BUSINESS SWEDEN

THE SWEDISH TRADE & INVEST COUNCIL

TECHNOLOGIES OF POWER

Swedish companies caught in the crossfire between the US and China

FOREWORD

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There is little doubt that geopolitics is tightening its grip on international business. During a conversation I had a few years ago with the CEO of a Swedish company operating in the United States and China, it soon became obvious that the company was already trapped in the fields of tension of both nations. The software embedded in the company's products, developed at a US-based division, could not be used in China and, at the same time, software developed in China was banned from use in the US. Customers, authorities and surveillance agencies in both countries decided that the risk of unwanted transfer of data and technology to "the other side" was too high to accept.

More recently, the ongoing power struggle between the US and China has been overshadowed by the coronavirus pandemic. Companies have been busy tackling acute business challenges including large demand fluctuations, accelerating infection rates, supply chain vulnerabilities, shortage of components and freight transport problems. Meanwhile, what was previously considered a trade war between the US and China has evolved into a permanent state of tense relations. Most of the punitive tariffs on imports from China introduced by the Trump administration are still in place, and vice versa. Despite this, life goes on for international business. Companies are coping with the new conditions and continue to deliver products that are in high demand by customers and markets.

The only question is – how long can stability last before geopolitics causes serious disruption to cross-border trade? When it comes to high-tech products and products with potential dual use – meaning that they can be used for both civilian and military purposes – the risks are particularly high. It is not just possible but quite likely that the current conflict between the US and China will escalate with repercussions for business that are hard to predict. As concluded in Business Sweden's report *If crisis hits* (2017), Swedish companies with international operations – particularly large multinational companies – are accustomed to navigating regional conflicts, but they lack an action plan when it comes to the risk of global confrontation between the superpowers.

This report, *Technologies of power*, picks up where the previous report left off. From globalisation to trade war and now escalating superpower rivalry played out as a technology race. With the help of defence and security policy experts at the Swedish Defence Research Agency (FOI), Business Sweden has outlined three alternative risk scenarios for the world market until 2030. The analysis

focuses on the relationship between the US and China and the global market conditions that are likely to prevail in each respective scenario.

At the heart of the power struggle lies China's challenge to the United States for technology leadership. Both superpowers view technological superiority as a prerequisite for economic and military dominance. FOI has on Business Sweden's behalf identified seven technology areas that both the US and China are giving top priority. These are briefly described in the report.

The report concludes with an analysis of how Swedish companies could be affected if the rivalry between the superpowers escalates in a cycle of measures and countermeasures, impacting the business sector. While it is clearly impossible to predict which Swedish companies and organisations will suffer from a full-blown conflict situation, our assumption is that high technology will remain the focus of any measures taken by the superpowers affecting international business.

So, what are the insights that Business Sweden – with its global presence in some 40 markets – would like Swedish companies to take home as geopolitical tensions rise? Here is some simple advice: Plan for business scenarios under worse conditions than those prevailing today, despite indicators of future stability, or else you will risk making the wrong decisions. Build up adequate internal resilience in your company and supply chains so that you have the strength to ride out a local or global crisis situation. And finally, acquire skills to identify business opportunities in a complex environment.

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RIVALRY ON A NEW PLAYING FIELD

FROM GLOBALISATION TO TRADE WAR

It is now widely agreed that the latest and most transformative period in the integration of the world economy – the period of globalisation – had its starting point in 1989. This was the year the Soviet Union collapsed, marking the end of the Cold War that overshadowed international relations since the end of the Second World War.

Even before the fall of the Berlin wall, many countries in the Western world had deregulated considerable parts of the business sector, including banking and finance, and reduced state control over the economy. During the 1990s, globalisation accelerated at a rapid pace in terms of international trade and direct investments. A technological leap in information technology and expanding infrastructure for international transport paved the way for the internationalisation of business. In politics there was consensus around the importance of safeguarding an attractive business climate. Rules and regulations for business were modernised and adapted to companies' needs. The multilateral negotiations on freer international trade in the so-called Uruguay Round were successfully concluded in 1995 which led to the creation of the World Trade Organization (WTO) based in Geneva. In Europe, there was strong optimism about the future, which at the political level paved the way for the new European Union (EU). The European economy became increasingly integrated and expanded with new member states, including most of the former communist countries of Eastern Europe.

After Deng Xiaoping's takeover of power in 1978, China implemented extensive market reforms and gradually became a favourite destination for American and European companies who recognised the opportunity of producing goods for the world market at low cost. In US politics, there was a sense of belief that China was on the path to becoming a market economy and, in the long run, a Western-style democracy. The US's recognition of the People's Republic of China in 1979 at the expense of Taiwan, which the Chinese government considers a breakaway province, was a milestone in relations. As a courtesy gesture, China changed its official stance from an intention to liberate Taiwan by military means to an offer of peaceful reunification. The continuation of relaxed relations between the countries was facilitated by the fact that China at the end of the Cold War was a fast-growing yet still a small player in the world economy. Its military power was technologically inferior and clearly focused on self-defence.

With support from the US and others, China was able to secure its entry into the WTO in 2001, on what today would seem favourable conditions for an economic superpower. In later statements, representatives of the negotiations emphasised that no one at that time could have predicted the speed and scope of China's economic expansion. Since its entry, China has shown unprecedented growth and multiplied its influence in the world economy. The country's share of global exports of goods increased from 4 per cent to 15 per cent between 2000 and 2020 (see Business Sweden's report *Sweden gains ground amid pandemic*, December 2021). The large export revenues have been channelled into the economy and gradually led to the emergence of a huge domestic Chinese market. China's manufacturing industry, formerly notorious for copying and lower quality products, is now spearheading development in several industries and is on par with its Western counterparts in advanced manufacturing. China's remarkable

rise is perhaps most strikingly exemplified by the services sector, where a combination of entrepreneurship, innovation capacity and high technology have completely changed everyday life for Chinese households.

In the United States, concerns about competition from an emerging China gradually increased, but the country was also preoccupied with the fight against terrorism following the attacks on the World Trade Center in New York in 2001. The military operations in Afghanistan and later in Iraq required substantial resources and political attention. The global financial crisis, which began in the US's overvalued and overindebted housing market and erupted in 2008, shifted the focus of policymaking to domestic crisis measures to counter a dramatic downturn in the US economy.

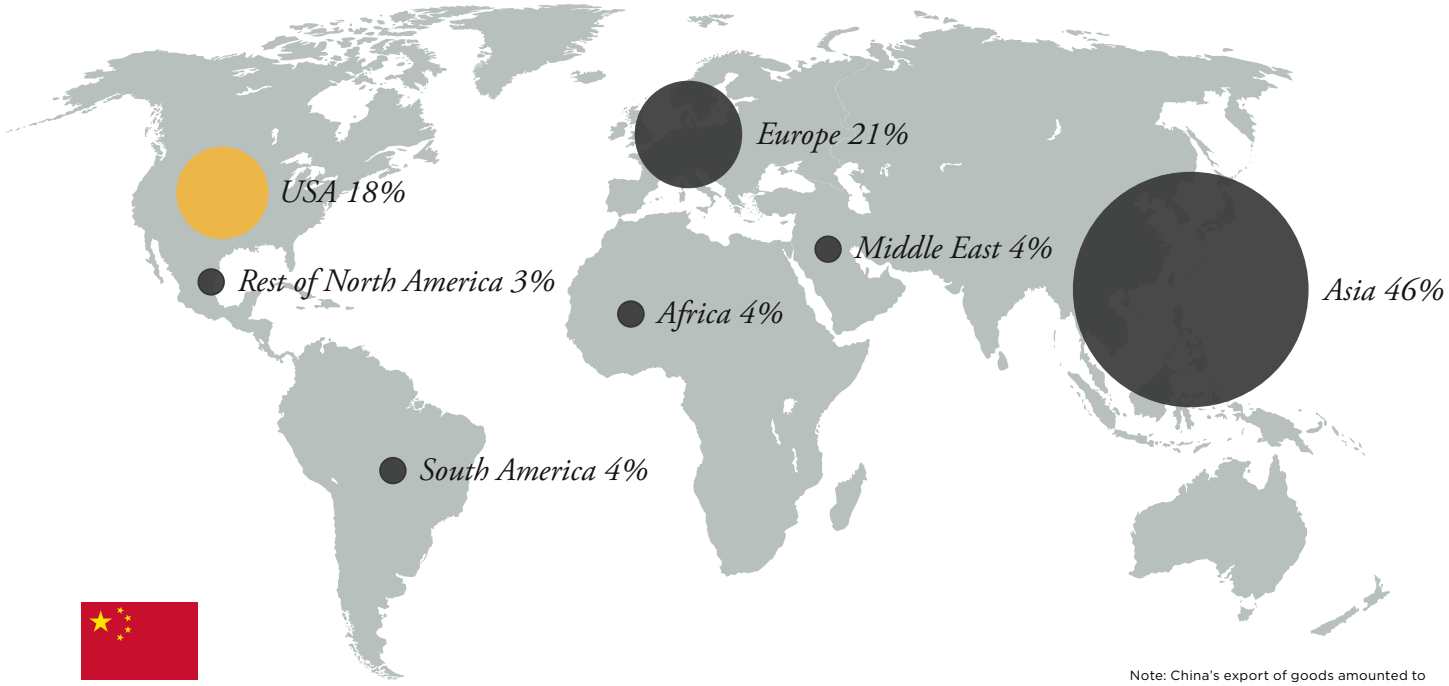
In the US and Europe, the financial crisis unleashed broad political questioning of globalisation which focused on the negative consequences that could result from free trade with China and other developing economies. US media reports focused on the industries that were being knocked out by Chinese competition and the ensuing social problems in the industrial Midwest states that were affected. Even economic research, which usually points to technological development as the most important catalyst for economic change, supported the view that the rapid increase in US imports from China had contributed to the downfall of US manufacturing.

China's simultaneous political shift towards an increasingly authoritarian regime undermined the Western view that free trade and mutual economic dependence would inevitably lead to an open, more democratic China. Many years of discontent with what the US sees as systematic theft of American technology and Chinese exploitation of gaps in WTO regulations, which do not fully address the impact of state-subsidised companies, instead gradually resulted in broad US political support for decoupling from the Chinese economy.

With the Trump administration, the US began an open economic confrontation with China in the form of a trade war between the two superpowers. It imposed punitive tariffs on parts of China's imports in July 2018. China responded by imposing punitive tariffs on an equal share of US imports. The trade war gradually escalated to include most of the US-China trade. In January 2020, the countries signed the so-called Phase 1 agreement, in which China undertook to increase imports of US goods and open up parts of the Chinese market where American companies had been excluded. In the same month, the first reports came from China about the discovery of a new infectious virus in the city of Wuhan. Since then, the world has been fully occupied with combating the coronavirus pandemic. The Biden administration has essentially kept Trump's punitive tariffs in place and upheld the hard-line tone towards China.

THE US IS CHINA'S SINGLE LARGEST EXPORT MARKET

China's export of goods 2020, percentage share by region



Note: China's export of goods amounted to approximately 2,600 billion USD in 2020.

Sources: IMF, Business Sweden

HIGH-TECH A GEOPOLITICAL FORCE

The political debate and media reporting often convey the idea that the world is facing a new Cold War, a balance of terror between the US and China where the threat of military conflict is never far away. The geopolitical power struggle between the two superpowers has clearly escalated, and the question of Taiwan's future has once again become a focal point of the conflict. The US regards China's geopolitical and high technology ambitions as the single greatest threat to American interests. But today's conflict is fundamentally different from the Cold War between the US and the Soviet Union. Back then, the US was far superior to its adversary both in terms of economic and technological strength and the power struggle played out entirely in a militaristic context. The nuclear weapons arsenal was the only tool the Soviet Union had to challenge the US.

Although China is rapidly building up its military muscle, it is now challenging the US on an entirely different playing field – one that China has successfully used to achieve its current position in education, research and development, technology and financial competitiveness. According to most forecasts, China will overtake the US and become the world's largest economy by 2030, if not sooner. China is already by far the world's largest exporter, with the US and Japan as the most important export markets. Half of Chinese exports go to Asia, where the country is gradually expanding its influence. Aid policy and major infrastructure projects, with the Belt and Road Initiative (BRI) as the largest investment by far, provide further leverage for China's foreign presence. For a decade now, China has been the dominant foreign player in Africa due to massive investments, loans and aid packages. In the latest Fortune Global 500 list of the world's top corporations worldwide measured by revenue, China ranks first with 135 companies against the United States' 122 companies.

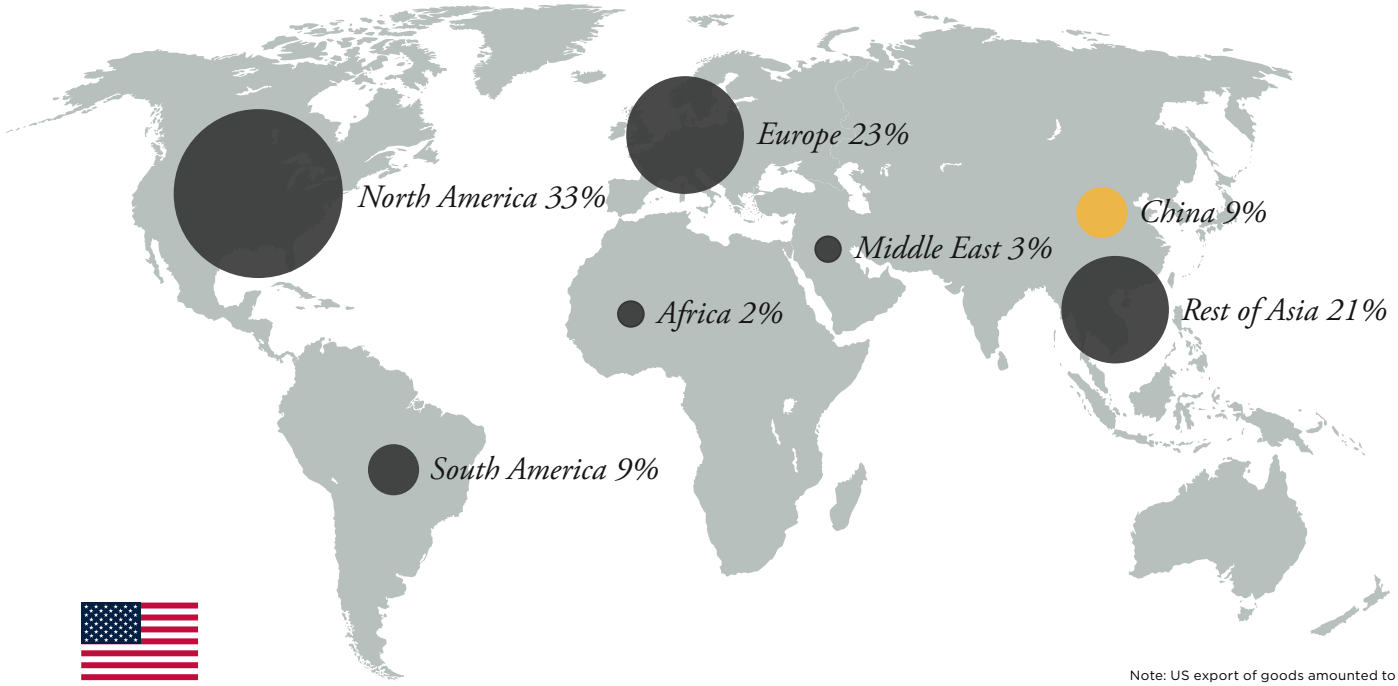
As part of China's strategy to expand its influence in international organisations, in 2015 the country pushed for the formation of a new multilateral development bank, the Asian Infrastructure Investment Bank (AIIB), with the aim of increasing economic growth in Asia and the Pacific. The bank is headquartered in Beijing and counts most major economies except the United States as members. China has a dominating stake in the bank with 26 per cent of the share votes, which can be compared to the country's 5 per cent share votes in the World Bank where the US and other Western countries have the greatest influence.

The United States is particularly concerned about China's stated goal of becoming a world leader in high technology, a position that has long been held by US. Since World War II, technology leadership has underpinned the US position as the number one economic and military superpower and defender of democratic values. Many analysts believe that China will overtake the US in this field in a not too distant future.

China will overtake the US and become the world's largest economy by 2030

CHINA IS THE THIRD MOST IMPORTANT EXPORT MARKET FOR THE US AFTER CANADA AND MEXICO

US export of goods 2020, percentage share by region



Note: US export of goods amounted to approximately 1,400 billion USD in 2020.

Sources: IMF, Business Sweden

THE KEYS TO LEADERSHIP

SUPERPOWERS LOOKING INWARD

Geopolitical power is largely based on economic strength, which in turn is underpinned by the level of technological development. High-tech expertise can be used to develop products for both civilian and military purposes. By becoming a world leader in high technology, China is hoping to not only strengthen its economic influence but also its geopolitical influence. From the American perspective, a technologically advanced China means that the US will be facing an opponent that challenges its leadership position in the economic and military spheres, and who threatens what is known as the rules-based world order where institutions such as the North Atlantic Treaty Organization (NATO), the International Monetary Fund (IMF) and the International Court of Justice in The Hague are just a few of the cornerstones.

China's technology investments have taken place over decades and are therefore not a new priority. The strategy document that is perhaps most well-known to the outside world is Made in China 2025. The plan was launched in 2015 and covers a large number of technologies, products and industries in which China aims to become more self-sufficient or world-leading. In the US, federal technology investments over the years have mainly been channelled into some twenty national research centres, universities and to the defence industry, including aerospace, while support for other industries has been politically unpopular and often cited as meaningless and wasteful industrial policy. Under the Trump and Biden administrations, previous convictions have shifted and in the spring of 2022, Congress will consider passing a USD 50 billion bill to support the American semiconductor industry.

The Swedish Defence Research Agency (FOI) has, on behalf of Business Sweden, compiled a list of what the two superpowers consider to be the top priority technology areas. These have been identified following a review of US and Chinese policy and strategy documents, public statements and real actions taken in the form of targeted investments and government funding in both countries, intended for specific sectors and technologies. The seven highest prioritised technology areas are: communications, robotics and automation systems, aerospace, semiconductors, materials, energy and biotechnology. These are briefly described below in no ranking order.

In addition, FOI's review shows that the investments made by the US and China in the development of artificial intelligence (AI), i.e. complex technical systems that perceive their environment and possess human qualities such as learning, planning, reasoning and creativity, are included as an obvious and integral part of all priority technology areas. AI is expected to benefit from the still budding quantum technology, which, among other things, enables extremely fast and complex calculations, measurements and communications.

7 PRIORITISED TECHNOLOGIES

7 PRIORITISED TECHNOLOGIES

COMMUNICATIONS

Advanced communication technologies enable fast and reliable connections for civilian, industrial and military purposes as well as security, such as protecting against data intrusion and large-scale cyber attacks. This technology field includes both software and hardware, and covers the development of antennas and components for communication systems. The US and several European countries including Sweden, have banned Chinese telecom companies in the tendering for the fifth generation (5G) networks, citing the risk of security-threatening activities. Conversely, China has made its own market exclusive to domestic telecom companies.

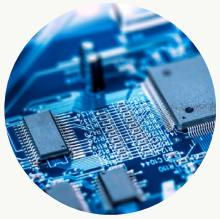
ROBOTICS AND AUTOMATION SYSTEMS

Machines that perform tasks independently – we all know them as robots – are used in almost all areas of society today. Consumers, for example, are well-acquainted with robot vacuum cleaners and lawn mowers. Industrial robots have revolutionised manufacturing. Advanced sensoring technologies that control complex autonomous systems for navigation, signal processing and image recognition can make robots useful for most tasks, not least in military applications.

AEROSPACE

No other technology area is as closely associated with military capabilities as aerospace. This area includes research and development, construction and operation of civilian and military, manned and unmanned vehicles for aviation and space exploration. The United States' long-standing leadership in aerospace is now being challenged on several fronts. In civil aviation, the American aircraft manufacturer Boeing has lost market share to European Airbus. The US is by far the world's largest exporter of fighter aircraft, but in allied Europe and Japan, investments in domestic fighter aircraft systems are on the rise, at the same time as Russia and China are offering their own alternatives in the export market.

The US is facing increased competition also in space. The US manned space programme now relies on private companies and launchers from other countries. US reconnaissance satellites share the same orbit as Chinese, Russian, Indian and European counterparts. Both the US and China are preparing for a possible military conflict in space through, for example, the development of anti-satellite weapons. FOI's analysis shows that the superpowers are focusing heavily on continued development of technologies for hypersonic robotic systems, meaning robotic weapons that can reach at least five times the speed of sound after discharge. Recently taken satellite images of China show a large number of newly built silos for intercontinental ballistic missiles. This may indicate that China has abandoned its security policy doctrine of minimal deterrence – in other words that the country should only acquire enough nuclear weapons to deter an opponent from attack – and is instead expanding its offensive nuclear weapons capability.



SEMICONDUCTORS

This term actually refers to materials with a certain level of electrical conductivity, such as silicon and germanium. But today, semiconductors are associated with integrated circuits, or as they are more commonly referred to, microchips. They are industrially manufactured circuit boards with a large number of interconnected electronic components and form the core of all electronic products such as computers, smartphones and servers. Industrial automation and an ever-increasing share of electronics used in consumer products, ranging from passenger vehicles to household appliances, have led to an enormous global surge in demand for semiconductors.

The current shortage of semiconductors stems from the global economic disruption unleashed in 2020, the first year of the coronavirus pandemic. Semiconductor manufacturers were obliged to cease production and then try to catch up as demand accelerated. China claims that US measures to prevent the country from accessing semiconductor production technologies and equipment are a major contributor to the shortage. Several Chinese semiconductor manufacturers are subject to US sanctions. The geopolitical equation is further complicated by the fact that semiconductor manufacturing is dominated by Taiwan, with South Korea and the US as other major producer countries.

MATERIALS

The production of steel, aluminium and other metals, glass and cement, rubber and plastics all represent large-scale industrial output generating export revenues and which is also critical for the supply of materials, not least for a superpower engaged in a military conflict. Refined and new materials can have many uses and provide strategic benefits for military operations. An example is the Swedish fighter aircraft Gripen's new active radar system. Its semiconductor material consists of gallium nitride, which reduces the energy consumption of the radar and increases heat resistance, resulting in vastly improved functionality.

In a variety of ways, the US and China are working to secure the supply of raw materials that are not available in their own countries. Chinese companies have taken over cobalt mining operations, critical for the battery industry, in the Democratic Republic of Congo and now controls almost 70 per cent of global production. Thanks to its own deposits, China has an unrivalled position when it comes to production of rare earth minerals used in many high-tech products for civilian and military use. Around 90 per cent of world production is now under Chinese control.

ENERGY

The energy supply is critical for all countries and presupposes well-functioning production, storage, conversion, distribution and use of energy. Through extensive use of fossil fuels in energy production, China and the US account for a total of 45 per cent of the world's carbon dioxide emissions driving global warming. A long-term solution to the energy challenge, and by extension global warming, requires rapid advances in energy technologies. The two superpowers are in a rare agreement on the importance of taking steps to mitigate climate change, but energy also has multiple areas of geopolitical conflict. The US has imposed anti-dumping measures on Chinese-made solar cells. In the UK, the government wants to stop a Chinese state-owned company from being a stakeholder in British nuclear power plants. China is engaged in infected conflicts with Vietnam and the Philippines, which is supported by the United States, over the right to extract oil and natural gas in the area around the strategically important Spratly Islands in the South China Sea.

BIOTECHNOLOGY

The real-world benefits of biotechnology became clear to citizens worldwide as Covid vaccines were rolled out during the pandemic. Biotechnology is usually defined as the use of living organisms in various production processes and products – contributing to advances in diverse areas such as food production, drug development and the remediation of heavily polluted environments. A military branch is biological warfare. The biotech industry, which falls under the broader concept of life science, has grown rapidly in recent decades and is now competing with traditional pharmaceutical companies. Both the US and China are prominent nations in biotech research and development. In terms of the number of annual, international patents in biotechnology, the US is clearly in the lead today, followed by Japan and China.

COMPETITION OR COLD WAR?

THREE SCENARIOS

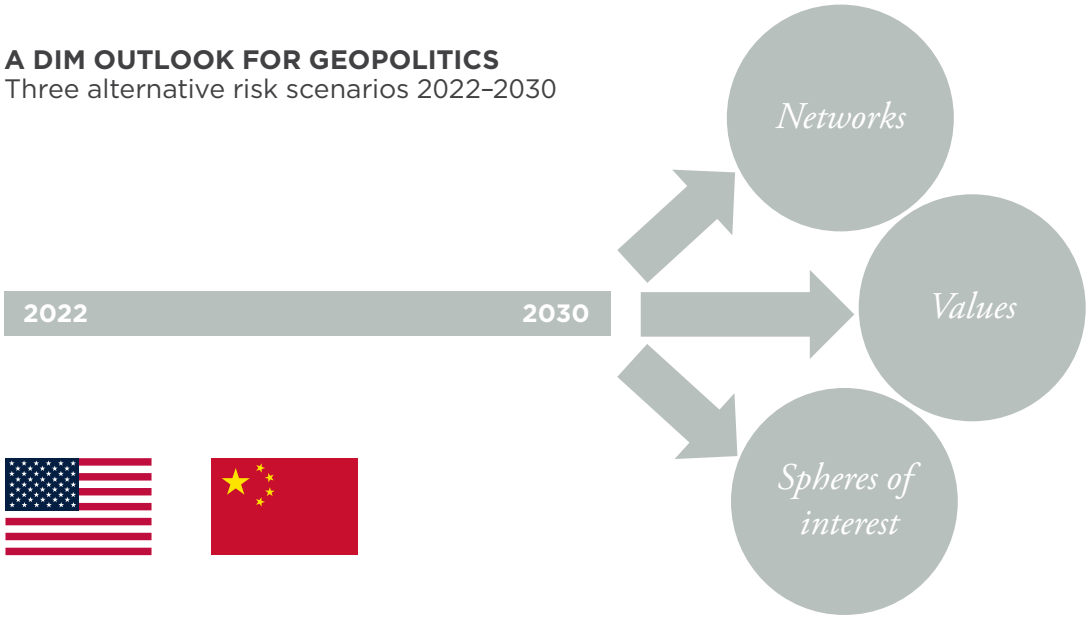
On assignment from Business Sweden, FOI has made a forecast for 2030, outlining three potential geopolitical risk scenarios shaped by US-China relations. The scenarios follow different routes in regard to the character of the conflict between the superpowers, but they all presume a successive rise of tensions with implications for international business and the world market. The section below elaborates on FOI's analysis of what the world might look like when relations between not just the superpowers, but all countries, are governed by: 1) Networks, 2) Values, or 3) Spheres of interest. It also explores a possible conflict scenario between the United States and China.

1. NETWORKS

In 2030, international relations will be governed by networks, in a world where geopolitics are largely based on the same forces that prevail today. The US and China are equal competitors with a mutual objective to gain geoeconomic advantages in the international arena, preferably at the expense of the other side. However, they do not intend to challenge each other militarily.

The EU is weakened by internal tensions and has toned down its previously stated ambition to become a united and strong foreign policy player. Member states support US interests on one issue and Chinese interests on the other. France and Germany could remain neutral in the event of a conflict in the Taiwan Strait to avoid economic reprisals from China. This does not prevent the same countries from showing dissatisfaction with Russian-Chinese military cooperation on the borders of Europe and demanding support from the US. Some countries in Europe choose to support the integration of domestic industries into Chinese supply chains in the automotive sector, while also being willing to comply with US demands for disconnection from China in the telecom sector.

A DIM OUTLOOK FOR GEOPOLITICS
Three alternative risk scenarios 2022–2030



India may follow US calls to halt Indo-Chinese business activities, but will at the same time refuse to take part in a possible escalation of conflict in the South China Sea. Meanwhile, South Korea may be positive towards doing business with China while also supporting tougher US action against China's expansion of its territorial waters.

In this scenario, the US and China will pressure other countries not to ally themselves with their opponent, especially when it comes to collaborating on technology development or other areas considered strategically important by the superpowers. This prompts an infected debate between allies to the US where several major EU countries want to prioritise business opportunities that benefit their own economies and self-interests, while Japan and South Korea will follow the US line. Within ASEAN (The Association of Southeast Asian Nations), views are divided when having to choose sides between the United States and China.

Companies operating internationally have access to a fairly open and uniform world market, but friction between the superpowers is beginning to seriously disrupt business. Compliance with new rules is draining more and more resources and country requirements for local content in manufactured products increase the costs of operating overseas. At the same time, companies have to make investments to adapt their operations to climate goals. As a result of permanently stranded negotiations, the WTO has fallen into a backseat role, even though the existing multilateral regulations are largely respected by the superpowers and all other members of the organisation. However, companies need to navigate a growing patchwork of bilateral and regional free trade agreements.

2. VALUES

In 2030, international relations will be governed by values. The world has become divided into a coalition of democracies, the so-called Western bloc led by the United States, and an alliance of authoritarian-led countries led by China, in which Russia plays an important role. The EU is part of the Western bloc, but several member states have strong sympathies for China and Russia and effectively block all initiatives to mark or act against the alliance. Cooperation between the blocs is limited to joint efforts to achieve climate goals and to combat international crime and terrorism. The Sino-Russian alliance is supported by a large number of countries in South Asia, Central Asia and Africa. Some countries stand with one foot in each camp. Washington and Beijing are pressuring these and other hesitating countries to choose sides once and for all.

The relationship between the US and China is reminiscent of the Cold War with a technology race at the centre. Countries act on the basis of their bloc affiliation in both economic and security policy matters. Many countries believe that it is easier to deal with China than the United States and have forged economic ties with China.

The Western bloc repeatedly criticises the authoritarian bloc for lack of democracy and human rights, while the authoritarian bloc's rhetoric focuses on the Western bloc's betrayal of weak groups in society, thereby feeding social unrest both in its own countries and in the rest of the world. A military conflict between the United States and China is not considered likely, but neither is it ruled out. The link between high technology for civilian and military purposes grows increasingly stronger in the industrial military complex of both superpowers, which gradually gain a more influential position in national governance. China in particular has taken so-called military-civilian fusion to a new level.

International companies are forced to navigate an increasingly divided world market. WTO is clinging on to its dwindling role. The United States, Canada, Mexico and the EU formed a free trade area in 2026 which has gradually expanded with allied countries in Asia and South America. In Asia, China dominates the RCEP (Regional Comprehensive Economic Partnership), which was formed as early as 2020 and now includes 25 countries in the Asia-Pacific region. Exports of goods that are not classified as high-tech move quite freely between the blocks, but China effectively excludes American and European companies that cannot offer new technologies and know-how to Chinese partners.

At the same time, Chinese companies are expanding in the Asian region, as well as in Africa and South America, despite facing increased political opposition even from allies as China attempts to make a clean sweep and acquire all high-tech startups. In the US, Canada and the EU, the acquisition opportunities that were previously available to Chinese companies have been stopped since long, citing reasons of national security.

3. SPHERES OF INTEREST

In 2030, international relations will be governed by spheres of interest. The United States and China are closely guarding what they see as their economic and political heritage. China and Russia claim sovereignty over the countries in their vicinity. The EU is divided and has practically split into two political blocs, with a northwestern faction allying with the United

States and a southeastern faction leaning towards China and Russia. International cooperation bodies such as the United Nations (UN), the IMF and the WTO have become marginalised in terms of being able to influence real politics and economic development. The only arena capable of bringing governments together is the recurring climate conferences.

For companies operating internationally, the world market has become highly fragmented and most business considered to be sensitive has come to a standstill in both the US and China. Export goods that are not high-tech or classified as dual-use, meaning products that can have both civilian and military uses, move quite freely in a landscape that is largely unchanged since the Uruguay Round. But market conditions in the US, China and even the EU are clearly characterised by hard-line economic nationalism. The US has further tightened the Buy American Act, which stipulates that American companies must be given priority in all federal procurement, as well as having permanented the Defence Production Act, which was activated to prevent medical goods from leaving the United States during the 2019-2022 coronavirus pandemic. Additional legislation has been introduced making it more difficult for European companies to compete in the US market.

China has secured its import of critical goods but has otherwise severely crippled the opportunities for foreign companies seeking to operate in the Chinese market. Chinese build-up of supply chains for advanced semiconductors, the aerospace industry and communication technologies have been successful. The EU has blocked the possibility for China to make acquisitions in the internal market, but in practice Chinese influence is increasing in the southeastern part of the Union. Many EU countries have ramped up their own military preparedness in the expectation of conflict between the United States and China. In the EU's northwestern faction, where several countries have strong links to NATO, government cooperation is characterised by the defence industry's greatly expanded role. As a contingency, companies with high-tech products and dual-use products are incorporated into the collaborative work of the military industrial complex, with a view to make their know-how available for military purposes. Security of supply – meaning efforts to secure delivery of critical goods and services during a crisis – plays a key role during preparations.

The risk of a superpower conflict is imminent. The technology race is openly geared towards strengthening each side's military capabilities and firepower. The United States and China face difficult considerations. Can military goals be achieved in a particular geography without escalating the conflict to global mass destruction? A superpower conflict in 2030 may look completely different from the Third World War that most people would imagine. The result could be a low-intensity, but high-tech conflict without direct military involvement. This is because neither the United States nor China want to risk a large-scale war where mutual annihilation becomes a real risk.

TECHNOLOGY IN THE DRIVER'S SEAT
Features of three alternative geopolitical scenarios 2022–2030

	Networks	*Values*	*Spheres of interest*
World market	Uniform	Divided	Fragmented
US-China relations	Competition	Rivalry	Hostility
The conflict	Geoeconomic power struggle	Cold war	Grey zone warfare and risk of open military conflict
Technology	Important	Critical	Critical

CONFLICT SCENARIO: SPHERES OF INTEREST

The world in 2030 risks being drawn into an armed conflict between China and the United States. Many observers fear that the Taiwan issue could lead to war. So far, both the US and China have restrained their allies who have sought to take advantage of the tense situation. China claims that it is being targeted by a massive attempt by the US to encroach its territory along the entire Chinese border from India to the Pacific. Russia, Iran and Pakistan announce their solidarity with China in the event of a crisis. At the same time, the number of cyber attacks on companies in the Western world has increased dramatically.

In the spring, US military surveillance indicates that China may invade Taiwan. Many companies depend on freight transport passing through the South China Sea. China claims that the US is flexing its muscles by deploying military vessels to the area and disrupting international container traffic.

At the same time, China steps up its rhetoric against Taiwan. During the summer, tensions escalate after China announces that US reconnaissance drones have been shot down after violating Chinese airspace. The US makes a contrary claim, saying that China is attacking drones in international airspace. In the midst of a war of words between the superpowers, Taiwan is carrying out a partial mobilisation. The Chinese reaction to this is fierce with a sharp warning to Taiwan about the consequences of a breakaway province declaring independence.

During late summer, fears grow in the US that outbreak of war is imminent. Many companies expand their warehousing and follow the government's recommendations of adapting to emergency preparedness conditions. Sources of intelligence in the US make the assessment that Chinese cyber attacks and anti-satellite weapons could block the US forces' ability to communicate and cripple the movement of American military units. The sources underscore that US bases in the region would probably not be able to handle a Chinese missile attack. In addition, the sources estimate that US fighter jets are unable to defeat Chinese drone swarms, while China would quickly sink American carrier strike groups approaching Taiwan or China.

As the world's attention is fixed on the deteriorating security situation in Asia, Russia launches an operation against Lithuania which is reminiscent of its actions taken on the Crimean peninsula fifteen years earlier. Suddenly there are unknown military units in Lithuania. Belarus orchestrates a series of incidents along the countries' shared border. Moscow says it is concerned about developments and that Russia is ready to stabilise the situation between the parties, and enter Lithuania to do so if needed.

HOTSPOTS FOR MILITARY CONFLICT
Taiwan and Lithuania in the spotlight

WHEN POLITICS TRUMPS BUSINESS

RED LIGHT FOR CHINA

The United States is trying in various ways to prevent key technologies from becoming accessible to China. This is done, in part, through export bans on what can be considered strategically important components and equipment, in addition to dual-use products. The legislation has repercussions outside the US borders as the country also punishes foreign companies that violate US rules. In response, both China and the EU have introduced countermeasures that include blocking legislation in order to protect companies that are subjected to US sanctions.

Chinese companies have increasingly become a target for scrutiny by US authorities. The US Department of Commerce publishes the Entity List, a comprehensive list of, among others, Chinese companies and individuals who are directly subject to US sanctions. The government body for reviewing foreign investment in the United States, CFIUS (The Committee on Foreign Investment in the United States), has been given a broader mandate to ban acquisitions of American companies, taking specific aim at China. The US has also imposed restrictions on the activities of Chinese students and researchers at American universities and research institutions.

The following section lists three policy areas where measures can have a particularly large impact on companies' foreign operations. The measures are most effective when used by major economic powers such as the US and China.

TRADE POLICY

Countries have always used different types of fees and tariffs on foreign goods that cross national borders. In Sweden, customs duties were introduced as early as the 12th century and were mainly used to strengthen the treasury. During Europe's industrialisation in the 18th and 19th centuries, it became common for the state to impose high tariffs to protect domestic producers from foreign competition.

After the Second World War, there was a political appetite to organise international trade by setting up rules for export and import of goods between countries. There was also a realisation that high tariffs could hold back economic development and even contribute to a devastating recession, as was the case with the so-called Smoot-Hawley tariffs introduced by the US in 1930. In October 1947, the General Agreement on Tariffs and Trade (GATT) was concluded by 23 signatories in Geneva. The agreement was the starting point of several decades of extensive tariff reductions and is today a cornerstone of the multilateral framework administered by the WTO. Around 60 agreements and binding decisions have been added over time, including agreements on trade in services and protection of intellectual property rights. The WTO also has a dispute settlement gateway which allows its members to try alleged violations of the framework and to demand compensation from the other party.

Following its flying start, the WTO has become increasingly inapt as a negotiating forum, due to major differences of opinion between members about the way forward. The rift between mainly developed and developing countries led to the WTO's failure to complete the latest Doha Round. There is a consensus among key players such as the United States, the European Union and Japan that the WTO needs to be fundamentally reformed. During the Trump administration, the US was also firm in its view that WTO regulations and rulings consistently favour China.

As explained in the report *Doing business in a world of uncertainty* (Kommerskollegium and Business Sweden, in Swedish only, February 2020), preconditions in terms of trade policy usually have secondary importance in the international growth strategies of companies. Export business is driven by market demand, and companies absorb the terms of existing regulations, including applicable tariffs and other levies, in their offers to customers. For industrial companies, however, trade barriers can further support decisions on the establishment of new manufacturing facilities closer to customers and markets, see the report *Taking manufacturing to new frontiers* (Business Sweden, June 2021).

The superpowers can expand their economic influence by signing bilateral free trade agreements with selected partner countries. They can create and deepen their economic sphere of interest through regional free trade agreements, such as the recently signed USMCA (United States-Mexico-Canada Agreement). The United States and China can also penalise countries and companies using trade policy defence tools where anti-dumping duties are a typical example. WTO rules also allow for extensive interpretations of national needs for defensive measures. During a bilateral diplomatic conflict in 2020, China stopped imports of, among other products, beef from Australia on the pretext that the measure was necessary to protect health and safety. The Trump administration imposed punitive tariffs on imports from China with reference to national security, which thereby sparked the ongoing trade war.

INDUSTRIAL POLICY

Most countries' starting point in their economic modernisation has been one of various forms of government support and protection for domestic businesses. As the business community develops and grows more competitive, subsidies have decreased or in many cases been phased out. But even in the modern market economies of Europe, North America and Asia, long-standing support or new measures are still frequent for certain sectors that are considered vulnerable, critical for society or strategic.

There is no internationally agreed definition of industrial policy, but it can be said that the aim is to ensure a favourable framework and good conditions to enhance the competitiveness of the domestic business community, with a focus particularly on industry. Industrial policy may include direct state aid and subsidies, tax rebates and loans on favourable terms. It can consist of supportive efforts in, for example, education, research and development, and infrastructure such as roads, ports and airports, as well as public procurement with priority given to national companies.

Industrial policy can also be directed at – for the benefit of its own business community – influencing various product standards and service standards that specify technical and commercial criteria for goods and services to be sold on the market.

Industrial policy receives a lot criticism, not least from economists who deplore the use of tax money to prop up companies and industries that will collapse anyway. Sometimes they also object to the state taking on the difficult role of finding and investing in future growth industries. However, there is no doubt that industrial policy around the world has gained momentum. In the US, the new industrial policy is a fact, even if the term is not used politically. China's investments and support for its own business community, not least in high technology, are the largest source of other countries' suspicions and opposition to Chinese expansion in the world market. The EU, for its part, has recently launched an updated industrial policy under the slogan "open strategic autonomy".

SANCTIONS

Countries also have more subtle instruments of power at their disposal to influence the market. Authorities can harass companies by pursuing constant checks, inspections and reporting requirements. Countries can use advocacy campaigns on social media, for example to orchestrate boycotts, or carry out cyber attacks and shutdown internet access for companies. High-ranking politicians can urge companies to take certain action under the implicit message that they will otherwise fall into disfavour.

For superpowers, economic sanctions can be used to effectively punish countries, companies and individuals. The US and EU sanctions against Russia, introduced in 2014 following the conflicts in Ukraine and the Crimean peninsula and which are still in force, have been hard felt by the Russian economy. The US sanctions against Iran are even more effective as they, among other things, have meant that the country is left outside the international payment system.

EXPORTS AT RISK?

A RELUCTANT MARKET

Through its presence in both the American and Chinese markets, Business Sweden can confirm that Swedish companies are already today directly or indirectly affected by the superpowers' escalating geopolitical rivalry. The United States uses all available means to prevent China from accessing high-tech or dual-use products. For example, Swedish companies need to navigate a growing and increasingly intricate list of Chinese companies and individuals who are subject to US sanctions. If mistakes are made when choosing customers or suppliers, companies can be punished by US authorities in the form of heavy fines or even imprisonment for senior executives.

But it is not only the US that is making business more difficult for Swedish companies in the Chinese market. Despite advances in many high-tech fields, China is still concerned about and reliant on technology and skills transfer from overseas. However, as Chinese companies and industries catch up with their competitors, attitudes in China harden towards foreign companies, and what is considered undesirable behaviour is punished by the authorities. With government backing, China is developing its own supply chains to reduce its dependence on foreign competence. At the same time, rising demands on local content in products sold in China mean that the market is becoming either limited or completely closed to many foreign players, including Swedish companies. In recent years, the central government's directive has also had a greater impact in the country's provinces, which means that new obstacles for foreign businesses, Swedish companies included, are now apparent even at the regional level.

Interviews with representatives of leading Swedish companies confirm the impression that US-China frictions have become increasingly noticeable in their business operations, at the same time as gaining access to the Chinese market has become increasingly difficult. It is naturally neither practical nor economically viable for companies to manufacture all their products for the Chinese market in China. In the long run, therefore, China's escalating demands on local content threaten the efficiency of companies' supply chains. Nonetheless, the companies emphasise that it is the ongoing US-China trade conflict that poses real problems, and that their focus right now is on managing the consequences of the coronavirus pandemic. The shipping crisis and shortage of components are the most acute concerns. The pandemic has also highlighted the importance of focusing on supply chain resilience, where a common denominator is the shift towards alternative suppliers and reduced dependence on Chinese suppliers.

In all three of the outlined alternative geopolitical scenarios until 2030, the superpowers' sensitivity to the technological progress of its adversary increases. The US and China will monitor each other and make sure they are, at the very least, keeping pace with research progress on the other side.

At the same time, measures are being stepped up to prevent technological and systems intrusion, for example by banning the domestic use of communications equipment and software developed by the other side.

HIGH-TECH IN A VULNERABLE SPOT

Swedish companies that have an international presence, particularly those operating in high technology industries offering unique high-tech products or products with dual-use, should expect to be caught in the crossfire of the escalating

conflict between the superpowers. The measures taken by either side could affect leading export companies, importers of high-tech intermediate goods or companies that are part of global supply chains for high-tech products. The question is, does any particular group of Swedish companies risk being more exposed than others? And how would measures taken by the superpowers against businesses affect the Swedish economy?

There are several ways of identifying potentially vulnerable Swedish companies. Business Sweden concludes that the most risk exposed Swedish companies are the ones that have business operations in both the US and Chinese markets, including export of goods. These companies are vulnerable as they may be suspected, in the eyes of the superpowers, of contributing to unwanted technology transfer, or that their products may facilitate data intrusion by the other party.

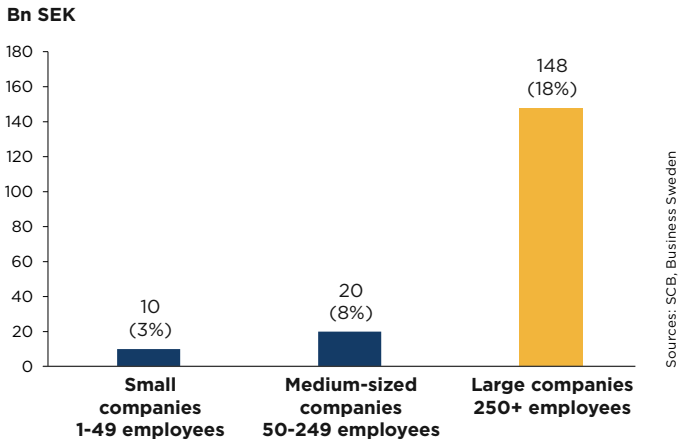
Based on this assumption, Business Sweden has commissioned trade data from Statistics Sweden (SCB) that identifies Swedish exports of goods that are potentially highly exposed, i.e. goods exported by companies with presence in both markets, in an escalating conflict between the US and China.

Both the US and China are important export markets for Swedish companies. Out of Sweden's total goods exports in 2020 valued at SEK 1,427 billion, the US accounted for SEK 121 billion and China for SEK 78 billion. Customers in both markets thus purchased Swedish export goods for a total value of just under SEK 200 billion. In terms of the percentage share of Swedish total exports of goods, the US accounted for 9 per cent and China for 6 per cent, which means that, together, the two markets accounted for 15 per cent.

The data from Statistics Sweden reveals that the majority of Sweden's export of goods to the US and China in 2020, SEK 104 billion and SEK 74 billion, respectively, or a total of SEK 178 billion, can be linked to companies

LARGE COMPANIES IN THE RISK ZONE

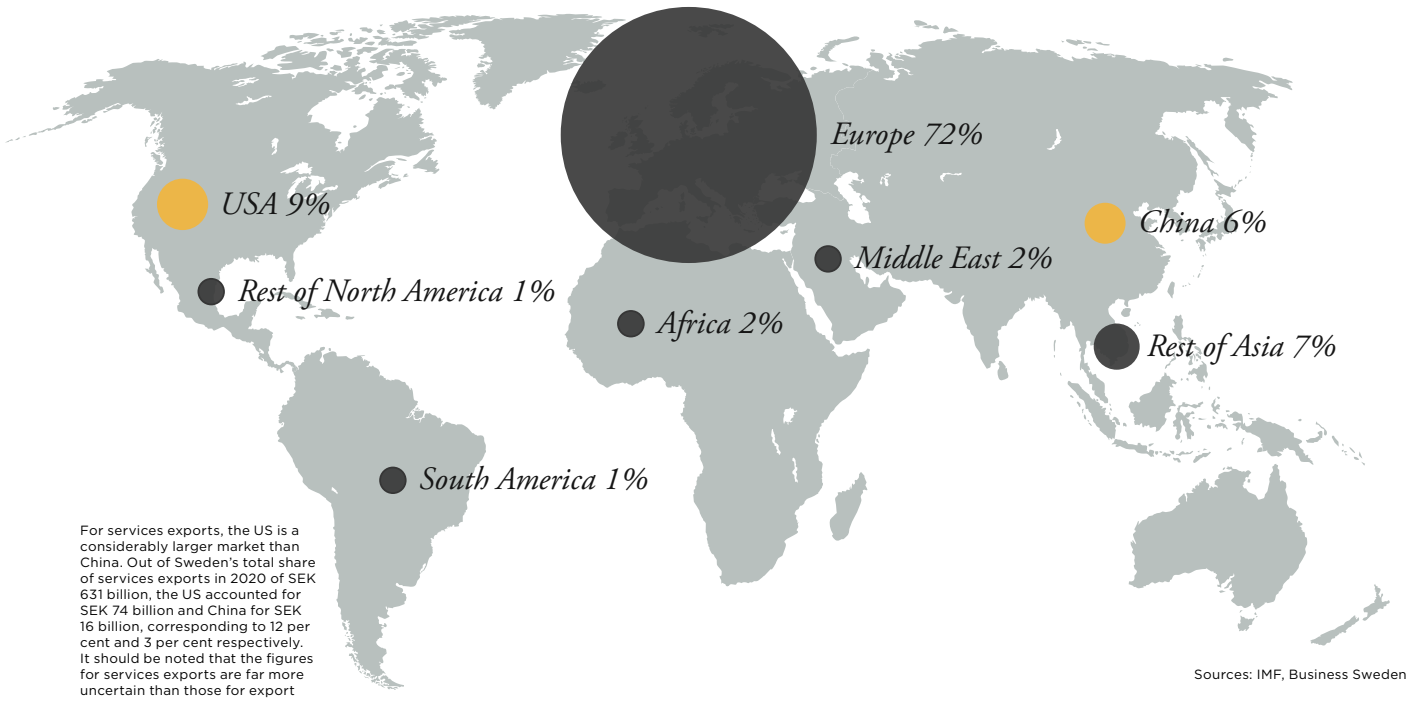
Highly exposed exports* 2020, billion SEK



*Defined here as export of goods to the US and China from Swedish companies with export sales in both markets. The share of total export of goods in each size category is shown in brackets.

THE US IS MORE IMPORTANT THAN CHINA FOR SWEDISH COMPANIES

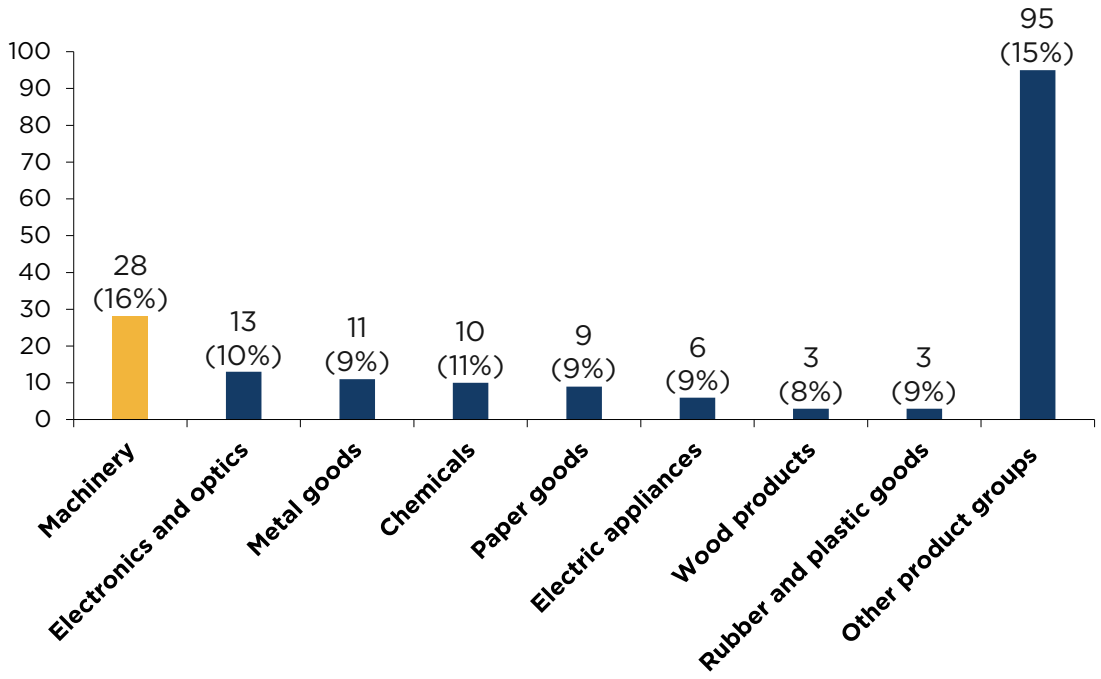
Sweden's export of goods 2020, percentage share by region



For services exports, the US is a considerably larger market than China. Out of Sweden's total share of services exports in 2020 of SEK 631 billion, the US accounted for SEK 74 billion and China for SEK 16 billion, corresponding to 12 per cent and 3 per cent respectively. It should be noted that the figures for services exports are far more uncertain than those for export of goods.

Sources: IMF, Business Sweden

MACHINERY AN OUTLIER
Highly exposed exports* 2020, billion SEK



Sources: SCB, Business Sweden

* Defined here as export of goods to the US from Swedish companies with export sales in both markets. Each commodity group's share of total goods exports is shown in brackets. The figures for the commodity group electric appliances are for 2019.

exporting to both markets. Therefore, 12 per cent of Sweden's total export of goods would be flagged as highly exposed exports – by no means an insignificant share.

A breakdown of the statistics by size category of companies reveals that as much as 18 per cent of the total goods exports of large companies consisted of highly exposed exports to the US and China. This amounted to a total of SEK 148 billion of the large companies' total export of goods, SEK 826 billion in 2020.

The share of exports from small and medium-sized companies that can be considered highly exposed amounted to 3 per cent and 8 per cent respectively, of the total export of goods in each group. For small companies, this share corresponded to SEK 10 billion out of a total of SEK 325 billion in export value. For medium-sized companies, the corresponding figures were SEK 20 billion and SEK 254 billion.

A breakdown of the statistics by commodity group shows that machinery exports to the US and China had the highest exposure – 16 per cent as a share of the total export of goods in the category. This is followed by chemical products with 11 per cent and electronics and optical products with 10 per cent. Wood products had the lowest share at 8 per cent. Due to source confidentiality, Statistics Sweden is unable to publish statistics showing exposure for the commodity groups automotive and pharmaceuticals, which together account for 23 per cent of Swedish export of goods. However, the high proportion, 15 per cent, of the unspecified "other" commodity group indicates that there is significant exposure.

An alternative method to establish the level of commercial exposure for Swedish companies in the escalating superpower conflict would be to look at the companies' total sales in the US and China. The benefit of this method is that it gives a more detailed picture of the extent to which companies are exposed, given that exports only account for a portion of the companies' total sales in overseas markets. Total sales also include the local sales pf subsidiaries, which in many cases exceed export sales. The disadvantage of the method is that the impact on the Swedish economy becomes harder to ascertain given that local sales of subsidiaries have a weaker link to Sweden than exports.

2022 3073 (ENG)

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