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## Introduction to Ragnar Frisch's pamphlet

### *Saving and Circulation Regulation*

by

**Olav Bjerkholt and Jan F. Qvigstad<sup>1</sup>**

Ragnar Frisch's pamphlet *Saving and Circulation Regulation* from 1933 (Frisch, 1933a), originally a series of three articles in the Oslo newspaper *Dagbladet* in January 1933, shows us an economist deeply concerned about the depression that had hit Norway and a number of other countries from around 1930. That concern was surely shared by many other economists but a remarkable characteristic of Frisch's pamphlet is the insightful and constructive macroeconomic reasoning that it displayed at a time when the term "macroeconomics" had not yet been coined. Frisch set out the saving paradox as an explanation of how the macro economy, left to itself, might contract as a result of many agents doing what seemed individually rational, and called for the government to take responsibility for stabilizing activity through monetary means. In this connection he proposed the establishment of national accounts as a tool for the macroeconomic management of the economy.

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<sup>1</sup> Correspondence: Olav Bjerkholt, Professor of Economics, [Department of Economics](#), University of Oslo, P.O. Box 1095, Blindern, 0317 Oslo, Norway E-mail: [olav.bjerkholt@econ.uio.no](mailto:olav.bjerkholt@econ.uio.no), or Jan F. Qvigstad, Executive Director and Chief Economist, Norges Bank (Central Bank of Norway), P. O. Box 1179, Sentrum, 0107 Oslo, Norway. E-mail: [jan.qvigstad@norges-bank.no](mailto:jan.qvigstad@norges-bank.no)

The pamphlet addressed the public and was written to persuade and convince the concerned citizen that the deep economic crisis in Norway was due neither to lack of resources, to structural problems nor to misfortunes of Norwegian exports, but simply to systemic failures of a kind that could relatively easily be remedied by politicians and bankers if they lived up to their responsibility. Frisch had by this time attempted – and failed – in persuading politicians in power as well as bankers to accept his diagnosis of the situation and his suggested policy remedies. His appeal to the public via newspaper articles was an attempt to reach further and cause change that way. He may have felt like the hero of Ibsen's *An Enemy of the People* in his failed attempt to convince the “compact majority.” Frisch saw the macroeconomic policy of the day much as a fight against fiction and he took it upon himself to rid the public of fictions, e.g. with regard to public debt.<sup>2</sup> The pamphlet was not a call for comprehensive planning, as Frisch indeed promoted later. It may well be considered as a foreshadowing of Keynesian policy, perhaps not so much with regard to the more comprehensive prescriptions that Keynes argued for, but foremost with regard to the role of the government in taking responsibility for macroeconomic management.

But who was Frisch in 1933? He was primarily an academic economist and statistician better known in the still relatively small international community of econometricians than on the Norwegian public arena. In the 1920s, he developed a number of inventive ideas of how to turn economics into a proper empirical science, but few of them were well published. For the science he wanted economics to become, he coined the term *econometrics* in 1926. The term was institutionalized by the establishment of the *Econometric Society* a few years later and acquired its current connotation – somewhat more limited than Frisch's original concept – in the 1940s. Frisch may in 1933 have been close to the peak of his scientific performance, which Paul Samuelson in a memorial article characterized – perhaps slightly exaggerated – as follows: “Ragnar Frisch dominated analytical economics from the

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<sup>2</sup> See Andvig (1986). The most reliable and comprehensive source for Frisch's engagement in macroeconomic theory and policy in the 1930s is Jens Chr. Andvig, see Andvig (1981, 1986).

early 1930s founding of the Econometric Society to his wartime internment in a Nazi concentration camp” (Samuelson, 1974, p.7).

In the following, we first give a brief sketch of Frisch’s personal and scientific background. We then give a brief introduction of his best known and also most quoted macroeconomic contribution. We then discuss briefly his attempts at influencing economic policy in the 1930s and the further influence he exerted on the Norwegian economic-political scene after World War II. Finally, we look in retrospect at his diagnosis and prescription for the Norwegian economy as of 1933.

### ***The making of an econometrician***

Ragnar Frisch, born 1895, was the only child in a well established jewellers’ family in Oslo. His father, Anton Frisch, was also a local government politician adhering to the Liberal Party. Frisch excelled in secondary school, particularly in science and mathematics, but it was taken for granted that he would take over the family business rather than pursue higher studies. While a trainee in another jeweller firm he interrupted his vocational training to enrol in the economics program of the University of Oslo. It was two-year study which had been introduced just a few years earlier. Frisch graduated in 1919 with distinction. In an autobiographical note at the time of his Nobel award in 1969, Frisch credited his mother for this initiative and stated that economics was chosen simply because it was the shortest study. None of his teachers can said to have been outstanding or to have made any important original contributions. Simultaneously he was preparing to take over the family jeweller’s business. On becoming journeyman as a silversmith in 1920 his father made him partner in the business.<sup>3</sup>

As partner in a small but thriving business Frisch was relatively well off as a young man and he chose in understanding with his father to be a silent partner for a period and pursued his scientific interests by studying abroad for almost three years in 1921-23. Most of the time he spent in Paris, not enrolled in any program, but studying mathematics, statistics and economics intensely, and establishing contacts

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<sup>3</sup> This section draws here and in the following upon Andvig and Thonstad (1998) and Bjerkholt (1995, 1998a).

with many scholars in these fields. He also took an interest in modern natural science and when he summed up the need for a more scientific economics he contrasted the “from a logical and systematical point of view rudimentary situation of the relatively young economic theory compared to the theory of the other more mature empirical sciences.” The confusion that still ruled in the theory of value epitomized in Frisch’s view the missing foundation in economics: “For any science the object of which is the outer world there comes a moment when the logical need awakens, when the immediate, more or less emotional conception of the basic concepts must yield to an objective and exact definition” (Frisch, 1926b, p.300).

Frisch became highly proficient in mathematics and in probability theory. Throughout his career as an economist he would draw on mathematical insights beyond that possessed by most of his colleagues in economics and sometimes his results became hard to digest for that reason. In probability theory his student years directly preceded the new foundations in the field established by Andrey Kolmogorov and others. Frisch stayed abreast of new developments in the application of probability theory to economic problems and befriended both Ronald A. Fisher and Jerzy Neyman. By the 1920s Frisch was more of a statistician than an economist and all his earliest publications were on statistical issues.

He was also widely read in economic literature. Among early works that influenced him was in particular Irving Fisher’s 1892 dissertation, which he acquired and studied in a French edition in Paris (Fisher, 1917). He admired Fisher greatly for his scientific approach to economic theory. Joseph Schumpeter’s work was also a major influence, particularly his early work on the essence of economics (Schumpeter, 1908). Frisch, Fisher and Schumpeter later came to work very closely together within the Econometric Society. Fisher also came to play a vital role in determining Frisch’s career. Frisch and Schumpeter had a deeply shared interest in understanding business cycles and both benefited from the exchanges they had on this topic.

After his return to Oslo, Frisch published his first paper in economics, which had been conceived in Paris. He demonstrated in an elegant way his maxim of letting

theory guide empirical analysis by demonstrating how the elusive concept of marginal utility could be measured, i.e. estimated. In the paper he introduced an axiomatic approach to demand theory as a foundation for the use of utility function, long before the axiomatic method was recognized as a way of modelling microeconomic behaviour in economics (Frisch, 1926a). Frisch made a point of showing in axiomatic terms the distinction between cardinality and ordinality. He opted for a cardinalistic conception of utility. In a methodological paper the same year he tried to characterize the stage of progress of economics by stating that “theoretical economics is about to enter the phase of development at which natural sciences, particularly theoretical physics long have been, the phase in which the theory gets its concepts from the observational technique” (Frisch, 1926b, Frisch’s emphasis).

His ambition to measure the marginal utility of income had been foreshadowed in one of his exam papers in 1919, which comprised the following bold passage: “Man must not be afraid of what seems impossible to do. History has shown that human beings possess a wonderful gift of being able to obey the saying of Aristotle: ‘measure the nonmeasurable!’” (Quoted from Andvig and Thonstad, 1998).

At the end of 1926, Frisch was granted a three-year Rockefeller fellowship. He spent 1927 in the United States, having planned to spend the remaining two years in Europe. In February 1928, he moved to Italy. He was well aware of the strong position of economics and statistics in Italy and had established contact with a number of Italian economists and statisticians. But shortly after Frisch arrived in Italy his father became seriously ill and soon after died. This put Frisch’s entire career in jeopardy. He was forced to surrender the fellowship and take care of the family business.

At this point we may pause to consider what kind of economist Frisch had educated himself to become. He was well versed in theory, but had shown little interest in theoretical controversies or outlining his own theoretical program. He was quite critical of how theorizing was conducted, most often by verbal reasoning without mathematical precision. And if mathematical formulations were used, it was usually

without much consideration of how the theory could be confronted with observational data. Key concepts, such as utility, were used without any consideration of operational measurement. In the United States he had noted the great increase in empirical studies in economics, which in general was much to his liking, but when he dissected the empirical work in more detail he often came out with a very critical assessment of the methodological quality and thus unreliability with regard to the conclusions reached. It was not up to the standard of a proper science.

Thus Frisch was not a typical theory builder, but there was hardly anyone within the economics profession at that time with such a penetrating insight into the shortcomings of most empirical analyses of economic data, and also the limits economic data set to the verifiability of economic theory. His analyses around 1930 dealt with problems of identification and simultaneity, foreshadowing the econometric advances of the 1940s.

Frisch's concern, more than anything else, was to develop methods for confronting theory with data, but he was well aware that this required improvements both with regard to data and in the precision of theory operational definitions. Underlying Frisch's entire scientific view was the primacy of theory. There could be no empirical study without being guided by theory, even if the entire theory was to be regarded as a working hypothesis. He drew on references to physics when he argued for operational definitions of economic concepts, although he hastened to add that "the methods of natural science cannot unreflectedly be copied for use in economics" (Frisch, 1926b, pp.302-303).

After the death of his father Frisch was in a dilemma as to whether he could continue his scientific career. The family business was in dire straits. The partnership with his father had made Frisch well off in the beginning of the 1920s, but business conditions had deteriorated severely under the deflationary conditions that ruled in Norway and the family business was no longer profitable. He was certainly attracted by the possibility of an academic career, but there were only two professor positions at the University of Oslo at the time with meagre prospects for

additional positions. Frisch had held a subordinate teaching position since 1925 and was promoted in 1928, but only to a position with half the salary of that of a professor.

Decisive for Frisch's future career was an offer by Irving Fisher in 1929 to arrange for an invitation from Yale University as visiting professor for one year on generous conditions. Frisch consolidated the assets of the family business, found a satisfactory arrangement for the management of it and left for the United States again in February 1930, a visit that would last a year and a half and during which he worked intensely on all items on his research agenda.

Frisch's personal encounter with recession and business fluctuations, even prior to the Great Depression, had hardly detracted from his motivation to fully understand business cycles and may well have added to his social concern. Irving Fisher, who had saved him out of his dilemma, was a wealthy man. The offer from Yale University was entirely paid for by Fisher. Ironically, Fisher vented the offer to Frisch in 1929 some months before the stock market crash, which eventually wiped out Fisher's entire wealth. As it has been stated, Fisher's net worth was 10 million dollars before the crash, but eventually he lost 11 million dollars!

In the middle of Frisch's visit to the United States, he took part in the foundation of the Econometric Society. He had already from around 1925-26 started to build a network comprising François Divisia, Eugen Slutsky, Ladislaus von Bortkiewicz, A.L. Bowley and other economists, statisticians and mathematicians in several countries as an initial step towards establishing an organization and journal for the new discipline of *econometrics*. In the United States, Frisch joined forces with Fisher, Schumpeter and others towards gaining support for a more scientific discipline. Their efforts were brought to fruition when the Econometric Society was founded in Cleveland on 29 December 1930. Frisch had drafted the key paragraphs of the constitution of the newborn society, reflecting the view on economics he had developed in early 1920s: "Its main object shall be to promote studies that aim at a unification of the theoretical-quantitative and the empirical-quantitative approach to

economic problems and that are penetrated by constructive and rigorous thinking similar to that which has come to dominate in the natural sciences.”<sup>4</sup>

Frisch became a driving force in the organization of the Econometric Society’s annual European meetings, which for many years was the most important meeting ground for discussion of econometric problems in a broad sense. The first meeting was held in Lausanne in 1931, with Frisch giving the opening address, the closing address and presenting three out of 18 papers. When the Society was able to establish its own journal in 1933, Frisch was appointed editor and kept that position for 22 years.

While still in United States in the spring of 1931, Frisch was by a special act of the Storting (Norwegian parliament) called to a new chair in economics and statistics at the University of Oslo. He received at the same time a similar, albeit more generous, offer from Yale University, but unlike many European scholars in the interwar drift across the Atlantic he chose to return home. Frisch returned to Oslo in June 1931. Shortly afterwards he succeeded in acquiring some support from the Rockefeller Foundation for a research institute at the university. The Institute of Economics was established in February 1932, with Frisch as director until his retirement in 1965, and remained his workplace and laboratory until his death in 1973.

### ***Macroeconomics in the 1930s***

Frisch is often mentioned as a pioneer who contributed to the emergence of macroeconomics as a separate discipline. He may, indeed, be credited also with having coined the term “macroeconomics”, which he used in his Norwegian lectures from 1933. But Frisch is in fact a little difficult to classify in the history of economic thought. He did not adhere to any school and he did not aim at building theoretical edifices. His main concern was methodological; he was above all concerned about how economics, not least macroeconomics, ought to be conducted. He was not a macroeconomist in the sense that he professed certain macroeconomic

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<sup>4</sup> The constitution of the Econometric Society, including this sentence, was for several decades printed on the inside cover of *Econometrica*.



theories. As a methodologist he made highly appreciated contributions towards macroeconomic modelling.

The economic problem of the day was, of course, the depression. The paradigm for understanding the ups and downs of economic activity was the business cycle. Business cycle research, in the sense of investigations into the more or less regular fluctuations in economic activity, emerged around the mid-nineteenth century, particularly through the influential work of Juglar in 1862; see Morgan (1990, 41-44). During Frisch's formative years as a young economist, the field came to the centre of attention as the A-B-C method emanated from Harvard and business cycle research institutes mushroomed in Europe, while post-World War I shocks reverberated throughout the industrial world, see Morgan (1990, 44-68). As a socially conscious young man in the 1920s Frisch, like many others, was highly concerned about the inability of modern economies in the midst of plenty to prevent economic fluctuations from playing havoc with the livelihood of millions.

Frisch at first directed his interest in the cyclical character of the fluctuations towards methods for analysing time series data. He showed ingenuity in developing new avenues for determining cyclical properties of fluctuations, advising against relying on Fourier analysis and other methods with an overly mechanical concept of cycles. Increasingly he shifted his attention to the question of the nature of a proper theoretical explanation of economic fluctuations. His interest in the theory of science had led him to regard "cause" largely as a metaphysical term and he showed little interest in the ad hoc discussion of "causes," so frequent in business cycle discussions. Thus Frisch's orientation and contribution was not so much business cycle analysis in the substantive sense, understood as explaining why and how economic activity varied cyclically, but the appropriate methods for analysing and explaining cycles. To Frisch the explanation and determination of cyclical fluctuations was a prime example of an econometric problem.

Frisch's achievement in business cycle analysis is best known for the model he presented in his *Propagation and Impulse* essay in the festschrift for Gustav Cassel (Frisch, 1933b). The essay's propagation-impulse explanation of economic cycles,

underpinning the rocking horse simile of Wicksell, received great attention. Even after 50 years it is still discussed in the literature.<sup>5</sup> Frisch (1933b), which figures as a pioneering contribution also in the histories of macroeconomic modelling and national accounting, stands out as Frisch's only contribution to business cycle analysis. The Cassel essay was part of Frisch's most ambitious research project before World War II, but the intended main publications from the project never appeared. Frisch certainly did not regard the *Propagation and Impulse* essay as his final word in business cycle analysis and not even as a major outcome. For this reason the project must be deemed an unsuccessful one.

Frisch (1933b) is a very famous essay in the history of business cycles, but figures also in the history of macroeconomic models as a pioneering work setting out the idea of modelling, and with somewhat lesser justification in the history of national accounts. Frisch included a hand-drawn graph of how one could imagine macroeconomic flows. It fitted in with Frisch's methodological view of the relation between theoretical concepts and empirical data compilation procedures, as alluded to above. This became a guideline to which the post-war efforts towards establishing national accounts adhered fairly closely.

Frisch introduced the "propagation problem" as that of working out the cyclical properties of a given "swinging system" when it is started in some initial situation. For a model to generate cycles it had to be dynamic. Frisch took it for granted that the macro dynamic mechanism would generate damped cycles. The problem was then to explain the observation of non-damped cycles. This was the "impulse problem," namely how to explain how random shocks hitting the system would "energize" the cycles and keep them from dampening. Frisch credited his hero Knut Wicksell as having been the first to distinguish between the propagation and impulse in his rocking chair simile. He credited Slutsky (1927) for having shown that some sort of swings could be produced by the accumulation of erratic influences. Hence, the paradigm of a stream of "erratic shocks" energizing the

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<sup>5</sup> See e.g. Boumans (1999), Klein (1998), Le Gall (1993), Thalberg (1998), Velupillai (1992) and Zambelli (1992, 2007).

damped swings of an economic system, also known as the “rocking horse” model, may be called the Wicksell-Slutsky-Frisch paradigm.<sup>6</sup>

Frisch’s *Propagation and Impulse* essay was interpreted with much emphasis on the content and properties of the model he had specified as Frisch’s business cycle model per se. Frisch had, however, constructed a model just to present his method. He used a lag in the production of capital to generate dynamics in the model, inspired by the early 20<sup>th</sup> century French economist Albert Aftalion. Frisch was brilliantly showing off in the festschrift article by his “discovery” that his model generated the two most common cycle lengths in the conception of business cycle analysts at the time, and in addition predicted a third shorter cycle. His real message was not to promote a specific macroeconomic model but to demonstrate his overall paradigm for macro analysis in economics and to corroborate that this offered an adequate structure for a scientifically appropriate explanation of more or less regular fluctuations, see Morgan (1990: 99).

Frisch’s work in this field was his most important project throughout the 1930s. It was a wide-ranging project that also involved efforts to determine whether the propagation mechanism (i.e. the macroeconomic model) could be determined – or in modern terminology – be identified. Frisch’s confluence analysis is regarded as his main contribution to econometrics and the first specifically econometric method originated here.

Frisch kept raising his ambition in the project higher and higher. He did not satisfy himself just with a qualitative result, but wanted to work out the exact properties of the cycle that followed from a given distribution of shocks. His conversations with Schumpeter led to the attempt of distinguishing between on the one hand Schumpeterian shocks, which introduced innovations and thus changed the propagation mechanism itself, and purely disturbances on the other. As a result he never got around to completing his project before World War II took it off the research agenda.

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<sup>6</sup> See e.g. Morgan (1990), Ch.3.2 ”Frisch’s rocking-horse model of the business cycle.”

It was during this period of deep depression in the real world that he tried to get to the core of understanding what kept cycles going, and also tried to influence policy. His lectures on “macrodynamics” attracted students from several countries and were based on his mathematization and further elaboration of the works of Wicksell, Keynes and others.

Ironically, Frisch erred in the mathematics of his 1933b paper. The model, which had been studied more than any other model of business cycles, did not generate cycles. This was shown almost sixty years later by Zambelli (1992), which attracted minimal attention, and then restated in Zambelli (2007). Frisch’s structural explanatory paradigm survives unscathed by Zambelli’s findings, however.

### ***Frisch and economic policy***

But explaining business cycles was one thing, finding policy means for mitigating the disastrous economic and social effects of fluctuations was another. Although we have described Frisch as a scientist more concerned with the methodology of economics than with economic theory, his conception of science also comprised the social responsibility of the scientist. We can illuminate that here by quoting a passage – hitherto unpublished – from a lecture he gave to students at Yale University in 1930 on the range of activities the scientist has to face up to:

#### **“Five types of mental activities in which the scientific worker has to engage**

1. The descriptive procedure.

One sort of question which the scientist has to answer is: What happened? What is the situation? What course did the events follow? In order to answer these questions he has to engage in descriptive, historical and experimental work. In some sciences, like economics, direct experiment is more or less impossible and the scientist must rely largely on the descriptive and historical answers to the questions here considered.

2. The understanding procedure.

Another sort of questions which the scientist has to answer is: Why did it happen? Why did this situation exist? Why did the events follow the course they did? The answers to these questions constitute the rational part of the investigation. By the power of his mind the scientist tries to bring some reasonable order into the happening and the things he observed.

3. The prediction procedure.

The questions here are: What will happen? What will the course of events be in the future? In order that this sort of questions shall have a meaning, the phenomenon must be such that it cannot easily be controlled by man. If it can be fairly completely controlled, no forecasting problem really exists.

4. The human purpose decision.

Here the questions are: What do we wish shall happen? What do we wish the situation to be? The three first sorts of questions are exclusively of an intellectual character. On the contrary the sort of questions here considered is of an ethical or moral sort. It cannot be answered unless we adopt some sort of standard of social values. If the answer to such a question shall be socially significant, it must, of course, in some way or another weigh the opinions of the different individuals. It is not a question of what you or I personally think in this matter, but of what is a socially fair position.

5. Social engineering.

The question here is: What can we do to produce such happenings or such situations? This last sort of question is the most complicated we can ask. In order to give a significant answer to this sort of question, we have to build on an analysis of all the first four sorts of questions.”

(Frisch, 1930).

Although formulated generally to cover all sciences, it is economics that is foremost in Frisch’s mind. Frisch covered all the five kinds of activities on his list of scientific responsibilities and made path-breaking contributions to most of them.<sup>7</sup>

Under no. 1 would reasonably be placed his effort to develop national accounts for

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<sup>7</sup> For a modern discussion of Frisch’s overall conception of economics, see Dupont-Kieffer (2003).

Norway and under no. 4 his highly sophisticated approach in establishing a questionnaire to elicit the macroeconomic preferences of politicians and planners.

Frisch underwent a political radicalization in the 1930s under the influence of the depression and his disappointment with the inability of the ruling political system to cope with the economic conditions in an effective way. He moved from the liberal bourgeoisie into which he was born, towards a long-lasting association with Norway's somewhat left-oriented Labour Party. It is interesting to note, however, that his view on the economist's responsibility also for normative issues predates his political orientation; it was a position that can be traced back to his formative years in the 1920s.

Frisch's disappointment when he tried to convince cabinet members, bankers and others in the early 1930s that the depression could be combated if the economic logic was well understood has been referred to above. This was the situation when he wrote his pamphlet. Shortly afterwards he became involved in politics as he accepted to contribute to drafting a *Crisis Program* for the (opposition) Labour Party to combat the depression. The Labour Party wanted a major increase in public expenditures. Frisch's problem was how to accommodate the financing of such an expansion without harmful effects. Could it even have stimulatory effects on private industries? Should the financial infrastructure be modified? With regard to financial and monetary policies, Frisch's at the time indirect planning philosophy came into play. Instead of nationalizing the banking system, spending should be financed by implementing a well-conceived plan which would exploit the structure and the forces in the financial and banking sector.<sup>8</sup>

On the basis of the Labour Party's economic program that Frisch had helped to draft, it came to power in 1935. But before that some of the key reasoning in the program was attempted shot down by the Monetary Committee, which was an advisory body to the government, and had argued with reference to the authority of J.M. Keynes that "...an expansion of credit is dangerous and will cause inflation unless it is founded on an initial increase of the saving in society. ... And since

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<sup>8</sup> This and the following paragraph is recapitulated from Andvig (1986), pp.381-391.

saving is rather weak at present, there will not be much leeway for credit expansion” (quoted from Andvig, 1986, p.387). The Monetary Committee represented conventional wisdom, but not that of Frisch, nor that of Keynes! Frisch proved to be a shrewd and efficient operator. During an academic visit to Cambridge where he inter alia presented his business cycle ideas, he translated the crucial passages from the Monetary Committee to Keynes. He then asked Keynes to write a letter to him that he would be allowed to publish. Keynes did so and destroyed the Monetary Committee’s view. The letter argued that with a given rise in investment, one could show theoretically that the rate of employment would tend to increase and raise real income just enough to make private saving equal to the investment. Frisch passed the letter on to the leader of the Labour Party. This did not suffice, however, to win over a parliamentary majority at the time; the Labour Party’s bold proposal was defeated. Even this prior notice of views Keynes would propound in his 1936 book was to no avail.

In 1934, Frisch also published a paper which announced a way out of the crisis through voluntary commodity exchange outside the market within an ingenious scheme worked out by Frisch and denoted “circulation planning” (Frisch, 1934). Frisch was not the only economist who became so distrustful of the functioning of the market economy that he turned to voluntary trade cooperatives or similar schemes as an alternative to the market mechanism. Frisch’s paper was prominently published in *Econometrica* (edited by Frisch!). It was also an exceptionally long paper. It had many innovative ideas including an anticipation of the analytic core of Leontief’s closed model and a linear-quadratic optimization problem. Frisch had obviously put considerable effort into the paper, but it was completely ignored by his contemporaries, who must have found Frisch’s approach naïve and utopian, see Bjerkholt and Knell (2006). As policy advice and policy proposal it was a complete failure and for good reasons. Some ideas in the paper resurfaced in Frisch’s post-war work, first in a proposal for organizing international trade in a world of non-convertible currencies and later in his elaborate programming models.

In 1937, Frisch embarked upon constructing national accounts for Norway at his university Institute. The Institute had in 1936 obtained a research contract from the

new Labour government to investigate the economic possibilities and potential for Norwegian industry. Frisch was centrally (heavily) involved and took the opportunity to launch the establishment of “national accounts” as a part of the overall project. It was accepted and became Frisch’s contribution to the project and the only thing of value that came out of it. But where did the idea of national accounts come from?

In the *Saving and Circulation Regulation* pamphlet Frisch had, as noted above, actually briefly introduced the idea of national accounting. In the context it was a plea for an effort to provide a better basis for assessing the economic situation of the country, but it was not elaborated how national accounts actually might come about. We noted above that he later in the same year also brought up this idea in Frisch (1933b). Frisch discussed national accounts as if it was entirely his own idea, although he may well have picked up within his econometric circuits that national accounts were prepared in some countries, e.g. in the United States and the Soviet Union, and in some other countries initial efforts in the same direction had been made.

Frisch was not really cut out for being a national accounts compiler. He had neither the patience nor the motivation for painstaking empirical work; his concern was primarily the methods involved. Frisch engaged his best students in the project and took it upon himself to develop the principles of national accounts without paying too much attention to what had been done in other countries. His work resulted in the “eco-circ” method, a graphical method for the design and presentation of accounts. A considerable amount of work was done on the project by Frisch’s assistants and students when World War II interrupted the project. Norway was occupied by Germany in April 1940. Although the university remained open until 1943, when Frisch as Dean of the Faculty of Law was arrested together with other university leaders and the university closed. Some of Frisch’s co-workers in the projects continued the work clandestinely inside Norway's Central Bureau of Statistics while Frisch was imprisoned.



After the liberation of Norway, the Statistical Bureau completed the national accounts for Norway under the leadership of Frisch's former students, based on Frisch's original ideas, but naturally also adhering to the emerging international cooperation on national accounting within the Organisation for European Economic Co-operation (Aukrust, Bjerve and Frisch, 1948). The early completion of national accounts in Norway, which hardly could have been the case without Frisch's early start, played a considerable role in the establishment of the post-war economic regime which was based on national accounts as an integrating framework for macroeconomic and sectoral policy, cf. Bjerkholt (1998b, 2005).

After the war, Frisch's former students came into influential civil servant positions and carried major responsibility for implementing the economic policy. Frisch may have wanted to exert more influence, but his students knew his tendency to completely dominate the scene where he came, and they treated him cordially but at arm's length.

In the early years after the war, Frisch shifted his agenda and embarked upon building what he called decision models, large-scale macroeconomic models, often incorporating input-output tables and extended with programming solution. Frisch's frontier work in this period has never really been evaluated properly. His projects were too advanced and too demanding on computer power (when computers hardly existed) for them to be taken into use by his former students in the administration, although they used to great benefit simplified versions of some of Frisch's prototype models<sup>9</sup>.

In the early 1950s, he worked on the preference function part of his macroeconomic models and pursued the idea of determining macroeconomic preference functions based on the actual preferences of politicians/planners, determined from a questionnaire designed by Frisch. It was in fact an interactive questionnaire. Frisch was the interviewer and among his interviewees upon whom he tested his tool were a former minister of finance (and future prime minister) and the chief civil servant

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<sup>9</sup> For Frisch's key contributions in modelling and programming, see Bjerkholt (1995). The role Frisch's modelling played as a background and inspiration for the modelling undertaken within the government is set out in Bjerkholt (1998b).

in the Ministry of Finance (and former student). Very few of Frisch's colleagues showed any interest in his estimation of preference functions, despite his attempt to convince them of its importance (Frisch, 1961; Bjerkholt and Strøm, 2001). Frisch interviewed politicians in order to establish their welfare function; his approach also has some relation to the idea of estimating utility and demand from stated preferences.

The attempt at estimating decision-makers' preferences also bears some resemblance to modern monetary macroeconomic theory. In this theory a period loss function is often defined as  $L = (\pi - \pi^*)^2 + \lambda y^2$  where  $\pi$  is the inflation rate,  $\pi^*$  is the inflation target and  $y$  is the output gap. The parameter  $\lambda$  indicates the weight the decision-maker puts on output stabilization. In most central banks the decision maker is a monetary policy committee.<sup>10</sup>

Frisch's involvement with interview methods went far back in time, however. He introduced it in the 1920s when he worked on the measurement of marginal utility. He suggested determining people's flexibility of the marginal utility of income directly from well designed interview questionnaires. In the 1930s, he suggested interview information as a supplement when simultaneity sets limits on which parameters were identifiable and could be estimated. In the 1960s, he worked on determining the preferences of decision-makers. At the very end of his a career, he launched the idea of cooperation between econometricians and politicians based on the same set of ideas. In his last public address to his students in Oslo he tried to explain – in a humorous, but yet serious way – the inherent difficulties of determining preferences:

“In a realistic, theoretical foundation of social policy we must for each individual consider two entities: the own-utility and the conjectured utility of other persons. An example will make this clear. Assume that my wife and I have had dinner alone as we usually do. For dessert two cakes have been purchased. They are very different, but both are very fine cakes and expensive - according to our standard.

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<sup>10</sup> Professor Lars Svensson at Princeton University argues that inflation-targeting banks should announce an explicit loss function with numerical relative weights on output-gap stabilization ( $\lambda$ ). He also suggests simple voting procedures for forming the Monetary Policy Committee's aggregate loss function, cf. Svensson (2003).

My wife hands me the tray and suggests that I help myself. What shall I do? By looking up my own total utility function I find that I have a strong preference for one of the two cakes. I will assert that this introspective observation is completely irrelevant for the choice problem I face. The really relevant problem is: which one of the two cakes does my wife prefer? If I knew that the case would be easy. I would say “yes please” and take the other cake, the one that is her second priority. But here a problem of reliable data emerges. If I know exactly what she prefers, the case is resolved, but what if I am in doubt about that? The problem cannot be solved by asking her: “Which one do you prefer?” She would then say: “I am completely indifferent, take which one you prefer.” Neither is the case resolved by saying: “You help yourself first,” because then the same problem will arise for her. Hence, the simplest thing I can do is to utilize earlier experience and make the decision on that basis. In some cases my assessment of her preferences may be so vague and indeterminate that I to some degree must rely on my own total utility, i.e. make some compromise between the two preference scales.”

(Frisch, 1971, p.6, translated from Norwegian.)

In the 1960s, Frisch lost faith in the Labour Party, partly over its dismantling of the post-war regulating which Frisch found went too far, and partly over its policy in favour of joining the European Economic Community, which Frisch vehemently opposed.

### ***The Frisch pamphlet in retrospect***

In discussing Frisch’s pamphlet *Saving and Circulation Regulation* we might very well bring into play his own classification of the mental activities in which a modern economist had to engage and perhaps was written down not least with regard to himself as a guide to being the economist he intended to be. His list was:

1. The descriptive procedure
2. The understanding procedure
3. The prediction procedure
4. The human purpose decision

## 5. Social engineering

Frisch gave an explanation of the “saving paradox” and the pedagogical qualities of this exposé have survived the test of time.

Frisch discussed the national versus the international factors relating to the crises. Even if there was an international crisis, Frisch suggested that it was the “saving paradox” in each country that was the core problem more than a crisis in one country contaminating other countries through faltering exports. He wrote: “A country can increase or reduce its outstanding accounts with other countries in the same way that an individual can change his outstanding accounts with other individuals in a country. However, the most important factors that determine saving for society as a whole are nevertheless to be sought within the country itself. This applies, not least, to the current situation. It is these domestic factors that I will highlight here.” (Frisch, 1933a.)

Frisch proposed Keynesian demand management policy to alleviate the economic crises. He suggested tax cuts, but that they should be neutral (balanced budgets) over the cycle.<sup>11</sup> These proposals are now considered as key elements in modern mainstream macroeconomic policy making.

He argued for the establishment of an independent body of experts to identify the cycle. Frisch probably saw the need for such an independent body of experts because it is complex to identify the external impulses and the internal impulses of the cycle and probably also due to a certain scepticism to political populism. Economists today would probably put the main emphasis on the incentive problem: It is easier for politicians to pursue expansionary policies than contractionary policies.

He also proposed national accounts for the nationwide economy, not only for the central government and the local governments.

So, in retrospect, where was Frisch right in his analysis and where was he wrong?

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<sup>11</sup> Frisch does not clarify whether the tax cuts should be just the automatic stabilizer of magnitude or whether there also should be discretionary tax cuts.

### **Frisch was right: The 1931 recession was ugly**

Bordo and Filardo (2004) have a classification of deflationary events as “the good, the bad and the ugly”. They are “ugly” if GDP in constant prices falls from one year to another by more than 10 per cent, “bad” if the change is less than 10 per cent and “good” otherwise. Since 1830 there have in Norwegian history only been two incidents of GDP falling by more than 10 per cent<sup>12</sup>. Qvigstad (2005), using the terminology of Bordo and Filardo (2004,) adapted the criteria to Norwegian economic history with “ugly” defined as a fall in GDP of more than 5 per cent in constant prices from one year to the next and they are not only restricted to deflationary episodes. Inflationary events are also included. Six ugly episodes are identified.<sup>13</sup> The Frisch pamphlet *Saving and Circulation Regulation* is written against the background of one of the six “ugly” episodes – the one in 1931.

### **Frisch was wrong in his description of the actual economic situation**

The economic downturn was however *short lived*. GDP in constant prices fell by 8 per cent from 1930 to 1931 but increased by 5 per cent from 1931 to 1932. Already in 1934 the GDP level was 2.7 per cent higher than the 1930 level. The downturn was *export led* (in contrast to Frisch’s proposition) and aggravated by a fall in private consumption probably due to the general strike and lockout in the labour market. But a Frisch proposal for a tax reduction (balanced over the cycle) would have contributed to dampening the cycle especially if it had been accompanied by an appropriate monetary policy. The saving paradox could, however, have been at the centre of the problem in other countries.

### **Monetary policy was tight and Frisch did not focus on that.**

During the crisis, interest rates were kept in the range of 4-5 per cent even though prices were falling. Real interest rates were thus kept high. Monetary policy was not

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<sup>12</sup> See Eitrheim et al. (2004).

<sup>13</sup> The six episodes are: (1) 1848 after the revolution in France and upheavals in other countries. (2) 1857 in the aftermath of the Crimean War. (3) 1916-1918 with inflation during WWI. (4) 1921 with deflation as a result of international business cycle and tight domestic monetary policy. (5) 1931 with deflation as a result of the international business cycle and amplified by the historically largest general strike and lock out domestically. (6) 1940-1945 as a result of WWII.

supportive of private consumption and private investment. Under a flexible inflation targeting regime, short-term interest rates would probably have been set close to zero per cent already in 1930 and would have softened the downturn by supporting private consumption and private investment.<sup>14</sup>

Frisch criticised the radical appreciation of the currency in the latter half of the 1920s, but did not applaud (or to be more precise; it was not the focus of his booklet) that exchange rate policy was very expansionary from the autumn of 1931 (which was a bit late, but not that late). The Norwegian krone was pegged to the gold standard until 27 September 1931 – seven days after the UK dropped its peg. The krone was floating after that (shadowing the GBP). The krone depreciated 7 per cent the next month against a weighted average of trading partners. A year after leaving the gold standard, the krone had depreciated 20 per cent.<sup>15</sup> Klovland (1998) finds that the choice of exchange rate regimes was the critical decision determining the severity of this most famous of all business cycles in modern history. The Scandinavian countries, like the other participants in the sterling bloc, escaped from the Great Depression with fewer feathers broken than most other countries in the world. The world economy started to recover in the second half of 1932. The structure of the Norwegian export sector was such that it benefited early in the cycle. We cannot say from just a superficial look at data whether it is the improved competitive position or the export composition that contributed most to the recovery of exports. However, the depreciation and the subsequent improved competitiveness probably made a considerable contribution to the growth of the import substitution industry during the rest of the 1930s.

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<sup>14</sup> This argument is based on a Taylor rule  $i = r^* + \pi^* + 1.5(\pi - \pi^*) + 0.5(y - y^*)$ , where  $r^* = 2.2$  and  $\pi^* = 0$ . Yields on two-year government bonds have been used. The real rate of interest (bond yields) was 2.2 per cent for the period 1822-2003. The output gap is calculated with a HP-filter ( $\gamma = 100$ ). The calculated output gap is positive in the latter half of the 1920s, turning negative in 1931 and staying negative until 1935. It is assumed that price stability was defined as a price level target. The price level was falling from 1930 to 1934, not reaching the 1930 level until early 1936.

<sup>15</sup> In order to calculate the combined effect of changes in the interest rate and exchange rate, a monetary condition index (MCI) is constructed. The combined interest rate policy and exchange rate policy was very expansionary in 1932. A MCI calculated on monthly data shows that the expansionary effect started immediately after leaving the gold standard in September 1931, reaching its most expansionary effect in November 1932.

**Frisch did not focus on the malfunctioning of the labour market.**

Unemployment among trade union members had been high throughout the 1920s, see Grytten (1995). It was higher than 10 per cent in the first half of the 1920s and somewhat lower in the second half, but in the 1930s it exceeded 30 per cent. This unemployment probably affected the household saving ratio due to precautionary saving. Grytten has, however, calculated that unemployment as a percentage of the total labour force was considerably lower, probably between 5 to 10 per cent. This suggests that in order to alleviate the economic crisis of the 1930s not only traditional macro economic policies were appropriate, but policies directly aimed at improving the functioning of the labour market were even more warranted. From a welfare point of view, the most relevant problem would have been to focus on the labour market. Frisch did not do that. The main improvement came with “The Fundamental Agreement on Principles of Labour Settlements” in March 1935, which regulates the interaction between employers and employees at a very centralized level<sup>16</sup>.

**Frisch was clairvoyant when advising an independent body to monitor the cycle.**

Modern main stream macro economic policy advice would be to let the automatic stabilizers work, and to be somewhat reluctant to use discretionary fiscal policy as it has turned out to be politically easy to pursue expansionary policy in low growth situations and politically difficult to pursue contractionary fiscal policy in high growth situations. The political asymmetry leads to an increased budget deficit over the cycle, or higher public spending and a higher tax level over the cycle. (Higher public spending could of course be a good thing, but it should be politically decided for that reason and not a consequence of failed macroeconomic stabilization policies.) Frisch’s research on the business cycle alluded to the necessity of distinguishing between the external shocks that could start a cycle and the intrinsic forces that would prolong and amplify the business cycle. It is unclear whether the Frisch proposal for an independent body was a response to the incentive problems

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<sup>16</sup> Cf. Seim (1972).

for politicians or the technical business cycle problem. Today central bank independence is the conventional wisdom, mainly as a response to the incentive problem.

By publishing the pamphlet *Saving and Circulation Regulation*, Frisch tried to put the principles “Five types of mental activities in which the scientific worker has to engage” into practice. He succeeded quite well, but he would not get a score of 10 out of 10. Had Frisch’s proposal to draw up National Accounts (NA) already been in place, he would not have missed the point in describing the root of the Norwegian business cycle problem in the beginning of the 1930s. The Norwegian Central Bureau of Statistics (now Statistics Norway) established historical national accounts in 1965<sup>17</sup>. It took more than 30 years to find out that the crisis in 1931 was a traditional export-led downturn and not a saving paradox problem!

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<sup>17</sup> Statistics Norway (1965)



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