

FINNVERA: INSIGHTS ON IMPACT

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EXECUTIVE SUMMARY

This research report on Finnvera's impact sets forth to find answers to the following research questions: (1) "How does Finnvera generate impact, and on what?" and (2) "What is Finnvera's impact?"

The first question is a "formative assessment" of impact, which is an impact assessment approach that is geared toward the development of services using in-depth case studies on (a) major clients of Finnvera, Andritz, Outotec, Valmet, Wärtsilä, Meyer Turku, and Nokia, and (b) on a selection of typical clients from the small- and medium-sized customer base, including Kopar, Nightingale Health, Optomed, Lamor, and Huone International.

The findings reveal that Finnvera's impact on large firms is extensive; these firms develop "solution business models" that encompass various necessary components (technology and engineering, sourcing and construction, maintenance, service and operations support), but a considerable share of their businesses, practically entirely where Finnvera is involved, is only viable and sufficient for success with Export Credit Agency (ECA) financing mechanisms in place. Thus, most firms like to view Finnvera as an essential and strategic partner in their endeavor for international competitiveness and growth. The report illustrates a wide array of impact dimensions, including: "Finnish content", which is the economic value and employment directly and indirectly produced in Finland by themselves or through their distributor network; "Finnish interest" dimensions containing wider and also more future-oriented effects on impact, including HQ activities, research and development (R&D) commitments, supplier ecosystems' development and outlook, regional impact, tax and employment effects, socio-economic and psychological impacts, and science and education impacts; "Finnish credibility and legitimacy", which is the impact Finnish institutions have on reducing uncertainty and building reassurance within Finnish firms; and "social and environmental impact in the world", usually brought about by providing best-in-class and state-of-the-art technologies substituting for dated methods with negative social and environmental externalities.

Concerning small- and medium-sized clients of Finnvera, the direct impact, while individually small in volume in comparison to large client counterparts, is very important because most major multinational firms were once small firms with large potential. This is where Finnvera generates a considerable impact on these firms. Through the granting of loan guarantees, as the primary mechanism, these firms are able to establish themselves and pursue major business opportunities internationally. Finnvera is often a necessary lifeline in turbulent times and for turnaround phases, and it provides these firms with a basis to negotiate and construct their equity in order to take these entrepreneurial opportunities in global niche markets to the next level. The impact of Finnvera is critical in that it provides these small firms with credibility and legitimacy abroad, allows them to

build leverage and maintain control over their ventures, accesses promising markets for their products and services, and is essential for engaging in highly promising cooperative arrangements with multinational players who open their global markets for their offerings. In summary, Finnvera acts as an enabler for these firms.

The second question has an underlying purpose: a “summative impact assessment” approach (i.e., to evaluate to what extent impact is created). This question has been approached in two different ways. First, we use the collected primary, in-depth data from the cases at hand (which comprehensively assumes a lion’s share of Finnvera’s business) to ask the question of counterfactuals: “what if Finnvera’s services were not available to these firms?” The straightforward answer to this question is that, for both the multinational large- and small-sized enterprises group and medium-sized enterprises group, the impact can be considered high. This means that, in every business in which Finnvera’s services are used (in extant cases), these businesses or important parts of them or companies overall would likely not exist without Finnvera’s services; they are understood to be without alternatives rather than considered to possess “nice to have” features.

Quantifying the “how much impact” question of the summative impact assessment requires a different approach and method. We designed a natural experiment that applies an analysis on secondary data in different databases, encompassing Finnvera’s internal databases, Statistics Finland databases, and Orbis databases. The analysis was conducted to create counterfactuals and comparative analyses with the objective of evaluating the impact between firms benefitting from Finnvera’s mechanisms and their “close counterparts”, which do not utilize possibilities provided by ECAs. The result we obtained is statistically inconclusive for a number of reasons. Aside from the technical issues of not being able to match (due to confidentiality settings) small- and medium-sized enterprises (SME) namely between databases holding different data, the more striking issue is that Finland, as a small economy, has very few companies competing for the same space internationally; if they do, they also utilize Finnvera in similar ways. Thus, this approach to measuring impact quantitatively has not been fruitful. The report discusses the recommendation to develop primary data for such impact assessments.

Overall, this study reveals a large number of insights that are thoroughly understood within both Finnvera and its most important clients, but are considered less thoroughly understood when considering important stakeholders at ministries or when considering the Finnvera-centered public and political debates. The report makes a number of recommendations that may be addressed in order to enhance Finnvera’s services and the resulting impact in the pursuit to enhance Finnish firms’ growth, internationalization, and persistence in international competition both currently and in the future.

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I. INTRODUCTION

This research project investigates Finnvera's financing activities for Finnish firms in pursuit of internationalizing their business in order to attain survival and growth. This research has been initiated against the background of political discussions and decisions during 2016 regarding Finnvera's statutory limits for financing, credits, and guarantees to facilitate positive effects for Finnish firms' developments and for the overall well-being of the Finnish society and economy.

Finnvera enacts a resolution (422/2001) passed by the Finnish Parliament known as the "Act on the State's Export Credit Guarantees" (see Appendix 1 for a summary). The purpose of export credit guarantee activities is to strengthen Finland's economic development by promoting exports and the internationalization of enterprises. Export credit guarantees are meant to moderate risk of loss arising from (a) exports and (b) investments carried out abroad.

In effect, Finnvera's activities moderate the level of risk Finnish firms are willing to take or mediate the inception of certain types of businesses and international projects. This report sheds light on a selection of Finnvera's largest customer-stakeholders, who have been chosen for investigation due to their weight in Finnvera's portfolio and their individual importance in the Finnish economy. In addition, this report analyzes a selection of small- and medium-sized enterprises (SME) from their customer base in order to learn more about the enabling effects of Finnvera's financing mechanisms to generate a capacity for drawing on these firms' international opportunities. The report provides insights into how Finnvera's mechanisms can unleash international potential and growth when used at critical times on firms' development paths.

Exports are defined as "the production, delivery, transport or leasing of goods or services to a foreign buyer or lessee; the transfer of manufacturing rights, industrial rights or copyrights abroad; and the implementation of a planning, installation or building project, or some other work or service or storage of goods, abroad³."

Investments are defined as "equity or some other type of financing, production equipment or methods, and other comparable economic interests, which are invested in enterprise activities in the host country."

Export credit guarantee refers to "an agreement or a commitment undertaken by the State with respect to exports or an investment carried out abroad; such agreement or commitment may take the

³ Definitions (bold) from Finnish Parliament's "Act on the State's Export Credit Guarantees", Resolution (422/2001), see Appendix 1 for a summary.

form of direct insurance or reinsurance, guarantee as for own debt, deficiency guarantee, or some other liability commitment.”

Export credit guarantees are meant to support Finnish firms’ international operations and, aside from mitigating risks that would otherwise lower international activity and firms’ risk-taking, export credit is also intended to equalize potential international competitive disadvantages. This, however, is limited (Appendix 1, section 7) and regulated by international agreements to which Finland has committed, most importantly through the European Union’s commitment to the Organization for Economic Cooperation and Development (OECD) “Arrangement on officially supported export credits” (OECD, TAD/PG 2017/1), also known as “The Arrangement”, with the following participants: Australia, Canada, the European Union (EU), Japan, South Korea, New Zealand, Norway, Switzerland, and the United States (US).

The limits on outstanding commitments (see Appendix 1, section 10) were under discussion twice during the year 2016. On November 10th, 2016, the government presented legislative proposals to Parliament, aiming to ensure competitive financing for Finnish companies engaged in international business and capital goods trade. The purpose of the legislation (and the need to increase the limits), which later that month was passed by Parliament, was to (a) countervail the reduced ability of banks to finance major export deals due to stricter solvency regulations (e.g., Basel III, EU-approved implementation in 2013) and (b) to preserve export financing authorizations and terms of financing at the level prevailing in Finland’s principal competitor countries. In practice, this means that export credit guarantee authorizations, the authorizations for export credits and interest equalization limits, need to be raised. This consequentially led the “Act on the State’s Export Credit Guarantee” to be amended so as to increase the combined liability of the export credit guarantees granted by Finnvera Plc and the hedging arrangements to 27B€ (with authorization of special risk-taking being extended to 5B€; see attachment 1, section 6) and the Finnish Export Credit Ltd.’s authorizations to a maximum of 22B€. The view expressed by the government is that export finance is an important factor contributing to the development of the Finnish economy as measured in “wellbeing and employment” (former Minister of Economic Affairs, Olli Rehn) and that the structure of the Finnish industry producing capital-intensive exports requires competitive finance to sustain international competition⁴.

The purpose of this research project is to develop insights into matters of the impact of Finnvera’s financing instruments on some of Finnvera’s largest (volume-wise) Multinational Corporate (MNC)

⁴ Väänänen, H. (2016) Press release by Ministry of Economic Affairs and Employment, 11.11.2016 (https://tem.fi/en/minister-of-economic-affairs/-/asset_publisher/hallitus-esittaa-parannuksia-vientirahoitukseen).

customer stakeholders as well as a selection of insightful SME targeting high growth and internationalization. The project unfolded in three stages: (a) from August 2016 to June 2017, resulting in an internal report for Finnvera focusing on Nokia and Meyer Turku as they together assume more than two thirds of Finnvera's exposures; (b) from November 2017 to June 2018, which expanded the research to include four more of Finnvera's largest customer stakeholders and a selection of five SMEs⁵; and (c) a research effort to use secondary data from Finnvera's database in a natural experiment drawing on other secondary data stored in databases (Statistics Finland and Orbis). The research design, taking the lion's share in this report, is a case-based investigation with cross-case analyses. This design provides deep insights into individual cases' specificities and provides an explanatory understanding of how and why Finnvera's mechanisms produce their effects.

In general, "impact assessment" is a challenging undertaking for several reasons. The most prominent challenges include: (a) necessary and sufficient factors explaining success of internationally active firms are systemically intertwined and complex. The success of a firm depends on many factor combinations that interact, meaning that generalizations are challenging and potentially misleading. For instance, ECA support in terms of credits and guarantees can have a substantial enabling effect on firms that, if not available, would put a firm on an alternative development path or lead to the discontinuation of part or the entirety of a business. These mechanisms can also act as positive moderators (or mediators) of an outcome, which would overall be less successful (or not viable). ECA mechanisms can also have strategic importance for some firms because they do not view viable alternatives for a particular share of their business when financing options are part of a larger solution package; (b) ECA mechanisms can be temporally, contextually, and situationally critical in certain stages of the development of a firm or in the development and implementation of a new business concept. Thus, it is challenging and potentially misleading to rely on overly stated generalizations; (c) the purpose of impact assessment can be understood in two alternative ways: impact assessment is a facilitating binary judgement (i.e., whether activities and programs are effective or not), or impact assessment is used to gain a deeper understanding regarding how processes unfold or how institutional logics are structured, providing a platform to develop ECA activity over time by learning from feedback, adapting to a changing world, and making progress⁶.

The current report is structured in the following way. Subsequent to this introduction, we discuss the research design, which is split into two distinctive approaches. The first approach engages in deep

⁵ SMEs were selected from a list proposed by Finnvera. Finnvera's selection was intending to provide a cross industry list of illustrative examples where Finnvera impacted the resilience, turnaround, competitiveness and international growth of firms.

⁶ Ebrahim, A., & Rangan, V. K. 2010. The Limits of Nonprofit Impact: A Contingency Framework for Measuring Social Performance. *Harvard Business School Working Paper* #10-099.

case-based investigations into some large customer stakeholders of Finnvera and a selection of SMEs. These two groups provide considerably different insights into the impact of Finnvera and show how different financial instruments affect both their survival and success. On the large client side, we conducted expert interviews with the responsible financial managers at Nokia, Meyer Turku, Andritz⁷, Valmet, Outotec, and Wärtsilä. In addition, we conducted expert interviews with Finnvera's key account managers, which enabled informant triangulations. These six cases share many features in terms of impact and the direct effects of Finnvera's support and subsequently give insight into the intended and unintended consequences and impacts on their Finnish supplier networks, the regional impact at the locations where they perform their activities, the indirect impact on innovativeness, research, development, specialist education, and inland revenues, among others. While Wärtsilä, Outotec, Valmet, and Andritz share many features, they bear considerably less weight on the overall outstanding statutory limits and risk exposure of Finnvera. Meyer and Nokia together assume more than two-thirds of the weight of Finnvera's exposure. In addition, Nokia is by far the most transnationally organized of these six firms, which means the "Finnish interest" definition is more relevant for Nokia than for the rest of the largest clients. "Finnish interest" is defined as "the extent to which indirect impact in Finland is critical in terms of headquarters locations in Finland and research, technological development and business development plays a major role, while the traditional export support component, usually measured in terms of Finnish production and shipment of products over borders, is to less extent displaying a more conventional impact definition" = Finnish content. On the other hand, Meyer Turku is different from the others, not in terms of the turnkey role they have in major projects where Finnvera is involved, but in that their value creation model is highly localized in Finland (while others generate a considerable part of their overall offerings as responsible turnkey managers abroad). In addition, Meyer Turku's business, in contrast to others, is nearly entirely dependent on the provisions of export credit guarantees demanded by their global customers, without which "we are not able to sell ships" (Bollenbach, CFO Meyer Werft, Member of Board at Meyer Turku).

The investigations made in SMEs included five companies, where we conducted expert interviews. In addition, we gained insights from Finnvera's case managers who were acquainted with these customers. The respondents in the case companies were the managing directors, to the largest extent, and the financial manager, in one case; these individuals had either been with their firms for many years or were members of the founding team. Among the firms investigated were Kopar Oy from Parkano (a firm delivering subsystems to process industries), Lamor Oy from Porvoo (a firm providing technologies and services in the oil spill recovery business), Huone International Oy from

⁷ When referring to Andritz, Andritz OY or Andritz Finland the company in question is the Finnish subsidiary of Andritz AG.

Helsinki (a hospitality services firm arranging spaces for effective business meetings), Optomed Oy from Oulu (a firm developing medical hardware and software for diagnosing eye diseases), and Nightingale Health Oy (a firm in the medical laboratory testing business providing a wide range of markers from blood samples). The major commonality across these firms in terms of impact were generated through loan guarantees that Finnvera provided in different stages of establishment, growth, turnaround, and internationalization. All firms were unanimous in ascribing their survival, continuity, and ability to both maintain and grow their international potential with the support granted by Finnvera (or their banks) in order to mitigate the risks associated with building their entrepreneurial opportunity.

The section describing the data collection and analysis approaches is followed by case descriptions and particular discussions on the impact Finnvera has had on each case. Furthermore, the section explains how Finnvera enables the cases to contribute to the Finnish economy through generating tax revenues, employment, regional impact, and channels for domestic firms, all of which supply them with products and services that become part of their overall value propositions internationally. Based on the cross-case analysis, some findings on the differences and commonalities between the large firm and the small firm samples are drawn. We discuss aspects of how Finnvera produces impact, discuss what works well to keep Finnish industry globally viable and growing, and indicate how Finnvera makes a considerable contribution to internationally successful small and largely young firms enacting international success. The section contributes to understanding “how Finnvera’s impact is generated” in general as well as in specific cases while considering what works well and where further progress may be achieved as a formative evaluation of Finnvera’s work.

Subsequent to the qualitative part of this research report is a section on our attempt to draw conclusions on secondary data stored in different databases by conducting a natural experiment-type investigation with the objective of quantifying the impact of Finnvera’s activities on its client base. The baseline approach to this investigation was to test how firms that utilize Finnvera’s support fare in comparison to those firms in the economy that do not receive cooperation from Finnvera (“the counterfactuals”). The goal can be associated to an impact assessment exercise that attempts to measure the degree of impact (“what the impact of Finnvera is”) and to judge whether the impact is exceeding a threshold or not. The results of this research approach are described and considered unsatisfactory, as we were not able to match the data in different databases to create a counterfactual statistical evaluation. The major reasons why the research has not been successful are technical in nature, on one hand, such as not being able to match data in different databases measuring different items and by identifying firms’ IDs—namely for SMEs—and are structural in nature, on the other hand. Finnvera’s portfolio is weighted heavily toward a very small number of large customer stakeholders responsible for the very largest part of Finnvera’s exposures (largely covered in depth

by the qualitative design implemented in this research); these firms are rather unique in the small Finnish economy and it is problematic to assign counterfactual pairs without skewing the result. In a corresponding subsequent chapter of this report, we provide some views on this approach to impact assessment.

II. RESEARCH DESIGN OF IN-DEPTH CASE STUDIES

This research approach consists of detailed case studies in six multinational corporations: Andritz, Meyer Turku, Nokia, Outotec, Valmet, and Wärtsilä, which together account for a major share of Finnvera's business. Five SMEs as representatives account for the large pool of smaller firms of Finnvera's customer base. The case research approach is geared toward exploring insight and increasing the understanding of effect that comes with Finnvera's financing mechanisms. Thus, the approach targets the question "how does Finnvera generate its impact on different client groups?" The in-depth understanding is constituted by understanding the logic, purposes, and mechanisms behind financing approaches and drawing transferable conclusions. Different than a quantitative analysis, where the known hypotheses and assumptions are tested in terms of their significance for an explanation, the qualitative investigation provides explanations of specific cases and their circumstances, including temporal and situational contexts in which phenomena unfold. Given that this report investigates six major corporations, which, in sum, form the lion's share of exposures of Finnvera's guarantees and credits, we can assume that learning from these cases bears a high degree of explanation in terms of the overall impact. The case companies from the large multinational corporation population have been selected in light of the weight they carry, assuming well over four-fifths of Finnvera's overall exposure, and are thus highly explanatory. Furthermore, these firms have a signaling character for other firms, either in that they are important customers, local or regional employers, or are psychologically important for the formation of economic expectations concerning the future of the business and the economy.

The selection of small firms has been suggested by Finnvera as being exemplary of the cross section of SMEs. The common feature is that all these firms have been very active and have repetitively used Finnvera's financing opportunities for different purposes, such as turnaround, continuation, growth, and internationalization. Finnvera initially proposed seven firms for which we conducted open-ended question-type surveys with their respective case managers, of which five were able to participate (we were unable to get into contact with one firm after several trials, while another firm had recently made a change in management and the new CEO did not know enough to participate effectively).

In both case groups, we followed a straightforward design for data collection. We first discussed major questions regarding the business, the role of Finnvera within the business, the context in which Finnvera's service produces value, and questions regarding how and why Finnvera is important, what

the potential impact may be on their business, and what other aspects related to the Finnish economy may be indirectly affected with Finnvera's key account managers (for large multinational firms) and with case managers (for SMEs). After reviewing the entirety of the responses we obtained, we then contacted and interviewed the managers from the selected firms. With the large multinational clients, we conducted face-to-face interviews on their premises, each of which typically lasted from one to two hours. With the small- and medium-sized selection of companies, we conducted telephone interviews that varied in length. Before these interviews, we sent them the overall agenda of the interview that consisted of the main discussion points for their prior perusal and preparation. We recorded each interview after asking interviewees for their consent to do so, and informed them that their responses would potentially be shared with different stakeholder groups both inside Finnvera and beyond. In order to avoid misunderstandings, we supplied respondents with the written transcripts of these interviews and, when requested, made corrections.

In terms of biases and limitations, we would like to remark that this study does not include counterfactual cases of failures or firms who were not interested in using Finnvera's services. Although, we conducted conversations informally with some firms of various sizes to generate understanding why some firms do not view Finnvera as adding value. These conversations, however, are not directly considered in this report. Encompassing counterfactual cases would have enabled us to construct a more balanced picture, comparing different firms with those under investigation, which are rather successfully utilizing the services provided by Finnvera. In terms of response biases, we must carefully point out that all respondents generally possessed the interest to shed a positive light on the work of and cooperation with Finnvera, as many view "no alternatives" for the services Finnvera provides, either for their business entirely (usually in small firm cases, but also for Meyer) or for a significant share of their business (most large clients). These respondents often view Finnvera's services as an integral component of business models when applied in different institutional contexts. We tried to open the door for criticism and improvement suggestions by encouraging the respondents to suggest items they would forward to Finnvera in the form of a "wish list" to gain some degree of balance for our understanding. With a question formulated in such a way, we had the overall perception that respondents felt they could constructively deposit some opinions and views on the things they perceived as possessing "room for improvement" by making positive suggestions regarding what they believed could increase the value of Finnvera's services. Generally, the involved researchers were under the impression that respondents answered freely, openly, and with good intentions aimed toward pointing out how they perceived Finnvera's services, generally in a very positive and favorable manner. In some cases, the respondents added remarks that made comparisons with other agents of the state possessing a business support role (e.g., Business Finland, especially Tekes; Sitra) or remarks addressed to different ministries, policy makers, and the political

discourse (including the treatment of ECA work by journalists) they viewed as both enabling and limiting Finnvera's possibilities.

Evaluation of Case-Based Research

Different than quantitative research approaches, which use standardized questions and standard response choices to produce primary data or utilize data that has been collected for other purposes, qualitative data and findings cannot be evaluated by the same criteria (e.g., generalizability, validity, reliability) because the goal is not to generalize insights, but rather to learn from different cases, including learning what often would be considered a statistical outlier. While generalizing data produces understanding of “what” is happening (e.g., what relationships different variables have with each other and with a dependent variable), qualitative data seeks to answer “how” (e.g., how do Finnvera's mechanisms secure survival, growth, and internationalization; how is Finnvera an enabler for certain types of business) and “why” questions. For certain types of businesses, some instruments add necessary factors that, together with other factors, create sufficient explanations for success. In case-based qualitative research, important criteria for generating trustworthiness⁸ include: transferability (i.e., the ability to take an insight from one case and compare and draw understanding for other empirical occurrences in their own context), credibility (i.e., the findings from cases are consistent with reality), dependability (i.e., dependability in process: clearly outlining how the research was conducted, including how cases have been chosen, how data has been collected and confirmed by respondents, managing masses of data, analysis; dependability in product: to present the data, the interpretations, and recommendations), and confirmability as part of the “audit trail”. The “audit trail” involves documenting the residue of records stemming from the research process, which includes a previous report produced for internal use at Finnvera in June 2017 and the current report, which encompasses 220 pages of transcribed interview materials and is included in an internal report version that was made available to Finnvera for further analysis in June 2018 but has been omitted from this report for the sake of keeping the report compact.

⁸ Lincoln, Y. – Guba, E. (1985) Establishing Trustworthiness. In: *Naturalistic Inquiry*. Beverly Hills, CA: Sage.

III. FINDINGS FROM LARGE MULTINATIONAL ENTERPRISE CASES

In this section, we present a concise description of the large client segment that contains six companies: Wärtsilä, Valmet, Outotec, Nokia, Meyer Turku, and Andritz. In this chapter, each company is briefly introduced, their businesses most relevant for their partnership with Finnvera are discussed, and the results from a within-case analysis flowing into a cross-case analysis are examined to summarize the main findings toward the end of this chapter.

a. Wärtsilä Oyj⁹

Business Background: Wärtsilä is a global leader in smart technologies and complete life cycle solutions for the marine and energy markets. By emphasizing sustainable innovation, total efficiency, and data analytics, Wärtsilä maximizes the environmental and economic performance of its customers' vessels and power plants. In 2017, Wärtsilä's net sales totaled 4.9B€ with approximately 18,000 employees. The company has operations in over 200 locations in more than 80 countries worldwide. Wärtsilä is listed on Nasdaq Helsinki. The company's major business areas are in marine solutions (27% of net sales), energy solutions (28%), and services (45%).

While the marine business is what Wärtsilä is best known for, the energy solution business possesses the highest growth share of the firm (+40% from 2016-2017) and is, for the purpose of understanding the impact of Finnvera, the most important part of Wärtsilä's business. The marine solution business, although raking in the biggest share in revenue overall when combining with related services, is less relevant in the impact discussion because the transactions with customers are of supplier-buyer nature, with the major risks of finance assumed by their customers (i.e. shipyards in Asia and Europe in most cases), who assume the overall role of turnkey managers and take care of project financing of newbuild projects. Therefore, primary attention is devoted to the energy solution business, where Wärtsilä's direct customer is the beneficiary of the export financing and Finnvera's impact can be most directly assessed.

Wärtsilä's energy solution business in the last completed period (2017) attained net sales of 1401M€ (up from 943M€ in 2016), the order book at the end of the financial period stood at 1871M€, and the personnel ascribed to the business is currently 1,038 full-time equivalents (FTE) (up from 903). These numbers indicate increasing productivity and growing scale economies and, importantly, run against the industry trend (main competitors Siemens and GE suffer from the industry cycle; Wärtsilä has a different technology with high peak agility, placing them in a favorable position). Finnvera's impact on Wärtsilä's energy solution business is grounded in the fact that Wärtsilä usually assumes full turnkey responsibilities and consequently deals with the overall project's financial implications.

⁹ Information gathered from www.wartsila.com; Mr. Petri Vartiainen (Finnvera Key Account Manager, January 23, 2018); Tuomas Haapakoski, Director Financial Services, February 13, 2018; additional comments November 13, 2018).

According to their website and the interview with Mr. Haapakoski, Wärtsilä is one of the leading suppliers of power plants for the decentralized power generation market. Wärtsilä offers power plants for baseload, peaking, and industrial self-generation purposes as well as for the oil and gas industry, and has a growing number of turnkey projects in the delivery of complete solar energy plants and battery-based energy storage (including software), where Wärtsilä assumes overall responsibility (i.e., engineering, procurement, and construction [EPC]). The strengths of Wärtsilä power plants in all these market segments and the basis of their strong position in these markets include flexible design, high efficiency, and low emission levels.

Finnvera's role: Wärtsilä's Energy Solutions is a turnkey business; they operate in the niche market that demands high flexibility (quick start-up of temporary energy production) at high net efficiency and usually at peak consumption, adding to or substituting the base-load electricity production. Wärtsilä conducts this business as a solution provider rather than supplier, which involves full responsibility for engineering, procurement, construction, and service after handover; in some cases, it also involves operations on behalf of the operator. As part of the solution business and as a component in the competitive bidding process, finance takes a prominent role. According to Haapakoski, this aspect, the importance of a bidding company to include also financing solutions, is largely misunderstood. It is often not relevant to ask questions such as “what would happen if Finnvera would not have financed an individual project -had the customer been able to find financing from any other source than Finnvera and is Wärtsilä still able to implement the project”; rather, it is a different perspective of business, which Haapakoski expresses in the following way:

Exporting companies like us have long-term strategies for business and those [strategies] have developed over many years and continue to evolve. We develop our value propositions for the markets we want to be in, we analyze our competition, and if financing can provide value to our customers, we need to have partners who want to share and support the strategy. So then, we need to work together with Finnvera to tailor their offering to make it relevant and competitive for our customers. This needs to be a joint effort with longer term goals. It is not realistic to think that Finnvera or any other financier can become a relevant financing solution for an industry, segment or customer in connection with an individual project (whenever a “market shortcoming” is seen to be present), but rather it takes years to develop a deep understanding of an industry and learn to tailor an overall solution, which is competitive on the global market. Wärtsilä on the other hand needs to be able to rely on Finnvera knowing that financing can be delivered when a customer with acceptable credit risk is ready to take decisions in favor of Wärtsilä and Finnvera.

This statement is highly insightful and represents an industry view on how managers experience the debate on impact, Finnish content, and Finnish interest. For them, impact is not a comparison of counterfactual behavior, but rather means for realizing solution business approaches. It is about being a

strategic partner who is able to contribute to the endeavor adding to what it takes to survive and grow while opportunities emerge and being developed. Although the long-term partnership approach may be the most important element in building sustainable global business models, there are also several projects where Wärtsilä simply could not even compete for certain projects without Finnvera's involvement.

A typical project in the energy solution business would unfold in the following way (example from PLN in Indonesia): Wärtsilä enters the bidding process for a turnkey EPC, where they must have three essential components: (1) engineering and building the power plant, (2) the operations and maintenance part over the life cycle, and (3) long-term ECA financing with all the details laid out and with secured ECA commitments over a ten-year+ period. These bids are compared by life cycle costs and the ways in which they break down to the single kWh that is produced. The winning bid delivers the full solution: "And these three parts are mandatory, so if we wouldn't have ECA support on this, we would be out on the first pre-qualification round" (Haapakoski).

In such turnkey projects, Haapakoski estimates that a typical share of value in the final delivery (a power plant) is constituted by a quarter from the engines themselves, which are produced in Vaasa, Finland. Another quarter is locally generated during construction, civil engineering, and installations. And, about a half of the value is created by their subcontractor network, who delivers the equipment and materials for the associated infrastructure of the power plant where the share of Finnish suppliers is high. Thus, the "Finnish content" of these turnkey projects is high (often more than 50%). Another important aspect of impact on Finland are the commitments to maintain the headquarters and R&D (currently over 70% of expenditure) in Finland and to be one of the driving forces in the development of the energy cluster in Vaasa. The cluster does not develop by chance, but is driven by companies such as Wärtsilä and are built around a group of spearhead companies, creating momentum that has a wide impact for the subcontractor network, the well-being of the people in the region, and the opportunities in research, science and education.

Although the Finnish content is high, the "Finnish interest" in the energy solution business might be even more considerable and significant, as the ability to compete in such a business model creates new growth trajectories that would otherwise not exist (and is partly displayed in the growth in that business area). Therefore, Finnvera's involvement must be viewed as an integral strategic enabler: "You don't have ECA support, you're out. Forget it. If you're not competitive, you lose" (Haapakoski). Concretely, the first two 340 MW Finnvera deals in Indonesia with the complete solutions package in 2014, including the ECA finance, have given Wärtsilä reference means to promote this business model and gain visibility and market recognition, and these cases are widely known in the industry. Wärtsilä power plant installed in Indonesia is now exceeding 4,000MW. The impact of Finnvera in these deals, although, is considerably even more complex, as the competition

of Wärtsilä bids under the same preconditions. Siemens, GE, and MAN involve their respective German and Swedish (Siemens in Sweden) ECAs, while Wärtsilä and Finnvera (together, at times, with the Italian ECA in cooperation) compete against the German and Swedish ECAs. Thus, Finnvera's impact is also dependent upon its ability to somewhat match the ECA competition in scale and price (although the financing cost can never compensate for price competitiveness for the solution overall); thus, Finnvera is necessary, but not sufficient, and some competitors have the means to organize their own financing (e.g. General Electric). Therefore, it is critical for Wärtsilä that Finnvera is capable of matching competition in terms of agility and speed aside from price: "The countries are, well, sort of competing, even if they are not supposed to compete" (Haapakoski).

To conclude, Finnvera's involvement in Wärtsilä's energy solution business has high impact when measured in conventional terms, including employment, inland revenues, headquarter control, R&D, and future outlook, creating high Finnish content through Wärtsilä directly and through the subcontractor network and cluster activities in Vaasa. Less widely understood is the Finnish interest in Wärtsilä's business, as the turnkey solution business model requires, next to engineering and construction, procurement, maintenance, and operations as well as the critical component of finance. Thus, Finnvera's impact on a share of their business is directly enabled by Finnvera, making them a strategic partner. More emphasis on this strategic partnership role is desirable and provides room for improving the cooperation between these organizations.

b. Valmet Oyj¹⁰

Business background: Valmet is a leading supplier of technologies, automation, and services for the pulp, paper, and energy industries. Its net sales were 3,159M€ (2017, up 8%, EBITA 226), it employs 12,268 FTE worldwide, and its shares are listed on the Nasdaq Helsinki stock exchange. Its main business areas are in pulp & energy (26% of sales), paper (26%), services (39%), and automation (10%), with roughly half of its sales coming from the Europe, Middle East and Africa (EMEA) area, 19% from North America, 8% from South America, 13% from China, and 11% from Asia-Pacific. Competitively, Valmet and Andritz (Finland) are the only two companies in the world capable of building a complete pulp mill, which, according to Ms. Toikka, is partly reliant on ECA funding but customers organize that funding directly and independently with ECAs and financing banks (e.g., the case of Metsä Äänekoski). For the paper mill business, Finnvera is more directly relevant for Valmet as international competition includes financing, with German Voith and Andritz (Austria) being the main contenders.

¹⁰ Information gathered from www.valmet.com; Ms. Satu Savelainen (Finnvera Key Account Manager, January 23, 2018) and Ms. Marikka Toikka (Director Trade and Export Finance, March 21, 2018; further comments November 20, 2018).

Finnvera's role: For Valmet, Finnvera's role is especially important in the paper business, where finance is often required by its customers, who are smaller, often family-owned businesses that need assistance with arranging their financing packages. In these situations, Finnvera provides an important part of the overall package, which includes (a) leading edge technology (comparable to the offering of Voith and Andritz, Austria), (b) competitive pricing, and (c) assistance with financing, on one hand; on the other hand, they are part of the direct competition with other ECAs, such as Euler Hermes from Germany. However, during a recent project, several paper machine orders from a Chinese customer (multiple paper machines) were split in half between Valmet/Finnvera and Voith/Hermes, indicating that Finnvera and Hermes, as part of the overall package, are somewhat on par. Overall, for the paper machine business, Finnvera is an essential part of Valmet's offerings, as the business model is increasingly moving toward a solution business that combines hardware, software, and long-term service contracts into a single offering (including finance). ECA financing may have some influence on the success of the pulp mill businesses if they can lead to more favorable terms by banks (e.g., Brazilian, Chilean, and Uruguayan projects); however, large pulp-producing companies are generally able to arrange the financing themselves.

Another interesting detail for Valmet is that they have additional operations in Sweden; thus, they can also rely on the Swedish Export Credit Agency (EKN), which provides them with cheaper financing than Finnvera. This is relevant for the pulp mill business (and SEK, which has "swap back" instruments for banks to get 25 basis points back), since, Andritz (Finland) as main competitor in that business, is on the same "level playing field" as provided by Finnvera. Valmet drawing on the Swedish ECA improves competitiveness for certain financing packages, but on the other hand, Finnvera "knows the customers and the pulp and paper industry better [than EKN]. And, in certain issues, they are a bit more flexible. Like now, it was changed to Finnish interest and not the content anymore, which makes a difference" (Toikka). Toikka explicitly mentioned certain areas in the world where pricing plays a bigger role, such as India, in which cases they must use local or Chinese suppliers. There, the more flexible "Finnish interest" definition plays an important role for them in retaining their competitiveness.

Finnvera's impact on Valmet: Many deals in the pulp mill business, but especially in the paper machine business, would not materialize in the absence of ECA support. Namely in Asian contexts, the involvement by government agencies is highly appreciated, adding legitimacy and credibility and subsequently enabling Valmet's customers to structure their finance with the assumption that their competition would fill the gap if Finnvera had to reduce their commitments. At the same time, with a move toward solution business models, the role of finance is becoming increasingly more important.

The following example illustrates this well. Recently, a deal in the UAE materialized that combined the delivery of a paper plant with a maintenance and service package, which included spare parts and service fees (volume some 20M€), in addition to the overall capital expenditure (CAPEX) items offering. Besides the plant delivery this enables Valmet to generate revenues from operational expenditures (OPEX) over the subsequent years, and in their service business unit, thus enabling long-term finance for plant delivery and enabling the “stable business” (i.e., revenues from long-term service and maintenance contracts) based on “capital business” (investment in paper plant). This means that the impact of Finnvera is growing beyond the capital investment business. The impact of Finnvera grows because it also affects the “stable business” with long-term contracts. These services are provided by the production of parts (i.e., spare parts) that concern Finnish content. For example, a typical project volume of 100M€ is, to a great extent, what concerns the hardware delivery (typically 60-70%), is manufactured in Jyväskylä, and has a major regional impact, as Valmet is one of the largest employers there. Meanwhile, with growing volume, Valmet also includes locally produced value through maintenance and service provisions, thus increasing its viability (Finnish interest). Valmet’s stability in the long term is affected by the capital investment deals it closes. Therefore, Finnvera’s role increases toward a strategic partnership that affects a larger share of Valmet’s business.

Concretely on impact, an example calculated that a 50M€ deal translated into 150-200 FTE-years directly at Valmet in Finland; if that amount is compared to a typical paper machine project (80-100M€), then the employment, associated taxes, and regional impact are rather significant. These direct impacts are important, but the headquarters’ activities and major R&D operations are located in Finland, which makes the impact of Valmet in Finland significant. For paper machine turnkey projects, the ECA involvement is generally difficult to replace because the banks are not willing to take such risks: “ECA’s are needed more because the banks are not willing to take the risk” (Toikka). However, Valmet has the option to use Swedish ECA for pulp mill projects in addition or instead of Finnvera, but this has not yet been discussed. Referring to possible consequences of such a move, as Valmet understands itself and its 220 years of history being part of the industrial history of Finland, Toikka questions whether such a move would be possible.

Environmental impact was a point highlighted further. Through the financing provided by Finnvera, many old mills around the globe have an opportunity to modernize, increase efficiency, and reduce pollution and environmental impact. Therefore, Finnvera and its social and environmental impact assessments are viewed in a positive light. Buying from Valmet (as well as Andritz, Austria, or Voith, Germany) is generally believed to improve the local impact compared to sourcing equipment from other parts of the world. Toikka further mentioned the impact Valmet has on engineering education in Finland, stating that their presence in Finland means there are future prospects for technical

university-level education programs and R&D, which create a sufficient symbiosis with reciprocal benefits and maintain the development of such knowledge and skills transfer in the future.

c. Outotec Oyj¹¹

Business background: Outotec offers complete technology solutions and processes from “ground up” and life-cycle services in the mineral processing industry. The company’s two main business areas are Minerals Processing and related services (about 60% of sales in 2017), and Metals, Energy & Water with related services (around 40% of sales in 2017). The company is among the three biggest players in the world in mineral processing and metals refining technologies. The majority of the business comes from the mining and metals. Outotec has sales, R&D and service centers in 36 countries, employs over 4,100 people around the world, and makes deliveries to over 80 countries. Sales in 2017 were 1,139M€ (2017, up 8%) and R&D expenditure was 56M€ (5% of sales). Three R&D centers, of which two are in Finland, are at the core of Outotec’s technological expertise..Heikki Keränen describes Outotec as a design and engineering company that aims to create the smartest technological solutions for its customers.

Finnvera’s role and impact: In connection of bidding for deals, some clients of Outotec are also asking for finance indications. The main need for guarantees stems from the global scope and large scale of projects. Finnvera is important in providing financing options for clients so that Outotec meets clients’ requirements. According to Keränen: “Financing is kind of an additional offering that helps us in the bidding competition. In the end, it might be that the customer does not need Finnvera’s financing; but, because they received the offer in the first phase, Outotec would reach that last phase in which the client makes the final decisions. If we didn’t have that letter [a financing offer] then we would have been dropped out already at stage one” (Keränen).

In some cases, the possibility for long-term financing is also critical due to the fact that some customers are not able to source long-term financing themselves. The problem may be that the investment is heavy, and no long-term financing is available in the local commercial banking markets (i.e., the repayment is limited to five years whereas ECA financing can cover up to ten years). Alternatively, the cost of financing in local banking markets may be too expensive for a client. This situation is quite common in the developing world, such as in Latin America and Asia.

Outotec occasionally uses other ECAs, such as EKN in Sweden, Hermes in Germany, the Australian counterpart Efic, or an aggregate of two ECAs working together. According to Keränen, the main

¹¹ Information gathered from www.outotec.com; Mrs. Maria Maliniemi (Finnvera Key Account Manager, 23. January 2018) and Mr. Heikki Keränen (Director Customer Financing, 13.02. 2018; amendments November 21, 2018).

issue of concern related to procuring out of Germany is Hermes's requirement for a high level of local content, resulting into high cost of making equipment and reducing price competitiveness. Recently, however, these requirements have been reduced. While manufacturing in Germany is decreasing in general, the alleviated requirements are meant to retain the companies' headquarters and R&D units in Germany.

The indirect benefit of Finnvera financing for Finnish economy is evident in many ways. First, while Outotec mainly provides the engineering and design on the basis of their R&D work, they cooperate heavily with local subcontractors, who manufacture the equipment.

Another significant impact, according to Keränen, relates to running their R&D units, offices and the headquarter in Finland. These require significant amount of external service providers for daily operations. Moreover, Outotec is a significant employer of highly educated people, many of whom are engineers. The projects require people capable of doing special engineering work and the company provides training to develop these skills even further. Cooperation with Universities is also spreading the technological know-how. On a wider scale, the development of clean technologies is linked directly to Finland's goals for a better environment.

Finally, the geographical scattering of the operations and employees in Finland supports regional economic well-being. Outotec has units in Espoo, Pori, Turku, Oulu, Kuopio, Lappeenranta, Outokumpu, and Harjavalta. From the capital's perspective, the number of people in certain units is small, but the company is considered a major employer in many of these places.

In conclusion, in Finland, capabilities and activities for developing the company are located there. Finnvera helps keep Finnish companies in the bidding competition for CAPEX intensive projects that need long-term financing. Outotec delivers large projects globally. The nature of the business requires finance offering at the bidding stage to secure the long-term finance for these types of investments: "[Finnvera's responsibility] is to facilitate them to get the deals that they would not get otherwise. . [Finnvera is an] essential enabler for Outotec , enabling the company to do more business" (Maria Maliniemi, Finnvera Key Account Manager). Finnvera supports Outotec's competitive position, which entails remaining a technological innovator, developing the capabilities in scientific research at universities, and providing jobs to engineers needed to keep this industry afloat in Finland.

Nokia Oyj¹²

¹² Information gathered from an internal document produced for Finnvera in June 2017. Major informant was Mr. Jari Hanninen, Head of Structured Finance, Credit Products, at NOKIA (interview on November 21, 2016; updated through e-mail conversations on June 6, 2018); Key Account Manager at Finnvera: Antti Saviaho (September 8, 2016; November 30, 2016).

Business background: Nokia is publicly listed at Nasdaq (Helsinki), Euronext (Paris), and New York Stock Exchange. It operates in around 130 countries and employs around 101,000 employees worldwide. During the financial year 2017, the net sales amounted to 23100M€ at a gross margin of 39.5%, with investments of 4900M€ in R&D. Its main business is in networks (ultra-broadband, global network services, IP network and applications), technologies, and common and other services. At its core, Nokia's business can be seen as a major technological enabler. A myriad of technological advances across many industries are being built on the infrastructures they create. Nokia, together with its global competitors, Ericsson and Huawei, are the companies that build the platforms (e.g., Networks, IoT, 5G, cloud services) on which many current and future innovations are based; thus, Nokia can be considered being system-significant for many industries. The technology leadership that is being developed promises a bright future in the long run, considering many of the proclaimed emerging and converging industry effects based on wireless connectivity often referred to as the fourth industrial revolution (e.g., converging technologies in automation, IoT, big data analysis, artificial intelligence, robotics, 5G networks, and cloud services).

Nokia's business must be understood as a "solution business". It possesses strategic resources and capabilities that are spread over various organizational units across the world and can create new configurations of abilities that are co-defined with their customers (e.g., network operators). Thus, their business models consist of globally dispersed technological and organizational capabilities that are often highly context- and location-dependent in that they benefit from specific agglomeration and cluster spill-over effects when producing their technologies and services at specific locations around the world. At the same time, their value creation is highly customer-specific and responsive to local conditions, and enables customers' business concept innovations. Such a solution business model is usually characterized by value co-creation approaches (i.e., value is context dependent, value is temporally dynamic, value is idiosyncratically defined) and requires an efficient global coordination and integration of geographically dispersed activities. Thus, Nokia's competitiveness is strongly directed toward a transnational strategy that seeks global efficiencies through concentrated operations while deploying them in context-specific and locally adapted ways. Efficiencies are based on cost leadership effects through a geographically dispersed agglomeration of specific activities for the purpose of attaining standardization of platforms effects, economies of scale and scope effects in production; economies of learning effects and benefits from spillover effects of specific global centers of specialized knowledge. These produce firm-specific advantages that can be transferred and integrated. These globally dispersed resources need high coordination efforts and integration in order to realize an effective solution business on local level. Solution businesses are based on the principle that value is defined and created through the specific situational and idiosyncratic situation of Nokia's

customers as well as the understanding of how Nokia's technological resources can be integrated to create new business opportunities together with their customers. This requires a highly responsive localized and customer/stakeholder-centric approach to business.

Considering both requirements necessary to succeed with such a strategy, the sophisticated globally dispersed and integrated technological resource base and the ability to zoom into customers' localized problems on a worldwide scale to produce new opportunities together with customers is a very sophisticated business model. Structurally, it also requires a very sophisticated organization. The organizational requirements, on one hand, must deliver effective and efficient management of highly specialized units that develop technological capabilities and resources and coordinate with other globally dispersed technology centers; on the other hand, the organizational requirements must possess sophisticated project management abilities to identify and evaluate customers' situational needs and locally integrate the company's own technologies in order to produce new opportunities and new value for customers. Thus, how does such an organization function? On one hand, it requires a high level of headquarter control in order to make sure the global integration functions come together; on the other hand, the organization needs to facilitate free flow of coordination in a network-type organization where relevant nodes in the network easily locate and connect with one another in order to contribute to the creation of value in customer projects. This organizational form can be characterized as vivid multinational and multifunctional globally dispersed teams that operate within the broader hierarchy of the organization; these team-like structures cross organizational borders when realizing new projects with customers.

At the point where value is created together with customers, a cross-organizational team consisting of individuals from different legal entities is established. Among these teams are managers of Nokia, their customers, customers' customers (eventually), financial institutions (e.g., banks), and Finnvera managers in cases where special finance requirements are given.

Finnvera's role and impact: The need for Finnvera's export guarantees and credits has grown since the financial crisis in 2008. Nokia's industry in the core business of networks functions basically as a global oligopoly, with Ericsson of Sweden and Huawei of China being the respective competitors with comparable offers. While Sweden and Finland both oblige to the "OECD arrangement" in regard to export credits and guarantees, China has not been participating in this institutional framework. However, the basic rule remains that no competitive advantage should emerge through the support generated by export guarantees and credits, with the idea of facilitating a "level playing field" in competition. This means that Finnvera is able to support Finnish companies such as Nokia to the extent that it facilitates business that would otherwise not happen due to structural constellations (e.g., to overcome shortcomings of financial institutions or to expand the ability of Finnish firms to

take structural risks, such as country or political risks). Thus, Finnvera plays an important role in such projects in that it creates finance mechanisms for deals which may, for a variety of reasons, not be financeable by commercial banks.

However, the reason why Nokia's business qualifies for export guarantees or export credits is neither straightforwardly defined by a traditional view on "export" nor straightforwardly defined by "Finnish content"; rather, the reason is defined by the concept of "Finnish interest". Nokia's offerings for their network's clients are typically constituted by solution packages that include the following component categories: (a) hardware components, (b) software, (c) services, and (d) finance, wherever needed. Usually, all three rivals in the industry participate in bidding processes for these projects and, where finance is required (even highly potent global operators have been eager to take credits and guarantees), the financial conditions that are part of the package must be matched. While the traditional "export" definition for these types of deals is not applicable because hardware components only constitute a part of the overall package (and are produced largely elsewhere than Finland), the "local content" definition is not useful due to both the globally integrated nature of Nokia's business and the very local value creation that exists when a new solution is implemented. Thus, the evaluation of Finnvera's impact on Nokia must be defined via the "Finnish interest". Finnish interest may primarily be defined as the combination of having a globally competing firm headquartered in Finland, being listed on the local stock market, creating value through its headquarters' services, employing high-level managers locally, and being deeply embedded in the Finnish economy through its local presence as well as through assets such as intellectual property rights (IPR), R&D activities, and ties to local companies. On the other hand, even Finnvera's involvement in Nokia's business can be considered as serving the Finnish interest because Nokia's deals that are supported by Finnvera's mechanisms have been rather sound and thus have been profitable, contributing to Finnvera building up substantial reserves. In purely monetary terms, the estimate of impact for business that is facilitated annually through Finnvera's involvement has been averaged at around 1B€ prior to the Alcatel-Lucent acquisition. This amount might double to around 2B€ in the future (approximately 8-9% of current annual sales), and thus it may be considered to be critical in terms of volume in order to assure Nokia's sustainability and allow Nokia to compete at equal terms with its oligopolistic competitors.

To summarize, considering an alternative perspective, the question of impact can qualitatively be estimated on a broad range, from being an enabler of otherwise difficult-to-finance businesses in structurally difficult markets to being an enabler for equal terms competition globally and against their two global competitors. Thus, Finnvera can be considered to make a contribution for an important part of Nokia's business, as it enables a considerable share of Nokia's overall sales. In the end, Finnvera's services and its impact on the share of business in question might also be a significant

factor for maintaining Nokia's headquarters in Finland. In addition, impact can be viewed more widely if we consider social construction and signaling effects for the whole economy. Nokia has been an iconic company that is important in the economic history of Finland. When Nokia is maintaining good business, the general economic outlook is considered more optimistic. Nokia, as a leading company, affects perceptions of economic actors in Finland through its signaling of commitments to be a globally competitive firm by showing that it can develop high capacities and then draw on them to develop exciting new businesses and by having a positive long-term outlook that emphasizes the ability to actively construct new opportunities and exploit them for the greater good of Finland. Considering Nokia's effects on other players and the general economic mood in the country, one must also underline, in qualitative terms, that Nokia is an asset for the economic location of Finland. Therefore, we can observe rich synergies in terms of impact concerning the cooperation between Nokia and Finnvera.

d. Meyer Turku Oy¹³

Business background: Meyer Turku is one of the leading European shipbuilding companies and is globally one of the technological leaders in its industry, developing and building specialized cruise ships, car-passenger and cruise ferries, and special vessels for its customers (shipowners and ship operators). Meyer Turku is owned by the Meyer family. Aside from the Turku shipyard, Meyer Turku manages its subsidiaries Piikkio Works, a cabin factory, Shipbuilding Completion, a turnkey solutions provider for public spaces on ships, and ENG'nD, an engineering company specializing in design and engineering services for shipbuilding projects; altogether, these companies employ around 2,200 employees, a number that is growing by over 200 new direct employees each year.

The indirect employment effect of Meyer Turku is significant because as many as 15,000 jobs have been estimated to be maintained in the future in specialized activities of maritime subcontractors. Overall, Meyer Turku is investing heavily in upgrading its local shipyard capacities with an investment program of 200 M€ total. The company is one of the best in its industry, with order books currently full until the year 2024. The outlook is good beyond that due to the generally fast-growing cruise shipping industry, which has been growing at an average annual rate of 7.2% since 1990 (measured by passenger growth at <http://www.repositioncruises.com/cruise-industry/>).

¹³ Information gathered from an internal document produced for Finnvera in June 2017. Major informants were Mr. Thilo Bollenbach, Member of the Board of Meyer Turku Oy, Member of Executive Board Meyer Werft (group); Ms. Tuija Mäkelä, Finance Manager of Meyer Turku Oy (Interviewed on November 17, 2016; updates and corrections incorporated by June 14, 2018 by e-mail); Finnvera's Key Account Manager: Ms. Pia Peltoniemi (September 8, 2016; November 30, 2016).

The nature of the cruise ship and ferry shipbuilding business is interesting because it draws heavily on location-specific advantages that are created by agglomeration effects. This means that, due to the huge structural integration of building a ship, a vast proportion of the production must be facilitated in relative physical proximity in order to be economically viable (transaction costs). At the same time, the average size and complexity of these ships is also increasing. Producing a state-of-the-art cruise ship with ever-tightening standards and consumers' expectations (in terms of these ships becoming "attractions and destinations" for final consumers buying memorable experiences) is an undertaking that requires high-level engineering and management capabilities as well as highly future-oriented and engaged tacit insights into the trends that shape the cruise line business. At the same time, these ships also need to meet today's expectations in terms of environmental impact, employment conditions for sailing cruise line employees, and many other regulations both in place and anticipated over the lifetime of the vessel. This requires the shipyard to be innovation-driven and seek new solutions to produce high lifetime value for shipowners and operators.

Therefore, the value creation model of a shipyard such as Meyer Turku can be characterized as a networked ecosystem with a central controller and integrator of subsystems that are produced by affiliated suppliers who are led by the shipyard. The shipyard competes against a small number of global competitors who can compete in this top segment niche (mainly Fincantieri, with an estimated 60% market share in cruise ships including STX France; recently, also, MV Werften/Genting Hong Kong; China State Shipbuilding Corp [CSSC], with its wholly owned Shanghai Waigaoqiao Shipbuilding/China [SWS]) and sells its services to a handful of firms controlling the global cruise passenger market (i.e., market share of lower berths: Carnival Cruise Lines [CCL], 43%; Royal Caribbean Lines [RCL], 24%; Norwegian Cruise Lines [NCL], 9%).

At Meyer Turku, more than 80% of a ship's value is produced by the partner network. Nearly all equipment and materials are procured and over 80% of design and engineering is performed by external engineering offices; 25-30% of surface-treated hull work is made by subcontractors, about 80% of prefabricates are procured from external workshops, and about 80% of outfitting is conducted by suppliers in turnkey organizations. This means that Meyer Turku's impact on the current economic situation of its supplier network is vast and its impact on the outlook is important. Being the leading firm in its cluster, Meyer Turku's securing a full order book over the next several years contributes to economic certainty, which enables suppliers to plan, invest, upscale, and upskill their own operations. Doing so may create new opportunities based on new capabilities or based on generated scale and scope economies that these suppliers can then apply in other areas of their businesses. On the other hand, working at the top end of shipbuilding and pushing the boundaries of technological and managerial complexity of these ships also produce a focus on innovations and problem solving, creating capabilities for engaging and working on cooperative projects as well as developing

managerial sophistication; such capabilities may be dynamically transferable beyond the given local shipbuilding interests of the supplier network. Therefore, we can assume that Meyer Turku's overall impact on its supplier network is vast and highly significant, in the long run, for the economic development, employment, and future-proofing of these supplier firms in both this industry and related industries.

Thus, the value creation logic of a shipyard is very interesting because it draws heavily on the location-specific resources and endowments that are created by the wider supplier ecosystem and network. At the same time, this logic creates products together with its direct shipowner/operator customers, creating a locally integrated production model with a strong focus on diversification and creation of new consumer segments that are either adapted to the future shipping destinations or configured to make ships the destination for a multitude of experiences.

Finnvera's role and impact: The role of Finnvera in the continuity of the Turku shipyard during the takeover by the Meyer family and its subsequent impact on the firm's growth and economic success is considerable due to the current financial model under which the industry is operating. The model can be summarized in detail in the following way: Meyer Turku agrees with well-established shipowners on a 20% down payment (an example for the payment terms for well-established shipowners is 5% at contract signing, 5% is paid 36 months before ship delivery, 5% is paid 24 months before delivery, and another 5% is paid twelve months before delivery). Meyer Turku finances a share of about 20% on its own. The remaining 60% is covered by "construction finance", which, in the past, was financed with Finnvera's support, but is currently covered through commercial banks that view Meyer Turku as a sound receiver of finance. Meyer Turku's part of the business model that provides it with certainty is the fact that contracts they sign with customers (e.g., CCL, RCL) are "just considered paper" (Bollenbach) and what truly count are (a) real commitments (e.g., down payments) and (b) the certainty that their customers have secured financing for deliveries. This is what makes Finnvera and other equivalent institutions so critical in this industry.

"Buyer credit guarantees" provided by Finnvera are absolutely necessary to enable shipbuilding for Meyer Turku's segments. There are currently no private markets for this kind of financing without the instrument of a buyer credit guarantee (i) due to the very large sums at play for a single deal requiring high equity backing (e.g., the ICON class ships signed with RCL to be delivered in 2022 and 2024 amount to a sum of more than 1B€ per ship) and, more importantly, (ii) due to the very long financing periods, as the agreements involve commitments of typically twelve years before the delivery of the ship, which is outside the risk-taking framework for commercial loans or bond instruments. This means the impact of Finnvera on Meyer Turku's business constitutes that, without buyer credit guarantees, the large cruise ship business would not be feasible; according to CFO Thilo

Bollenbach, the process currently offers no alternative. These considerations and the support the government (i.e., through an initial joint ownership) and Finnvera (with initial construction loans and buyer credit guarantees) provided were an important aspect that led to the 2014 acquisition of STX Europe's Turku shipyard by the Meyer family. Up until 2008, the financial crisis buyer credit guarantees were considered to make deals unnecessarily complex and expensive, but now they are absolutely necessary in order to secure funding for customers (e.g., the case of RCL during the negotiations leading up to the signing of agreements in fall 2016).

However, the view by Meyer that buyer credit guarantees are, under OECD arrangement, meant to create an equal, level playing field (i.e., for overcoming financial market failures or shortcomings) is somewhat artificial (according to Mr. Bollenbach) because ECAs are, themselves, influencing competition through their price-setting policies that can amount to considerable sums in the shipbuilding business. For instance, in the case of interest equalization, the Italian and French financing institutions operate with no or lesser surcharges on the Commercial Interest Reference Rate (CIRR) than the financing institutions in Finland and Germany, which believe a "high volume and low margin business" can make a significant difference in profitability/viability. Thus, ECAs can be viewed as influencing competition indirectly (i.e., providing Meyer Turku's customers with a negotiating angle when comparing Fincantieri/SACE's offerings), which might also be considered when discussing impact (however, these practices also must be considered by the standing of Italian banks versus Finnish and German banks).

The competitive outlook for Meyer Turku is currently good. About 90% of the world's cruise ships are built in European shipyards and the Turku yard's order books are full until 2024, but competition is growing; the "China 2025" national strategy, namely, sees a push into "artificial ships" as a strategic industry (also in light of a growing domestic tourism industry that might see high growth for cruise tourism). The strategy to counter these competitive attempts by Meyer Turku is: (a) to invest in innovations such as fuel cell technology, which is very promising and is planned for implementation in the ICON class but is also challenging because the technology is not commercially viable yet (infrastructure must be developed and regulations must be placed); (b) to push the sophistication and complexity of cruise ships in order to maintain a technological and managerial gap in realizing these projects. A good case in point is Mitsubishi Heavy Industries, which had the ambition to push into the large cruise vessel segment by constructing two ships for CCL, which ended in over 2 billion USD losses due to delays and cost increases (<http://www.maritime-executive.com/article/mhi-backs-out-of-cruise-ship-business>); and (c) to drive the local supplier ecosystem toward utilizing the economic certainty for the current maritime industry in Finland to invest in supplier capacities and grow with Meyer in size and sophistication. To summarize, in a nutshell, Bollenbach states: "No business and no alternatives without buyer credit guarantees".

e. Andritz Oy¹⁴

Business background: Andritz Pulp & Paper is a leading global supplier of complete plants, systems, equipment, and comprehensive services for the production and processing of all types of pulp, paper, board and tissue, and in the generation of power from renewable resources. In 2017, its sales were 2060M€ (EBITA 195M€) and the business area had approximately 8,000 employees. Andritz Oy is within the top 5 largest companies in the Andritz Group, having a leading role within in pulp production technologies and power generation from renewable resources, and has group wide product “centers of excellence” located in Lahti, Kotka, Savonlinna, Tampere, and Varkaus. As a company Andritz Oy is one of the leading global suppliers of pulp production technologies and key process equipment for pulp mills - as well as for biomass boilers, biomass pelleting plants, and gasifiers for energy generation. The publicly listed technology Group (Andritz AG) is headquartered in Graz, Austria and has an overall staff of approximately 25,800 employees.

Finnvera’s role and impact: Andritz Oy’s typical projects are large-scale Greenfield as well as brownfield modernization and extension projects in areas where wood is available (e.g., Brazil, Uruguay, Russia). As an example in 2017, Andritz Oy concluded two very successful pulp mill projects that were unique worldwide: Fibria’s Três Lagoas second pulp production line was started up in Brazil, and key production technologies were supplied for the Metsä Group’s bioproduct mill in Finland (Äänekoski Biorefinery). Currently, there are also new greenfield pulp mill initiatives in Finland (Kemijärvi and Kuopio). The largest greenfield projects are typically around 2B€ complete plants (including all civil works, construction etc.), of which Finnvera’s portion of financial facilitation is 200-400M€ (value of imported goods recently for projects in Brazil where higher levels of local manufacturing by Finnish firms take place as required; in comparison to that Finnvera’s facilitation might be as high as 700-800M€, for instance in Uruguay or Chile, where the value of imported Finnish goods tend to be higher), covering approximately 20% (alternatively up to 40%) of the total investment. Projects are long term and financing is needed for nearly ten years. The market is transparent in the sense that: “Everybody knows about coming projects. Usually they [Finnvera] have two years to prepare [an offer]. However, they can’t do much in advance as there is not enough information in the early stages of Greenfield projects” (Savelainen). The lack of information is especially perceivable in new greenfield projects in Russia, where customers are not existing industrial players, but are totally new organizations, such as industrial start-ups with no previous experience running pulp mills.

¹⁴ Information gathered from www.andritz.com; Ms. Satu Savelainen (Finnvera Key Account Manager, January 23, 2018; 28 November 2018) and Ms. Heidi Vasala (Director Project Financing, February 19, 2018; amendments 27. and 28. November 2018).

In terms of finance, the normal procedure is that customers obtain ECA financing themselves. They deal directly with their banks, which negotiate with Finnvera. However, with new players especially in Russian Greenfield pulp mill projects, Andritz first needs to “open the doors” and introduce Finnvera to its customers.

According to Savelainen, Andritz strictly manages their risks. They follow a tight group credit risk policy, meaning that all risks must be covered either by bank securities or credit insurances even for well-established customers regardless of the size of projects. Andritz’s business can range from 0.5M€ upgrades or refurbishments to over 500M€ complete pulp mill technology supplies. Latin America and Russia are the geographic areas containing the biggest producers of pulp at present. Without Finnvera, it would be difficult for Andritz’s customers to obtain financing in some markets. According to Vasala: “In Russia, it is highly unlikely that western banks would provide loans without Finnvera”. There, Finnvera’s financing is key for realizing some projects. In Brazil, the larger scale projects would be problematic as well. This was experienced some time ago with a major Brazilian customer, for instance, which is a well-known company in the industry; to their surprise, they were not recognized by commercial banks and were only able to obtain financing when the country risk was insured. In Asia, big pulp mills currently do not use ECA financing. The local markets work well, and such pulp mill projects are practically a letter of credit (L/C) business. Chinese companies have started to consider ECAs, but the difficult due diligent phase is perceived as an obstacle; nevertheless, interest in ECA financing has recently increased.

The buyer credits Finnvera provides are very competitive in pricing, resulting in a significantly positive impact on Andritz’s offerings in large-scale projects where customers are seeking ECA financing. Finnvera provides to Andritz also credit risk guarantees. “If Finnvera’s cover wouldn’t be available for us...and if we don’t find the solution from private insurance market, then our only option is start to require bank securities, which worsen our commercial terms significantly. It would be too expensive for customers to buy from us and then they might start to use other suppliers with better terms, and we lose deals and our order intake would be decreased” (Vasala).

Andritz is able to utilize other ECAs to some extent, namely the Oesterreichische Kontrollbank AG (OeKB), for deliveries of pulp dryers as an aspect of complete pulp mill deliveries. Andritz is aware that Valmet has more of its own production and sourcing in Sweden, making the latter’s Swedish portion much larger than the former’s. This means that Valmet can use Swedish ECA (EKN and SEK) that may put the company in a more favorable position in terms of cost of financing for some projects: “We fear, that they can source cheaper financing, because they have

more sourcing in Sweden” (Vasala). According to Vasala, Andritz relies on Finnvera’s support, even though the technology and know-how is the main driver in the pulp mill business and practically only Andritz and Valmet are globally able to deliver complete mills. Andritz needs to remain ahead in technology development, “We are an engineering company and a very big part of that is R&D. We don’t otherwise succeed in competition. We have a lot of research projects that deal with sustainability and energy efficiency. That is something our customers are now really looking for” (Vasala).

An obvious indirect impact is purchases from Finnish sub-suppliers; approximately 60-65% of Andritz’s total purchasing is from Finnish suppliers. Another impact is its track record of stable employment (no layoffs), significant R&D operations, and maintenance of the entire process, know-how, and engineering capabilities in Finland that enable revenues both now and in the future. Cooperation with the city of Savonlinna and Savonlinna Polytechnic, or a significant research and development cooperation with Aalto University to commercialize production of microcrystalline cellulose, are good examples of a hands-on approach to developing new technologies together with university researchers and students. Currently, such cooperation has a small local impact, but when it succeeds, it may have a huge impact on a much larger scale in the long-run: “When you talk about education of future engineers, these are the core resources for a knowledge-based company. That way Finland remains a world-class engineering country” (Vasala).

To conclude, Andritz Oy is strongly affected by Finnvera, as their business consists of typical turnkey operations with solution business approaches that also require helping customers arrange their finance specifically in certain markets where pulp and paper is a business with new entrants, where country risks are considered too high for commercial banks, or where financing periods are too long for commercial interests by banks. Very similar in an overall sense to other investigated firms, Andritz Oy requires that Finnvera facilitates an important aspect of their business abroad. In addition, as being part of Andritz Group, the Finnish subsidiary must comply with their group wide corporate policy, which is highly risk-avoiding and requires that most transactions be credit insured or alternatively bank securities are used.

LARGE CLIENTS’ CROSS-CASE ANALYSIS

The six large clients of Finnvera under investigation have many commonalities when trying to understand “how Finnvera’s financing mechanisms generate impact”. The most important insights from the detailed analyses by case above are summarized in the section below.

#1 Business models. All the firms in the businesses in which Finnvera plays a critical role are developing solution business models. This means what traditionally have been separate factors and offerings in a competitive situation are increasingly interdependent and reciprocally needed to reinforce one another, providing larger packages of integrated hardware, software, and services (i.e., “the solution package”). In practice, this unfolds in the following way: a potential customer seeks to invest in a new industrial plant, network, or ship for which they assign full turnkey responsibility to the firm winning the bidding process. The factors explaining a successful outcome (winning the deal) typically consist of the following:

- (1) World-class leading edge technology that provides competitive advantages in the commercial use for the customer/operator;
- (2) An engineering and design package for the specific solutions adapted to local or customer-specific conditions and the markets in which these system solutions operate;
- (3) Procuring and managing construction services leading to the full delivery of the delivered solution package;
- (4) Maintenance and services provided during parts of the solutions life cycle and spare parts. These long-term services and provisions increasingly transform OPEX over part of the lifetime into CAPEX at the stage of investment. This means that operational expenses in the future are already considered in the capital investments, which creates long-term stability for these firms and generates future uncontested revenue;
- (5) Increasing operational assistance or full operational responsibility for the management of a solution are considered as part of offerings, usually contributing to future revenues for the vendors to be earned in local or globally centralized operation centers;
- (6) Assistance in arranging financing as part of the solution package consists of support in the securing of funding and demonstrating the commercial viability of the overall operation of a plant over its life cycle, often directly related to the output unit of a plant (e.g., the cost of a kilowatt-hour (kWh) and the revenue potential of a kWh, under different given scenarios).

Thus, Finnvera’s role in the financing aspect is decisive for these Finnish firms in conducting their businesses, which has been made clear by many financial managers: “These parts are mandatory, so if we wouldn’t have ECA support on this we would be out on the first pre-qualification round” (Haapakoski, Wärtsilä); “If we didn’t have that letter [of support with guarantees from Finnvera] then we would have been dropped out already at stage one” (Keränen, Outotec); “ECAs are needed more because the banks are not willing to take the risk” (Toikka, Valmet).

#2 Strategic partnership. In order to successfully run a solution business in these industries, Finnvera is needed as a critical partner in securing the overall financing packages that enables these firms to monetize on their knowledge, know-how, technology, engineering, turnkey management, and other abilities. Thus, these firms view Finnvera as a strategic partner, without whom a solution business is not viable in the current financial environment. According to some respondents, this feature is poorly understood. Finnvera, for them, is not a “nice to have” feature, but rather is a critical element with no alternatives for the solution business. As they see Finnvera as a strategic partner, some businesses have expressed the perception that this is not mutually reciprocal, referring to important stakeholders of Finnvera (e.g., ministries) who do not consistently display a strategic position on Finnvera’s purposes and activities. This can be expressed with the help of a metaphor: “When building a house, then all the plans and requirements need to be readily laid out, all the resources and processes need to be available in order to complete the house and to commence with actions. It is not so, that in the middle of the construction project you question if really all windows are needed, or if the house could do with only half a roof”. This metaphor is an attempt to capture the perception concerning the political discussion and the way some ministries seem to approach this important topic. Many respondents called for an “industrial policy” (many referred to other Scandinavian countries as examples, especially Sweden). Such an industrial policy (other than the practiced Finnish “fiscal policy” approach, which looks at the level of debt and the risks attached to guarantees and credits by Finnvera) would enable Finnvera to provide full support in strategically joining these firms where they decide and know how to make business.

A view on counterfactuals (i.e., “what if Finnvera would not support...how much less business there would be”) is not seen as a viable approach by many respondents, as companies form long-term strategies act on them and enact the business schemata resulting from those actions. If support for financing their clients is part of such a business model, then these firms need strategic partners, such as Finnvera, to realize these opportunities. However, many feel that the discussion, especially on the political level and in ministries, is stuck in an era when international business exports business, favoring the idea of Finnish content as the measure that can be defended.

#3. Finnish content. All investigated large firms (except Nokia), when looking at their overall business (rather than as the total sum), have in common that a large extent of their value production is physically still occurring in Finland. Valmet, for instance, estimates that the delivery of hardware contains typically 60-70% Finnish content and a 50M€ project for which customers secure export credit guarantees, in turn, secure 150-200 FTE in Finland. Similarly, Andritz sees that their 60-65% of typical Finnish content in their business easily meets the threshold. Wärtsilä sees about 50-60% content in their deliveries, while Outotec estimates that, in addition to their own house production, sourcing from Finnish suppliers accounts for approximately 25% of their offerings sold abroad.

Meyer Turku's value is produced up to 20% by the shipyard and subsidiary companies and 80% of the deliveries' value are, to a large extent, created by some 15,000 FTE by Finnish supplier networks. All these firms currently and easily meet the expectations of Finnish content that is part of the political discourse in Finland. Nevertheless, this might change in the future, especially if solution business is growing and parts of the offerings are increasingly produced locally in target countries not only during construction stages, but also when future maintenance, services, and operations management contracts increase in volume (most companies under investigation share this feature with Nokia, which has also been a forerunner in globalizing its production system to take advantage of globally dispersed location advantages that foster its price competitiveness and technological leadership). Under such scenarios, the Finnish content share might decrease as the business models and the international competition driving them evolve, albeit sales volumes and overall production in Finland continue to increase. However, Finnish content is high and all firms stressed that the Finnish interest constitutes a major impact, which is not considered prominently enough in the political and public discourse.

#4 Finnish interest. All firms were keen on sharing their perceived impact in Finland and wished to point out that a large degree of this is because Finnvera enables both their businesses and their business models. Among the stated points, the following areas were considered the most important Finnish interest impacts:

(1) Headquarters located in Finland, with the major decision-making institutions being located in Finland, their identification as Finnish organizations, and their loyalty to the home country. An important aspect of the headquarters being located in Finland is the fact that high-level management talent is cultivated, employed, and bound to Finland. Without these human resources being located in Finland, the future opportunities for developing the Finnish economy and cutting-edge technology there would be compromised, with high-level talent-seeking for building their careers elsewhere, potentially leading to a downward spiral and a decrease in certain types of economic development opportunities;

(2) Investments in R&D. All firms have high-level R&D operations spread throughout Finland, covering the major share of global R&D being pursued there. This is important because the core technologies are invented and developed in Finland, which create technology spillovers that can also benefit other firms and sectors;

(3) Supplier networks. These firms have long-lasting supplier-customer and subcontractor relationships with other Finnish firms in their vicinity. These firms, often small or medium in size, generate major shares of their revenues from supplying and serving these firms. Thus, their presence in Finland can be seen as an important contribution to the development of skill, competence, and

capability of a supplier base that is able to deliver their technologies, products, and services as part of world class offerings. This enables suppliers to develop and create new technologies, aside from securing their contributions to the tax base, employment, and regional, social, and economic well-being;

(4) Regional impact is an important part of the Finnish interest produced by these firms. Each firm has their own cases illustrating the close cooperation they have with both the society and economy at the locations in which they are active in Finland. Wärtsilä in Vaasa can exemplify this circumstance. Aside from being an important employer, taxpayer, and technology development firm, Wärtsilä is part of a small group of major companies developing and giving viability to the energy cluster in Vaasa. This, on one hand, creates new technological trajectories, and on the other hand, enables and encourages entrepreneurship in an important industry with high future relevance by providing not only technological, but also commercial opportunities. However, regional development and impact is far wider-reaching, as thriving locations of production and technological development are comprehensively important ingredients for maintaining a healthy and well-developing local population, maintaining good infrastructure and services for both inhabitants and local businesses, and securing the provision of local services. Because the investigated firms have many operations across Finland (often in smaller rural communities), one can understand this indirect effect as being hugely important for a balanced urban-rural population development;

(5) Tax revenues from employment, local consumptions, and inland revenues paid by these corporations. In addition to these monetary contributions, the companies are also important investors reinvesting major areas of their gross margins;

(6) Lead firms. These companies are an important aspect of the industrial history of Finland. Aside from their technological capabilities that keep them globally competitive, they are also critically important leading firms that influence the socio-psychological expectations and the future outlook of firms as well as the economy overall. When these firms look at positive business development, a signaling effect occurs on other firms, thus increasing the likelihood for investments both directly (e.g., by suppliers, see the Meyer Turku case) and indirectly (e.g., communal investments in infrastructure), which encourages other firms to base major company functions in Finland (e.g., Vaasa Energy Cluster, Turku Shipbuilding cluster);

(7) Science and education. These firms, in their respective industries and industrial disciplines, are important factors regarding the standing and well-being of the educational sector both in terms of developing meaningful outlets for creating scientific discoveries and their developments into viable technologies and for creating high-level engineering and managerial skills, the latter of which are

the raw material for future opportunities. Thus, these firms are hugely important because they are a crucial aspect of the capacity and capability development in a highly educated workforce;

#5 Finnish credibility and legitimacy. These firms' impact on the standing of Finland as a highly developed country with top-of-their-industry technology and viable business models is an important feature in the narrative of Finland within the world. Reciprocally, these firms benefit from the image of Finland and from their cooperation with Finnvera; in some regions of the world (especially Asia and Latin America) these firms gain credibility and legitimacy through cooperation with a well-respected agent of the state. This is an impact factor that reduces uncertainty and choice ambiguities for Finnish firms' clients abroad and thus constitutes an important moderator in international negotiations. While large firms reciprocally give and take credibility, smaller firms benefit from the good image of these firms within the world, and SMEs in our sample (see later section) benefit largely from the extended credibility they receive from cooperating with Finnvera.

#6 Social and environmental impact in the world. What the investigated large firms in our sample have in common is that their activities in the world create industrial renewal that benefits the environment through better technologies and improves social settings through their engineering and managerial practices; thus, these firms and their offerings contribute to a more sustainable world with fewer negative externalities. Finnvera's work with these firms have the additional impact that, through their social and environmental auditing processes (although the process creates extra costs and is not equally appreciated by all interviewed individuals), a positive image of elevating such issues and taking such issues seriously is consequently generated.

To summarize, Finnvera enables these firms to conduct part of their business and participate in global competition, which they could not do without the support of a potent ECA actor. Impacts can be understood in many ways, either in conventional terms (e.g., tax contributions and employment) or in the more colorful direct and indirect ways we pointed out in the previous discussion. Among the many different aspects discovered in our interactions with these firms, one seems to be critically important and insufficiently acknowledged: the strategic role Finnvera has as an integral part of a prominent share of business in these firms. However, as this is an investigation into the question of "how Finnvera generates impact", with a developmental aspect that should not be ignored, we would also like to point out a few areas that have room for improvement. As mentioned in the research design section above, we attempted to encourage financial managers of the case firms to state some suggestions they would include in a "wish list" for Finnvera or their influential stakeholders to consider.

Developmental propositions:

- (1) *ECA Competitiveness*. ECA activity needs to be understood as underlying a form of competition that takes place between agencies of states to enable firms that possess considerable interest or produce content in a country in order to conduct international business and grow and that are enabled in their own industries to compete successfully. Thus, the work of ECA, like Finnvera, is an important factor in the overall competitiveness of firms, namely in certain industries such as the selection of major firms treated in this report as developing solution business models. In order to provide competitive viability for firms, ECA must be competitive vis-à-vis their peers. This competitiveness must be achieved in multiple areas, including (a) competitive pricing of their services, (b) high responsiveness in providing agile and flexible solutions with straightforward frameworks, clear rules, and transparent processes, (c) and fully-equipped and supported capability to do their job from both political and public administration points of view. This might require a stronger push toward industrial policy in order to determine which industries, which types of business, and what kinds of risks are taken; in addition, these firms should fully commit to these areas, implemented with effective and efficient processes and fast decision making. This would be a key ingredient for becoming a strategic ally of Finnish companies in selected industries.
- (2) *ECA Adaptability of Service*. An ECA's quality of work can be (parsimoniously) observed from two perspectives: (a) as an expert who understands customers' businesses and the business models of their clients, one is willing to assess business risks in multiple ways (risk taking versus affordable loss versus potential opportunity development) and understand both political and country risk; and (b) as an expert who understands the financial and financing practices in major markets (e.g., one suggestion was that Finnvera could learn from EKN/SEK by setting up office in China and some other major markets, at least temporarily) in order to acquire deeper knowledge of the business practices specific to the financing industry.
- (3) *Public Opinion and Political Discourse*. From some respondents' perspectives, the political discourse regarding ECA purpose and related exposures has been characterized by disinformation specific to how ECA mechanisms work and what the implications are. Several respondents mentioned the role of journalists as decisive mediators of understanding this, as they both inform the public and inform politicians. In several respondents' views, journalists must develop a higher understanding of ECA financing and Finnvera might assist them in doing so. They must understand that certain types of business require, as an entry ticket, the ability to arrange long-term finance beyond commercial banks' means with commercially sound customers in sometimes politically challenging and risky environments; on the other hand, they must understand that certain business models are only viable if ECA provides the means and

subsequently commits to certain industries in which Finnish firms take major turnkey roles and develop leading solution businesses with high Finnish content and high Finnish interest.

IV. FINDINGS FROM SMALL- AND MEDIUM-SIZED ENTERPRISE CASES

In this section, we present a brief description of the small- and medium-sized client segment containing five typical companies benefitting from Finnvera's services: Kopar Oy, Nightingale Health Oy, Optomed Oy, Lamor Oy, and Huone International Oy. In the following section, we summarize the key findings to the question: how Finnvera's financing mechanisms generate impact?

a. Kopar Oy

Kopar Oy is a small-sized industrial engineering firm from Parkano. Established through a management buy-out in 1989, the firm produces equipment for process industries as a typical supplier of subsystems (e.g., pneumatic or mechanical conveyors) in industries such as energy/power, metallurgy, pulp/paper, and chemicals. They have been expanding with their solutions- and services-oriented businesses internationally through projects and have encountered experiences with international joint ventures and a wholly owned subsidiary in Estonia (2016: >13M€ turnover; 56 FTE). Their main international projects include those in Central and Eastern Europe, a growing share in Latin America, and some negotiations/bidding processes currently ongoing in Russia. Their most common mode of operations abroad is through cooperation with agents who enable them to do business in specific countries in order to localize and participate in bidding processes as well as execute local tasks. They are also suppliers for large Finnish industrial firms such as Outotec, Andritz, and Valmet (approximately 25% of their business at present), which means that, for those projects, they do not take international risks because they act as a domestic supplier within the usual domestic frameworks.

b. Nightingale Health Oy

Nightingale Health Oy, established in 2013, is a biotech science-based firm that is able to currently draw 220 bio-markers from one blood sample with a focus on major chronic diseases in order to obtain "more from data". This constitutes a major international business opportunity that they have been building over the past five years, cumulating by completing a cooperation agreement with PerkinElmer Inc. a global leader in healthcare technologies, in 2018. With revenues of over 1.5M€ (2016-2017) and a strong equity base, they employ 29+ full-time employees. The company's rapid development and growth, as well as their international opportunity, have enabled them to quickly set up their first laboratory (1.4M€ funding, first year profit of 0.5M€, 2014) in Kuopio. They received Tekes funding (2.1M€ in 2015), enabling them to set up their first internationally franchised lab in the UK. During 2016, they increased their equity basis through industry equity investments and established their financial position on solid grounds through bank loans that were enabled by

Finnvera. In 2017, their second international franchise was established at Oxford University in the UK; at this current stage, they serve customers in twenty countries.

c. Optomed Oy

Established in 2004, Optomed Oy is a medical instrument company based in Oulu. They specialize in retinal scanning technologies (hardware and software) that target a broad range of medical customers with their “handheld device”, which is capable of detecting various diseases. Currently, major efforts are going into developing digitalization capabilities that will enrich the possibilities for users in supporting their diagnoses (latest obtainable figures show around 6.5M€ in revenue and staff of 45 FTE, 2016 data; an additional 36 FTE are based on the acquisition of Commit Oy).

Optomed has been developing their retinal scanner hardware, and during the past five years, they have been investing more of their focus and effort into the software component of their business with the goal of increasing value by generating artificial intelligence for supporting medical professionals with their diagnosing. In order to do so, they acquired a software company, Commit Oy, in 2018, with 36 FTE to develop screening software and speed up the commercialization process. Their international market focus is on all major global markets in Europe, US, China, Russia, Japan, Korea, India, and Brazil.

d. Lamor Oy

Lamor is a global leader in oil spill response and environmental solutions, established in 1982. The company developed several product lines and services to recover spilled oil. Based on their portfolio, they can customize the response team and equipment effective for many different situations. Internationally, they operate as a solutions provider through local partners (latest official figures from 2016 show 21.5M€ in revenue; turnover ranges between 40-60M€ and 41 to 50 FTE). The firm began their active internationalization in the early 1990s by entering markets such as Russia, acquiring foreign companies during the 2000s in the US, and creating joint venture in Ecuador. The company can be characterized as highly experienced in their core technologies as well as highly capable of managing commercial and project operations in a wide variety of country contexts. On the financial side, Lamor is highly capable and structures its finances through a wide variety of instruments.

e. Huone International Oy

The business, established in 2012, set out to disrupt the service offerings in the very traditional hospitality industry, offering meeting and event venues and corresponding services with some clear differentiators. The firm currently operates two locations in Helsinki, opened a subsidiary and started operations in Singapore in 2016, and has plans to expand to a total of ten locations with over 100 FTE by 2020. In 2017, their turnover reached 1.66 M€, with 17 FTE in Finland.

SME CLIENTS' CROSS-CASE ANALYSIS

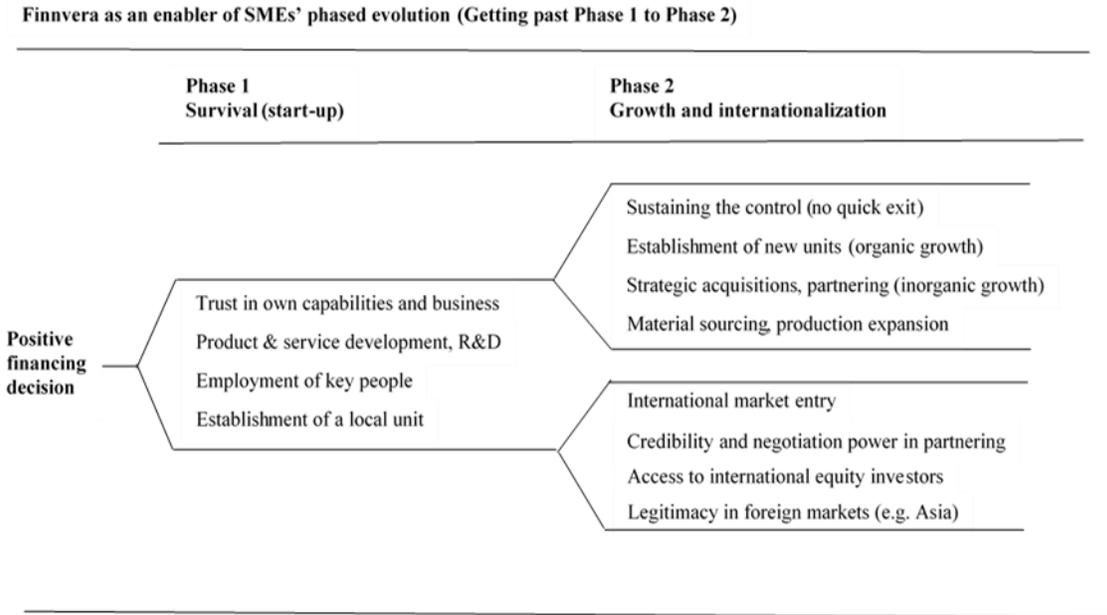
The five SMEs under investigation were found to share many commonalities when trying to understand “how Finnvera’s financing mechanisms generate impact”. The most important insights are summarized below. The section will first present the impact on companies and then briefly discuss the mechanisms’ impact on society.

#1 Enabler of phased evolution. The role of Finnvera as an enabler of companies’ phased evolution (e.g., survival, growth, and internationalization) was evident across the five cases. Consequently, the SMEs are familiar with and have used many of Finnvera’s financing instruments over the course of their life cycles, such as loans, guarantees for export trade, guarantees for bank limits (e.g., payment bonds, performance bonds, warranty bonds), and guarantees for bank loans in “export trade”, ranging from a few hundred thousand euros to several million euros. When asked about Finnvera’s impact on their business, a general view among the informants was that the SMEs simply would not exist without Finnvera.

Initially, the companies’ survival through the start-up phase—but also through economic downturn and recovery—was believed to be on account of Finnvera. One informant claimed that, without Finnvera, they would not have been able to start the business or establish their first unit in Helsinki, as getting a bank loan without equity would not have been possible. The financial support has also enabled the companies to, for example, invest in R&D, develop products and services, test technologies, employ key workers, and develop sales and marketing. Another informant highlighted the critical role of Finnvera during the financial crisis of 2008-2009. The survival of the firm was largely dependent on their support, as when the external crisis coincided with internal difficulties: “nobody else was willing to help” and “banks just might have quit without Finnvera during the difficult years” (interview respondent).

The support during the initial phases is also suggested to entail a psychological element in order to boost the founders’ entrepreneurial orientation. Obtaining the positive financing decision and starting collaboration with Finnvera was found to strengthen the founders/managers self-belief in their own capabilities and in their businesses, which significantly boosted their motivation to pursue further growth. This was particularly evident in a case where the founder was starting up an unconventional business in a traditional industry. The founder highlighted the important role of Finnvera’s case manager, who could add value to the financing package through her expertise. The crucial starting aid is thus further strengthened by Finnvera’s professional case managers and their knowledge and understanding of companies’ needs across their life cycles.

The SMEs’ development can be described as a funnel, where getting past the first phase (start-up) allows them to get to the next one (growth and internationalization), simultaneously widening and deepening the direct and indirect impact (see figure below).



In phase two, after the creation of necessary foundations for the firms’ existence, Finnvera’s support was found to be critical in jumpstarting the businesses. Across the cases, the companies’ growth trajectories have been realized through “internationalization”. Most importantly, the financial support has enabled the companies to execute international projects and grow profitably in the international markets. In most cases, internationalization, or the extent of it, would have been impossible without Finnvera’s support. According to one informant: “the extent of the international operations would have been considerably more limited” (interview respondent). Based on the general view, executing the commercial risks (defined mostly as country risks) by themselves and becoming an international actor would have been unlikely without Finnvera. Supposedly, and as claimed by one informant: “there are no alternatives to Finnvera” (interview respondent). Yet, for the case companies, international business is fundamental to their long-term existence, as they operate in highly competitive niche markets.

The case companies’ growth and internationalization has been enabled mainly through new market entries, establishment of international partnerships, and organic growth (e.g., establishment of foreign

units, expanding sourcing and production). One company reported a financing package for acquiring a software company in order to accelerate product development and spur international growth. The acquisition also ensured the continuation of the acquired firm in the region: “If we did not buy [company name] they would be bought from abroad” (interview respondent).

In addition, Finnvera’s involvement was found to increase the companies’ credibility and legitimacy in foreign markets. It appears that, in addition to generating money, the association with a Finnish state agency is a favorable reassurance that creates credibility in the companies’ expertise and know-how, subsequently increasing their attractiveness and leverage with potential partners, customers, and investors. An informant explained Finnvera’s participation by stating, aside from the guarantees for loans to “get money, it brought credibility”. Another informant claimed that the advantage in the international markets of partnering with a well-known and respected ECA and Finnish state institution is largely underestimated and under-acknowledged (interview respondent). It seems that the legitimacy by association and involvement is especially critical in Asian markets, where Finnish government institutions are highly appreciated and act as door openers, trust builders, and reassuring factors: “The Finnish brand is much appreciated in places like Singapore” (interview respondent).

Similarly, Finnvera’s participation has been important in establishing credibility and attaining legitimacy in regard to creating the basis for cooperation with international partners. This capacity-building support (i.e., demonstration of “government agents back-up”) has, for example, enabled a case company to negotiate a cooperation agreement with a large global partner. The agreement enables the company to utilize their technology and agility as a small firm and take advantage of the partner’s global scale and reach. The CEO of the company describes the situation as highly favorable and potential, where only “the sky is the limit”. According to him, international opportunity creation is made possible by Finnvera providing means to attain finance “at the right time” to enable the right moves (e.g., to hire key personnel who give pushes toward the development of the firm), while at the same time being largely hands-off and not involving themselves with major business decisions or operational choices: “allowing us to show what we can do” (although, there was much praise for Finnvera’s case managers not only being competent in financial matters, but in showing a real interest and background knowledge in their business). This is ascribed as instrumental for the firm—“otherwise we would not be here now”—and both a matter of survival and a fair chance in a highly competitive global market.

Finnvera has also had a major impact by helping the SMEs acquire “patient money”. Some of the informants stressed how the guaranteed loans have enabled the companies to retain an important share of their equity base and allowed them to maintain control of strategic and operational choices. It was found that the financing may function as a catalyst for equity-based investments, which allow

the SMEs' founders/management to maintain control of enforcing the entrepreneurial orientation (e.g., innovativeness and proactiveness) and long-term perspective and commitment. Thus, Finnvera's guarantees have allowed the SMEs to "avoid vicious venture capital firms" (interview respondent) that focus on dilution and short-sightedness, restrict entrepreneurial vision, and emphasize too much on exit, instead building strong equity positions with international industry-based equity investors. As lamented by a CEO: "there is too much belief in the VC model...it is diminishing the entrepreneurial spirit, not helpful, nor motivating...and largely built on a blackmailing model". Access to "patient money" is argued to be especially relevant in R&D intensive industries (e.g., medical, life science) where it may take years to develop products or solutions and become profitable.

#2 The societal impact. Societal impacts related to SME establishment and growth were evident, as were their increase along with the growth and internationalization of the SMEs. The main impacts related to growth and internationalization were employment and regional purchases, as the companies' main value-creating functions are based in Finland. One of the CEOs estimated that, from 1M€ in export sales, about 400k€ translate into revenue for Finnish suppliers with respective employment effects spreading across five main Finnish suppliers and each of them again contracting up to ten suppliers to perform their manufacturing tasks. Another CEO calculated that their local supply volumes in Finland, especially in the Oulu region, create around 1M€ in revenue for other firms (electronics, software engineering), securing somewhere between 5 to 20 FTE of employment.

In terms of wider regional impact, the SMEs located in smaller cities or communities were viewed as having important indirect impacts on a regional level, as they are an important part of small rural communities and affect the general well-being of their community via employment and local taxes. Some companies were even believed to uplift the economic confidence in their respective regions.

Developmental Propositions

The five firms made a number of valuable propositions that illustrate where Finnvera could enhance similar firms' abilities to sustain, turn around, grow, and internationalize. A selection extracted across cases is described in detail below.

(1) Promoter and enabler of entrepreneurship. Finnvera, with clear rules and processes in place, with transparent decision making and engaged expert case managers, could enhance promoting entrepreneurship. Generally, all respondents see Finnvera in a positive light, especially vis-à-vis other state agencies. Many mentioned that Finnvera could take on a bigger role based on their expertise to promote entrepreneurship in Finland;

(2) Equity and control. Several respondents mentioned the need for convertible equity loan mechanisms that enable small firms with huge potential to maintain control for a longer period in the growth process, build up leverage for extending the ownership base, and provide firms with more weight in the area of negotiations in order to drive the opportunity-making abilities of such firms. Some also mentioned that Finnvera should become and be considered a partner and alternative to venture capital, which often compromises the entrepreneurial drive needed in the early phases of international growth opportunities;

(3) Risk taking. Respondents discussed the nature of their entrepreneurial venture, which can be characterized by a very high level of personal risk-taking in light of potential “lifetime punishment” should they fail. Some expressed that Finnvera would be in a good position for maintaining and even extending the partnering in regard to risk-taking.

(4) Faster decision-making. Some opinions stated that it would be important to speed up the decision-making processes as time is of essence and these firms have, at times, few viable alternatives for arranging their finance.

To summarize the discussion of impact of Finnvera’s activities, one must remember that most large corporations were once small firms with the ingredients, drive, and support necessary to grow into major companies. As for many niche technologies and services, Finland is too small and they need to seek early internationalization to achieve viability and growth. From the perspective of a small open economy, Finnvera’s impact on these firms is potentially very significant, as most of the high-potential firms we investigated claimed to “not exist without Finnvera”.

V. SUMMARIZING INVESTIGATIONS INTO SECONDARY STATISTICAL DATA

As a second trajectory to treating the question of impact in a summative way, to find out what Finnvera’s impact is in a quantitative way, we engaged in a research design based on natural experiment. The goal of natural experiment is causal inference, which is a process of drawing a conclusion about a causal connection based on the conditions of the occurrence of an effect. The research design for this approach subscribed to the following logic: how can impact be measured and quantified when comparing firms that draw on Finnvera’s services with firms that do not (counterfactuals)? For the purpose of finding answers to this question, we reviewed a number of suitable databases that might allow us to draw conclusions. After that process, we selected data sets covering a duration of eleven years (timeframe selected in the view of the financial crisis 2007/2008 as a major event with high impact on business) and found the databases of Statistics Finland inside Finnvera’s internal databases, while drawing on the Orbis database for some items (Bureau Van Dijk). In addition, a central idea was to control for other possible policy effects (e.g., Tekes finance) that might skew the policy instruments implemented by Finnvera.

Finnvera database: Some statistics in the Finnvera sample show the coexistence of firms that request offers from time to time and few firms that frequently request Finnvera’s services. However, the latter firms are scarce. Less than 5% of firms benefited from Finnvera offers eight times or more for the eleven-year time period of our sample (see Table 1).

Table 1: Distribution of offers per firm over the eleven-year period (2005-2015)

	<i>min</i>	<i>5%</i>	<i>25%</i>	<i>50%</i>	<i>75%</i>	<i>95%</i>	<i>max</i>
<i>Big</i>	1	1	1	2	4	9	11
<i>Mid Cap</i>	1	1	1	4	6	10	11
<i>Small</i>	1	1	1	1	2	6	10
<i>All</i>	1	1	1	2	3	7	11

The repartition of offers also show that a single offer over the eleven-year period occurred for about 45% of firms and are spread over that period, meaning that the turnover of Finnvera clients is high and that repeat clients who receive at least one offer per year are scarce (only four firms in the sample).

The heterogeneity reported in Table 2 is interesting because it should ease the identification of non-treated firms and thus ease the impact of a Finnvera treatment. A further interesting dimension is that the sample is restricted; in other words, many similar firms should be identified and the evaluation of Finnvera’s impact on SMEs should be feasible. On the other hand, the cases of very large companies are challenging because, for instance, there is only one Nokia in Finland and no reliable solution can be proposed regarding this type of company.

Table 2: Repartition of offers 2005-2015

<i>Patterns</i>	<i>Percentage</i>
00000000001	5.48
00000000010	5.12
00000000100	4.75
00000001000	3.84
00000001000	3.11
00000100000	6.76
00001000000	6.76
00010000000	3.84
00100000000	3.66
10000000000	3.29
00001100000	3.47
Other patterns	49.91
<i>All</i>	<i>100.00</i>

Statistics Finland database: Our team obtained the requested complementary data from Statistics Finland covering annual data about dimensions likely to be affected by Finnvera’s services. For example, R&D investments, innovative sales, EBITDA, or productivity can be affected. Nevertheless, three problems emerged during our investigation:

- Finnvera’s activities are not properly identified in the dataset gathering the different policies to support firms. In other words, we cannot properly identify the firms that are benefiting from Finnvera services in the data available.
- A second caveat is that the firm identification number is encrypted for confidentiality purposes. In other words, it is impossible to rebuild the sample of Finnvera clients and identify this subsample in the different datasets available online at Statistics Finland’s website.
- Third, a major caveat is also that the level of exports or the export rate is not available in the different datasets provided by Statistics Finland. Hence, whenever the first two problems can be alleviated, it would be impossible to identify the effect of Finnvera on exports. The only dataset with some

information on export is the Community Innovation survey, where a dichotomous variable is filled with the target markets for exports being inside or outside Europe.

In the short term, Statistics Finland’s available data are thus irrelevant for Finnvera.

Finnvera firms in the Orbis database: A second strategy was implemented to use data from other Statistics Finland sources. We identified that Van Dijk (Finnish data is sold by Bureau Van Dijk through its Orbis database) holds data on Finnish firms. To assess the feasibility of a quantitative analysis based on the Orbis data, we downloaded the Finnish data and matched it with the Finnvera sample, as the Orbis database provides Finnish ID numbers. Out of 554 firms, 544 were retrieved in the Orbis dataset (98.2%). This rate is impressive but does not mean that firms properly reported their numbers, and thus variables of interest are available and reliable. To explore the issue, we chose a selection of variables likely to measure firm performance and counted the number of missing values in Orbis. Table 3 shows that some variables are sufficiently filled (assets, sales, EBIT, EBITDA, profit before and after taxes) and the Orbis data also improved overtime. Hence, some impact analysis should be feasible for these different variables. Some other dimensions are, however, obviously under-reported (value added, R&D) with, once again, a total lack of information on exports.

Table 3: Percentage of missing values in the Orbis data on the Finnvera sample

<i>T=2017 or 2016</i>	<i>T</i>	<i>T-1</i>	<i>T-2</i>	<i>T-3</i>	<i>T-4</i>	<i>T-5</i>	<i>T-6</i>
<i>Total assets</i>	1%	26%	1%	2%	3%	6%	8%
<i>Turnover</i>	3%	3%	3%	4%	7%	9%	13%
<i>Wages</i>	10%	9%	10%	11%	13%	16%	18%
<i>Value added</i>	44%	43%	37%	38%	41%	43%	42%
<i>R&D</i>	96%	96%	96%	96%	96%	96%	96%
<i>Exports</i>	100%	100%	100%	100%	100%	100%	100%
<i>Operating cash flow</i>	13%	10%	10%	11%	14%	16%	20%
<i>EBIT</i>	1%	1%	2%	3%	6%	8%	12%
<i>EBITDA</i>	13%	10%	10%	11%	14%	16%	21%
<i>Current profit before taxes</i>	1%	26%	1%	2%	3%	6%	8%
<i>Profit after taxes</i>	1%	1%	2%	3%	6%	8%	12%

Note: Orbis data does not identify the different policy instruments granted to firms.

Conclusions regarding the quantitative effort

Our investigation demonstrates that, at the moment, there is no feasible solution for obtaining secondary data that allows a quantitative evaluation of Finnvera’s impact on the Finnish economy. A

possible but questionable approach to launch an analysis based on Orbis data is to determine to what extent Finnvera's clients are better performers than clients belonging to similar firms. An important caveat, however, is that there is no information available on exports. A risk, therefore, involves comparing the performances of Finnvera's firms with similar firms (size, industry, geographic area) that do not export. A further caveat is that, in such an inquiry, it is impossible to control for other public instruments applied to firms. In a medium term, some efforts should thus be developed by Finnvera to control for this specific dimension for its clients as well as for a comparative sample. A specific annual survey by Finnvera and/or some information by Finnish customs could provide a workable solution to build annual datasets, thus enabling systematic quantitative analyses. Customs data, on the other hand, has many limitations due to the complexity of international business strategies and operational modes applied abroad, which might not provide the full picture of impact because foreign direct investments, licensing agreements, franchising contracts, and other forms of international operations must be incorporated in an assessment of impact. In the end, export is often only a first stage in an internationalization process, which might even decrease when firms conduct international business in more sophisticated ways that may be associated with Finnish interest measures that would not be captured in a control group sample.

A long-term solution might be to promote the collection of information on exports and other forms of international expansion in Finland either by public bodies (Statistics Finland) or by private data providers (e.g., Bureau Van Dijk).

VI. DISCUSSION and CONCLUSION

As this study's research team is largely comprised of pragmatist scholars at home in the disciplinary field of International Business, it is appropriate to begin this conclusion with the central phenomenon and question for which our field is seeking answers:

“What determines the success and failure of internationally operating firms?”

This question, as anyone can quickly understand, is complex and must be tackled in a parsimonious (i.e., focused perspectives) and comprehensive way (i.e., enough explanatory factors to gain understanding that contains both necessary and sufficient factors). It is a perspective that looks at what firms do that explain their outcomes. Success is a complex phenomenon, as it has special meanings for many individuals and requires a fuller picture of stakeholders, their interests, and how they converge into the aspirations of firms.

With such a background, this study has been approached in two ways, guided by the overall desire by Finnvera to understand, elaborate upon, and share what impact this state agent has on firms, the Finnish economy, and society overall. It comprehensively contributes to our understanding of how certain firms, some businesses, and business models are able to combine their internal resources, capabilities, and capacities with resources, capabilities, and capacities of critical actors (such as Finnvera) to enable them to strive and attain international success. We approached this challenging task by operationalizing it in two ways:

- (1) To understand “how Finnvera generates impact?” and “impact on what?”
- (2) To understand “what is Finnvera's impact?”

These two sets of questions are fundamentally different. The first set requires deep insights into actual practices, procedures, occurrences, and perceptions of individuals in order to gain a deeper understanding. In order to do this, one must “get the hands dirty”. We have been conversing with a large number of informants at Finnvera and at selected case companies regarding how their businesses work, where Finnvera is needed, how Finnvera's services influence their choices and actions, what would happen without such means, and what impact they see on these businesses in particular, the wider ecosystem in general, and the future prospects upon which Finnvera's services are founded. As a result, we attained many interesting insights summarized in the cross-case discussions of large-, small-, and medium-sized firms selected from Finnvera's clients (see respective

sections above). The overall insight gained is significant because these firms overall assume far more than the lion's share of Finnvera's results and impact.

This informs us that Finnvera is not merely an external export promotion agency for these firms. Finnvera is more thoroughly understood as an integral function of large firms' cutting-edge business models and is, for many high-potential global niche players, a non-substitutable institution that provides firms with a service that is a necessary factor of success. When added to the other necessary factors for doing business, Finnvera's services become vital for sustaining international competition, growing internationally, and having a wide variety of impact on many levels that benefit the Finnish economy and society in both the short and long run. Answering the first set of questions provides us with "formative impact assessment". Such assessment does not seek binary answers (good/bad), but allows us to look holistically at impact in different forms, including how it is produced and where it could be developed to increase value and impact.

The second question is an empirical one with a "summative impact assessment" that determines whether or not impact is given and to what extent it is given. This question presents us with challenging conceptual and methodological implications, with choices concerning the "boundaries of a measure". We strive to answer the question "what is Finnvera's impact?" in two different ways.

First, we look at the qualitative data obtained throughout case work with firms that altogether account for well over four-fifths of Finnvera's volume. The verdict, in simple terms (i.e., counterfactually, if Finnvera was not available), is rather clear-cut.

For the majority of the business of large clients where Finnvera's services are used, the respective share of business depends on Finnvera. There are no alternatives for ECA, and thus the impact of Finnvera is significant and can be directly connected to the revenues of these projects, the employment maintained by these projects, and the indirect consequences of an unviable business system. In our understanding, most large firms would not involve Finnvera if their involvement was not absolutely necessary. Thus, the impact is vast.

Similarly, SMEs under investigation that share similarities in terms of their niche offerings that require an ambitious international push to generate the scale and scope of economies in order to be viable would not exist in their current form without the mechanisms provided by Finnvera. Thus, the impact is vast.

Second, (referring to an attempt to conduct a statistical data analysis) the question of impact is: "How much?" Given the available access to secondary data spread across different sources, it is questionable that we are able to provide an answer that satisfies high-quality evaluation criteria. With the given means, the most likely outcome would be to produce a result that might be highly biased.

The cure envisioned at this point must be in the creation of primary quantitative data collected within Finnvera's customer base, but must also create samples of non-customers in order to have a valid comparison that concludes the quantity of impact.

VII. APPENDIX

Unofficial translation

Act on the State's Export Credit Guarantees

(422/2001)

In accordance with a resolution passed by Parliament, the following is enacted:

Section 1 - Purpose of export credit guarantee activities

The purpose of export credit guarantee activities is to strengthen Finland's economic development by promoting exports and the internationalization of enterprises.

Section 2 - Scope of application

This Act contains provisions on the conditions and principles to be applied to the State's export credit guarantee activities.

Export credit guarantees are granted against the risk of loss arising from exports or from investments carried out abroad.

Section 3 - Definitions

For the purposes of this Act:

(1) export means the production, delivery, transport, or leasing of goods or services to a foreign buyer or lessee; the transfer of manufacturing rights, industrial rights, or copyrights abroad, and the implementation of a planning, installation, or building project, or some other work or service or storage of goods abroad;

(2) investment means equity or some other type of financing, production equipment, or methods, and other comparable economic interests, which are invested in enterprise activities in the host country;

(3) export credit guarantee means an agreement or a commitment undertaken by the State with respect to exports or an investment carried out abroad; such agreement or commitment may take the

form of direct insurance or reinsurance, guarantee as for own debt, deficiency guarantee, or some other liability commitment. 2

Section 4 - Risks to be covered in exports

An export credit guarantee may be granted to compensate for a loss arising from exports in the event that:

- (1) a party to an agreement, the issuer of a commitment or a beneficiary—other than the guarantee holder—acts against or fails to comply with the conditions of the agreement or commitment or becomes insolvent;
- (2) an exceptional situation beyond the control of the parties to the agreement, the issuer of the commitment and the beneficiary—such as a statute, a decision or an action taken by the authorities, or a force majeure—prevents a party to the agreement or the issuer of the commitment from meeting the obligations specified in the agreement or commitment.

Section 5 - Risks to be covered in investments carried out abroad

An export credit guarantee may be granted to compensate for a loss arising from investments carried out abroad in the event that an exceptional situation beyond the control of the parties to the agreement, the issuer of the commitment, the beneficiary, the party carrying out the investment, and the project enterprise—such as a statute, a decision or an action taken by the authorities, or a force majeure—prevents a party to the agreement or the issuer of the commitment from meeting the obligations specified in the agreement or commitment or prevents the party carrying out the investment from utilizing the investment.

In the case of an investment carried out abroad, an export credit guarantee may, for special reasons, be granted to compensate for a loss arising from financing or guarantees in the form of liabilities, if the loss results from a situation where a party to an agreement, the issuer of a commitment, or a beneficiary—other than the guarantee holder—acts against or fails to comply with the conditions of the agreement or commitment or becomes insolvent. 3

Section 6 - Special risk taking

By virtue of authorization given by the Government for special considerations, an export credit guarantee may also be granted when the risks involved in the export or investment project carried out abroad, in the related financing schemes, or in the host country are so great that no export credit guarantee would be granted on the basis of regular risk assessment, or when an export credit guarantee would be granted under exceptional conditions in view of the risk assessment.

Section 7 - Factors to be taken into account when export credit guarantees are granted

The following factors shall be taken into account when export credit guarantees are granted and when the terms and conditions of the guarantees are confirmed:

- (1) international rules and regulations applied to export credit guarantees and binding on Finland;
- (2) international competition factors;
- (3) the environmental impact of the project to be guaranteed, as part of the total risk assessment of the project.

In addition to the provisions of subsection 1, it should be noted that one of the objectives of export credit guarantees is to correct any deficiencies that may exist in the financial market.

Section 8 - Fees

A handling fee may be charged for decisions concerning export credit guarantees. In determining the fee, attention shall be paid to the amount of work and expenses incurred in the handling process.

A premium is charged for export credit guarantees. In determining the premium, attention shall be paid to the duration of the risk period, the creditworthiness of the project enterprise, the credit standing of the host country, other factors affecting the risk to be covered, as well as competition factors. 4

Section 9 - Hedging arrangements

In order to safeguard the State's interests against the risk of loss arising from the export credit guarantee activities referred to in this Act, provision may be made by means of insurance, security, liability swap agreements, and other arrangements (hedging arrangements).

Section 10 - Limits on outstanding commitments

The combined liability for export credit guarantees and hedging arrangements shall not exceed 7,900M€. However, the liability for the export credit guarantees referred to above in section 6 shall not exceed 700M€ and the liability for the investment guarantees referred to in section 5(2) shall not exceed 200M€.

The liability referred to above in subsection 1 is calculated as follows: the guarantee liability resulting from endorsed export credit guarantees shall be taken into account in full insofar as the guaranteed principal is concerned, without any other sums that might fall due for indemnification, and half of the guarantee liability stemming from binding guarantee offers shall similarly be taken into account insofar as the guaranteed principal is concerned. The liability resulting from hedging

arrangements is taken into account at its net value, as laid down in the relevant decree of the Ministry of Trade and Industry.

To calculate the liability referred to above in subsection 1, the currency specified in the guarantee agreement shall be converted to euros by using the rate of exchange quoted by the European Central Bank for the currency in question on the day when the export credit guarantee was granted.

Section 11 - Granting and management of export credit guarantees

The export credit guarantees referred to in this Act are granted and managed by the company referred to in the Act on the State-Owned Specialized Financing Company (443/1998). The company also ratifies the general terms and conditions applied to export credit guarantees, concludes the agreements and commitments referred to in section 3(3), and makes the necessary hedging arrangements. 5

While handling and managing export credit guarantees, the company shall comply with the provisions of the Act on Administrative Procedure (598/1982) and the Language Act (148/1922).

Section 12 - Publicity and confidentiality

The provisions of the Act on the Publicity of the Authorities' Activities (621/1999) and the provisions in section 5 of the Act on the State-Owned Specialized Financing Company shall apply to the publicity of the company's activities referred to in this Act.

Section 13 - Further provisions

Further provisions on the principles to be followed in export credit guarantee activities shall be issued by Government decree. These principles apply to:

- (1) definition of what is meant by promoting Finland's economic development, as referred to in section 1 (existence of a Finnish interest);
- (2) the prerequisites for covering the commercial risk referred to in section 5(2), insofar as investments carried out abroad are concerned;
- (3) assessment of the environmental impact of export credit guarantee projects;
- (4) fees to be charged for export credit guarantees; and
- (5) other general outlines pertaining to export credit guarantee products, risks and pricing.

Further provisions on the implementation of this Act may be given by Government decree.

Section 14 - Entry into force

This Act enters into force on 1 July 2001.

This Act repeals the Export Guarantee Act (479/1962) issued on 14 September 1962, as amended. 6

The provisions that were in force when this Act came into effect shall be applied to export credit guarantees granted before the entry into force of this Act.

Measures necessary for the implementation of this Act may be undertaken before the Act's entry into force.

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