

“WEAK” EUROPEAN STATES IN THE INTERNATIONAL ARMS TRADE, 1920—1937: The Impact of External Threats, Market Forces, and Domestic Constraints¹

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ABSTRACT

This article analyses the small and medium size arms trade behaviour of nine “weak” (=limited political and economic influence) European states in the interwar period: Belgium, Czechoslovakia, Finland, the Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland. In particular, the significance of external threats, market forces, and domestic constraints was assessed for these states’ military trade. Firstly, the hypothesis that there might be fewer domestic constraints on the military trade behaviour of these states was not supported by the analysis. The increased military spending of the 1930s seemed to benefit the domestic producers. Secondly, most of these countries were dependent on their aggregate military trade, especially military exports. Thirdly, the hypothesis that the differences between these states might be explained by geographical, strategic, or economic factors was found too simplistic. Only proximate groupings could be developed based on various types of categories. Fourthly, “weak” states were found to benefit from the intense international political and economic competition of the 1930s, enabling the pursuit of new military export markets amidst increasing threats.

INTRODUCTION

This article focuses on the small and medium size arms trade behaviour of “weak” — implying limited capabilities of influencing the political and economic system — European states (Belgium, Czechoslovakia, Finland, the Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland) in the interwar period; especially, how the ratio of military exports and, respectively, military imports of military expenditures, indicators of military trade behaviour respective military spending, responded to external and internal variables. The key questions in this article are whether these countries were merely

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dependent on their military imports or were actually important players in the armaments markets, whether they acted differently due to especially strategic and geographic limitations, and whether they encountered significant domestic constraints on their behaviour.

The military trade behaviour of these nations is here analysed with previously largely ignored data from the League of Nations on interwar arms trade, the latest historical macroeconomic data, as well as with the few studies that have touched upon the subject. As such, the League of Nations arms trade data includes only small and medium size armaments, without listing such large-scale items as warships, aircraft, and internal arms purchases.² Also, as *Milan Hauner* has pointed out, the figures were usually updated throughout the publication series. However, as a comparison between the League of Nations military spending figures and the current figures used by this author indicate, it seems that the League of Nations statistics in general, with the exception of Germany in the 1930s, were relatively reliable, especially for the smaller states.³ What can these figures tell us? Firstly, they can demonstrate the relative strengths of these nations in the small and medium size arms trade in this period, although it must be noted that their aggregate role in the military trade was more meagre due to their smaller share of the heaviest equipment trade. Secondly, they enable us to arrive at guesstimates, since for many countries also quantities are listed, at how the unit prices of these military goods may have developed as a whole. Thirdly, they provide us with data to test how much the

² In the series the armaments included small arms (such as rifles, pistols, revolvers), artillery (heavy artillery, mountain artillery, mortars), explosives (dynamite, gunpowder, torpedoes etc.), as well as tanks and armored vehicles. See e.g. *League of Nations, Statistical Information on the Trade in Arms, Ammunition and Material of War*. A. 30. 1924. IX. Geneva 1924. Thus regular vehicles, even if intended for military purposes, were not included.

³ See Hauner, Milan, *Military Budgets and the Armaments Industry*. Papers in East European Economics, 36, October. Centre for Soviet and East European Studies, St. Anthony's College, Oxford 1973, 6; *League of Nations, Statistical Information on the Trade in Arms, Ammunition and Material of War*. A. 30. 1924. IX. Geneva 1924. Here the figures used were also updated backwards in three-year intervals. Comparison between the League of Nations Armaments Year-Books' figures and the figures collected here, similar as done in Eloranta, Jari, *The Demand for External Security by Domestic Choices: Military Spending as a Public Good among Eleven European Democracies*. June Paper. European University Institute, Florence 2000 (available in www-format: <URL: <http://www.jyu.fi/~pete/junepaper.pdf>) for another set of figures, found statistical tests supporting the same median and same variance assumption in most of the cases. Calculations can also be obtained from the author by request.

military trade dependence of the selected states changed in the 1930s and whether this was due, for example, to more extensive reliance on the domestic markets.

THEORETICAL FRAMEWORK AND RESEARCH TRADITIONS

The military-economic impacts and implications of the interwar period have rarely been studied from an arms trade perspective, let alone the military spending behaviour of the European nations.⁴ Especially focus on the "weak" European nations has been missing thus far.⁵ With a European focus in this article, due to mostly the availability of reliable military spending and economic data, the selected "weak" states represent both the periphery (such as Portugal, Finland, and perhaps Spain⁶) and the core (for example, Belgium, the Netherlands) of Europe, as well as different political systems. Using *Angus Maddison's* data, it is possible to divide, albeit arbitrarily, them into low-income (Finland, Portugal, Spain), middle-income (Belgium, Czechoslovakia, Norway, Sweden), and high-income "weak" states (the Netherlands, Switzerland).⁷

What exactly are "weak" states? As for example *Olle Krantz* has argued recently, there are several characteristics that separate small countries from the larger, more influential ones. For example, small countries possess fewer possibilities of influencing the international system, their economies are often highly specialized and export-

⁴ See e.g. Eloranta, Jari, *Different Needs, Different Solutions — The Importance of Economic Development and Domestic Power Structures in Explaining Military Spending in Eight Western Democracies During the Interwar Period*. A Licentiate Thesis in Economic History at the University of Jyväskylä 1998 (unpublished) and Eloranta, *The Demand for External Security* for further details.

⁵ On a foreign policy perspective of the small nations during the interwar period, see e.g. Paasivirta, Juhani, *Pienet valtiot Euroopassa. Kansainvälisen järjestelmän muutoksia 1800- ja 1900-luvuilla* (Small States in Europe. Changes in the International System in the 19th and 20th Centuries). Suomen Historiallinen Seura, Helsinki 1987.

⁶ For a similar classification, see e.g. Myllyntaus, Timo, 'An Introduction to Comparative Analysis of Small Countries'. In *Economic Crises and Restructuring in History. Experiences of Small Countries*. Ed. by Timo Myllyntaus. St. Katharinen 1998. Although by geographic size Spain was comparable to e.g. France or Italy, its economy was considerably smaller. Its real GDP level, based on Maddison, Angus, *Monitoring the World Economy 1820—1992*. OECD, Paris 1995, was only 56 per cent of the Italian equivalent and less than 30 per cent of the British one in 1930. For example Denmark, a perfect candidate according to the criteria, is excluded due to the lack of quantity data in the League of Nations records. On other selection and data concerns, see Eloranta, *The Demand for External Security* for details.

⁷ Based on Maddison, *Monitoring*. Here the 1929 real GDP per capita figures were used to divide the countries into the three groups (1990 Geary-Khamis USD): 1) 0—3000 USD; 2) 3000—5000 USD; 3) 5000+ USD.

dependent, and they suffer from diseconomies of scale in production. Conversely, they can also have potential advantages over their bigger rivals. Depending on international politics and trade rivalries, they may have room to manoeuvre between the bigger nations, possess comparative advantages in certain commodities, and have more flexible and unified domestic markets.⁸ Quite similarly, *Patrick Salmon* has argued in the Nordic interwar context that small countries were constrained by their geographic position, their limited resource bases, the international environment, and the (lack of) diplomatic skill. While the Nordic countries clearly had some control over their respective “destinies” in this period, they were constrained especially by their export-dependence and the intense trade competition between the United Kingdom and Germany in the 1930s.⁹

As *Michael Handel* has pointed out, “small power” and “smaller state” can be misleading terms to describe such states. They usually embody the connotation of small geographic size. A more fitting definition can perhaps be found in the use of the term “weak state”. According to Handel, this concept can be applied not only to small, weak states but also to countries of considerable area (such as Spain in this period), which were nonetheless weak players in the international system.¹⁰ He has also presented an interesting “ideal type” of a weak state, which he admits to be an abstraction. This “ideal type” contains especially the following characteristics: 1) small population; 2) small area; 3) low GNP in absolute terms; 4) high degree of specialization and small domestic market; 5) high dependence on foreign military protection and military imports; 6) limited chances of influencing the international system. Handel thus uses a plethora of indicators to assess a country’s power status. However, he also has strong reservations about the validity of the notion that weak states are merely passive and reactive participants in such a system, which raises equal doubts about the validity of the term weak state.¹¹ Indeed, how “weak” were these states?

⁸ Krantz, Olle, ‘Small European Countries in International Organisations: A Perspective on the Small-State Question’. Umeå (mimeo) 2000.

⁹ Salmon, Patrick, *Scandinavia and the great powers 1890—1940*. Cambridge, UK 1997, 4—19.

¹⁰ Handel, Michael, *Weak States in the International System*. London 1981, 10—20. He divides states into super powers, great powers, middle powers, weak states, and mini-states. The three last-mentioned can be understood as weak states. All definitions are, however, arbitrary by necessity.

¹¹ Handel, *Weak States*, 37—46, 52—53.

Based on Handel's observations presented above, it is possible to construct some testable hypotheses to analyse the behaviour of the "weak" states in the international arms transfer system of this period. Firstly, *there should be fewer domestic constraints on the foreign and trade policy decision-making of a weak state*, implying that external variables such as market prices or perceived threats ought to have primacy in explaining the military trade behaviour of these nations.¹² Secondly, *weak states should be highly dependent on military trade and military imports in particular*. Thirdly, *weak states should differ from one another mostly due to factors such as their geographic and/or strategic location, the level of industrialization, the type of foreign policy tradition, and the size of the economy*. Thus, for example, the military trade behaviour of states either close to the centre (such as Belgium and Czechoslovakia) or holding strategic importance to a great power (such as Finland) should differ, due to vulnerability, from the military trade behaviour of relatively safe and/or peripheral countries (such as Portugal, Switzerland, and Sweden).¹³ Fourthly, — a point shared by Krantz, Salmon, and Handel — *weak states may be influential in the international system when a balance of power exists between the Great Powers*, especially in the bargaining game between trade blocs. Thus, the military trade behaviour of the "weak" states should be affected by the various structural systemic shocks of the period, such as the Great Depression.

The research on arms trade has largely ignored the "weak" states as players in the international system. Nonetheless, especially Robert E. Harkavy's 1975 study 'The Arms Trade and International Systems' focused also on the interwar period, with a comparative, systemic emphasis. Also, Keith Krause's 'Arms and the State: Patterns of Production and Trade' (1992) had a similar emphasis.¹⁴ As Krause maintains, the so-called strong customers obtain and use the most modern weapons, and weak customers

¹² This notion has been challenged by e.g. Patrick Salmon (*Scandinavia and the Great Powers*) and this author as well. See e.g. Eloranta, Jari, 'In Whose Interest? The Interaction of Public Decision-making and Private Interests in the Armaments Production of Finland and Sweden in the 1920s and 1930s'. In *Deindustrialization and Reindustrialization in 20th-century Europe*. Ed. by Franco Amatori, Andrea Colli and Nicola Crepas. European Business History Association (EBHA). Milano 1999.

¹³ Handel, *Weak States*, 72—74.

¹⁴ Harkavy, Robert E., *The Arms Trade and International Systems*. Cambridge, MA 1975; Harkavy, Robert E., 'The Changing International System and the Arms Trade'. *The Annals of the American Academy of Political and Social Science*. Vol. 535, September 1994; Krause, Keith, *Arms and the state: patterns of military production and trade*. Cambridge Studies in International Relations: 22. New York 1992.

(=states) either obtain modern weapons without the ability to use them, or are unable to obtain them at all.¹⁵ In the interwar period, there were three kinds of states evident among the arms producers: the dominant producers of heavy armaments (such as the UK and France); the alternate producers of heavy armaments (Germany, the United States, the Soviet Union, and Italy); and the numerous “weak” states who were often dependent on the arms trade with the dominant group but also established themselves as major producers of small and medium size arms, especially in the 1930s. These countries formed the players (sellers, buyers, or a combination of the two) in the “game” for profits and national security¹⁶, to be constrained by both formal (such as limitation efforts and sales zones) and informal (such as moral compulsions) regulations, both internationally and domestically. Yet, as Harkavy has argued, this was a period in which alliances were not stable and did not form significant obstacles for the arms trade. Arms trade was also mostly privatised and unregulated, at least up until the mid-1930s.¹⁷

Although business historians have studied the interwar arms trade, they have mostly concentrated on the large countries and big firms of the period. Most efforts have focused on firms such as *Armstrong Ltd.*, *Vickers Ltd.*, *Schneider*, and *Krupp*, already well-established arms producers by the 1920s. One of the more prominent works in this field has been *Clive Trebilcock's 'The Vickers Brothers. Armaments and Enterprise 1854—1914'* (1975).¹⁸ Another feature in the current scholarship seems to be the emphasis placed on the economic imperialism of the 1930s, especially by Great Britain and Germany. As for example *Christian Leitz* has pointed out in the German case, it seems that the big arms producers, especially Germany, exported weapons in vast amounts even to potentially hostile countries.¹⁹ These studies notwithstanding, the interwar arms trade

¹⁵ Krause, *Arms and the state*, 26—32.

¹⁶ See also Eloranta, *Different Needs* on the application of such a typology.

¹⁷ Harkavy, 'The Changing International System', 16—19.

¹⁸ Trebilcock, Clive, *The Vickers Brothers. Armaments and Enterprise 1854—1914*. The Europa Library of Business Biography. Kent 1975. For a narrative of the actions of these companies, see e.g. Collier, Basil, *Arms and the Men. The Arms Trade and Governments*. London 1980. A good analysis of the role of Vickers abroad (this case: Italy) can be found e.g. in Segreto, Luciano, *Marte e mercurio. Industria bellica e sviluppo economico in Italia 1861—1940* (Mars and Mercury. War Industry and Economic Development in Italy 1861—1940). Milano 1997.

¹⁹ See especially Leitz, Christian M., 'Arms as Levers: *Matériel* and Raw Materials in Germany's Trade with Romania in the 1930s'. *The International History Review*. Vol. XIX, no. 2, 1997; Leitz, Christian M.,

as a whole or its implications for the countries selected here have not been analysed in a comprehensive fashion.

THE LEAGUE OF NATIONS AND THE INTERNATIONAL ARMS TRADE AFTER THE FIRST WORLD WAR

The efforts to achieve peace after the Great War rested on *Woodrow Wilson's* Fourteen Points and the Treaty of Versailles, which included the foundations of League of Nations.²⁰ The League Covenant's Article 8 comprised the key aims of the future disarmament. It maintained that the League Council was to assess each state's security needs and to formulate a plan for the disarmament of its members, based on this assessment. Equally, with this Article and others the League was entrusted with the task of supervising the collection of information on the development of armaments among its members.²¹ These aspirations were dealt a severe blow right from the beginning with the U.S. Senate's refusal to ratify the treaty and the ensuing isolationist path of the Americans in the interwar period.²²

Within the League of Nations, many of the member states attempted to achieve disarmament measures in earnest at least until the mid-1930s. Mostly these efforts took place between diplomats within the various committees of the League of Nations' political machinery. Among the many difficulties in achieving concrete results were the heterogeneous expectations of the participants. For example, the Geneva Protocol of 1924 — which advocated principles such as denouncing of war, agreement on sanctions against aggressor(s), and the convening of a disarmament conference — failed ultimately

'Arms exports from the Third Reich, 1933—1939: the example of Krupp'. *Economic History Review*. LI, No. 1, 1998.

²⁰ Eloranta, Jari, 'Military Competition among Friends? Hegemonic Development and Military Spending among Eight Western Democracies, 1920—1938'. *Essays in Economic & Business History*, Vol. XIX, 2001; Soule, George, *The Economic History of the United States*. Vol. VIII: Prosperity Decade, from War to Depression 1917—1929. New York 1968, 81—82.

²¹ Barros, James, 'The League of Nations and Disarmament'. In *Encyclopedia of Arms Control and Disarmament*. Editor-in-chief Richard Dean Burns. Vol. II. New York 1993, 606—607; Peterson, Neal H., 'The Versailles Treaty – Imposed Disarmament'. In *Encyclopedia of Arms Control and Disarmament*. Editor-in-chief Richard Dean Burns. Vol. II. New York 1993.

²² Eloranta, 'Military Competition'; Bemis, Samuel Flagg, *A Short History of American Foreign Policy and Diplomacy*. New York 1959, 437—439; Stimson, Henry L. & McGeorge Bundy, *On Active Service in Peace and War*. New York 1948, 106.

due to British rejection. In 1925, nonetheless, the Preparatory Commission for the Disarmament Conference was established to prepare for a disarmament conference. Its work took five years and culminated in the Disarmament Conference of 1932—1934. By that time, as other peace efforts had confirmed, it was too late politically to achieve concrete results.²³ Even though efforts undertaken outside the League of Nations were at first more successful (especially the Washington Conference on Naval Limitation in 1921)²⁴, they proved difficult to extend or even sustain in the 1930s.²⁵ For example in the naval armaments limitation efforts, the latter half of the 1930s was mostly a time of bilateral treaties and continuous negotiations, often with less than satisfactory results.²⁶

In the period following the First World War, the League of Nations attempted to control and limit the arms trade on several occasions. Firstly, the Treaty of Versailles established controls on the arms trade of the losers of the war, and there were negotiations on embargoes and production limitations both at the national and supranational level, mainly under the auspices of the League. Similarities with the failures of the overall disarmament process are abundant. For example, the St. Germain Convention for the Control of the Trade in Arms and Ammunition of 1919, which attempted to establish a government licensing system for certain weapons, failed mainly due to the objections of the United States on the League of Nations' involvement. A broader agreement following the Conference for the Supervision of the International Arms Trade in 1925 ran into similar problems with the ratification of the convention. The participants, especially the smaller (military) import dependent states, attached various conditions to the ratification process, which effectively destroyed its chances of success. All in all, as emphasised by *David Stone*, these “weak” states, usually proponents of

²³ Barros, ‘The League of Nations’, 615—619.

²⁴ Eloranta, ‘Military Competition’; *American Foreign Policy. A Documentary Survey 1776—1960*. Ed. by Dorothy Burne Goebel. New York 1961, 245—248, The Washington Treaty for Limitation of Naval Armaments 1922.

²⁵ Tate, Merze, *The United States and Armaments*. Cambridge, Mass 1948, 141—151; Stimson-Bundy, *On Active Service*, 163—164; *American Foreign Policy*, 259—260, The London Conference in 1930. On the failures of disarmament efforts, especially in regards to navies, see more Buckley, Thomas H., ‘The Washington Naval Limitation System 1921—1939’. In *Encyclopedia of Arms Control and Disarmament*. Editor-in-chief Richard Dean Burns. Vol. II. New York 1993; Kennedy, Paul, *The Rise and Fall of British Naval Mastery*. Third Edition. London 1991.

²⁶ See more Buckley, ‘The Washington Naval’; Pearton, Maurice, *The Knowledgeable State. Diplomacy, War and Technology since 1830*. London 1982.

general disarmament, were often the most outspoken opponents of arms trade regulation efforts.²⁷ The main accomplishment that emerged from the 1920s arms trade limitation negotiations was the establishment of a licensing and statistics gathering system among the League members and other nations.²⁸

The security policy strategies of the “weak” states differed broadly. Sweden, a member of the League of Nations from the beginning, was a good example of active pursuit of disarmament policies throughout the period. The basic principles in the Swedish interwar foreign policy were the maintenance of neutrality and non-commitment.²⁹ Similarly, for example the Norwegian governments relied on the geographic proximity of Great Britain for protection, which limited their foreign policy interests to mainly trade issues.³⁰ Finland, on the contrary, did not follow the example set by its neighbours rather than followed the example of the Eastern European countries like Czechoslovakia in seeking alliances, due to geopolitical disadvantages.³¹ In the late 1930s, for example, the Finnish foreign policy was focused on achieving an alliance with Sweden, yet these efforts were also unsuccessful.³² In the case of Czechoslovakia, threatened both from the East and the West, its security policy was based on a bilateral treaty with France, similar to other Eastern European countries. Consequently, an agreement with Romania and Yugoslavia concluded the so-called Little Entente in the 1920s, a loosely knit alliance aimed against Hungary. In addition to a pro-West foreign

²⁷ Stone, David R., ‘Imperialism and Sovereignty: The League of Nations’ Drive to Control the Global Arms Trade’. *Journal of Contemporary History*. Vol. 35, No. 2, 2000..

²⁸ Krause, Keith & Mary K. MacDonald, ‘Regulating Arms Sales Through World War II’. In *Encyclopedia of Arms Control and Disarmament*. Editor-in-chief Richard Dean Burns. Vol. II. New York 1993, 713—717. See also Krause, *Arms and the state*.

²⁹ Trönberg, Stefan, *Nedrustning under mellankrigstiden. Sverige och nedrustningskonferensen i Genève 1932* (Disarmament in the Interwar Period. Sweden and Disarmament Conference in Geneva 1932). Kungälv 1985; Paasivirta, *Pienet valtiot*, 194—195; see also Agøy, Nils Ivar, ‘When Officers Need Internal Enemies: Aspects of Civil-Military Relations in Scandinavia Between the World Wars’. *Journal of Peace Research*. Vol. 33, No. 4, 1996.

³⁰ Agøy, ‘When Officers Need’, 478; Paasivirta, *Pienet valtiot*, 194—195, 225—227. On the Danish case, see Wiberg, Håkan & Keld Jensen, ‘Military Defence in Denmark: Expenditures and Conversion Problems’. *Cooperation and Conflict 1992. Nordic Journal of International Studies*. Vol. 27, No. 4, 1992, 353—354; and Handel, *Weak States*, on the geopolitical advantage of also Portugal (and perhaps Spain).

³¹ Paasivirta, Juhani, *Suomi ja Eurooppa 1914—1939* (Finland and Europe 1914—1939). Hämeenlinna 1984, 256—258, 262, 265—267; Tervasmäki, Vilho, *Eduskuntaryhmät ja maanpuolustus (valtiopäivillä 1917—1939)* (Parliamentary Groups and National Defense (in the Diets 1917—1939)). Helsinki 1964, 23—24. See also Paasivirta, *Pienet valtiot*.

³² Eloranta, *Different Needs*; Paasivirta, *Suomi ja Eurooppa*, 272—273.

policy, Czechoslovakia experienced favourable economic performance and managed to become a dominant producer of small arms in the 1930s.³³ These factors exerted a strong incentive for the maintenance of a high military burden, for both Finland and Czechoslovakia.

The real military spending of the selected “weak” states increased slightly during the course of the 1930s, following the mainly flat spending curves of the 1920s. However, their respective military burdens (=military expenditures as a percentage of GDP), on the average, remained flat even for most of the 1930s, with *active* rearmament taking place during the last few years of the decade. Among these countries, Czechoslovakia, Finland, Portugal, and Spain maintained high military burdens (column B, Table 1, Appendices), with the Czech and Portuguese shares being over five per cent in 1935. As seen in Table 1 (Appendices), many of these countries were highly dependent on foreign trade, especially in the 1920s, yet most of them relied increasingly on their domestic markets in the 1930s. Only Belgium’s trade dependence share (column A, Table 1, Appendices) remained, and barely at that, over fifty per cent. The development of military trade, respective of total foreign trade, world arms trade, and military spending, display that many “weak” states developed their arms trade very rapidly. In military exports, respective of almost any indicator, Czechoslovakia and Sweden, trailed by Belgium and Norway, emerge as the growing military exporters in the 1930s. Czechoslovakia even assumed the top position in the world (small and medium size) armaments markets with its 24,5 percent market share in 1935.

Based on Table 1 below, it is possible to evaluate further the hypothesis of whether these countries were specifically dependent on their military imports. It seems that Finland, the Netherlands, and Portugal were clearly dependent on their military imports and had less developed military export industries respectively. Secondly, Belgium, Czechoslovakia, Spain, and Switzerland were moderately dominated by the military exports in their military trade, with Czechoslovakia being poorly representative of this group with its rapid emergence in the world markets in the 1930s. Thirdly, Sweden and Norway were extremely dominated by military exports in their military trade behaviour

³³ See e.g. Hauner, *Military Budgets*; Teichova, Alice, *The Czechoslovak Economy 1918—1980*. Contemporary Economic History of Europe Series. London 1988.

(as measured by columns A and E). None of the countries selected here could top the high British value for ratio 1 in Table 1 (see column D). Also, as seen in columns B and C, for four countries (BEL, CZE, FIN, NED) this period seemed to amplify the role of military exports, for three countries this tendency clearly decreased (POR, SPA, SWI), and for two (NOR, SWE) there were conflicting tendencies. By and large, these groupings do not seem to coincide with the income groupings presented earlier, nor can we say that these countries were particularly dependent on military imports rather than, in fact, on military exports.

Table 1 Structural Developments in the Military Trade of Nine “Weak States”, 1925, 1935

COUNTRY	YEAR	A.	B.	C.	D.	E.
BEL	1925	BALANCE	↑↑	↑↑	LESS	LESS
	1935	MILEXP			LESS	LESS
CZE	1925	BALANCE	↑↑	↑↑	LESS	LESS
	1935	MILEXP			LESS	MORE
FIN	1925	MILIMP	↑↑	↑↑	LESS	LESS
	1935	MILIMP			LESS	LESS
NED	1925	MILIMP	↑↑	↑↑	LESS	LESS
	1935	BALANCE			LESS	LESS
NOR	1925	MILEXP	↑↑	↓↓	LESS	MORE
	1935	MILEXP			LESS	MORE
POR	1925	MILIMP	↓↓	↓↓	LESS	LESS
	1935	MILIMP			LESS	LESS
SPA	1925	MILEXP	↓↓	↓↓	LESS	MORE
	1935	MILEXP			LESS	LESS
SWE	1925	MILEXP	↑↑	↓↓	LESS	MORE
	1935	MILEXP			LESS	MORE
SWI	1925	MILEXP	↓↓	↓↓	LESS	MORE
	1935	MILEXP			LESS	SAME

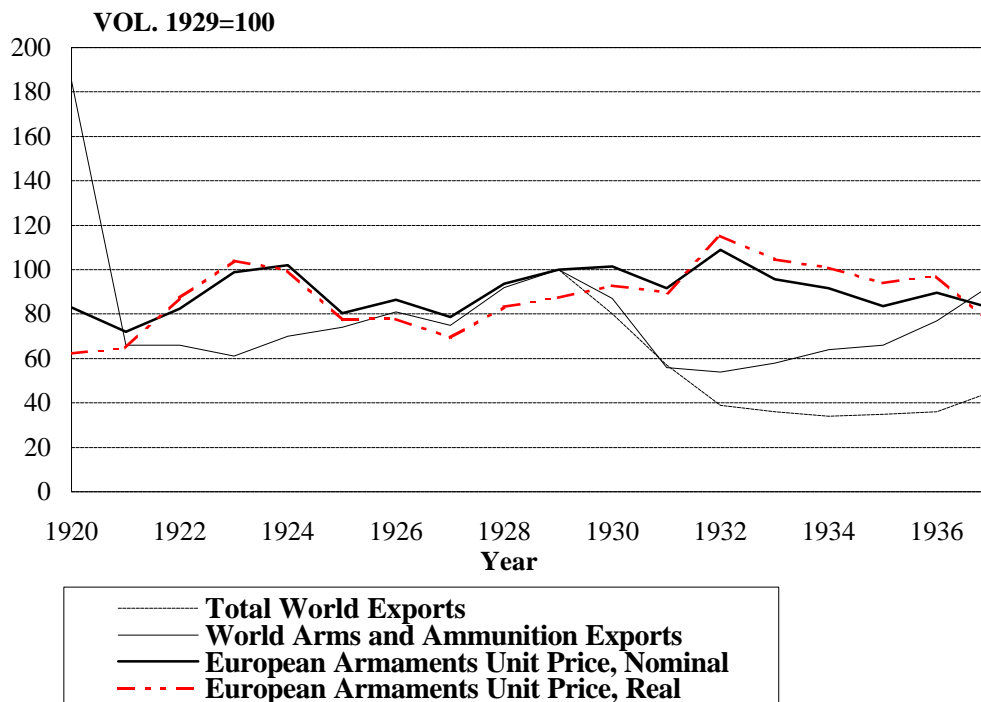
A = dominance (or roughly the balance between them) of either military exports (MILEXP) or imports (MILIMP), calculated by the ratios of: 1. MILEXP of total domestic exports, divided by MILIMP of total domestic imports; 2. MILEXP of total world armaments exports, divided by MILIMP of total world armaments imports; thus, both have to indicate the dominance of MILEXP (>1) or MILIMP (<1), (otherwise BALANCE), results are shown above; B = change in the ratio 1 from 1925 to 1935; C = change in the ratio 2 from 1925 to 1935; D = ratio 1 compared with the British equivalent; E = ratio 2 compared with the British equivalent.

Sources: see Table 1, Appendices. The UK calculations based on the same sources as listed therein.

The world arms exports, as seen in Figure 1 below, rebounded after the early 1920s' saturated markets and economic adjustments to resume growth up until the beginning of the Great Depression era. However, comparatively, the world arms exports recovered much quicker from the depression than the aggregate world exports, with recovery taking place as early as 1931—1932. This period of adjustment introduced more and more new

exporting nations to compete in the international markets, which can also be seen in the decline of the European unit price of arms, both in nominal and real terms. However, this competition took place in a trading environment dominated by Great Power competition for informal allies, which provided the smaller players more room to manoeuvre in the markets, thus these prices may not adequately reflect the military trade environment of the late 1930s. The traditional dominant producers (such as the U.K.), however, did maintain their hegemonic control in the trade of heavier equipment, for example naval armaments.³⁴

Figure 1 Total World Exports (Nominal), World Arms and Ammunition Exports (Nominal), and European Armaments Unit Prices (Nominal and Real), 1920—1937, Volume Indices (1929=100)



Sources: The aggregate nominal unit prices calculated from *Statistical Year-Books of the Trade in Arms and Ammunition 1924—1938*, with the combined arms trade data (=arms exports + arms imports, divided by the quantity in metric tons) of Belgium, Czechoslovakia (incl. until 1936), Finland (also France to make the data more robust), the Netherlands, Norway, Sweden, Switzerland, Portugal, and Spain (incl. until 1935), for which there was information on quantities; world arms exports also from this source. Real aggregate unit prices derived by deflating the aggregate nominal unit price series with a combined, weighted (by the real GDP shares among the nine, derived from Maddison, *Monitoring*) average wholesale price index (individual country WPIS derived from Mitchell, B.R., *International Historical Statistics: Europe 1750—1988*. Basingstoke 1992, except for

³⁴ Krause, *Arms and the state*, 74.

Portugal from Valério, Nuno, *As finanças públicas portuguesas entre as duas guerras mundiais* (The Portuguese Public Finances between the Two World Wars). Lisboa 1994). Total world exports from *League of Nations, Statistical Year-Book of the Trade in Arms and Ammunition*. C. 263. M. 156. 1938. IX. Geneva 1938, 206.

“WEAK” STATE ARMS TRADE PATTERNS, 1920—1938: The Case of Military Exports

In this section the ratios of military exports of nominal military expenditures were regressed against several variables in order to test whether this ratio was affected by external and/or internal factors, as explained below. This ratio should indicate whether the military exports of a country were developing differently from the military expenditures of the said country. Changes in this ratio should point towards either positive or negative externalities vis-à-vis domestic military spending, to be reviewed in conjunction with the said country’s military importing behaviour. Thus, the following equation was adapted from a standard equation used by defence economists to explain military spending patterns³⁵, with an additional, military spending variable³⁶ tested as an omitted variable:

$$\frac{MILEXP}{ME}_{it} = \hat{a}_{i0} + \hat{a}_{i1}EUROPEPRICE_{it} + \hat{a}_{i2}GDPCAP_{it} + \hat{a}_{i3}THREAT_{it} + \hat{a}_{i4}TRADEOFGDP_{it} \dots (1) \\ \dots(+ \hat{a}_{i5}DUMMY_{it}) + e_{it}$$

Here MILEXP/ME (log) equals the ratio of nominal military exports to nominal military expenditures in the said country i in year t ; EUROPEPRICE corresponds to the real European unit price of military goods as presented in Figure 1 (log, external variable); GDPCAP equals the income variable in real terms (log, internal variable); THREAT (either COMBTHRT = combined threat; GERTHRT = German-weighted threat; or

³⁵ Military expenditures are explained by a **price**, **income**, **spillin**, and **threat** variables in the simplest adaptations. See Sandler, Todd & Keith Hartley, *The Economics of Defense*. Cambridge Surveys of Economic Literature. Cambridge, UK 1995. Following Smith, Ron, Anthony Humm & Jacques Fontanel, ‘The Economics of Exporting Arms’. *Journal of Peace Research*. Vol. 22, No. 3, 1985, we will attempt to uncover the military spending impacts upon military exports. Smith et al., achieving contradictory results, estimated weapons exports on the basis of oil prices (dummy), aggregate weapons exports, military expenditures of the said country, and the changes in the military expenditures of the said country.

³⁶ On the choice of possible explanatory variables, see especially Pearson, Frederic S., ‘The Correlates of Arms Importation’. *Journal of Peace Research*. Vol. 26, No. 2, 1989. Note that here the differences in productivity are largely ignored.

GERSOVTHRT = German-Soviet-weighted threat; defined below) equals the threat faced by the country, expressed by a combined index³⁷ (log, external variable); TRADEOFGDP (log) equals the ratio of total exports and imports of GDP. DUMMY (DUMMY1 = 1 after 1929; DUMMY2 = 1 after 1933; DUMMY3 = 1 after 1935; DUMMY4 = 1 after 1932, added later as a potential dummy) variable indicates a structural change in the equation in a given year. An additional variable, MILBUR (log, internal variable), the military burden of the country, was tested with an omitted variable test in cases where specification errors were indicated by the regressions statistics. Before the regression was run, the variables were tested for unit roots and differenced if necessary.³⁸ The results had to pass the *Breusch-Godfrey* LM serial correlation test³⁹ for them to be accepted. The complete rundown of the results can be found in Table 2 (Appendices). Equally, since these individual country regressions suffered from small sample problems, the equation was also estimated as a pooled sample using Seemingly Unrelated Regressions (SUR) as the estimation method (Table 4, Appendices).⁴⁰

³⁷ Threat was here calculated as a combined index. The individual countries representing threats were assumed to be Germany, the Soviet Union, Italy, and Austria (on the basis of the First World War). Thus, individually, the development of their defense share (nominal ME of nominal central government expenditures) and the number of military personnel were both turned into volume indices (1931=100), and then combined on country-basis to form the threat index of a single country. If a value was missing from one of these series, only one indicator was used for that particular year. Next, a combined index was formed with the following weights: 2/7 for others, 1/7 for Austria (the weakest of these countries). This index was initially tested for Portugal and Spain. A German-weighted index (the combined aggregate index of all countries 1/2, Germany's threat index 1/2 of the weighting) was tested for Belgium, the Netherlands, Norway, and Switzerland. A German-Soviet-weighted index (the combined aggregate index of all countries 1/3, Germany's threat index 1/3, and the Soviet Union's threat index 1/3 of the weighting) was tested for Czechoslovakia, Finland, Sweden. These weighting choices were chosen due to geographic proximity and strategic threat (Austria developed similar to Hungary, which is not included due to limited data). The sources used are listed below Table 2 (Appendices). All threat indices were tested in connection with the SUR estimations, see Tables 4—5 (Appendices).

³⁸ The results of the tests on the stationarity available from the author by request. These tests on stationarity of the series (hampered by the sample size) were either Augmented Dickey Fuller or, in case they indicated nonstationarity, Phillips-Perron. For details on these procedures, see especially Harris, Richard, *Using Cointegration Analysis in Econometric Modelling*. London 1995. All regressions were adjusted with the Newey-West covariance estimator. Regression sample years were adjusted to fit the country data in question. Cointegration tests, equally problematic in small samples like the unit root tests here, were not carried out here. Instead, the individual regression results were checked against the pooled sample results.

³⁹ The Breusch-Godfrey LM serial correlation test is used to test the null hypothesis that there is no serial correlation up to lag order p , where p is a pre-specified integer. See Godfrey, L.G., *Specification Tests in Econometrics*. Cambridge 1988 for further details.

⁴⁰ SUR is a feasible GLS estimator when the residuals are both cross-section heteroskedastic and contemporaneously correlated, due to e.g. common shocks in the political system. Here the panel data was first estimated using OLS, yet the residual matrix indicated cross-section correlation.

The price variable was expected to have a positive coefficient, implying a rational response. The income variable's coefficient was more difficult to anticipate: if it was positive, the chosen country's military exports coincided with economic development; if it was negative, the situation was reversed. The threat variable was expected to yield a negative coefficient, meaning that the said country decreased military exports with rising threats (allocating limited military resources for domestic purposes). The spillin variable, the aggregate trade share, was anticipated to exert a positive externality effect on the development of military trade. The additional spillin variable, the military burden, could be expected to have a negative coefficient, since this would indicate domestic (or other military spending) preference in military spending increases in comparison with military exports. The possible dummies are analysed briefly below. Furthermore, coefficients having different signs as the ones outlined above are offered alternative explanations.

In the individual country regressions, the price variable was statistically significant only for three countries, implying that either the military export decisions of the others were not influenced by the European market prices or that these prices are not adequately captured by the data. These conclusions are supported by the negative common coefficient incurred in the respective SUR-system. Individually, the income variable was found to be relevant in all the cases except Portugal and Switzerland. And in all cases, with the exception of Czechoslovakia, the coefficient of this variable was positive. Again, the pooled estimation results support the conclusion that economic development exerted an externality effect upon the military exports. The threat variables appeared to be significant in four of the cases in the individual regressions, yet the signs conflicted with the pooled results. The SUR-system analysis, however, revealed a distinction: the German threat seemed to produce profit-seeking behaviour, whilst a rise in the aggregate threat decreased relative military exports.

The aggregate trade share turned out to be a significant variable for only two countries (BEL, SWE), with a negative coefficient. In the pooled sample, it produced the expected positive spillover effect for some of the countries. However, the military burden

variable⁴¹ was statistically significant in five of the individual cases, with only the Spanish regression incurring a positive coefficient. Especially in the case of Finland, an import-dependent country, the coefficient was strongly negative (-19,42). The negative coefficients were also strongly supported by the SUR-system for four countries (BEL, CZE, FIN, POR). Thus, a domestic preference effect, implicating a significant role for the Great Depression, seems to emerge from both the analysis of the income and the military burden variables. This, however, needs to be confirmed with the analysis of the military import behaviour of these nations. Most of these nations also displayed some sensitivity to structural changes occurring in this period, especially after 1932 (DUMMY4).

It should also be noted that the destination countries and market “zones” of these countries differed broadly. For example Czechoslovakia, which experienced a tremendous growth of arms exports in the 1930s, exported 48 million USD worth of arms to foreign countries. The biggest destination countries in the 1930s were Romania (circa 10,9 million USD), China (circa 9,3 million USD), Iran and Afghanistan (circa 5,4 million USD), Turkey (circa 3,9 million USD), and Yugoslavia (almost 3 million USD). Czechoslovakia even exported over two million USD worth of arms to the Soviet Union in 1938, signifying that the Czech military export industries attempted, quite successfully, to capture markets in possible troubled areas and regardless of possible adverse consequences later.⁴² The military export destinations of Sweden and Finland, for example, illustrate the differences and similarities in their respective positions. Sweden’s principal European destinations included Poland and Belgium, and China and Argentina outside Europe, displaying similarities to the Czech case. In the Finnish case, one has to point out that Finland barely had any military exports to speak of until the early 1930s. Military exports and imports did not reach approximately the same size until 1935. Finland’s primary arms markets were the Baltic states. Nonetheless, both Finland and

⁴¹ As discovered by e.g. Pearson, ‘The Correlates of Arms Importation’, military imports are often significantly related to military spending, not military exports. It seems, however, that military exports were also tied into efforts to boost domestic defense industries.

⁴² Sloutzki, N.M., *The World Armaments Race 1919—1939*. Geneva Studies Volume XII: No.1. Geneva 1941, 76—77; Hauner, Milan, ‘Military Budgets and the Armaments Industry’. In *The Economic History of Eastern Europe 1919—1975*. Vol. II. Oxford 1986, e.g. 54, 58—67. As Hauner points out, other emerging arms producer nations, such as Poland, behaved similarly.

Sweden were drawn closer to the German orbit in their military imports of the late 1930s.⁴³

“WEAK” STATE ARMS TRADE PATTERNS, 1920—1938: Military Imports and Domestic Market Influences

Can we confirm or challenge the results presented in the previous section by analysing military imports? In this section the ratios of military imports of nominal military expenditures are regressed against the same variables as in the case of military exports, in order to test whether this ratio was affected by external or internal factors, as explained previously. Thus, we can analyse the impact and timing of domestic preferences in military spending in a similar fashion as before (with MILBUR as the predicted source of spillins):

$$\frac{MILIMP}{ME}_{it} = \mathbf{b}_{i0} + \mathbf{b}_{i1}EUROPEPRICE_{it} + \mathbf{b}_{i2}GDPCAP_{it} + \mathbf{b}_{i3}THREAT_{it} + \mathbf{b}_{i4}MILBUR_{it} \dots \quad (2)$$

$$\dots(+\mathbf{b}_{i5}DUMMY_{it}) + \mathbf{e}_{it}$$

Here MILIMP/ME (log) equals the military export ratio of nominal military expenditures in the said country i in year t ; the rest of the variables are the same as in the previous equation.

The European prices of arms were expected to yield a negative coefficient, indicating rational market behaviour for the said country. On the other hand, highly import-dependent countries might have been forced to ignore price developments, thus producing a positive sign. The income variable was, again, more problematic as far as the expected sign is concerned. If the sign was positive, the said country favoured domestic production during an economic downturn, such as the Great Depression. If it was negative, the situation was reversed. The threat variable was expected to be positive, indicating that military imports increased in the face of mounting threats. The expected sign of the military burden variable was perhaps more ambiguous (as a ratio), with a

⁴³ Sloutzki, *The World Armaments*, 93—95; *Statistical Year-Books of the Trade in Arms and Ammunition 1938*.

positive sign indicating increases in military spending inducing also an increase in military imports. In the opposite case, domestic military goods were preferred. In addition, trade was again assumed to exert a positive spillover effect. Analyses of the regressions are carried out below. A complete presentation of the individual country results can be found in Table 3 (Appendices), whereas a rundown of the SUR-system can be found in Table 5 (Appendices).

The European unit prices were found to be statistically significant in four individual regressions out of nine. For the stronger (higher income and/or geographically larger) “weak” states, the coefficient was negative, whereas for Finland and Portugal the positive coefficient implied military-import dependence. The pooled analysis also indicated a common negative coefficient. It seems that the bilateral trade environment of the 1930s allowed most of these countries to make a rational adjustment in their military imports to changes in market prices, yet they did not have to do so in terms of their military exports as the Great Powers attempted to define their circles of influence. Nonetheless, in the Czech case for example, we should point out that the Czech arms production was primarily aimed for exports, and the domestic military forces were often faced with quite severe material shortages.⁴⁴ The income variable was positive in the individual regressions for Belgium, Czechoslovakia, and the Netherlands. Only Spain and Finland formed marked exceptions. The pooled sample indicated a positive coefficient as a whole for these countries, confirming that military imports declined during the Great Depression.

The threat variable was significant in six of the nine individual cases here, with both negative and positive coefficients. In the SUR-system, respectively, the German threat seemed to produce a positive coefficient for most countries, indicating a rational adjustment. The two significant trade variable coefficients in the individual cases were not supported by the panel results. The military burdens of the individual countries were found to be statistically significant for Czechoslovakia, Finland, the Netherlands, Norway, Spain, and Sweden. For Finland, the Netherlands, Spain, and Sweden this variable suggested domestic market preference during military spending increases. A

⁴⁴ See Hauner, *Military Budgets* for details.

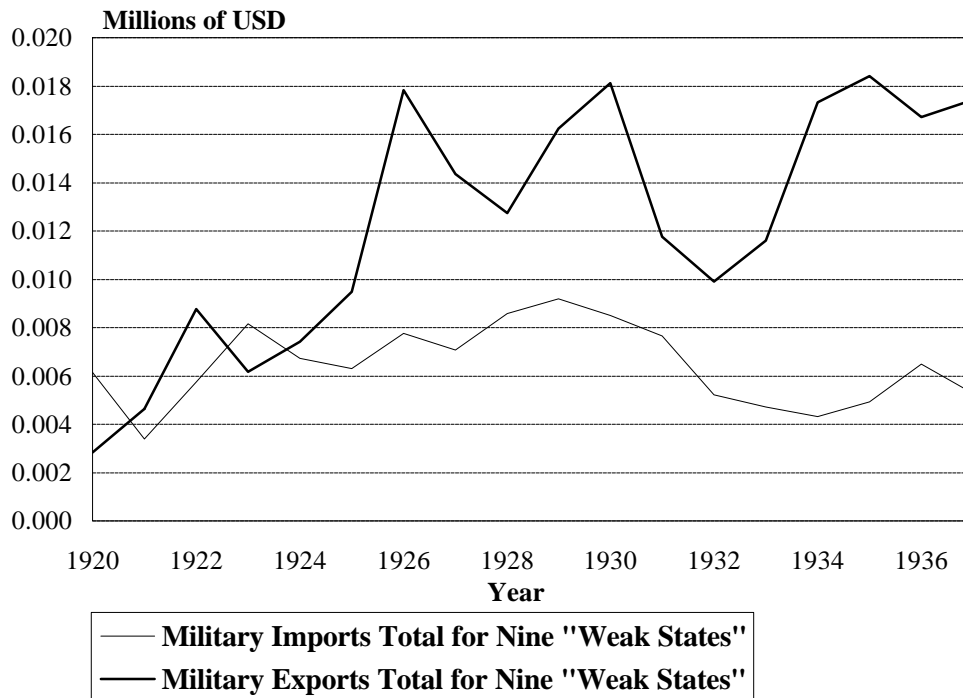
reverse relationship was found instead for Czechoslovakia and Norway. Moreover, the pooled sample suggested domestic market preference for four countries (NOR, POR, SPA, SWE) in the 1930s. Dummy variables produced somewhat conflicting results, yet DUMMY4 was again found significant in the pooled system.

All in all, the results of the equations warrant some conclusions. It seems that many of the states failed to respond to changes in the (real or nominal) European arms unit prices in their military exports, which may be explained both by the quality of the data as well as the altered trading environment of the 1930s. The opposite applied, for many of the countries, in their military imports. Also, it seems clear that they adopted a strong domestic military production preference in the 1930s, especially during the Great Depression, yet they also continued to expand their arms exports, with duality to be seen in the choice over externally or internally produced military goods. There also seem to have been differences in the strategies adopted by these states, mostly relating to their different perceptions of increasing threats either as a market opportunity or as a reason to exercise caution. This coincided with an overall trend among these “weak” European nations to rely more extensively on the domestic markets during the downturn of the early 1930s.

One could argue, of course, that it was not the capital expenditures in the total military expenditures (=purchases of durable military goods) that drove down the military import share rather than for example the wage component. This, however, does not seem to be the case. For example, the Finnish and Belgian cases tell us that the share of capital expenditures in the total military expenditures increased strongly in the 1930s, coinciding with the phenomenon of domestic preference described above. In Finland, nominal capital military expenditures increased 27 per cent from 1929 to 1937, whereas the military import share actually declined over ten per cent. In the Belgian case, the nominal capital military expenditures increased 247 per cent in the same time period, whereas the military import share increased only circa seven per cent. Furthermore, the military spending of Great Powers such as the UK and France was also very capital intensive, and

in both cases capital-intensive branches such as the Navy and the Air Force gained in shares of total military expenditures, especially in the 1930s.⁴⁵

Figure 2 Total “Weak” State Military Exports and Imports (USD), 1920—1937



Sources: see previous figures and Appendix tables.

The turn towards domestic market preferences emerges quite distinctly for these “weak” states. As seen in Figure 2, the total military exports of these countries exceeded their military imports for almost all of the period and continued to grow after a short-lived depression impact. Their total military imports, on the contrary, declined for a longer time and recovered only modestly at the end of the 1930s. The cases of Sweden and Finland illustrate the diversities in the way these preferences surfaced. The impact and success of the domestic market interest groups varied greatly in these two countries, due different historical and economic environments. As observed earlier, Finland was an

⁴⁵ See Eloranta, *Different Needs* for further details. Finnish and Belgian calculations were based, respectively, on Tervasmäki, *Eduskuntaryhmät* and Clement, Piet, *De Belgische overheidsfinanciën en het ontstaan van een sociale welvaartsstaat, 1830—1940* (Belgian Government Finances and the Beginning of the Social Welfare State, 1830—1940). (KUL) Leuven 1995.

import-dependent country and did not develop military exports until the 1930s, and even then only modestly. Sweden, in turn, developed into a major military exporter especially in the 1930s. Sweden's dependence on its military imports was more limited.⁴⁶

Correspondingly, the Swedish military import share remained fairly steady, owing to the mature level of Swedish arms production and the relatively fixed institutional "playing field". Swedish military exports, however, increased steadily up until the mid-1930s and the beginning of the hectic international rearmament. Contrasts to the Finnish case were copious. Finland was a newly independent country that had to develop many key organizations, such as the armed forces, from scratch during the interwar period. Thus it is initially quite surprising that the Finnish military import share declined up until the mid-1920s, levelled off, and then began to decrease again. The main reasons for this development include the unsettled institutional game situation in for example the strength of domestic industrial pressure groups, the large investments in domestic, government-owned military production, and certain trade policy constraints.⁴⁷

CONCLUSIONS

There were several competing forces that contributed to the disarmament framework, or rather its failure, mainly taking place under the auspices of the League of Nations: the abhorrence of war and the ensuing efforts at disarmament, including various efforts to regulate arms trade; the persistent continuation of the pre- First World War system of arms transfers and the market position defended by the key sellers; the distrust and broadly differing goals of the negotiating countries, including the new suppliers of arms; the altered threat and trading framework emerging in the 1930s; and the strong resurgence of domestic market preferences in the production of military goods.

⁴⁶ Krantz, Olle, 'Notes on Output Levels and Industrialisation in Denmark, Finland and Sweden 1870—1940'. In *Cross-Country Comparisons of Industrialisation in Small Countries 1870—1940. Attitudes, Organisational Patterns, Technology, Productivity*. Ed. by Olle Krantz. Occasional Papers in Economic History, No. 2, Umeå University. Umeå 1995, 91—99; Olsson, Ulf, 'The state and industry in Swedish rearmament'. In *The Adaptable Nation. Essays in Swedish Economy during the Second World War*. Publications of the Institute of Economic History of Gothenburg University. Stockholm 1982.

⁴⁷ See e.g. Eloranta, 'In Whose Interest' for further discussion of the Swedish and Finnish cases.

Although there are no simple general historical laws to be found governing arms trade, time-period specific insights can be discovered with the analysis of individual states and/or systems of states.⁴⁸ For the interwar period, we can say that the somewhat limited data on military trade can be utilised in order to arrive at conclusions about, among others, the market preferences perceived by these European states. As outlined in the introduction, consistent with most of the contemporary approaches in explaining military spending behaviour, these attempts must take into account both external and internal variables.

As such, the results of the quantitative tests suggest that these countries, by and large, reacted to fluctuations in the European prices of arms only in their military imports. Three proximate groups of countries can perhaps be discerned from their midst, mostly based on their military export behaviour. The first group, including Belgium, Sweden, and Norway, were military export dominated countries influenced by the rising incomes and the increasing German threat, even as an opportunity to increase military exports as a whole. The second group, Finland, and Portugal, comprised countries that were mostly lower income states with a need to keep importing key military goods. The third and the most heterogeneous group, consisting of Czechoslovakia, the Netherlands, Spain, and Switzerland, were countries experiencing a rapid structural change in their military trade during this period. In military imports, it is even more difficult to divide these countries into groups. It seems, though, that at least Czechoslovakia and Spain (and all sample countries on the aggregate panel) responded with a negative adjustment to rising prices, with positive adjustment to increasing threats. Most of these countries seemed to increasingly acquire their capital military goods from the domestic markets in the 1930s.

Thus, these "weak" states did not display clear differences in their military trade behaviour in the lines of, for example, strategic and/or geographic differences, as hypothesized in the introduction, and only partially due to differing income levels (*the third hypothesis*). They were, on the whole, dependent on their external trade (*the second hypothesis*), although this dependence declined significantly during the 1930s. They were not, however, as dependent on military imports as seemingly suggested this hypothesis,

⁴⁸ See e.g. Maddock, R. T., *The Political Economy of the Arms Race*. London 1990, 1—2.

rather than on military exports. Mostly they attempted to extend their military export market shares, often successfully, by selling military goods to even countries potentially hostile to them. Therefore, they did indeed, in addition to their dual role in the League of Nations, act assertively in the balance-of-power system of the interwar period (*the third hypothesis*), yet some of these states found the best opportunities for expanding their market shares during the 1930s, in the climate of intense competition for political and economic leadership in the system. Here we must also acknowledge the limitations of this inquiry, such as failing to take into account the complex ownership structures of the armaments industries in this period. The large arms producing firms owned significant shares in the armaments industries of the “weak” states, and often licensed their products.⁴⁹ Thus, the distinction between domestically or foreign produced military goods became blurred in many instances. However, the results achieved here confirm that also the arms producers of the “weak” states had room to manoeuvre in the international markets without significant strategic constraints.

Nonetheless, these “weak” states were constrained by domestic actors, contrary to the hypothesis of Michael Handel presented in the introduction, in their military trade behaviour (*the first hypothesis*). The results achieved here suggest that many of these countries developed strong domestic military production in the 1930s, especially during the Great Depression, or at least their military import shares grew slower than capital expenditures in general after the height of the depression. This coincided with a general trend of more extensive reliance on the domestic markets among European nations, along with the trade dependence figures dropping drastically compared to the 1920s. The reasons for this behaviour include efforts to support domestic production during the depression, the influence of domestic market interest groups, the changing trading climate, and perhaps an underestimation of the new, emerging threats of the 1930s.

APPENDICES

⁴⁹ A good example is the Swedish company Bofors and its extensive ties to the German Krupp until 1935. See especially Nordlund, Sven, *Upptäckten av Sverige. Utländska direktinvesteringar i Sverige 1895—1945* (Discovery of Sweden. Foreign Direct Investments in Sweden 1895—1945). Umeå Studies in Economic History 12. Kungälv 1989, 173—178.

Table 1 Characteristics of Aggregate Trade, Military Trade, and Military Spending of Nine “Weak” European States (%): 1925, 1935

COUNTRY	A.	B.	C.	D.	E.	F.	G.	H.
1925								
BEL	79,09	1,75	0,12	0,12	2,22	2,68	3,09	2,53
CZECH	54,54	4,28	0,16	0,16	1,87	1,67	1,54	1,41
FIN	51,13	2,82	0,00	0,15	0,00	0,43	0,00	1,36
NED	75,55	1,63	0,05	0,15	0,73	4,86	3,91	0,95
NOR	43,09	0,86	0,18	0,15	2,15	0,73	3,80	4,15
POR	29,70	3,26	0,01	0,15	0,01	0,49	0,02	1,00
SPA	17,72	3,15	1,02	0,04	7,00	3,67	2,33	0,14
SWE	33,95	2,14	0,73	0,24	3,24	1,11	5,65	1,98
SWI	52,57	0,96	0,31	0,04	2,52	0,47	7,32	1,38
1935								
BEL	50,91	1,77	0,83	0,31	5,75	5,56	12,38	4,23
CZECH	31,80	5,34	5,36	0,35	24,46	2,73	15,82	0,87
FIN	42,09	3,18	0,12	0,14	0,23	0,46	0,87	0,87
NED	34,83	1,57	0,17	0,13	1,43	6,86	1,72	1,61
NOR	32,78	0,86	0,80	0,18	1,64	1,06	12,79	4,05
POR	21,51	5,20	0,02	0,72	0,01	2,23	0,03	2,12
SPA	13,21	2,23	0,09	0,02	0,58	0,54	0,17	0,07
SWE	29,35	1,45	1,69	0,30	7,67	3,13	14,62	2,92
SWI	26,32	1,22	0,28	0,08	1,03	0,90	2,41	1,03

A = Total trade (exports + imports) of GDP; **B** = Military burden (nominal ME (=military expenditures) of nominal GDP); **C** = Military exports of total overall exports of the country; **D** = Military imports of total overall imports of the country; **E** = Military exports of total world arms exports; **F** = Military imports of total world arms imports; **G** = Military exports of nominal ME of the country; **H** = Military imports of nominal ME of the country. **Sources:** All military export and import data from *Statistical Year-Books of the Trade in Arms and Ammunition 1924–1938*. Geneva 1924–1938; total imports and exports of countries from Mitchell, *International Historical Statistics*. **Belgium:** nominal GDP from Buyst, Erik, ‘New GNP Estimates for the Belgian Economy during the Interwar Period’. *The Review of Income and Wealth. Journal of the International Association for Research in Income and Wealth*. No. 3, 1993, nominal ME from Clement, *De Belgische*; **Czechoslovakia:** only real GDP figures are available (Mitchell, *International Historical Statistics*, 1929=100), so the trade variables were deflated with the wholesale price index (Mitchell), and the nominal ME, taken from *League of Nations, Armaments Year-Books 1924–1940*, deflated with an average of wholesale price index and the military goods unit price index for Czechoslovakia (calculated from *Statistical Year-Books of the Trade in Arms and Ammunition 1924–1938*) to arrive at the ratios; **Finland:** nominal GDP from Hjerpe, Riitta, *Suomen talous 1860–1985. Kasvu ja rakennemuutos* (The Finnish Economy 1860–1985. Growth and Structural Change). Kasvututkimuksia XIII. Helsinki 1988, nominal ME from Tervasmäki, Vilho, *Eduskuntaryhmät; Netherlands:* nominal GDP from Bakker, G.P. den, T.A. Huitker & C.A. van Bochove, ‘The Dutch Economy 1921–1938: Revised Macroeconomic Data for the Interwar Period’. *Review of Income and Wealth*. No. 36, 1990, and nominal ME (and nominal NNP for year 1920) from Central Bureau voor de Statistiek, *1899–1979: tachtig jaren statistiek in tijdsreeksen* (1899–1979: Eighty Years of Statistics in Time Series). ‘s-gravenhage: Staatsuitgeverij 1979; **Norway:** nominal GDP from NOS XII. 245, *Historical Statistics 1968*. Central Bureau of Statistics of Norway. Oslo 1969, nominal ME from *Historisk Statistikk 1978*. Norges Offisielle Statistikk XII 291 (Historical Statistics 1978. Norway’s Official Statistics XII 291). Oslo 1978; **Portugal:** nominal GDP from Batista, Dina, Carlos Martins, Maximiano Pinheiro & Jaime Reis, *New Estimates for Portugal’s GDP 1910–1958*. Banco de Portugal. Lisboa 1997, nominal ME from Valério, *As finanças públicas portuguesas*; **Spain:** nominal GDP from Prados de la Escosura, Leandro, *Spain’s Gross Domestic Product, 1850–1990: a New Series*. Universidad Carlos III de Madrid. Dirección General de Planificación (Ministerio de Economía y Hacienda). Marzo 1993, nominal ME from Carreras, Albert (ed.), *Estadísticas históricas de España: siglos XIX–XX* (Historical Statistics of Spain: 19th and 20th Centuries). Fundación Banco Exterior. Barcelona 1989; **Sweden:** nominal GDP from Krantz, Olle, ‘Swedish Historical National Accounts 1800–1990 — aggregated output series’. Umeå (mimeo) 1997, nominal ME from Krantz, Olle, *Historiska nationalräkenskaper för Sverige: offentlig verksamhet 1800–1980* (Historical National Accounts for Sweden: Public Sector 1800–1980). Skrifter utgivna av Ekonomisk-historiska föreningen i Lund, vol. L. Lund 1987; **Switzerland:** nominal GDP from Ritzmann-Blickenstorfer, Heiner & Thomas David, *New Estimates of the Swiss Gross Domestic Product (1892–1960)*. Manuscript 2000, nominal ME from Vogler, Albert, *Die schweizerischen Militärausgaben von 1850–1963 un ihre Auswirkungen auf die wirtschaftliche Entwicklung der Schweiz* (The Swiss

Military Expenditures 1850—1963 and their Effect on the Economic Development of Switzerland). Dissertation. Lungern 1965.

Table 2 Military Export Patterns of Nine “Weak” European States: Regression Results, 1920—1937

DEPENDENT VARIABLE	INDEPENDENT VARIABLES	COEFFICIENTS	REGRESSION FIT
<i>MILEXPORBEL</i>	EUROPEPRICE***	-2,31	$\bar{R}^2=0,79$
	GDPCAPBEL***	9,99	
	TRADEOFGDPBEL***	-1,99	
	MILBURBEL*	-1,37	
<i>MILEXPORICZECH</i>	GDPCAPCZE*	-4,76	$\bar{R}^2=0,72$
	GERSOVTHRT**	-1,86	
	MILBURCZE***	-1,80	
	DUMMY2***	0,83	
<i>MILEXPORIFIN</i>	GDPCAPFIN**	10,75	$\bar{R}^2=0,71$
	MILBURFIN***	-19,42	
	DUMMY1**	2,28	
<i>MILEXPORINED</i>	EUROPEPRICE***	1,06	$\bar{R}^2=0,66$
	GDPCAPNED***	4,28	
	DUMMY1***	-0,26	
<i>MILEXPORINOR</i>	GDPCAPNOR***	6,41	$\bar{R}^2=0,55$
	GERTHRT***	1,05	
	DUMMY1***	-0,55	
<i>MILEXPORIPOR</i>	MILBURPOR**	-1,49	$\bar{R}^2=0,31$
	DUMMY4**	-0,45	
<i>MILEXPORISPA</i>	EUROPEPRICE**	-1,69	$\bar{R}^2=0,69$
	GDPCAPSPA*	4,19	
	MILBURSPA(-1)***	2,38	
	DUMMY2**	-0,48	
<i>MILEXPORISWE</i>	GDPCAPSWE***	4,55	$\bar{R}^2=0,85$
	GERSOVTHRT***	-1,53	
	TRADEOFGDPSWE***	-1,82	
	DUMMY4***	0,10	
<i>MILEXPORISWI</i>	GERTHRT(-1)***	-1,18	$\bar{R}^2=0,35$
	DUMMY3***	0,63	

Sources: for European arms unit prices, see Figure 1; real GDP per capita from Maddison, *Monitoring*. In addition to sources listed under Table 1 above: **Portugal:** real GDP per capita (Maddison, *Monitoring* provides real GDP for 1929 and 1938) figures calculated by interpolating with using the average ratio, close to the ratio for both years 1929 (36.129 per cent) and 1938 (36.674 per cent), 36.402 per cent share of Maddison’s figures for these two years of Batista et al., *New Estimates* real GDP, divided by the population figures in Maddison, *Monitoring*. In threat calculations: **Austria:** nominal ME (1923—1937) from *League of Nations, Armaments Year-Books 1924—1940*, nominal CGE (=central government expenditures) from Mitchell, *International Historical Statistics*, military personnel from Flora, Peter, *State, Economy, and Society in Western Europe 1815—1975*. Volume I. The Growth of Mass Democracies and Welfare States. Frankfurt am Main 1983; **Germany:** nominal ME (1928, 1932—1938) from Abelshausen, Werner, ‘Germany: guns, butter, and economic miracles’. In *The Economics of World War II. Six great powers in international comparison*. Ed. by Mark Harrison. Cambridge, UK 1998, extended (1924—1927, 1929—1931) with *League of Nations, Armaments Year-Books 1924—1933*, nominal CGE from Mitchell, *International Historical Statistics* and Klein, Burton Harold, *Germany’s Economic Preparation for War*. Harvard Economic Studies: 109. Cambridge 1959, military personnel from Flora, *State*; **Italy:** nominal ME and CGE from Ercolani, Paolo, ‘Documentazione statistica di base’. In *Lo Sviluppo Economico in Italia. Storia dell’Economia Italiana negli ultimi cento anni* (The Economic Development in Italy. History of the Italian Economy in the Last Hundred Years). Volume III. A cura di Giorgio Fuá. Milano 1975, military personnel from Flora, *State*; **Soviet Union:** nominal ME and CGE from Davies, R.W., *The Development of the Soviet Budgetary System*. Cambridge 1958 (1920—1927) and from Harrison, Mark & R.W. Davies, ‘The Soviet Military-economic Effort during the Second Five-year Plan (1933—1937)’. *Europe-Asia Studies*. Vol. 49, No. 3, 1997 (1928—1938), military personnel from Harrison-Davies, *The Soviet* (1926—1927, 1931—1938). All variables are in logs. Differencing: EUROPEPRICE, all threat indices, and MILEXPORISWI are $I(1)$. On variable definitions, see the text for details. Only statistically significant independent variables were listed in the table

(intercepts omitted from the table): * = significant at the ten per cent level; ** = significant at five per cent level; *** = significant at the one per cent level.

Table 3 Military Import Patterns of Nine “Weak” European States: Regression Results, 1920—1937

DEPENDENT VARIABLE	INDEPENDENT VARIABLES	COEFFICIENTS	REGRESSION FIT
<i>MILIMPORTBEL</i>	GDCAPBEL**	4,25	$\bar{R}^2=0,55$
	GERTHRT***	0,71	
	AR(2)*	-0,59	
<i>MILIMPORTCZECH</i>	EUROPEPRICE**	-2,75	$\bar{R}^2=0,38$
	GDCAPCZE***	5,06	
	MILBURCZE***	1,58	
	GERSOVTHRT**	0,76	
<i>MILIMPORTFIN</i>	EUROPEPRICE**	0,33	$\bar{R}^2=0,93$
	GDCAPFIN***	-0,92	
	COMBTHRT***	-0,47	
	MILBURFIN***	-1,81	
	DUMMY3**	0,15	
<i>MILIMPORTNED</i>	GDCAPNED**	3,75	$\bar{R}^2=0,09$
	GERTHRT(-1)*	-0,51	
	MILBURNED**	-3,26	
<i>MILIMPORTNOR</i>	TRADEOFGDPNOR**	1,08	$\bar{R}^2=0,34$
	MILBURNOR**	1,21	
<i>MILIMPORTPOR</i>	EUROPEPRICE***	1,28	$\bar{R}^2=0,23$
	GERTHRT***	-1,27	
	DUMMY4***	0,49	
<i>MILIMPORTSPA</i>	EUROPEPRICE*	-1,05	$\bar{R}^2=0,60$
	GDCAPSPA***	-9,83	
	MILBURSPA***	-3,87	
	DUMMY1***	-0,37	
<i>MILIMPORTSWE</i>	GERTHRT(-1)***	0,42	$\bar{R}^2=0,60$
	MILBURSWE***	-1,21	
<i>MILIMPORTSWI</i>	GERTHRT(-1)***	-0,57	$\bar{R}^2=0,78$
	TRADEOFGDPSWF***	-0,77	
	DUMMY3***	0,34	

Sources: see previous figures and tables for details. Differencing: as in Table 2. Additionally, MILIMPORTNED and MILIMPORTSPA are $I(1)$. Only statistically significant independent variables were listed in the table (intercepts omitted from the table): * = significant at the ten per cent level; ** = significant at the five per cent level; *** = significant at the one per cent level.

Table 4 Military Export Patterns of Nine “Weak” European States: SUR (Seemingly Unrelated Regressions) Estimation Results, 1920—1937

DEPENDENT VARIABLE	INDEPENDENT VARIABLES	COEFFICIENTS	STANDARD ERROR OF REGRESSION
<i>MILEXPORBEL</i>	EUROPEPRICE**	-0,40	SE = 0,24
	GDCAPBEL***	1,33	
	GERTHRT(-1)***	0,86	
	TRADEOFGDPBEL**	0,55	
	MILBURBEL***	-1,74	
	DUMMY4**	0,06	
<i>MILEXPORCZECH</i>	GDCAPCZE***	2,10	SE = 0,56
	MILBURCZE***	-1,74	
	DUMMY4**	0,06	
<i>MILEXPORFIN</i>	GDCAPFIN***	1,49	SE = 1,55
	MILBURFIN***	-1,74	

	DUMMY4**	0,06	
<i>MILEXPORINED</i>	GDPNED***	1,62	SE = 0,27
	DUMMY4**	0,06	
<i>MILEXPORINOR</i>	EUROPEPRICE**	-0,40	SE = 0,33
	GDPNOR***	2,40	
	COMBTHRT(-1)***	-1,71	
	TRADEOFDPNOR**	0,55	
	DUMMY4**	0,06	
<i>MILEXPORIPOR</i>	EUROPEPRICE**	-0,40	SE = 0,69
	GDPAPPOR***	1,94	
	COMBTHRT(-1)***	-1,71	
	GERTHRT(-1)**	0,86	
	TRADEOFDPPOR**	0,55	
	MILBURPOR***	-1,74	
	DUMMY4**	0,06	
<i>MILEXPORISPA</i>	GDPAPSPA***	2,55	SE = 0,52
	COMBTHRT(-1)***	-1,71	
	DUMMY4**	0,06	
<i>MILEXPORISWE</i>	EUROPEPRICE**	-0,40	SE = 0,23
	GDPAPSWI***	2,40	
	COMBTHRT(-1)***	-1,71	
	GERTHRT(-1)***	0,86	
	TRADEOFDPSWE**	0,55	
	DUMMY4**	0,06	
<i>MILEXPORISWI</i>	EUROPEPRICE**	-0,40	SE = 0,39
	GDPAPSWI**	1,23	
	GERTHRT(-1)***	0,86	
	TRADEOFDPSWI**	0,55	
<i>MILEXPORISWI</i>	DUMMY4**	0,06	SE = 0,39
<i>Number of observations =</i>	<i>Log likelihood (weighted) =</i>	R^2 (<i>unweighted</i>) =	<i>SE aggregate (unweighted) =</i>
139	13,50	0,81	0,46

Sources: see previous figures and Appendix tables for details. Only statistically significant independent variables were listed in the table: * = significant at the ten per cent level; ** = significant at the five per cent level; *** = significant at the one per cent level.

Note: common intercept or common AR(1) term not reported here. Residuals not exhibiting serial correlations up to three lags.

Table 5 Military Import Patterns of Nine “Weak” European States: SUR (Seemingly Unrelated Regressions) Estimation Results, 1920—1937

DEPENDENT VARIABLE	INDEPENDENT VARIABLES	COEFFICIENTS	STANDARD ERROR OF REGRESSION
<i>MILIMPORTBEL</i>	EUROPEPRICE***	-0,33	SE = 0,16
	GDPAPBEL**	1,06	
	GERTHRT***	0,13	
	DUMMY4***	0,08	
<i>MILIMPORTCZECH</i>	EUROPEPRICE***	-0,33	SE = 0,26
	GDPAPCZE***	1,06	
	GERTHRT***	0,13	
	DUMMY4***	0,08	
<i>MILIMPORTFIN</i>	EUROPEPRICE***	-0,33	SE = 0,10
	GDPAPFIN***	1,06	
	DUMMY4***	0,08	
<i>MILIMPORTINED</i>	EUROPEPRICE***	-0,33	SE = 0,34
	GDPNED***	1,06	
	GERTHRT***	0,13	
	DUMMY4***	0,08	
<i>MILIMPORTINOR</i>	EUROPEPRICE***	-0,33	SE = 0,24
	GDPNOR***	1,06	

	MILBURNOR*	-0,22	
	DUMMY4***	0,08	
	EUROPEPRICE***	-0,33	
	GDPGAPOR***	1,06	
	GERTHRT***	0,13	
<i>MILIMPORTPOR</i>	MILBURPOR*	-0,22	
	DUMMY4***	0,08	SE.=0,35
	EUROPEPRICE***	-0,33	
	GDPGAPSPA***	1,06	
	GERTHRT***	0,13	
<i>MILIMPORTSPA</i>	MILBURSPA*	-0,22	
	DUMMY4***	0,08	SE.=0,26
	EUROPEPRICE***	-0,33	
	GDPGAPSWI***	1,06	
	GERTHRT***	0,13	
<i>MILIMPORTSWE</i>	MILBURSWE*	-0,22	
	DUMMY4***	0,08	SE.=0,22
	EUROPEPRICE***	-0,33	
	GDPGAPSWI***	1,06	
<i>MILIMPORTSWI</i>	DUMMY4***	0,08	SE.=0,18
<i>Number of observations =</i>	<i>Log likelihood (weighted) =</i>	\bar{R}^2 (<i>unweighted</i>) =	<i>S.E. of regression (unweighted) =</i>
147	111,91	0,79	0,19

Sources: see previous figures and Appendix tables for details. Only statistically significant independent variables were listed in the table: * = significant at the ten per cent level; ** = significant at the five per cent level; *** = significant at the one per cent level.

Note: common intercept and common AR(1) term not reported here. Residuals not exhibiting serial correlations up to three lags.