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Labour Markets and Recovery of the Great Depression in Norway

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Evidence from newly constructed manufacturing statistics questionnaire the forces leading Norway out of the Great Depression in the 1930s. By analysing changes in employment structure, production, business establishment and technology, I reveal major empirical weaknesses in former explanations of recovery. Too much weight has been given to independent supply-side economic factors in tracing the turning point, thus ignoring the effects of foreign events and domestic demand. This paper presents a more balanced view, emphasising both the interdependence of national and international factors and the interaction of supply and demand. The empirical findings suggest that recovery cannot be understood by reference to any singular cause of events. Rather, the analysis must seek its explanations in the reciprocal influence of various variables.

Introduction

Over the past decade there has been a controversy among Norwegian economic historians about how to explain the recovery from the Great Depression.[1] While the conventional view since the mid-1970s give preference to supply-side transformation of domestic industry in explaining recovery (hereof labelled as the 'supply-school'), a group of younger scholars have recently challenged this view by giving larger priority to foreign events and demand. In empirical terms the dispute may be reduced to an argument about historical statistics. Not only does one disagree about developments in global attributes as world trade and income, also different interpretation of national statistics describing developments in employment and production diverge the research positions.

The Norwegian debate is not reflected internationally. While scholars for many decades disagreed about the causes of recovery, in the last fifteen years or so economic historians have come to a broad consensus about the most important forces triggering growth in the 1930s. A widening of geographical focus and a general acceptance of the stimulating

[1] For the most recent debate: Hanisch, Tore J., Vea, Jan, Krisen i 1930-årene. Var det høyere etterspørsel på verdensmarkedet som ledet ut av krisen. *Historisk Tidsskrift*, vol. 84, 2005: 1, 61-82. Lie, Einar, Hjemmemarkedsledet *eller* eksportledet vekst på 1930-tallet? – Nei takk, begge deler, *Historisk Tidsskrift*, vol. 84, 2005: 3, 487-494. Venneslan, Christian, Krise og vekst i Norge på 1930-tallet, *Historisk Tidsskrift*, vol. 84, 2005: 3, 495-500.

effects of leaving the gold standard deserves much of the credit for this breakthrough. The *time* at which a country abandoned the 'golden fetters' is now commonly regarded as the key determinant of the recovery process.[2] And this explanation has been shown to hold for literally a dozens of countries, including developing ones.[3] The theoretical framework and the historical analysis underlying such a view do also deserve more attention in the Norwegian debate than achieved up to now.

Though not making it a task to investigate the progress of international recovery research in this paper, I do indeed have it in mind in the following presentation. The structure of the article is fourfold. The opening section describes the Norwegian debate from a historiographical perspective. The second section addresses the course of the trade cycle, giving a brief overview of its turning points. The third section take a closer look at the work of the supply-school, with four extensive sub-paragraphs critical examine and contrasting its main contents with newly constructed indices of manufacturing statistics. The following topics are reviewed: employment structure, technological transformation, establishment of firms and production of consumption goods. The paper ends with a brief summary and conclusions.

1. The Whys and Wherefores

Few topics have received as much interest as the recovery of the Great Depression in Norwegian economic history. Why is it so? The answer to this question has to be detailed, if only because explanation of recovery comes in many different variants. While early post-war authors gave priority to analysis of single variables as cyclical unemployment rates and establishment of firms during the slump, scholars in more recent times made recovery to an independent research object in search of synthesis and more profound explanations.[4] In many aspects it has not only been a question about recovery, but also about the driving forces of history. Are periods of abrupt changes and reinforcement to be explained by supply-side dynamics of domestic industry, or is it foreign factors and demand that lead the way out of turmoil and depression? This dichotomy of preferences does not only give content to the controversy of the 1930s, it is also recognisable in explanations of historical matters of other periods. In fact, it reflects some fundamental disagreement about the impetus forming the course of development. And the variable explanations of recovery are not very apprehensible without taking into account their more long-run historical priorities.

To start with the supply-school, a large research project during the 1970s under the auspices of Professor Francis Sejersted of the University of Oslo, made a powerful case that it

[2] Eichengreen, Barry and Sachs, Jeffrey, Exchange Rates and Economic Recovery in the 1930s, *The Journal of Economic History*, vol. XLV, 1984: 4, 925-946. Temin, Peter, Transmission of the Great Depression, *Journal of Economic Perspectives*, 1993: 87-102. Eichengreen, Barry, *Golden Fetters: The Gold Standard and the Great Depression 1919-1939*, New York: Oxford UP 1992. Bernanke, Ben, The Macroeconomic of the Great Depression, *Journal of Money, Credit and Banking*, vol. 27, 1995: 1, 1-28.

[3] See for instance Campa, Jose, Exchange Rates and Economic Recovery of the 1930s: An Extension to Latin America. *Journal of Economic History*, vol. 50, 1990: 677-682. Bjørtvedt, Erlend and Venneslan, Christian, The Gold Standard, Trade and Recovery in the 1930s – The Norwegian Case, *Scandinavian Economic History Review*, vol. 47, 1999: 2, 23-44.

[4] For analysis of singular variables: Wedervang, Frøystein, *Development of a Population of Industrial Firms*, Bergen: Universitetsforlaget 1965. Gjermoe, Eilif, Langtidsbevegelser i produksjon, prisnivå og endel andre konkjunkturserier i mellomkrigstiden, Oslo: Akademisk forlag 1955. For explanations giving preference to synthesis: Sejersted, Francis, Ed., *Vekst gjennom krise: Studier i norsk teknologihistorie*, Oslo: Universitetsforlaget 1982.

was independent supply-side economic factors which led Norway out of the depression.[5] By arguing that the home industries grew faster that the export industries during the first critical years of recovery, traditional explanations giving more weight to foreign events and demand were ruled out from importance in causing the upswing.[6] Rather, the attention was drawn to the transforming and domestic effects of crisis. During periods of economic stress and hardship, entrepreneurs acted in creative manners by innovating the process of production and by realizing potential needs in the market. In light of world trade decline and absence of foreign demand for Norwegian products, these innovating forces were directed domestically and towards consumers demanding new lifestyle goods and services. A resulting wave of new, small establishments saw dawn, producing goods as leisure-wear, sports articles, radios and fashion furniture for the home market.[7] Accompanied by higher employment and income, the consumer-led recovery renewed optimism and brought in turn vitality and demand also to other sectors of the economy.

The starting point for the strong denial of international factors should be considered in a broader theoretical context. It did not only counteract export-led growth explanations *per se*, but rejected also traditional economic theory in more general terms. Classical economics incline to view transformation as result of growth, not crisis. Prosperity improves profitability in businesses and stimulates spending outlays in new plants, equipment and technology. The surge in investment raises productivity and makes capital accumulation to the most important impetus for further production increases. Growth yield more growth, it might be said. But to explain the fluctuating movements of an economy, the mainstream economic theory proved rather poor. Why doesn't investment rises when interest rates are at lowest levels in midst of crisis? Why do people tend to hoard during depressions, thus breaking the mechanical link between savings and investment? What motivates at all the entrepreneurs to accumulate capital in times of turmoil and decreasing profitability?

Not meaning to avoid John M. Keynes answers to these intricate questions, also other contemporary economists were engaged with the issues. By explicitly emphasising the contribution of technological innovation in periods of crisis, the Austrian economists Joseph Schumpeter opted to explain the complex connection between fluctuations and growth. When depression makes impact and profits dwindle, entrepreneurs intensify competition in technical and organizational innovation. 'Gales of creative destruction' are sent through the economic system, Schumpeter wrote.[8] As competition increases so do the embracement of new technology and the adoption of more productive working processes. Obsolete production methods are replaced, productivity and outcome raises, the business cycle turns and recovery follows. Transformation is in such terms not due to any self-sustained growth process. Rather, it is the other way around. Crisis makes transformation which in turn induces growth.

The structurally-inclined explanation of Norwegian recovery presented by Sejersted and his students was an attempt to empirically specify the theories proposed by Schumpeter. In a longer-term perspective, however, the depression of the 1930 only forms one of many

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[5] The main result of the project may be read in Sejersted Francis, *Historisk introduksjon til økonomien*, Oslo: Cappelen 1973 (1985), 166-199. Several master theses in history constituted the empirical foundation for the conclusions drawn: Føsker, Harald, *Krise og strukturendring*, 1973. Vea, Jan, *Industriell vekst og teknologisk fornyelse* 1973. Refsdal, Arne O., *Nyetablering og krise*, 1973. Lange, Even, *Krise og vekst*, 1974. Wicken, Olav, *Konfeksjonsindustrien i Romsdalen*, 1977.

[6] Sejersted, *Historisk introduksjon til økonomien*, 130. For export-led growth explanations: Furre, Berge, *Norsk historie 1905-1940*, Oslo: Det norske samlaget 1971, 246. Dahl, Hans F., *Norge mellom krigene*, Oslo: Pax 1971, 49.

[7] Sejersted, *Historisk introduksjon*, 131-133, 139-146.

[8] Schumpeter, Joseph, *The Theory of Economic Development. An Inquiry into Profits, Capitals, Interest and the Business Cycle*, New York 1934., *Capitalism, Socialism and Democracy*, London: George Allen & Unwin 1976 (1943), 81-86.

cases in the supply-schools depiction of economic development in the 19th and 20th century. A study in 1983 by Trond Bergh, Tore J. Hanisch, Even Lange and Helge Pharo, make this point quite clear:

> "In literature on economic development there has been an explicit tendency to view structural changes as result of growth. It is said that growth promotes changes. [...] In Norwegian cases there are contrary much which call for that the most important transformations have emerged in times of depression and stagnation. The crisis seems largely to have liberated forces which have contributed to transformation and new growth."[9]

It was not only the events of the 1930s these scholars had in mind. A range of other examples were also brought up. Agricultural transformation between 1870-1900 was largely induced by poor profitability and stagnating production of traditional foodstuff. The subsequent growth until 1920 was a direct 'result of these painful transformations'.[10] Similarly, and more important in our regard, is the inclination to connect a major, industrial breakthrough in the Norwegian economy to the recovery from the 'great depression' of the 1870s and 1880s. Declining economic activity increased competition and strengthen the effort of industry to innovate and to find new markets for their products.[11] Francis Sejersted has in a more recent paper emphasised the case of 'Schumpeterian entrepreneurs' operating during this period, turning new technology into product innovation and growth.[12] In the latest national history of Norway, Even Lange of the University of Oslo hem in all the former works by identifying two major phases in the industrialisation process: the first connected to crisis, transformation and growth between the 1870s and the turn of the century, the second to the recovery from the Great Depression in the 1930s. This last wave of modernisation lasted until about 1950 and transformed Norway into a developed consumer society with less dependence on large export-oriented industries.[13]

But if changes and transformation primarily stem from periods of stagnation and depression, what take place during times of growth and prosperity? To answer this question the supply school relied on another theory of economic behaviour worked out by the Nobel Price awarded Herbert A. Simon (1978). Simon emphasised that limited intellectual capacity of man makes the economic textbook norm of rational maximising unrealistic. Economic agents do make choices, but these are based on individual experience, 'bounded rationality' and 'satisficing' of minimum needs. Applied on the behaviour of firms, the theory may explain the changing size of enterprises by references to measures aiming to limit unpredictable economic behaviour and high transaction costs.[14] Applied on history and business fluctuations, however, the content of the theory may change radically. While Simon primarily used his theory to explain why the form of organisation such as the firms is necessary, Norwegian economic historians made his theory to a fundament of firm behaviour

[9] Trond Bergh et al., *Norge fra u-land til i-land*, Oslo: Gyldendal Norsk Forlag 1983 (1988), 231.
[10] Bergh et al., *Norge fra u-land til i-land*, 232.
[11] Bergh et al., *Norge fra u-land til i-land*, 146, 232.
[12] Sejersted, Francis, A Theory of Economic and Technological Development in Norway in the Nineteenth Century, *Scandinavian Economic History Review*, vol. XL, 1992: 1, 40-75, (73).
[13] Lange, Even, Samling om felles mål 1935-70, *Aschehougs Norgeshistorie*, vol. 11, Eds. Knut Helle et al., Oslo: Aschehoug 1998, 28-29.
[14] Simon, Herbert A. et alt., *Organizations*, New York: Wiley 1958., *Models of Bounded Rationality and Other Topics in Economics*, Cambridge, Mass: MIT Press 1982-97., The theories of decision-making in economics and behavioural sciences, *American Economic Review*, vol. 49, 1959: 3, 253-283.

during times of growth.[15] In affluence circumstances, accordingly, companies are satisfied with a minimum level of profit:

> "[They] hold on to traditional, tried and tested techniques and organisations as long as this functions reasonable appropriate, i.e. as long as companies have a surplus which is satisficing."[16]

In periods of depression and profit squeeze, on the other hand, the pressure and competition increases and makes the entrepreneurs more aware and eager to maximize outcome by innovating the methods of production. To paraphrase the theoretical impact of Schumpeter and Simon on the supply-school's depiction of economic development: in times of growth, firms 'satisfices' and keep calm, in times of depression, they maximize and transform.

At first glance the empirical and theoretical basis of the supply-school seems very solid. It was premised on a dichotomy between domestic factors as opposed to foreign factors, supported by empirical evidence culled from individual industries and strengthens by theories derived from well-known economists. Severe doubt was raised to if Norway, as a small, open economy, offered any clear case of export-led economic growth. By emphasising and providing evidence for continuous supply-side transformation of domestic industries during the 19th and 20th century, they found;

> "that an extremely open economy like the Norwegian one is not necessarily a victim of the vagaries of international business fluctuations. Despite a very large foreign trade, [we hold] that Norway's economic development was decisively determined by internal factors".[17]

With regard to the 1930s, this punctured any conception of foreign factors and demand leading the way out of depression. Even the main advocator of export-led economic growth explanations in Norway, Fritz Hodne of the Norwegian School of Economics and Business Administration, admitted that the 1930s was an exception to his depiction of the economic development process.[18] In general, Hodne had argued that it was foreign trade and participation in a liberalized, international economy which acted as the central conduit of growth throughout the 19th and 20th century.[19] The process of liberalization, increasing world trade and demand for Norwegian products, however, was a human construct, after all. It was not some force of nature. And it was reversed in the bouts of beggar-my-neighbour policies, protectionism and declining world trade during the 1930s. It gave the room needed for a domestic, supply-led recovery of the Great Depression.

Not every supporter of demand-led explanations agrees with this argument, however. Among younger scholars, there has been a tendency in recent years to emphasise the influence of foreign factors and demand also during the 1930s. By large, these authors have been influenced by substantial progress in international literature on understanding the Great

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[15] For remarks with reference to the concept of 'safisficing': Sejersted, *Historisk introduksjon*, 159. Sejersted, Francis, *Demokratisk kapitalisme*, Oslo: Universitetsforlaget 1993, 362-371. Lange, Even, Konjunkturer og teknologisk tilpasning. En "case-study" fra norsk treforedlingsindustri, in Sejersted (ed.), *Vekst gjennom krise*, 254. Lange, Even, Teknologisk endring, økonomisk utvikling og Joseph Schumpeters teorier, in Sejersted (ed.), *Vekst gjennom krise*, 310.

[16] Bergh et al., *Norge fra u-land til i-land*, 232-233.

[17] Bergh et al., *Norge fra u-land til i-land*, 231.

[18] Hodne, Fritz, *Norges økonomiske historie 1815-1970*, Oslo: Cappelen 1981, 518-526., *The Norwegian Economy 1920-1980*, New York: St. Martins Press 1983, 6-7, 83-86.

[19] For the first, constructive critique of independent supply-side explanations: Hodne, Fritz, Export-led Growth or Export Specialization, *Scandinavian Economic History Review*, vol. 43, 1994: 3, 297-310.

Depression. While intellectuals for a long time disagreed sharply on the causes for recovery, the last two decades or so have almost brought the profession towards agreement about the most important forces triggering growth in the 1930s. A general change in the focus of recovery research has emerged, from a traditional emphasis on events in single countries to a more global and comparative approach that examines the experience of many countries simultaneously.[20] And most of the younger scholars in Norway seem to be of the opinion that this broadening in focus deserves more attention in the Norwegian debate than hitherto done.

Without claiming these characteristics to be representative for all authors, I do believe it is accurate to assert that the first, critical review of the supply-school paradigm came with an article by Einar Lie of the University of Oslo in 1996.[21] Lie questioned foremost the validity of using the theories of Schumpeter and Simon in empirical history research. But he also emphasised that the supply-school had underrated the importance of foreign trade. Particularly, the growth in exports during the 1930 brought large incomes to the domestic economy:

> "Not least is it important that without this upswing one could barely have had the fast growth in home industries. Increasing export earnings contributed to raise demand for Norwegian products; it was because of these revenues one could have a net contribution of purchasing power through large parts of the 1930s".[22]

Though more balancing the supply-school view than rejecting it, Lie's work undoubtedly triggered the interest of other academics, as well. In 1998, the pen-pusher of this article and student collegeau Erlend Bjørtvedt published two articles which reasserted external, demand-side explanations of the recovery. By analysing the development in an international context, and drawing heavily on scholars like Barry Eichengreen, Jeffrey Sachs and Peter Temin, the mechanism of recovery was related to increased foreign demand for Norwegian export products following the ending of Gold Standard constraints in 1931. Generally, we argued that just as it were external forces that led Norway into the Great Depression, such forces also paved the way for the subsequent recovery. Increased export renewed optimism in domestic markets, bringing about a growth in investment activities and eventually a recovery in private consumption.[23]

In more econometric manners, Norway's favourable position after the upheaval of the 'golden fetters' has been emphasised by Jan T. Klovland and Ola H. Grytten, both at the Norwegian School of Economics and Business Administration.[24] By pointing to the monetary effects of leaving gold, they view currency depreciation as the key to understand the recovery. Effecting improved conditions for exports and restricting import, the current account balance turned into surplus for the first time in decades.[25] Without fear of the external balance, the central bank could reduce the discount rate to its lowest level since the 1880s, stimulating an

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[20] For a summary of recent development: Bernanke, Ben, *Essays on the Great Depression*, Princeton N. J.: Princeton University Press 2000. Eichengreen, Barry, Still Fettered After all These Years, *National Bureau of Economic Research*, working paper no. 9276, 2002. Eichengreen, Barry and Temin, Peter, The Gold Standard and the Great Depression, *Contemporary European History*, vol. 9, 2000: 2, 183-207.

[21] Lie, Einar, Hva førte Norge ut av krisen i 1930-årene, *Historisk Tidsskrift*, vol. 75, 1996: 3, 325-336.

[22] Lie, Hva førte Norge ut av krisen, 335.

[23] Bjørtvedt, Erlend and Venneslan, Christian, Veien ut av krisa, *Historisk Tidsskrift*, vol. 77, 1998: 2, 130-159., The Gold Standard, Trade and Recovery, 23-44.

[24] Grytten, Ola H., Monetary Policy and Restructuring of the Norwegian Economy During the Years of crisis 1920-1939, Ed. Time Myllyntaus, *Economic Crises and Restructuring in History. Experiences of Small Countries*, 1998, 93-124. Klovland, Jan T., Monetary Policy and business cycles in the interwar years: The Scandinavian experience, *European Review of Economic History*, 1999: 2, 309-344.

[25] With the exception of single years as 1926 and 1916, where surpluses aroused mainly because of completion of parity policies and war, respectively.

investment binge particular in housing. Rising prices on inflowing goods also spurred import substitution: many products former imported were now manufactured by home industries, supplying the needs of demanding consumers. However, the improvements of the competitive climate were not primarily due to supply-side transformation of domestic industries. Foremost, it was caused by foreign events and alternating conditions for external trade and services.

Though not forming any coherent school of thought, the fragmented critique raised by all these authors questionary the theoretical and empirical validity of the supply-school. Any challenge to its supreme position in historical textbooks, however, requires detail analysis of its keystones and references. By presenting new statistics and elaborations of existing ones in both the short and long run, I intend to do so in this paper. Taking also into account the recent progress in international literature, a different tale of the economic development process in the 1930s is told. Though not rejecting all the central principles and narratives of the supply-school, they will altogether be confronted and hopefully balanced in the right direction. I start the analysis with a brief overview of the trade cycle.

2. The Course of Recovery

In historical studies of growth and depression chronology is important. Different interpretations of the cyclical movements give easily an uneven balance to comparable analysis and data exchange. But although a major labour dispute in the midst of the Great Depression in Norway seriously disrupted the natural fluctuations of the economy, there is a relatively agreed consensus among scholars when the turning points occurred. By estimating the production loss due to strikes and lockouts, Jan T. Klovland of the Norwegian School of Economics and Business Administration has portrayed the manufacturing business cycle during the 1930s in convincingly manners:

Table 1 Turning point in Norway and abroad 1929-1937

	Norway	World
Turning point	Manufacturing output	Manufacturing output
Top	3. quarter 1929	2. quarter 1929
Low	4. quarter 1932	3. quarter 1932
Top	3. quarter 1937	2. quarter 1937
Low	3. quarter 1938	3. quarter 1938

Source: Jan T. Klovland, Industrivekst uten planøkonomi: Nye beregninger av veksten i industriproduksjonen i Norge 1927-1939, *I det lange løp. Essays i økonomisk historie tilegnet Fritz Hodne*, Eds. Basberg, Nordvik and Stang, Bergen: Fagbokforlaget 1997.

The close connection between a fluctuating world economy and national development is observable in the table. With a lag of about a quarter or so, the domestic turning points followed suit to the international business cycle. The lops of the national economy were though smoother than the variations abroad. While the volume of world manufacturing output fell by 27 per cent, Norwegian manufacturing decreased by ten per cent from its peak in August 1929 towards the end of 1932. The domestic movement is confirmed by cyclical analysis of unemployment indicators, which showed its highest level in November 1932[26] In

[26] For analysis of cyclical unemployment rates among trade unionists: Eilif Gjermoe, *Konjunkturene i mellomkrigstiden, Norge og utlandet*, NOS XI. 78., Oslo: Statistisk Sentralbyrå 1951. For joblessness in the national labour force, see Ola H. Grytten, *En empirisk analyse av det norske arbeidsmarked*, dissertation

the aggregate, GDP declined in Norway by almost 12 per cent in current prices, in constant prices by three per cent.[27] The subsequent recovery was at first modest, but gained strength and vigour in course of the decade. It lasted almost five years, until a mild recession occurred in the third quarter of 1937.

To analyse the causes of recovery, the first critical phase deserves particular attention. Though the last part of 1932 and the year 1933 more arrested the decline rather than recovered the economy, it is important to ask why this happened. Additionally, strong growth in 1934 claims detailed analysis of both economic activity as a whole and of individual industries. By the end of this year the first phase of recovery was passed and the growth impetuses seem to have settled its further course. Over the next three years a strong and continuous consolidation phase followed. At its peak in 1937 real national income stood at level almost a quarter above the average of 1932.[28] The current value of manufacturing production had increased by almost a half and even the unemployment rate, which by the man in the street's view was unpleasant high during the whole decade, had shrunk by four percentage points.[29]

3. In Search for the Invisible Hand

What forces triggered recovery? For more than a quarter-century, this question has echoed many times in Norwegian academia. Most of the scholars puzzling their time with the issue have favoured explanations of supply-led growth and home-market specialisation. Paying homage to the trade cycle theory of Joseph Schumpeter, they have emphasised the role of the entrepreneurs, the leading men of capitalism, and the venturesome protagonists who move the plot forward. Appearing particularly during times of crisis, the entrepreneurs have an ability to do new technology marketable and to make innovations which reorganize the working process in fundamental manners. The effect is to raise productive efficiency, moving the production possibility boundary upwards and, finally, out of recession. At the time the markets are saturated with the new modes of organisation and production techniques, the cycle turnaround and returns to a slower path of economic activity. Without this process of 'creative destruction' and technological innovation, the economy will in Schumpeter's words 'settle in a state of static equilibrium' with no trade cycles or net growth whatsoever.[30] It is a necessary wheel for historical development.

In its doctrines and ethos, the simple, basic entrepreneurial theory of Schumpeter is attractive and easy understandable. The idea's appeal lies in the way it ties together elements of classical microeconomics with dynamic macroeconomics. In the settled equilibria and smooth adjustment of traditional microeconomics, the entrepreneurs are given few if any lines to read. They are reduced to passive parts of a Walrasian tâtonnement process, acting mechanical to adjust to changing prices until equilibrium is reached. By introducing a regular psychological moment into this static universe, Schumpeter tried to ravage such a kind of entrepreneurial myopia and to revive the agents as promoters of economic change. A fluctuating level of national income could accordingly be traced to the actions of the

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submitted for the degree of dr. oecon, Norwegian School of Economics and Business Administration, Bergen 1994, 73.

[27] Official Statistics of Norway (NOS) XII. 163, *National Accounts 1865-1960*, table 1 and 30, Domestic product by category of expenditure, At current and constant prices, Oslo 1965, 64-65, 244-245.

[28] NOS XII. 163, *National Accounts 1865-1960*, table 30.

[29] Grytten, Ola H. *En empirisk analyse av det norske arbeidsmarked*, 73. Unemployment among trade unionist fell by 13 per cent: NOS XII 245, Historical Statistics 1968, Oslo 1968, 81.

[30] Schumpeter, Joseph, *The Theory of Economic Development. An Inquiry into Profits, Capitals, Interest and the Business Cycle*, New York 1934.

entrepreneurs during times of crisis, thus embedding a macroeconomic mechanism of economic change in a theory of microeconomic behaviour. For economic historians, this idea did indeed fascinate. Particularly, to explain economic transformations and developments in the aggregate by reference to a single, dynamic force of entrepreneurial creativity is appealing. It acts to narrow the empirical research of a complex past and to focus on sources giving room for entrepreneurial based explanations of historical change.

But what is the empirical foundation for applying this theory to explain Norway's economic performance during the 1930s? In general, advocators of the supply-school will argue that the crisis encouraged entrepreneurs and increased corporate Norway's 'animal spirit'. Many of the entrepreneurs were former unemployed shed by the depression and turmoil's of the early 1930s and now keen to make their own way. Some would be seen establishing small, private firms, eager to apply new technology and to innovate the methods of production.[31] Others would be licensed agency to sell imported goods, fitting the new consumption pattern which emerged at the day. They realised in this way a latent or potential demand with the consumers, who made a shift in their expenditure patterns toward new items as electric cooking appliances, designed furniture and sport wears produced by the upcoming growth industries. Larger-scale companies, traditionally regarded as the nation's economic engines, were in relative decline and depressed by the smaller ones in importance. But also many of them did not just cost during the depression, but turned themselves into more focused profit-orientated entities stimulating and encouraging a change in the consumption pattern.[32] It was an entirely new mood which developed in businesses, depending on the free market forces and on wide abilities of entrepreneurs to realise their creative ideas. Any hindrance of government regulation, or big businesses monopolising free trade, would only suppress the innovative growth climate which had emerged out of crisis.

In a longer-term perspective, the upswing allegedly also introduced a new phase in the economic development process. Increasing production for domestic markets moved the former leading export industries into the sideline. Finished goods and new consumer items replaced semi-manufactures and production of raw materials for export.[33] Beside the wave of small business start-ups, the method of mass production became more common in larger factories. And along with all these new methods and firms went technological innovations which highly strengthen productive efficiency. Particularly, as the supply-school has emphasised, electricity and an extensive use of small electric motors transformed the productive operations of companies and encouraged to establishments in rural areas far away from former industrial centres. Low-cost and flexible electric motors did indeed make it convenient for firms to utilize power in regions where little or none had previously been commercially employed.[34] It was a fundamental industrial transformation which took place, brought about by the turmoil and hardship of the economic depression. As stated in the latest national history volume:

> "The recovery from the depression introduced a second, major phase in the industrialisation of the country. The first, large modernisation wave from the 1870s to about the turn of the century resulted in a quarter of the Norwegian population obtaining its means from the industrial sector. This share was approximately constant

[31] The first authors to use the concept of so-called "levebrødsforetak", i.e. firms established in order to create a livelihood, were Wasberg, Gunnar Christie and Svendsen, Arnljot Strømme, *Industriens historie i Norge*, Oslo: Norges Industriforbund 1969, 216.
[32] Sejersted, *Historisk introduksjon*, 143-144.
[33] Hanisch, Tore J. and Lange, Even, *Veien til velstand: Industriens utvikling i Norge gjennom 50 år*, Oslo: Universitetsforlaget 1986, 26.
[34] Norwegian economic historians have in general associated the number and size of electrical motors with technological innovations during the 1930s.

> during the first three decades of the 20th century. But in the twenty years to follow, an additional ten per cent of all the Norwegians were connected to the industrial sector. In 1930, the primary industries of agriculture, fishing and forestry were still the country's most important means of support. According to the statistics, it gave employment to about 35 per cent of the population. By the strong transformation from the early 1930s, this relationship between the primary industry and the industrial sector were turned upside down."[35]

One should take notice of the effort to connect a 'first, large modernisation wave' to another period of economic stress in the Norwegian economy: the 'great depression' of the 1870s and 1880s. Several authors relate major industrial progress in these turbulent years to the concepts of recovery from crisis and to changing technological paradigm. The potential for growth in traditional industries were exhausted and only innovations and developments of new technologies could point the way out of the depression.[36] Like the 1930s, the crisis brought with it a painful process of restructuring, stimulating new growth impetus and a rising demand for labour.

But the view of relating major changes in the employment structure to long waves of economic fluctuations is not very common. Traditionally, analysis and explanations of long-term developments in the labour market give more weight to structural factors like demography, changing levels of skills and intersectoral reallocations due to relative compensations rates. Though not making it a task to investigate all these factors, the following sections will pour some cold water on the idea that the depression of the 1930s initiated a second, major transformation of Norwegian industry. Additionally, and in more specific terms, I will critically review the main argumentation of the supply-school in both short and long-term perspectives. I start with the employment structure.

3.1. The Shift in Employment Structure

A major problem with the supply schools' depiction of industrial progress in Norway is that one easily considers equal severe depressions and fundamental transformations of industry. It may imply a biased understanding of the economic reality. Transformations are seen as derivative from economic fluctuations and the history of industrial progress becomes the history of the trade cycle, though of course with some lags. Nonetheless, the seemingly well-founded empirical work of the supply-school may catch one's breath quite occasionally. Not only have they provided evidences from qualitative sources and written materials, also quantitative proofs and statistics lie at heart of their analysis. To critical review all these components is time consuming. Here I limit myself to mainly look at the statistical sources.

On closer inspections, the analytical records of the supply-school are vulnerable. A common problem seems to be definitions of central concepts used in statistical analysis. Also an uncritical use of chronology does occasionally cause troubled waters. With regard to identifications of long-term changes in employment structures, some of the difficulties are easy observable. When explaining the process of industrialisation, references are given to

[35] Lange, *Samling om felles mål*, 28-29.

[36] See for instance Sejersted, A Theory of Economic and Technological Development, 73. Sejersted, Francis, Teknisk utvikling i sagbruks- og treforedlingsindustrien under krisen i 1880-årene, Ed. Francis Sejersted, *Fra Linderud til Eidsvold Værk*, vol. 3, Oslo 1979. Lange, Even, 'To take Great Pains': Norwegian Wood Pulp on the British Marked in the 1870s, *Technology Transfer and Scandinavian Industrialisation*, Ed. Kristine Bruland, New York/Oxford: Berg Publisher Ltd 1991, 387-403. Lange, Even, Industrien bak det moderne Norge, *Teknologi i virksomhet. Verkstedsindustri i Norge etter 1840*, Ed. Even Lange, Oslo: Ad Notam forlag 1989, 18-20.

employment changes in secondary industry.[37] Instead of making the traditional distinction between manufacturing industry, building and construction, all these sectors (including craft industries) are put in a summary account (secondary industry) and asserted to indicate the pace of industrial progress in Norway. Though such procedures may be justified to analyse relative employment patterns in general, it is not very suited to explain developments of individual industries. Foremost, short-term and abrupt employment changes in the cyclical trades of building and construction may overshadow important particularities of the other sectors. Building houses does neither raise long-term economic growth in the way equipping a factory do. Nor does it satisfactory express industrial activity. So to make a clear distinction between these various activities when doing numerical analysis should be a plain procedure. Table 2 shows the employment distribution on main industries between 1890-1939:

Table 2 Percentage share of total employment 1890 - 1939

Year	1890	1900	1910	1920	1930	1932	1934	1937
Primary industry	48	41	39	37	36	36	35	34
Secondary industry	20	25	25	26	25	25	25	27
hereof in construction	4	6	4	4	4	4	4	5
hereof in manufacturing	16	19	21	22	21	21	21	22
in factories/small-scale manufacturing	7	10	13	14	14	14	15	16
in crafts/by independent workers	9	9	8	8	7	7	6	6
Tertiary industry	32	34	36	37	39	39	40	39
Total labour force	100	100	100	100	100	100	100	100

Source: Official Statistics of Norway (NOS), Tredie Række No. 236, *Folketællingen 1 Januar 1891*, Tabel 6, Kristiania: Aschehoug 1896. NOS Fjerde Række Nr. 111., *Folketællingen 1900* , Femte hefte, Folkemængde fordelt efter livsstilling, Kristiania: Aschehoug 1905. NOS V. 211., *Folketællingen 1910*, Fjerde hefte, Folkemængde fordelt efter livsstilling, Kristiania: Aschehoug 1913. NOS VII. 103., *Folketellingen 1920*, Niende hefte, Folkemengden fordelt efter livsstilling, Kristiania: Aschehoug 1923. NOS IX. 40., *Folketellingen 1930*, Sjette hefte, Folkemengde fordelt efter livsstilling Oslo: Aschehoug 1934. NOS XI. 109, *Nasjonalregnskap 1930-1939 og 1946-1951*, tabell 39, Oslo: Aschehoug 1952.

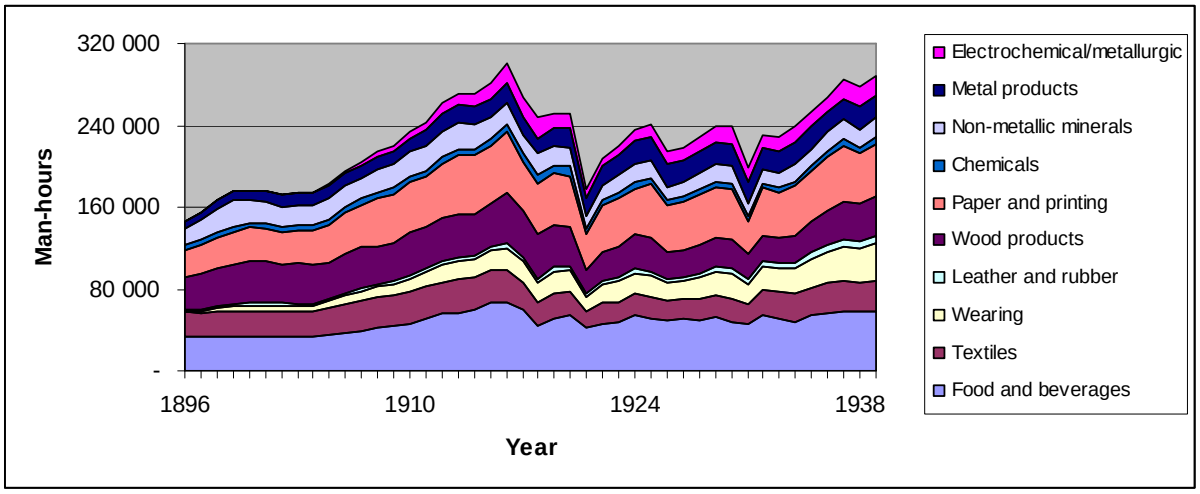
These numbers tell a quite different tale than the one presented by the supply-school. While the overall share of the labour force engaged in secondary industry was almost constant during the first three decades of the 20th century, the percentage distribution of its subsections varied a lot. Due to extraordinarily boom conditions in building and construction at the turn of the century (the so-called 'Kristiania-krakket'), the number of employees in that sector were abnormal high. In the subsequent recession, several thousands construction workers were laid off, cutting its share of the total labour force by almost half between 1900 and 1910. Simultaneously, employment in manufacturing industry continued its steady rise. From a percentage share of 16 in 1890, it rose to 19 per cent in 1900 and to almost 22 per cent in 1920. Particularly, the number of workers in factories and smaller manufacturing increased rapidly. From the decennial population censuses we can read a rise from a mere 7 per cent in 1890 to 14 per cent in 1920. All in all, and taking into account an absolute increase in the labour force from 0.7 to 0.9 millions, the first period of the century can be described by nothing else than rapid industrialization.

A pause, or even a small decline, in the manufacturing employment share was observable in the next decade. From its peak of 22 per cent in 1920 it fell to 21 per cent in 1930. During the second half of the 1930s, employment regained and strengthens its former position and climbed above 22 per cent in 1938. These relative shifts in the employment

[37] Lange, *Samling om felles mål*, 28-29. Bergh et al., *Norge fra u-land til i-land*, 146.

structure are confirmed by statistics showing the number of man-hours in manufacturing industry. Chart 1 expresses the data:

Chart 1 Number of man-hours in manufacturing 1896-1939 (1000 man-hours)



Source: NOS V. 58 – NOS X. 16., *Industristatistikk* 1895/96-1918, Annual publications, Kristiania/Oslo: Aschehoug 1897-1919. In two periods there were not published any data: 1919-1920 and 1931-34. Numbers are calculated by basic statistical methods.

Between 1896 and 1916, man-hours in manufacturing almost doubled. Sharp cyclical movements and general decline in economic activity succeeded in the 1920s. Beside a severe depression in 1921, a low point was reached in 1926, with 192 million man-hours completed, about a fifth below the level of 1920. The upswing until 1930 rose the number to 219 million man-hours. During the Great Depression, however, it fell back again by about 5 per cent. To rejoin the labour market in the first phase of the recovery was not simple, in 1932-33 hardly possible at all. By 1933, a modest growth set in, at a rate which accelerated rapidly in the following years. In 1939 one counted 267 million work-hours in manufacturing industry, a quantity that almost matched the last prewar year of 1913 (268 million).[38]

The point to make here is that both the share of the labour force engaged in manufacturing and the amount of man-hours were at about the same level in the second half of the 1930s as in the most prosperous years of 1910-20. Of course, this is not to deny that the depression of the 1930s initiated transforming effects in manufacturing industry and in the overall employment structure. It only bring forward that these forces in the aggregate must have been of relative modest dimensions compared to the period of rapid industrialisation between 1900 and 1920. Not to mention that eventual structural changes at those days would have been during times of growth, not crisis. Next section discusses these matters in more detail.

3.2. Turning Electrical Power on its Side

How can we measure technological transformation? In general, there is no standard answer to this question. While economists tend to keep their attention in the aggregate, using traditional

[38] If measuring employment by the number of employees, this would give higher magnitudes in 1939 than in 1913. The number of man-hours was though higher in 1913 because of longer working days (10 hours against 8 hours, respectively). While a man-year accounted for 3000 man-hours in 1913, it amounted to 2400 in 1939.

growth accounting and production function analysis to estimate the rate of technological change, the historians are more interested in details. Growth accounting can never tell us how entrepreneurs adopt new technology during times of crisis. Neither can it provide sustainable proves of its diffusion during a critical recovery phase. That's why we have to count. The question is what. One possibility is to count new products appearing in the market. Another is to investigate improvements or changes in the methods of production. A third alternative may be to look at the number of patents during times of depression.[39] Also the number of establishments can be a suitable indicator of entrepreneurial activity and technological advance. The choices are many, and a combination of the opportunities seems to be the golden mean most scholars apply.

The research project exploring the idea of supply-side transformation during the 1930s has particularly made references to three aspects: business establishments, product innovations and new technology altering existing production methods. With regard to the last of these factors, several authors have emphasised that introduction of small electric motors in manufacturing production was an important indicator of technological innovation during the depressed period in the first part of the 1930s.[40] Along with increasing efforts of local governments to build power stations and to raise the supply of electricity to the public, power became available in most of the country, stimulating to rapid electrification of small and medium-seized businesses. Within the firm, instalments of electric motors and tools made the system highly flexible. Power could be put anywhere dictated, not only matching the most productive operations, but also reducing the cost of running them.

The development was part of what has been labelled as a 'second technological system' based on electric power.[41] The 'first system' was connected to larger-scale production and extensive input of power within electrochemical and electrometallurgical industries. A powerful impression is given by the supply-school that while the first system of big businesses dominated the scene in the beginning of the 20th century, the second system of small-scale electrification did not make real impact before the 1930s.[42] Given the expansion of public electricity supply, creative entrepreneurs with unengaged capital were now keen to apply the new technology. Also adjusting their production to the new consumption pattern of the day, the resulting wave of new establishments formed the most important growth impetus to the subsequent recovery. It was a structural change of fundamental character. And the character and strength of the new technological paradigm have been compared to the revolutionary computerisation of firms in recent times:

> "The situation [today] is not quite unlike that of the 1930s. There are good reasons to consider the crisis of that time as a structural crisis. Also in those days one experienced a flourishing of new, small firms, of which several showed up to be progressive. The small electric motor played in several manners the same role for those small establishments as the computer technology today – it made small businesses productive."[43]

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[39] For an introduction to this approach in Norwegian economic history: Basberg, Bjørn, Patenting and Early Industrialization in Norway, 1860-1914. Was there a Linkage, *Scandinavian Economic History Review*, vol. 54, 2006: 1, 4-21.

[40] Føsker, *Krise og strukturendring*, 42. Vea, *Industriell vekst og teknologisk fornyelse*, 32, 80. Vea, Jan, Teknologisk utvikling i norsk verkstedindustri under depresjonen i mellomkrigstiden, in Sejersted (ed.) V*ekst gjennom krise*, 180-208 (184). Lange, Even, Teknologisk utvikling i norsk trevareindustri under depresjonen, in Sejersted (ed.) *Vekst gjennom krise*, 150-179 (151). Sejersted, *Demokratisk kapitalisme*, 181.

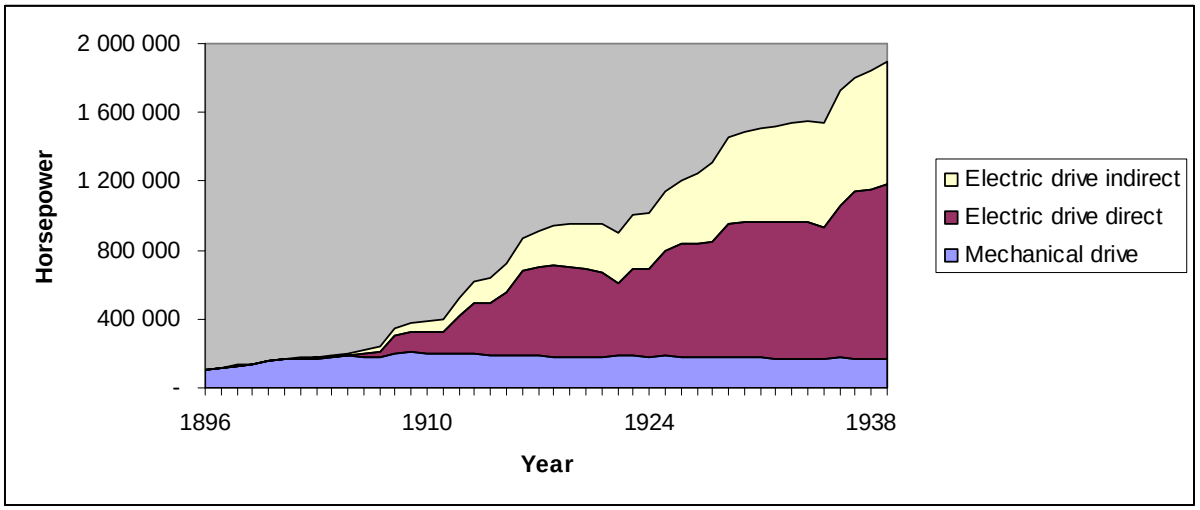
[41] Sejersted, *Demokratisk kapitalisme*, 177.

[42] Sejersted, *Demokratisk kapitalisme*, 181. Lange, Even, Bedriftsetablering under depresjon, in Sejersted (ed.) *Vekst gjennom krise*, 147.

[43] Sejersted, *Demokratisk kapitalisme*, 244.

The problem with this depiction of the economic reality is chronology. From the very beginning Norway became an electrical powerhouse, a dual structure of its power application was at place. Chart 2 gives an overview:

Chart 2: Mechanical and electric drive (direct and indirect) in manufacturing 1896-1939



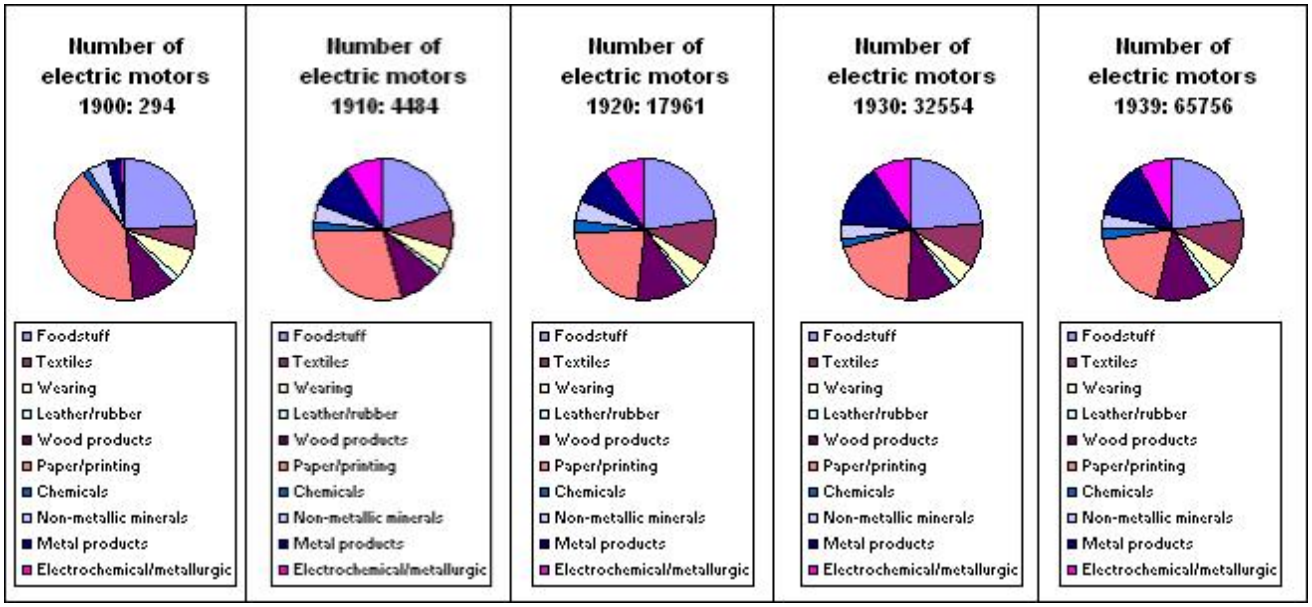
Source: NOS Fjerde Række Nr. 99 – NOS X. 44., *Industristatistikk* 1895/96-1939, Annual publications, Kristiania/Oslo: Aschehoug 1904-1942.

Electrification did not start with large scale businesses in Norway. As emphasised in a recent article by Arne H. Erlandsen, it 'started very locally – and in small scale'[44]. Although large enterprises with substantial inputs of power in electrochemical and metallurgical processes soon formed a dominant position (electric drive direct), it was never close to wipe out the more traditional role of electric motor drive (electric drive indirect). While mechanical drive (i.e. machinery driven by direct water supply, steam, gas, coal, et cetera) declined during the entire period, electric motor capacity held a strong position from beginning to end. Of total electric drive in 1910, electric motors supplied slightly above a third. During the 1920s, this share increased rapidly to almost 40 per cent. The growth trend continued in the 1930s, but at a slower rate than before. By 1939, the share stood at 43 per cent.

What does all these numerical data tell us? Taking into account an increase in the capacity of water power plants from 10 Megawatt (MW) in 1907 to 1250 MW in 1920 and 2250 in 1939, it says something about the speed of the electrification process.[45] And it was a development which supported both greater industrial concentration and small businesses in all branches. The inference is supported by statistical data showing the distribution and quantity of electric motors in manufacturing industries between 1900 and 1939:

[44] Erlandsen, Arne H., Vannkraftutbygging i Norge, *Kulturminner i norsk kraftproduksjon*, Oslo: Norges vassdrags- og energidirektorat 2006, 37-70 (40-42).
[45] Erlandsen, Vannkraftutbygging, 43.

Chart 3: Distribution and number of electric motors in manufacturing industries 1900-1939



Source: NOS V. 58 – NOS X. 44., *Industristatistikk* 1900-1939, Annual publications, Kristiania/Oslo: Aschehoug 1908-1942.

In 1900, the number of electric motors in manufacturing industry was 294 with a capacity of 2826 horsepower. By 1910, the quantity surpassed 4000 and the capacity rose to 62 183 horsepower. A rapid escalation then followed. Between 1910 and 1920, both the number of electric motors and their capacity quadrupled, to almost 18 000 units and 263 263 horsepower. The upward trend continued in the 1920s and 1930s, but at a slower rate. Between 1920-30 and 1930-39, respectively, the numbers of electric motors doubled and so did almost their power capacity. The diffusion of electrical technology was widespread. All manufacturing industries felt its impact quite early, though some branches were more in front than others. Particularly, in printing and in manufactures of foodstuff, textiles, clothing, wood and metal products the effects were pronounced. By rapid growth and utilization of electric drive, the productive operations of these industries were completely transformed during the period.[46]

But what about the development in the 1930s? Did entrepreneurs adopt new technology in the wake of the Great Depression? First of all, to apply electric motors in production at these times were hardly very innovative. This electrical device had existed for more than thirty years and had emerged in many variants and forms. Maybe it was more of them in the 1930s. Maybe they had smaller capacity, were cheaper, and more flexible than ever before. But to label them as innovative, or as part of a new technological paradigm, is to overestimate their importance during a particular time period. To make a contemporary analogy: it is like saying that since computers in 2006 have much larger capacity than those of the 1980s, the computerisation of firms started after the turn of the millennium and not before.

[46] Venneslan, Christian, *The Second Industrial Revolution in Norway*, Unpublished manuscript, Norwegian School of Economics and Business Administration, 2006.

A point is made by some scholars that a fundamental transformation from a so-called 'electric group drive' to 'electric unit drive' took place during the 1930s.[47] This implied a transfer from a system where production machinery were arranged in groups and driven by a line shaft turned by its own electric motor to a drive arrangement where all shafting was eliminated and each machine was run by its own electric motor. Some advantages of the 'unit drive system' were increased flexibility in the arrangement of machinery, improved working conditions and better machine control. All these factors worked to increase productivity and to maximize throughput. But the first electric unit drive system had been introduced in Norway already by 1905, far ahead of the depression of the 1930s.[48] The transforming processes may have been speeded up a bit in the 1930s, given cheaper and more available power supply, but it was nothing particular new in the situation. Some statistics can further elaborate these issues:

Table 3: Number, size and electric motors per firm 1922-1938 (arithmetic average per period)

Period	1922-26	1926-30	1930-34	1934-38
Number of electric motors	22 566	28 624	35 000	51 583
hereof in wood product industry	*2 974*	*3 626*	*4 374*	*6 726*
hereof in metal product industry	*2 846*	*4 820*	*5 600*	*8 800*
Motor size (Hp per engine)	14,50	15,76	14,90	12,51
Motors per firms	2,9	3,4	4,1	5,1

Source: NOS VII. 127. – NOS X. 44., *Industristatistikk* 1922-1939, Annual publications, Kristiania/Oslo: Aschehoug 1924-1942.

For analytical purposes, I have divided the span of years covered by the statistics into four periods: 1922-26, 1926-30, 1930-34 and 1934-38. The main target is to compare the rate of new electric motors before, during and after the Great Depression. A particular attention is drawn to two sectors: manufacturing of products of wood and metal. This should give opportunity to contrast my findings to those of the supply-school, which has attached considerable weight to these two branches in their arguments for supply-side transformation of domestic industry during the depression.[49]

We find in table 3 that the overall growth trend of electric motors is surprisingly stable in the three first periods (about 25 per cent increase from one period to the next). Also in the subsections the development were rather fixed. This hardly supports any argument of entrepreneurs adopting new production technology either during the crisis (1930-32), or in the first, subsequent recovery phase (1932-34). In the next period, however, the overall trend is rising and point to a 47 per cent increase in the quantity of electric motors. In the subsections, the growth is even stronger, with a 57 % increase in metals and 53 % in the sector of wood products. Undoubtedly, this break in the series point to something quantitatively new in the consolidation phase of the recovery. The evidence is also supported by measurements of electric motors per firm. While the increase between 1922/26-1926/30 and 1926/30-1930/34 was 17 and 20 per cent, respectively, this rises to almost 25 per cent in the subsequent period.

[47] Føsker, *Krise og strukturendring*, 42. Vea, Teknologisk utvikling i norsk verkstedsindustri, 184. Lange, Teknologisk utvikling i norsk trevareindustri, 151.

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[48] Nerheim, Gunnar, Fra Laugstol Bruk til Alta – Norge under elektrisiteten, *Samtiden*, 1980: 6, 14-20.

[49] Lange, Teknologisk utvikling i norsk trevareindustri, 150-179. Vea, Teknologisk utvikling i norsk verkstedsindustri, 180-208.

Thus, both in absolute numbers and in relative measurements of electric motors per firm there is an upsurge in the trend growth between 1934-38.

Can we say anything about more qualitative changes? The size of the electric motors can give some indications. While the capacity of the engines increased by almost ten per cent between 1922/26 and 1926/30, a factual decline of about 14 per cent is observed in the next session. The tendency continues in 1934-38, with a further decrease of capacity by about 16 per cent. Given that the number of electric motors per firm also grew, it indicates an intensification of the transfer from 'electric group drive' to 'electric unit during the 1930s. But as mentioned above, these innovating forces had been around for a few decades already. Very identical to the spread of computers today, however, the engines were smaller, cheaper and more efficient, thus making them available to more people than before. In such terms, the 1930s witnessed a deepening and a continuation of the electrification process which had advanced since the turn of century. But there was not anything fundamental new in its course.

By barring the revolutionary effect of introducing electrical motors and the fundamental reorganising of factory production during the first decades of the 20th century, the supply-side school has attached historical characteristics to a period (*the* 1930s) where they do not belong. If there is any decade to be portrayed as technological innovative with regard to electricity and electric motors, it is the period between 1910 and 1920. The quantity of electric motors quadrupled in those years, as did their capacity. Along with extensive development of both small and more grandiose electric power stations, the annual capacity of water plants increased by 100 MW between 1910 and 1920. All these rates were to be halved during the interwar period. While the number and capacity of electric motors only doubled during the decennials of 1920-30 and 1930-39, respectively, increases in electricity produced by water plants were reduced to 50 MW per year. The electrification process did indeed continue, but at a slower speed than before.

The reason for the ignorance of the development between 1910 and 1920 is probably its poor fitness to a 'Schumpeterian' view on the economic reality. Rather than entrepreneurial activity and new technology provoked by crisis, innovating forces seem to have appeared during periods of growth and prosperity. Amazingly few references are therefore given by supply-school scholars to the influence electrification had on small firms during the first decades of the century. Instead almost all the focus during this period is directed to the so-called 'first system', with large-scale enterprises producing electrochemical and electrometallurgical products. But electrification did not only advantage economies of scale and international enterprises. A parallel movement existed from below, where a combination of new electrified technology, bottom-up entrepreneurship and new firms established themselves in other areas than those dominated by large-scale companies. The next section takes a closer look at these developments.

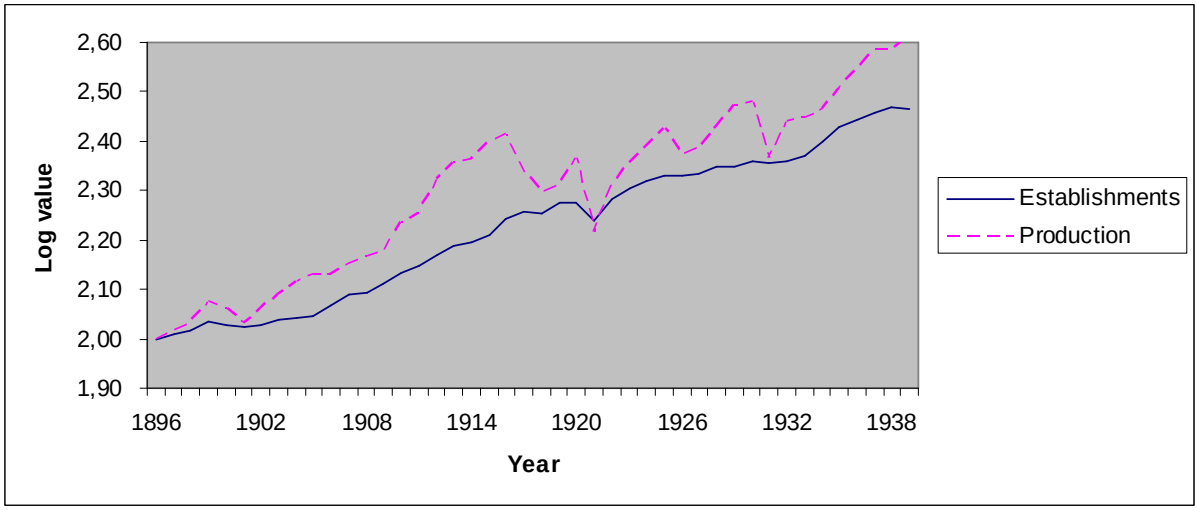
3.3. Establishment of Firms

Entrepreneurs, a close proxy for supply-school theory, were allegedly in strong vigour during the first part of the 1930s. Idleness and stagnation provoked by crisis built up a psychological and economical pressure which was first released by creative behaviour profiting the existing market potential. By moving activity out of saturated markets and establishing firms in coming growth industries, entrepreneurs managed to adjust their supply to new demand signals favouring consumer goods as electrical stoves, synthetic textile fibres and bicycles. The resulting increase in production for domestic markets moved the former leading exporting firms into the sideline. "A real swarm of new, small establishment took over as

prime movers after the stagnating larger companies", writes Even Lange.[50] And those establishments were not a "phenomenon which broke through in spite of crisis, rather it must be understood as a result of it."[51]

In general, most quantitative analyses of new enterprises and business cycles point to an opposite, regular connection between their growth path. While an upswing in economic activity increases the trend growth of start-ups, a slowdown retard or decreases the rate of formation. Looking at the overall, long-term development of these variables between 1896 and 1939, there is not much evidence in this material which support the view that "the crisis [in the beginning of the 1930s] coincided with a substantial increase in business establishment".[52] Chart 4 gives an overview:

Chart 4: New enterprises and business cycles in manufacturing 1896-1939



Source: NOS Fjerde Række Nr. 99– NOS X. 44., *Industristatistikk* 1895/96-1939, Annual publications, Kristiania/Oslo: Aschehoug 1904-1942. Stoltz, Gerhard *Økonomisk Utsyn 1900-1950,* Samfunnsøkonomiske studier, Statistisk Sentralbyrå, Oslo: Aschehoug 1955.

Ignoring the highly incidental fluctuations inherent in war (1916-18) and labour conflicts (1931), we register three marked business downturns in the figure: 1901-03, 1920-22 and 1930/32. In the two recessions prior to the 1930s, there was significant decreases of new establishments, while during the Great Depression the upward trend from the second half of the 1920s came to an halt. However, since the decline in economic activity (manufacturing measured in constant prices) were larger in 1930/32 than in 1901-03 and not much inferior to the severe contraction of 1920-22, one should expect also the rate of start-ups to fall more. This did not happen. It points to some ordinary circumstances which in spite of the crisis were at work in the economy:

> "One must never forget that even during the worst depression some manufactures still earned money and showed profitability, even quite good profitability. New products and new possibilities were created continuously, maybe in a somewhat smaller extent than before, but it did happen."[53]

[50] Lange, *Samling om felles mål*, 28. Also in Sejersted, *Historisk introduksjon*, 145.
[51] Lange, Bedriftsetablering under depresjon, in Sejersted (ed.), *Vekst gjennom krise*, 131. Also in Sejersted, *Historisk introduksjon*, 146.
[52] Lange, Bedriftsetablering under depresjon, 128.
[53] Wasberg and Svendsen, *Industriens historie i Norge*, 202-203.

Such reasoning breaks with the logic of 'creative destruction' and new firms established as a result of crisis. Instead the attention is drawn to the facts that the rate of business start-ups were 'somewhat smaller than before', and that a subsequent upswing also would recover this rate. And so it did, indeed. From 1933-34, there is a upsurge in the growth of new establishments, which far outranged any positive trends during the period of depression.

In a throughout statistical analysis of the development of industrial firms, Frøystein Wederwang, former professor at the Norwegian School of Economics and Business Administration, confirmed the covariance between business cycles and new establishment during the 1930. While the net increase of firms (i.e. new establishments/entry – firm closures/exit) in relation to permanent firms between 1930-33 were 10 per cent (254 out of 2346), this rate almost tippled to 29 per cent between 1933-36 (780 out of 2638).[54] A closer look at the absolute numbers gives us also some additional information for the period preceding the depression:

Table 4 The net increase of firms 1927-35 (absolute numbers and percentage increases)

Period	Predepression 1927-29	Depression 1930-32	Recovery 1933-35
Net increase of firms	346	94	445
Percentage increase	12,4	3,0	13,1

Source: NOS VIII. 110. – NOS IX. 105., *Produksjonsstatistikk* 1927-1935, Annual publications, Kristiania/Oslo: Aschehoug 1930-1937 (the PS).

Between 1927-29, the growth of new establishment amounted to 12,4 per cent. In absolute numbers, 346 firms saw dawn. In the subsequent depression period of 1930-32, these magnitudes fell rather fast. The number of new firms was cut by three-quarters, reducing the growth rate to three per cent. In the recovery phase between 1933-35, a rise in business establishment followed. Slightly above 440 new firms were founded, re-establishing the growth rate at more than 13 per cent. Undoubtedly, when analysing these figures, changes in the number of firms were very cyclical in nature.

However, advocators of the supply-school have not accepted these conclusions. Two main objections have been raised. The first considers the practise of measuring net increases. When counting the number of new establishments one also has to add company closures as well. It is the gross numbers which counts, i.e. the absolute number of incoming firms in the economy.[55] And during depressions one must expect the exit rate of firms to be abnormal high, thus adding quite a lot to the net numbers. Frøystein Wedervang did though consider the discrepancy between net and gross figures, as well. As expected, he found the exit rate to be more sensitive to the business cycle than the incoming figures. But his gross numbers still not change the overall picture. While the net figure referred to above almost tippled in size between 1931-33 and 1933-35 (from 254 to 780), his gross account for new establishment also doubled with recovery, from 595 in the first period to 1083 in the second.

A second, more fundamental objection to the analysis made by Wedervang concerns the basic statistics underlying his estimates. He founded his calculations on annual production statistics, published from 1927 onwards (the PS). The sample of this statistics omitts branches like mining, dairies, bakeries and butcheries and smaller firms with less than five persons

[54] Wederwang, Frøystein, *Development of a Population of Industrial Firms*, Bergen: Universitetsforlaget 1965, 159-167, 263.
[55] Lange, Bedriftsetablering under depresjon, 126-127.

employed.[56] At average, only 30 per cent of manufacturing companies are included in the estimates. A more comprehensive source, and the one preferred by the supply-school, is the numbers collected by the National Insurance Administration (the NIA). Since 1896 this public agency registered manufacturing enterprises subordinated the law of accident insurance. The task of revising and publishing the data was in 1922 undertaken by Statistics Norway. Though the statistics only covered firms with employees and those which had installed machinery or steam engine of more than one horsepower, it still accounted for about 90 per cent of registered firms in the 1930s. [57] But also these figures have their severe drawbacks. A lack of funding prevented Statistics Norway from publishing any figures between 1931-33, in the midst of the Great Depression. So any inference made about crisis and new establishments based on these data must be rather dubious. Though not very out of ordinary procedures, that's exactly what the supply-school did.

In most of the analysis relating business establishments to depression, the supply-school compared the number of firms in 1930 with those appearing in 1934. A common practice was to contrast the net increases of start-ups in this period with the preceding five years of 1926-30. Whether considering overall figures, or particular manufacturing sectors, their findings commonly supported the conclusion that the "growth in the number of firms was considerable higher in the worst depression years than in the period before".[58] The problem with this depiction is of course the last year in the series. In 1934, recovery had lasted for until two years already. There is, however, a possible roundabout to avoid these fallacies without making to much harm to the economic reality. By adjusting the number of establishment between 1931 and 1933 with the annual fluctuations as expressed in the production cencuses, continuous series of the development of firms could be established.[59] The result of the computation process in presented in table 5:

Table 5 Development of industrial firms 1926-36 (average numbers and relative increases)

Period	Predepression 1 1926-28	Predepression 2 1928-30	Depression 1930-32	Recovery phase 1 1932-34	Recovery phase 2 1934-36
Number of firms	8 395	8 709	8 780	9 334	10 286
Percentage increase	3,03	3,73	0,82	6,30	10,21
In wood product industry	3 244	3 410	3 483	3 720	4 179
Percentage increase	3,19	5,13	2,13	6,82	12,32
In metal product industry	351	457	465	490	570
Percentage increase	9,4	1,7	2,3	5,0	16,0

Source: NOS VII. 194. - NOS IX. 131., *Industristatistikk* 1924-1936, Annual publications, Kristiania/Oslo: Aschehoug 1926 – 1938 (the NIA).

Aiming to compare the rate of new establishment before, during and after the Great Depression, the table shows the overall developments of firms between 1926-36. Some subsections of industries are included in order to contrast my findings to those of the supply-school. The growth of new establishment between 1926-28 and 1928-30 was 3.7 per cent, bringing about 314 additional firms. In the depression period of 1930-32, the up going trend come to a halt. The number of new firms was cut by more than three quarters, reducing the growth rate to about 0.8 per cent. In the recovery phase between 1932-34, the number of start-

[56] NOS VIII. 110., *Produksjonsstatistikk* 1927, Kristiania/Oslo: Aschehoug 1930, 2-3.
[57] This inference is based on comparison of the number of firms in the NIA and the Establishment censuses of 1936, which covered all firms (except self-employed) registered in Norway.
[58] Lange, Bedriftsetablering under depresjon, 127.
[59] A total of 29 branches were prepared.

ups surged. Almost 554 new firms saw dawn, re-establishing the growth rate at more than six per cent. The subsections present a similar pattern of cyclical development: growth – retardation – growth. A main difference may be read in the recovery phase of 1934-36. The increases are above the numbers given by the overall figures. Still, this was during a period of growth, not crisis. So any swarm of new, small establishments during the depression, there were definitely not.

3.4. When did the Consumers Wake Up?

Another important reason for many scholars' emphasise on supply-led recovery is observations of changes in household consumption. While the US, France and many other countries experienced a new age and a consumption boom in the 'happy days of the 1920s', Norway, pursuing gold parity of the krone during this decade, was delayed in its enjoyment to a typical westernised consumer society. But a breakthrough occurred allegedly in the wake of the depression of the 1930s. Along with establishment of new firms and production technology there was a change in pattern of demand, encouraging consumption on new items like vacuum cleaners, radios, bikes, rubber wears and furniture. The transformation was initiated by pressure from the crisis and in spite of falling total consumption between 1930-34 (current price estimations). The point to make, as emphasised by Fritz Hodne of the Norwegian School of Economics and Business Administration, is that;

> "[...] one should look at the changes in composition rather than at the total size of consumption expenditure. The national income figures, when disaggregated, suggest a far-reaching shift in consumption habits. The changed pattern of demand also provides a simple explanation as to why the downturn was checked. It was halted to extent that the supply side of the economy moved out of saturated markets into new growth industries. These tended to be profitable lines with new products experiencing rapid sales, produced by new firms, and run by new entrepreneurs, making their way up beside existing products and firms."[60]

When did consumers start to demand the new items and when did the entrepreneurs start to produce them? Under the auspice of Francis Sejersted, several empirical studies were carried out to answer this question at the University of Oslo in the 1970s. Even Lange focused on wood products and wood processing industry. Jan Vea concentrated on manufacturing of metal products and Olav Wicken on clothes and wearing. They all concluded in the same manner: depression initiated transformation by adoption of new technology and product innovation, thus realizing a potential demand with the consumers, who made a shift in their expenditures towards the new items. Fortunately, the annual production statistics published by Statistics Norway from 1927 make it possible to research these findings. By contrasting the production of 'new goods' during the depression with manufacturing before and after the slump, an overview is presented in table 6:

[60] Hodne, *The Norwegian Economy*, 84. Also in Sejersted, *Historisk introduksjon*, 142.

Table 6: Manufacturing statistics 1928-36. Samples of 'new goods'. Current values.(1000 kr.)

Period	Predepression 28-30		Depression 30-32		Recovery phase 32-34			Recovery phase 34-36	
Year	1928	1929	1930	1931	1932	1933	1934	1935	1936
Chocolate	13268	13651	13548	12576	12165	11914	12818	14084	16715
Soft drinks	1673	1887	2171	1586	2034	2220	2298	2596	3388
Women coats	2836	3126	3428	2960	3667	3548	3973	4289	4437
Dresses	2214	2331	2195	2274	2435	2435	2569	2668	3050
Suits	10622	11565	11215	8664	8357	7853	8062	9105	10461
Cotton fabrics	13085	13803	14239	9689	15772	13594	15640	16147	18860
Bricks	2833	3329	2929	1835	2642	1961	2152	2824	4255
Kitchen equip.	1057	1194	1298	855	1276	1436	1689	1761	2089
Electric equip.	2063	2397	1662	1610	2008	2325	2935	4326	6610
Bicycles	1072	1372	1405	1313	1092	1289	1673	2864	3047
TOTAL	50723	54655	54090	43362	51448	48575	53809	60664	72912

Source: Source: Source: NOS VIII. 161. – NOS IX. 131., *Produksjonsstatistikk* 1928-1936, Annual publications, Oslo: Aschehoug 1931-1938.

We find in figure 6 that the overall production value of 'new goods' diminished from 54,1 million kroner in 1930 to 51,4 million kroner in 1932. In the first recovery phase until 1934, the production hardly regained its former position at all. The annual growth rates were for instance less than in the pre-depression years of 1928-30, i.e. 2.2 per cent against 3.3 per cent, respectively. In the consolidation phase of the recovery, however, some fundamental alterations took place. Production of 'new manufactures' surged, supporting the inference of a changed pattern of demand and rising expenditures on modern consumption goods. But to state these sectors as leading the way during the critical phase of recovery from depression is not very accurate.

This view can be confirmed by looking at national income statistics. While the focus on composition of consumption rather than total demand may be justified when production pattern tend to shift, this is not the case when production (and hereof consumption) is the same as before. Then the strength of explanation must rely on analysis of the aggregates, on the basic macroeconomic relations between consumption, saving and investment. Table 7 gives an overview:

Table 7 Gross Domestic product (GDP) by category. Current prices and percentage distribution. Million kroner.

Year	1930	1931	1932	1933	1934	1935	1936	1937
GDP	4377	3842	3862	3866	4068	4362	4850	5581
Private consumption	3050	2839	2778	2749	2865	3024	3256	3651
as share of GDP (%)	69,7	73,9	71,9	71,1	70,4	69,3	67,1	65,4
Public consumption	330	322	307	301	307	328	356	384
as share of GDP (%)	7,5	8,4	7,9	7,8	7,5	7,5	7,3	6,9
Gross capital formation	1005	741	649	654	771	923	1081	1414
as share of GDP (%)	23	19,3	16,8	16,9	19	21,2	22,3	25,3
Export surplus	-8	-60	128	162	125	87	157	132
as share of GDP (%)	-0,2	-1,6	3,3	4,2	3,1	2	3,2	2,4
Export of goods and services	1300	1016	1026	1052	1102	1163	1347	1760
as share of GDP (%)	29,7	26,4	26,6	27,2	27,1	26,7	27,8	31,5
Import of goods and services	1308	1076	898	890	977	1076	1190	1628
as share of GDP (%)	29,9	28	23,3	23	24	24,7	24,5	29,2

Source: NOS XII. 163 1965, *National Accounts 1865-1960*, table 1. Domestic product by category. At current prices, 64-65.

While GDP in 1934 was about five per cent above the level of 1932, household consumption lags behind with a growth rate of only three per cent. This trend continued during the decade, as reflected in the fall of private consumptions' share of GDP from 71.9 per cent in 1932 to 65.4 per cent in 1937. And what people did not consume, they saved by investing their money somewhere. Additionally, a relative strong growth of almost 8 per cent in export of goods and services between 1932-34 gave a further stimulus to savings by rising national income and turning the net current account positive for the first time since the war. Investment did not lag much behind this shift in thrift behaviour. Indeed, it surges from 1933 to 1934 by 17.9 per cent, giving a strong growth impetus to the prevailing recovery. The upturn in *real* capital formation is shown in table 8:

Tabel 8: Annual volume changes 1933-1937

Year	1933	1934	1935	1936	1937
GDP	2,3	3,6	5,0	6,7	4,4
Private consumption	1,6	2,3	4,3	4,3	5,0
Gross capital format.	1,1	17,2	16,0	11,2	15,6
Export	5,4	4,0	3,3	9,5	9,8

Source: NOS XII. 163 1965, *National Accounts 1865-1960*, table 30 Domestic product by category. At constant prices, 244-245.

While export growth was strong already in 1933, increases in both private consumption and capital formation were more moderate. In 1934, however, investment outdid both household consumption and exports. But export was still stronger than the growth impetus given by consumption. The rise in investment, which continued during the entire recovery, was particularly pronounced in building industry. In 1934, allocation of total investment to business building and dwellings amounted to 34 per cent. Shipping and the agricultural sector

followed suit with 26 and 22 per cent, respectively. The share allotted to manufacturing industry was more modest, at 13 per cent.[61]

The consumers mood seemed most upbeat quite long after the through of the crisis. First in 1935 is growth in household consumption larger than the increase in export and it is never close to the magnitude of investment demand. To state the first phase of recovery as consumer-led is therefore difficult to accept. National income figures suggest rather that it was rising exports, import substitution and a positive current account balance which first stimulated higher domestic-sector investment. A similar strong impetus to capital formation came as real real interest fell along with rising prices and no need to protect the external exchanges after the collapse of the gold standard. From May 1933, the discount rate stabilised at its lowest level since the 1880s, triggering a housing boom which lasted almost the entire decade. Additionally, the rise of investment in the agricultural sector must be viewed against a background of market regulation and intervention. The Liberal government encouraged in the first part of the 1930s to comprehensive mergence of farmers in monopoly organisations in order to reduce competition, regulate prices, and to eliminate excess capacity. In combination with cheap money policy and regional support to farm new land, this secured income and stimulated investment in new machinery and equipment.[62]

In spite of these regulatory impulses, the recovery was for the most part market-driven. But not so much by entrepreneurs and independent supply-side factors as to foreign events and domestic demand for investment goods. Deliveries from manufacturing industry support this inference. While production of investment goods increased by almost a quarter from 1932 to 1934, manufacturing of consumption items rose by a mere five per cent.[63] The improved investment conditions, along with import substitution and relative tentative signs of an upturn of foreign demand for Norwegian goods and services, tempered hope also for the stimulation of consumption. Increased production called at first for more labour. Between 1932-34, total man-years worked grew by three per cent.[64] Advanced profitability gave room for higher wages, finally breaking the downward spiral by raising total labour income by 3.6 per cent in 1934.[65] Along with a surge in entrepreneurial income of 7.5 per cent same year, the result was an increase in total factor income at 5.6 per cent.[66]

All these factors worked to release the behaviour of thrift which had dominated the depression period. A new, optimistic mood developed among consumers, now keen to spend more money on lifestyle goods and to regain their position from the lost 1920s. The shift from export and investment-led recovery to consumer-led growth was supported by flexible entrepreneurs, being able to establish businesses and to start production which met the new demand. But the impulses for this adjustment did not principally arise from crisis, but by ordinary market signals emerging from improved conditions in export and capital goods industries. The redirection of an economy as dependent to shipping and raw material exports as Norway's towards domestic consumption did not either imply any abrupt change. It was a continuation of a process which had started several decades before. And the transformative

[61] NOS XI. 109 *Nasjonalregnskap 1930-1939 og 1946-1951*, table 32, Gross domestic fixed asset formation, by industry and type of asset. In millions of constant 1938 kroner, Oslo: Aschehoug 1952, 262-264.
[62] For a further overview of the microeconomic planning apparatus during the first part of the 1930, see for instance Hovland, Edgar, Mellom to kriger, Danielsen et al., *Grunntrekk i norsk historie*, Oslo: Universitetsforlaget 1991 (2000), 272-276. Grytten, Ola. H., The Consumer's Burden. What did regulations of the Norwegian milk market in the 1930s cost consumers?, Basberg et al., *I det lange løp. Essays i økonomisk historie tilegnet Fritz Hodne*, Bergen: Fagbokforlaget 1997.
[63] NOS XI. 109, table 37 Production accounts for the various industry sectors: 286-296.
[64] NOS XI. 109, table 38 Full time equivalent employment, by industry: 322-323
[65] NOS XI. 109, table 20 Wages and salaries, by industry: 166-167.
[66] NOS XI. 109, table 21 Entrepreneurial income, by industries: 172-173.

forces bringing the development forward were not as apparent during times of crisis and depression, as during periods of growth and prosperity.

4. Conclusions

Observing the controversies between explanations given weight supply and demand, respectively, some scholars may ask themselves: since they both seem to have some empirical roots, wouldn't we take comfort in efforts which try to compromise them? In a recent, published commentary on the discourse, Einar Lie of the University of Oslo speaks in favour of such an approach. By making an effort to synthesize the different views, Lie argue against positions stating recovery either as export-led *or* home-market driven. Rather, the growth dependent on both demands from abroad and at home. And the state of affairs would be worser off and the depression more severe without the one of them.[67]

Given the views as presented above, however, such a compromise seems to be difficult, perhaps even impossible. It may also imply a paradox of opinion. Everyone agrees on dramatic changes and supply-side transformations of domestic industries during the 1930s. But the question is when this happened. Was the first growth impetus to recovery connected to transformation induced by crisis? Or was it foreign events and demand that formed its key determinants? Of course one can answer *yes* to both these question, but then one should be aware of the constituting opinion of making such a choice.

As shown in this paper, the thorough Norwegian debate is not only a question about the forces which triggered recovery. It is also a question about more long-run priorities and the driving forces of history. Whether one regard economic development and transformation as result of 'Schumpeterian' crisis, or incline to view it as integral part of classical, self-sustained growth processes, both approaches implies a very particular understanding of the economic reality. To compromise them when giving explanations of historical change is obviously very difficult. One can't at the same momentum state that transformation emerged from crisis, when growth is its true source. Or vice versa.

Any act of balancing the different views must take these considerations into account. Only by considerable concessions from the one part, or by empirical falsification of the thesis of the other, can the profession reach agreement about the course of recovery. The goal of this paper has been to achieve such a task. Evidence from manufacturing statistics raises doubt about the view of regarding supply-side transformation as an independent movement with starting point solely in internal factors and crisis. Rather, the transformation of domestic industries must be viewed in interaction with events abroad and stimulation of national demand. Only by such measures can the 'Norwegian case' be reconciled with the broad international consensus in explaining the recovery of the Great Depression in the 1930s.

[67] Lie, Hjemmemarkedsledet *eller* eksportledet vekst på 1930-tallet? – Nei takk, begge deler, 494.