

Rethinking interdependencies: Ideal-typical worldviews on small and medium powers' economic security

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Abstract

Asymmetric and systemic interdependencies are increasingly viewed as security risks that could materialise as harmful outcomes for small and medium powers. While great powers have an arsenal of resources to decrease interdependencies, for smaller powers size constitutes a core vulnerability and becomes a key variable in their recalculations of economic security. This article (1) identifies potential harmful outcomes brought on by the competences of great powers, and (2) constructs three ideal-typical worldviews on small and medium powers' economic security. In particular, it argues that smaller powers can view security risks of foreign ownership, supply disruptions and critical high technology cut-offs either through competitive global market capitalism, integrationist multipolarism or protectionist small state realism: by prioritising cost-effectiveness, balancing between efficacy and risks of interdependence or actively reducing vulnerabilities. The data originate from a large-scale Finnish Delphi panel, during which stakeholders proposed means to avoid the materialising of threat scenarios presented as comic art. Although the results are not generalisable as such, the study offers an empirically rooted introduction to considerations and tensions that all non-great powers encounter when enhancing their economic security under the current circumstances. As such, the article opens the ground for theorising and formulating strategies on de-risking.

Keywords

China-US rivalry, Delphi method, de-risking, economic security, Finland, great powers, interdependence, small and medium powers

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Introduction

The combination of increasingly confrontational US–China relations and the shock followed by the Russian invasion of Ukraine have led to the proliferating view that the world has entered a new era of great power competition. This phase entails a fundamental shift in perceptions of a desirable exposure to global markets, as the post-Cold War liberalist view focusing on a positive cycle of mutual gains has given way to realist thinking that sees interdependencies as security risks, economic cooperation in zero-sum terms and technologies for their dual-use potential. Due to this change of perception, great powers are implementing protectionist policies that aim at reversing or limiting economic globalisation. These include, for example, the US export control regime affecting companies outside the country, different types of sanctions, and Chinese export restrictions on critical raw materials of which European countries are dependent on. As a result, small and medium powers, which have greatly benefitted from economies of scale and open trade, are finding themselves in a highly uncertain and rapidly changing environment that weakens their relative power position. After decades of globalisation and building specialised economies, it is difficult for smaller powers to drastically decrease their interdependencies similarly to great powers. Under these circumstances, smaller size constitutes a core vulnerability and becomes a key variable in small and medium powers' recalculations of economic security, which at a minimum level corresponds with 'economic conditions necessary for survival' (Buzan, 1991: 241).

This article is an explorative opening in the emerging research on small and medium powers' strategies to adjust to economic interdependencies during an age of rapid technological, societal, and power political transformation. By drawing insights from an extensive Finnish online stakeholder exercise, we first propose a categorisation of potential harmful outcomes brought on by the relative competences of great powers. In doing so, we focus on two broad avenues enabling great powers to exercise their might over smaller actors: asymmetric interdependence that covers small and medium powers' bilateral relations with great powers, and systemic sources of power, including weaponized interdependence (Farrell and Newman, 2019). Second, we construct three ideal-typical worldviews on small and medium powers' economic security drawn from the stakeholder data and reflecting Buzan's (1991) take on related perspectives on a liberal-mercantilist spectrum. Namely, these approaches are competitive global market capitalism, integrationist multipolarism and protectionist small state realism.¹ As our approach focuses on the measures weaker powers can adopt either themselves or together with others in the face of great powers' economic competences, this article also makes a contribution to studies emphasising small states' agency in global politics (see Kolnberger and Koff, 2024; Panke, 2011; Pedersen, 2023; Thorhallsson, 2018; Wivel, 2021). More specifically, we seek to answer the following two research questions:

1. What kinds of harmful outcomes can asymmetric and systemic interdependencies expose small and medium powers to in an era of Sino-US rivalry?

¹The authors wish to thank anonymous reviewer 2 for proposing these names for the worldviews.

2. What kinds of ideal-typical worldviews characterise small and medium powers' thinking on economic security in the face of these potential shocks?

The Finnish stakeholder exercise was organised in 2022–2023. Over the course of 11 months, altogether 97 Finnish experts participated in an online panel that consisted of scenarios manifesting shocks of economic origin potentially faced by Finland in the short to long term. The threat scenarios were constructed by the authors' research team in a process supported by such data-gathering methods as interviews of company employees and state officials. The core task was to propose changes that should be implemented to enhance Finland's economic security to avoid or at least mitigate harmful outcomes created by asymmetric and systemic interdependencies. Based on the key idea of the Delphi method, the experts not only shared their views anonymously but also had a chance to build on each other's views in their responses (Linstone and Turoff, 2002 [1975]).

As will be discussed in later sections, the Finnish empirical setting is characterised by the country's distinct history, geographical location next to its former aggressor Russia, and well-established practices for enhancing economic security. These features enabled a successful running of a large-scale Delphi stakeholder exercise, which are known to suffer from drop-outs (e.g. Varho and Tapio, 2013). Although the results are not generalisable as such, the Finnish setting offered a fruitful platform to develop a preliminary, empirically rooted introduction to the broader considerations and tensions that all small and medium powers encounter when seeking to enhance their economic security under the current circumstances. The position of all these states is rather similar amid the current shocks of asymmetric and systemic interdependencies: although the available responses vary to a degree, in this context all non-great powers constitute weaker states with a limited ability to alter the global patterns that ultimately define one's capacity to avoid shocks. As such, the article also opens the ground for further theorising and formulating of strategies on, for example, de-risking towards China (Von der Leyen, 2023) – a process that European states and political parties are only beginning (Andersson and Lindberg, 2024).

Economic security and interdependencies

Since the Second World War, economic security has ranked high in most governments' priorities across the world. Yet marrying 'economic' with 'security' is problematic when talking about capitalist systems. Most fundamentally, capitalism is a competitive system whose whole logic is based on the idea of winners and losers. In other words, its lifeblood is the 'constant interplay of threats, vulnerabilities and opportunities', which makes the aim of feeling secure in such a system absurd and almost a contradiction in terms (Buzan, 1991: 235). From this also follows that we can only talk about relative economic security: some units – be it companies, individuals or states – can meet their economic needs for survival better than others (Buzan, 1991: 234–235).

When states engage themselves in the task of seeking enough wealth from the competitive markets to survive and thrive, they clearly benefit from the efficacies created by capitalist structures. In a nutshell, participation in the global market allows them to benefit

from economies of scale, cross-border networks and specialisation. From a purely economic perspective, these benefits are incontestable in comparison with a self-sufficient economy. Yet states' primary goal is to provide security for the citizens and excessive dependencies on international trade may jeopardise this aim, as dependencies reduce states' control over their own economy and expose them to security risks. It is not possible for large-scale economic systems to maintain a high level of economic specialisation and to be self-sufficient at the same time. Consequently, states must balance between reduction of vulnerabilities and efficiency of interdependence (Buzan, 1991: 236, 241–242).

From the perspective of small and medium powers, it is crucial that the benefits and security effects of interdependencies are not actor-neutral: the ways in which states can be affected by them depend on their relative power and national conditions. Also, the type of interdependence plays a role in dictating its potential effects on small and medium powers' ability to enhance their economic security.

Interdependencies can be divided into asymmetric and systemic types. Asymmetric interdependence, as coined by Keohane and Nye (2012), is a source of power in the form of control over resources, 'or the *potential* to affect outcomes' (p. 10). Power in asymmetric interdependence has two dimensions, *vulnerability* and *sensitivity* of the weaker actor. Vulnerability is more important than sensitivity, and it relates to 'an actor's liability to suffer costs imposed by external events even after policies have been altered' (p. 11). Sensitivity, in turn, refers to the time it takes for the outcome to hit the weaker party, as well as its costs in a framework where set policies remain constant. In other words, the ways in which power operates in asymmetrically interdependent relationships depends on the characteristics of both actors, and the weaker side can sometimes have a considerable leeway to mitigate negative effects. Yet, given the current crisis of the international order, small and medium powers are increasingly exposed to situations in which the established rules no longer protect them from the effects of great power politics. As a result, they are both more vulnerable and sensitive to different excesses of power than they were in a more solidarist system.

Systemic interdependence, in turn, stems from Strange's (1987) idea of structural power. According to Strange, it is the ability to control security, production, financial markets and knowledge that gives certain states leverage over others, even in instances in which they do not intentionally seek to yield influence. In other words, power is not only exerted in bilateral asymmetric relations but lies in the 'four major global structures' (Strange, 1987), which create systemic interdependencies. Study of systemic interdependencies has become more common in the 2000s due to increasing computational power, which has enabled the use of such new research methods as network analysis. Furthermore, such real-world events as the global financial crisis in 2007 have increased the demand for approaches looking at structures of interaction and interdependence (Winecoff and Young, 2023).

Building on network analysis, Farrell and Newman (2019) introduced the concept of *weaponized interdependence*. They argue that complex systems tend to form asymmetric network structures that give disproportionate power to actors in control of 'critical network hubs', making it possible to weaponize interdependence on a systemic level. Technological development also plays a role in this new distribution of power, and network hubs that enable information gathering (*panopticon effect*) or choking off economic

and information flows (*choke point effect*) are usually controlled by great powers. For example, around 70 per cent of global net traffic passes through Amazon Web Services in Northern Virginia (Farrell and Newman, 2019: 65), making it possible for the US authorities to access vast amounts of information and make use of the panopticon effect. In a similar vein, the United States was able to play out the choke point effect by cutting the Iranian banks out of the SWIFT payment system in 2012 as a response to Iran's nuclear programme.

Potential harmful outcomes of interdependencies in a changing world

Emphasising the abilities of great powers to utilise their relative power position through asymmetric and systemic interdependencies is not to argue that small and medium powers have no agency. On the contrary, they can dramatically enhance their economic security despite these vulnerabilities by, for example, forming unions, partnerships, alliances and joint stocks of critical goods. However, temporal aspects greatly affect small and medium powers' ability to utilise these strategies and hence mitigate the potential harmful outcomes of interdependencies. Given that great power politics clearly define the ethos of the global political economy, that is, whether states or the market are stronger, the current nature of Chinese and US economic policies is particularly decisive in this regard.

In recent years, both the United States and China have adopted mercantilist policies. In essence, this means that they have actively reduced interdependencies over opting to benefit from efficacies created by them. In particular, both great powers have sought to minimise their reliance on each other with such drastic policy changes as industrial planning with heavy state subsidies, export controls and investment screening. At worst, the United States and China can force small and medium powers to choose their side in the competition.

Arguably, China started the race towards self-reliance with its *Made in China 2025* industrial plan (2015) and dual circulation strategy (2020) with the aim to reorient China's economy towards domestic consumption and enhance its technological self-reliance (García Herrero, 2021). Yet as strong government involvement in economic activities has characterised the Chinese system for long, the United States has made a more notable qualitative change in its approach. The first Trump administration placed tariffs on Chinese goods during the Sino-US trade war in 2018. The Biden administration kept these tariffs in place and introduced multiple new economic policies including export restrictions, the aim of which has arguably been to slow down Chinese economic development, not just to restrict China's military advancements (Bateman, 2022). The US massive *Inflation Reduction Act* (2022) aimed at reshoring manufacturing back to the United States with subsidies, and additional controls of outbound investments restricted capital flows (US Department of the Treasury, 2024). Chinese responses to these US policy moves have been mild, but since July 2023 China has placed export controls on various minerals needed in high tech production.

Given the current mercantilist ethos of the global political economy, the asymmetric or systemic power position of great powers makes them well-placed to act out at least

Table 1. Great power competences and their potential harmful effects^a.

Type of interdependence	Competences of great powers	Potential harmful outcomes on small/medium powers
Asymmetric	Investment leverage	Security risks of foreign ownership
Asymmetric/systemic	Supply chain dominance	Supply disruptions
Asymmetric/systemic	Core technology control	Cut-offs of critical high technology

^aThe table is modified from Mattlin et al. (2023).

three types of economic competences, which enable them to bring about potential shocks to small and medium powers' economic security. These categories served as the basis for the design of the Finnish stakeholder exercise (Table 1).

On the first row, *investment leverage* is a form of economic competence that creates *security risks of foreign ownership*. The foreign direct investment (FDI) outflows of the United States and China account for more than one third of the global total (United Nations Conference on Trade and Development (UNCTAD), 2023), and investors from both countries acquire real estate and make venture capital (VC) investments in overseas start-ups. Through this position of economic strength, China and the United States may inevitably gain control over resources of small and medium powers that can be used to promote their own foreign policy goals. These aims may contradict with the national interests and security of the target country in various ways and potentially cause or contribute to the emergence of harmful outcomes. Generally, American investments are currently causing less unease in this regard in Europe, but Chinese investments are increasingly assumed to expose the host country to situations in which, for example, acquisitions of companies producing critical goods expose such states as Finland to supply security crises (Breslin and Mattlin, 2025; Kauppila et al., 2023: 37; Mattlin, 2020). Speculations over such events have increased along with the emergence of China's strategic company acquisitions and contentious National Intelligence Law, which states that 'national intelligence work institutions may request that relevant organs, organisations, and citizens provide necessary support, assistance, and cooperation' (National People's Congress, 2017).

Security risks of foreign ownership constitute a risk category that small and medium powers can tackle through their national legislation. In the European Union (EU) area, most member states have established FDI screening mechanisms either before or after the *EU Framework for Investment Screening* came into force in 2020 (European Parliament and Council of the EU, 2019). Yet such mechanisms are never exhaustive and controls on VC investments, for example, are not common. Moreover, the security benefits of investment screening must always be compared with their possibly negative impact on the business environment.

On the second row, *supply chain dominance* refers to great powers' position as the primary nodes of the global economy, which gives them power to bring about *supply disruptions*. More specifically, due to such a standing, great powers can transform choke points and hubs into political weapons, as Farrell and Newman (2019) argue. In

an ultimate situation, great powers can also discriminate or sanction smaller states for political reasons (e.g. Bøje Forsby and Sverdrup-Thygeson, 2022). Moreover, over-concentration of supply in itself causes supply disruptions, as an example from the medical sector showcases: in 2018, there were global shortages of piperacillin-tazobactam antibiotic because there was an explosion in the one Chinese factory producing its active ingredient (Access to Medicine Foundation, 2018; Mattlin et al., 2023). In addition to pharmaceuticals, other critical industries in which China is a key player in supply include, for example, specific water management and wind power technologies (European Commission, 2020; Wang and Wang, 2019). While the United States has traditionally focused on higher-end goods, its strategic reshoring efforts have led to an increase in its share of supply in the above-mentioned industries, too (e.g. Dray, 2023). As a result, China's strong standing may sometimes be replaced with a Sino-US dominance. Overall, China and the United States rank the first and the second in the global merchandise exports, with their respective 14.2% and 8.5% shares (World Trade Organisation (WTO), 2024).

Smaller powers have limited resources to prepare for supply disruptions and political sanctions. For example, although the possibility of major supply disruptions of Chinese antibiotics is widely known, the resources of Finland to relaunch domestic production as a precautionary measure differ vastly from those of the United States. In a similar vein, while Norway had no option but to adjust to China's unannounced sanctions on its salmon exports in the aftermath of Liu Xiaobo's Nobel Prize, the United States would have an arsenal of means to prevent such a situation.

The third-row category, *core technology control*, refers to great powers' strong standing in the development, delivery and servicing/overhaul of the most advanced technological devices. In essence, they have the ability to expose small and medium powers to *cut-offs of critical high technology*: situations in which problems in the availability and functioning of technology may cause major turmoil for people and the national economy (Mattlin et al., 2023: 18). According to the World Intellectual Property Organization, China and the United States were the largest and the third largest high-tech exporters in 2022, if the EU27 are counted together (Léon et al., 2022). Moreover, China is the world leader in various green transition technologies such as advanced batteries, solar panels, windmills and electric vehicles. The EU area is reliant on China on these technologies, with consequences for energy security. Recently, China has also made significant advances in high-end medical technology as part of its self-reliance drive. It has a strong standing in, for example, global in-vitro diagnostics markets and notable innovations in artificial intelligence (AI)-assisted medical imaging and surgery robots (Economist and Intelligence Unit, 2019: 6; Yu, 2020).

The fast tempo of technological breakthroughs further exacerbates the weak position of small and medium powers by shortening the reaction time actors have in adapting to changes. Moreover, although many smaller powers rank high in innovation indexes, it would be impossible for them to produce many of the high-technology products domestically. This dilemma was evident during the Covid-19 pandemic, when the demand for high-end medical equipment and their spare parts was high all over the world and there was competition for limited resources.

Running a stakeholder exercise in Finland

Worldviews on economic security always evolve in a distinct national context characterised by historical, geographical and institutional factors. These features also inevitably shape the risk perceptions of the above-mentioned types of interdependence and potentially harmful outcomes brought on by competences of great powers. In the following subsection, the Finnish empirical setting is introduced to provide context for the stakeholder panel. After that, the process of running the exercise and its methodological choices are described.

Empirical setting

The empirical setting of Finland is that of an open economy that ranks high in global innovation indexes and is tightly connected to global investment and trade flows. As a country standing at the northernmost edge of Europe, Finland is mostly separated from the rest of the EU countries by the Baltic Sea and located next to its former aggressor Russia. It has overlapping economic networks with the rest of the Nordic countries, which can be exemplified by Sweden's status as one of Finland's largest investor countries and trading partners (Statistics Finland, 2024). The Finnish economy also has strong ties to both the United States and China. While the United States constitutes a more significant investor country in terms of annual flows, in terms of trade Finland is dependent on both countries.² Especially different types of batteries, artificial fibres, laptops, mobile phones, solar panels and magnets constitute critical dependencies on China (Kaaresvirta et al., 2023), while trade with the United States is more focused on services (Statistics Finland, 2024). After years of non-alignment, Finland became a US ally through its NATO membership in 2023.

Finland has a long tradition of monitoring and regulating foreign ownership. The country has had statutory controls over FDI in place uninterrupted since the 1930s (Rajavuori and Mattlin, 2023). The current legislation, *Act on the Screening of Foreign Corporate Acquisitions*, subjects non-EU/European Free Trade Association (EFTA) acquisitions of security critical companies to monitoring but does not apply to greenfield investments, new foreign companies set up in Finland (Act on the Screening of Foreign Corporate Acquisitions, 2020). Unlike most EU countries, Finland has also controlled non-EU/European Economic Area (EEA) real estate transfers since 2020 (Act on Transfers of Real Estate Requiring Special Permission, 2022). The act was largely a reaction to Russia's invasion of Crimea, and particularly aimed at monitoring Russian transfers, which then accounted for one third of all acquisitions.³ The current government (2023–) is planning to tighten the legislation and ban Russian real estate transfers.

²The US has been among the top three investor countries in Finland throughout the 2020s, and in 2022, it was the third largest export and seventh largest import country. In 2021, China's share of Finland-bound FDI was only 6%, which is roughly in line with the longer trend. In the late 2010s, however, China's share peaked, as the world's largest sports equipment firm Anta acquired the Finnish Amer Sports. In 2022, China was Finland's third largest export and third largest import country (Statistics Finland, 2023).

³Finnish state official, interview, 23 March 2023.

Given the history of having fought two wars with Russia (1939–1940, 1941–1944), Finland has also had established practices and legislation for tackling market disturbances since the post-war years. For example, statutory emergency stockpiling was initiated as early as in the 1950s (Emergency Stockpiling Act, 1958). The current Finnish model stands out in international comparison as a network of private and public actors. In practice, the National Emergency Supply Agency (NESA) (2024) executes the government's goals by tasking companies with such duties as obligatory storing of medicines and enhances industry-specific situational awareness together with companies. In addition to national efforts, Finland collaborates closely with other Nordic countries in enhancing its resilience in the face of supply disruptions (Wigell et al., 2022). Also, the recent openings on strategic autonomy have highlighted the potential for EU-level collaboration on these issue areas (European Commission, 2023; Garcia Higuera and Weichert, 2023). Yet materialised union-wide efforts are few, and limited acts of solidarity during the Covid-19 pandemic underlined the continued importance of national efforts.

Method

During the stakeholder exercise, an online panel of 97 Finnish experts proposed means to enhance Finland's economic security in the face of potential shocks arising from asymmetric and systemic interdependencies. The panel consisted of researchers, businesspeople, representatives of non-governmental organisations, state officials, decision-makers/politicians and general citizens with specific knowledge of the exercise's themes. Some of the panellists ('generalists') were invited to participate in all three questionnaire rounds, whereas others ('sectoral experts') joined the exercise to share their views on specific scenarios. The panellists were selected with an expertise matrix, a cross-tabulation ensuring that all relevant stakeholder groups and types of knowledge are represented and none are completely lacking (e.g. Varho and Tapio, 2013) (Appendix 1). Researchers were slightly overrepresented in the exercise as a whole, and a proportionally large businesspeople and state official participation characterised some of its parts. Strong researcher engagement was, in part, a conscious choice that supported the real-time format of our Delphi exercise: given the nature of researchers' profession, they were expected to share research-based arguments that other panellists could find useful in drafting their own responses. This assumption also proved right during the process.⁴

⁴In part, the overrepresentation of researchers is also spurious and can be explained by the generalist/sectoral expert division of the panel. Additional sectoral experts were invited to join each questionnaire round, and many of the researchers possessing these knowledge types (e.g., 'game industry') also held knowledge of the more general knowledge types ('competences of great powers'), making them add onto the numbers in both slots. With other stakeholder groups, this was not the case to the same extent. Moreover, some of the stakeholders labelled as 'researchers' held a strong background either as civic sector experts or state officials, making them able to view the issues from various standpoints in their responses. See Appendix 1 for more information on the logic of the matrix.

Table 2. Threat scenarios^a.

	Questionnaire 1	Questionnaire 2	Questionnaire 3
Security risks of foreign ownership 2027	Acquisitions of technology companies (mobile game company gathering personal data)	Transfer of real estate ownership (Arctic tourism and sports facilities)	Venture capital investments in start-up companies (quantum computing)
Supply disruptions 2030	Discriminatory practices limiting access to pharmaceuticals (antibiotics)	Sanctions on green transition materials, components and minerals (wind energy)	Political retaliation limiting access to components needed in critical services and industrial processes (water treatment)
Cut-offs of critical high-technology 2035	Maintenance of advanced military technology (F-35 fighter jets)	Cybersecurity of advanced health technology (home dialysis machines)	Supply of chemicals for advanced research and development activities (helium)

^aThe table is also presented in Kauppila and Sinkkonen (2023a).

The scenarios fell into the previous section's three risk categories, and they depicted either a shock or a risky situation with a high likelihood for shocks (Table 2). While great powers' control over resources was a core element in each narrative, we aimed at scrutinising a wide variety of causes and triggers through which great powers' actions can intentionally or unintentionally expose small and medium powers to situations that reduce their economic security. Bearing in mind that our selection of cases could not be exhaustive, we included causes ranging from sanctions to discriminatory trade practices. As states' liability to suffer costs due to great powers' actions varies not only nationally but within societies, we also selected different sectors of society as empirical scenes of each scenario (Appendix 2). Each alternative future was written into a comic art threat scenario with an everyday life situation as the main plot (Appendix 3). In tangible terms, they were inspired by real-life events, previous research (e.g. Panke, 2011; Pedersen, 2023; Thorhallsson, 2018) and insights of sectoral experts gained in 14 semi-structured interviews. Target years varied, allowing the panellists to 'practice' short- (2027), mid- (2030) and longer-term (2035) threats. Security risks of foreign ownership were events that could unfold soon, whereas the likelihood for the two other types of scenarios would grow as great power rivalry intensifies and China's technological prowess advances.

In most scenarios, China's control over resources was at the core of the setting, but there were also scenarios focusing on the competences of the United States or both great powers. With scenarios manifesting systemic interdependence – supply disruptions and cut-offs of critical technology – also the mutual relations and competition between China

and the United States were portrayed as important triggers. The stronger emphasis on China was a choice dictated by the key requirement of scenario-building: the panellists must find the narratives plausible. In a situation in which Finland was applying for a NATO membership and the United States was perceived possibly more favourably than ever, it would have been challenging to focus equally on harmful outcomes caused by both great powers.

The panellists shared their views anonymously, answers became visible in real time and original responses could be edited in light of the gathered knowledge. These features – anonymity, expertise, feedback and iteration – are crucial in disaggregative policy Delphi studies, which aim at producing a diverse set of elaborated views (Linstone and Turoff, 2002 [1975]; Tapio, 2003). The chosen application of the method differs clearly from the traditional consensus-seeking Delphi studies: the aim of stakeholder interaction is not to make the experts agree or align with each other but to produce more thought-out and justified views that have been debated and hence tested by one's peers (Tapio, 2003).

Anonymity, in particular, was viewed as a useful feature for the purposes of the research; most importantly, it allowed notable experts to speak out and disagree on sensitive issues without a fear of being labelled. Moreover, anonymity of Delphi studies is considered to mitigate the impact of a bandwagon effect, the tendency of individuals to align their views with those of others (Linstone and Turoff, 2002 [1975]).⁵ Also the logic applied in the exercise differed from conventional forecasting Delphi studies, which rely on participants' ability and willingness to anticipate complex future developments. While the benefit of this methodological choice was that it left the duty of forecasting to the research team drafting the scenarios, its key challenge was the inevitable 'lack of ownership of futures images' among the panellists (Zimmermann et al., 2012). In other words, the respondents had to accept the content of the scenarios as the starting point of the exercise, even if the narratives did not correspond with their own conceptions of the future. In our study, comic art enhanced the level of immersion and hence alleviated the problems arising from this dilemma. Moreover, we offered participants the opportunity to express their criticism about the exercise, as to minimise interference with the main task.

Overall, the response rates for all three rounds were high for a Delphi study: 92%, 78% and 87% of those who accepted the invitation logged onto the exercise platform. This was most likely a result of engaging each panellist through a phone call, personalised email or face-to-face invitation and sending out a large number of targeted reminders. Moreover, as underlined by the panellists themselves, the application of the method raised curiosity and motivated the experts to the task.

⁵It should, however, be noted that Finland has a small population, and few non-Finns speak fluent Finnish. For this reason, the pool of suitable experts for any specific Finnish-language Delphi panel is narrow. Moreover, given that many well-known experts have a highly distinct style of argumentation and writing, some panellists may not have remained completely unrecognisable to each other in the exercise.

Three ideal-typical worldviews on small and medium powers' economic security

In the following analysis, a data set of approximately 500 stakeholder comments⁶ is organised into three worldviews on economic security: competitive global market capitalism, integrationist multipolarism and protectionist small state realism. These belief systems reflect alternative readings on what small and medium powers' economic security is and how it can be enhanced. The worldviews were identified and constructed based on individual arguments instead of profiling respondents as representatives of ideal-typical worldviews. As such, they stand out as somewhat simplistic ideal-typical belief systems rather than expressions of real-life thinking, which is always more nuanced. In analysing the data, this became clear in that sometimes a single stakeholder comment reflected elements of at least two worldviews. Some respondents, for example, pondered two alternative strategies in one lengthy answer.

The approaches are compared by analysing their key differences, ranging from ideational basis to the role of technology (Table 3). In addition to the country-specific characteristics and methodological issues outlined in the previous section, the timing of the panel most likely shaped the respondents' views: the exercise took place in the aftermath of Russia's massive attack on Ukraine, from May 2022 to March 2023, at a time when also China's ambivalent stance on the war was a much debated topic both in Finland and internationally. Although the timing created a sense of national urgency and hence motivated the panellists, it also created a possible bias. In the construction of the exercise, this potential bias was considered by making the current Russia-related debates explicit in the textual backgrounders that accompanied each scenario. In this way, we sought to ensure that the panellists were aware of the dominant ideas that possibly coloured their thinking regarding China, too. Hence, the panellists were more likely to assess them critically when drafting their responses. In the last section of the analysis, we seek to highlight the contexts in which the bias might have been particularly strong.

Ideational basis

The identified worldviews reflect different stances on the fundamental dilemma of the idea of economic security: more extensive participation in the global market enhances one's

⁶The responses were given in Finnish. The excerpts included in the analysis are translated by the authors. The data is stored on the University of Turku server and the exercise platform with password-protection. It is not published at a depository, but the metadata (description of the data and the data-gathering process) is published at <https://etsin.fairdata.fi/>. Moreover, the comic art threat scenarios are published in their entirety at <https://sites.utu.fi/forac/en/raportti/>. Given the nature of the research problem, it was considered important to name the research team analysing the expert views, whereas opening the data for a broader research community was assumed to have a negative impact on the experts' willingness to join the exercise. The main reason for this was the practical reality of conducting Delphi exercises in a small country like Finland: the small pool of experts and their possibly distinct style of argumentation may risk making the panellists recognisable from the dataset (see Note 4).

Table 3. Key differences of ideal-typical worldviews on small and medium powers' economic security.

	Competitive global market capitalism: cost-effectiveness first	Integrationist multipolarism: equal balance between efficacy and mitigation of vulnerabilities	Protectionist small state realism: mitigation of vulnerabilities first
Ideational basis	Liberalism with overtones of laissez faire/libertarianism	Mixed economy with overtones of neoliberalism	Realism, mercantilism, economic nationalism with overtones of protectionism
Whose economic security/Primary referent objects	The state and companies	The state, companies and individuals	The state and nation
Outlook on risks of interdependencies	A 'normal' state of affairs	Call for increasing attention	Call for exceptional attention
Time orientation of risk management efforts	Present-looking	Anticipatory	Preemptive
Nature of risk management efforts	Efforts that 'make sense anyway', that is, increase effectiveness and quality	Efforts that enhance awareness and incentivise readiness improving practices	Mostly 'sticks', that is, controlling, banning and restricting; protectionist subsidies
Ideal source of wealth	Well-functioning global markets	Regional markets	National self-reliance in critical needs
Overseas partners	A global network of actors	Regional and other like-minded partners	Limited sub-regional partnerships
Role of technology	Improves efficacy and creates alternatives	Builds capacity	A tool of control and an avenue for protectionism
Coverage in the exercise	Most visible in the scenarios of security risks of foreign ownership, the least common approach	Most visible in the supply disruption scenarios, the most common approach	Most visible in the real estate acquisition scenario, second most common approach

susceptibility to vulnerability but creates efficacy through specialisation. The first worldview, competitive global market capitalism, leans towards efficacy in enhancing economic security. As such, it reflects the core values and ideas of the US-led liberal order: free and open economy, individual liberty, globalisation etc. In ideological terms, it is located at the liberal end of the liberal-mercantilist spectrum (see Buzan, 1991: 242–248), and it has overtones of *laissez faire*/libertarianism. Hence, it resists the idea of compromising or changing one's fundamental values even when navigating in the risk environment characterised by asymmetric and systemic interdependencies. In practice, this means that state intervention is either entirely overlooked or less oversight is suggested in the economy due to the high costs of security enhancing interventions. As one panellist proposed: 'hindering acquisitions through legislation will have a negative impact on Finland's competitiveness. On the contrary, investment processes should be streamlined'.

Proposing a minimal level of state intervention in enhancing economic security does not, however, necessarily mean that the need to mitigate vulnerabilities would be downplayed; risks can simply be tackled through other means. Companies are considered to have the most comprehensive knowledge of supply chains and stand as rational actors that should have 'the understanding that companies are not automatically sold to those that offer the most', as one panellist argued. Indeed, it is emphasised that economic freedoms come with duties, and 'not all responsibility in a society can be put on the shoulders of state officials', as the same expert continued. In other words, '. . . an entrepreneur has an ethical responsibility for their services and the consequences of the investment (moral > money. . .)', as another panellist framed it.

The second worldview, integrationist multipolarism, maintains an equal balance between mitigating vulnerabilities and seeking cost-effectiveness in enhancing economic security. The interventions of the state may, at times, prioritise tackling vulnerabilities over the best of the economic actors and national economy, but generally, these actions are limited in scope and do not alter the dynamics of the markets to a large extent. In other words, the worldview is located in the middle of the liberal-mercantilist spectrum: economic security is generally enhanced by liberal economic policies, but the state is responsible for intervening whenever a potential crisis is expected to critically risk the wellbeing of its citizens. In practice, this means that the state may oblige companies to certain statutory duties, such as stockpiling of antibiotics. As such, the worldview reflects the ideals of a mixed economy, welfare state and close state-business collaboration. For the proponents of this worldview, state regulation is often viewed to be dictated by necessity, either due to information gaps, lack of resources or hard realities of business, as three experts underlined:

We should be able to shift a lot of responsibility onto individuals, but our awareness is not really up to all this freedom.

If one is to interfere with economic incentives alone, the resources of a small state soon appear to be insufficient. . .

Companies should reach a situation in which the exits of one supplier or supplier country . . . do not let the entire business collapse. This is difficult for small newly established businesses and an extra cost for big companies, which is why it may be that certain fields should perhaps be encouraged to diversify through regulation.

The third belief system, protectionist small state realism, is clearly located at the mercantilist end of the liberal-mercantilist spectrum. In reflecting the eroding solidarism and rising nationalism among the members of the international system, the worldview prioritises mitigation of vulnerabilities over cost-effectiveness in enhancing economic security. In a realist spirit, national security is viewed as the highest foundational value and hence the state's actions in its name may override freedoms of economic actors and individuals (see Jackson, 2000: 170–172). Economic dependencies, as such, are viewed as questions of national security, and the risks of asymmetric and systemic interdependencies are proposed to be tackled through measures that compromise or even abandon some of the key principles of liberal capitalism. Most fundamentally, this means that the idea of an open economy is questioned:

Is it really up to date to allow all kinds of economic activities to everyone, when we see what kind of destruction Russia has caused in Ukraine and how China clearly consolidates power. . . ?

While economic nationalism is clearly a guiding light of this approach, some of the interventionist arguments are also protectionist: they favour state intervention to boost domestic industries. Indeed, the need to tackle interdependencies can also justify changes that limit foreign actors' role in the national economy, as one panellist proposed:

The Finnish authorities should expand the scope of the *Act on the Screening of Foreign Company Acquisitions*. We produce a lot of critical technology, which is of interest to foreign companies and investors. This is not only about data security or supply security but also about a possible 'new Nokia' gliding into foreign ownership.

Whose economic security

Another difference between the worldviews is the prioritised referent objects of economic security, that is, the entities that are protected (Buzan and Wæver, 1998). All three belief systems view the state as a key referent object of economic security. Hence, it is the economic conditions for the survival of the state that the worldviews are concerned with. Yet as competitive global market capitalists and integrative multipolarists value the efficacies of capitalism to a great extent, providing economic conditions for the survival of companies is emphasised, too. Hence, also the firm constitutes a prioritised referent object of economic security for them. In comparison with the proponents of the two other worldviews, integrative multipolarists also explicitly emphasise the individual as a referent object: interventions are only made when individuals' wellbeing calls for it. As for protectionist small state realists, nation is an additional prioritised referent object: drastic interventions, including extensive stockpiling, are proposed to make the people survive in exceptional circumstances.

It is also clear that context matters is defining which referent objects of economic security are prioritised over others. In the exercise, this was seen in that, for example, integrative multipolarists clearly emphasised the need to secure the survival of individuals more than that of the state when discussing supply disruptions on antibiotics. For protectionist small state realists, the nation stood out in this context, too. As for critical high technology cut-offs affecting the maintenance of F-35 fighter jets, the majority of the respondents were most concerned with the survival of the state – no matter what worldview their answers represented. In discussing the security risks of foreign ownership, the proponents of all worldviews emphasised their prioritised referent objects more equally.

Outlook on risks of interdependencies

The nature of the risks of asymmetric and systemic interdependencies as very real vulnerability consequences is acknowledged across all three worldviews. However, the outlook on them varies. For competitive global market capitalists, such risks are a ‘normal’ state of affairs, something whose existence must be accepted if one is not to compromise liberal values, as one panellist argued: ‘in an open society, it is not possible to mitigate all risks, although reducing their number is desirable’. Such an outlook reflects the original nature of liberalism as a programme for desecuritisation: an attempt to reduce the number of issues viewed as threats (Buzan and Wæver, 1998).

The competitive global market capitalists, however, also underline that China is not the only potential danger; economic security may also be reduced due to actions taken by large companies and liberal democracies themselves, as one panellist put it:

China is often viewed as scary, and stereotypically as a data collector. It would be more important to note how Facebook (Meta) collects data on Finns in Finland and in Europe, how much data they possess and how much they already use and sell it. For me, e.g., Facebook will be a bigger threat in 2027.

Moreover, competitive global market capitalists remind us that driving ‘classification into “dangerous” countries and others’ is an impossible task, as the situation changes constantly.

The integrationist multipolarists underline that the world order is changing and, consequently, adapting to it calls for taking a new outlook on risks of interdependence. In addition to pandemics etc., some – but certainly not all – economic transactions related to authoritarian states pose particular dangers, which must be considered in crafting state interventions:

. . . not all Chinese investments should be blocked. A risk assessment should focus on evaluating the investment’s larger significance for Finland’s national security and supply security.

Protectionist small state realists, in turn, highlight the particularity of the ‘authoritarian threat’. In a pure act of securitisation, they hence construct the risks of asymmetric and systemic interdependencies as something that call for exceptional attention and

justify extraordinary responses (Buzan and Wæver, 1998) as one panellist summarised it in the context of the weaponised wind power dependencies:

Energy self-sufficiency and independence of Finland (and the West) from China (and Russia) are existential questions. Every step toward these aims reduces the chances of autocratic leaders to decide upon the future of us and our children.

Time orientation and nature of risk management efforts

Since competitive global market capitalists view the risks of asymmetric and systemic interdependencies as a normal state of affairs, the nature of the proposed risk management efforts is not different from actions that ‘make sense anyway’ in a capitalist system. This means that existing structures are made more efficient and resilient. Hence, in practice, there is no need for drastic just-in-case changes but efforts that equally enhance the current level of cost-effectiveness. Most importantly, competitive global market capitalists emphasise correcting shortcomings that prevent businesses from thriving and markets from functioning in a healthy manner. For example, the panellists argued that companies should run supply chain stress tests, stockpile some key components and improve their cybersecurity practices. In addition, regulation should be lowered to attract all kinds of foreign investments since it allows the target of the investment to make responsible choices. Patents of critical products should be dissolved, if need be, and limited resources – including antibiotics and natural resources – should be used rationally. Risk awareness should be enhanced through free media rather than through state-led efforts.

Given that integrationist multipolarists acknowledge that liberal open economies – such as Finland – could now face shocks that are particularly dangerous, they focus on building capacity to act if need be. However, they hold the view that the cost-effectiveness created by the market should not be completely abandoned just in case. Hence, the time orientation of their risk management efforts is perhaps best described as anticipatory. In essence, this means that integrationist multipolarists favour efforts that enhance awareness, incentivise readiness improving practices across the society and softly guide economic actors towards interdependencies that are less risky. In concrete terms, the efforts proposed in the exercise included, for example, state-led attracting of investments, data gathering on foreign ownership and developing (international joint) funding structures that enable domestic technologies to emerge. The focus is hence primarily on ‘carrots’ instead of ‘sticks’.

Since protectionist small state realists underline that the authoritarian threat is existential and that risks of asymmetric and systemic interdependencies call for exceptional attention, they must be mitigated to a degree that the likelihood of potential dangers is actively reduced or eliminated. In other words, the proponents of this worldview advocate for ‘a closure against things perceived as threatening’ (Buzan and Wæver, 1998). The time orientation of interventionist risk mitigation efforts is hence preemptive: costly actions are taken based on the possibility that future crises materialise (see Anderson, 2010). These efforts are often ‘sticks’, that is, they focus on controlling, banning and restricting, and they may also have a strong protectionist twist. Hence, they violate the normal rules of politics in liberal capitalist states (see Buzan and Wæver, 1998). In concrete terms, the exercise’s protectionist small state realists proposed efforts that may

include legislative tightening on foreign ownership, subsidies to domestic production and extensive stockpiling.

Ideal source of wealth and overseas partners

Whether wealth should ideally come through self-reliance or a division of labour and economies of scale constitutes a key difference between the worldviews. These preferences also clearly reflect alternative readings of the ability to rely on the other actors of the international system in managing risks of interdependencies. Competitive global market capitalists continue to adhere to the value of globalisation and maintain a high level of trust in international collaboration. Therefore, functioning global markets suffice and suitable partners for enhancing economic security can be found anywhere, including in China. By expressing a persistent belief in the ideas of free trade and open economy, some of the proponents of this worldview in our panel even viewed the Covid-19 pandemic and Russia's war in Ukraine as evidence of no need to turn inwards:

Global supply chains have enabled the world to spin around under these exceptional circumstances . . . global supply chains have been rather resilient, and disruptions have focused, above all, on specific parts of them.

The proponents of integrationist multipolarism, in turn, express a medium level of trust and lean towards regional self-reliance in the most critical goods and services. This reduces dependencies in critical products and yet saves the costs of reorganising economic activities at home. For Finland, the EU member states constitute the key overseas partners in, for example, securing a sufficient supply of antibiotics and coregulating data gathering. Moreover, other like-minded partner countries can be relied on in re-establishing supply chains and producing high technology, a field in which some panellists emphasised the need to form a 'bloc of techno democracies'. China collaboration should be limited but can still be continued in certain sectors.

Finally, protectionist small state realists have a low degree of trust in International Relations and a corresponding desire for a high-level of self-reliance in critical products. Often this aim overrides any other ideals, including green transition, as one panellist argued: 'energy production and its maintenance should be secured to be self-sufficient in all situations . . . no matter how energy is produced'. Although the arguments expressing this belief system in our panel were highly sceptical of the EU's ability to enhance preparedness together because of the Covid-19 failure, the high costs of reaching self-reliance were acknowledged. As a solution, some panellists viewed such contributing sub-regional arrangements as the Nordic joint stockpiling and production of medications as a tolerable option: 'Regional (Nordic) collaboration could ease the burden of costs and pave the ground for new companies without amplifying political, logistical and moral risks'. China collaboration, in turn, was proposed to be limited to the least risky fields or completely ended.

Intriguingly, choosing not to have partners or coregulate emerging technologies but to 'go alone' can also positively influence other like-minded countries' ability to mitigate the

risks of interdependencies in the long term – while contributing to the national economy through the logic of protectionism. As one panellist argued, Finland could adopt a tighter than average legislation on digital data security by, for example, setting regulations on operating systems used in Finland. This would encourage domestic innovations and give rise to new growth industries (‘new Nokias’). Although foreign actors’ ability to enter the market would first be limited due to tighter legislation, such safer products could soon be popularised in other like-minded countries, too.

Role of technology

The proponents of competitive global market capitalism view technology as a means of enhancing the efficacy of businesses and markets. They also underline that technology can create alternatives for critical products – without relying on state intervention. In our exercise, the panellists proposed, for example, technologies to recycle critical minerals since they can make wind power parks and water management facilities more cost-effective and less prone to supply cuts. Moreover, they argued that the risk that data leaks to a foreign owner of a technology company can be mitigated through encrypting technologies that prevent applications from, for example, gathering real location data.

The integrationist multipolarists believe in the power of technology in building capacity to act if need be. For example, one panellist proposed setting up state-owned 3D printing facilities for producing different spare parts and components during crises. Many experts also considered national investments in research and development activities to be crucial since they ensure that sufficient domestic knowledge base exists if a crisis occurs.

Protectionist small state realists, in turn, harness technology to a tool of control and oversight. These control technologies can also be viewed through a protectionist lens, as a way to enhance national competitiveness: ‘Finland should also invest heavily in counter espionage, which at best could emerge as a new growth industry’.

Coverage in the exercise: visibility of the worldviews in the scenario responses

Although each approach was visible in all nine sets of responses, there was variation in their case-by-case coverage. Competitive global market capitalism was not the most common worldview in any scenario, but it was clearly more visible in the responses dealing with security risks of foreign ownership. This suggests that perceptions of asymmetric interdependence remain more positive than those of systemic interdependence. In other words, it is still considered possible for small and medium powers to rely on foreign investments – even Chinese capital – to seek cost-effectiveness. With risks related to systemic interdependence, that is, supply disruptions and cut-offs of critical high technology, the threat perceptions were stronger, and few panellists prioritised efficacy over mitigation of vulnerabilities.

Integrationist multipolarism was the most common worldview in responses dealing with supply disruptions, that is, risks created by not only asymmetric but also systemic

interdependence. This tendency may suggest that systemic interdependence is perceived to force states to take such precautionary steps that in other contexts would seem excessive. Moreover, this worldview was clearly the most visible line of argumentation in the entire panel across all cases; there were no sets of responses with integrationist multipolarism as the least dominant approach. This is unsurprising since the two other worldviews are rather radical. Moreover, in many of the scenarios the depicted crisis was only about to unfold, or its impact would be somewhat limited. Had the panellists been presented with full-blown chaises, the responses may have been more radical.

Protectionist small state realism was more visible when pondering responses to the risks of foreign real estate transfers than in other cases. This reflects the fact that territorial integrity is perceived as a fundamental component of national security, and hence related vulnerabilities can be justifiably tackled with exceptional means unacceptable in other contexts. Protectionist small state realism was also the second most common belief system in responses dealing with supply disruptions, which suggests that several stakeholders began to consider systemic interdependencies dangerous enough to justify drastic actions.

It is also likely that Russia's full-scale attack on Ukraine at the time of conducting the exercise made several panellists lean towards protectionist small state realism either in the entire exercise or in pondering individual scenarios. At least some panellists expressed rather liberal views in other scenarios but favoured strong state intervention in real estate ownership. This mostly likely reflected a broader trend in Finnish thinking: as the risks of Russia dependencies materialised across Europe, the Finnish stances on Russian ownership of real estate and mutual trade radicalised. Although the real estate transfer scenario and other scenarios in which this worldview was most visible dealt with China, it is likely that these negative – even hostile – perceptions of Russia were projected into its partner, too.

Conclusion

Asymmetric and systemic interdependencies are increasingly viewed as security risks that could materialise as harmful outcomes for small and medium powers. Due to systemic factors and their relative power position, weaker actors often cannot adjust to these vulnerability consequences with the means available to great powers. In identifying three ideal-typical worldviews from Finnish stakeholder data, this article has provided food for thought for understanding the considerations and tensions that small and medium powers encounter when seeking to enhance their economic security in the face of security risks of foreign ownership, supply disruptions and critical high technology cut-offs.

For the proponents of competitive global market capitalism, economic security is about prioritising cost-effectiveness over mitigation of vulnerabilities. Adjusting to the potentially harmful outcomes of asymmetric and systemic interdependencies is simply possible by streamlining liberal market economies. In a global environment increasingly dominated by protectionist arguments, such a belief system can almost be considered a form of ideological resistance. Integrationist multipolarism balances between liberalism and mercantilism, that is, favouring both a partial surrender to the global market and a

reduction of interdependencies in recalculations of economic security. Protectionist small state realists, in turn, put ‘all in’ to avoid the kinds of vulnerability consequences that, for them, represent existential threats. In proposing some legislative changes that compromise the foundational values of liberal democracies, they would make changes that also mould the identity of the state.

There were also outlying arguments that did not fit to any of the three main world-views as well as entire missing belief systems. It is possible to adjust to potentially harmful outcomes of interdependencies through granting Indigenous peoples a stronger say on their land and by making decision-making more inclusive. Indigenous people possess extensive knowledge of local conditions, and they are by default critical of such issues as selling local land, which can improve decision-making and related risk management. It was also argued that curbing conspicuous consumption of resources would reduce risks associated with interdependencies, as by using limited resources for need instead of greed capitalist structures would become more efficient and some problems associated with supply chain vulnerabilities could be avoided. These proposals were somewhat parallel with the competitive global market capitalists’ idea of managing risks by becoming a ‘better’ version of oneself. The above-mentioned outlying suggestions make democratic societies function more effectively in all circumstances. As for missing belief systems, no Marxist views contesting the capitalist markets as a provider of economic security stood out in the data. Such a worldview would emphasise the class as a referent object of economic security.

A key aim of this article was to open the ground for further theorising of small and medium powers’ strategies to adjust to economic interdependencies during an age of rapid technological, societal, and power political transformation. While the need for states to balance between reduction of vulnerabilities and economic gains of interdependence has been recognised and conceptualised decades ago (Buzan, 1991: 236, 241–242), it is necessary to consider time-specific features when pondering acceptable levels of interdependencies. By bringing insights from timely examples of and stakeholder discussion on asymmetric and systemic interdependencies, this study has updated and deepened the analytical discussion on economic security with such temporal dimensions. At the same time, it has demonstrated that Buzan’s original conceptualisation has stood the test of time. We also wish to highlight that relative economic security is a moving target, requiring fast adaptive measures and continuous theorising especially due to deepening great power rivalry and rapid technological development. Two years after the data collection we can already see some small changes in the relative importance of competences of great powers presented in Table 1. For example, the relative importance of supply chain dominance in the field of critical minerals has slightly increased after further export restrictions. Also core technology control appears to constitute an even more critical competence, due to the growing role of Chinese companies as standards-makers and technological leaders from whom others hope to gain technological transfers.

To achieve the goal of theorising on small and medium powers’ strategies, we have provided two matrices proposing abstract categories and variables that have the potential to function as a useful starting point for prospective studies. The first matrix scrutinised the potential harmful outcomes of asymmetric and systemic interdependencies on small

and medium powers in the face of great powers' competences. Clearly, the matrix does not offer an exhaustive take on all related competences and outcomes. Had the stakeholder exercise been more extensive, it would have been possible to include, for example, great powers' standards power, which can be seen in their vast resources and ability to dictate the development of both official and de facto standards. The potential harmful outcomes of this form of interdependence on small and medium powers are, for example, opportunity losses, as standards-makers are at the forefront of technological development and create the markets (Heikkilä and Rajavuori, 2024). Expanding the matrix is a suggested topic for prospective studies.

The second matrix suggests variables that differentiate ideal-typical worldviews on small and medium powers' economic security. While these categories emerged as a result of an inductive analysis, they were also in line with existing literature on economic security. Most notably, Buzan's take on the idea and concept is visible in the categories. Similarly to the matrix on competences and harmful outcomes, further research can expand this typology.

As mentioned in the previous sections, the Finnish empirical setting, research design, methodological choices and the timing of the stakeholder exercise all affected the quality and broader usefulness of the findings. Finland's distinct history and practices of crisis preparedness inevitably coloured the respondents' views. Had the exercise been organised in a country without a strong state-enterprise collaboration in preparing for market disturbances, the findings may have been rather different. In a similar vein, risks of foreign ownership may have been perceived differently in a country that has not been at war with its militarily stronger neighbour. Moreover, the exercise's timing in the immediate aftermath of Russia's full-scale attack on Ukraine most likely had a more drastic impact on the data in the Finnish context than in many other countries. While the war was a critical motivational factor for the panellists, it also most likely sharpened the panellists' views on interdependencies in general and those related to Russia's partner China in particular.

In terms of research design, the selections made in the above-mentioned typology on competences and harmful outcomes coloured the findings, too. For example, if great powers' standards power had been included in the exercise, the discussion on tackling opportunity losses could have revealed additional worldviews. When it comes to the subcategories of harmful outcomes, that is, the topics of the scenarios, the case selection inevitably affected the data, too. For example, if 'killer acquisitions', buyouts eliminating potential innovations or companies, had been included, protectionist small state realism may have emerged as a more visible category. For prospective studies adopting a similar research design, Thorhallsson's (2018) shelter theory offers various additional elements to be used in building threat scenarios.

As for the dominance of China-related scenarios, most likely the increasingly negative Western perceptions of China provoked stronger responses than may have been the case with the United States – at least at the time of running the exercise. This could be different in the current environment characterised by President Trump's policies, and conducting a more US-focused exercise would be a fruitful idea for prospective studies. The slight overrepresentation of researchers as panellists, in turn, may have made idealist views more common, as researchers in general do not need to think along the lines of executing things – unlike state officials and businesspeople. Moreover, the comic art format affected the data by possibly making some respondents share more provoked and emotional views

than they would have in response to a different set of scenarios. For example, more report-style non-visualised scenarios may not have activated respondents' emotional level to the same extent. Also, the fact that the panellists had to respond to scenarios whose content they did not necessarily agree with ('lack of ownership of futures images') may have sharpened their expressions.

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Ethical considerations

The participants of this study are over 18 and the research design poses them no threat or harm, as the data are anonymised. According to The Finnish National Board on Research Integrity, and based on an evaluation discussion with the University of Turku's Data Protection Office, no formal ethical approval is required for a study that adheres to the principles of the Helsinki Declaration, as is the case with this research.

Consent to participate

All interviewees provided written informed consent prior to participating. All stakeholder panelists provided informed consent on the online platform before responding to the actual survey.

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Data availability statement

The ForAc Project's metadata (description of the data and the data-gathering process) is available at <https://etsin.fairdata.fi/>. Moreover, the comic art threat scenarios are published in their entirety at <https://sites.utu.fi/forac/en/raportti/>.

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Liisa Kauppila is a Researcher at the Arctic Centre, University of Lapland and Centre for East Asian Studies, University of Turku. Her former projects at the Finnish Institute of International Affairs and Turku University have focused on China's economic engagement in the Arctic and Nordic countries. She combines methods of Futures Studies with IR in her work.

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Appendix I

Composition of the stakeholder panel^a.

		Research	Business	Civic sector	Public sector	Decision-making	Citizens
Competences of great powers	Supply chain dominance	6	2	2	6	2	1
	Core tech control	8	6	4	5	3	1
	Investment leverage	7	4	2	8	2	1
Vulnerabilities of Finland	Supply disruptions	6	3	3	4	2	1
	Cut-offs of critical high technology	6	6	4	4	4	1
	Security risks of foreign ownership	5	5	3	7	2	1
1st questionnaire	Pharmaceutical industry	2	2	1	1	1	1
	Game industry	1	3	1	1	1	1
	Defence industry	3	3	2	4	2	1
2nd questionnaire	Real estate industry	2	1	1	1	5	2
	Wind power industry	2	3	1	3	2	1
	Health technology industry	2	2	2	2	1	2
3rd questionnaire	Quantum computing industry	4	2	3	2	1	1
	Water management industry	2	2	1	1	3	1
	Research and technology industry	9	1	3	2	2	1

^aThe table also appears in Kauppila and Sinkkonen (2023b).

Many panellists could have represented various stakeholder groups of the horizontal row. In this matrix, they were, however, placed according to their profile instead of institutional affiliation because they were instructed to share their personal views in the exercise. Most panellists had knowledge of various issue areas of the vertical row, and hence they were located in multiple slots.

Appendix 2

Key variables of threat scenarios.

	Tangible harmful outcome	Nature of threat	Cause from an interdependence perspective		Specific cause/trigger	Sectors of society potentially affected	Competences of China/United States
			Great powers' control over resources	Great powers' ability to affect outcomes			
Scenario 1: Gaming company acquisition	Possible misuse of personal data	Looming	x	x	Liberal investment environment, fuzzy and non-transparent ownership structures	Technology	China
Scenario 2: Antibiotics supply crisis	Supply cut of a critical medicine	Materialised	x	x	Discriminatory trade practices due to collaboration with a sheltering great power, simultaneous external events cutting a concentrated supply chain	Healthcare	China
Scenario 3: F-35 maintenance dependencies	Lowered defence capabilities	Materialised	x	x	Fluctuations in sheltering great power's domestic politics	Defence	United States
Scenario 4: Lapland real estate transfer	Possible dual use of premises, for example, intelligence and location gathering	Looming	x	x	Great power utilising smaller power's territory for national security purposes	Property	China
Scenario 5: Wind power supply crisis	Possible slowing down of green transition	Looming	x	x	Sanctions imposed due to other union member state's bilateral relations with a great power	Energy	China
Scenario 6: Home dialysis machines cyberattack	Debilitated life-supporting devices	Materialised	x		Malicious third-party hacking high-tech controlled by a great power	Healthcare	China
Scenario 7: Quantum computing portfolio investment	Talent exodus, industrial espionage	Materialised	x	x	Liberal investment environment, great powers' dominance of the most advanced technology	Technology	China
Scenario 8: Water supply and sewage crisis	Possible cuts in technologies of critical services	Looming	x	x	Regulatory/counter-sanctions resulting from great power frictions between a sheltering power and a competing great power	Water supply	China/United States
Scenario 9: Helium supply shortage	Impeded research and development capability	Materialised	x		Non-great power-related external events combined with great powers' dominance of limited resources	Research and development	China/United States

Appendix 3

News
1 Feb 2030

Political retaliation and preferential practices:
Antibiotic reserves at critically low levels in Finnish hospitals

HEW... HOME AT LAST!

THANKS, TURN ON THE TV... AND SWITCH ON THE SAIUNA!

ok, Sai!

This is Plus News Finland, good evening!

Our top story today: Finnish hospitals are struggling with critically low reserves of the vancomycin antibiotic, which is commonly used to treat illnesses such as pneumonia and blood poisoning.

In recent years, vancomycin has become more important due to the spread of antibiotic-resistant strains of bacteria. The Chinese-Indian supply chain for vancomycin was disrupted in last July following an explosion in a Chinese factory.

Since December, Finnish hospitals have been supplied from the National Emergency Supply Agency's reserves.

If the availability of antibiotics does not improve, commonly curable diseases will soon threaten human lives. There is also a risk of considerable decrease in surgical operations as the vancomycin shortage has also increased the demand for antibiotics used in surgeries, contributing to their supply disruptions as well.

Next up, we have The Daily Debate, in which our commentators tackle the situation.

The antibiotic industry has for a long time concentrated in the China-India axis due to the small profit margins. Western companies produce medicines for chronic diseases. We should have directed more public funds to our domestic or the EU's internal antibiotic production long ago.

In my opinion, we should have changed our public bidding rules already at the beginning of the 2020s to support the diversification of production.

Back in 2020, the Commission also encouraged the development of the EU's own strategic medicine stocks to support the member states' stocks. If this had been established successfully, then...

Now look, let's not forget that Chinese hospitals have no vancomycin supply issues – it is only that its export is restricted strictly to China-friendly states! As an EU member state, Finland is suffering from the consequences of these restrictions.

You could say that the EU's human rights criticism of China and its close relationship with the United States are now taking their toll.

YEAH I'M HOME FROM WORK. HOW'S IT GOING AT THE HOSPITAL? IS MIRA COMING HOME TODAY?

...HUH? BUT WASN'T IT SUPPOSED TO BE SOME THING THAT'S EASILY TREATABLE?

WHAT DO YOU MEAN THERE'S NO MEDICINE AVAILABLE?

Dear experts, how could this situation have been avoided?

Example comic art threat scenario.