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SMALL STATE INFLUENCE IN HIGH STAKES GAMES

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Small state influence in high stakes games

A case study on the Dutch reactions to American pressure for export controls on semiconductor equipment (SME)

NATHALIE B. W. VAN VEEN

Abstract

The Dutch company ASML produces internationally indispensable machines that manufacture advanced semiconductor chips. As a small state, the Netherlands are now caught between China and the US, which are both interested in securing ASML technology. The purpose of this study is to look at the small state strategies employed by the Netherlands in reaction to US pressure to adopt export controls and what the impact is of ASML as a critical node on the power sources of the Netherlands. It proposes that a critical node mostly affects a small state's intrinsic power (positively) and collective power (negatively). This will be researched by looking at official Dutch and American policy documents and interviews with government officials. It aims to add work on small state power and foreign policy strategies.

Introduction

Tensions between the United States (US) and China have been rising with the emergence of China as a global power challenging the USA's dominant position in the liberal international order. In reaction to this changing international stage, other states are recalculating their relations to China and the US. Small and middle powers aligned with the US face growing pressure to find a balance between economic profits of trade with China and its security as a result of having the United States as an ally. As global networks become increasingly weaponized, small states are facing mounting pressure to align their foreign and trade policies with those of the major powers (Poutala, Sinkkonen, & Mattlin, 2022, p. 82; Narlikar, 2021, pp. 296-297).

The semiconductor industry stands as one of the foremost battle grounds of the US and China. The Netherlands, a small power home to the critical company ASML, is right in the middle of it (Miller, 2022; Hijink, 2023). Semiconductor chips are essential to all computing devices. They provide switching logic and processing power and which is essential to any modern digital system such as computers, smartphones, and cars, but also defense products such as security cameras, drones and aircrafts. As such, the US is keen on preventing China from acquiring the most advanced versions of these semiconductor chips and the technology to make them. The Dutch company ASML has a monopoly on the technology for the semiconductor equipment (SME) that can make the most advanced of these semiconductor chips, which means that the Netherlands is essential to global production chains of these chips. This has attracted international attention to the company based in the small town of Veldhoven. China wants to secure access to the most advanced ASML machines, which the US seeks to prevent. How does a small state such as the Netherlands deal with such attention in its foreign policy?

When it comes to resources, small states are at a disadvantage compared to great powers. Therefore, when something vital to the great powers is at stake, it might be expected that the Netherlands are pressured into alignment with the United States, even though the Netherlands benefit heavily on open trade. However, as a growing body of literature is ascribing to, small states are not powerless. Small states in particular might be able to exert what Kamrava (2015) calls 'subtle power' to influence outcomes. Especially interesting is whether and how this subtle power can be manifested in such a salient issue, where the Netherlands are home to a critical node in a global value chain. The question central to this research is the following: what small state strategies did the Dutch government employ in

response to US pressure to control DUV equipment and how does having ASML as a critical node interact with these strategies?

This study proposes that the Netherlands tries to use a mix of intrinsic power, collective power and institutional power and that ASML mostly influences this dynamic by increasing intrinsic power, while it also poses a challenge to collective power. The results of the analysis will shed more light on the effects of big power competition on small power foreign policy options.

Although small powers have become more popular as a research topic, instead of only an object of great power's decisions, more work could be done on the sources and manifestations of influence for small powers. As mentioned by Toje (2011), small powers make up the majority of the world and are thus in itself a relevant topic. Now, when on the one hand the world has become more interdependent and great powers are more interconnected with small powers, but on the other hand rising tensions between China and the US lead to more bipolarity on the world stage, small power foreign policy gains new significance.

The structure of the remaining part of this study is as follows. First, relevant studies and results about small states are presented and discussed. Subsequently, a causal mechanism is proposed to show how small states' sources of power are translated into recognizable strategies. Next, a timeline is reconstructed from the moment EUV export was halted and discussions about DUV technology commenced which includes relevant events, official policy documents and interviews with government officials. Finally, it is concluded with a discussion of the results.

What are Small States?

Defining what exactly constitutes a small state¹ is a difficult task. The attention given to the influence of small states has been limited, despite its gradual increase. Moreover, part of defining small powers consists of defining power, which has been a divisive subject among IR disciplines (Long, 2017).

One frequently used measure for size is population (see for example Vital, 1967). Countries with a small population are often limited in absolute terms of resources compared to larger populated states, for example size of the economy, military and government. The drawback of using population, and indeed any tangible measure, is that any cut-off point would be arbitrary

¹ The words small states and small powers are used interchangeably throughout this study, see Long (2017).

and “based on convenience or political expediency” (Baldacchino, 2023, p. 20). For example, a state with a population of 10 million and another state with a population of 10 million and one are not different enough to justify labelling the first a small state and the second a large state. In addition, states do not always statically fit into one category. For example, in Alofs’ (2023) case study on Aruba, the Netherlands is categorized as the large state Aruba seeks to influence, but it would be counterintuitive to consider the Netherlands in the same size category as the United States and China. This problem persists wherever the line is drawn.

In other words, a large state is large when you compare it to another, significantly smaller state, and small when you compare it to a significantly larger state. Perhaps, the only exceptions are those at the very ends of the spectrum, that check all the conventional measures of either smallness or greatness. Think of China, the United States, and India or, at the other end of the spectrum, Andorra, Liechtenstein, and Monaco. Even then, however, there might be subsections where a smaller state excels and holds more influence over a larger state than the other way around (Baldacchino & Corbett, 2023).

In essence, size is about asymmetrical relationships (Long, 2017). Despite not being appropriate measures for demarcating size categories, countable variables such as population size, GDP and the size of the military can be used to measure asymmetry between two given countries. These variables are presented in **Table 1** for the Netherlands and the United States, to give a quick overview of the size differences between the two states. These asymmetries lead to economic and political disadvantages for small states such as limited resources, limited institutional capacity, a reliability on great powers for security, and a vulnerability to outside events (Kamrava, 2015).

That said, size and resources are not equal to power. Instead, in line with Kamrava (2015, p. 59) power is understood here as “the ability to affect outcomes and reach desired objectives”. Resources provide the necessary potential for power but are on its own insufficient and need (state) agency to be translated into influence (Kamrava, 2015). Furthermore, in addition to direct and targeted, power can also be indirect and diffuse, working through institutions and shaping preferences (Kamrava, 2015). As such, a growing body of literature argues that small states are not inherently weak and possess avenues to exert influence on foreign policy in diverse ways and are able to at least partly shape outcomes (Kassimeris, 2009; Long, 2017; Toje, 2011). Particularly in a more open, democratic, and interdependent global landscape, where (the threat of) force has become a less favorable and effective tool, and institutions all the more important, small states can use nontraditional forms of power (Long, 2017; Stiller, 2023). Of course, not all small states are equal and weak small states do exist.

Table 1*Comparison of US and Dutch Tangible Resources in 2020*

Variable	The United States	The Netherlands
Population	331,8 million ^a	17,5 million ^b
GDP ^c	21,1 trillion	909,8 billion
Military Expenditure ^c	778,4 billion	13,1 billion
Armed Forces Personnel ^c	1,4 million	41,000

Note. All currencies are in current USD, data are from United States Census Bureau (*n.d.*)^a, Centraal Bureau voor de Statistiek (Statistics Netherlands) (*n.d.*)^b and World Bank (*n.d.*)^c.

But in the same manner, some small states can overcome size constraints and consciously influence their outcomes.

According to Long (2017) small states typically draw strength from three different sources: intrinsic, derivative, and collective power. Intrinsic power stems from a state's internal resources, such as raw materials or strategic location (Kassimeris, 2009). Derivative power is derived from a relationship formed with a great power. Of course, this relationship gives leverage over third countries, but the relationship can also affect the great power. Finally, collective power is derived from collaboration with other small powers. A coalition of states or access to critical resources can empower small states to compel a great power. Long does note that issue salience has an effect on a small state's power relationship with a great power. In case of a direct confrontation about vital interests, a great power will often be able to override (a coalition of) small states.

In a case study on Qatar, Kamrava (2015) comes to a similar typology. He theorizes that small states can draw power from four sources. First, military and physical protection. This does not necessarily come from within the state itself. Most often, small states derive military and physical protection from larger states and / or the great powers. Security is a necessary condition for a small state's power, because it frees up resources that can be put towards influencing foreign policy. Second, marketing and branding efforts by the private sector lead to prestige, brand recognition and reputation. A third source of power is diplomacy and international relations. These relations allow small states to have a "proactive presence as a global good citizen", providing small states with a subtle and indirect form of influence (Kamrava, 2015, p. 61). And lastly, a small state with sufficient economic resources can influence foreign policy through purchases and global investments. When all of these sources

and manifestations of power are consciously coordinated, small states like Qatar hold ‘subtle power’, which Kamrava (2015) distinguishes from Nye’s (1990) traditional forms of power (hard, soft and smart power) as those are more visible types of power, whereas subtle power operates more unseen. Small states exert this subtle power to influence outcomes, often done through the grander strategies of forming alliances, norm entrepreneurship and hedging (Kamrava, 2015).

In another study, Long (2022) develops a typology for more specific manifestations of power when a small state finds itself wishing to influence a great power on a particular issue. Possible strategies are: (1) perseverance, under-implementation, foot-dragging, (2) problem redefinition, (3) agenda setting for salience, (4) finding mutual benefits, (5) extraversion, (6) agenda setting and new alternatives, and (7) maintaining status quo and seeking additional benefits. The effectiveness of these strategies is shaped by the characteristics of the issue at stake. More specific, they depend on policy divergence, relational issue salience and preference cohesion.

Before going into more detail about how different strategies are employed by the Dutch government, a bit more information on hedging is provided. This is particularly relevant in a scenario where the country finds itself caught between the United States and China. Moreover, hedging may not be as self-explanatory or extensively discussed in the literature compared to the formation of alliances and norm entrepreneurship.

Generally, small states have three options for their foreign policy strategy in the event of a rising power. First, to preserve their security, states could choose to ‘balance against’ a rising power. This line of thought originates from the balance of power theory and argues that states prefer to work together with other states to balance against a rising hegemon, out of fear that they could not trust that the rising hegemon stays benevolent towards them, and that it will be too late when the rising power has achieved hegemony (Walt, 1985, p. 5). Heightened threat perceptions, for example because of geographical proximity or offensive intention, make it more likely that a small state will choose to balance against a rising power (Walt, 1985; Kuik, 2008, p. 160).

Instead of balancing against a rising state, a state could also ‘bandwagon’ with it. In other words, they could work with, or crouch under it to avoid an attack on themselves, or to share in the profits of the rising power (Walt, 1985; Schweller, 1994; Kuik, 2008, p. 160). Regarding the US-China competition, this has been mostly taken to mean that states will either balance against China by forming closer alliances with the United States, or bandwagon with China (Toje, 2010).

However, either full bandwagoning or balancing is unlikely in the absence of an immediate security threat (Kuik, 2008, p. 160; Bloomfield, 2016, p. 260). Kuik explains that while bandwagoning is economically appealing, it is also politically undesirable and strategically risky. For a small state, it might result in unwanted interference and a loss of sovereignty (Kamrava, 2015). Balancing, on the other hand, has strategic disadvantages because it could be seen as a provocation undertaken against the rising power. Additionally, it could result in a loss of trade with the rising power. Because the international power structure is unpredictable, it is very risky to develop “too close or too distant a relationship with any of the major powers” (Kuik, 2008, p. 164). Toje (2010) further points out that ‘picking a side’ is more dangerous in a multipolar system than in a unipolar system. More often states will choose a hedging strategy. Instead of picking a side, hedging is a strategy in which a state pursues relations with both great powers. By combining return-maximizing on the one hand and risk-contingency strategies on the other “an actor seeks to offset risk by pursuing multiple policy options that increase the likelihood of a beneficial result from a range of different outcomes” (Toje, 2010, p. 185; Kuik, 2008). Risk contingency strategies can range from simple communication to intensive ties with the great power’s adversaries (in this case China) (Kamrava, 2015).

Theory

Drawing upon the theories outlined above, this thesis proceeds to posit a causal framework to understand how the specific characteristics a critical node in a global value chain (GVC) shape the Dutch reaction to the American pressure for export controls within the wider context of small state foreign policy strategy preferences. This framework proposes that while a small state’s agency is weakened by a loss of collective power, it is strengthened by its increased intrinsic power. First, however, follows a brief discussion of ASML and its unique importance in the unfolding ‘chip war’.

ASML and the Chip War

The semiconductor industry is currently one of the most important economic sectors in the world. Semiconductors are manufactured chips that deliver computing power. All computing devices today need semiconductors to function (Miller, 2022). Examples are personal computers, laptops, smart phones, but also military products such as aircrafts, drones or security cameras. The industry benefitted greatly from globalization and free movement of

goods, resulting in specialization by a few large firms, which has created dependencies in the global value chains (Miller, 2022). However, rising tensions in the world, especially between the US and China, are slowly eating away at the benefits of globalization. Both countries are eager to secure products and technologies that are vital to their national security. Access to the most advanced chip technology, is access to more advanced technology in general, and thus arguably to more power, whether economic or military. The production chain of these microchips is dispersed over the entire world. However, all of the critical production firms are based outside of China and in the US, or states generally perceived as US allies, leaving China to spend more money on importing microchips than on oil (Miller, 2022). China is trying to develop its own semiconductor technology, in order to reduce its dependency on the United States (Miller, 2022). The United States, meanwhile, is trying to stay one step ahead of its rivals, China in particular (Hijink, 2023; Miller, 2022). This dynamic has unfolded into a chip war, reminiscent of the space race during the second half of the twentieth century.

The most advanced semiconductor chips currently on the market are produced with EUV-technology. The machines equipped with this EUV-technology are mainly produced by a single company which is based in the Netherlands: ASML. Through both patents and experience, ASML holds a monopoly on EUV technology. Consequentially, the Netherlands is home to a company that is critical to a global value chain. Hence why it is referred to here as a critical node in a network. On top of that, the semiconductor GVC is one of great political and economic importance. It is then not surprising that ASML has attracted the attention of the great powers.

In 2022, the United States implemented export restrictions of DUV equipment to China for which it sought cooperation from the Netherlands on these export controls. Without the support of the Netherlands in curbing ASML's exports, after all, American controls will be less effective (Allen & Benson, 2023). As the Netherlands is one of the most Atlantic oriented states in the European Union and depends on the United States for security cooperation, it will likely have trouble refusing the US. However, following the American example does come with some disadvantages. As a small state the Netherlands depends heavenly on open trade and thus it will be cautious to restrict it any further than necessary. China is the Netherlands' largest trading partner in Asia (Ministerie van Buitenlandse Zaken [Ministry of Foreign Affairs], 2019). Exports to China amounted to €20,1 billion in 2022 and imports to €61 billion in that same year (Rijksdienst voor Ondernemend Nederland [Netherlands Enterprise Agency, RVO], 2023). As indicated by the literature on small states, small states often prefer to maximize their profits as well as their security by executing hedging strategies. In the same manner, the

Netherlands will try to hedge between enjoying the security of cooperation with the US and maximizing trade with China.

Challenges to Foreign Policy Influence

It is important to recognize that the US is not solely interested in securing access to ASML equipment, but also aims to exclude China from it. As such, the preferred outcome for the US is full cooperation from the Netherlands. As a consequence, the US will exert pressure on the Netherlands to align with its interests and bar China from advanced ASML exports. Given the immense leverage at the disposal of the US, the Netherlands may find itself compelled to comply. Alternatively, China stands to gain the most from unrestricted access to all ASML machines and has demonstrated a general willingness to circumvent international rules and regulations to attain its objectives. This raises national security concerns for the Netherlands and could prompt them to seek greater security cooperation with the United States.

In addition to a security dependence, as a small state the Netherlands also deal with institutional capacity constraints, for example in the form of a less advanced bureaucracy due to size or budget constraints. One potential consequence is that the Netherlands rely on the American government as an information source. Without sufficient influence, these dynamics will push the Dutch foreign policy strategy away from hedging and more towards balancing.

Furthermore, the unique position of ASML means that other European Union member states do not encounter the same challenges as the Netherlands. Consequently, they may be less inclined to formulate explicit policies regarding semiconductors to avoid arousing China's discontent. This means that the Netherlands will lose its collective power on this issue and will be more vulnerable to great power pressure, reinforcing the dynamics explained above. As Kassimeris (2009, p. 93) writes: "[...] a balance of power and a degree of interaction with other states is required, particularly, when a small power becomes the 'apple of discord' between two greater powers, thus facing the threat of becoming partitioned".

Sources of Power

But small states are not powerless. ASML's importance increases the issue's salience and US efforts are likely to be exerted to ensure compliance from the Netherlands. In situations of heightened issue salience, small states face increased difficulty in influencing outcomes (Long, 2022). Nevertheless, ASML, as a producer of globally crucial machinery, also serves as a source of intrinsic power for the Netherlands. The machines manufactured by ASML are

sought after by both the United States and China. Because ASML is headquartered in the Netherlands, ASML is subject to Dutch policy. Therefore, Dutch policy on semiconductor technology is of interest to the US and China. Access to ASML's SME is a powerful bargaining chip affording the Dutch government greater autonomy in shaping negotiation outcomes to its benefit, rather than being compelled to align with one of the major global powers.

In addition to serving as a bargaining tool, ASML's presence in the Netherlands contributes to its intrinsic power in two other ways. First, it can increase self-confidence, both in public speeches and during negotiations. As seen in the case study on Qatar, self-confidence can be a subtle way in which to influence outcomes (Kamrava, 2015). Self-confidence can result in a state taking on a larger role than "its stature and size would warrant" and increasing international prestige (Kamrava, 2015, p. 57). Secondly, ASML holds a monopoly on advanced technology that requires specialized knowledge. By claiming that the Netherlands is better positioned to determine the specifications of potential export controls, the Netherlands can leverage ASML's knowledge to gain influence over the policy formation.

Finally, like Kamrava (2015) describes, small states can derive influence from its status as a global good citizen, by using diplomacy and international relations. This influence operates through institutions, as a result of the small state commanding respect, trust and prestige. This type of power is referred to in this analysis as institutional power. Its scope is interpreted more expansively, encompassing not only the influence gained from official diplomatic relations, but also from appealing to global norms, rules and values, often invoking concepts like fairness and proportionality.

Next, I turn to the method section of this analysis, which includes a conceptualization of the different types of power and its manifestations.

Method

This study aims to investigate the impact of having a central node in a global network on a small power's strategy, with a focus on the case of the Netherlands and its semiconductor manufacturing equipment (SME) producer ASML. Several factors make this case particularly interesting for this study. First, global value chains and networks often stay hidden until possible consequences of their disruption become more widely recognized (Farrell & Newman, 2019). ASML, for instance, remained relatively unknown to the general public until the emergence of the chip war (Hijink, 2023). Additionally, ASML stands out as one of the rare instances of an essential node located outside the great powers' borders. The exclusion of states

from this production chain carries significant and far-reaching economic implications, comparable to the SWIFT case examined by Farrell and Newman (2019). Therefore, it offers valuable insights into how small states can navigate such situations. The case also holds more practical significance, as small state research is often hampered due to language barriers. Policy documents, speeches and reports on plenary debates are only examples of sources that are not frequently translated into English or other languages. Native speakers from small states are, therefore, well-positioned to contribute to the literature on small states.

In order to find out more about the strategies adopted by the Netherlands in reaction to American export controls, a timeline is reconstructed which includes the relevant events leading up to the export controls and the Dutch government's reactions to these events. Various types of sources are included in the analysis to provide a more comprehensive depiction of the different stages leading up to the export controls. Among the sources are official government documents from both the United States and the Netherlands, such as laws and letters to parliament, press conferences, and tv and newspaper interviews with government officials, in particular Dutch Prime Minister Mark Rutte and Dutch Minister of Foreign Trade and Development Cooperation Liesje Schreinemacher.

The theory introduces four types of power that a small state can leverage: derivative, collective, intrinsic, and institutional power. From these types of power follow various strategies expected to be of relevance for this case. Derivative power, the first type, is the influence derived from the Netherlands' relationship with the United States. While beneficial in collaborative efforts against other states, when the Netherlands is seeking to influence the United States, derivative power is counterproductive to the Dutch objective. Security and resources obtained from the United States can aid the Netherlands in some situations, yet in this scenario it inadvertently provides the US with a strategic advantage. This security dependence will likely be visible as Dutch officials emphasizing the importance of (military) partnership with the US. Capacity constraints, or resource dependence, will mostly mean that the Netherlands will rely on American information, for example from US security ministers. Both of these dynamics will push the Netherlands more towards adhering to American requests.

Moving on to collective power, the power that is derived from cooperation with other states. To this end, the Netherlands will seek support from the EU. Cooperation with EU-states has multiple advantages. First, the Netherlands will not be isolated and vulnerable to potential reactions from either the US or China. Second, the EU can form its own bloc within the SME value chain, forming a strategy together and thereby having a larger pool of resources available. This will decrease dependency on the US.

The third source, intrinsic power, in this case stems mainly from ASML's monopoly position, offering a bargaining chip, fostering self-confidence, and providing information advantages. Because of ASML's monopoly position, the Netherlands have to their disposal the threat of exclusion from ASML's products. Actually putting this into effect is a radical measure and the Netherlands will be careful to use this for the same reasons as it is in regards to China. It undermines free trade and strains the relationship between the Netherlands and the United States. Nevertheless, it can be subtly employed for a stronger negotiating position, which brings us to the second effect of ASML's monopoly position: increased self-confidence.

International dependence on ASML's equipment boosts Dutch prestige in an important industry. Dutch government officials can exploit this prestige by emphasizing its importance in the global value chain, commanding respect and stature.

The final advantage of ASML's unique position is that it has a monopoly on highly technical equipment. This means that ASML personnel are experts on any product-specific information that is necessary to determine problems or potential policy. In relation to the case, the Netherlands can take the stance that it is better positioned than the United States to determine policy specifications. The final source of power, institutional power, is perhaps the most indirect form of power. It comes from creating a good reputation internationally, or in the words of Kamrava (2015), by being a global good citizen. To tap into this form of influence the Dutch government can emphasize the proportionality and fairness of the Dutch reaction and potential export controls. These concepts are summarized in **Table 2**. It gives an overview of the visible strategies that Dutch government is expected to employ, the power sources of these strategies and its manifestations. Also included are the directions of the effects the power sources and strategies on Dutch influence towards the US are expected to have in this case.

Analysis

In this section a timeline is reconstructed from the run-up to the moment that export of EUV technology was obstructed in the Netherlands in 2019 and discussions continued about the export of certain DUV equipment. First, some necessary context is given about the international regime on export controls for dual-use goods (the Wassenaar Arrangement) and explanations of some technical terms from the SME industry.

Table 2*Sources and Manifestations of Dutch Power*

Sources of power	Manifestation	Strategy	Effect
Derivative power	Dependence on US resources & information	Following US advice	–
	Dependence on US security cooperation	Emphasizing US strength	–
Collective power	EU cooperation	Focus on including EU	+
Intrinsic power	Monopoly position	Threatening exclusion / punishments	+
	Self-confidence	Emphasizing international dependence on ASML	+
	Knowledge on technical equipment	Using product specific information to determine problem	+
Institutional power	Global good citizen	Emphasizing proportionality and fairness of Dutch reaction	+

Background Information*The Wassenaar Arrangement*

Dual-use goods are products with the potential for both civilian and military applications. Seeing as semiconductor chips use is essential in many areas, from refrigerators and cars to missile systems, they are a good example of a dual-use products. The most important international legal instrument on dual-use goods is the Wassenaar Arrangement. The Wassenaar Arrangement (WA) is a multilateral export control regime, founded in 1995, after the Cold War, as a successor to the Coordinating Committee for Multilateral Export Controls (COCOM). In its own words: “The WA was designed to promote transparency, exchange of views and information and greater responsibility in transfers of conventional arms and dual-use goods and technologies, thus preventing destabilizing accumulations” (Wassenaar Arrangement, n.d.). The Arrangement keeps a ‘dual use list’: the List of Dual-Use Goods and Technologies & Munitions List. For the items on this list, every signatory state has agreed to maintain export controls on them through national legislation, following a number of guidelines or best practices provided by the Arrangement. The Netherlands, the United States and the Russian Federation were among its founding members. China, on the other hand, is not a member of the WA. In addition to this Arrangement, the US and the EU have separate Dual Use Lists which lists additional products not subjected to the Wassenaar Arrangement. Also, individual

EU member states can unilaterally form export legislation for their own states if public security or human rights are at risk otherwise. For both the US and the EU licenses have to be requested for export of the products on the Dual Use Lists in some cases, depending on the item's technical characteristics, the destination, the end-use, and the end-user, and other activities of the end-user (BIS, n.d.). These are reviewed on a case-by-case basis and must be requested and reviewed again once they expire.

Lithography Equipment

To grasp the intricacies of semiconductor equipment legislation, it is useful to first acquire a foundational understanding of the technical terms. The distinction between DUV lithography and EUV lithography is particularly important, as determining which of these lithography types should be subjected to export controls has been a central question in the policymaking processes and negotiations. Lithography, in this context, involves imprinting chips onto wafers using light. The wafer, composed of a photosensitive material like silicon, captures the mask's imprint by using light (Hijink, 2023). The precision of printed lines, and thus the number of transistors storable in the same space, depend on the wavelength of the light source. The shorter the wavelength, the less space you need for the same number of transistors and the “more powerful, faster, and energy efficient” the chips become (ASML, n.d.). After mercury and UV, excimer lasers were developed to utilize deep ultraviolet (DUV) as a light source, which has a wavelength of 193 nanometers (nm) (ASML, n.d.). The most recent and advanced lithography equipment, however, uses EUV, or extreme Ultraviolet. EUV operates at a remarkably short wavelength of 13.5 nanometers, existing naturally only in the sun's plasma in outer space (ASML, n.d.). In ASML machines this plasma is generated by shooting lasers on a drop of tin. As of yet, ASML is the only company in the world with the technology to produce advanced EUV equipment.

The Netherlands Halt EUV Export to China

In 2014, DUV technology was removed from the WA dual use list. This decision was driven by the belief that with the advancement of EUV it was no longer necessary to regulate the less advanced DUV technology in order to keep the lead in semiconductor equipment (BIS, 2015). As DUV technology was no longer cutting edge and already becoming quite old and widespread, regulating it was no longer deemed necessary. The following statement was included in the adoption of the adjustments in American policy:

“Two lithography equipment parameters in 3B001.f are revised to recognize the movement of the state of the art of lithography equipment and feature size of advanced integrated circuits of significance to the military. (...) Therefore, Items paragraph f.1.a is revised by lowering the light source wavelength from “shorter than 245 nm” to “shorter than 193 nm”” (BIS, 2015).

This regulation also means that EUV remains on the list, as its wavelength is shorter than 193 nm. Consequently, companies wishing to export EUV equipment to China are still required to secure a license. Until 2019 ASML held a license to export EUV equipment to China. When ASML’s license for EUV export to China expired in June 2019, the company filed for a new license.

However, In October 2020 the Dutch Ministry of Defense sent an analysis to the Dutch Ministry of Foreign Affairs, advising against export of advanced semiconductor technology (Ministerie van Defensie [Ministry of Foreign Affairs], 2020). This analysis became public following a WOO [Open Government Act] request (Van Craaikamp, 2023). The ministry highlighted shifting geopolitical power relations, noting that China’s military modernization and its willingness to employ military capabilities for expansive strategies. Acquiring two EUV machines would assist China in (1) expanding production capabilities for advanced chips and (2) establishing an independent semiconductor industry. This technology could be utilized for more advanced algorithms in target recognition, navigation systems (e.g., in robotics and missile systems), and expediting the development of artificial intelligence for applications such as autonomous systems, encryption, and sensors. The report underscored an increased risk for NATO member states to defend against advanced weapon systems if EUV machines were sold to China, especially considering China's potential to further distribute these systems to third countries. Notably, the United States, described as ‘the most important strategic security partner’, urgently appealed to the Netherlands not to export EUV technology. Eventually, ASML did not receive permission to export their EUV machines, but neither was it explicitly prohibited. Effectively, however, the absence of explicit approval halted the export of EUV equipment to China.

Discussions about DUV equipment

Following the restriction on EUV equipment export, the export of DUV equipment became a subject of discussion once again after the United States unilaterally implemented a set of additional export rules. These rules were published by the Bureau of Industry and Security (BIS) on 7 October 2022 (BIS, 2022). They further constrained the U.S. semiconductor industry, containing export controls for products which are not on the Wassenaar Arrangement. The measures were implemented to impede China's military modernization. Specifically mentioned are concerns about the developments of weapons of mass destruction (WMD) and human rights abuses. The new rules aim to prevent this by restricting access to high-end AI chips, American chip design software, American SME, and American components for SME (Allen, 2022). The effectiveness of these measures relies significantly on the support of other states, primarily from the Netherlands and Japan (Allen & Benson, 2023). Firstly, due to the technological progress in the semiconductor industries of these nations, they could potentially fill the gap left by restricted American exports to China. More importantly, they hold market leadership in crucial segments of the semiconductor value chain. The Netherlands is home to the world leader in lithography equipment. In essence, US control would be more effective if Japan and the Netherlands were to adopt comparable export rules.

In response to these regulations, both ministers Liesje Schreinemacher (Foreign Trade and Development Cooperation) and Micky Adriaansens (Economic Affairs and Climate Policy) reacted in interviews in the Dutch press. Schreinemacher told NRC that the US cannot simply unilaterally impose such rules on the Netherlands (Hijink, 2022). Emphasizing that the Netherlands should not underestimate or downplay its significance, she pointed out that the Netherlands has significant negotiation space due to important Dutch companies. Furthermore, Minister Schreinemacher stated that the Netherlands would not blindly adopt the American export regulations, but rather engage in discussions with partner countries such as the U.S. and Japan. She also expressed a desire to formulate export policies on a European level but acknowledged the possibility that the Netherlands might need to take the initial step. In response to a question about how the Netherlands compare to Germany, with the interviewer suggesting that Germany takes a friendlier stance toward China, Schreinemacher answered that the Netherlands are more 'in the middle', displaying some caution toward China while recognizing its economic importance, particularly in the supply of crucial raw materials for microchip production.

Taking a similar view to the American export restrictions as Minister Schreinemacher, Minister Adriaansens emphasized the negative implications of indiscriminately restricting trade with China (Hijink & van de Wiel, 2022). Highlighting the significance of global cooperation, especially for the Netherlands as an open trading nation, she reiterated the stance that the country should not unquestioningly follow the American example, they might follow their own agenda based on their economic interests.

During a press conference in January 2023, when questioned about Minister Adriaansens' statements, Prime Minister Rutte underscored that despite the Dutch economy's relatively small size compared to nations like France and the U.S., the Netherlands is a global player in the field of the semiconductor industry (Rijksoverheid, 2023). This status instills self-confidence and sovereignty in international discussions according to the prime minister, because of which he did not recognize a sense of being put under pressure. He also noted that the Netherlands is the most transatlantic-oriented country in the European Union as, he argues, it understands the vitality of the American military and defense systems. This has only become more relevant since the Russian invasion of Ukraine. Rutte mentioned that many details of the talks will not be disclosed.

Two days later, Minister Schreinemacher is interviewed by Buitenhof, a Dutch current affairs program (Toeset, de Bruijn, & Tames, 2023). She acknowledges the wish of the United States for the Netherlands to implement similar export restrictions as the Americans, by stating that the US has prohibited export of certain technologies to China and is now asking the Netherlands to do the same. By way of response, she says that the Netherlands 'won't just sign their name'. However, she expects the conversations to proceed amicably due to the significance of the Dutch American partnership which extends beyond a company like ASML. In addition, she reiterated many of the Dutch government's statements made earlier, for example by the prime minister at the press conference. First, she repeated the American reliance on Dutch ASML machines. Second, she mentioned the fact that subject is too sensitive to disclose much. Third, the preference to embed any potential export controls in EU policy, or at least in cooperation with France and Germany especially, was again expressed. Regarding ties with China, Schreinemacher affirmed the importance of maintaining economic ties with China but also the need to reduce dependency on them.

On several occasions during and after a visit to the White House, a specific narrative was repeated by Prime Minister Rutte (Nieuwsuur, 2023; Rijksoverheid, 2023). This narrative consists in part of the motivation for potential export controls, namely that the technological leadership should stay in the West. In addition, supply chains should not be hurt, especially of

the simpler chips (for refrigerators or cars). On a panel about semiconductors at the World Economic Forum (WEF) annual meeting, Minister Schreinemacher put extra emphasis on the importance of open trade and global value chains, saying that even though this is under a lot of pressure internationally, she will “be fighting for open trade and preventing protectionism” (WEF, 2023).

Then, in March, the Dutch parliament was briefed via a letter by Minister Schreinemacher on the forthcoming implementation of additional export controls. Included in this letter to parliament are mostly the motivations for the export controls, echoing a more detailed elaboration on the views already expressed by Rutte and Schreinemacher. According to the letter, the export controls are necessary because of (inter)national security concerns arising from technological advancements and the geopolitical context. It outlines three strategic objectives: firstly, preventing Dutch products from contributing to undesirable end uses, such as weapons of mass destruction; secondly, averting long-term strategic dependencies; and thirdly, preserving Dutch technological leadership. The measures are designed to be surgically precise to minimize disruption to value chains. With the aim of incorporating these regulations on a multilateral level, a proposal was submitted to the WA. However, it also acknowledged that the proposal’s acceptance was unlikely, as it would need Russian agreement for a consensus.

In any case, it is permitted to member states of the European Union to individually implement export controls if this is necessitated by public safety or human rights. Deeming the circumstances too important to await further cooperation, the Netherlands has decided to unilaterally implement these controls under the ‘Besluit strategische goederen’ [Strategic Goods Decree] (2008). Subsequently, other member states are allowed to adopt these same measures. However, the likelihood of other countries replicating these measures is again low as not many nations produce the advanced machines covered by the rules. Still, the Netherlands is intensively trying to sway the European Commission and the EU member states.

The rules were officially published on the 30th of June 2023 (Regeling geavanceerde productieapparatuur voor halfgeleiders [Regulation advanced semiconductor manufacturing equipment], 2023). It contains further details on the controls announced in March. Most notably, it specifies that some advanced types of DUV lithography equipment are now subject to the export restrictions. For the existing DUV-machines already exported permits for maintenance will have to be requested, which will be reviewed on a case-by-case basis, just like the export products. The legislation was enacted through ministerial decree under Article 4 of the Strategic Goods Decree (2008).

Discussion & Conclusion

The timeline constructed above illustrates the sequence of the events surrounding the export controls on DUV technology. Notably, in all cases of Dutch policy changes, it follows American policy changes or calls for changes. In that sense, the Netherlands certainly follow the American example. From the Dutch ministers' motivations can be gathered that this is indeed mostly done out of security considerations. As a small state, the Netherlands is dependent on the US for its security and military cooperation. This is not necessarily solely in relation to China. The Netherlands rely on security provided by the United States in general, making it advantageous to maintain close and positive relations. This dependence has only become more apparent after the Russian invasion of Ukraine. Multiple times has it been pointed out by the government officials. The US is mentioned as an important security partner and the transatlantic partnership emphasized because of the vitality of its military and defense systems. Furthermore, the American desire for Dutch compliance and pressure on the Dutch government is acknowledged. Without Dutch cooperation, the US-Dutch relationship could suffer damage. The second form of dependence, resource and information dependence, can also be found in the Dutch reactions to the American controls and pressure when the Dutch Ministry of Defense based its recommendation at least partly on American security analysis. The third security driven argument for adopting export controls is that China poses a security threat if they continue to receive advanced SME. The main concerns mentioned are that the SME can provide assistance in building advanced weapons that can be used against the Netherlands and that Western leadership on SME will be lost.

However, instead of immediately following the American example and adopting extensive export controls, some resistance and venues of agency can be recognized in the Dutch government's composure. Particularly present is the intrinsic power strategy that consists of emphasizing the Netherlands' international importance as a global player that should not be underestimated and that has confidence and sovereignty. Using the leeway created by information asymmetry to determine the technical specifications of the controls is also present in the officials' statements. On multiple occasions, Rutte explained the difference between chips for 'fridges' and for potential military use and said controls will be surgical and precise. As a result, the export controls on DUV technology do not cover all DUV equipment but has been limited to the most advanced systems.

As for institutional power, being a global good citizen and appealing to international norms and values is mostly pronounced by emphasizing the importance of open global trade. According to the Dutch ministers, great effort is put in to ensure that the measures undertaken

are proportional to the security risk and do not harm global trade anymore than is necessary. The government officials are here tapping into the institutional strengths of being a small state. Lastly, the Dutch government also tries to recruit EU cooperation even though as of yet this has been without success.

What is further noticeable, and a clear departure from American policy documents and government expressions, is that the Netherlands refrain from mentioning China specifically in any legal document, and even de-emphasizing in interviews that the controls are about China, specifically, potentially wanting to provide China with as little ammunition for criticism as possible.

Of these power dynamics, two specifically lead back to ASML's presence in the Netherlands. It creates intrinsic power that the home state, in this case the Netherlands, can use to their advantage. It also, however, creates difficulties in forming collective power. Not every critical node will isolate its home state, but it does logically follow from its unique position in the international arena. Thus, when a critical node exists in a highly salient and divisive area, just like ASML is subject of friction between the United States and China, it becomes riskier for other states to participate in policymaking, particularly if their involvement doesn't yield substantial benefits due to their exclusion from that particular segment of the global value chain.

This study has outlined the strategies the Netherlands have employed during this stage of the policy process and the mechanisms that lie behind those. It builds on existing literature on small states power and strategies. Additionally, it introduces insights into how a critical node, like ASML, can impact these strategies and the power dynamics of small states.

So far, the Netherlands have succeeded in implementing export controls that have not been damaging to the Dutch economy, while at the same time preventing Chinese backlash, even though there have been warnings (Koenis, 2023; den Daas & Kasteleijn, 2023). One drawback of the currentness of this study is that many government documents, for example on the Dutch preferences and US-Dutch negotiations, remain undisclosed. Once these documents are disclosed, future research can reveal how the outcome compares with the US and Dutch preferences to find out how much influence the Dutch strategies have had in this particular case.

The fact that the Netherlands have this node within its borders at all is taken for granted here. One might say that without ASML, the Netherlands might not have been in the situation at all of being caught between the US and China, and that it might have been better off without the great powers' attention. For estimating if it's altogether beneficial or not to have a company

with such a unique position within a small state's borders requires a different type of research, if possible. For example, a larger comparative study on multiple small state cases with and without a critical node. It is imperative that more research be done on small state power and strategies, because despite appearances, small states have a role to play in high-stakes games.

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