand situation (sales)	Overall indebtedness of the sector? average	Non-payments over the last 12 months
+ Profit margins: trend over the next 12 months	Dependence on bank finance average	- Non-payments over the next 12 months
	Willingness of banks to provide credit high	Insolvencies over the last 12 months
		- Insolvencies over the next 12 months



Source: Atradius

India

Digital transformation is a major growth driver



The Indian ICT sector has performed very well during the past two years, and demand is expected to increase further in the coming years. In the B2B segment, many Indian companies are focusing on upgrading their systems and on digital transformation. The same focus accounts for government ICT investments. Computer & office equipment producers, as well as service companies, benefit most from this demand surge. In the B2C segment, demand was robust during the pandemic-related lockdowns, due to a sharp increase in remote working and e-learning. However, demand could taper as the situation returns to normal and inflationary pressures restrict household purchasing power. End-prices for ICT products have also increased. This should affect short-term demand of smart home devices, wearable devices and new TV sets. That said, the Indian consumer electronics market is forecast to grow annually by 5.8% in the 2022-2026 period, supported by demographic developments.

The telecommunication segment benefits from higher investments in 5G infrastructure and increasing mobile phone penetration. However, market competition is fierce due to a lack of product differentiation, while the ongoing chip shortage hampers project completions.

With offices and educational institutes opening again, the business prospects of ICT wholesalers and retailers are not as benign as during the pandemic. This segment mainly consists of small businesses with a low financial risk profile (stretched liquidity, low margins, fierce market competition).

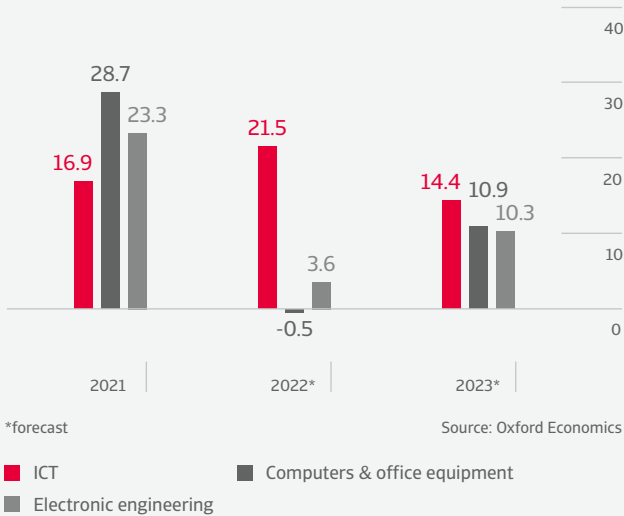
ICT production and sales remain impacted by semiconductor shortage, which we expect to last into 2023. Businesses are currently pre-ordering

material in bulk and piling up inventory in anticipation of demand. This has led to higher working capital requirements. However, as cost increases are passed on to end-consumers, we expect profit margins to remain stable in the coming months.

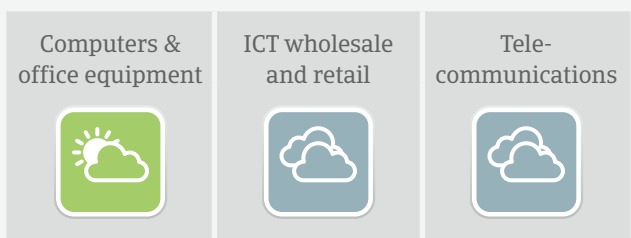
Payments in take between 60 and 90 days on average. Payment behavior in the ICT industry has been good during the past two years, with a low level of payment delays. A main reason has been the persistent raw material and chip shortage, enabling sellers to demand payments in advance and setting strict payments terms. Not abiding, and paying late, could have exposed buyers to the risk of not being able to source chips and commodities. We expect no increase in payment delays during the coming twelve months, with the exception of large government/smart city projects, which are traditionally more prone to delays. The number of business failures should remain low in H2 of 2022 and H1 of 2023, and our underwriting stance is open across all subsectors. However, given that many smaller businesses are highly geared and have a low capital base, we scrutinize carefully financial strength of individual buyers.

India ICT/electronics output

y-on-y, % change



Performance forecast along subsectors



India ICT - credit risk assessment

Good



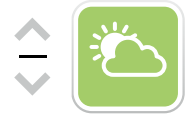
Business conditions	Financing conditions	Default assessment
+ Demand situation (sales)	Overall indebtedness of the sector? high	Non-payments over the last 12 months
Profit margins: trend over the next 12 months	Dependence on bank finance high	Non-payments over the next 12 months
	Willingness of banks to provide credit average	Insolvencies over the last 12 months
		Insolvencies over the next 12 months



Source: Atradius

Italy

ICT Sales growth maintained by businesses and public bodies



ICT sales in Italy recorded robust growth in H2 of 2020 and in 2021, as spending from businesses and employees on digital goods and services increased due to the expansion of remote working and e-learning. We expect that ICT spending from consumers will slow down in the coming months, due to a certain saturation after the recent spending spree and lower disposable household income due to high inflation. However, spending by businesses and public bodies should continue to grow, driven by fiscal support (Recovery and Resiliency Plan) in order to spur the digitalisation of the country. Shortage of chips supplies continues to burden the industry, but the negative effects should gradually ease. ICT wholesalers still face shortages of stock due to persistent supply chain bottlenecks.

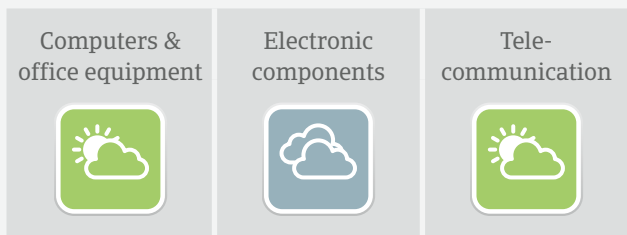
After increases seen in 2021, we expect profit margins of Italian ICT businesses to remain stable this year because most companies are able to pass on higher costs for semiconductors, energy and transport to end-consumers. However, in the ICT wholesale and retail segment, high competition is adding pressure on margins.

ICT businesses in general have a medium to high working capital requirement, and banks are willing to provide loans to the industry. Payments in the ICT industry take between 60 and 120 days on average, depending on the size and market power

of individual businesses. Payment behavior in the sector has been good in the past two years. The number of payment delays and insolvencies has been low during the past 12 months. Both should remain stable in the coming twelve months, supported by ongoing ICT investments by businesses and public bodies.

Our underwriting stance is generally open for producers of computers and telecommunication equipment and of consumer electronics. We take a more neutral approach for electronic component producers, which are most affected by semiconductor shortage. In the ICT retail segment high competition is adding more pressure on margins than in other subsectors. ICT distributors try to diversify their product mix to improve their profitability.

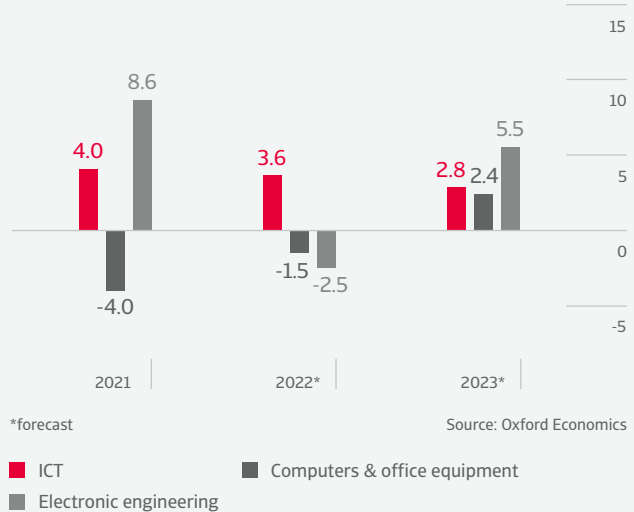
Performance forecast along subsectors



Source: Atradius

Italy ICT/electronics output

y-on-y, % change



Italy ICT - credit risk assessment

Good



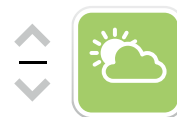
Business conditions	Financing conditions	Default assessment
+ Demand situation (sales)	Overall indebtedness of the sector? average	+ Non-payments over the last 12 months
Profit margins: trend over the next 12 months	Dependence on bank finance average	Non-payments over the next 12 months
	Willingness of banks to provide credit high	+ Insolvencies over the last 12 months
		Insolvencies over the next 12 months

big increase | increase | stable | decrease | big decrease

Source: Atradius

Japan

Solid growth expected during the coming years



Japan accounts for more than 7% of global electronics and computers production. The overall performance of the ICT sector remains good in 2022. Sales growth of hardware items and consumer electronics has slowed down somewhat, but this is compensated by robust demand for IT services and solid growth in the electronic components segment.

Production of electronic components is driven by high demand for chips, order backlogs and rising prices. That said, the semiconductor shortage continues to affect production of computers and telecommunication equipment, which are forecast to decrease year-on-year by 6.4% and 10.4% respectively. Growth in these subsectors should pick up again in 2023, and large investments are underway to expand semiconductor production capacities in the coming years. However, a protracted war in the Ukraine and a subsequent shortage of palladium and neon gas, both necessary raw materials for semiconductors production, remains a downside risk. For the time being, chipmakers still have sufficient inventories available, but a longer war could lead to bottlenecks towards the end of 2022.

We expect profit margins of Japanese ICT producers, wholesalers and retailers to remain stable in 2022, because they are able to

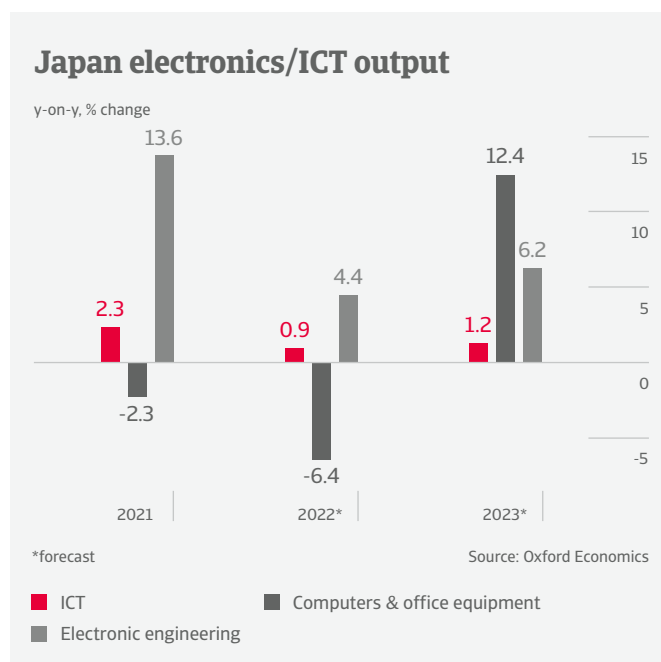
pass on higher costs for semiconductors and increased expenses for energy and transport to end-consumers.

Payments take between 60 and 120 days on average, depending on the size and market power of individual businesses. Payment behavior in the ICT industry has been good during the past two years. The number of payment delays and insolvencies has been very low in 2021 and H1 of 2022, and we expect this benign credit risk environment to continue in the coming twelve months. Our underwriting stance is open across all ICT subsectors. We expect the Japanese ICT sector will continue to grow in the coming years, by about 3.5% annually until 2025, and remain a key provider of computers, smartphones, gaming items and consumer electronics.

Performance forecast along subsectors

Computers & office equipment	Electronic components	Tele-communication

Source: Atradius



Japan ICT - credit risk assessment

Good

Business conditions	Financing conditions	Default assessment
+ Demand situation (sales)	Overall indebtedness of the sector? average	Non-payments over the last 12 months
Profit margins: trend over the next 12 months	Dependence on bank finance average	Non-payments over the next 12 months
	Willingness of banks to provide credit high	Insolvencies over the last 12 months
		Insolvencies over the next 12 months

big increase | increase | stable | decrease | big decrease

Source: Atradius

The Netherlands

Solid performance, but high input prices could become an issue



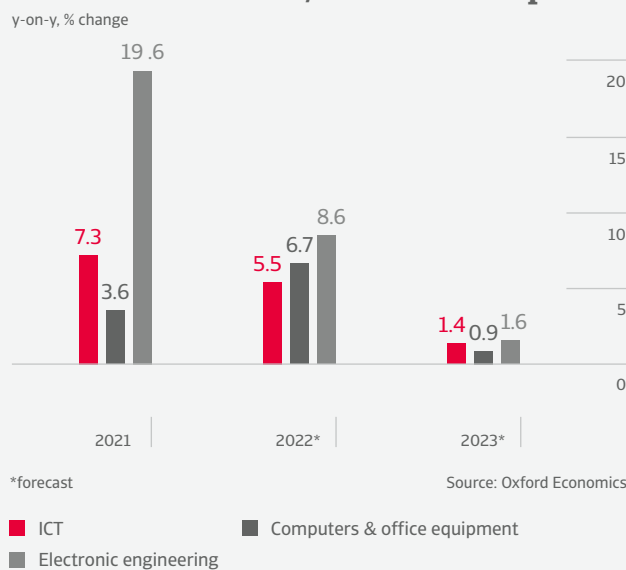
In the Netherlands, ICT market performance has been very sound during the last couple of years, and although growth has slowed down somewhat compared to a peak period at the height of the pandemic, we expect the overall situation to remain positive. IT and information services should benefit from increasing digitalisation, while telecommunication growth is sustained by rollouts of 5G networks.

Chip supply shortages may improve slightly in H2 of 2022, but backlogs will remain an issue into 2023. The chip shortage should boost production of electronic components, but at the expense of output in key chip-consuming segments. While we expect ICT output to grow 5.5% this year, it will slow down to 1.4% next year.

Currently, most businesses in chip-consuming segments (such as computers, telecommunications equipment, consumer electronics) are still able to pass on higher costs for semiconductors to end-customers. However, less predictability of product lead times could make it more difficult for ICT companies to manage prices for their products in the coming months. Deterioration of consumer sentiment due to persisting high inflation remains a downside risk for sales of consumer electronics and computers. It remains to be seen if producers in both segments can pass on higher input prices in the coming months, or if margins will come under more pressure.

Ongoing consolidation and acquisitions in the sector have resulted in higher gearing of affected ICT businesses, particularly when private equity is involved. To a large extent ICT companies depend on creditors and prepayments for their financing. Overall, the financing conditions are favourable compared to other industries, because the loan policy of banks towards ICT is open. Payments in the Dutch ICT sector take 30 days on average, and payment behavior in the industry has been good during the past two years. The number of ICT payment delays and insolvencies has been low in 2021 and H1 of 2022, and we expect no deterioration in the coming twelve months. Given the stable business performance and credit risk situation, our underwriting stance is open for all ICT subsectors, even very open for the electric component producers, telecommunications, and ICT wholesalers and retail segments.

The Netherlands ICT/electronics output



Performance forecast along subsectors



Source: Atradius

The Netherlands ICT - credit risk assessment

Good

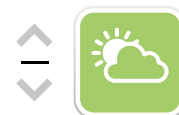
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Profit margins: trend over the next 12 months	Dependence on bank finance average	Non-payments over the next 12 months
	Willingness of banks to provide credit high	Insolvencies over the last 12 months
		Insolvencies over the next 12 months



Source: Atradius

South Korea

Profit margins of ICT businesses should increase again in 2022



South Korea accounts for more than 9% of global electronics and computers production, and with a 29% share in manufacturing it means the country's economy depends hugely on the industry. Lockdown-related semiconductor shortages caused some ICT production delays in 2021. Supply chain issues have gradually eased since early 2022, but we expect some chip shortage issues will persist into 2023. In the mid-term, the war in the Ukraine could severely affect the availability of raw materials like neon gas, necessary for semiconductor production. However, large South Korean chip manufacturers have great buying power in the market and good access to inventories. Additionally, South Korea has announced plans to refine neon gas domestically.

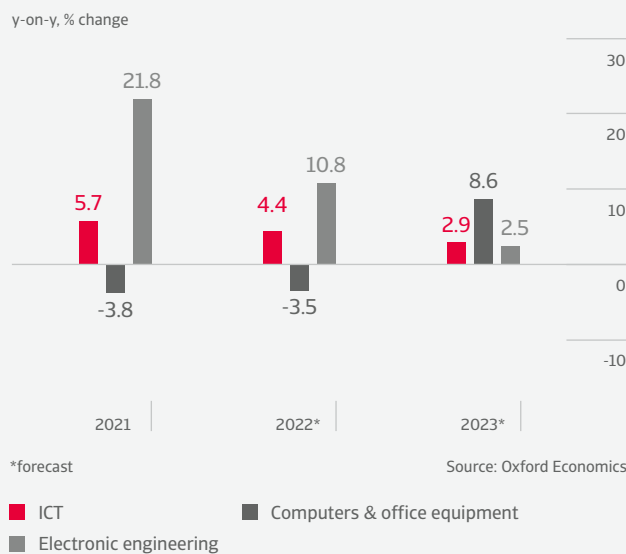
Consumers' demand for computers and related equipment should slow down somewhat in the coming twelve months, due to a certain market saturation. However, demand from businesses will remain robust, and 5G networks, data server, cloud computing and launching of new foldable phones will sustain production and sales growth.

With the improvement of the chip shortage situation, robust demand for ICT business solutions and higher sales prices for consumer electronic premium devices, we expect profit margins of South Korean ICT producers will increase again next year. ICT

wholesalers and retailers will have to deal with higher input costs passed on to them by manufacturers but should be able to compensate with robust ongoing sales.

Payments in the ICT industry take 60-90 days on average, and payment behavior has been good during the past two years. The number of payment delays and insolvencies has been low in 2021 and H1 of 2022. Given ongoing solid demand, the low gearing of businesses across all subsectors, and open loan policies by banks, we expect the credit risk situation for ICT will remain good. Therefore, our underwriting stance is open across all ICT subsectors. We expect a 7.7% compound annual growth rate of South Korean electronics/ICT sector output in the 2019-2025 period.

South Korea ICT/electronics output



Performance forecast along subsectors

Computers & office equipment	Electronic components	Tele-communication

Source: Atradius

South Korea ICT - credit risk assessment

Good

Business conditions	Financing conditions	Default assessment
+ Demand situation (sales)	Overall indebtedness of the sector? average	Non-payments over the last 12 months
+ Profit margins: trend over the next 12 months	Dependence on bank finance average	Non-payments over the next 12 months
	Willingness of banks to provide credit high	Insolvencies over the last 12 months
		Insolvencies over the next 12 months

big increase
 increase
 stable
 decrease
 big decrease

Source: Atradius

Spain

Slowdown in demand, and higher input prices



We expect ICT demand in Spain to remain solid in 2022 and in 2023. However, a slowdown of growth is underway due to lower purchasing power of businesses, while high food and energy prices have a negative impact on household purchasing power. At the same time, ICT producers and retailers alike are affected by high commodity prices, supply chain issues (semiconductor shortages) and geopolitical downside risks (war in the Ukraine).

The Spanish IT market is highly competitive, and consists mainly of wholesalers and retailers, most of them operating with thin margins. Spanish IT businesses are mainly financed through suppliers, and secondarily through bank working capital lines. Overall indebtedness in the sector is low, and many businesses have benefited from fiscal support during the pandemic. In the telecommunication segment, companies are more highly leveraged compared to their peers in other subsectors, but they also record solid margins due to a favourable demand situation.

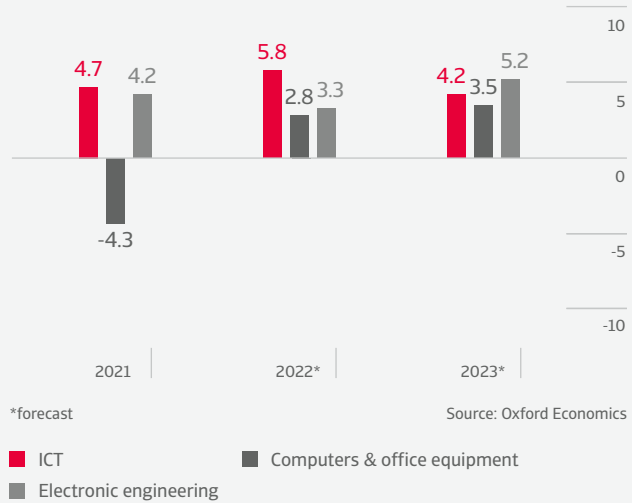
Major producers are not present locally, and electronic components are mainly imported from Asia, with Spanish importers currently facing high shipping costs. In the consumer electronics segment,

large and financially strong international companies are active in Spain. Wholesalers and retailers can pass on higher input costs to end-customers, thereby preserving their profit margins.

Payments in the Spanish ICT industry take 60 days on average. Payment behavior has been good during the past two years, and the number of payment delays and insolvencies has been low in 2021 and H1 of 2022. In Q1 of 2022, ICT accounted for only 0.2% of business failures in Spain. Due to ongoing revenues, stable profit margins and moderate gearing of most businesses, we do not expect a substantial increase in ICT insolvencies in the coming twelve months. Based on the stable business performance and credit risk situation

Spain ICT/electronics output

y-on-y, % change



Performance forecast along subsectors



Spain ICT - credit risk assessment

Fair



Business conditions	Financing conditions	Default assessment
Demand situation (sales)	Overall indebtedness of the sector? low	Non-payments over the last 12 months
Profit margins: trend over the next 12 months	Dependence on bank finance low	Non-payments over the next 12 months
	Willingness of banks to provide credit average	Insolvencies over the last 12 months
		Insolvencies over the next 12 months

big increase | increase | stable | decrease | big decrease

Source: Atradius

Taiwan

Robust growth continues due to high demand for chips



Taiwan accounts for more than 8% of global electronics and computers production. The sector's share of GDP amounts to 17% of GDP and to 50% of manufacturing. The island is one of the largest semiconductor manufacturing bases in the world and is leading in the production of the most advanced chips.

Taiwan has widely benefited from sharply increased demand for chips and other ICT products since 2020. Electronic engineering (which includes chip manufacturing) increased 17.4% in 2021, and we expect another 7% growth this year. Output of computers and related equipment will level off due to a certain market saturation after high growth rates seen in 2020 and 2021. However, ongoing business digitalisation will drive demand for related items. For the consumer electronics segment, we expect a stable performance with ongoing demand for digital entertainment and gaming devices.

Semiconductor shortage has so far had a moderate top line impact on most ICT companies, and we expect the bottlenecks to abate in H2 of 2022. Taiwanese ICT producers have successfully passed on higher energy, raw material and transport costs to end-customers, leading to higher gross/operating margins in 2021. We expect profit margins will level off in the coming twelve months,

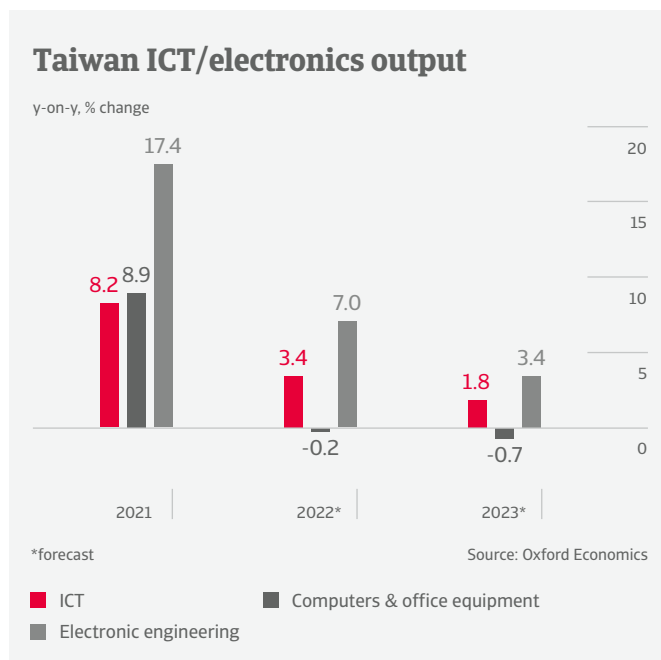
because the high global ICT demand will peak in the course of 2022 and in 2023.

Payments in the Taiwanese ICT industry take 90 days on average, and payment behavior has been good during the past two years. The number of payment delays and insolvencies has been low in 2021 and H1 of 2022. Given ongoing global demand for ICT products (in particular semiconductors), the low gearing of most businesses and open loan policies by banks, we expect the credit risk situation for ICT to remain good. Therefore, our underwriting stance is open across all subsectors. We expect a 6.5% compound annual growth rate of Taiwanese ICT/electronics sector output in the 2019-2025 period.

Performance forecast along subsectors

Computers & office equipment	Electronic components	Tele-communication

Source: Atradius



Taiwan ICT - credit risk assessment

Good

Business conditions	Financing conditions	Default assessment
+ Demand situation (sales)	Overall indebtedness of the sector? average	Non-payments over the last 12 months
Profit margins: trend over the next 12 months	Dependence on bank finance average	Non-payments over the next 12 months
	Willingness of banks to provide credit high	Insolvencies over the last 12 months
		Insolvencies over the next 12 months

big increase
 increase
 stable
 decrease
 big decrease

Source: Atradius

United Kingdom

Main issues are chip shortage and inflationary pressures



ICT sales in the United Kingdom grew strongly in 2020 and 2021, mainly driven by a sharp increase in remote working and e-learning. Growth is set to continue in 2022, as businesses invest in upgrading their IT-infrastructure. However, in many cases supply has not been able to keep pace with demand. Supply shortages of semiconductors remain a serious issue, and backlogs remain significant along the ICT value chain, hampering production. Meanwhile smartphone manufacturers have run out of their stockpiles of chips, and game consoles are in short supply. Duplicated chip orders by ICT producers don't help the backlogs. Inflationary pressures, increased transport costs, and strong market competition additionally affect the business performance.

As the ongoing supply chain issues meet persistent demand, most end customers are willing to accept price increases. Therefore, we expect profit margins of ICT businesses will remain stable in the coming months. However, ICT sales to consumers could reduce in the coming months as high food and energy prices affect the purchasing power of households. Additionally, after the expiry of lockdowns, consumer spending has shifted back towards social activities and travel.

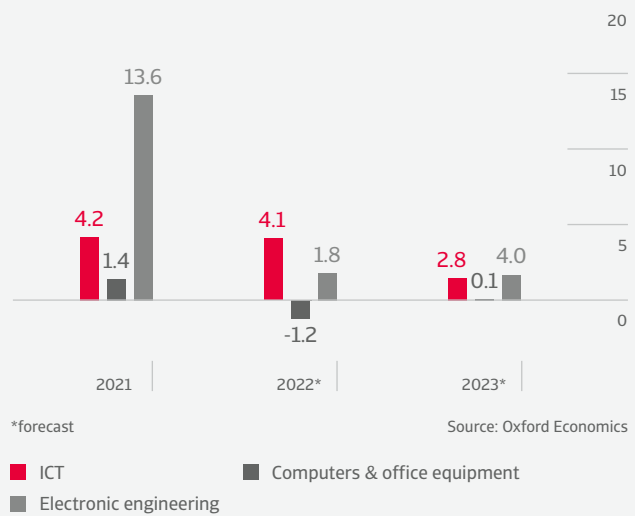
Payments in the British ICT industry take 60 days on average. Payment behavior has been good during the past two years,

and the number of payment delays and insolvencies was low in 2021 and H1 of 2022. However, we expect both to increase in the coming months as government support measures expire, and the number will return to "normal" levels seen in 2019. Businesses in the managed print segment could be particularly affected after suffering from deteriorating sales during the pandemic. Additionally, data centres face increased inflationary pressures.

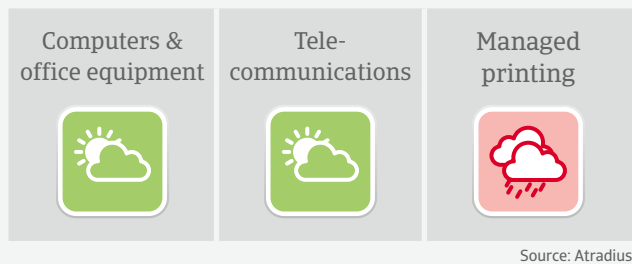
Our underwriting stance is rather selective for the managed print segment (case-by-case approach). We are generally open for all other subsectors because ICT has proved to be resilient, with a lower credit risk compared to most other industries. The long-term growth prospects are benign, supported by a flexible business environment, world-class universities, and a strong digital services economy in the UK.

United Kingdom ICT/electronics output

y-on-y, % change



Performance forecast along subsectors



United Kingdom ICT - credit risk assessment

Fair



Business conditions	Financing conditions	Default assessment
Demand situation (sales)	Overall indebtedness of the sector? average	Non-payments over the last 12 months
Profit margins: trend over the next 12 months	Dependence on bank finance average	Non-payments over the next 12 months
	Willingness of banks to provide credit high	Insolvencies over the last 12 months
		Insolvencies over the next 12 months



Source: Atradius

United States

Lower, but still solid sales and production growth



ICT production and sales in the US remain robust, despite a certain slowdown of growth expected in 2022 and 2023 compared to last year. Demand for home office products and connectivity-related accessories, cloud services, mobility solutions and network security offerings remain solid. However, ongoing high inflation could have a negative impact on households' discretionary spending and, in turn, is likely to result in lower device purchases. For instance, we expect that after a whopping 11.5% increase in 2021, consumer electronics output will grow only 1.5% in 2022.

Due to the ongoing semiconductor shortage, output of computers, telecommunications equipment and consumer electronics has slowed down, while the production of electronic components (which includes chips) will grow 8.5% this year. Despite this increase, chip demand will still outpace supply into 2023. Providers have recently announced major investments in US chip making capacity, and US Congress passed the so-called "Chip Act", which earmarks USD 52 billion of subsidies for domestic production. However, it is likely to take a few years to ramp up production.

While silicon remains the primary component of chips, neon gas is highly utilized in the etching of silicon. The war in Ukraine could have an adverse impact on chip manufacturers, particularly because two of Ukraine's biggest producers of neon gas have halted production. However, the major US chip manufacturers tend to maintain large reserves, limiting the near-term impact for the time being.

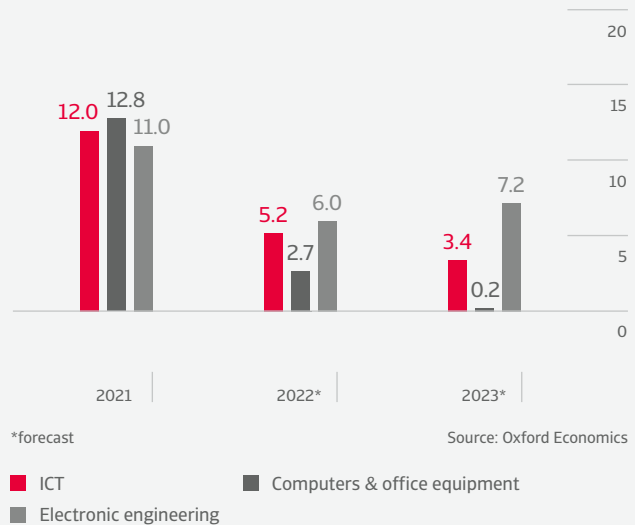
Average sales prices for semiconductors increased by 15% in 2021. Additionally, ICT businesses are facing higher energy and transport costs (in particular, costs for shipping containers have increased substantially). Given

the delays caused by supply constraints, some businesses have to sustain high costs of airfreight in order to meet the demand of buyers in time. Profit margins of US ICT businesses increased in 2021, driven by strong demand, and we expect them to level off in the coming twelve months, as demand eases somewhat across all major product categories and competition in the market is high. On the positive side, most ICT businesses are able to pass on a large share of price increases to end-customers.

In order to sustain growth, most ICT businesses are heavily reliant on bank financing to fund the necessary working capital. The willingness of banks to provide sufficient financing helps improve the liquidity profile of most ICT companies. Payment terms in the industry range between 30 days and 60 days on average, and the payment behavior has been good during the past two years. Due to the still satisfying demand situation and good access to external financing, we expect no increase in payment delays and insolvencies in the coming twelve months. Given steady growth and sufficient access to liquidity, our underlying strategy remains open for all subsectors.

United States ICT/electronics output

y-on-y, % change



Performance forecast along subsectors



Source: Atradius

United States ICT - credit risk assesement

Good



Business conditions	Financing conditions	Default assessment
+ Demand situation (sales)	Overall indebtedness of the sector? average	Non-payments over the last 12 months
Profit margins: trend over the next 12 months	Dependence on bank finance high	Non-payments over the next 12 months
	Willingness of banks to provide credit high	Insolvencies over the last 12 months
		Insolvencies over the next 12 months



Source: Atradius

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