

The Wealth of a Nation: Norway's Road to Prosperity

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The Wealth of a Nation: Norways Road to Prosperity

By Ola Honningdal Grytten*

Abstract

The present paper discusses Norway's way to prosperity during the two last centuries. The main reason for its wealth seems to have been the ability to meet international demand by utilizing its rich natural resources, adopting efficient technology, and draw on a skilled labor force in order to gain high productivity and profitability.

Historical national accounts reveal that Norway's wealth was close to the western European average in the early nineteenth century. From the 1840s to the mid 1870s, Norwegian growth rates were very high, due to significant growth in foreign trade. This period was followed by relative stagnation until the 1890s, from when the country saw rapid industrialization on the basis of hydroelectricity.

After the two world wars Norway adopted a social democratic rule, with a high degree of economic planning, called the Nordic model. This has contributed to a large public sector and evenly distributed wealth and resources. The discovery of oil and gas on the Norwegian continental shelf marked a new era, when Norway experienced higher growth rates than most western economies. This has made it the country with the highest score in the United Nations Human Development Index (HDI) during the two first decades of the 21st century.

Key words: Economic history, economic growth, economic development, Norway.

JEL-codes: N00, N13, N14, O1

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One of the wealthiest countries in the world

According to national accounts, Norway has grown into one of the wealthiest countries in the world within the last decades, measured as gross domestic product per capita in purchasing power parities. According to the Human Development Index (HDI) of the United Nations Development Program, Norway had the highest human development for most years during the first decades of the 21st century (UNDP, 2019). On all parameters, i.e. gross domestic product (GDP) per capita, life expectancy, compulsory schooling, and education, the country obtains high scores. This gives an indication of a highly developed economy. It seems natural to believe that this comes as a fruit of the gas and oil exploitation on its continental shelf. However, research confirms that Norway obtained wealth long before the start of the petroleum adventure. The economic history of Norway explains when and why the country became rich.

Table 1. Human Development Index 1990-2018.

	1990	2000	2010	2013	2015	2016	2017	2018
1 Norway	0.850	0.917	0.942	0.946	0.948	0.951	0.953	0.954
2 Switzerland	0.832	0.889	0.932	0.938	0.943	0.943	0.943	0.946
3 Ireland	0.764	0.857	0.890	0.908	0.926	0.936	0.939	0.942
4 Germany	0.801	0.869	0.920	0.927	0.933	0.936	0.938	0.939
4 Hong Kong, China	0.781	0.827	0.901	0.916	0.927	0.931	0.936	0.939
6 Australia	0.866	0.898	0.926	0.926	0.933	0.935	0.937	0.938
6 Iceland	0.804	0.861	0.892	0.920	0.927	0.932	0.935	0.938
8 Sweden	0.816	0.897	0.906	0.927	0.932	0.934	0.935	0.937
9 Singapore	0.718	0.818	0.909	0.923	0.929	0.933	0.934	0.935
10 Netherlands	0.830	0.876	0.911	0.924	0.927	0.929	0.932	0.933
11 Denmark	0.799	0.863	0.910	0.926	0.926	0.928	0.929	0.930
12 Finland	0.784	0.858	0.903	0.916	0.919	0.922	0.924	0.925
13 Canada	0.850	0.868	0.895	0.910	0.917	0.920	0.921	0.922
14 New Zealand	0.820	0.870	0.899	0.907	0.914	0.917	0.920	0.921
15 United Kingdom	0.775	0.867	0.905	0.914	0.916	0.918	0.919	0.920
15 United States	0.860	0.881	0.911	0.914	0.917	0.919	0.919	0.920
17 Belgium	0.806	0.873	0.903	0.908	0.913	0.915	0.917	0.919
18 Liechtenstein	..	0.862	0.904	0.912	0.912	0.915	0.916	0.917
19 Japan	0.816	0.855	0.885	0.900	0.906	0.910	0.913	0.915
20 Austria	0.795	0.838	0.895	0.896	0.906	0.909	0.912	0.914

Source. UNDP (2019).

The wealth comes against a background which makes Norway a special case. In order to understand the country's economic development, it is important to shed light on some demographic, topographic and geographic facts. In the first place, the country had a

population of less than 0.9 million in 1801 against 5.5 million in 2021. The last implies a population density of 15 persons per square kilometer, which is among the lowest densities in the world (Statistics Norway, 2020). Norway has a cold climate, with a historical annual average temperature of zero degrees Celsius. It is basically mountainous, and almost 40 percent is covered by forests. It holds 339.000 islands, 455.000 lakes and has the third longest coastline in the world, with a continental shelf that hosts one of the largest volumes of biomass worldwide.

Norway possesses large natural reserves in oil and gas, fish, forests and fresh water and waterfalls. These have been utilized to the benefit of the wealth of its inhabitants. Hence, the country has been able to obtain growth from its natural resources. This is contrary to the experience of many other states with similar resources, experiencing what is denoted the course of natural resources. So, what can explain the Norwegian road to prosperity, and what can explain the downturns along this road?

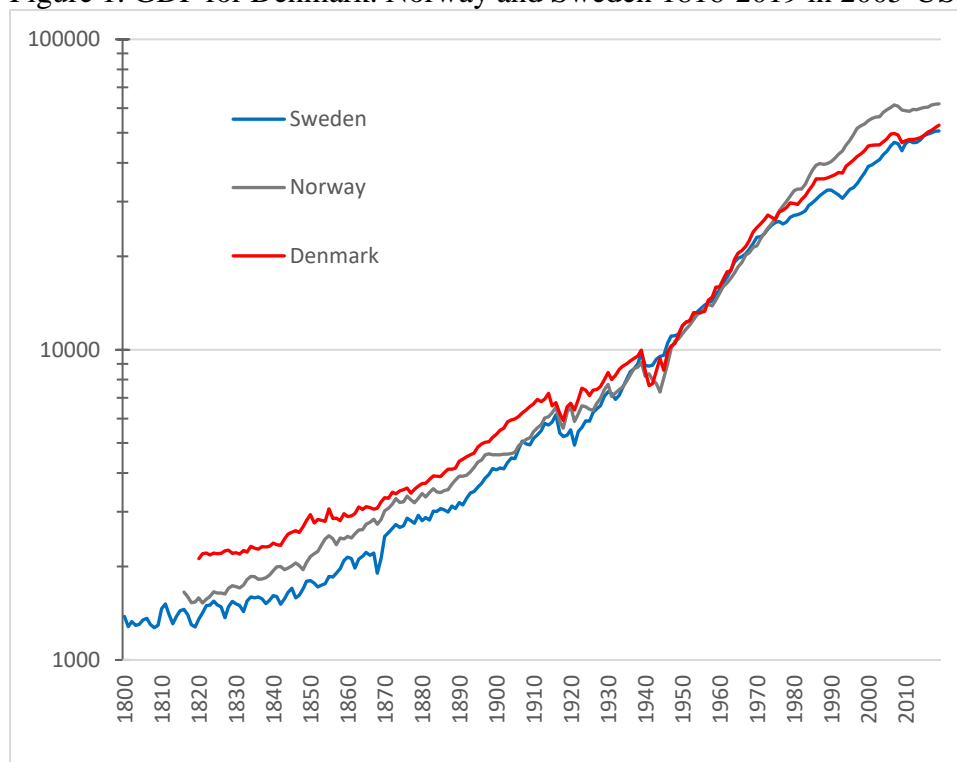
Economic growth

Historical national accounts reveal the levels and developments of value creation of a nation. The Norwegian historical national accounts stretch back to 1816. They report macroeconomic patterns for more than two centuries (Grytten, 2020a).

Figure 1 shows the development of GDP per capita in purchasing power parities for Denmark, Norway and Sweden from the early 1800s until 2019. The graphs depict economic development with takeoff for lasting economic growth during the 1820s, despite some fluctuations. Moreover, the graphs reveal that Norway was wealthier than Sweden during the time of the personnel union 1814-1905, but poorer than Denmark. This implies that the starting point for the Norwegian economy after independence in 1814 was close to the western European average. Only 15 years earlier Thomas Robert Malthus had been touring Norway with three research assistants and concluded the standard of living was close to that of England, and higher than on continental Europe (Malthus, 1799).

There was strong convergence in value creation between the three Scandinavian countries until 1917. Thereafter, they followed different patterns during the interwar years. Before convergence took place 1945-1975. Since then, oil and gas made Norway positively diverge from the two others. All in all, the annual compound growth rates for the three economies 1820-2019 were 1.63 percent for Denmark, 1.86 for Norway and 1.83 percent for Sweden.

Figure 1. GDP for Denmark, Norway and Sweden 1816-2019 in 2005-US\$.



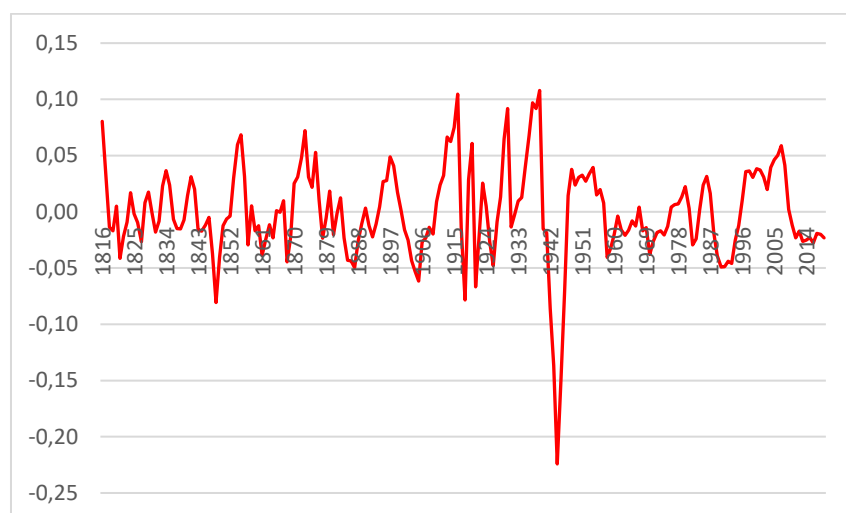
Source, Denmark: Hansen (1983). Norway: Grytten (2020a). Sweden: Edvisson (2010).

Cycles and phases of growth

Despite it is difficult to spot huge fluctuations in historical GDP in Figure 1, the development moves through different phases and cycles of growth, along with relative or absolute contractions. Figure 2 shows business cycles for Norway from 1816 until present. These are calculated as output gaps from a computed polynomial trend of GDP. The trend is calculated with a Hodrick-Prescott filter, which is smoothing the GDP timeline. The gaps between the actual GDP line and the smoothed GDP line define cycle values, called business cycles.

The graph shows huge fluctuations around the first and the second world war and around large economic crises, like the 1848 crisis, the Crimean crisis in the late 1850s, the long depression in the 1870s and 1880s, the Kristiania crisis 1900-1905, and during the interwar period. After the second world war, there was significant downturns during the Bank crisis 1988-1992, the financial crisis 2008-2010, and the Covid19 crisis of 2020. Normally, the cycles are within +/- five percent of the trend.

Figure 2. Output gaps (business cycles) in Norwegian GDP per capita 1816-2019.



Smoothing parameter annual series, lambda = 2.500.
Source, Grytten (2020a)

Looking at phases of growth, there are significant differences over time, as reported in Table 1. The strongest growth was recorded in the years 1945-1973. However, Norway saw lower growth than most of its trading partners in this period. The second strongest period was 1973-2019, when Norway had significantly higher growth rates than its closest trading partners. Finally, also the periods covering the years 1843-1973 and 1891-1914 were significant growth periods, when 1816-1843, 1873-1891 and 1914-1945, had substantially lower growth.

Table 1. Phases of Growth in GDP per capita for Norway 1816-2019.

Annual compound growth rates.

	GDP	GDP per capita
1816-1843	1.88	0.61
1843-1873	2.87	1.77
1873-1891	1.66	0.94
1891-1914	2.85	1.94
1914-1945	1.66	0.93
1945-1973	4.98	4.05
1973-2019	2.70	2.03
1816-2019	2.89	1.86

Source, Grytten (2020a).

Structural changes

Along with the economic growth, Norway saw a dramatic change in the industrial structure (Figure 3). The primary sector, i.e. agriculture, forestry, fisheries and hunting, fell from 55

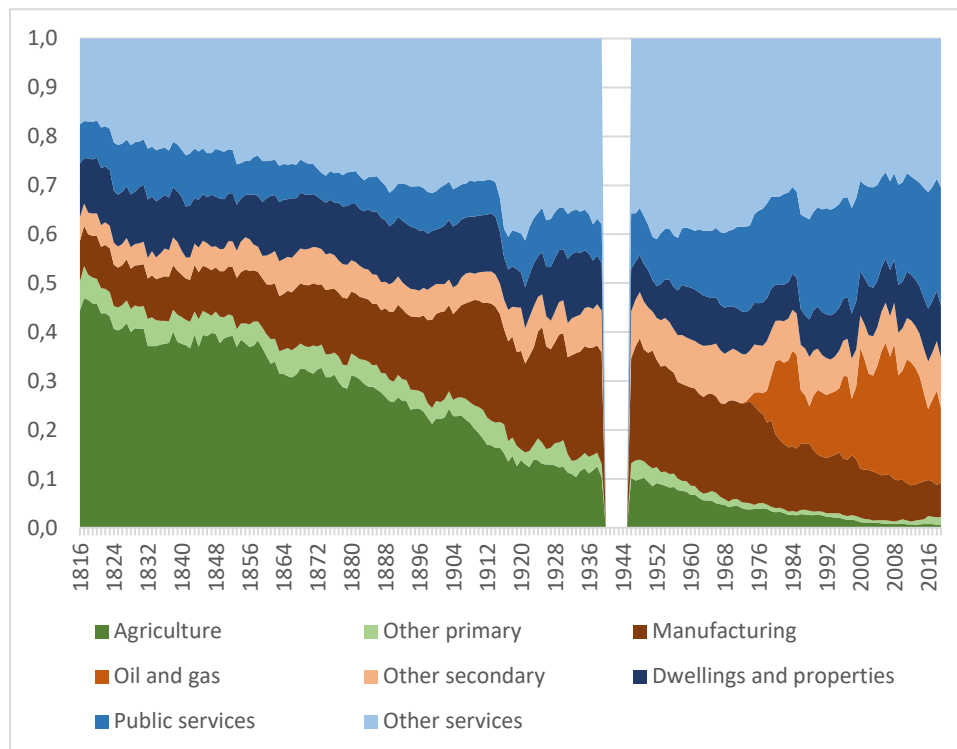
percent of the total Norwegian value creation around 1820 to around 2.5 percent in 2020. However, one should note that these industries are heavy suppliers to other industries. Thus, they are still far more important than at a first look at the figures. Calculations show that the ripple effects of agriculture and fisheries gives multipliers of around six, when second wave movements are included (Nordbø, 2020).

Manufacturing and other secondary industries reached a maximum of almost 35 percent just after the second world war. The first moderate manufacturing takeoff seems to have been around 1850, with a significant spurt from the 1890s (Venneslan, 2009). From the 1970s Norway experienced significant deindustrialization in traditional manufacturing, due to high labor costs. However, this was compensated for by a huge increase in oil and gas extraction from the Norwegian continental shelf. Thus, all in all the secondary industry accounted for around 35 percent of the Norwegian GDP in the years leading up to 2020.

Services always played a considerable role in the Norwegian economy. This was historically very much due to the merchant fleet, which became the third largest ocean going fleet in the world in the 1870s (Tenold, 2019). In addition, lack of self-sufficiency, made trade important. Dwellings also played an important part, due to the need of quality housing in the cold climate (Grytten, 2018). Services became the largest contributor to Norwegian GDP in the years leading up to the 1860s, and has held that position until presently, with around 65 percent of total value creation.

It is worth noticing that the relative decline in in agriculture, fisheries and forestry was a sign of success rather than failure. Less farmers and fishermen produced continuously more food. Hence, production from these industries increased significantly. The increase in productivity made it possible for labor to enter into new and growing industries. These transfer gains gave central contributions to economic growth.

Figure 3. GDP by main industries for Norway 1816-1819.



Source, Grytten (2020a).

Forming a national state

During the late 1700s, a liberal wave swept over the Western world and gained stronghold in Norway, which was under Danish rule. The liberal wave was displayed in popular support for increased religious, political and economic freedom. In 1776 the United States of America declared its independence. This move was followed up in 1787, by the establishment of a liberal American constitution. The French revolution in 1789, followed up by its constitution, marked the liberal wave in Europe.

Up front of the European momentum Adam Smith published his path breaking book on a liberal economic order. *An Inquiry into the Nature and cases of the Wealth of Nations* in 1776. The liberal wave gave inspiration to the possibility of establishing an independent Norwegian national state in 1814, as Danish 417-years rule over Norway was about to meet its conclusion. The Treaty of Kiel from January 14th, 1814 gave the rule of Norway over from the Danish to the Swedish king. This was a tribute to the latter, whom contributed to Napoleon's defeat, when the Danish king was on Napoleon's side. The situation made a political vacuum. Norwegian civil servants and industrialists saw this as an opportunity to organize an independent constitution. Elections were held in local churches and an assembly gathered swiftly and

constructed a written constitution and elected their own king on May 17th, 1814. Significant democratic and liberal rights were included in the constitution. This should pave the way for development and growth.

The Norwegian move towards independence was not supported by any of the significant powers in Europe. Thus, Sweden started an armed campaign in July 1814. The two powers agreed on a treaty at the Norwegian town Moss, close to the border, on August 14th the same year. Parliament agreed on a revised Norwegian constitution on November 4th. It gave increased power to the parliament and the people compared to the initial constitution. The Swedish king was to be regent in a personal union of two independent states. Hence, Norway obtained home rule with its own independent constitution, parliament, government, courts, central bank, armed forces and police authority (Danielsen, 1995).

Central in this became the establishment of important economic institutions, like the ministry of finance, the central bank and later a network of savings and commercial banks. When Norway gained its independence, it was a typical egalitarian country with a high degree of self-supply from agriculture, fisheries and hunting. According to the population censuses from 1801 and 1815 more than 90 percent of the population of 0.9 million lived in rural areas, mostly on small farms.

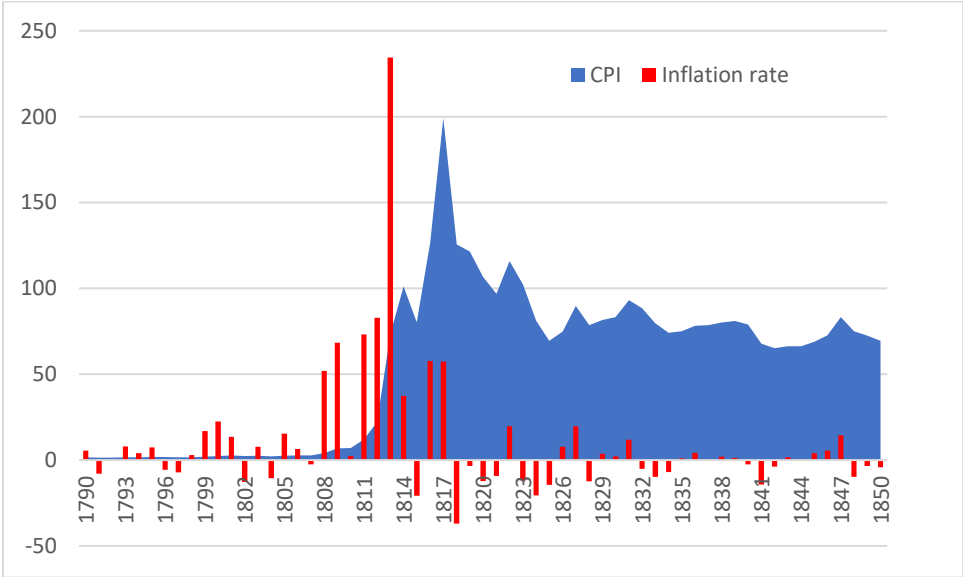
The communities in the North and the West were more dependent on fish and foreign trade than the communities in the south and east, which relied mainly on agriculture, but still had huge exports of timber. The public sector was around three percent and remained small during the entire century (Bjørsvik, 2004).

Institution building 1814-1842

The newborn national state had limited resources when it came to institutions, industrial entrepreneurs and domestic capital. This was to a large extent compensated for by huge stocks of natural resources. i.e. fish, timber and water. During the 18th century, these were better utilized as part of a growing market economy. Norway by that stood in the doorstep to economic development (Hutchison, 2012). Additionally, its localization was also favorable, with one of the longest coastlines in the world and closeness to the United Kingdom. The newborn independent state, connected to Sweden in a loose royal union, gradually seized its growth potential. After a short boom and recession, following the Napoleonic wars, the economy started its growth pattern in the 1820s.

The central bank, Norges Bank, was founded by Parliamentary act in 1816. Its main responsibility was to maintain a national currency, the speciedaler, pegged to silver. Additionally, the central bank was to provide financial assistance for the state and give loans both to public and private institutions and business activities (Lie, 2016). Europe saw high inflation during and after the Napoleonic wars, and Norway was no exemption. The cost of living inflation reached a stunning total of 13245 percent between 1791 and 1817. In 1813 alone it was higher than 234 percent (Grytten, 2020b).

Figure 4. Cost of living index for Norway (1913=100) and annual inflation rates 1790-1850.



Source Grytten (2020b).

The new national currency depreciated heavily during the first years after independence (Eitrheim et al, 2016). This made it difficult to attract foreign investors and for the state to take up loans abroad. In order to obtain a stable value of the currency, the parliament instructed the central bank to monitor deflationary policy aiming at reaching the par silver value. The central bank limited its money expansion, which gave boundaries for industrial expansion possibilities. However, this period saw the formation of both savings banks and entrepreneurial activity. Christiania Savings Bank was founded in 1822, and the year after Bergen Savings Bank started its operations. The Puritan leader Hans Nielsen Hauge (1771-1824) established a successful entrepreneurial network at the time. Hauge and his followers became pioneers within religious, industrial and financial activities, along with educational, political and welfare transformation (Grytten and Minde, 2019). They showed a remarkable

pace of social mobility, and contributed significantly to the modernization of the Norwegian economy and society (Dørum and Sødal, 2017).

The great boom

The currency reached its official par value to silver in 1842 after more than 20 years of tight monetary policy. Norway could now enter a period of stability and significant economic growth up to the mid 1870s. An important reason for the high growth was the closeness to the UK, which was the most important trading partner and an important source of imports of machinery and technical skills. As long as the UK did well, Norway did well.

The economic growth was significantly higher than that of most of its trading partners. During this period, a considerable growth in agricultural productivity and impressive growth in foreign trade made Norway take the last steps out of the Malthusian trap, implying that increase in food production was no longer eaten up by growth in population. Instead, increasing labor productivity in agriculture and fishing made abundant labor enter new industries, giving pace to economic growth (Grytten, 2010). Hence, the growth process was very much initiated by a technological process resulting in significantly more efficient agriculture and fisheries, along with the success in foreign trade. The adoption of new efficient production structures and technology along with substitution from arable to life-stock production made labor productivity in agriculture increase by 150 percent between 1835 and 1910 (Hodne and Grytten, 2000). Fisheries saw even higher productivity gains.

The exports of timber, fish and maritime services recorded significantly higher growth than in the rest of the economy. Norway became a major power in shipping services during this period, accounting for about seven percent of the world fleet in 1875. Norwegian sailing vessels freighted international goods at low prices globally (Brautaset, 2008).

The success of the Norwegian foreign sector can to a considerable degree be explained by utilization of natural resources as timber and fish. However, institutional factors also played an important role. Liberalization of world trade and high international demand secured a market for Norwegian goods and services. In addition, Norway had vast human resources in maritime skills. GDP per capita showed a compound growth rate of 1.8 percent 1843-1873, well above the European average (Maddison, 2007). At the same time the Norwegian annual rate of growth for exports was close to five percent. During the nineteenth century, shipping services, forestry and fish exports made up around 90 percent of total exports. However,

manufacturing rapidly gained market shares during the last decades of the century (Brautaset, 2002).

In the 1840s pioneers established the first modern large-scale mechanical and textile manufacturing industry plants in Norway (Lange, 1989). Production technology was imported from both the European continent and the United Kingdom. Large industrial plants, such as Aker Mekaniske Verksted in 1841, Arne Fabriker in 1846, and O. A. Devold in 1853, were located close to waterfalls or rivers to extract mechanical hydropower. With the establishment of Bergen Mekaniske Verksted in 1855, Norwegian ship building reached its takeoff. The abolishment of the British Navigation Act in 1850 made it possible for the Norwegian fleet to freely operate in freights for the British market (Sandvik, 2018).

A second wave of industrialization took place in the 1860s and 1870s when food processing and dairy production became mechanized manufacturing industries. Canning of fish was first done in Norway in 1841, but had its significant breakthrough with Stavanger Preserving from 1879. The product soon became one of the main food processing success along the west coast, when Northern Norway more stucked to the traditional dried cod.

During this great boom, Norwegian industry was dependent on foreign capital, imported mainly from Britain, Germany, Sweden and Denmark. Savings banks and networks of local investment consortiums to a large extent raised the domestic capital. The first Norwegian commercial bank, Christiania Creditkasse, was founded in 1848. The first full bread commercial bank, Bergens Privatbank, was finally established in 1855 (Grytten, 2014).

As an impact of the Danish-Norwegian reformation in 1536, reading skills became obligatory, as in order to take confirmation one should be able to read. Thus, compulsory schooling was introduced in 1739. Through this measure Norway acquired a generally skilled and independent labor force. A huge challenge had been the very high alcohol consumption, causing health problems and poverty, limited investments and low labor productivity. From the 1830s parliament, influenced by the puritan and the sobriety movements, took action to reduce alcohol consumption. At the same time, they introduced programs to improve health services and nutrition. Local governments established hospitals and local health services. Improved health care and nutrition along with a steady growth in the standard of living led to a significant increase in life expectancy (Grytten, 2009).

Relative stagnation 1873-1891

The long depression from mid 1870s to the early 1890s hit the Norwegian economy severely. GDP stagnated, in the mid 1870s and during the early and late 1880s. Prices fell until the 1890s. Signs of the stagnation are found in a large-scale immigration from Norway to North America during the 1880s. In the long-run immigration was basically a result of increased labor productivity in the primary sector, causing surplus labor to find jobs in the “New World”. In other words, immigration was basically a supply side phenomenon, and a sign of development rather than stagnation. However, in domestically bad times, unfavorable business cycles motivated people to leave (Abramitzky, 2017).

Additionally, the long depression did not have any big impact in North America. Thus, immigration from Norway reached its peak in 1882. That year 1.5 percent of the population left the country. In total, 250,000 Norwegians immigrated during the 15-year period 1879-1893, i.e. 60 percent of the birth surplus. Only Ireland recorded higher immigration rates than Norway between 1836 and 1930, when 860,000 Norwegians left the country (Semmingsen, 1960).

Norway’s dependence on the British economy largely explains the slowdown. The UK experienced relative decline through slower economic growth than the other major economies of the time. As a result of lower international growth, Norwegian exports fell during the recession years, but expanded during the rest. A second reason for the slowdown in Norway was the introduction of the international gold standard. Norway adopted gold as basis for its currency in January 1874. As many countries did the same, gold prices increased relative to silver prices, making currencies based on gold appreciate. Hence, the products of the gold standard countries became more expensive and they developed trade deficits. These caused negative current accounts, and thus, lack of capital. Consequently, the gold countries experienced huge contractions in their gold reserves, leading to lower money supply, since the volume of the money stock should have a stable ratio to the gold reserves. This had a deflationary effect, grappling the economy (Eitrheim et al, 2016).

Thus, Norway lost competitive power through a relative price increase of Norwegian products. In addition, lower money supply made domestic demand fall. A third contributor to Norway’s economic problems in the 1880s was the transformation from sailing to steam vessels. Norway had by 1875 the fourth biggest oceangoing merchant fleet in the world. Compared to the size of the economy it was a huge sector, accounting for around 40 percent

of income from exports at the time. However, due to lack of sufficient capital and technological skills, the transformation from sail to steam in the Norwegian fleet was slow (Harley, 2013; Tenold, 2019). Ship owners found a niche in cheap second-hand sailing vessels. Their strategy was to survive in diminishing markets. Finally, when the Norwegian fleet of steam vessels passed the volume of sailing vessels in 1907, Norway was no longer a major maritime power of the world.

A fourth explanation of the problems during the long depression is its lack of manufacturing industry. Manufacturing made newly industrialized economies thrive better during the recessions and depression of the 1870s and 1880s (Bruland, 2003). They gained new markets and through huge productivity increase also significant competitive power, which Norway to a low extent took part in.

Rapid industrialization from the 1890s

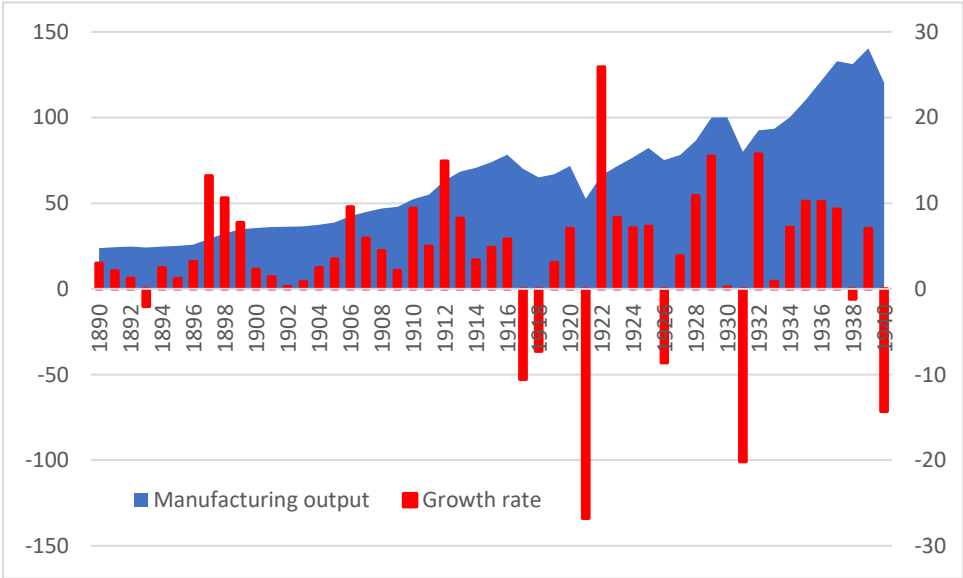
The first Norwegian large-scale modern manufacturing industry was established in the 1840s. According to historical national accounts, the first significant manufacturing growth started around 1850. Then, the final takeoff came in the 1890s (Venneslan, 2009). This was to a large extent a result of two demand side and two supply side factors. On the demand side we find an international increase in demand for technologically advanced products like electro chemical, electro metallurgical and electro technical products. Domestically, the large increase of the standard of living in the nineteenth century encouraged higher demand of highly processed products. On the supply side we find a remarkable increase in technical skills and an energy revolution caused by the electro motor, and even to a larger extent, hydroelectricity. Nowhere else in Europe was it possible to find better opportunities for taming rivers in order to produce electricity than in Norway. Additionally, many of the potential waterfalls to use for hydroelectricity production were located close to the fiords, meaning transportation would not be any problem (Leknes, 2018).

Substantial increase in labor productivity in agriculture, industrialization and inflationary monetary policy from the early 1890s created significant urbanization and booms in the cities. New banks were established to give loans to building of properties and new industry. After 1895 there were evident signs of overheating of the economy. House and stock prices increased dramatically, as financial speculation became common. As the central bank decreased its interest rents and increased its credits, money supply stepped up with 60 percent

between 1894 and 1899. Prices of dwellings increased between 40 and 70 percent in the major cities between 1895 and 1899. Thus, the boom created asset bubbles, which crashed in 1899. Property prices fell by 59 percent in Oslo and 43 percent in Bergen. It was followed by a major financial crisis, the Kristiania crisis, with stagnation in GDP per capita from 1900 to 1905 (Grytten and Hunnes, 2016).

Thereafter, a major wave of industrialization took place. Pulp and paper industries started to grow rapidly in the 1890s, when chemical industry grew even faster in the years to come. From 1905, when Norsk Hydro was established, manufacturing industry connected to hydroelectrical power had its takeoff. According to Figure 5 the period from the mid 1890s until 1916 marks a large industrialization period in Norwegian economic history, only disrupted by the consequences of the Kristiania crises 1900-1905 (Venneslan, 2008; Klovland, 2015). Export and import competing domestic industries were the winners. The rapid industrialization process continued in the 1920s and 1930s, but with large fluctuations due to major financial crises.

Figure 5. Output in Norwegian manufacturing 1890-1940.
 Volumes (1929=100) (left scale). Growth rates in percent (right scale)



Source, Klovland (2015).

Turbulent years 1914-1945

The years from the outbreak of the first world war to the end of the second world war represents a turbulent period both in Norwegian and international economy. Significant slumps occurred during the two last years during the first world war, in the early and mid 1920s, the first half of the 1930s, and finally during the second world war. In the years in between economic growth was surprisingly high. However, unemployment stayed on a persistently high level since the fall of 1920 until 1941.

First world war

Norway chose neutrality during the first world war. However, in terms of economic and financial matters, the government clearly took the side of the UK and their allies. Through a number of treaties Norway and the allied powers were admitted mutual advantages. During the first years, the Norwegian merchant fleet profited from the war through high freight rates. The economy showed significant growth in 1915 and 1916. Then, on January 31st, 1917, Germany declared naval war against non-friendly vessels. In consequence, the Norwegian fleet took heavy losses due to torpedo attacks by German submarines (Riste, 1965; Klovland, 2017). This also limited Norwegian foreign trade. A deep recession replaced a vibrant boom.

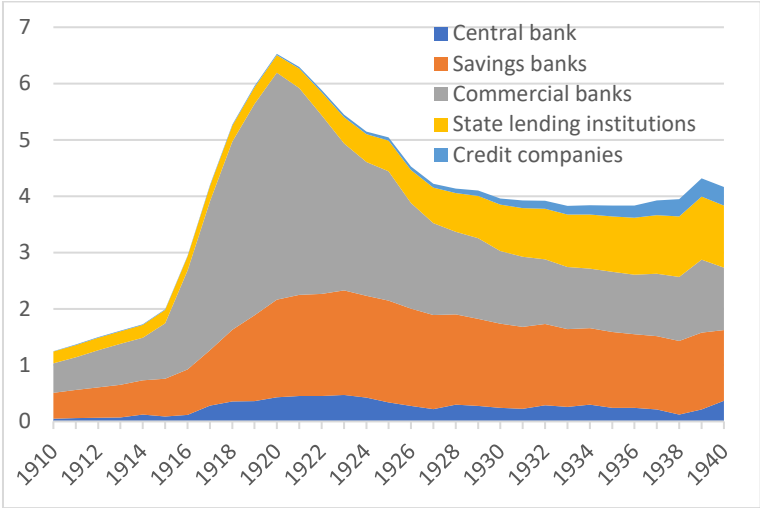
Like most countries, Norway suspended gold redemption in August 1914. The central bank lowered the interest rates significantly and increased their credit limits. Inflationary monetary policy along with a negative supply shift during the war made general demand high compared to supply. Huge savings were put into the stock market. When the war came to an end the surplus demand coincided with a positive shift in product supply. Savings in stocks and other assets were sold and used for investment and consumption (Brautaset et al, 2019). At the same time loans and credits increased dramatically to meet large investment demands. Hence, a significant boom hit the economy from early 1919 to the summer 1920. The boom was followed by high inflation, trade deficits, currency depreciation and overheating of the economy.

Crises and growth

The international postwar recession, from the autumn 1920 was more severe in Norway than in most countries. In 1921 GDP per capita fell by eleven percent, a contraction which was

only exceeded by the United Kingdom. As a small open economy, Norway was more sensitive to international recessions than most other countries. This was simplified by the fact that the recession hit the country’s most important trading partners, the United Kingdom and Sweden, very hard. Also, the combination of strong and pro-cyclical inflationary monetary policy from 1914 to 1920 and thereafter, tight monetary policy during the crisis made the depression deeper (Knutson and Ecklund, 2000).

Figure 6. Credit by source 1910-1940.



Source: Klovland (2004).

By the Autumn 1920, the Norwegian krone had lost 50 percent of its value compared to its par gold value. Thereafter, the central bank pursued a long but non-persistent deflationary monetary policy, aimed at restoring the par value of the krone (NOK) up to May 1928 (Klovland, 1998). When this policy was indecisive during the post war depression of the early 1920s, it was more targeted from the middle of the decade. In order to make the krone appreciate, interest rates were set up and credit volumes reduced during a period of deflation. In consequence, real interest rates reached astonishing levels of almost 40 percent during periods of recession, against minus almost 30 percent at the bottom during the war. Those who had borrowed money suffered from both appreciation of the currency and a huge increase in real interest rates during the depression. In consequence, they were not able to meet their obligations.

Norway was one of the worst performers in the western world during the 1920s. This can best be seen in the number of bankruptcies, a massive financial crisis and rocketing unemployment. Bank losses amounted to seven percent of GDP in 1923. Total unemployment

rose from one percent in 1919 to more than eight percent in 1926 and 1927. Within manufacturing the unemployment rate reached more than 18 percent (Grytten, 1995).

A rapid boom and success within the whaling industry and shipping services, contributed to a rapid recovery before the Great Depression hit Europe during the summer of 1930 (Basberg, 1985). The worst year for Norway was 1931, when GDP per capita contracted by eight percent. This was not only due to the international crisis but also to a massive and violent labor conflict that year. According to the implicit GDP deflator prices fell more than 63 percent from 1920 to 1933, making the period the hardest deflationary era in modern history.

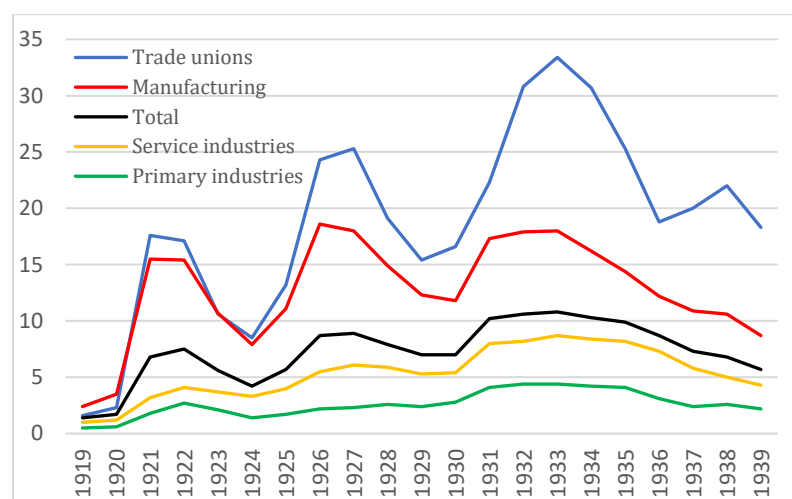
Nevertheless, the depression of the 1930s was milder and shorter in Norway and the Scandinavian countries than in most western countries (Grytten, 2008a). This can to a large extent be explained by the redemption of the gold standard at September 27th. 1931. Generally, the countries that left gold early, and thereby ran a more inflationary monetary policy, were the best performers in the 1930s (Sachs, 1990; Eichengreen, 1990; Grytten, 1998).

During the recovery period Norway experienced growth in manufacturing output, exports and import substitution. This can to a large extent be explained by currency depreciation (Eichengreen, 1984; Grytten, 2008b). Also, when the international merchant fleet contracted during the drop in international trade in the 1930s, the Norwegian fleet grew rapidly. Norwegian ship owners were pioneers in the transformation from steam to diesel engines, tramp to line freights and into a new expanding niche; oil tankers.

The primary sector still employed 30 percent of the Norwegian labour force during the interwar years. Both fisheries and agriculture struggled with over production. These were dealt with by introducing market regulations and cartels, partly controlled by the industries themselves and partly by the government (Hovland, 1979). This policy also paved the way for continuous subsidies for agriculture and fisheries.

The Norwegian business cycle reached its bottom in the last quarter of 1932 (Klovland, 1998). Despite a surprisingly rapid recovery and significant growth both in GDP and in employment, unemployment stayed at high levels. It reached around 14 percent during the winter of 1932-1933 (Figure 6). This was not only a consequence of the crisis, but to a large extent a positive labour supply shock, caused by immigration ban to the USA from 1930.

Figure 6. Unemployment Rates in percent of the labor force 1919-1939.



Source: Grytten (1995).

The standard of living improved for some groups when it declined for others. Those who kept their jobs in manufacturing, construction and crafts saw their real wages increase due to strong deflation. Purchasing power decreased in the primary sector, in private domestic services, and for the under and unemployed (Grytten, 2000).

Second world war

Denmark and Norway were both victims of a German surprise attack the 9th of April 1940. After two months of fighting, the allied troops evacuated Norway during the first days of June. On June 7th Norway surrendered and the royal family and government escaped to London.

From then on until the end of the war there were in reality two Norwegian economies; the domestic German-controlled and the foreign allied-controlled economy. The foreign economy primarily rested on income from the large Norwegian merchant fleet, which again was among the biggest in the world, accounting for more than seven percent of the global tonnage. About 90 percent of this floating capital escaped the Germans. The vessels were organized into a state-controlled company, called Nortraship. The company served at the major source of income for the foreign based economy (Basberg, 1993). The domestic economy, however, struggled with a significant fall in production, inflationary pressure and rationing of important goods, which three million Norwegians had to share with 400.000 occupants and 120.000 eastern European prisoners of war. All in all, GDP per capita fell by 20 percent during the

second world war. However, the German occupants started several infrastructure projects, i.e. building of roads, airports and fortifications. However, the productivity level fell back significantly (Milward, 1972; Frøland and Lervold, 2014).

The Nordic Model from 1945

After the German capitulation on May 7th, 1945, a major challenge was to reconstruct the economy and re-establish political and economic order. After a short period of unity government, the Labor Party, in office since 1935, took the opportunity to establish a strict social democratic rule. This implied a large public sector and widespread centralized economic planning. Norway first declined the American proposition of financial aid after the war. However, due to lack of hard currencies they accepted the Marshall aid program. By receiving 400 million dollars from 1948 to 1952, the country was one of the largest per capita recipients (Magid, 2012).

The Golden Era, 1950-1973

As part of the reconstruction efforts Norway joined the Bretton Woods currency system, the General Agreement on Tariffs and Trade (GATT), the International Monetary Fund (IMF) and the World Bank. Norway also chose to become member of the North Atlantic Treaty Organization (NATO) and the United Nations (UN). In 1958 the country also joined the European Free Trade Area (EFTA). The same year Norway made the krone convertible to the U.S. dollar, together with many other western countries.

The period from 1950 to 1973 is often called the golden era of the Norwegian economy. GDP per capita showed an annual compound growth rate of 3.5 percent. Foreign trade stepped up even more. Unemployment moved around one percent, and the inflation rate was stable, but high. The performance often been explained by the adoption of the Nordic model, with central government planning, a large public sector and significant market interventions and regulations (Lie, 1995). However, the Norwegian growth rate in the period was lower than that of most western nations, as shown in table 3. The same accounts for Sweden and Denmark. The Nordic model delivered social security and evenly distributed wealth, but it did not necessarily give very high economic growth (Hodne and Grytten, 2002).

Table 3. Annual compound growth rates in GDP per capita 1950-1970.

Country	Growth rate	Country	Growth rate
Japan	8.51	France	4.55
Italy	6.34	Belgium	4.15
Greece	6.30	Spain	4.01
Germany	5.64	Sweden	3.67
Austria	5.59	Denmark	3.46
Ireland	5.59	Norway	3.32
Finland	5.22	Iceland	3.22
Portugal	5.03	UK	2.58
Switzerland	4.75	USA	2.29
Netherlands	4.57	Canada	2.27

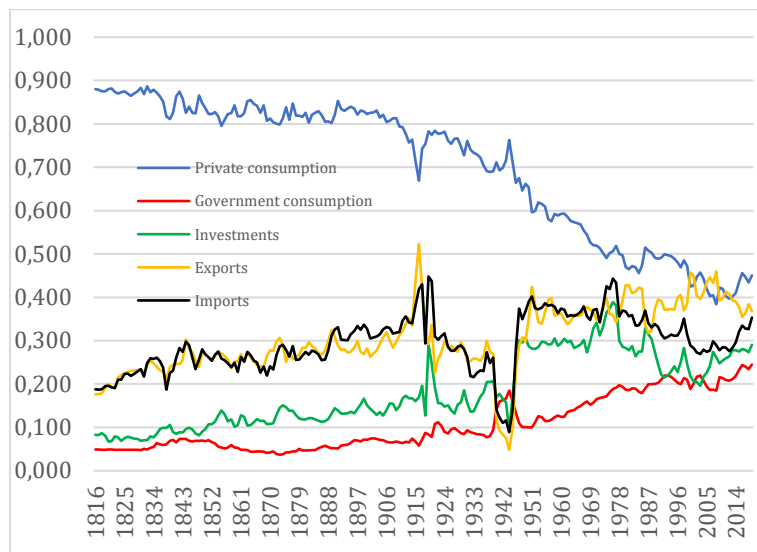
Source, OECD.

Central political goals in this period were high and stable economic growth, evenly distributed wealth and resources, low unemployment, low interest rates to obtain high levels of investments, and low inflation. In order to obtain high investments, the government by the ministry of finance set the interest rates for the banks. They were set under the market rents. At the same time tax deductions for financial costs were very generous. Hence, real interest rates after tax were negative. This gave pace to both investments and inflation. Thus, one had to introduce strong regulations with quotas in the credit market along with subsidies and price regulations (Hanisch et al, 1999). After a long period of stability, the system failed to solve the problems of stagflation in the 1970s.

The combination of economic stagnation and increasing inflation demanded new economic policy. In addition, the public sector reached 50 percent of the total economy and had become a heavy burden for the private sector through high taxes. At the end of the decade, the political parties almost unanimously agreed that the Nordic model had to be modified, and that one should restore market solutions (Lie, 2010).

Government consumption expenditures increased from around ten to 25 percent of total GDP after the second world war to present times. At the same time private consumption fell from around 70 to 40 percent (Figure 7). Investments were almost constantly at high levels, around 20-30 percent, due to low interest rates and later due to high oil and gas investments.

Figure 7. GDP from the expenditure side in percent of GDP.



Source, Grytten (2020a; 1-26).

Stagflation in the 1970s

The Bretton Woods system fell apart between August 1971 and March 1973. Just after, the oil price shock in the autumn 1973 made oil prices quadruple. Hence, most developed economies went into a period of prolonged recession and slow growth.

During the summer of 1969 Philips Petroleum discovered petroleum at the Ekofisk on the Norwegian continental shelf. This gave the Norwegian government the financial strength to run a countercyclical financial policy during the stagflation period in the 1970s. In consequence, economic growth was higher and unemployment lower than for other western countries. Since the countercyclical policy to a large extent focused on branch subsidies, Norwegian companies soon learned to adapt to policy makers rather than to the markets. Hence, Norwegian industry did not develop according to market requirements (Espeli, 1992).

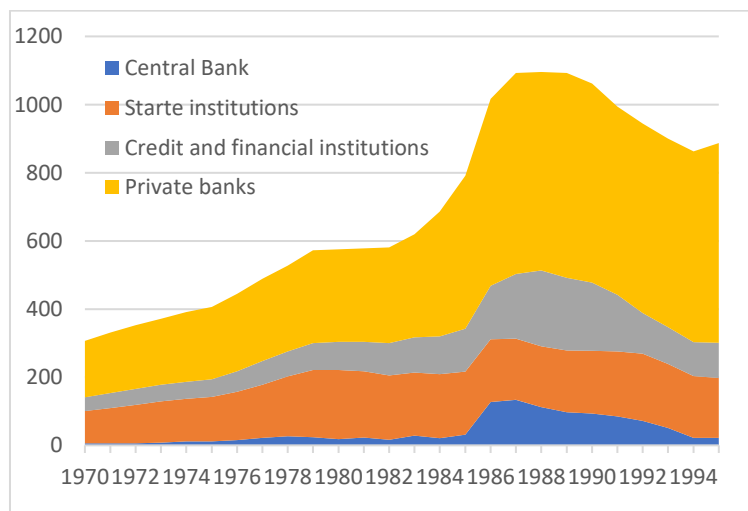
The high profits within the petroleum sector also gave a higher cost level than those of the trading partners. In result, Norwegian industry rapidly lost competitive power. Rapid deindustrialization took place, despite efforts to save manufacturing industry by state subsidies (Skonhoft, 1998). At the same time the high investment volumes, and profits in the petroleum sector, gave Norway higher growth rates than most other countries. Also, the country developed a high skill marine and maritime manufacturing industry. Norway experienced high growth rates in all the three last decades of the twentieth century, making it among the top nations of the world GDP per capita list at the dawn of the new millennium.

From boom to bank crisis in the 1980s

In 1981 a conservative government replaced the Labor Party, which had been in power for most of the post-war period. Norway had already joined the international wave of credit liberalization, and the new government speeded up this policy. Along with the credit liberalization, the parliament still ran a policy that prevented market forces from setting interest rates. Politicians still decided their levels in contradiction to the liberalization policy.

The level of interest rates was an important part of the political game for power. Thus, they were set significantly below the market level. In consequence, a substantial credit boom arised in the early 1980s. It continued to the late spring of 1986 (Knutson and Lie, 2002). In that year alone total credits increased by 38 percent. In consequence, Norway experienced monetary expansion and an artificial boom, an overheated economy and asset bubbles. When oil prices fell dramatically from December 1985 a substantial trade surplus was turned to a deficit.

Figure 8. Total credit by source 1970-1995 in billion fixed 1995 prices.



Source, Klovland (2004).

The government was forced to keep a tighter fiscal policy. Interest rates had become persistently high as the government tried to run a reliable and stable fixed-currency policy. During the summer of 1990 the Norwegian krone was officially pegged to the ECU. When an international wave of currency speculation reached Norway during autumn 1992 the central bank finally suspended the fixed exchange rate and decided devaluation.

In consequence of years of credit expansion, most western countries experienced financial crises. It was relatively hard in the Nordic countries, as they experienced a severe banking crisis. In Norway real prices of dwellings fell almost 43 percent. Mortgage holders couldn't meet their obligations, and bankruptcies and unemployment reached new heights. The state finally took over most of the larger commercial banks to avoid a total financial collapse (Aamo, 2016).

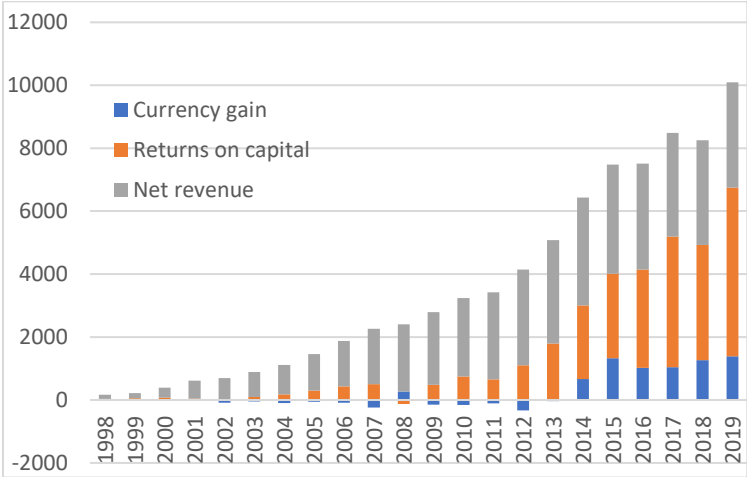
After the suspension of the ECU in December 1992 and the following devaluation, Norway experienced growth until 1998. This can to a large extent be explained by optimism, a long and persistent international boom, and high oil and gas prices. Thereafter the Asian financial crisis in 1998 rattled the Norwegian stock market. At the same time petroleum prices fell rapidly, due to internal disagreements among OPEC members. Hence, the krone depreciated. The fixed exchange rate policy had to be abandoned and the government adopted inflation targeting in March 2001. Along with changes in monetary policy, the new center coalition government was able to monitor a tighter fiscal policy. At the same time interest rates were high. In result, Norway escaped a new overheating process without any devastating effects for the real economy.

Globalization

Norwegians two times rejected membership in the European Union by referendums in 1972 and 1994. However, still the country put emphasis on a liberal foreign trade regime. It has taken part in the globalization process going on since the 1980s. High prices on oil and gas have been important sources of significantly higher growth in the economy and the standard of living than in other western countries. At the same time the economy has become dependent on petroleum revenues. It has been imperative to use this currency gift as part of a sustainable development. Parliament has deliberately been seeking to avoid Dutch disease with lost competitive power due to domestic overspending, the Norwegian Government Pension Fund Global was founded in June 1990, with its first operating year in 1998. The fund invests the Norwegian state's net revenue of oil and gas extraction in portfolios abroad. Up to three percent of its value can be used domestically in normal years (previously four percent). This is lower than its average return on capital of six percent during the years 1998-2019 (Norges Bank, 1920). At the beginning of 2020 the fund reached a value of approximately 1200 billion US dollars, which makes it to one of the largest investment funds

in the world. It has been decisive for counter-cyclical fiscal policy since the financial crisis of 2008.

Figure 9. Value of the Norwegian Government Pension Fund Global in billion NOK.



Source, www.nbim.no/no/oljefondet/markedsverdi/

The dot.com communication technology bubble and following crash early in the first decade of the 21st century led to a significant stock market crash. Thereafter, Norway followed the international business cycle. The world economy went into a significant boom. During the 1990s and early 2000s western countries adopted different forms of inflation targeting in their monetary policy. At the same time inflation rates were falling, basically due to imports of cheap labor from Eastern Europe, lower information technology costs and increase in labor productivity. This made central banks worldwide reduce their key interest rates. Market rents fell, which gave incentive to high investments financed by credits.

Financial crisis 2007-2010

The period leading up to 2008 saw huge credit expansion, high investment rates and the creation of asset bubbles in stock markets and the property markets. Norway experienced the longest and strongest continuous increase in house prices ever between January 1993 and the summer of 2007 as the real prices of swellings stepped up more than three times in 14.5 years. During that period the credit and property markets lost financial stability. The financial crisis hit the world economy devastatingly from the second half of 2008. Countries saw dramatic stock market and house market crashes.

The bubbles were created by a far too high increase in gearing, i.e. borrowed money. When credit institutions became hesitant to prolong loans, international markets rapidly turned down. Property prices plummeted and investors, banks and credit institutions took heavy losses. Several of them went bankrupt. In consequence, they stopped giving mutual loans and many became illiquid. Thus, the credit markets stopped to provide necessary credits to business worldwide (Reinhart, 2009). This resulted in the biggest international recession in peacetime since the 1930s.

The stock market crash was severe in Norway as stock prices fell by 64 percent between May and November 2008. Real house prices stepped down 18 percent from Summer 2007 until the end of 2008. Prices on North Sea oil were reduced from 160 US dollars per barrel to 30. However, a rapid reaction by OPEC, limiting its member states production, made oil prices recover rapidly. In consequence, Norwegian GDP fell less than in most other countries.

The financial crises and the following recession made governments take action. Crisis measures were given to secure liquidity in the markets via state guarantees and bailouts. In addition, counter cyclical fiscal and monetary policy gave impulses to the demand side of the economy. For some countries huge public spending led to a government debt crisis (Reinhart, 2011).

The Norwegian government through swapping of securities guaranteed for Norwegian banks and credit institutions when illiquidity hit the money market during Autumn 2008. By this crisis measure, banks were again able to borrow money and provide companies with credits. At the same time the central bank lowered its key interest rate with 1.75 percent units. During the winter of 2009 the parliament substantially increased fiscal spending (Bernhardsen, 2009). In sum, Norway did better than most other western countries during the crisis. This was due to relative low risk exponentiation by credit institutions, large reserves in the global pension fund and the rapid recovery of petroleum prices. When several states ran substantial governmental deficits and increased their debts dramatically, the Norwegian state had no funding problems. Thus, Norway also escaped a government debt crisis.

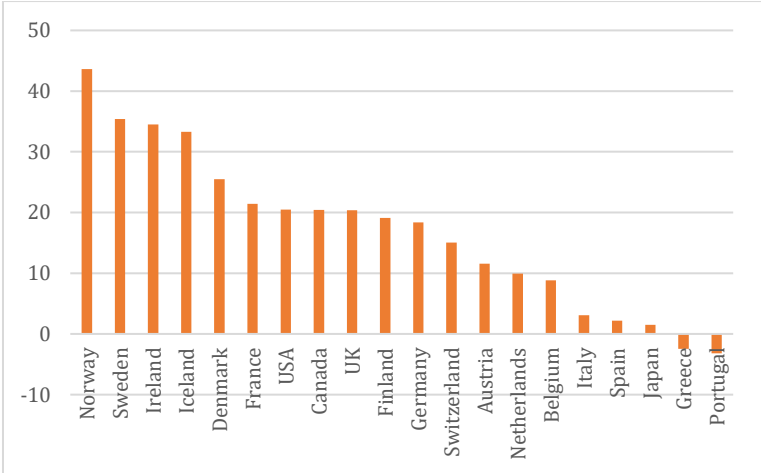
Shocks and increasing standard of living

The years after the financial crisis saw new growth and prosperity. Unemployment rates fell and the standard of living increased significantly (Figure 10). High prices on oil and gas

secured high investment volumes in petroleum related industries. Labour force continued to migrate from Eastern Europe and the Nordic countries.

In the second half of 2014 North Sea oil prices started to fall from 115 dollars per barrel to around 30 dollars in January 2016. This was to a large extent due to competition from shale oil. At the same time Norwegian extraction volumes of oil and gas was falling. More than 50,000 jobs were lost in the petroleum related industry and the huge large Norwegian maritime sector recorded heavy losses (Koilo and Grytten, 2019).

Figure 10. Increase in real wages in percent 2000-2019.



Source, OECD.

This made political focus shift over more to green energy and green economy for the future, and the government and parliament sought to confirm Norway’s pioneer role in the green shift. Norwegian shipyards shifted from building offshore vessels for the oil industry to build “green” expedition and cruise ships (Koilo, 2019). Gradually oil prices started to increase again, and economic growth stepped up. A relatively weak currency made exports and tourism blossom.

The boom lasted until the second half of March 2020, when the Covid19 pandemic hit the world economy with a devastating negative supply side shock. Worldwide, governments closed down the economy, seeking to prevent the epidemic to spread. This also caused a negative shift in demand and a huge economic crisis with the largest fall in GDP and highest increase in unemployment ever recorded during a month in April. Oil prices again plummeted

due to the large fall in demand for energy. At their lowest they even became negative. However, during the summer and autumn of 2020 one saw signs of a moderate global and domestic recovery.

Conclusions

During the last 200 years Norway has developed to become one of the countries with the highest living standards in the world. Already when it gained its independence in 1814 it was fairly well off, compared to other countries. The continuous growth process started in the 1820s, and from the 1840s the growth rates accelerated.

During the 19th century Norway was transformed from being an agricultural society to becoming a modern economy of its time with significant foreign trade, growing manufacturing industry and a well-functioning market economy. The takeoff in manufacturing came with hydroelectricity at the turn of the century, and the country saw impressive growth in the years following up to the first world war.

The interwar period saw three significant crises, in the early 1920s, the mid 1920s and the first half of the 1930s. In between these years the growth was impressively high, despite persistently high unemployment rates.

After the second world war Norway joined international institutions to ensure foreign trade, corporation and wealth. At the same time the country chose the Nordic model with a high degree of planning and a large public sector to ensure welfare and even distribution of wealth and resources. In 1969, Norway entered into the petroleum age by extracting oil and gas from its continental shelf. Despite significant financial crises since the late 1980s, the growth in the economy and the standard of living has brought Norway to the top of the Human Development Index for the two first decades of the 21st century.

During the same period the world economy experienced several negative economic shocks. The financial crises 2007-2010 included a governmental debt crisis. Norway was less exposed to this crisis due to more careful credit policy by banks, and substantial capital reserves in the foreign government sovereign fund. However, economic growth decreased due to falling oil prices from 2014 and finally contracted due to the Covid-19 pandemic crisis in 2020.

The main reasons for the economic development during the two centuries period seem to have been efficient utilization of the three central production factors labour, capital and natural

resources, which has resulted in significant multifactor productivity growth. An important reason for this has been good and relevant institutions like a functional and stable democracy, legal system, and incentives to produce. This has made it possible for Norway to avoid the course of natural resources, as the combination of the abundance of natural resources and efficient institutions made Norway a wealthy country.

References

Aamo, B., S. (2016). *Læring fra Kriser*. (Bergen: Fagbokforlaget).

Abramitzky, R., and Boustan, L. (2017). "Immigration in American Economic History." *Journal of Economic Literature*. 55 (4): 1311-45. Doi: 10.1257/jel.20151189

Basberg, B. L. (1985). "Technological transformation in the Norwegian whaling industry in the interwar period." *Scandinavian Economic History Review* 33(2): 83-107.
Doi: 10.1080/03585522.1985.10408044

Basberg, B. L. (1993). *Handelsflåten i krig 1939-1945. Nortraship: alliert og konkurrent*. (Oslo: Dreyer).

Bernhardsen, T., Kloster, A., Smith, E., and Syrstad, O. (2009). "The financial crisis in Norway: effects on financial markets and measures taken." *Financial Markets and Portfolio Management* 23: 361–381. Doi.org/10.1007/s11408-009-0115-0

Bjørsvik, E. (2004). *Public Services in Norway 1830-1865 within the framework of historical national accounts*. Bergen: NHH. openaccess.nhh.no/nhh-xmlui/bitstream/handle/11250/163511/Bjorsvik_2004.pdf?sequence=1&isAllowed=y

Brautaset C., and Tenold, S. (2008). "Globalisation and Norwegian shipping policy, 1850–2000." *Business History* 50(5): 565-582, Doi: 10.1080/00076790802245949

Brautaset, C. (2002). *Norwegian Exports. 1830-1865: In Perspective of Historical National Accounts*. Bergen: NHH).

Brautaset, C., Ecklund, G., and Øksendal, L. F. (2019). *Børsen: Markeds plass og møteplass 1819-2019*. (Oslo: Universitetsforlaget).

Bruland, C. (2003). British Technology and European Industrialization
Business History 44(2): 88- 111.

Damsgaard E. H. (2001). *European Economic History: From Mercantilism to Maastricht and Beyond*. (Copenhagen: Copenhagen Business School Press).

Danielsen, R., Dyrvik, S., Grønlie, T., Helle, K, and Hovland, E. (1995). *Norway: A History from the Vikings to Our Own Times*. (Oslo: Scandinavian University Press).

Dørum, K. and Sødal, H.K. (2017). *Hans Nielsen Hauge: fra samfunnsfiende til ikon*. (Oslo: Cappelen Damm Akademisk).

Edvinsson, R. (2013). “New annual estimates of Swedish GDP, 1800-2010.” *Economic History review* 66(4): 1101-1126.

Eichengreen, B. (1990). “The gold-exchange standard and the Great Depression.” In Eichengreen, B. (ed). *Elusive Stability: Essays in the History of International Finance, 1919-1939*. (Cambridge: Cambridge University Press): 239-270. Doi: 10.1017/CBO9780511664397

Eichengreen, B., and Sachs, J. (1984). “Exchange Rates and Economic Recovery in the 1930s.” *The Journal of Economic History* 45(4): 925–946.

Espeli, Harald (1992). *Industripolitikk på avveie motkonjunkturpolitikken og Norges Industriforbunds rolle 1975-1980*. (Oslo: Ad Notam Gyldendal).

Frøland, H. O; and Lervold, A. (2014). “Forced Labour in Norway during the German Occupation: French and Soviet Workers in the Light Metals Program.” *Revue d'histoire Nordique* 17(1): 71-100.

Grytten, O. H. (1995). "The Scale of Norwegian Interwar Unemployment in International Perspective." *Scandinavian Economic History Review*. 43(2): 226-250.

Grytten, O. H. (1998). "Monetary Policy and Restructuring of the Norwegian Economy During the Years of Crisis 1920–1939." In Müller, M., Myllyntaus, T. (eds). *Economic Crises and Restructuring in History. Experiences of Small Countries*. (St. Katharinen: Scripta Mercaturae: 93–124.

Grytten, O. H. (2000). "Differences in the standard of living in inter-war Norway." *Scandinavian Economic History Review*. 48(3): 22-41.
Doi: 10.1080/03585522.2000.10419833

Grytten, O. H. (2008a). "Why was the Great Depression not so great in the Nordic countries?" *The Journal of European Economic History* 37(2/3): 369-403.

Grytten, O. H. (2008b). A small country's policy response to global economic disintegration during the interwar years. In Müller, M., and Myllyntaus, T. (eds). *Pathbreakers: Small European countries responding to Globalization and deglobalization*. (Bern: Peter Lang).

Grytten, O. H. (2009). "Purchasing Power of Labour: Norwegian Real Wages, 1726–2006." *Scandinavian Economic History Review*. 57(1): 48-87.
Doi: 10.1080/03585520802700256.

Grytten, O. H. (2018). "Historisk blick på eiendomsmarkedet: prisdrivere for bolig." In Ringen, Ø. K., Røsnes, A. E. (eds). *Eiendom og eierskap*. (Oslo: Universitetsforlaget): 72-88

Grytten, O. H. (2020a). "Two Centuries of Economic Growth: Norwegian GDP 1816-2020." NHH Dept. of Economics Discussion Paper No. 10/2020. Doi: 10.2139/ssrn.3632902

Grytten, O. H. (2020b). "Revising price history: consumer price index for Norway 1492–2018." *Scandinavian Economic History Review* 68(2): 129-144.
Doi: 10.1080/03585522.2020.1714714

Grytten, O. H., and Hunnes, A. (2010). "Økonomisk og demografisk interaksjon i det førindustrielle Norge. Finner vi økonometriske spor av Malthus?" In Knudsen, J. P.; and Sødal, S. (eds). *Økonomi og tid*. (Bergen: Fagbokforlaget): 85-101.

Grytten, O. H., and Hunnes, J. A. (2016). *Krakk og kriser i historisk perspektiv*. (Oslo: Cappelen Damm Akademisk).

Grytten, O. H., and Hunnes, A. (2014). "An anatomy of financial crises in Norway. 1830-2010." *Financial History Review*. 21(1). 25-57. Doi: 10.1017/S0968565013000279.

Hansen, S. Aa. (1983). *Økonomisk vækst i Danmark 1914-1983*. (Copenhagen: Akademisk Forlag).

Hanisch, T. J., Sjøilen, E., and Ecklund, G. (1999). *Norsk økonomisk politikk idet 20 århundre: Verdivalg i en åpen økonomi*. (Kristiansand: Høyskoleforlaget).

Harley, C. K. (2013). "The shift from sailing ships to steamships. 1850-1890: a study in technological change and its diffusion." In McCloskey, D. (ed). *Essays on a Mature Economy: Britain After 1840*. (Milton Park: Taylor & Francis).

Hodne, F. and Grytten, O. H. (2000). *Norsk økonomi i det 19. århundre*. (Bergen: Fagbokforlaget).

Hodne, F. and Grytten, O. H. (2002). *Norsk økonomi i det 20. århundre*. (Bergen: Fagbokforlaget).

Hovland, E. (1979). "Smør og margarin blir ett fett." *Historisk tidsskrift* 52(3):305-325.

Hutchison, R. (2012). *In the Doorway to Development: An Enquiry into Market Oriented Structural Changes in Norway ca. 1750-1830*. (Leiden: Brill).

Klovland, J. T. (1998). "Monetary policy and business cycles in the interwar years: The Scandinavian experience." *European Review of Economic History*. 2(2): 309-344.

- Klovland, J. T. (2004). "Monetary aggregates for Norway 1819-2003". In Eitrheim, Ø., Klovland, J. T., and Qvigstad, J. F. (eds). *Historical Monetary Statistics for Norway. 1819-2003*. Oslo: Norges Bank Occasional Papers 35: 181-240.
- Klovland, J. T. (2015). "Measuring trends and cycles in industrial production in Norway 1896-1948." Working Paper Norges Bank. 18/2015.
- Klovland, J.T. (2017). "Navigating through torpedo attacks and enemy raiders: Merchant shipping and freight rates during World War I." Discussion paper SAM 07/2017 (Bergen: NHH – Norwegian School of Economics)
- Klovland, J. T. (1998). "Monetary Policy and Business Cycles in the Interwar Years: The Scandinavian Experience." *European Review of Economic History* 2(2): 309-344.
Doi.org/10.1017/S1361491698000148
- Knutsen, S., and Ecklund, G. (2000). *Vern mot kriser? Norsk finanstilsyn gjennom 100 år*. (Bergen: Fagbokforlaget).
- Knutsen, S., and Lie E. (2002). "Financial Fragility, Growth Strategies and Banking Failures: The Major Norwegian Banks and the Banking Crisis, 1987-92."
- Koilo, V. (2019). "Sustainability issues in maritime transport and main challenges of the shipping industry." *Environmental Economics*10(1): 48-65. Doi: 10.21511/ee.10(1).2019.04
- Koilo, V., and Grytten, O. H., (2019). "Maritime financial instability and supply chain management effects." *Problems and Perspectives in Management*, 17(4): 62-79. Doi: 10.21511/ppm.17(4).2019.06
- Lange, E. (1989). *Teknologi i virksomhet. Verkstedsindustri i Norge etter 1840*. (Oslo: Ad Notam Forlag).
- Lie, E. (1995). *Ambisjon og tradisjon. Finansdepartementet 1945-1965*. (Oslo: Universitetsforlaget).

Lie, E., and Venneslan, C. (2010). *Over evne: Finansdepartementet 1965-1992*. (Oslo: Pax Forla).

Maddison, A. (2007). *The World Economy*. Development Centre Studies. (Paris: OECD).
[amazon.com/World-Economy-Development-Centre-Studies/dp/9264022619](https://www.amazon.com/World-Economy-Development-Centre-Studies/dp/9264022619)

Magid, J. (2012). "The Marshall Plan." *Advances in Historical Studies* 1(1): 1-7. Doi: 10.4236/ahs.2012.11001.

Milward, A. (1972). *The Fascist Economy in Norway*. (Oxford: Oxford Clarendon Press).
Doi.org/10.1177/000271627240300144

Nordbø, M. (2020). Resource rent taxation in the mirror of ripple effects in Norwegian fisheries. (Oslo: Norwegian School of Management).

Norges Bank (1920). www.nbim.no/no/oljefondet/oljefondets-historie/

Reinhart, C. M., and Rogoff, K. S. (2009). "The Aftermath of Financial Crises." *American Economic Review* 99(2): 466-72. Doi: 10.1257/aer.99.2.466

Reinhart, C. M., and Rogoff, K. S. (2011). "From Financial Crash to Debt Crisis." *American Economic Review* 101(5): 1676-1706. Doi: 10.1257/aer.101.5.1676

Riste, O. (1965). *The Neutral Ally: Norway's Relations with Belligerent Powers in the First World War*. (Oslo: Universitetsforlaget)

Sachs, J. (1990). "Exchange rates and economic recovery in the 1930s." In Eichengreen, B. (ed). *Elusive Stability: Essays in the History of International Finance, 1919-1939*. Cambridge University Press: 215-238. Doi: 10.1017/CBO9780511664397

Sandvik, P. T. (2018). *Nasjonens velstand. Norges økonomiske historie 1800-1940*. (Bergen: Fagbokforlaget).

Semningsen, I. (1960). "Norwegian emigration in the nineteenth century." *Scandinavian Economic History Review* 8(2): 150-160. Doi: 10.1080/03585522.1960.10411427

Skonhoft, A. (1998). "Industrialisation and deindustrialisation in Norway. 1960–1990." *Scandinavian Economic History Review* 46(3): 23-41. Doi: 10.1080/03585522.1998.10414746

Tenold S. (2019). "A Brief Introduction to Norwegian Shipping." In Tenold, S (ed). *Norwegian Shipping in the 20th Century*. Palgrave Studies in Maritime Economics. (London: Palgrave Macmillan). Doi: 10.1007/978-3-319-95639-8_1

Tenold, S. (2019). *Norwegian Shipping in the 20th Century. Norway's Successful Navigation of the World's Most Global Industry*. (London: Palgrave Macmillan).

UNDP (2019). *Human Development Report 2019*.

Venneslan, C. (2009). "Electrification and industrialisation: An assessment of the industrial breakthrough in Norway." *Scandinavian Economic History Review* 57(2): 124-155. Doi: 10.1080/03585520902799638

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