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Cartels as institutions for crisis management in interwar
Hungary

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Abstract

The present article offers a case study to cartels as institutions of crisis management analyzing the experience of the two leading Hungarian electro-technical companies in the interwar era. Interwar Hungary, struggling to overcome the challenges of both the transformation from part of a European Great Power into a small and impoverished country and that of the Great Depression, provides a historical example for it. The main findings are, first, that although international cartels might help even medium sized or small members from poor countries to overcome short term economic crises. The cartels, however, might seriously constrain their room for maneuvering in adjusting to the altered market conditions in the long run. Second, national cartels tend to help to overcome transformation crises only if economic policy incentives further branch-wide coordinated rationalization and specialization. In the conclusion suggestions are presented for a future research framework analyzing to what extent cartels may help small and poor countries in crisis management.

Key words: International cartels, crisis management, small and poor countries, Great Depression, private economic coordination

Research interest and outline of the article¹

The potential of cartels in assisting crisis management had been a crucial question in the debates about their legal regulation. Generally, the experiences of the large industrialized countries are still in the focus of historical studies, but that of the smaller industrialized European states receive also growing attention. On the one hand, the analysis of similar experiences of small and poor countries may provide further information on how such collusions influence the crisis resistance of their members. On the other hand indications for policy choices may be gained. The present case study analyzes how the specific market characteristics of interwar Hungary, a small and poor, open economy, influenced to what extent the two leading electro-technical enterprises, Tungsram and Ganz & Co., could make use of participation at national and international cartels to survive the transformation crisis after 1918 and the Great Depression.

The first hypothesis is that the breakup of the Austro-Hungarian Monarchy, consequently the radical shrinking of the territory of Hungary combined with the country's exhaustion in the WWI, turned into a serious transformation crisis on the company (and branch) level only if no strategy was developed to adapt to the radically changed national and world economy. The second hypothesis, related to that, is, that in small and poor, late industrializing countries domestic cartels rarely favor strategies on the company or branch level to overcome such deep transformation crises, though economic policy incentives may direct their activity towards such a path. This hypothesis suggests that the findings of Harm G. Schröter that national cartels helped to solve only short term crises in Germany by reducing output, therefore raising prices and keeping production capacities at work would be true in the case of small and poor countries, too.²

The third hypothesis is that the participation in international cartels might indeed have helped participants from small and poor countries to overcome a different type of crisis, the Great Depression. The chances of relying on these international structures for overcoming long-term, transformational crises, however, have been rather poor for such participants.

Two different types of crises are differentiated here, according to the historical example analyzed in this paper. The first one is called transformation crisis meaning regime changes in countries leading to a (necessity of) reorganization of the whole structure of the economy. Here the fundamental change of Hungary from being part of a European Great Power to a small, poor, and open economy set such a

¹ A first version of this paper was presented at the 4th conference on World and Global History in Paris, September 4-7th, 2014. I am grateful for comments by members of the MTA Crisis Group and Marc Flandreau. Special thanks to Dr. Ágnes Pogány for the possibility of using a manuscript of her presentation.

² Schröter 1998: 186-187

transformation crisis off. The Great Depression provides the example for the second type of crisis, i.e. a multiple crisis, using the interpretation of Ágnes Pogány, consisting of severe liquidity and solvency problems of the Hungarian money institutions, added to fiscal, currency and foreign debt crises.³ These were, however, closely connected to the severe disruption of world trade and capital relations that followed the stock exchange crisis of 1929 in New York, represented a culmination of the unsolved issue of the reparation debts, and manifested structural changes in the world economic system, too.⁴ The Great Depression came to mark an interim station in the long process of the techno-economic paradigm change⁵, too. The slow shift from steam to electrical power and to the internal combustion engine, that took place from the late 19th century, arrived in a phase of creating nation-wide systems and a focus on furthering the technical, economic and social efficiency of such systems at least in the industrialized countries.⁶

The article is built up in the following way. First, the main functions of cartels as institutions of crisis management are summarized and the market conditions of small and poor, late industrializing countries are specified. Then the two companies that are in the focus of this paper, Tungsram and Ganz & Co., will be introduced. A summary of the main problems of the interwar Hungarian economy provides the primary context these companies operated in making the specific market conditions of small and poor countries that influence to what extent cartels could act as crisis managers visible. The analysis of the participation of the two companies in national and international cartels looks, then, for different ways of crisis management. A conclusion of the main findings closes the paper.

State of the art

Cartels may defend the weaker market participants and stabilize their output, prices and, implicitly, employment, during crises. These were one of the few major positive effects attributed to cartels from the early debates about these powerful organizations in the late 19th century. That's why they were considered in some, more coordinated economies, most of all in Germany, as useful instruments of private economic coordination helping to avoid ruinous competition. Hence, they were considered as beneficial for the whole economy, only the abuse of monopoly power had to be controlled by the state. This standpoint was clearly against those of the United States which claimed that cartels undermined not only economic but also political

³ Pogány 2014

⁴ Here just one reference to the specific coordination problems of the manifestation of the Great Depression in Central Europe: Wolf 2013

⁵ To the possibility of small, late industrializing countries to catch-up at times of techno-economic paradigm changes: Perez 1998

⁶ Hausman – Hertner – Wilkins 2008; Field 2009; Sandgruber 1993

freedom.⁷ This standpoint had been accepted in Europe only gradually after the Second World War.⁸

As the reconstruction of Europe after the devastations of the WWI proceeded slower than expected and Europe's loss on world economic hegemony became evident, international cartels became increasingly considered useful for making the European economy fit for global competition by fostering cooperation among former enemy countries and by continent-wide rationalization.⁹ Such hopes were based for example on the German-French steel cartel.¹⁰ The concept was basically related to the – as it was seen – natural tendency of the capitalist economic system to concentration.¹¹ During the world economic crisis in the early 1930s the fine web of international and national cartels were experimented with as means of international economic policy coordination, too, f. ex. by the cartel of the Eastern European agrarian exporters or by using cartels to translate the decisions of the international trade agreements into national production allocation. The potential primary benefits of private economic collusions were protection for national industries and promotion of exports. These expected benefits, together with the hopes tied to the above mentioned functions of the cartels as agents of economic diplomacy and the structural transformation of the European economy made cartel legislation in most European countries in the interwar years, if it came to a legislative act at all, follow the German model.¹²

An international regulation of cartels was supposed to ensure that these beneficial effects of collusion would outweigh the harms they caused. The establishment of such a regulation failed in the late 1920s-early 1930s due to divergent interests of various countries and private economic actors.¹³ Nonetheless such an attempt clearly demonstrates the hopes set in cartels as instruments for managing not only short term but also transformation crises, provided for their closer governmental surveillance.

⁷ Pohl (eds.) 1985

⁸ Fear 2008; Resch 2005

⁹ Barjot 1994; Wurm 1989; Hidvégi 2011

¹⁰ Gillingham 1989; Brussière 1993

¹¹ A few manifestations of such a dominant view in Hungary: Nr. 540: A Felsőház közgazdasági és közlekedésügyi, valamint pénzügyi bizottságának együttes jelentése az „iparfejlesztésről” szóló 517. számú törvényjavaslat tárgyában. [Nr. 570: Joint report of the Economic, Transport and Financial Committees of the Upper House about the bill of the law Nr. 517 about furthering industrialization] In: Az 1927. évi január hó 25-ére összehívott Országgyűlés Felsőházának irományai [Documents of the Upper House of the Hungarian Parliament, opened on 25th January 1927. Vol. XIV.] Athenaeum, Budapest, 1931, 563-567; SCHILLER 1929

¹² Schröter 1996: 133-142

¹³ D'Alessandro 2008; Hara 1993,

The playfield: small and poor, late industrializing countries

Contemporary observers and recent studies both underlined that small and developing countries were specifically threatened by the price competition of international cartels. Through buying into local production international cartels might wipe out whole local industries, rendering investments into national industrialization useless, too.¹⁴ They might cause tremendous welfare losses due to high consumer prices, by raising barriers to entry through limiting access to technology or by inducing governments to use tariffs and anti-dumping duties against developing competitors who would usually compete with low prices.¹⁵

The specific market conditions of the small and poor, late industrializing countries influenced to what extent cartels could function in such countries as institutions of crisis management. Their economies were usually less diversified due to the size of their territory, population and supply of natural resources. The small domestic market limited chances to reach optimum plant size in large-scale industries and made diversification a frequent method of company growth. As small markets could only support a small number of competitors, monopolistic or oligopolistic market structures tended to evolve protected by high entry barriers. Accompanying heavier reliance on foreign trade, small countries were found to be more vulnerable to changes in consumer demands and trade restrictions by their larger partners.¹⁶

What specific characteristics of small *and* poor countries may have most influenced to what extent cartels acted as crisis managers? As the present case study suggests two groups of characteristics played a crucial role in this respect.

First, the characteristics of such markets that ultimately restrain technological development decisively influence this process. Not the limited size alone had been found particularly retarding technological development and, therefore, long-term growth according to the analysis of L.T. Pinto about the Portuguese economy. In a small country, with a multi-positional elite, that is a political and economic elite tied together in multiple ways¹⁷, legal restrictions on market entry, inclusively tariff protection, might have been easier achieved than in big countries by pointing out the consequences of harmful competition (a waste of scarce resources) and the importance of securing a large enough market for the existing companies to grow. These restrictions reduced both competition at the home market and incentives to export channeling investments into the traditional sectors resp. into import substitution, instead of into technical progress for the sake of international competitiveness.¹⁸ I suggest making an interrelated factor explicit, too. Due to a very

¹⁴ Kelemen – Faluhelyi 1929

¹⁵ Levenstein – Suslow 2004a

¹⁶ Kuznets 1960

¹⁷ For Hungary see Lengyel 1993

¹⁸ Pinto 1960

thin middle class and the small share of middle-sized enterprises the demand for quality products was restricted. Furthermore, a good portion of such demand was usually met by more prestigious foreign products. That's why such a home market rarely induced enterprises to opt for a strategy of quality producer. To cut this line of argument short, cartels may, under such conditions, help their members to survive short-term crises by stabilizing output, prices and employment. They are, however, not induced to facilitate technological adjustment which would be the key for their members to master any of the types of crises listed in the introduction. Especially they not further preparation for a technical-economic paradigm change.

The high ratio of public investments in total production is the second characteristic of small and poor economies inducing cartels not to realise their full potential for managing crises. The importance of public investments in late industrialising countries is well known. The relative security of payment and the usually above marginal prices make them particularly attractive even during crises: Private business partners tend to become insolvent more often than states do, therefore, a payment, at least on the long run, is more likely to be expected from public authorities. As large public investments in such countries are usually dependent on long-term foreign credits, at times of hindrances to international capital flows the contraction of the home market is, however, painfully felt in the cutting back on public investments, too. During the Great Depression, when agricultural prices fell and international capital withdrew from Central Eastern Europe, public spending could not balance the reduction of private purchasing power. Under such conditions cut-through competition for the remaining business opportunities – most of all for the remaining public investments – was a frequent answer in Hungarian home-market oriented branches reinforcing the orientation towards the needs of the less developed home market: Chances are minimal for building up export markets at times of no opportunities to open up new sources of capital in order to modernize production and to offer pre-financing to potential customers.

This very characteristic, however, as it is claimed in this paper, offers policy makers the chance to bring cartels to step in as crisis managers. For example, contracts to supply public authorities and participation at public investment may be tied to realizing branch-wide rationalization, specialization and typization.

It is difficult to answer to what extent cartels could act as crisis managers in small and poor countries as these economies are usually not included into the current surveys about international cartels. This paper presents a case study contributing to such a later systematization. Interwar Hungary was part of "Europe's third world" using Derek C. Aldcroft's term. It was a relatively late industrializing Central Eastern European country that suffered greatly from the political and territorial transformation of the Danube basin after the WWI and was particularly hit by the Great Depression. Two leading Hungarian export companies, Tungsram and Ganz & Co., are in the focus of the present investigation inquiring to what extent national and international cartels helped them, resp. their branches, to (re-)establish their

position on the world market after the WWI and the Great Depression. These two companies exemplify the chances and the difficulties that the “new” and “old industries”, here the electrical and mechanical engineering, had to face following the dissolution of the Austro-Hungarian Monarchy, when technological development accelerated and growing protectionism and economic nationalism appeared in world trade. The paper is based on the archival sources of Tungsram and Ganz & Co., their main German competitors and the two leading Hungarian commercial banks, the Hungarian General Credit Bank (Magyar Általános Hitelbank, HGCB) and Hungarian Commercial Bank of Pest (Pesti Magyar Kereskedelmi Bank, PMKB), shareholders of Ganz & Co. resp. Tungsram.

Hungary: A small, impoverished, open economy in the interwar era

Hungary exemplifies the problems that small and poor countries experienced during the slow recovery of the European economy in the 1920s and the Great Depression. The dissolution of the Austro-Hungarian Monarchy and the loss of 2/3 of its territories, made the Hungarian Kingdom from being part of a European great power to a middle-sized state with slightly less than 8 million of inhabitants. The country became truly small in economic terms: exhausted by the war, the economy was struggling to come back on feet under the heavy weight of reparation payments and the necessity to adjust to the loss of natural resources and the breaking up of traditional company structures and market relations. Although the remaining part of the country was more urbanized and industrialized than pre-1914 Hungary, important regional growth centers, raw material bases and the primary markets of the Hungarian industry had been lost. Hyperinflation (1922-1924) wiped out much of the remaining capital, around 80% of the capital of the great commercial banks evaporated; the ratio of capital accumulation fell back on a considerably lower level than before 1914.¹⁹ This territorial change causing heavy imbalances and disruptions in the structure of the Hungarian economy combined with the break-up of the Austro-Hungarian Monarchy was called the Trianon shock, or shortly Trianon, after the name of the palace where the peace treaty was signed.

Despite some efforts to modernize, agriculture continued to use mainly extensive pre-war production methods. Without a land reform, the duality of large estates and numerous small, not viable plots remained dominant. A shift from traditional staple products to the intensive production of vegetables, dairy and packaged products similarly to the development in Denmark took place only in limited extent. Hungarian exports suffered from gradually diminishing terms of trade as even in 1929 nearly 60% of the exports (in value) were agricultural products the prices of which were diminishing rapidly. This tendency culminated during the crisis, when similarly to many exporters Hungary tried to compensate falling prices by increasing

¹⁹ Berend – Ránki 1966: 31-32; Aldcroft 2006: 53

the exports' volume²⁰. Overseas competition provided a main challenge for Hungarian agricultural export already in the 1880s. At that time, however, stricter protection of the common custom territory with a population of nearly 50 million allowed Hungarian agriculture to keep production and profit levels relatively high.²¹ After WWI, this was not a viable solution any more: The traditional markets, Austria and Czechoslovakia carefully protected their own growing agricultural production and agricultural industry.

In postwar Hungary, import substitution was considered as a means to lower the need for foreign currency. Building up national production capacities for the largest product groups in industrial imports such as textiles was, therefore, highly subsidized and protected (1925 new tariff system). Shortage of capital and cheap labor did not induce a rapid mechanization of industrial production, product quality was therefore, usually low – except for a few leading enterprises. Though after the stabilization of the currency in 1924 foreign capital sources opened, the terms of capital import were very unfavorable, due to these internal conditions, the instability of the international financial system (rivalry between London and New York, a weaker cooperation of central banks), and to political tensions in the Danube-region.²² The political tensions were consequences of the diametrically different interests of the successor states concerning the territorial resolutions of the peace treaties. The economic disintegration of the former Habsburg territory aggravated these tensions as the new states carefully protected their emerging industries or agricultural production from the former main suppliers. Hungarian industry had to face increasing hurdles of access to its traditional markets in the successor states of the Monarchy, too. Under such circumstances industry was not able to absorb the labor surplus in agriculture or provide a growing home market for agriculture.

These structural problems were aggravated by Hungarian monetary policy that, after the stabilization of the currency, was foremost concerned with the protection of the value of the currency through a deflationary policy and high taxes.²³ The possibilities to induce economic growth by deficit spending were minimal not only because of the overwhelming concern of the government about inflation and of the growing foreign debt service but due to the limits of international borrowing, too: The government was not able to take new loans in order to meet reparations and service the stabilization loan, provided under a League of Nations-scheme.²⁴ Thus, the transformation of the Hungarian economy into to the new territorial and political settings was to take place under conditions of impoverishment, high regional

²⁰ Magyar kir. Központi Statisztikai Hivatal 1934: 152

²¹ See for example Klement 2012: 32-34

²² Péteri 1992: 31–42; see also Fishlow 1985

²³ Pogány 2000

²⁴ Pogány 2002

political instability, and the difficulties resulting from the structural transformation of the world economy.

Two companies in focus

Ganz & Co. was the country's oldest (founded in 1844) mechanical engineering company and remained one of the largest ones during the interwar era. Company growth was furthered by large-scale private and public investment into the railroads and from the late 1870s by the emergence of the Budapest milling industry; technological inventions of the company furthered these developments in turn. After the death of its founder, a Swiss iron foundry-professional Abraham Ganz, in 1867 the company remained mainly in the possession of family members and business partners and was managed by former collaborators of Ganz. From 1895 the Hungarian General Credit Bank stepped in by providing a large credit. In the interwar years the bank was already the largest shareholder of the company and its most important creditor, too.²⁵

From the first experiments in 1879 Ganz & Co. made rapid progress in a new field, the electro-technical industry. In 1885 Ganz presented an AC-power system superior to competing systems in terms of the transmission of high-voltage power on long distance and subsequently built power centers in Europe and overseas, too. In 1902 the first regular mainline electrical railway service of Europe was opened 1902 in Northern Italy with a system developed and installed by Ganz & Co., too. The pride of the Hungarian electro-technical industry, however, was not able to match the quick technological progress in Western Europe and North America, especially the growing managerial complexity and capital demand of electrification projects. During the interwar era both the Ganz Electrical Ltd. (autonomous company 1906-1929) and the mother company, Ganz & Co., suffered greatly from the loss of their main markets, i.e. the lost Hungarian territories resp. the Austrian half of the Monarchy. 1930 the International General Electric Comp., New York, and AEG, Berlin, were gained to bring in fresh capital and a license for the use of their patents for a 25 % share of the capital stock of Ganz & Co., limiting, in practice, the activity of the electro-technical department in exchange in terms of scope and geographical dimensions. However, as the main problems of the company, opening new and growing markets were not solved by this act, Ganz & Co. operated at a growing deficit which could only be gradually reduced in the late 1930s.

The United Incandescent and Electrical Ltd., called shortly Tungstram, was founded 1882 by a Hungarian-Viennese entrepreneur, Béla Bernát Egger, founder of companies active on different fields of the electrical industry (telegraphy, light bulbs, lighting installations, development of the first demonstrational electrical railway in

²⁵ Szekeres – Tóth 1962

Austria etc.).²⁶ Company growth was foremost based on public investments in Hungary in the telephone and telegraph infrastructure resp. in the railroad network (signal and safety installations); from the 1890s the production of light bulbs rapidly grew on importance, too. A licensee of the Western Electric Corp., New York, from 1892, Tungsram gradually became the most important supplier for automatic telephone centers in Hungary and a main competitor in Romania, Yugoslavia and Bulgaria. 1896 the enterprise was transformed into a joint stock company with members of the Egger family, the Viennese mother company (VEAG), so as the Pesti Magyar Kereskedelmi Bank (Hungarian Commercial Bank of Pest, PMKB) and the Niederösterreichische Escompte Gesellschaft, Vienna, at the board of direction. By 1903 Tungsram had grown to an equal partner of VEAG, culminating in a division of low current products and light bulbs at Tungsram and the high current ones in Vienna. The participation of the company at the first international light bulb cartel (1902-1913) with a market share equal to that of the Dutch Philips (above 11 per cent each) and only behind that of the leaders, AEG and Siemens (25 per cent each) expressed the market position of Tungsram in Europe quite accurately in this product line. In the interwar years Tungsram grew to the most important producer of light bulbs and radio tubes in Central Eastern Europe. Though the main competitors, Western Electric, the International General Electric Comp. New York, Philips, Eindhoven, and Osram, Berlin (the main German light bulb producer, established from AEG, Siemens and the Auer Company) gained each around 10 per cent share at the capital stock of the company while that of the founder family had shrunk into insignificance, both strategic and operational decisions were ultimately made in Újpest, by the Hungarian managers.

Ganz & Co. and Tungsram gave diametrically opposite strategic answers to the transformation crisis of the Hungarian economy after the WWI.²⁷ Tungsram streamlined production: Vacuum-technical mass products (incandescent lamps and radio tubes) and the installation of telephone and telegraph equipment presented the two main fields of activity; other products were transferred into small autonomous companies or their production was given up entirely. Investments were made into technological progress in the remaining lines (f. ex. establishment of a permanent research laboratory) and into the vertical integration of production (glass and gas factories, paper mill, radio set production) to aim for the role of the key supplier in Hungary, in the neighboring countries and to become an important quality supplier in Europe and in a few growing markets overseas. The key to Tungsram's survival was the maneuvering among the global players, as a licensee and their partner in the relevant international cartels.

²⁶ Monographs about the history of Tungsram: Jeney 1990, Koroknay 2004

²⁷ The following analysis is based on the PhD-thesis of the author, to be defended in July 2015 at the University of Leipzig: Hidvégi, Mária: Manövriren zwischen den global playern: Ungarische elektrotechnische Unternehmen auf dem Weltmarkt 1867-1949.

Ganz & Co. in contrast was slow to adapt to the political changes in the Danube region and to the technological development in the electro-technical industry (the magnitude of electrification projects, household electronics etc.). It was in part due to the false impression made upon postwar reparations deliveries and the urgent need of reconstruction that the high demand for Ganz' traditional products would be a lasting one.²⁸ Heavy investments into a new system for railroad electrification²⁹ and special furnaces for low-quality coal did not recover their costs. Instead of a substantial rationalization and specialization of production, the production of ever new products was taken up to recover lost profit due to the shrunken home market and sharply declining profitability of exports. Only the development of Diesel-engines from the mid-1920s opened a new market: The subsequent introduction of their batch production and installment into railcars provided the strategic answer to the challenges of that time and – with the moderate but steady income of the electro-technical department mainly from supplying the home market – the possibility of regaining financial stability by the outbreak of the WWII.

Though the Ganz Electrical Ltd. did still relatively well in the 1920s thanks to the electrification of many Hungarian municipalities and a similar development on the traditional foreign markets (Italy, the Balkan states), it gradually lost ground on foreign markets. It was mainly due to (1) comparatively high production costs, (2) the shortcomings of up-to-date production and management facilities needed to plan and coordinate large electrification projects, and, related to that, access to a large enough capital market, (3) a lack of home market incentives to invest early into the development and production of electro technical mass-products such as smoothing irons or refrigerators. That's why financial reserves were used to cover up losses in export sales that were more and more sought for only for the sake of preserving presence on long established markets. The only competitive enough electro technical product of the Ganz & Co. in the interwar years to become incorporated into the international cartel of the main producers was the AC-electric meter.

Through these two companies the specific problems of traditional and new industries will be visible so as their collusive strategies to master different types of crises.

National cartels: Failed management of the transformation crisis

Let us turn our attention first to the question to what extent domestic cartels managed to help Hungarian enterprises through the transformation crisis and the Great Depression based on the experience of Ganz & Co. This company participated at nearly all of the important cartels of the mechanical and electrical (high current) engineering industry in Hungary, therefore provides a good example to gain insights into the mechanisms of crisis management via cartel agreements.

²⁸ Boross 1994

²⁹ Verebely 1932; Duffy 2003: 137-138, 141-143

It has become well known that throughout the first half of the 20th century the more developed small European countries, the Netherlands, Switzerland and the Nordic countries used national cartels to protect industries oriented more towards the national market without risking trade retaliations from the countries that were the main markets of the leading export oriented companies. These companies in turn usually participated at the international cartels of their branches allowing them access to export markets.³⁰

A similar response to the challenges would have been adequate in Hungary, too, due to the degree of openness of the economy and the seminal importance of earning hard currencies for debt service. Cartelization might have protected industries oriented towards the home market without jeopardizing agricultural exports: Behind the shield of domestic cartels industries suffering most from the territorial changes might have worked out coordinated strategic answers to the challenge.

Cartels did appear in large numbers, the economy was claimed to have been under their full control (since the pre-war era).³¹ However, the branches in existential crisis seem not to have been able to profit from the benefits of collusion. The leader of industrialization in pre-war Hungary, the milling industry, suffered most from the territorial changes by losing many of the richest grain producing regions of Hungary and its by far most important market, the Western parts of the Austro-Hungarian Monarchy. Though a concentration process started and attempts for cartelization, even with strong support by the government, were made, the main producers opted for more autonomy. Their efforts to reduce production costs and search for new markets did not prevent the flagships of Hungarian industry to fail; the milling industry never reached its former importance.³²

Confronted with similar challenges of equal magnitude, one would expect the mechanical engineering industry to have made serious attempts to protect their remaining markets by lobbying for trade protection and by collusion. Indeed, they made use of both methods; the introduction of a protectionist tariff system in 1925 was in part a consequence of such lobby activities. In 1924, the year of currency stabilization which revealed the greatly reduced international competitiveness of Hungarian industry, however, the *Pesti Tőzsde* pointed out a lack of willingness for industry-wide cooperation that would have allowed the specialization of specific enterprises in the production of Diesel-engines. The creation of export cartels were presented as strategic means of competition in articles of the business press. At the

³⁰ Schröter 1993; Schröter 1997; Katzenstein 1985; Müller – Myllinhaus 2008; Bouwens – Dankers 2010

³¹ Varga 1954; Fenyő – Fellner 1931

³² Pogány 2014

end of the decade cartels, the one organizing exports, too, were presented as means of survival in publications of industrial lobby organizations.³³

In response to the hindrances to a rapid extension of export markets, a bank-led concentration process started in the mechanical engineering industry in 1927; Ganz & Co. gradually incorporated three smaller works. The home market, however, still remained small compared to the remaining productive capacities. The concentration process rather furthered the tendency to diversification of production at the remaining enterprises as a means to cover up for lost sales. Furthermore, the concentration did not solve two fundamental problems. First, technological advancement was not furthered by this process, reducing the chances of the remaining works to export. Second, the financial situation of the leading banks, especially that of the HGCB, and many of the mechanical engineering firms did not allow to pre-finance exports, an important factor in the cut-through competition.

Ganz & Co. demonstrates these problems. 1920-1926 the Ganz Electrical Ltd. and Ganz & Co. were among the first ten industrial companies considering the frequency of asking the HGCB for credits. In 1926 the Credit Bank mediated a USD 1 million credit to Ganz & Co. issued by US-American banking houses led by Goldman Sachs & Co. As the company did not realize enough profits in exports and the contraction of the home market continued, it became unable to pay the interests. In order to safeguard considerable financial interests in Ganz & Co., the HGCB provided credits to Ganz & Co. and prolonged them regularly. During the Great Depression, when deliveries to public authorities often remained unpaid and public and private investments were cut, Ganz & Co. faced heavy losses. That, and the illiquidity of many other large industrial interests of the HGCB, aggravated the financial situation of the bank in turn: Suffering from the loss of substantial capital due to war-loans and depreciation during the hyperinflation, the collapse of the Vienna Creditanstalt in mid-1931 and the following withdrawal of international capital from the region brought the bank on the verge of collapse. Both Ganz & Co. and the bank consolidated their financial situation only during the late 1930s after painful reductions on costs of organization and production, direct payment of export earnings to the creditors, selling of the Austrian Ganz etc. The consolidation had, however, only been completed with the help of the rearmament program of the government, launched in 1938, when the Hungarian state finally paid its debts to industrial suppliers and banks.³⁴

³³ Miért van szükség az ipari kartelokra? A kartelek széjjelbomlása veszélyezteti az exportot. [Why do we need export cartels? The dissolution of cartels endangers Hungarian exports.] Pesti Tőzsde 10, 31 January 1929 (5), 16; A Magyar Vasművek és Gépgyárak Országos Egyesülete a magyar gépipar helyzetéről [The Association of Hungarian Iron- and Engineering Works about the situation of the Hungarian mechanical engineering industry] Pesti Tőzsde 11 (17 April 1930), 16-17, 30

³⁴ Pogány 2007

As a partial answer to these problems, 1927-1929 many new cartel agreements were signed in order to raise the profitability of deliveries to the home market and keeping production capacities constant. Ganz & Co. participated at the most important cartels of the mechanical engineering industry. These cartels were usually simple quota allocation cartels fixing minimum prices without serious attempts at specialization or joint research. That was true for cartels allocating production of just one product resp. product group (cast steel products, screws, rail cars for narrow tracks, tubes, diesel engines, furnaces, casks and turbines, industrial refrigerators³⁵) and for the agreements of the leading mechanical engineering companies (Ganz, Lang and Röck) encompassing a large part of their production lines³⁶, too. Even in the case of the latter agreement members did not renew their commitment made in 1908 for a limited co-financing of product development.

Limits to a cartel-led specialization and rationalization in the 1920s

Though quite a few cartels included restrictions on the product range of their members such commitments were too restricted in scope to meaningfully contribute to the reductions of variable costs and inducing specialization. The necessity of reducing the variety of products and specialization of members' production had been declared to be a primary goal of the above mentioned cartel encompassing a broad product range of the largest mechanical engineering companies already in 1908 that is, before the territorial changes. Such a commitment was sought for in the renewed agreements in 1927, 1934 and 1938. Ganz' agreement with two other producers of gas engines from 1939 on not introducing the production of those types of engines that were produced by the partners showed, however, that extending the product line as a compensation for low demand remained widespread in mechanical engineering – just as the above mentioned press article from 1924 pointed this out. Such a rare commitment of Ganz & Co. as restricting tube production to the parts of its component products for financial compensation clearly neither helped Ganz to make a better use of its specific production capacities nor induced the partners to specialize in tube production.³⁷ An identical problem was clearly recognizable in Ganz's agreement on restraining from the production of screws and to buy them from members of an equivalent cartel for a financial compensation.³⁸ Though Ganz & Co.

³⁵ Documents of such agreements in MOL Z425_2, 3, 5 and 10

³⁶ MOL Z425_3_25 A magyar gépgyárak kartellszerű megállapodásai [Cartel-type agreements of the Hungarian mechanical engineering works] 1908, 1927, 1934, 1938

³⁷ MOL Z425_2_22 Letter of Ganz & Co. to MAVAG and Friedrich Siemens Művek Vasöntő és Gépgyár Rt. Budapest, 26 January 1929 (Previous agreements of the latter two companies with dr. Lipták és Társa Építési és Vasipari Rt. (1926) and Schlick-Nicholson Gép-, Vagon- és Hajógyár Rt. (1927), merged into Ganz & Co.)

³⁸ MOL Z425_2_21 Screw agreement (= Letter of Ganz & Co. to the registration office of the screw producers) Budapest, 12 August 1926

usually was the most powerful member (or one of them) of these agreements, the company's possibility to push through partners' commitments to narrowing their product line was restricted, too. So in 1935, the Hungarian Brown Boveri Works pledged themselves to give up the production of turbo generators that were directly linked to gas turbines. The Hungarian market for turbo generators that were *not* directly linked to gas turbines, however, was to be divided among the partners fixing Brown Boveri's share in 20 %.³⁹

Furthermore, these cartels usually left members free in seeking their fortune on export markets which made attempts to reduce the scope of production by mutual abdication of the production of specific goods futile. These cartels missed the opportunity of joint marketing on export markets, too, though an export cartel of the mechanical engineers appeared in a few cases in the late 1920s in the news. There were attempts to hinder the emergence of competitors. For example members pledged themselves to ensure that industrial equipments of shut down plants, sold abroad, were not be re-imported into the country.

In short, by concentrating coordination and surveillance on the voluntary reduction of output and on price agreements, the mechanical engineering companies mainly remained general store-type works, producing a wide range of products each, such as Ganz & Co. from cast iron, screws and tubes to full ships and factory equipments (resp. Ganz Electrical Ltd. from condensators to power centers). Such enterprises – on their own – remained unable to meet the challenge of rapid technological change. Thus, the cartels of the mechanical engineering industry failed to do exactly that what they promised in their preambles, that is, to give a strategic answer to Trianon.

Competition policy during the Great Depression

Competition policy did not alter this trend, rather reinforced it. The cartel law, issued in 1931, represented a compromise among the industrial advocates refusing any legal control at all on the one hand and the social democrats' wish for full state control on the other hand. Cartels were acknowledged as institutions of the modern capitalist economy, whose activities, however, needed to be controlled by the state because of abusive use of market power and because international economic relations took more and more the form of cartel agreements. These organizations were considered by the legislators as helpful both in pushing through rationalization and specialization and, most of all, in fostering Hungarian exports. Therefore, they became legal forms of

³⁹ MOL Z425_3_23 Agreement between Ganz & Co. and Magyar Brown-Boveri Művek Villamossági Rt. Budapest, 14 March 1935

economic organization provided for their registration at the Department of Commerce.⁴⁰

The Hungarian cartel commission did hardly play a role comparable to that of its German counterpart, as it was a mere administrative body, registering the cartels. It issued no fundamental decisions as to guidelines for coordinating and controlling the activities of cartels.⁴¹ Penalties were often too insignificant to reach their primary aim of establishing a meaningful control over collusion, e.g. in January 1940 producers of narrow range - rolling stock were fined 50 pengő each for late registration of their prolonged cartel.⁴² The extent to which the content of the agreements was to be disclosed by registration was successfully kept low, f. ex. they did not have to declare their actual prices.⁴³ Registered cartel agreements were not to be published. As a clear sign for organized economic interests' ability to maintain secrecy about collusions was, thus, the lack of more detailed information about at least the registered cartels, although compulsory registration would have made it possible.⁴⁴

This decision of secrecy about the content of the cartel agreements allowed the negative effects of collusion to dominate. First and foremost, it allowed protecting vested interests building thereby an obstacle to structural adjustment. This situation corresponded to the political factors pointed out by Pinto, and exercised harmful influence on technological adjustment and ultimately, on economic growth especially in the case of small and poor countries. Furthermore, the cartel law incorporated neither incentives for joint investments into technological development or marketing, nor a protection for related industries and consumers from the cartels' price dictates. Other measures were to fill this gap: A specific body, separated from the cartel commission, was created in 1933 in order to control the price movements mostly in industry, supporting thereby the agricultural sector. Furthermore, as state intervention into private economy grew, quite a few compulsory cartels were forced through in order to organize exports, to reduce unemployment and keep prices and quality up. Notwithstanding such later corrections that added to the costs of bureaucracy, too, competition policy was inadequate to provide incentives for the private economy to develop joint schemes for structural adjustment to world

⁴⁰ Unfortunately, this register of cartel agreements seems to have been completely destroyed during WWII or, more probably, in 1956.

⁴¹ F.ex. Kádas 1932

⁴² MOL Z425_2_19 Court of justice of Budapest to the Members of the Agreement on narrow range – rolling stock. Budapest, 4 April 1940 Decision

⁴³ MOL Z425_2_19 Petition submitted by the Members of the Steel Agreement (Ganz & Co, MAVAG, Magyar Waggon- és Gépgyár, Győr, and Weiss Manfréd Művek, Csepel) to the Secretary of Trade. Budapest, 13 February 1932

⁴⁴ See recurring publications about the cartel issue in the Ungarisches Wirtschaftsjahrbuch (Hungarian Economic Yearbook) from 1931 on.

economic challenges. The national cartels Ganz & Co. participated at, underline these shortcomings.

Encouraged by the large banks, their creditors, many industries developed schemes for reducing output, thereby keeping the price level high, during the crisis. Ganz & Co enlisted more than ten such organizations of the mechanical engineering product line at the registration office in the Department of Trade plus two concerning the electro-technical department (meters and electricity installations). The wording of the preambles of these agreements was nearly identical. Taking into account the not too friendly opinion of consumers about cartels and possible changes in the government's standpoint on competition policy, these preambles emphasized three points. First, the considerable territorial losses of Hungary made large production capacities superfluous and would not allow profitable production. Therefore, mechanical engineering companies should cooperate in order to reduce costs of production and marketing. Second, the small home market would not allow these companies to grow fit for international competition. Obviously, cooperation would help to overcome this difficulty. At the same time members would be enabled to contribute to private and political efforts for earning convertible currencies, too. Third, as the reduced size of the home market made the unit costs of innovation and development increase, Hungarian consumers paid high prices without producers being able to earn enough to cover costs. It was left open how cartels would help to solve this problem. Therefore, taking the first point into consideration, it could be understood that these organizations would help to push through industry-wide rationalization thereby reduce unit production costs.

Though cheating occurred quite often and many cartels had to be reorganized, generally collusion helped members to earn at least production costs, thus, to survive - as indeed, Ganz & Co. owed in part its survival during the Great Depression to such collusions. However, neither before nor during that crisis did they advance structural adjustment as these cartels did not meaningfully extend their activities on specialization, rationalization and cooperative research. Such necessity was recognized – in theory. For example, in 1935, after a prolonged crisis, Ganz & Co. and the Lang factory, two companies belonging to the sphere of interest of the HGCB with a very similar product range in mechanical engineering, agreed on a market division (60:40 Ganz : Lang), a preferential supply, prior consultation with the industrial secretary of the bank about taking up the production of new goods, and on mutually restraining from the production of specific type of Diesel engines and other products. Even then, however, such a first step towards specialization was accepted only for the supply of the home market, leaving the actual reduction of the product range to prolonged company-intern decision processes.⁴⁵ The difficulties of putting

⁴⁵ MOL Z425_3_25 Agreements between Ganz & Co. and the Láng factory, Budapest, 11 May 1935

through even an arrangement with one other competitor are clearly recognizable at the cartel not have been effectively working till mid-1937.

This is just one indication that the attitudes of the mechanical engineering companies remained unchanged during the Great Depression: they were not designed to facilitate technological change, thereby regaining competitiveness. They focused their attention on the stabilization of their status quo by keeping the extent of production capacities in the country constant and raising the profitability of home-market supply. In other words, cartels were designed for the ever more rigorous division of the cake (the home market) and not for making the cake bigger by facilitating members' entry on new markets.

Though the presence of the MAVAG, the large mechanical engineering factory of the Hungarian State Railways, would have facilitated the development of the necessary economic policy incentives in order to push through an industry-wide rationalization and specialization eventually combined with the establishment of cooperative research and joint marketing on export markets no such thing happened. (The Industrial development Act, which was prolonged and slightly modified in 1931, provided a mixture of tax and financial incentives for quite a few of these purposes; resources, however, were scarce, fragmented, and provided without a clear concept about the orientation of industrial development.) The obvious answer to the question why this opportunity was missed is the fear from the high social costs of such a radical transformation such as high unemployment and the costs of investment. Other events indicate, however, that a more fundamental problem lied at the heart of this deadlock.

No master plan to induce structural change in the Hungarian economy

Successive governments failed to give a strategic answer to the transformation crisis of the Hungarian economy in the 1920s. The recovery of Hungarian industry in the second half of the 1920s was mostly a consequence of the import substitution policy of the government, supported by a protective tariff system, introduced in 1925. Though especially the growth of the textile industry certainly saved scarce foreign currencies, this orientation of industrial development strengthened branches Hungary could not realistically expect to achieve competitiveness. It reduced the means to foster the growth of the few export-oriented branches such as the low-current electro-technical industry, too. The awareness of the only chance of Hungarian industry being the shift to high value-added goods and especially to specialty production, based on domestic resources and especially on specific knowledge and know-how, became omnipresent only after the WWII (for a short while).⁴⁶

⁴⁶ Scranton 1997

After the stabilization of the currency, foreign credit sources gradually opened, too. They did, however, not ultimately help the structural transformation of the Hungarian economy. Due to their high country-risk premiums and interest, these credits were unsuitable for long-term investments. Especially credits to the private economy were lent on unfavorable conditions and on short terms. Added to pre-war public debts, the obligations resulting from the Armistice agreement and the preliminary determination of the reparations duty of Hungary, so as to the service of the League of Nations-credit debt service on both public and private credits required an alarmingly growing share of export incomes.⁴⁷ The real problem was that productivity had not grown quick enough to finance the growing debt service, due in part, to the terms of borrowing. The way how credits were used, i.e. consumption or investments into the social infrastructure and education with an obviously long time-lag for the economy to reap their returns added to these problems.

The debates on the rapidly growing foreign indebtedness of the country and the hindrances to earning convertible currencies such as protectionist barriers and falling prices for the traditional export products of Hungarian agriculture culminated in 1929. It was recognized that not Trianon alone was responsible for the difficulties of the Hungarian economy in adjusting to the postwar world economy. It was pointed out that a strategic answer should have been given to such a fundamental change.⁴⁸ In 1929 the secretary of Trade, János Bud was appointed to Secretary of Economy, too, entrusted with the coordination of different policy fields to work out such a coordinated answer. Keen observers of the Hungarian economy pointed out, however, the lack of a clear direction in Bud's program.⁴⁹

Indeed, in the 1920s, obstacles to a master plan inducing a structural change of the Hungarian economy and its adjustment to the reduced room for maneuver of a small, open economy would have been manifold due to the domination of the pre-war liberal economic ideas⁵⁰ and, probably, to hopes for the (partial) fulfillment of the revisionist goals of the political elite, too. The successive governments were, furthermore, absorbed into mastering manifold acute problems from the hyperinflation over restarting economic production to the integration of the migrants from neighboring countries into the Hungarian society (jobs, housing etc.) – all that

⁴⁷ See the division of total debts in 1932: long-term and short-term public debts 1647 resp. 302 million Swiss francs, long-term and short-term private debts: 719, resp. 1106 million Swiss francs. Spigler 1986: 146-147; Nötel 1986

⁴⁸ Optimizmus – Pesszimizmus. Báró Szterényi József nyilatkozata [Optimism – Pessimism. Statement of Baron József Szterényi] Pesti Tőzsde 10 (1929) 48, 1

⁴⁹ Gratz 1929

⁵⁰ F. ex. no cooperative research institutions following the German example were established, cooperative financing of investments was established, however, at the initiation and with participation of the government (Ipari Munkaszervező Intézet, Institution for Organizing Industrial Investments, founded in 1933). Erker 1995; Tomka 2000: 124-125

in the squeeze of the high financial obligations of the defeated country. Reestablishing diplomatic connections, thereby allowing for the normalization of international economic connections equally presented an urgent task.

The cartel of the electro-technical suppliers: Free-riders of a missed opportunity

The electro-technical industry underlines the missed opportunity of a coordinated answer to the challenges of technological change so as of lost supply and sales markets from another perspective. During the war the immense strategic importance of a reliable energy supply was universally acknowledged leading to the first wave of nationalization of the electrical supply grid all over the world.⁵¹ The potential of the extension of energy supply for furthering economic growth equally led governments and regional authorities to promote this process by legislative measures, tax reliefs and subsidies. The 1920s saw a boom of municipal electrification projects in Hungary, too. There were, however, manifold problems with this movement.

First and foremost, electrification was not carried out systematically. A national supply grid had been designed already during the WWI, such plans were, however, not realized due mainly to lack of capital. After the war, most of the largest municipal projects were realized with expensive foreign credits. Though the government took part in a large part of these loan negotiations such as the consolidated credits provided by the Speyer banking group, a central coordination of the electrical supply investments did not take place. As debt service required high consumer prices, electrification could not trigger economic growth in the province, furthering the growing inequality between Budapest and the province.

Second, the government refrained from regulating electrification from the technical point of view, too. That resulted in a patchwork-type supply grid, with large unsupplied territories and power centers in sensible distances, often in close neighborhoods, not being able to communicate with each other.⁵² Obviously, that was a highly wasteful use of scarce natural and financial resources.

Third, the cartel of the electrical supply companies divided the territory of Hungary. The electro-technical suppliers, the Ganz Electrical Ltd. and the Hungarian subsidiaries of AEG, Siemens and the Brown Boveri Works, all imposed the same terms of contracts on municipalities highly favoring the suppliers (sharing of costs and risks). This would, in turn, hold the growth of electricity consumption back due to the indebtedness of the municipalities and to high consumer prices.

⁵¹ Hausman 2008: 125-131

⁵² Verebély 1924; Verebély 1935

The cartel of the electro-technical suppliers was renewed regularly since its foundation in 1912. Though prices had been adjusted to the actual development, the primary aim remained unchanged: setting the terms and conditions of the installation of electro-technical products, for lighting, building power centers etc. The chance of standardization allowing for scale economies was missed by that cartel and, as we had seen, was not furthered by a government-controlled systematic electrification either. That stands in clear contrast to the Czechoslovak systematic electrification furthering company growth, too.⁵³ One reason for that must have been that the subsidiaries of the foreign companies had no interest in the necessary technological adjustment of production. Furthermore, the electro-technical industry belonged to the few branches that experienced a modest growth in the 1920s. It was only during the prolonged stagnation of the Hungarian economy in the 1930s when the above mentioned problems, such as a restricted consumption due to the high prices or the missed chances for standardization got hold of the electro-technical producers.

It is no coincidence that the electro technical department of Ganz & Co. agreed on cartel-type arrangements for dividing the Hungarian market at the end of the financial crisis in the 1930s. Added to the cartel of all Hungarian producers of AC-electric meters, signed in 1926, was an agreement with the most important Hungarian competitor, the Hajós & Szántó Ltd. in 1934.⁵⁴ In the next year, the above mentioned agreement with the Hungarian Brown Boveri Works about turbo generators followed. 1937 Ganz & Co. and the HBBW agreed on a market division and mutual defense for the partner by preparing tenders encompassing a wide range of their product line.⁵⁵ Besides keeping consumer prices high enough to regain at least production costs, the main goal of these bilateral agreements was declared to hinder the emergence of new competitors. That was a clear sign for the transformation crisis of the Hungarian economy having finally reached the electro-technical industry, too, and for the reflex of the producers to answer the challenge basically in the same manner as the cartels of the mechanical engineering companies did in the 1920s.

⁵³ Kuklik 1994

⁵⁴ MOL Z425_2_20 Agreement on AC-electric meters between Ganz & Co. and Hajós & Szántó Ltd. Budapest, 10 September 1934; MOL Z425_2_20 Contract of the Hungarian electric meter association. Budapest, March 1926, signed by Áron H. Mérőkészülékek Gyára, Budapest Danubia Légszeszmű, Világítási és Mérőkészülékek Gyár Rt., Budapest, Engel Károly, Budapest, Erőátviteli és Világítási Rt., Budapest, Ganz-féle Villamossági Rt., Budapest, Magyar Siemens-Schuckert Művek Villamossági Rt., Unió Magyar Villamossági Rt, Budapest

⁵⁵ MOL Z425_3_23 Protocol: Agreement between Ganz & Co. and HBBW, signed by director general Práger, Pál and director Ratkovszky, Ferenc for Ganz & Co., director general Stark, Béla and director Friedmann, Gusztáv for HBBW, included to a letter to chief clerk dr. Hammersberg, Ganz & Co. Budapest, 17 April 1934

Methods of crisis management by international cartels

It was already demonstrated that the quick re-establishment of regional and international cartels contributed to the survival of Hungarian industry. The Rimamurány-Salgótarján Ironworks provides such an example receiving assistance with raw materials from the former Czech and Austrian partners in exchange for foodstuffs. Another one is the renewal of cooperation of the Central Europe Group in the International Steel Cartel helping the same Hungarian company to re-gain its export markets.⁵⁶ This group, however, was swept away by the Great Depression.

As it is well-known, international cartels, if not dissolved during the Great Depression, protected their members by reducing output and thereby keeping up prices.⁵⁷ Another possibility would have been helping members through the crisis by **joint pre-financing of large investments**. One example for such an attempt is the *l'Association Internationale des Constructeurs de Materiel Roulant*, AICMR, the international railway carriage cartel. This cartel was set up in 1931 under German-Belgian leadership. In 1935 the association was newly formed, included 86 members, with a considerable British group. Hungary was present in both the original and the renewed cartel with Ganz & Co. and the state engineering factory, MAVAG. Both companies were represented in the financial committee of the cartel by the Hungarian General Credit Bank. The AICMR – as many similar associations – left the home market to the main local producers and allocated the export markets among the members. This regulation eased competition somewhat and held prices high but did not solve the basic problem of the lack of investment capital of the possible customers.⁵⁸ Though this cartel did study the possibility of financing investments jointly in order to modernize the railways in Yugoslavia and Romania, the poor state of public finances in both countries on the short run and their equally unpromising prospects led to giving up any such hopes; large scale deliveries into these areas were not realized.⁵⁹ Thus, the experience of the AICMR allows formulating the hypothesis that international cartels failed to manage the crisis by suppliers' credits for large-scale investments, transnational producer groups did not open up alternative financial sources for developing countries.

⁵⁶ Ormos 2007: 163

⁵⁷ To the duration of cartels and the instability of demand – as it was clearly the case during the Great Depression – as the most important factor leading to the dissolution of cartels: Levenstein – Suslow 2004b, 19-27

⁵⁸ BOARD OF TRADE 1944, 25-27

⁵⁹ MOL Z58_277_1496 Archive of HGCB, Documents of the Financial committee of the AICMR, 1931

A successful adjustment to Trianon and to technological change: The railcar-business of Ganz & Co.

Ganz & Co. did find a way to solve the old-new problem of considerably enlarging the home market for system innovations by tapping into the resources of large foreign markets in the 1930s through a cartel. The innovation was a diesel-engine, superior to the comparable German and American products till the late 1930s, and the idea of building them into railcars, i.e. units integrating the locomotive with the passenger car, enabling cheap passenger transport in scarcely populated areas even when tracks were in very poor conditions. This was rightly presented as the only financially viable solution for countries short of public and private capital instead of shifting towards road traffic or for large-scale electrification of the railways both in the case of suburban and long-distance traffic.

Ganz & Co. developed a diesel railcar service with the Hungarian State Railways that served as a model for many countries in Western Europe and overseas, too. License on the diesel railcars given to the largest national producers helped market entry abroad. A license and cartel agreement with the British Metropolitan Vickers and the Metropolitan Railway Carriages Ltd., signed in 1935, enabled Ganz & Co. to introduce these cars quickly into large countries with traditional British relations such as Egypt, India or Latin-America supported by credits raised on the London capital market.⁶⁰ Ganz & Co. particularly wished Argentina to become the stepping stone for further market entries by the demonstration of the capability of Ganz & Co. to inquire into the locally specific needs and developing both traffic organization schemes and motor coaches for suburban, intercity and long distance traffic, for widely different climates and altitudes. The entry into the market was greatly facilitated by the local GE-company and the Argentine railways which used this project to boost national economic sovereignty.

By planning transnational financing schemes for the large scale introduction of railcars a considerable flexibility was demonstrated in reconciling Hungary's interests in earning foreign currency with nationalist industrialization policies in Argentina and British investors' interest in keeping their foothold in Argentina. A change of partners, using North-American instead of British producers and investors was found equally possible when the outbreak of the WWII made the original plan, drawn in 1938, impossible to realize. Two problems appeared.

First, due to reduced communication possibilities, the local motor coach manager of Ganz & Co. in Argentina did not succeed in pushing through in Budapest the idea of establishing a local knowledge and business center in Argentina which was to be coordinated from outside Budapest, a new business concept in interwar Hungary. The importance of cooperating with the potential North-American competitors was

⁶⁰ The Ganz-Jendrassik motor coaches represented in 1937 2%, in 1938 3% of total Hungarian industrial exports. Lengyel 1939: 177

not understood in Budapest and the technological innovation process became sluggish.

Second, as the railcar manager of Ganz & Co. saw it, financing, that is providing credits for relatively low-priced machinery had been key for getting foothold in the industrializing countries of Latin-America before the North-American competitors matched the quality of the Ganz-Jendrassik cars and the field experience Ganz & Co. gathered with the co-establishing the railcar service in different countries. That is why connection to the London capital market was crucial and that is why the AICMR made Ganz & Co. such a headache. The market allocation provided by the renewed AICMR functioned in practice through a procedure that started with the duty of the members to inform the AICMR center about investment plans of public and private railways. The central office of the AICMR choose both the winner of the public calls for entering offers for delivery and the other cartel members who offered clearly not so advantageous but still competitive terms. These members, who actually covered the winner, were rewarded for their cooperation and the work put into submitting the offers from the higher prices the consumer paid to the winner who included this cost into his offer. The motor coach manager of Ganz saw the very real danger of the Argentine railways' giving a chance to the less-experienced North-American coach producers if Ganz & Co. would have to increase prices because the AICMR would coerce Ganz & Co. into including the Latin-American deliveries into the AICMR-schemes. A compromise was seemed to be found in including the AICMR into the new market segments of long-distance traffic.

However, Ganz & Co. lost the Latin-American market first and foremost because of the above mentioned management problems, the loss of the connection to the London capital market and the missed chance of coalition with the North-American producers. The AICMR-membership, important as it was to defend the home market and to compete in Europe was, thus, a hindrance for Ganz & Co. outside Europe and when technological innovation helped create new market niches.

Sailing through the world economic crisis, losing ground afterwards? Tungsram in the light bulb and radio valve cartels

Tungsram represents some of the problems and potentials of the membership in international cartels for **market access** and **long-term technological competitiveness** in the technology-intensive electro-technical industry. From the humble Hungarian workshop of an Austrian telegraph company, the United Incandescent and Electrical Ltd., called Tungsram, grew to the largest Central Eastern European producer of light bulbs and radio valves and built the basis of the telephone networks as licensee of the Western Electric in Hungary, Romania, Yugoslavia and Bulgaria in 1902-1928.⁶¹ Although, more than 40% of its share capital was owned by foreign investors by

⁶¹ Jeney – Gáspár 1990

1931, the management succeeded in retaining managerial initiative in Budapest thank to a careful balancing among the main foreign shareholders, i.e. the competitors and partners of Tungsram in international cartels and bilateral agreements about sharing technological information, General Electric, ISEC/IT&T, Philips and Osram /Telefunken.

Tungsram was member of the first international light bulb cartel before the WWI, having a selling quota of around 11% equal to that of Philips. As AEG and Siemens had a quarter of the quotas each, these 4 companies sold over 70% of the carbon filament light bulbs put on the market by the members of the cartel. Tungsram was an important partner in the German-Austrian-Hungarian cartels during the war and participated at the short lived attempts to organize the European metal-filament light bulb producers after the war. It took part also in the famous Phoebus cartel set up under the lead of General Electric the largest light-bulb producer of the world in December 1924.

As electricity became a basic infrastructure, the recession during the crisis was moderate. Obviously, once you installed electricity you could not easily switch back to petroleum, oil, gas or coal, to light your home and drive your machinery. The light bulb producers were, however, confronted with global electrification slowing down and the problem of declining purchasing power. That meant that demand shifted very much towards cheap lamps, even of lower quality. This change in consumer preferences which helped outsiders, especially Japanese, Russian and Belgian producers, was underlined by the basic light bulb patents running out in 1931, respectively 1934. The leading members of the Phoebus cartel concentrated, therefore their attention on re-enforcing their market position that is on not allowing outsiders to gain much ground. They did it basically, in three ways 1) yielding to consumer wishes up to a certain point 2) lobbying for trade protection 3) pooling and re-allocating market shares among the leading cartel members.

The first way of reaction, i.e. *price reduction* in form of extension of the life expectancy of light bulbs in Italy or GE's introduction of the 10 cent lamps in overseas markets proved to be the only successful one on the long run when the purchasing power of the mass of the population continued to decline and if government assistance to local producers was considerable and constant.

Lobby for anti-dumping measures was widespread to retain high consumer prices and establish barriers to entry. Cartel members informed each other about expected measures of the respective governments and lobbied for the exemption of the partners of the application of such measures. Such cooperation only functioned, however, when the partners threatened by the exclusion from a market could enforce the cooperation by quickly setting up production facilities on the respective market or by threatening the local partners to exclude them from other important markets. By this way, Philips could re-establish its market position in Great Britain when the

British light bulb producers persuaded the government of the introduction of anti-dumping protection and tariffs, Tungsram, however, lost its market share there.

The third way of crisis management was the establishment of the *pool*.⁶² In 1925 Osram, Philips and GE helped Tungsram eliminate its most important rival in Hungary, which was one of the prerequisites Tungsram demanded for its participation at the Phoebus cartel. This was a clear sign for cartel membership creating and strengthening the monopolistic position of Tungsram on its home market. A ruthless behavior against smaller competitors became necessary, too, when during the World Economic Crisis, Tungsram's participation at the pool was practically linked to its cooperation in eliminating outsiders on its main markets.

The pool was set up in 1931 by Osram, Philips and the British Group with the assistance of GE, in order to render their efforts in the "war" against outsiders more efficient.⁶³ Obviously, only the leading members were allowed to fully profit from the potential of the pool for shifting selling quotas among markets: In principle, the pool provided an opportunity to reallocate quotas among pool members so that each would sell the bulk of their products on markets where traditional supplier contacts, low transport costs, and the political and cultural environment made marketing easy and cheap. Tungsram was included with regard to its nearly 20% share on the cartel's sales in the European Common Territory, that is in countries without serious local production at the time when the Phoebus cartel was set up. The Hungarian partner was not allowed to shift quotas towards the Swiss and Scandinavian markets, where Tungsram-products earned a good reputation because Philips and Osram wanted Tungsram to concentrate efforts on the Balkan states forever. Sales on these markets, however, were sluggish due to the continuously low purchasing power and level of electrification there. Political tensions between revisionist Hungary on the one hand and Romania and Yugoslavia holding their territorial gains from the peace treaties firm on the other hand made sales of a Hungarian producer on these markets extremely difficult. Furthermore, as all of these countries were mainly agricultural exporters looking for hard-currency exports or direct

⁶² Cerretano found that collusion became more and more difficult also because of hindrances to transfer money among cartel members for example as a compensation for not quotas not sold. Cerretano 2012: 618 Evidence suggests, however, that leading members of the Phoebus cartel found various ways to circumvent such problems.

⁶³ LAB Osram A Rep 231 Nr. 325 Aufzeichnung: Interne Kontingentierung. Osram, Berlin, 8 January 1933; LAB Osram A Rep. 231 Nr. 67 Poolvertrag; MOL Z609_107_83 Niederschrift über die Sitzungen des vom Sales-Committee in Berlin am 17 April 1931 ernannten Sub-Committees zur Verminderung der Verkaufskosten. Munich, 12-13 June 1931, 27-28 August 1931, with representatives of Tungsram, Osram, Philips [Notes about the meetings of the Sub-Committee for reducing sales costs, appointed by the Sales Committee in Berlin, 17 August 1931]; *ibid.* Direktion [Executive], Osram to Dir. L. Fischmann, Tungsram. Berlin, 29 December 1931 "[Minutes of the meeting of the] Sub-committee on Reduction of Selling Expenses"

deliveries to creditor countries to service their debts, import quotas given to each other were very limited. Tungstram stated that her Romanian selling quota allocated by Phoebus and the pool was far above the light bulb quota Romania had allocated to Hungarian exporters for that year⁶⁴ and exceptions for a company from an arch-enemy country were not to be expected: Hungary belonged to the countries without fixed import quotas, therefore, Romanian authorities changed the amount of Hungarian products allowed to be brought into Romania flexibly according to short-term political interests.⁶⁵

As the pool compensated its members for not selling their quota and guaranteed the production up to the amount of the selling quotas on the common territory, it helped Tungstram to cope with the decline in demand during the Crisis. However, the above mentioned restrictions made it difficult for Tungstram to keep up with the overall growth of sales *after* the Crisis that is to sell its quota, i.e. more than 8% of the total sales of the cartel. Where Tungstram was allowed to sell more, were economies suffering from the Crisis much longer, therefore growing far slower than the leading industrial countries. Sailing through the Crisis, therefore, did not necessarily mean to master its long-term consequences.

The full cooperation of Tungstram in the second half of the 1930s in hindering the emergence of national light bulb producers in South-Eastern Europe (and elsewhere) was only a logical consequence of this particular situation⁶⁶: To ensure integration into the regularly renewed pool agreement, Tungstram had to do its utmost to sell its quotas on the allocated markets proving thereby to be useful and creative in defending the cartel's market position from outsiders' competition. In this way, Tungstram, itself from a small and poor country, contributed to the international cartel's efforts to render national governments' protection for their nascent industries useless.

Crisis management on the long run supposed, thus, technological innovation and creating new markets. Another example for the influence of the cartel membership on this kind of management decisions is the belated entry of Tungstram into the emerging television industry. The first commercially viable TV-sets were developed in the 1930s in the USA and Great Britain. The first TV-programs were launched in the second half of the decade. The valves became the crucial parts of the TV-sets. Therefore, producers of light bulbs and radio valves expected the cartelization of the television valve sales as well. Based on the experience with the light bulb and the radio valve cartels the CEO of Tungstram expected the poor and stagnating Southern European markets to be allocated to Tungstram in the new cartel that would not pay

⁶⁴ MOL Z601_24_173 David Aschner, Tungstram Bukarest to CEO Aschner, Tungstram, z. Zt. [at present] in Karlsbad. Bucarest, 21 June 1935

⁶⁵ Rácz 1939: 193

⁶⁶ F. ex. Tungstram must have bribed a Croatian light bulb producer to break up the quasi national cartel in Yugoslavia, see various documents in MOL Z601_221_890 and 891

off large investments into frontier-line research.⁶⁷ Therefore he first authorised greater investment into the research on TV-valves only after the main technological path had been sorted out in the competition among the American, British and German technological leaders.⁶⁸ That meant that Tungsram entered into a license-agreement with RCA without substantial marketable knowledge in this new technology. Consequently, Tungsram was in a very vulnerable position in the new field of consumer electronics and very probably would have had to find an alternative strategy, a new market segment, to survive even without the disruption of traditional market relations during the WWII.

From 1928 on, Tungsram established itself as the third largest producer of radio valves, the crucial piece of the radio sets, in Continental Europe, thank to original research and exchange of technological information with the International Standard Corporation and from 1928 on, with GE instead of the Standard, resp. its mother company, the IT&T. Despite – in European comparison – low wages Tungsram could not hope for a long-term success as cheap supplier of radio valves because of the foreseeable competition of low-cost-countries, for example Japanese producers. The path to be a quality producer would lead through getting foothold on the European market. Here, Philips and Telefunken set the trend, though from the early 1930s the American-type radio valves became increasingly popular. Therefore, Tungsram needed to offer both European and American-type valves.

During the Crisis, Tungsram profited from the psychological advantage of not having been a member of an international cartel.⁶⁹ The Hungarian competitor offered national radio set-makers valves matching the quality of the Philips- and Telefunken products cheaper and without insisting on agreements that would bind the set-makers to use exclusively Tungsram-valves.⁷⁰ Confronted with the technological competition of Philips and the IT&T on the one hand and with consumer boycotts against German products in 1933/1934 on the other hand, Telefunken finally agreed to enter into a cartel agreement with Tungsram and persuaded Philips to do likewise. Philips and Telefunken cooperated since 1930, so Tungsram was clearly in a junior position in the cartel. Did the cartel membership help Tungsram to surmount the crisis?

⁶⁷ MOL Z603_37_91 Report of director Leo Fischmann to Leopold Aschner, CEO, Tungsram. Újpest, 9 July 1935 „Berliner Funkausstellung“ [Wireless exposition in Berlin]

⁶⁸ To the advantages of such a strategy for small countries: Lemola – Lovio 1988: 146-148

⁶⁹ A collection of press attacks against foreign capital and specifically against General Electric, Osram/Telefunken and Philips in MOL Z602_2_16; MOL Z604_4_4 Andor Raab, Zjednoczona Fabryka Zarowek S. A., Warsaw to Tungsram, Újpest, [Audion-Exportabteilung], 4 July 1934. „Reisebericht Polen“ [Travel report, Poland]

⁷⁰ MOL Z601_301_1025 Andor Raab to director Dr. Rosenfeld. 13 March 1933 (Postbericht Punkt 2.) „Welche lizenzfreie Apparate könnten wir in der Schweiz in Verkehr bringen?“ [Which license-free radio sets can we sell in Switzerland?]

On the short run, Tungstram did profit from the radio valve cartel in the form of higher consumer prices, restricted (though not eliminated) competition and joint efforts to finish innovation procedures and to reduce the range of different types of radio valves on the market. Similarly to the light bulb cartel, the cooperation of the radio valve producers might have also helped Tungstram overcome nationalist obstacles in market entry.

On the long run, however, the radio valve cartel might have doomed Tungstram to an existence of the foot soldier of Philips and Telefunken supplying cheap valves to smaller set-makers and poor consumers and being sent to fight against outsiders.⁷¹ The closer relationship between Philips and Telefunken clearly meant practical restrictions on Tungstram's hoped-for equal share on influencing technological development in Europe. Tungstram was also hindered in some countries in selling valves directly to radio set-makers: selling valves only for replacement purposes obviously did not allow valve producers to establish technological path dependency.

Tungstram managed to avoid getting hopelessly on this slope of becoming a second-rank valve supplier. First and foremost, RCA had an interest in a reliable partner in Continental Europe through which American-type valves might have been sold indirectly in case of European governments would choose to protect their markets more. The firm American connection enabled Tungstram to call for technological cooperation within the radio valve cartel by threatening Philips and Telefunken with shifting production completely towards American valves which were already taking over European markets on an alarming speed.⁷² Telefunken's declining technological position compared to Philips prompted Telefunken into ad-hoc cooperation or at least in sharing of information with Tungstram. Keeping up with the speed of the European and American producers' launching ever new types of valves on the market was obviously easier if at least a reduced cooperation with the trendsetters helped to speed up the innovation process.

The competitive position of Tungstram within the radio industry was, thus, a vulnerable one. It is small wonder that the Hungarian company became a reliable partner of Philips and Telefunken in their efforts to hinder the emergence of national radio industries. Tungstram was reluctant to set up radio valve production units in hitherto non-producing countries such as in South-Eastern Europe, such an offer was only made to governments in order to facilitate taking up the local production of

⁷¹ MOL Z604_5_4 RV [Rosenfeld, Vilmos, Exportdirektor], Tungstram. Notiz. Schweden – Acquisitionsabkommen. [Notes to: Sweden – Marketing agreement [with Philips and Telefunken]] Újpest, 13 June 1936; MOL Z604_5_4 Aktennotiz über die Besprechungen mit den Herren Young und Haga [Minutes about the meetings with Mr. Young and Mr. Haga, 20 May 1936 [Svenska Orion, Stockholm]]

⁷² DTMB I 2 060.C 6223/11040 Protocol about a meeting of representatives of Philips, Telefunken and Tungstram. Berlin, 11 March 1937 „Röhrenprogramm 1938/39“ [Valve production scheme 1938/39]

light bulbs, and even in that case, Tungsram was careful not to be too explicit about the planned range of production of valves.⁷³

Contrary to the light bulb sector, Tungsram was far from being a monopolist in the radio valve production in Hungary. In the 1920s Tungsram gradually gained the Hungarian market back from Telefunken that took hold here due to the military cooperation between the Central Powers during the First World War. Philips took hold of a growing share of the Hungarian market too, similarly to its dizzy speed of gaining foothold in Europe and in overseas.⁷⁴ The radio valve cartel fixed the market shares of the partners in Hungary. In 1936 an agreement was reached among Philips, Telefunken, Tungsram and the Hungarian Standard Factory about the allocation of the radio set market, too.⁷⁵ It may have been only for the sake of lobby, but Tungsram emphasized the importance of being the unquestionably largest radio valve producer in Hungary as a prerequisite of its position in the radio valve cartel. This point was emphasized in a letter addressed to the Hungarian government claiming protection not from foreign companies but from potential Hungarian ones. During the Horthy-regime Hungary was quick to follow German discriminations against the Jewish population. In 1938 the restriction of the number of Jewish employees in the private economy led to the dismissal of Jewish radio engineers, too. As these people were expected to open up their own new businesses, Tungsram was quick in pointing out the necessity of legal hindrances to such plans as Tungsram's position in the radio valve cartel, which was claimed to have been crucial for the ability of Tungsram to earn valuable hard currency on exports, was said to be dependent on its firm hold on the home market. How the necessity to maintain the competitive position of Tungsram among the leading radio valve producers turned the company that was well known for being led by Jewish managers against a part of the Jewish community in Hungary and actually made Tungsram collaborate in discriminating them is, to my eyes, one of the saddest parts of this story. Not surprisingly, the

⁷³ MOL Z601_247_973 Letter of Director David Aschner to CEO Leopold Aschner, Tungsram. Bukarest, 3 December 1935 „Fabriksgründung“ [Foundation of a light bulb work in Rumania] and [Tungsram, Bukarest], Antrag an das Handelsministerium. [March 1936] [Proposal to the Department of Trade]; MOL Z601_221_890 [Übersetzung] An Dr. Milan Urbanitsch, Minister für Handel und Industrie des Königreiches Jugoslawien, o.D., Franjo Hanaman und weitere vier Unterschriften [Letter of Professor Franjo Hanaman and four other persons to Dr. Milan Urbanitsch, the Secretary of Trade and Industry in the Kingdom of Yugoslavia]; MOL Z601_42_196 Letter of C. H. Minor, Präsident, IGEC, to CEO Leopold Aschner, Tungsram. New York, 24 March 1941

⁷⁴ BLANKEN 1999

⁷⁵ DTMB Firmenarchiv AEG – Telefunken Telefunken GmbH. I. 2 060 C 3412/147 Vertrags-Archiv. Orion-Standard/Philips-Telefunken Ungarisches Apparatkontingent 24/29 February/29 April/9 June 1936 [Agreement about radio set sales in Hungary] Konditionskartell. “Budapester Protokoll”, 26 January 1939 and Letter of Philips to Telefunken. Eindhoven, 24 February 1936

discrimination of Jews did not solve the original problem of unemployment in the Hungarian economy, due to the lack of structural change in agriculture and the slow development of competitive industry.⁷⁶

Conclusion

The examples from interwar Hungary suggest a few points for a research framework investigating how cartels served as crisis managing institutions for producers from small and poor, late industrializing countries though many more case studies are still needed. First, the findings of Harm G. Schröter had been found valid for interwar Hungary, and probably for small and poor countries generally: National cartels may help to solve short-term crises by reducing output, therefore raising prices and keeping production capacities at work. The specific market conditions of such economies do rarely induce, however, cartels to assist long-term adjustment to market changes by fostering rationalization, specialization and technological competitiveness. The state as a main buyer and producer in many industries and backed by its regulatory power (competition policy combined with measures of furthering industrialization furthering a shift towards technology-intensive products⁷⁷), may initiate such a change in collusive behavior. One of the reasons for such a missed opportunity in the Hungarian case seems to have been the powerful lobby of specific industrial groups defending their piece of the cake. Another one might have been the lack of a clear understanding of the welfare potential of such coordination and of the tremendous losses collusive behavior in some sectors and the lack of cooperation in others would cause. Competition policy and the involvement of enterprises in public ownership should, therefore, be important points of investigation for the role of cartels in crisis management in small and poor countries.

The international wagon cartel, as one example for a powerful collusion of suppliers, did not substantially alleviate the effects of the crisis in small and poor countries by opening up new financial sources. For relatively small members with proprietary technology and experience in transnational cooperation international cartels did open up chances to defend their home market more effectively, to overcome protectionist barriers to export markets and fighting outsiders. However, junior members might have faced long-term negative effects of the cartel membership due to a restricted power to influence decisions concerning technological development and to not being allowed to restructure sales as much as the leading members or outsiders did.

Therefore, whether membership in international cartels did help producers from small, developing countries through short term crises by keeping prices high, a stricter protection of the home market and access to export markets, depended on the

⁷⁶ Pogány 2006

⁷⁷ Walsh 1988

bargaining position of these producers within the cartel. Such a position was dependent on the technological “standing” of the respective member (what could be offered to the leading members in exchange for their patents and know how), on its usefulness to push through the market regulation the cartel agreed on in its “own” geographic area, and on the backing by its respective government. Asymmetrical power relations could still very much curtail the chances of small and medium-sized members to remain competitive after the Crisis as crisis management schemes usually were tailored to the needs of the leading members (see for example differences in the possibility to shift sales from stagnating to growing markets).

Therefore, a future survey should first, differentiate between different types of crises such as transformation crises in the here defined sense or a sudden rise of factor prices. Second, different time frames of analysis should be considered as, as it was shown in this paper, solutions might work very well on the short run and still constrain (company) growth on the long run. Third, such an international survey might provide the historical evidence to identify other specific market characteristics of small and poor countries influencing to what extent cartels acted as crisis managers. Special attention should be paid in this respect to asymmetric trade relations and cross-branch transnational connections.

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