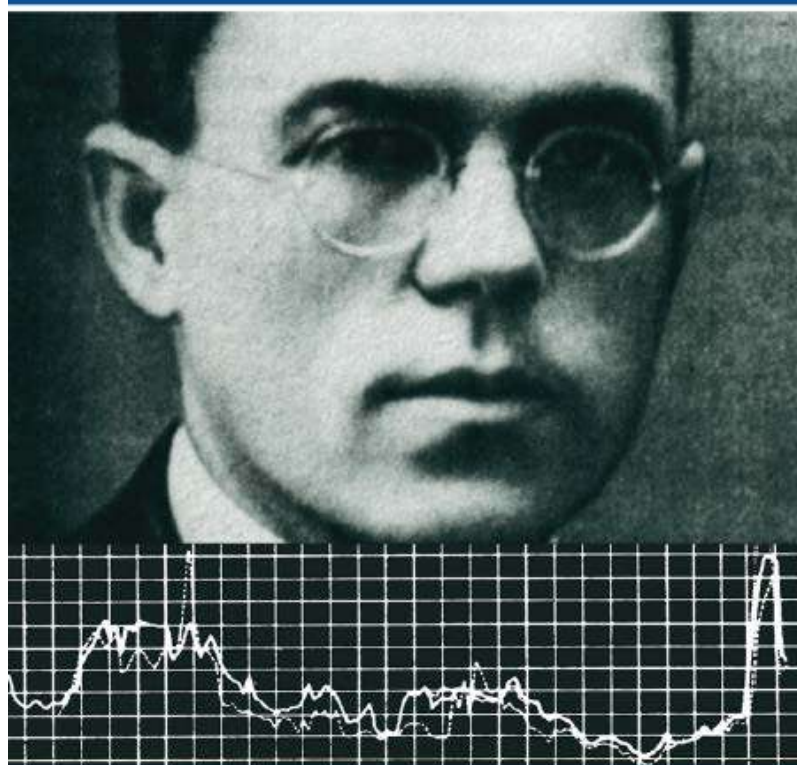


Vincent Barnett
**KONDRATIEV AND THE
DYNAMICS OF ECONOMIC
DEVELOPMENT**



**Long Cycles and Industrial Growth
in Historical Context**

Kondratiev and the Dynamics of Economic Development

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Historical Context**

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CENTRE FOR RUSSIAN AND EAST EUROPEAN STUDIES

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Contents

<i>List of Figures</i>	x
<i>List of Tables</i>	xi
<i>Acknowledgements</i>	xii
<i>Glossary of Russian Terms and Abbreviations</i>	xiii
1 Introduction	1
Cycles in History	2
Kondratiev and the Conjuncture Institute	5
The Importance of Kondratiev's Work Today	6
The Creation of the Conjuncture Institute	8
The Publications of the Conjuncture Institute	9
The Structure of the Conjuncture Institute	11
Soviet Economic Policy in the 1920s	13
Business Cycle Analysis in the 1920s	16
Wesley Mitchell's NBER	18
Conclusion	20
2 Kondratiev before the Conjuncture Institute	21
The Young Kondratiev	21
Kondratiev and M.I. Tugan-Baranovskii	24
Kondratiev's Analysis of the Zemstvo	26
Kondratiev as Minister of Food Supply	28
Kondratiev's Disillusionment with the SRs	32
Kondratiev and Agrarian Reform in 1917	34
The Consequences of the Bolshevik Revolution	37
<i>The Grain Market (Rynok khlebov)</i>	39
<i>The Grain Market and State Regulation</i>	42
Conclusion	45
3 Kondratiev and Economic Policy during NEP	47
The Mechanisms of Kondratiev's Policy Influence	48
Kondratiev and the Quantity Theory of Money	54
Kondratiev's Analysis of the Scissors Crisis	56

Kondratiev's Analysis of the Goods Famine	59
The Trial of the Socialist Revolutionaries	62
Kondratiev's Participation in Special Policy Commissions	64
Kondratiev and Peasant Tax Policy	65
Kondratiev and Peasant Farms	70
Kondratiev and Grain Exports	72
Obstacles to Kondratiev's Export Policy	79
Conclusion	83
4 Kondratiev's Trip Overseas, 1924-25	87
The Contours of the Trip	88
The Purpose of the Trip	90
Kondratiev's Meeting with Wesley Mitchell	92
The Results of the Trip - UK	94
The Results of the Trip - USA	97
The Results of the Trip - Germany	100
Kondratiev and J.M. Keynes	101
Conclusion	103
5 Kondratiev, Long Cycles and Economic Conjuncture	105
Terminology	106
Kondratiev's First Analysis of Long Cycles	107
Pure Long Cycle Analysis	112
Possible Origins of the Long Cycle Idea	115
Kondratiev's Long Cycle Methodology	118
Applied Long Cycle Analysis	121
Kondratiev's Theory of Long Cycles	127
Rainov and Cycles in Scientific Discovery	130
Oparin's Critique of Kondratiev	133
The Influence of Kondratiev's Long Cycle	136
Do Long Cycles Exist?	138
Conclusion	140
6 Kondratiev and the Economics of Planning	143
Kondratiev's Theoretical Conception of Planning	143
Kondratiev's Plan for Agriculture and Forestry, 1924-28	146
The General Features of Kondratiev's Plan	147
Numerical Expression of Plan Targets	151
Comparison of Plan Drafts	154

Kondratiev's Plan and Corrections to Grain Statistics	156
Criticisms of the Plan	158
Kondratiev's Response to his Critics	159
Gosplan's Attitude to Kondratiev's Plan	162
Fulfilment of Kondratiev's Plan	164
Conclusion	166
7 Kondratiev and Soviet Industrialisation Strategy	169
Kondratiev's Framework for Industrialisation	170
Kondratiev and Agricultural Industrialisation	174
Kondratiev's Trip Overseas and US Industrialisation	176
'Stages' Before and After Kondratiev	178
Shaposhnikov and Net Present Value (NPV)	179
Kondratiev versus Gerschenkron	182
The Kondratiev Path and War Preparations	184
Conclusion	185
8 Kondratiev in the 1930s	189
Kondratiev's Arrest and the Closure of the Conjuncture Institute	189
Kondratiev's Interrogation	191
The Menshevik Trial	193
The Campaign Against <i>Kondrat'evshchina</i>	194
Kondratiev's Letters to His Wife	197
The Fate of Other Conjuncture Institute Members	200
Conclusion	200
Appendix to Chapter 8 – Kondratiev's Writings while in Jail	202
9 Conclusions	205
The Meaning of Conjuncture	205
Policy	206
Theory	210
<i>Notes</i>	213
<i>Bibliography</i>	239
<i>Name Index</i>	247
<i>Subject Index</i>	249

List of Figures

5.1	Interest rates on short-term loans, 1896–1913	108
5.2	Discount rate, 1913–14	109
5.3	Kondratiev's long cycle, 1789–1922	113
5.4	Mulhall's price level, 1782–1885	116
5.5	The course of English consols, 1816–1922	119
5.6	Deviations of theoretical series from empirical	119
5.7	Wages in the French coal industry, 1847–1913	120
5.8	Index of commodity prices, 1786–1924	123
5.9	Long and small cycles – agricultural index, 1786–1921	124
5.10	Small cycles – agriculture and general, 1786–1921	127
5.11	Physical discoveries in England, 1651–1891	131

List of Tables

3.1	Level of wheat exports, 1886–1913	73
3.2	International flax exports, 1909–24	77
3.3	The foreign trade plan for 1925/26	82
5.1	Production of gold, 1810–1930	111
5.2	Kondratiev's dating of the long cycle	114
5.3	Short cycles in economics and physics, 1833–95	132
6.1	Planned sown area targets, 1923 and 1928	152
6.2	Quantity of livestock, 1923 and 1928	153
6.3	Drafts of total sown area	155
6.4	Drafts of livestock levels	156
6.5	Sown area targets for 1928	157
6.6	Growth of sown area of crops (%)	161
6.7	Growth of livestock (%)	161
6.8	Fulfilment according to Strumilin	165
6.9	Planned and actual horses	165
7.1	Relative proportions of national income	171

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VINCENT BARNETT

Glossary of Russian Terms and Abbreviations

- Bolsheviks** more revolutionary wing of the Russian Social Democratic Labour Party
- bol'shie tsikly* long cycles
- chervonets* a currency exchangeable for gold, 1922–26
- Conjuncture Institute** Kondratiev's business cycles and forecasting centre, 1920–28
- desyatina** a measure of area equalling 1.0925 hectares
- Gosbank** the State Bank
- Gosplan** the State Planning Agency
- guberniya* province
- Gulag** the Main Administration of Labour Camps
- KGB** the Committee for State Security
- khozraschet* commercial accounting
- Kondrat'evshchina* derogatory term for supporters of Kondratiev
- krai* district
- kulak* a rich peasant (carried a derogatory connotation)
- Mensheviks** less revolutionary wing of the Russian Social Democratic Labour Party
- NBER** the National Bureau of Economic Research (New York)
- NEP** the New Economic Policy, 1921–29
- NKFin** the People's Commissariat of Finance
- NKProd** the People's Commissariat of Food Supply
- NKTrud** the People's Commissariat of Labour
- NKVD** People's Commissariat of Internal Affairs
- NKVneshTorg** the People's Commissariat of Foreign Trade
- NKVnuTorg** the People's Commissariat of Internal Trade
- NKVnuVneshTorg** the People's Commissariat of Internal and Foreign Trade
- NKZem** the People's Commissariat of Agriculture
- NPV** net present value
- oblast'* region
- OGPU** the Unified State Political Administration (the Political Police)
- pud** a measure of weight equalling 16.38 kilogrammes
- RSFSR** the Russian Soviet Federative Socialist Republic

- smychka* the worker-peasant alliance
SNK the Council of People's Commissars
SRs the Socialist Revolutionary Party
STO the Council of Labour and Defence
TKP the Labouring Peasants Party (fictitious)
tovarnost' marketability
TsIK the Central Executive Committee
TsSU the Central Statistical Administration
uezd county, subdivision of guberniya
VKP(B) the All-Union Communist Party (Bolsheviks)
VSNKh the Supreme Council of the National Economy
Zemplan the Planning Organ of the People's Commissariat of Agriculture
zemstvo form of local rural administration (in pre-revolutionary times)

1 Introduction

If we judge by the passion it has aroused, the long wave is something of an economic historian's Holy Grail.¹

Nikolai Dmitrievich Kondratiev must rank as one of Russia's greatest economists. He resides in a very select group of economic theorists of Russian/Ukrainian/Soviet origin – other members being M.I. Tugan-Baranovskii, E.E. Slutskii and L.V. Kantorovich – whose names and ideas are well-known to economists the world over.² These scholars are recognised not only for their connection to the economics of Soviet-style planning, but as original contributors to areas of economic theory only tangentially related to the USSR; it is this which gives them their ultimate importance and durability. As a first instalment in a thorough re-examination of the history of Russian economic thought, Kondratiev has been chosen as a convenient starting-point.

This book investigates Kondratiev both from a history of economic thought perspective and from an economic history/policy of the USSR standpoint. Kondratiev was the director of a centre for the study of business cycles and forecasting – the Conjunction Institute – which existed in Moscow from 1920 to 1928, which had both a theoretical and policy remit. At its height in the mid-1920s the Conjunction Institute had over 50 members of staff and was internationally recognised. The primary focus of the book is on Kondratiev, but the work of his colleagues in the Conjunction Institute is discussed when this is appropriate. A second book will deal with the other Conjunction Institute members like E.E. Slutskii and A.A. Konyus in detail. The theoretical/business cycle and applied/policy work of the Conjunction Institute was so inextricably connected that it is often difficult to separate out these two elements; even if this was possible the artificial forcing of this distinction onto Conjunction Institute work could create a misleading account of its nature. Hence this volume should be seen as the first volume in an account of the Conjunction Institute as a whole.

Readers who are mainly interested in only one aspect of Kondratiev's work – business cycles or economic policy – are asked to suspend the conventional borders of their subject areas for a short while, so that a more complete understanding can be obtained. It was Kondratiev's managerial skills which brought all the members of the Conjunction Institute together to create an entity greater than the sum of its parts,

and it was this combination of differing expertise which was original and led to the innovations to be outlined. Readers should be aware that the narrative often switches between different aspects of Kondratiev's work; from the evolution of his personal views, to his role as a member of a political group, to an in-depth analysis of his economic thinking, to his links with decision-making institutions, but as this is the most accurate method of presenting Kondratiev's evolution, it cannot be avoided. The main purpose of the book is to give a general overview of all Kondratiev's activities, and to show the links between them, rather than concentrate on one specific aspect of his work. Consequently there is much scope for further research in specific areas, but since there was no general account of Kondratiev available in English, it was thought more important to provide an all-inclusive introduction than to concentrate on any one area in detail. Since little of Kondratiev's work has been available in translation, analysis and comment is sometimes interlaced with summarised presentation of Kondratiev's ideas.

CYCLES IN HISTORY

The study of various types of cycle has fascinated many thinkers in different human civilisations over a long period of time. In Chinese history there is the story of the astronomers Hi and Ho, who at around 2137 BC lost their heads for failing to forecast a solar eclipse.³ In Italy in the eighteenth century the philosopher Giambattista Vico developed a cyclical theory of history in which human civilisations passed through determinate stages of growth and decay, the classic example being ancient Rome.⁴ The stages of Vico's historical cycle were the divine (subordinate to a priesthood), the heroic (aristocratic dominance), and the human (democratic republic).⁵ The questioning of accepted customs that occurred in the last stage of the cycle led inevitably to disintegration, and the historical cycle would begin anew. Such cyclical conceptions of the historical process influenced many later writers such as the historian Arnold Toynbee. Elements of a cyclical approach to history can also be detected in the philosophy of G.W.F. Hegel. While for Hegel history was the realisation of mind (*Geist*), the march of freedom through the world, this progressed by the dialectic of thesis, antithesis, and synthesis, a rising cycle or spiral. Remnants of Hegel's approach can be found in Karl Marx's materialist conception of history.

In the natural sciences the idea of cycles/waves has been central to the development of both classical and quantum physics. In the seven-

teenth century Robert Hooke advocated a wave theory of light against Isaac Newton's corpuscular approach. In the wave theory light was conceived in terms of the transmission of a force through a medium (the ether); that is, light waves spread out in all directions from a source. During the nineteenth century the concept of interference of waves was discovered, which added weight to the wave theory.⁶ However, at the beginning of the twentieth century Albert Einstein proposed that light was not a continuous wave but came in definite packets or quanta.⁷ Then in 1924 Louis de Broglie took the revolutionary step of arguing that if light could behave according to the corpuscular theory, then matter could behave according to the wave theory, and quantum mechanics was born.⁸

From the 1890s onwards statisticians such as George Udny Yule in the UK used observations of periodicities in meteorological phenomena such as sunspot activity to develop new statistical techniques.⁹ For example Yule developed his distinction between hidden and disturbed periodicity in time series through an analysis of Wolfer's sunspot cycles.¹⁰ In a hidden periodicities model each observation can be represented as the sum of a strictly periodic term plus a random term. In a disturbed periodicities model a time series is interpreted as being analogous to the movement of a damped pendulum which is hit by a stream of random shocks. These two models have very different forecasting properties and Yule's discovery was an important step in the development of statistics. Cyclical conceptions of change have also permeated into many aspects of popular culture. Platitudes such as 'what goes around comes around' and ideas about human taste moving in circles can often be heard in general conversation, for example in relation to what is fashionable in music, clothes or design.

However, among the social sciences it is within economics that the study of cycles has currently reached its most advanced level. The idea of fluctuations in various aspects of economic activity has existed for many centuries. William Stanley Jevons, one of the leaders of the marginal revolution in economics in the 1870s, noted that cycles in agriculture had been identified as early as 1662 by Sir William Petty.¹¹ In 1837 Lord Overstone (S.J. Loyd) distinguished ten stages in the state of trade, including quiescence, improvement, prosperity, convulsion, stagnation and distress.¹² While Overstone listed a number of possible causes of cycles from the character of the human mind to legislative enactments, a more systematic investigation would not occur until 1862 and the work of two pioneers, W.S. Jevons and Clement Juglar.¹³ In papers such as 'On the Study of Periodic Commercial

Fluctuations' of 1862, Jevons began to investigate various commercial fluctuations such as the rate of discount, the number of bankruptcies, and the price of consols (fixed-income bonds) in detail for the very first time. He proposed that economic cycles should be investigated with the same methods applied to the study of meteorology and terrestrial magnetism, and used terminology such as 'minimum/maximum' and 'seasonal variation' still common today.¹⁴

The same year as Jevons wrote the paper identified above, 1862, Juglar published *Des crises commerciales et de leur retour periodique en France, en Angleterre et aux Etats-Unis*, which was the first monograph devoted entirely to economic cycles. Juglar approached cycles through the study of statistics of population, marriages, births and deaths, and argued against Thomas Tooke that commercial crises were indeed periodic.¹⁵ Although the first two volumes of Tooke's *A History of Prices* were published in 1838, Tooke had only identified individual fluctuations in prices rather than actual cyclical movements.¹⁶ Thus the study of economic cycles proper can be dated from the work of Jevons and Juglar of 1862, although specific aspects of cyclical movement had been identified well before this date.

Today within the overall topic of business cycles there are a multitude of specialisations and sub-distinctions which are pursued, and the study of various types of cycle has become an accepted part of modern economics. In the 1980s the market analyst Robert Beckman implied that he financed his Monte Carlo apartment, his white Lamborghini, and his speedboat 'The Upwave' from a knowledge of the application of long cycle analysis (together with other techniques) to the stock market.¹⁷ If the long cycle repeated itself Beckman promised 'rewards at your fingertips that exceed your wildest dreams of avarice'.¹⁸ However, the study of business cycles was not always an integral part of economics. Before 1890 it had often been left to those outside the economic mainstream such as Karl Marx to bring attention to this aspect of the capitalist system, sometimes for negative propagandistic purposes. Only Jevons in England and Juglar in France took economic cycles seriously at this time, and it required the efforts of other pioneers such as M.I. Tugan-Baranovskii in Russia in the 1890s and Wesley Mitchell in the USA and Dennis Robertson in the UK in the 1910s, for this attitude finally to be banished.

KONDRATIEV AND THE CONJUNCTURE INSTITUTE

In line with the increase in interest in economic cycles following the turn of the century, Nikolai Dmitrievich Kondratiev (1892–1938) and other members of the Conjunction Institute took the study and analysis of economic cycles very seriously indeed. This book aims to demonstrate how Kondratiev and his colleagues made a major contribution to the development of business cycle analysis in the 1920s and beyond, as well as providing original and insightful commentary on the economic development of the USSR itself. Together with Wesley Mitchell's National Bureau of Economic Research in the USA, F.A. Hayek's Institute for Trade Cycle Research in Austria, Michal Kalecki's Institute for Research on Business Cycles and Prices in Warsaw, and R.G. Hawtrey's and A.C. Pigou's efforts from within the UK Treasury, Kondratiev's Conjunction Institute should be regarded as one of the pioneering centres of the early twentieth century created specifically to advance the study of economic fluctuations and business forecasting.

It was Kondratiev's great misfortune however that the Conjunction Institute was located in Moscow. This was unfortunate in two respects. Firstly, as the Russian language was (and still is) far less widely known by scholars than languages like English and German, much of the Conjunction Institute's work remains unknown outside Russia. Secondly, and even more importantly, the Bolshevik assumption of power in October 1917 yielded a governing authority which was hostile to virtually all aspects of market economics. The new government was not in any way sympathetic to a group of professional economists trying to push the frontiers of business cycle analysis into new areas, especially as these very Bolsheviks were committed to the elimination of 'wasteful and irrational' markets and cycles from all aspects of economic life. Thus Kondratiev and his colleagues suffered a double handicap, both in terms of the accessibility of their work outside Russia and in terms of their personal positions within the Soviet economic bureaucracy.

In the 1930s many of the economists in the Conjunction Institute paid a very high price for their geographical position: exile to forced labour camps and even execution. However, location in Moscow did give the Conjunction Institute one fascinating advantage – it was in a prime position to view first-hand the world's pioneering effort in creating a centrally planned economy. Kondratiev's evaluations of the policies adopted by the Soviet government were virtually unique, in that they were made by someone who was contributing at the highest level to the development of international 'bourgeois' economics and

simultaneously to the Soviet planning effort. In this sense historians of economic thought should count themselves lucky that Kondratiev decided to remain in Moscow for as long as he did.

THE IMPORTANCE OF KONDRATIEV'S WORK TODAY

Kondratiev's enduring fame amongst economists has stemmed from his advocacy and analysis of the idea of long cycles in capitalist development. Long cycles are 45–60 year cycles in economic activity which (according to Kondratiev) were linked to social phenomena such as wars and revolutions, and were caused by the periodic renewal of basic capital goods. Joseph Schumpeter was the first to name these long cycles 'Kondratiev cycles' in 1939, and ever since this date Kondratiev's name has been inextricably linked with this idea. In his two-volume study *Business Cycles*, Schumpeter acknowledged that economists before Kondratiev such as Spiethoff had noted elements of the long cycle, but proclaimed that:

It was N.D. Kondratieff, however, who brought the phenomenon fully before the scientific community and who systematically analysed all the material available to him on the assumption of the presence of a long wave, characteristic of the capitalist process.¹⁹

Jan Tinbergen appears to have disagreed with Schumpeter, noting in 1950 that 'the Dutch may perhaps put in some reservations with respect to the name given by Schumpeter' to long cycles, this being a reference to the work of J. van Gelderen and S. de Wolff.²⁰ Tinbergen's reluctance to acknowledge Kondratiev's contribution made little impact, however, and long cycles are still frequently referred to today as Kondratiev cycles, along with their shorter counterparts Kuznets cycles, Juglar cycles, and Kitchen cycles. Acknowledging the contributions of the two Dutch predecessors, W.W. Rostow wrote that Kondratiev is 'properly regarded' as the father of long cycle analysis.²¹ The idea of long cycles has penetrated other fields of research apart from economics, being utilised in the study of politics, geography, art, even wars and revolutions. While many economists remain sceptical about its existence, the long cycle is still a topic of much contemporary research.²²

Other members of the Conjecture Institute apart from Kondratiev have also achieved fame amongst economists. E.E. Slutskii is known for two contributions to economics, one on the theory of consumer behaviour and the other on the random causes of business cycles. His

paper 'The Summation of Random Causes as the Source of Cyclical Processes' first published in 1927 opened up a whole new avenue of business cycle research by positing the hypothesis that the summation of mutually independent chance factors could generate cycles in a random series.²³ More important for Kondratiev's work on long cycles, Slutskii also suggested that the use of moving averages on a time series could artificially produce the appearance of cycles when used inappropriately, an idea discussed further in the chapter on long cycles. In addition to his analysis of cycles, Slutskii's work on consumer behaviour led to the discovery of the Slutskii equation, something still encountered in economics textbooks today. Slutskii showed how the consequence of a price change on the quantity of a good demanded could lead to a residual variation in demand, even given a compensating increase in income. This idea was taken up by the British economist John Hicks in the 1930s, and R.G.D. Allen wrote in 1950 that Slutskii's work 'had a great and lasting influence on the development of econometrics'.²⁴ Slutskii is also known for contributions to probability and mathematical statistics, for example he suggested the use of a chi-squared variate to test the goodness of fit of a regression line.

Another Conuncture Institute member, A.A. Konyus, is well-known to Western economists for his work on index numbers and the theory of utility. He provided the definition of a consumer's true cost of living index as the ratio of cost functions evaluated at different prices but at the same utility level, and introduced into economics concepts such as the indirect utility function. Amongst Sovietologists different members of the Conuncture Institute are well-known for different reasons. A.L. Vainshtein is noted for his work on pre-revolutionary Russian wealth completed in the 1950s and 1960s, and Konyus for his attempt to introduce marginalism into Soviet economics. To Sovietologists Kondratiev is famous for his plan for agriculture and forestry 1924-28 and for his leadership of an alleged counter-revolutionary party, the Labouring Peasants Party (TKP). To economic historians Kondratiev is known as the compiler of various specific indices, for example a composite index of output for the Russian economy from the 1880s to 1913.²⁵ Kondratiev's index of textile production was evaluated (rather negatively) in *The Growth and Fluctuation of the British Economy, 1790-1850*.²⁶ However, both in terms of economic theory and economic policy Kondratiev's Conuncture Institute was a source of major innovations which had international significance, something which few other Soviet economists could claim.

The work of the Conuncture Institute was immediately noticed on

the international stage. The author of *Crises and Cycles* of 1936, Wilhelm Ropke, wrote that 'most distinguished work was done also by the Russian Institute for Cycle Research in Moscow established after the war, with men like Kondratieff, Wainstein, Oparin and others'.²⁷ Ropke wrote in 'reverential commemoration' of these men, some of whom he had known personally, who had been 'sent to Siberia or shot'. In his *History of Economic Analysis* Schumpeter wrote of Kondratiev's work being the 'peak performance' of a considerable number of competent Russian economists active in the 1920s, which demonstrated that 'serious economics survived until the rigors of the Stalinist regime fully asserted themselves'.²⁸ And in 1927 Wesley Mitchell used data on the Russian economy provided by Conjuncture Institute members Kondratiev, Vainshtein and Ignatiev to investigate to what extent Russian business cycles synchronised with international movements.²⁹ For these reasons and more a serious study of the Conjuncture Institute is long overdue.

THE CREATION OF THE CONJUNCTURE INSTITUTE

In 1919 in Moscow the economist A.V. Chayanov, a specialist on peasant farms, organised an Institute for Agricultural Economy at the Timiryazev (then Petrov) Agricultural Academy, and initially Kondratiev established within this Institute a department of agricultural conjuncture. However, a clear distinction between Chayanov's and Kondratiev's approach to studying agriculture can be discerned. While Chayanov focused primarily on types of farm structure and how these structures developed as part of different economic systems, Kondratiev's work centred on the study of agricultural markets and how shifts in government policy could affect these markets. On the basis of the department of agricultural conjuncture within Chayanov's Institute Kondratiev created the Conjuncture Institute (*Institut po izucheniiu narodnokhozyaistvennykh kon'yunktur*) in October 1920, initially with only five members of staff. During 1921 Kondratiev began to establish ties with the two most closely related government ministries The People's Commissariat of Finance (NKFin) and The People's Commissariat of Agriculture (NKZem), and the leading political figures within these commissariats, such as G.Ya. Sokol'nikov and A.P. Smirnov.

The position of the Conjuncture Institute changed fundamentally in 1922 with the introduction of the monetary reform masterminded from within NKFin by L.N. Yurovskii,³⁰ and at the end of 1922 Sokol'nikov invited Kondratiev and the Conjuncture Institute to become part of

NKFin.³¹ It remained a part of NKFin until 1928, when it was transferred to the Central Statistical Administration (TsSU) as part of a strategy designed to dissipate the membership. Over time the number of staff in the Conjecture Institute grew from an initial level of five members in 1920 to a level of over 50 members after its transfer to NKFin in 1923, and staffing levels remained at this level until the Conjecture Institute was closed at the end of the 1920s.

The idea for the Conjecture Institute probably came out of the work Kondratiev was pursuing in 1918–19 on the behaviour of specific commodity markets during war and revolution. This work included the two important monographs *The Grain Market and its Regulation at the Time of War and Revolution* (*Rynok khlebov i ego regulirovanie vo vremya voyny i revolyutsii*) and *The World Economy and its Conjecture During and After the War* (*Mirovoe khozyaistvo i ego kon'yunktury vo vremya i posle voyny*), and gave Kondratiev the confidence and expertise to decide to devote all his efforts to developing this type of analysis further. The impetus for the development of the Conjecture Institute after 1922 may also have come from the leadership of NKFin, who would have been concerned to create an alternative to the State Planning Commission (Gosplan) which was beginning to grow in importance after its creation in February 1921. If Gosplan was set up to prepare prescriptive plans for how the USSR should develop, then the Conjecture Institute's task was to investigate how the USSR was actually developing.

The creation of centres for conjunctural analysis was an international phenomenon in the 1920s and 1930s, as witnessed by Wesley Mitchell's creation of the National Bureau of Economic Research (NBER) in 1920. Kondratiev's Conjecture Institute holds the honour – jointly with the NBER – of being the first institute in the world created specifically to analyse market conjuncture. But while the NBER went on to revolutionise the study of business cycles and to publish works by winners of the Nobel prize in economics such as Milton Friedman, the contribution of the Conjecture Institute has until now been relatively under-valued.

THE PUBLICATIONS OF THE CONJUNCTURE INSTITUTE

The Conjecture Institute published two main periodicals: *Questions of Conjecture* (*Voprosy kon'yunktury*), which was the theoretical journal and which ran from 1925 to 1929, published yearly; and the *Economic*

Bulletin of the Conjecture Institute (Ekonomicheskii byulleten' Kon''yunkturnogo instituta), which was the applied and statistical journal and which ran from 1922 to 1929, published monthly. The *Ekonomicheskii byulleten'* began publication in the summer of 1922 under the imprint of NKZem, initially with a small print-run of 1000 to 1500 copies.³² In 1929 it was taken over by the Central Statistical Administration (TsSU), and it disappeared from view shortly afterwards. *Voprosy kon''yunktury* began publication in spring 1925 and was immediately noticed by economists in many countries. In a letter to Kondratiev the president of the American Economic Association, Allyn Young, wrote about *Voprosy kon''yunktury*: 'It is exceedingly reassuring to find that work of such merit can be conducted in Russia today'.³³ Kondratiev was the general editor of both journals, but Vainshtein assisted a great deal with the *Ekonomicheskii byulleten'*, and all the Conjecture Institute members were listed as being 'participants' on its title page. Much of the innovative theoretical work on business cycles done by Conjecture Institute members was published in *Voprosy kon''yunktury*, for example Kondratiev's first paper devoted specifically to long cycles was published in the 1925 issue, and Slutskii's famous paper on the random causes of cycles was published in the 1927 issue. The *Ekonomicheskii byulleten'* contained detailed reports on the current position of domestic and international markets, work on the composition of various indices such as retail prices indices and peasant purchasing power indices, and reports on the performance of Soviet industry and agriculture.

The Conjecture Institute also published a series of edited volumes under the title *Works of the Conjecture Institute (Trudy Kon''yunkturnogo instituta)* on specific themes. All the Conjecture Institute members published individual books and articles under the imprint of NKFin and NKZem, and in rival journals such as *Planned Economy (Planovoe khozyaistvo)* and *Economic Review (Ekonomicheskoe obozrenie)*. Kondratiev in particular published much of his agricultural policy writings in the journal *Paths of Agriculture (Puti sel'skogo khozyaistva)*, while Slutskii published some of his very technical work in *The Statistical Herald (Vestnik statistiki)*. Conjecture Institute reports on Soviet economic conditions appeared regularly in the *London and Cambridge Economic Service* until January 1928, these reports being taken from the *Ekonomicheskii byulleten'*.³⁴ Both the statistical and theoretical work of the Conjecture Institute was much referred to by contemporaries within and without the USSR, and it was usually through either *Voprosy kon''yunktury* or the *Ekonomicheskii byulleten'* that they referred to it.

THE STRUCTURE OF THE CONJUNCTURE INSTITUTE

At its height in the mid-1920s the Conjunction Institute was an impressive organisation. Kondratiev as director of the Conjunction Institute earned 350 rubles per month, and was responsible for planning and overseeing all its major activities. The deputy director was initially I.N. Leontiev. The three top ranking consultants were A.L. Vainshtein, who became deputy director after Leontiev's demotion, E.E. Slutskii (from 1926), and N.N. Shaposhnikov.³⁵ The scientific secretary of the Conjunction Institute was D.S. Cherkasskii followed by N.M. Stepanov, and the director of business matters was I.I. Ivanova. Kondratiev worked very closely with his consultants on specific issues. For example, he worked with Shaposhnikov on foreign trade policy and Vainshtein on peasant tax policy, and although Slutskii did not officially join the Conjunction Institute until 1926, his work in Kiev previous to this date was avidly followed by Kondratiev and had a clear affinity with the work of the Conjunction Institute.³⁶

The Conjunction Institute was divided into six basic sections, each having responsibility for particular areas of research. These sections were agricultural markets; indices and prices; monetary circulation and credit; industry, labour, trade and transport; the international economy; and the methodology of conjunction. I.N. Zhirkovich was the leader of the section devoted to agricultural markets, and below him in this section were I.N. Ozerov, N.P. Lyubimov, V.A. Revyakin and seven statisticians. M.V. Ignatiev was in charge of the section devoted to indices and prices. Below him A.A. Konyus was the scientific secretary of this section, and below him were L.M. Koval'skaya and G.S. Kustarev. Seven additional statisticians in this section were the lowest rung of the 'indices and prices' ladder. S.M. Mekler was in control of the section devoted to monetary circulation and credit, and below him were A.A. Karpov and three statisticians.³⁷ K.N. Smirnskii was the leader of the section devoted to industry, labour, trade and transport. Below him were Ya.P. Gerchuk, V.A. Utts, I.F. Sushkin and three statisticians. N.V. Yakushkin was in command of the section devoted to the international economy, and below him were M.I. Batuev, V.E. Shprink, O.E. Pryakhina and two statisticians. Finally N.S. Chetverikov was in control of the section devoted to the methodology of conjunction.³⁸ Below him were T.I. Rainov, M.L. Kurasheva, and two statisticians.³⁹ Another important associate of the Conjunction Institute was D.I. Oparin, who was Kondratiev's main critic over the idea of long cycles.

There appear to have been no clear hierarchical divisions between

the sections of the Conjunction Institute. The largest with 12 staff members was the section devoted to indices and prices, and the joint smallest with five members were the sections devoted to monetary circulation and credit and the methodology of conjunction. It is clear that the three top-ranking consultants had the authority to work in any of the areas of responsibility of the various sections, as of course did the director. For example Shaposhnikov worked both on foreign trade policy, which might come under the jurisdiction of the international economy section, and monetary policy, which might come under the jurisdiction of the monetary circulation and credit section. What level of assistance the consultants received from the staff at the Conjunction Institute in elaborating ideas in policy areas is undetermined, although it seems likely that at least the statisticians of particular departments would have been used in preparing policy proposals which relied on numerical comparisons as a form of argument. In his publications on long cycles Kondratiev gave recognition to many Conjunction Institute members for assistance with the statistical element of the analysis, and thus much of the work attributed to individual members of the Conjunction Institute should be regarded in part as a group effort.

The roles of the various staff positions within the Conjunction Institute were as follows. The director was responsible for the general administrative and academic leadership of the Institute, for distributing work between sectors, and for elaborating the programmes of the Institute. He represented the Conjunction Institute in meetings and commissions on a national and international level, edited the publications of the Institute, and controlled communications and relations with NKFin. The deputy director filled the role of director in his absence, for example when Kondratiev travelled overseas, as well as organising the work of the Conjunction Institute within and between sections. The deputy director also represented the Conjunction Institute in the Conjunctional Council of Gosplan, in the Central Statistical Administration (TsSU), The People's Commissariat of Trade (NKTor), The Supreme Council of the National Economy (VSNKh), and other economic and administrative organs.

Consultants worked on economic and statistical matters which were currently under investigation by the Institute, and they fulfilled any special tasks set by the People's Commissar and collegium of NKFin. They participated in temporary commissions and conferences set up on specific issues, and represented the Institute in NKFin on specialised questions. Academic secretaries organised the links between the Conjunction Institute and other institutions of the USSR in an admin-

istrative sense, as well as between the Conjuncture Institute and analogous institutions overseas.⁴⁰

The theoretical work of many Conjuncture Institute members was closely linked to their area of specialisation indicated above. For example, Konyus worked on peasant indices and the purchasing power of money, Leontiev calculated seasonal variations in price series, Rainov worked on the problem of economic equilibrium, and Chetverikov investigated methods of calculating dynamic series. However, the most important members of the Conjuncture Institute were obviously the director, the deputy director, and the three consultants, and these economists worked in many different and overlapping areas of specialisation.

SOVIET ECONOMIC POLICY IN THE 1920s

Much attention has been given to debating whether leading Bolsheviks such as Bukharin, Trotsky and Rykov could have provided an alternative programme for the economic development of the USSR after 1929.⁴¹ It is the contention of this book that a real but neglected alternative to Stalinist industrialisation came from Kondratiev and the economists associated with him in the Conjuncture Institute such as Shaposhnikov and Vainshtein, as well as from other non-Marxist economists who were close associates of Kondratiev such as Yurovskii and Makarov. This group of economists consistently proposed a market-led industrialisation programme for the USSR based on the accepted tenets of mainstream economics, which was an alternative to Stalin's forced industrialisation policy based on compulsion and fear. The initial rate or speed of the Kondratiev path of industrialisation may have been slower than the actual Stalin path, but in the long term the Kondratiev path may have yielded a more advanced economy and a more acceptable social system than the Stalin path produced. Obstacles to the Kondratiev path such as considerations of war may have been important factors in the debate over alternatives, and these are examined as far as is possible in this context.

Due to the political circumstances of the 1920s, Kondratiev never wrote a single programme entitled 'A Market-Led Path of Industrialisation for the USSR'. However, after a thorough study of Kondratiev's works it is clear that he did support such a path, that the details of this path are scattered throughout all his policy-relevant writings from this period, and that his opponents realised that he was advocating such a path at the time. It is one of the main aims of the policy sections of

this book to piece together the various components of the Kondratiev path as far as it was elaborated by Conjuncture Institute members, and to judge its feasibility. The various elements of the Kondratiev path are found in (for example) Kondratiev's plan for agriculture and forestry 1924-28, Shaposhnikov's work on Soviet foreign trade policy, Kondratiev's examination of industrialisation in America, Vainshtein's analysis of peasant tax policy, Kondratiev's account of the necessary interrelation of agriculture and industry, Shaposhnikov's work on the net present value (NPV) concept, and Kondratiev's analysis of the position of international grain markets throughout NEP.

Readers should note that it is not being suggested that the Kondratiev path had much chance of being adopted by the Bolsheviks after the death of Lenin in 1924, nor that it would have necessarily led to abundance within Soviet borders. It is simply being established that this path was clearly elaborated by economists within the USSR in the 1920s, and the question is posed whether such a path might have been preferable to the actual path which was chosen. The political forces which would have been required to implement the Kondratiev path were eventually defeated by the Bolsheviks, and hence a decisive defeat of the Bolsheviks would likely have been required for the Kondratiev path to have any real chance of implementation. However, a detailed discussion of alternatives in this political sense is outside the scope of this book.

An econometric test of various alternative strategies for the economic development of the USSR was recently attempted by Holland Hunter and Janusz Szyrmer. Using the balance of the Soviet economy prepared in 1932 as a framework, Hunter and Szyrmer calculated the impact of hypothetical changes in specific policy variables on Soviet economic performance to 1941, for example, changes in variables such as population growth, defence outlays, livestock consumption, and factor productivity. Most relevant to what will be outlined as the Kondratiev path was changes to the growth of foreign trade and collectivisation policy. They concluded that even if Soviet exports and imports had grown by 20 per cent annually after 1928, the favourable impact on the level of capital in 1941 would have been only 4 billion rubles by 1941.⁴² Although this level of improvement is not to be dismissed as negligible, the impact of collectivisation was far greater. According to Hunter and Szyrmer if collectivisation had been avoided, then the share of heavy industry and construction in total gross output would have been between 55 per cent and 59 per cent in 1940, instead of the actual level of 45 per cent.⁴³ With changes to the other variables in-

volved, the absence of collectivisation gave additional fixed capital of between 34 billion and 46 billion rubles in 1941.⁴⁴ Hunter and Szyrmer concluded that their calculations 'might have added weight to the arguments of economists like Kondratiev' if they had been available to delegates at the Fourteenth Party Congress in December 1925.⁴⁵ In the policy sections of what follows the degree to which Kondratiev and the Conjunction Institute were aware of the impact of these possible alternatives is examined.

Another more philosophical way of seeing the debates which occurred in the 1920s over economic policy is in terms of the traditional Russian dichotomy of Westernisers versus Slavophiles. In the 1830s and 1840s Slavophiles such as Ivan Kireevskii strongly promoted the native elements in the social life of Russia, against Westernisers such as Vissarion Belinskii who stressed the positive role of Western influences in the modernisation of Russia.⁴⁶ The Slavophiles idealised Russia's political past and national character, and stressed that Russia should develop along its own unique path. Westernisers, however, wanted Russia to assimilate (West) European science and secular enlightenment.⁴⁷ In this context Kondratiev and the Conjunction Institute were unambiguous Westernisers, promoting the economic integration of Russia into the world economy, against the Slavophilic idea of 'socialism in one country' which was eventually promoted by Stalin.

A further question relevant to the debates over industrialisation policy is the level of industrialisation Russia had achieved by 1913, the base year which is often used to measure Soviet achievements. R.W. Davies explained that the Tsarist economy on the eve of the First World War was still primarily an agrarian peasant economy, with agriculture responsible for over half the national income and three-quarters of all employment. The development of a railway network had begun in the 1860s, and in the 1890s the Minister of Finance Sergei Witte had begun a programme of state assistance for capital goods industries: even so, by 1913 large-scale industry employed only 4 per cent of the labour force.⁴⁸ M.E. Falkus related that in 1913 the per capita industrial output of the USA was more than ten times that of Russia, although in absolute terms Russia's industrial sector was ranked fifth in the world.⁴⁹

As regards the Soviet achievement, Mark Harrison outlined that the employment share of agriculture declined from 75 per cent in 1913 to around 50 per cent in 1940, and that its contribution to national income fell from 50 per cent to 30 per cent in the same period.⁵⁰ This suggests that some progress had been made in the industrialisation of Russia after 1917, although at great human and ecological cost. However,

as Falkus noted certainly in 1913 (and still in many respects by 1940) the structure of Russian/Soviet industry was not comparable with other advanced nations. Aspects of industrialisation had begun to develop, but in 1913 Russia was still many decades behind the USA. As Kondratiev pointed out after his trip overseas, by the mid-1920s the agricultural population in the USA was only 22 per cent of the employed workforce;⁵¹ Harrison's figures were 75 per cent in 1913 for Russia and still 50 per cent for the USSR in 1940.

BUSINESS CYCLE ANALYSIS IN THE 1920s

Since some of the detailed analysis of the theoretical work of the Conjecture Institute involved reference to then-standard ideas in economics, this section provides a framework in which to locate much of the business cycle theory prevalent in the 1920s. Jens Andvig gave the following accurate description of the growth of business cycle analysis in the 1920s:

The development of empirical business cycle research in the 1920s was a rather dramatic episode in the historical development of modern economics. Seldom has a research field increased so fast and apparently become so like a mature science – not so advanced as physics perhaps, but at least something like botany or zoology.⁵²

Andvig divided cycle research in the 1920s into a number of competing 'schools' having various unique characteristics. The basic distinction was between empirical and theoretical approaches. Empirical centres such as Mitchell's NBER made great progress in the systematised collection and empirical analysis of data, but theory development was not a priority. Andvig argued that the 'hard core' of the empirical research programme was the collection and manipulation of a large number of economic time series in order to reveal the cyclical elements. The procedure was to fit a trend to the data, observe the difference between the trend and the observed value, and clean for seasonal factors. What remained was the 'real' cyclical component plus an erratic factor. An important aspect of the empirical school was the development of various business 'barometers', which attempted to show how economic variables moved over time in relation to other variables. Through this technique it was hoped to reveal how the business cycle as a whole operated, and examples included the Harvard Business Barometer and Babson's Business Barometer.⁵³ By stating in the section on the em-

pirical school that 'even the Conjecture Institute was on everybody's mailing list', Andvig implied that Kondratiev's centre was predominantly part of the empirical school.⁵⁴

The theoretical research programme in the 1920s was also divided into a number of competing schools. Andvig gave these as being the Cambridge school of J.M. Keynes and Dennis Robertson, the Austrian school of Ludwig von Mises and F.A. Hayek, and the Swedish school of Gunnar Myrdal and E.R. Lindahl. The UK economists R.G. Hawtrey and A.C. Pigou, and the US economist Irving Fisher could also be added to Andvig's list. Robertson's *A Study of Industrial Fluctuation* of 1915 and Hawtrey's *Good and Bad Trade* of 1913 could easily have influenced Kondratiev, and Fisher's *The Purchasing Power of Money* of 1911 was frequently quoted in Conjecture Institute literature. According to Andvig the theoreticians were committed to explaining economic cycles within an equilibrium framework in which the actions of various economic agents were reconciled, and they constructed various models based on the assumption of rational individual behaviour. Examples of this were Hayek's *Monetary Theory and the Trade Cycle* originally published in 1929 and Pigou's *Industrial Fluctuations* of 1927. The theoretical school were concerned not with empirically observed variables but with *a priori* theory construction based on intuitive reasoning, although any theory had of course to be consistent with the facts.⁵⁵

In partial opposition to both the empirical and theoretical schools outlined above, Andvig placed Ragnar Frisch in an original econometric research programme devoted to constructing a mathematical analysis of economic variables. This approach required a theory of econometrics to be outlined while at the same time being empirically oriented towards explaining the observed elements of the business cycle. According to Andvig Frisch thought that the observable business cycle was created by the interference between waves of different periodicity and amplitude.⁵⁶ Frisch seems to have believed in the Kondratiev cycle as one of these interfering waves, finding its origins in stochastic exogenous events.⁵⁷ Andvig suggested that it was Frisch and others like him who tried to bridge the gap which existed in the 1920s between the theoretical economists like Hayek and Robertson, who failed to make their theories operational, and the empirical school represented by Mitchell, who used statistical techniques without much concern for theory. It is one of the tasks of this book to place Kondratiev and the Conjecture Institute within this framework of business cycle analysis in the 1920s, and to demonstrate how within the Conjecture Institute elements of

the empirical, theoretical, and econometric approaches to the study of business cycles as outlined by Andvig coexisted and flourished. It will be suggested that Kondratiev and especially Slutskii began on a path similar to Frisch, but were cut short from fully realising their potential in this respect due to political circumstance.

Kondratiev himself operated with a type of distinction between empirical and theoretical analysis of the business cycle similar to the distinction outlined above by Andvig. In *The World Economy and its Conjuncture During and After the War* (*Mirovoe khozyaistvo i ego kon'yunktury vo vremya i posle voyny*) of 1922 Kondratiev wrote:

The works of Cournot, Jevons, Walras, Pareto, Clark, Marshall, and Schumpeter more and more differentiate between the dynamic point of view and the static, and establish several propositions in a theory of economic dynamics. The works of Tugan-Baranovskii, Aftalion, Mitchell, Spiethoff, Eillenberg and others examine the problem of economic cycles on the basis of empirical data. Despite this the theory of dynamics is still far from complete . . . The resolution of these problems requires great strength in abstract theory but cannot be successful without a simultaneous empirical analysis of these questions.⁵⁸

Kondratiev realised that some type of approach which aimed at combining theoretical abstraction with empirical analysis was required in order to further the study of economic cycles. The obvious place for this to happen was the Conjuncture Institute.

WESLEY MITCHELL'S NBER

Wesley Mitchell's National Bureau of Economic Research devoted a great deal of activity to identifying business cycles in historical data from the nineteenth and twentieth centuries in countries such as the USA, Germany and England. The early work of the NBER involved compiling comprehensive chronological records of economic activity in the form of 'business annals', and collecting statistical time series of particular variables in order to test for cyclical patterns.⁵⁹ The work of Mitchell and A.F. Burns drew a distinction between 'specific cycles', relating to particular time series, and 'reference cycles', relating to the economy as a whole, a distinction which is still used today. To decide if movements could be genuinely classed as cycles a combination of a duration rule and a minimum amplitude rule was used by the NBER.

The duration of a possible cycle must be at least 15 months and less than 10 or 12 years. The amplitude rule related to the lower limit of the range of all fluctuations that can be classed as business cycles.⁶⁰ Amplitudes were expressed from trough to peak as a percentage of the average monthly value of the series during the cycle.⁶¹

Mitchell was keen to point out that his work attempted a synthesis of previous theories of cycles. He wrote in 1913 that 'none of the theories of business cycles summarised in part I [of *Business Cycles*] seems to be demonstrably wrong, but neither does any one seem to be wholly adequate.'⁶² Mitchell outlined the limitations of various existing cycle theories and how much his own work had borrowed from predecessors as follows. For example, Arthur Spiethoff's theory of ill-balanced production supplied two elements which Mitchell used in modified form: the underproduction of complementary goods, which appeared in the guise of an increase in material costs, and the overproduction of industrial equipment, which was used as one of the reasons why it was difficult to increase retail prices. Jean Lescure's theory of variations in prospective profits and Thorstein Veblen's theory of the discrepancy between profits and capitalisation were combined by Mitchell to explain how prosperity breeds crisis. And Irving Fisher's analysis of the lagging adjustment of interest rates to changes in the price level was used by Mitchell as one of the factors which widened the margin of profit in the early stages of prosperity. In general Mitchell's early theory of the business cycle was really an attempt to bring together many different elements of existing theories in a detailed descriptive account of how the business cycle progressed stage by stage. Mitchell did not attempt to determine one ultimate cause of the cycle by which all other factors could be explained, and in this sense Mitchell's approach was multi-causal or functional.

Mitchell's first major work *Business Cycles* was published in 1913, and it was the first detailed search for cycles in a comprehensive international survey of statistical data ever published in English. In 1927 the NBER published *Business Cycles: The Problem and its Setting*, which was a much revised analysis of cycles using more recent statistical data and more sophisticated techniques. A Russian translation of an article by Mitchell entitled 'The International Nature of Cyclical Fluctuations' was published by Kondratiev in *Voprosy kon'yunktury* in 1927, and a Russian edition of Mitchell's *Business Cycles: The Problem and its Setting* was published in Moscow in 1930. Mitchell's work had an important impact on business cycle analysis in Russia and much common ground between the NBER and the Conjuncture Institute should

be expected. Kondratiev sent a copy of the Russian translation of Mitchell's book to the NBER in New York on 5 April 1930, in which he wrote: 'To Professor W.C. Mitchell – author of this remarkable book, with compliments of the editor of the Russian translation'.⁶³ In many ways Mitchell and his colleague Arthur Burns were the economists closest to Kondratiev in theoretical terms.

CONCLUSION

It should be clear from the above introduction that the work of Kondratiev and the Conjunction Institute was an integral part of the dramatic development of business cycle analysis which began to occur on the international stage after 1920. The fact that Russia had undergone a spectacular revolution in 1917 and was attempting to construct a completely new economic system was possibly seen by Kondratiev as a way for the Conjunction Institute to add a unique element to their study of cycles which could not be replicated elsewhere.

Kondratiev's attitude to socialism as a political ideal remained somewhat ambiguous throughout the 1920s, as will be seen in later chapters, but he did at least initially share some of the egalitarian aims of the revolutionaries. What much of Kondratiev's work implicitly criticised was the low level of understanding of economics which was common among socialists and Bolsheviks at this time, and he probably hoped that the Conjunction Institute could demonstrate to the Soviet leadership how inadequate their understanding of the Russian/Soviet economy actually was. Instead the Conjunction Institute was closed permanently in 1930, just when the Soviet government would need it most, but before this happened Kondratiev and his colleagues in the Conjunction Institute were able to provide some genuinely spectacular developments of their own.

2 Kondratiev before the Conjecture Institute

This chapter examines Kondratiev's student years in St Petersburg, his membership of the Socialist Revolutionary (SR) party, his relationships with his tutor Tugan-Baranovskii and his best friend Sorokin, his early work on the zemstvo (local self-government institutions), his role in the Provisional Government as Minister for Food Supply, his approach to agrarian reform, his attitude to the Bolshevik revolution, and finally the monograph *The Grain Market and its Regulation at the Time of War and Revolution* (*Rynok khlebov i ego regulirovanie vo vremya voyny i revolyutsii*). Each of these topics could occupy an entire chapter, but as the main focus of the book is the 1920s, these aspects of Kondratiev's life are covered in less detail.

THE YOUNG KONDRATIEV

Nikolai Dmitrievich Kondratiev was born on 4 (17) March 1892 to a peasant family near Vichuga, Ivanovskaya region (*oblast'*), a town approximately 200 miles north east of Moscow. His parents were Dmitrii Gavrilovich and Lyubov' Ivanovna Kondratiev and he was the oldest of ten children.¹ In 1910 Kondratiev became a student in the juridical faculty of St Petersburg University, where he attended the seminars of M.I. Tugan-Baranovskii on political economy, V.V. Stepanov on statistics, and V.V. Svyatlovskii on economic history. In his first year Kondratiev gave a paper entitled 'Teleological Elements in Political Economy' at a seminar of Tugan-Baranovskii, in his third year a paper on 'Economy and Society According to P.B. Struve', and in his last year a paper entitled 'War and World Economy' at a seminar of Svyatlovskii.² Also involved with tutoring Kondratiev at this time was A.S. Lappo-Danilevskii, a well-known historian and sociologist, but the influence of Tugan-Baranovskii was to be the most enduring.³ In 1915 Kondratiev graduated with a first-class diploma, and in the same year he published his first monograph using materials from zemstvo statistics entitled *The Development of the Economy of Kineshma Zemstvo in Kostroma Province* (*Razvitie khozyaistva Kineshemskago zemstva*

Kostromskoi gubernii). After graduation Kondratiev was retained in the sub-faculty of political economy and statistics within the juridical faculty of St Petersburg University from 9 November 1915 to 1 January 1917, where he received a stipend of 615 rubles a year.⁴

In 1905 Kondratiev joined the Socialist Revolutionary (SR) party. The SRs had been established in 1901 out of the Populist (*narodnik*) current of Russian social thought, and became the party of agrarian socialism. For the SRs socialism and democracy were equally important principles, although they considered it justifiable to use violence in the struggle against the non-democratic Tsarist regime. One of the most important goals of the SRs was socialisation of the land. In his early years Kondratiev was a socialist with peasant sympathies, but not a Marxist of the Bolshevik/Menshevik type.⁵ In fact Marx figured only infrequently in Kondratiev's work both before and after the revolution, and Kondratiev's SR sympathies can be seen clearly in his work on agrarian reform from 1917. In 1906, at the age of 14, Kondratiev was elected as a member of the Kineshma district SR committee. He was later arrested for his SR activities and spent seven months in prison as a consequence. This was to be the first of a number of periods in jail. When he initially moved to St Petersburg Kondratiev was without any means of support and hence was quite poor, although he eventually passed the entrance examinations and enrolled in St Petersburg University.⁶ In 1916 Kondratiev published an account of one of his tutors, M.M. Kovalevskii, following his tutor's death, in which he described Kovalevskii as the 'father of Russian sociology'.⁷ However, Kondratiev's interest in sociology only re-surfaced after he was arrested and jailed in the 1930s.

One of Kondratiev's closest friends in these early years was Pitirim A. Sorokin, later a famous sociologist, who was three years older than Kondratiev. Sorokin emigrated to the USA after being expelled from the USSR in 1923. In 1937 Sorokin published a four-volume work entitled *Social and Cultural Dynamics*, which applied the concept of cyclical development to social and cultural phenomena such as law and high art. Although Sorokin did not admit this in print, possibly out of concern for Kondratiev's position, the influence of Kondratiev on this work was extensive, implying that each had influenced the intellectual development of the other greatly.

In his autobiography Sorokin wrote fondly of his many friends while he was a student:

The closest of these friends was Kondratieff. As I mentioned before, we were together in the Teachers' Seminary. Several months after

my discharge from it, Kondratieff was also expelled for his revolutionary activities. Informed of my attendance at the night school, he moved to St Petersburg and enrolled in that school in the spring semester of 1908. In the fall semester of that year we rented a room, and Kondratieff and I continued to be roommates during several years of our university studentship.⁸

Sorokin related that after graduating from university, he rented a room in an old apartment house together with Kondratiev and his younger brother. Their typical diet was tea and a roll, occasionally supplemented by a piece of sausage or cheese. Food did not cost more than 10 to 12 rubles per month, and a monthly income of 25 to 30 rubles was sufficient to meet all their material needs. Sorokin explained the rationale for this austere diet as follows:

Of course, Kondratieff and I could have earned more but we preferred to spend most of our time and energy in enjoyable, creative activities rather than wasting our life in the more gainful but boring occupational pursuits we considered sterile for our mental, moral, and cultural development . . . We lived an intense intellectual life through our concentrated study of the problems and sciences we were interested in, through hearty discussions with our professors, fellow students, and friends, and through the writing and publication of our first scholarly papers.⁹

Soon they were granted fairly good teaching and research assistantships, and both Sorokin and Kondratiev received increasingly ample remunerations for their work. Sorokin's description of his student life suggests that he and Kondratiev were very close in intellectual, political and personal terms, and he gives the impression of their early lives as being idyllic, at least compared to later years:

After the Bolsheviks had taken power in 1917, for a period of about a year Kondratiev did not accept their moral authority to govern, but by the beginning of 1919 he had become resigned to their continued dominance. At the beginning of 1918 he moved to Moscow and began work as manager of the economic department of the Central Association of Flax-Spinners (*Tsentrāl'noe tovarishchestvo l'novodov*), working also in the National Bank at this time. As a consequence of this move Kondratiev met Muscovite economists such as L.N. Litoshenko, N.P. Makarov and A.V. Chayanov for the first time, these being economists with similar agricultural interests as Kondratiev.

According to Figurovskaya, Kondratiev was surprised at the different approach adopted by Muscovite intellectuals compared to those in

St Petersburg. He found that Muscovite scholars were more inclined to practical and empirical methodologies, whereas in St Petersburg there had been a strong influence of the Western European theoretical tradition. In his work in the Conjunction Institute in the 1920s Kondratiev would combine these two approaches to great effect. In Moscow in 1918 Kondratiev also became involved with the Cooperative Institute of the All-Russian Cooperative Congress led by S.N. Prokopovich, where in 1919 Chayanov founded his Higher Seminars of Agricultural Economy and Policy. Within the latter Kondratiev headed the laboratory of agricultural conjunction, which became the Conjunction Institute in 1920.¹⁰ Like Sorokin, Prokopovich was forced to leave the USSR at the beginning of the 1920s, and the possibility of emigration would have presented itself to Kondratiev in the post-revolutionary period. However, the temptation must have been insufficient as (like Chayanov) Kondratiev chose to remain in the USSR.

KONDRATIEV AND M.I. TUGAN-BARANOVSKII

One of the founders of modern business cycle analysis, M.I. Tugan-Baranovskii (1865–1919), was Ukrainian, and hence it might be expected that the Slavonic contribution to business cycle analysis would remain strong in the 1920s. Tugan-Baranovskii's major work on the business cycle, *Industrial Crises in Contemporary England (Promyshlennyye krizisy v sovremennoi Anglii)*, was first published in 1894 in St Petersburg, and this was followed by a more theoretical revised edition entitled *Periodic Industrial Crises (Periodicheskie promyshlennyye krizisy)*. As noted above Kondratiev was a pupil of Tugan-Baranovskii in the economics department of St Petersburg University between 1910–15, and hence it is clear where Kondratiev's interest in cycles originated. Jasny suggested that Kondratiev's meteoric rise to fame was due in considerable measure to his being one of Tugan-Baranovskii's closest pupils.¹¹ While this is partially true, Kondratiev's approach to the study of cycles differed in important respects from that of his tutor. This can be seen from the account of Tugan-Baranovskii's theory of cycles given below.

Tugan-Baranovskii distinguished between three basic approaches to explaining crises as follows. The firstly saw the cause of crises in the sphere of production (Say and Ricardo), the second in the sphere of exchange (Tooke and Juglar), and the third in the sphere of distribution (Sismondi and Malthus). In the Say–Ricardo view it was disproportional

distribution of production which caused crises;¹² in the view of the second group it was increased speculation and overtrading on commodity and money markets; and in the third it was insufficiently developed consumption of wealth in various classes of the population which caused crisis.¹³ Tugan-Baranovskii's own view was that crises were *provoked* by the fact that in the upturn capital was consumed at a faster rate than it was formed. However the basic *cause* of crises was national poverty (*narodnaya bednost'*), or the low level of consumption of the working classes. Proportional distribution of production was only a problem because production was conducted for profit, which was then accumulated by capitalists.¹⁴ This process of accumulation allowed the link between production and consumption to be broken, out of which the possibility of crisis arose. Unlike Say, Tugan-Baranovskii believed that in a monetary economy partial overproduction could and did develop into general overproduction.¹⁵ Tugan-Baranovskii's approach to explaining cycles is usually called a disproportionality approach.

However, as will be seen throughout this book, Kondratiev was less concerned with providing a definitive theoretical explanation of the 7-11 year business cycle, than with empirically identifying new types of cycle and examining interrelations between cycles of various periods and in different branches of the economy. In this approach Kondratiev was moving beyond Tugan-Baranovskii, into the area of research being pursued by Wesley Mitchell, A.F. Burns, and the National Bureau of Economic Research in New York.

One common element between Kondratiev and Tugan-Baranovskii was their rejection of the idea that capitalism would necessarily perish in a spectacular economic collapse. In a short pamphlet written in praise of his tutor, Kondratiev explained that for Tugan-Baranovskii capitalism was intrinsically capable of continuous development. Crises were not a symptom of approaching breakdown, but the method capitalism used for overcoming temporary problems.¹⁶ Kondratiev had studied Marx's *Capital* in Tugan-Baranovskii's seminars at St Petersburg University, and thus had a working knowledge of this doctrine, but Kondratiev became more critical of Marxism than his tutor. For example in 1923 Kondratiev described Tugan-Baranovskii's theory of sociology as being a 'primitive Marxist' approach.¹⁷ However, Kondratiev did find common ground with Tugan-Baranovskii's politics before 1917, in that they both shared a concern for the ethical side of socialism.

KONDRATIEV'S ANALYSIS OF THE ZEMSTVO

Kondratiev's first full-length book was *The Development of the Economy of Kineshma Zemstvo in Kostroma Province* (*Razvitie khozyaistva Kineshenskago zemstva Kostromskoi gubernii*) published in 1915 with a print run of only 600 copies. In this book Kondratiev attempted to analyse the development of forms of zemstvo in relation to the social-economic structure of life in the relevant county (*uezd*) using very detailed statistical materials. This work is over 400 pages long and is a very impressive scholarly debut. The conclusions drawn by Kondratiev suggest that even at this early stage he was straining to go beyond the narrow detail of a particular county to the grand sweep of the tensions between developing economic systems. This book was also the culmination of an interest in the locality in which he was born.

The zemstvo (plural zemstva) as an institution was first introduced in Russia in 1864, and it was entrusted with the management of affairs relating to local economic welfare. Zemstva consisted of assemblies and executive boards, the former having decision-making power and the latter executive power, and were composed of representatives of the local population elected by male citizens on an unequal franchise. They existed both at province (*guberniya*) and county (*uezd*) level, and by law contained representatives of three social groups – the peasantry, the townsmen and the gentry.¹⁸ The zemstvo movement brought forward a group of statisticians such as N.A. Khablukov and A.I. Chuprov whose work influenced Kondratiev to some extent, partly through the fact that some of Kondratiev's opponents in NEP such as V.G. Groman had been zemstvo statisticians.

In *The Development of the Economy of Kineshma Zemstvo*, Kondratiev argued that the key variable which characterised the level of services and utilities (*blagoustroennost'*) of zemstvo economy was the zemstvo budget. This applied not only to Kineshma zemstva, not only to all zemstva in general, but to every kind of public economy: urban, state, *obshchina* (rural commune) and so on. Kondratiev explained that the Russian financial system was very different to the various West European financial systems, in that the Russian system centralised financial means in the hands of the state to a much greater degree than those in Western Europe. Consequently local Russian organs of self-management had greater difficulty in being granted adequate financial powers.¹⁹

Examining the zemstvo in particular, Kondratiev outlined that they differed from each other according to the structure of their budget income. One zemstvo was poor, another wealthy, one had income orig-

inating mainly from land, another from trade and industry. According to Kondratiev, zemstvo budget income was determined by the economic structure of the given district (*krai*). Wealthy districts provided strong zemstvo budgets, poor districts had low zemstvo budgets. In industrial districts zemstvo income came mainly from trade and industry, in agricultural districts this income came from the land. Focusing on Kineshma zemstva in particular, Kondratiev related that they lay in an area of relatively wealthy zemstva whose main source of income was the taxation of trade and industry. The growth of budget income in Kineshma was accounted for predominantly by the economic growth of the region, increasing levels of taxation and by government subsidies.²⁰

Kondratiev then provided a general analysis of the zemstvo as an economic system. What distinguished the zemstvo from other organisational forms was its motivating drive, that of providing social service (*sotsial'noe sluzhenie*) to its members. For Kondratiev this meant that zemstvo activity could be called 'planned' in a specific sense of the word. The zemstvo was also characterised by the absence of the motive of personal profit (*lichnyi vygoda*) which drove private economy. Moreover it was not only the motivating principle of zemstvo economy which differed from private, but the form of management as well. The zemstvo used collective organs of management – zemstvo assemblies (*sobraniya*) – which meant that economic competition was minimised. However, Kondratiev was concerned to point out that even though zemstvo management organs were run on collective principles, such organs were composed of individual people of various social positions and views. Thus some level of friction and disputation between members was inevitable even within zemstva.²¹

Kondratiev's methodological conclusions in this work were as follows. Zemstvo economy was a type of 'public law' economy which was very different from private economy. The motivation of the zemstvo was social service, which expressed itself in the provision of facilities such as schools and hospitals. If private economy was decentralised and based on exchange and competition, then public economy was centralised and based on obligations and service. However, Kondratiev again stressed that contradictions still existed within all zemstva, as in reality they were not purely public institutions. Many elements of the private economic order existed within the zemstvo, for example buying and selling, the hiring of individual labour, and the paying of wages. Kondratiev thus implied that the zemstvo was in fact economy of a mixed type, incorporating both private and public elements, and warned that it was necessary to keep this in mind while studying this economic

system.²² The theme of viewing different types of economy as mixed would return in Kondratiev's work during the New Economic Policy (NEP).

KONDRATIEV AS MINISTER OF FOOD SUPPLY

Kondratiev's main areas of concern during much of 1917 were topics relating to food supply (*prodovol'stvie*) and land reform. As a member of the Socialist Revolutionaries in June 1917 he became the chairman of the economic section of the executive committee of the All-Russian Council of Peasant Deputies, and he also participated in various commissions in areas such as land reform. In a meeting of the executive committee of the Council of Peasant Deputies on 28 June 1917 he was chosen as a candidate for the Constituent Assembly, and in August 1917 along with P.A. Sorokin and others Kondratiev was chosen as a member of a committee created to fight against counter-revolution. This was of course counter-revolution directed at February not October.

On 27 June 1917 the Minister of Labour within the Provisional Government had written an appeal to workers to refrain from strike action and excessive wage demands. On 2 July Kondratiev wrote an article in *The People's Will* (*Volya naroda*) supporting the Minister's appeal for workers to assist in the prevention of Russian industrial breakdown. Kondratiev rejected the demands of workers for increased wages and asked them to 'settle conflicts with industrialists in conciliatory chambers'.²³ He pointed out that industrial decline was felt equally by rural and urban inhabitants, and warned that having already accepted fixed prices and state control against their interests, the rural population was beginning to mutiny. Kondratiev concluded by stressing that the interests of the working class were intimately interwoven with those of the peasantry.²⁴ Thus even as early as 1917 Kondratiev was calling for cooperation between workers and peasants, and this would be a theme which Kondratiev would pursue with even greater vigour during NEP.

In October 1917 Kondratiev became the Minister of Food Supply in the Provisional Government, the highest position he was ever to occupy in the political bureaucracy of state power.²⁵ *Information on Food Matters* (*Izvestiya po prodovol'stvennomu delu*) records that Kondratiev became Minister on 7 October, approximately three weeks before the Bolsheviks assumed state power.²⁶ The impetus for Kondratiev's appointment as Minister of Food Supply can be traced at least in part to

the 'April crisis' in the Provisional Government, during which the Minister of Foreign Affairs had written a note strongly in favour of continuing the war to a victorious conclusion. This led to large-scale street protests and to the formation of a coalition government in which an SR (V.M. Chernov) was Minister of Agriculture.²⁷ From May 1917 onwards the Ministry of Agriculture remained in SR hands, S.L. Maslov becoming Minister from 25 September until the Bolsheviks assumed control at the end of October.²⁸ Maslov was politically to the right of Chernov, this change being sanctioned by the central committee of the SR party.²⁹

The agrarian programme favoured by Maslov involved putting an end to the exploitation of the peasantry by owners of large estates, whereas the SR party programme had previously been to end the estates as such.³⁰ It was likely that Kondratiev was chosen as Minister of Food Supply – a post closely connected to agriculture – by Maslov, so that a consistent and coordinated policy could be pursued in the related areas of agriculture and food supply. However, the fact that Kondratiev was chosen to work with Maslov and not Chernov suggests that by September 1917 he was on the right wing of the SR party. As with many other state institutions, after the Bolsheviks assumed power at the end of October the Ministry of Food Supply continued to operate for a short period, but on an unrecognised and ambiguous footing.

Efimkin described the last days of the Ministry of Food Supply as follows. On 25 October 1917 the Provisional Government was overthrown, but for almost two weeks after this date the new Soviet authority controlling food supply failed to assume power with any degree of decisiveness. Kondratiev continued to sign orders as Minister until 13 November, when he signed the last official order of the Ministry of Food Supply – he ordered that the products of the fat industry should be distributed according to Ministry guidelines.³¹ On the following day Red Army guards occupied the headquarters of the Ministry of Food Supply, but still the old Provisional Government organ refused to bow to the new Soviet power until force was decisively employed. Even at the All-Russian Congress of Food Supply, held from 18–24 November in Moscow, Kondratiev was still directing the activities of the Ministry of Food Supply, stressing that the Ministry was not on strike or engaged in sabotage and should therefore continue to operate. However simultaneously with this Congress, in Petrograd the new Soviet authority – The People's Commissariat of Food Supply (NKProd) – was beginning to swing into action.³² By January 1918 NKProd had

taken decisive control of food supply matters. Kondratiev's refusal to desist from ministerial activities suggests that he was not afraid to provoke confrontation with political opponents when necessary.

At the All-Russian Congress of Food Supply in November, Kondratiev was elected to the All-Russian Council of Food Supply, the so-called Council of Ten. The Council of Ten proposed to the Council of People's Commissars (SNK) that it should retain powers over the apparatus of food supply, but this idea failed to impress SNK, and Kondratiev and the Council of Ten were arrested on 27 November outside the Ministry's headquarters.³³ The imprisoned representatives were soon released subject to the provision that they conform to SNK proposals on food supply matters. On 9 December 1917 Kondratiev was again involved in political activity, this time as a candidate for membership of the Constituent Assembly representing Kostroma province. Kondratiev's involvement with organs of food supply finally came to an end in January 1918 when a new Soviet food supply organ was created, the All-Russian Soviet of Supply.³⁴ Ivanov noted that in the period from February 1917 to January 1918 Kondratiev was involved closely with the practical activity of his area of government, and hence that many of his views on economic policy were formed in this time. During 1917 Kondratiev had published his ideas not in academic journals but mainly in newspapers, for example the SR newspaper *The People's Will* (*Volya naroda*) carried ten articles by Kondratiev between March and August 1917 with titles such as 'The Supply of the Countryside and the Food Crisis' and 'The Socialisation of Land and the Productivity of Agriculture'. Kondratiev's activities in this period were the closest he ever came to holding substantial political power.

Kondratiev's speech at the All-Russian Congress of Food Supply in November 1917 revealed his conception of the proper role of the Ministry in various food supply matters. He began by pointing out that ministerial responsibility for providing food supplies in the current conditions of war and revolution was new not only to the Ministry but to Russia itself. The responsibility for supplying necessities to the population must be undertaken by coordinating all possible channels of supply, including trade-industrial organisations and cooperatives. Part of this economic function must be transferred to private organisations, although they should remain under the overall direction of state organs or organs of a public-law nature.

Kondratiev believed this applied both to current and future work, where he saw state, cooperative, trade-industrial, and private trade institutions working alongside each other.³⁵ Turning to specific products

Kondratiev related that 60 per cent of fabrics were currently procured by the state as part of the war effort, 40 per cent remaining on the free market. Kondratiev hoped that this might become 100 per cent procured by the state in the near future, but stressed that in doing this he did not want to destroy the existing trading apparatus. In order to revive fabric supply and distribution the idea that this activity should be decentralised was proposed.³⁶ Kondratiev concluded by complaining about the difficulties engendered by the absence of real power, brought about by the ambiguous position of the Russian government at this time.³⁷

This speech by Kondratiev shows his position in the Ministry of Food Supply to have been very difficult. While Kondratiev campaigned for specific policies to be implemented, the power vacuum caused by the Bolshevik uprising must have made this a very complicated task. Kondratiev use of the term 'public-law' in his speech links his views as Minister of Food Supply directly to his work on the *zemstvo* examined previously. It could be interpreted as implying that types of organisation like the *zemstvo* would be found in post-revolutionary Russia also, and hence that all economic systems were by nature mixed.

When Kondratiev became Minister for Food Supply in October a policy of centralised control of grain supply had already been in operation for a number of months. The Provisional Government had introduced bread rationing on 24 March 1917 as the procurement of grain became increasingly difficult, and it also established a state monopoly of grain and set fixed prices at this time. In May 1917 tendencies towards state control of the entire economy were expressed in the Ministry of Food Supply, although they were not acted upon due to opposition from the Provisional Government as a whole.³⁸ According to Ivanov Kondratiev's writings from this period show that he supported the idea of state regulation and control not only of distribution, but also of production and exchange as well. For example at the Congress of Food Supply he spoke in favour of widening the scale and scope of planning to encompass new products not yet included such as kerosene, metals, fabrics, soap and footwear.

For Ivanov this signified that Kondratiev was an active participant in the elaboration of the principles of state planning in revolutionary Russia.³⁹ However, since Kondratiev's predecessors as Minister for Food Supply had also supported the idea of increased state control during the war, it is incorrect to lay the responsibility for this direction of policy solely at the feet of Kondratiev. It is common for all governments managing war economies to strengthen the role of the state in

distribution and supply, and for Kondratiev this policy was a temporary necessity, not a desired or long-term goal. The proposal for the establishment of a National Supply Commission came from V.G. Groman as early as March 1917, Groman being head of the Food Commission of the Council of Workers' Deputies at this time. This proposal was adopted by the Minister of Agriculture, A.I. Shingarev, on 7th March and Groman saw this as being part of his overall plan for a Committee for the Organisation of the National Economy.⁴⁰

Kondratiev's purely pragmatic support for state control of supply during the war is apparent from his publications in 1917. For example in 'The Food Supply Crisis and the Task of Organisation of the Economy' ('Prodovol'stvennyi krizis i zadacha organizatsii khozyaistva') he wrote of the prewar period: 'Thanks to free competition we could live peacefully, totally confident that money could purchase everything we needed in the market'.⁴¹ While Kondratiev recognised that in a period of war the functions fulfilled by free competition often needed to be assumed by government authorities, he saw this as only a temporary necessity. Thus during 1917 Kondratiev supported the principle of fixed prices of grain, as long as the authorities conducted this policy carefully. He wrote:

We see that under pressure from the developing [food supply] crisis, there is a successive shift . . . to fixed prices and state purchasing of food . . . We are thus sliding on a downward slope towards extending the scope of government regulation of economic life towards wartime state socialism. The task of managing the economy is thrust upon us by life itself.⁴²

Kondratiev's description of this process as 'sliding on a downward slope' suggests he believed it was not ideal. It is thus likely that in 1917 Kondratiev was in principle opposed to the kind of planning which the Bolsheviks supported, even though he believed it was expedient for the government to adopt regulatory measures during a crisis period.

KONDRATIEV'S DISILLUSIONMENT WITH THE SRs

According to Simonov and Figurovskaya Kondratiev remained a member of the SRs until 1919, when a profound disagreement with the central committee led him to a final split.⁴³ Kondratiev's disillusionment with the SRs had its roots in factional disputes that had been brewing for a number of years. As early as 1914 the SRs had been

divided over the war, the majority taking a defencist position while a minority supported the internationalist viewpoint. The right wing SRs were headed by A.F. Kerensky, who was to become the leader of the Provisional Government in July 1917.⁴⁴ Kondratiev was close to Kerensky through his friendship with Sorokin, and hence it might be expected that Kondratiev sympathised with the right wing of the party. According to Figurovskaya and Simonov, already in the summer of 1917 there was a definite rightward movement in Kondratiev's position, which was characteristic of the SR party as a whole.⁴⁵ It was the SR leadership participating in the Provisional Government which moved rightwards to the greatest degree, and hence Kondratiev's shift was in harmony with this element of the party led by Kerensky. These manoeuvrings precipitated the emergence of a faction representing the left wing of the SRs, who were in some ways more fanatical revolutionaries than the Bolsheviks.

As a result of these tensions the SRs formally split into left and right factions in November 1917, after the Bolsheviks had triumphed, and a short-lived alliance between the left SRs and the Bolsheviks occurred in the Congress of Peasant Deputies.⁴⁶ In July 1918 two left SRs assassinated the German ambassador in Moscow as a method of provoking Germany into resuming hostilities after Brest-Litovsk, and in August 1918 Lenin was shot and wounded (so it appeared at the time) by a right SR. In May 1918 the right SRs called for a policy designed to 'overthrow the Bolshevik dictatorship and to establish a government based on universal suffrage'.⁴⁷ In June 1918 the SRs were finally declared counter-revolutionary by the Bolsheviks and were expelled from the Soviets.⁴⁸ For Kondratiev's closest friend, Pitirim Sorokin, this was all too much. On 29 October 1918 Sorokin wrote an open letter explaining how political developments over the last year had greatly disappointed him and hence he had decided that only work in the fields of science and education would be of benefit to the people.

This must have affected Kondratiev, who in February 1920 resigned from the party. As reasons for the resignation Kondratiev stated that he now found the ideas of the SRs too utopian and their tactics too much orientated towards illegal methods. They had underestimated the roots of Bolshevism and thus their endeavour to overthrow the Soviet regime was not sufficiently well-grounded. The party strategy was also 'inconsistent and indecisive', and Kondratiev described himself as an 'evolutionist' at this time.⁴⁹ Since the SRs had been officially outlawed, Kondratiev's decision to leave may have been conditioned in part by his desire not to be re-arrested.

By 1919 Kondratiev's interests had moved decisively away from contentious political questions such as land reform to more abstract economic questions such as conjunctural movements. This was no doubt partly in response to the Bolshevik victory in the civil war, although it was also a natural progression from the work which Kondratiev had undertaken as Minister of Food Supply. According to Efimkin, by 1919 Kondratiev had come to accept that the view he had taken in 1917–18 about the Bolshevik assumption of power – that it was unstable – was incorrect, and hence he now felt he should co-exist or even cooperate with the Soviet authorities.⁵⁰ Kondratiev may have believed that he had no choice but to accept Bolshevik power after the Red Army had won victory, or that it would be better to challenge Soviet rule from within rather than from exile. Whatever the precise reason Kondratiev chose to remain in the USSR after 1919 and to work within the framework of the Soviet economic bureaucracy.

KONDRATIEV AND AGRARIAN REFORM IN 1917

One of Kondratiev's most important works of 1917 was entitled *The Agrarian Question: Land and the Land Order* (*Agrarnyi vopros: o zemle i zemel'nykh poriadkakh*), in which he outlined his favoured conception of agrarian reform for Russia. Kondratiev supported the idea of the socialisation of the land (*sotsializatsiya zemli*), although for Kondratiev this idea had a very specific meaning. What it did not mean in any sense was state-bureaucratic control of the land as eventually implemented by the Bolsheviks. Kondratiev based his conception of socialisation on the idea that there was a human right to land, what he called the labour right to land (*trudovoe pravo na zemlyu*). Land itself should not be privately owned, it should be viewed like the sun or like air, everyone having the right to utilise it in order to provide themselves and their family with the means to survive. All land – either state, private, or any other form – should become all-people's property (*obshchenarodnoe dostoyanie*), and any person who wanted to work on this land should have the right to do so. Kondratiev proposed that there were two methods of determining the norms of land apportionment in accordance with this idea, using labour norms or using consumption norms. In the former case the quantity of land given to a family was that amount which they could work by themselves, in the latter case it was the amount of land they could work in order to gain an income which covered the needs of the family. Kondratiev favoured

the consumption norm, as it more closely corresponded with the amount of land actually available and with the idea of satisfying consumer needs.⁵¹

Kondratiev admitted that the socialisation of the land would at first reduce the quantity of grain and other agricultural products which were available on the market, but presumably he believed this to be a temporary consequence of the transition period only.⁵² This implies that Kondratiev's form of socialisation would occur within a framework of the continuation of consumer markets as mechanisms of distribution. In elections to the Constituent Assembly which took place on 15–19 November 1917 the SRs, who had yet to split, gained 40 per cent of the vote, and hence were by far the largest party. The Bolsheviks received 24 per cent of the vote.⁵³ The cause of this success must be traced at least partially to the SR agrarian reform programme, which was very popular amongst the peasantry. Partly in response to the popularity of the SR programme, Lenin simply adopted in major part the agrarian policy of the SRs in August 1917 in an attempt to increase Bolshevik popularity.⁵⁴ However, the later evolution of Bolshevik agrarian policy after October 1917 had little to do with SR ideas.⁵⁵

Kondratiev's idea of socialisation was obviously very different from the view which eventually prevailed. It is also different from his own support of large-scale semi-capitalist farms expressed at the height of NEP around eight years later. A consequence of the type of socialisation favoured by Kondratiev in 1917 would be that all farms would be rather small, magnitude being determined by family size. This ignores the ideas of economies of scale and levels of marketability, the latter idea being very important to Kondratiev during NEP. It might be possible to argue that Kondratiev's views during NEP were applicable only to that period, since much Bolshevik policy had been pursued at this time, and hence that Kondratiev's principled response to NEP would be that he would not have started from this position at all. More plausible is the notion that this difference illustrates a clear movement in Kondratiev's views away from socialist ideas which is seen by comparing 1917 to the mid-1920s. This was due in part to his split with the SRs, partly as a response to watching Bolshevik policy in action, and partly to his growing knowledge of economic theory. Even given these reasons Kondratiev's political shift rightwards during 1917 is striking and a key element of his intellectual development. It is essential to realise that Kondratiev's 1917 agrarian programme was well within the mainstream of SR agrarian policy as it had developed in the years before 1917. The SRs had declared their preference for the

socialisation of the land and its equal distribution amongst those who worked on it as early as January 1906.⁵⁶ This means that Kondratiev had adopted this policy while still a teenager.

The type of farms that Kondratiev favoured before October 1917 owed as much to questions of social justice as economic efficiency. On 21 August 1917 Kondratiev presented a paper entitled 'On Large-Scale Peasant Farms' ('O krupnokrest'yanskikh khozyaistvakh') to the Commission for Redistribution of Land, which he had written together with N.P. Makarov. In this work the authors began by outlining that although agriculture in Russia currently included farms of a purely capitalist and purely labour type, there were also other types of a mixed nature, namely semi-labour and semi-capitalist farms.⁵⁷ A labour farm was one which was controlled and operated by those working on it, usually a family; a semi-labour farm involved additional hired labour. On the question of the economic rationality of these mixed types of farm, the authors believed that semi-capitalist farms did not have any noticeable advantages over peasant farms. They pointed out that the general policy was that land should be passed into the hands of labour farms, but warned that simply decreeing this progression would be irrational.⁵⁸ It might provoke opposition to the entire reform programme and hence could be counterproductive.

For the authors of 'On Large-Scale Peasant Farms' capitalist relations were expressed on farms in three different ways: through the employment of hired labour, through the degree of marketability of produce, and in the concentration of land and equipment. Hired labour could be found in two different forms – piece-work and employment for fixed periods. In policy terms they believed that semi-labour farms were not actually desirable, but stressed that it would be a mistake to introduce specific measures against them, for example decrees forbidding hired labour in agriculture. Instead tax measures and regulation of sown area were suggested as ways to guide the development of farms in the desired direction.⁵⁹ This paper demonstrates that in August 1917 Kondratiev still equated capitalist farms with 'exploitation', although he acknowledged that small-scale farms could be the least productive. Social justice was thus a key aim of economic policy for Kondratiev at this time.

As well as the influence of fellow SRs on Kondratiev's political thought during 1917, it is possible that his old tutor Tugan-Baranovskii had some effect at this time also. In 1917 Tugan-Baranovskii published *Advocate of the Nationalisation of Land* (*Propovednik natsionalizatsii zemli*), which was an analysis of the American econ-

omist Henry George's support for the nationalisation of land. In this work Tugan-Baranovskii explained how George viewed private ownership of land as the root of all social evil, and how social reform could be accomplished through changes to the tax system.⁶⁰ In *The Land Question in Russia and the West* (*Zemel'nyi vopros na Zapad i v Rossii*) of 1919, Tugan-Baranovskii argued that despite the polemics which had occurred in 1905–06 between the Russian Social Democrats and the supporters of 'narodnik socialism' such as the SRs, the agrarian programme of the former had been very close to that of the *narodniks*, in that both demanded the abolition of large land-owners and capitalist farms. Thus although the agrarian programmes of the constitutional democratic parties called for the redemption (*vykup*) of the land at a fair estimated value, rather than its straightforward confiscation, all the progressive parties expressed unanimous support for the widening of peasant farms at the expense of capitalist farms.⁶¹ Kondratiev would have followed this work of Tugan-Baranovskii, which would have been of use in reinforcing the difference between nationalisation and socialisation of land. In the 1920s Kondratiev would recognise the point that both the Bolsheviks and the SRs favoured the elimination of large-scale capitalist farms, which would have a noticeable effect on the marketability of grain.

THE CONSEQUENCES OF THE BOLSHEVIK REVOLUTION

Kondratiev published his analysis of the Bolshevik revolution under the title 'The Year of Revolution from the Economic Point of View' ('*God revoliutsii s ekonomicheskoi tochki zreniya*') in 1918. Kondratiev began with the general evaluation that, viewed from the social-economic point of view, the year of revolution represented a profound tragedy for Russian democrats. The essence of this tragedy consisted of the non-correspondence between expectations and verbal statements on the one hand, and objective possibilities and real conditions on the other.⁶² At the heart of the Russian economic collapse concurrent with the revolutionary year was a drastic fall in national productive forces, which expressed itself in a decline in labour productivity, a negative trade balance, a fall in the exchange rate of the ruble, a fragmentation of market connections, and the beginnings of a devastating inflation. Kondratiev criticised the old Tsarist authorities for vacillation and for delays in adopting policies which might have averted disaster, and for hesitation in the creation of price stability. Kondratiev thus believed

that the Bolshevik seizure of power was a negative development for Russia but that this was actually assisted by failures in Tsarist policy before and during the war.

Kondratiev was keen to distinguish between the ideology of moderate socialist groups, of which he was a part, and the ideology of the Bolsheviks, which he decisively rejected. According to Kondratiev if the ideology of the moderate socialists could be criticised as partially separated from the real tasks facing Russia, then the ideology of the Bolsheviks was absolutely utopian and totally divorced from reality.⁶³ Kondratiev argued that the Bolsheviks were exceedingly ignorant of the complexity and interrelatedness of the elements of the Russian economy:

They uproot the national economy from the world economy and think in essence this is socialism, when in the most powerful countries capitalism still flourishes. They issue slogans 'to seize' (*vzyat'*) this or that part of the economic structure, absolutely ignoring how this is to be done or its consequences. For example they want 'to seize' the banks, when actually the essence of banks is not at all in buildings, books, papers and so on, but in invisible social relations.⁶⁴

For Kondratiev the ideology of the Bolsheviks was in sharp contradiction with the actual tasks of the moment. Their ideology was utopian and if adopted in practice would inevitably lead to ruin. This was especially clear in the field of monetary circulation, where 'socialist' power must inevitably lead to the excessive issue of paper money. Kondratiev concluded that 'national-economic renaissance' was the correct slogan for this period, in that it united the various interests of the nation with the aim of developing the productive forces. The Bolshevik policy based on class conflict could lead only to the destruction of the country's productive forces.⁶⁵

Kondratiev's critique of Bolshevism could be seen as Marxist in spirit, in that it was based on the idea that the political superstructure could only change if the economic base had reached the appropriate level of development. Kondratiev believed that Russia was far from being ripe for communism at this time, and stated so unambiguously in 1918. However, Kondratiev's characterisation of the SRs as 'moderate socialists' in the above presentation may seem questionable. Of course he meant the right SRs only in such a characterisation, not the left SRs who went on to form an alliance with the Bolsheviks. Even given this caveat, Kondratiev's views in 1917 were still well to the left of the policy which had been pursued by P.A. Stolypin in the

period 1907–11. Stolypin had attempted to abolish peasant communal landholdings and to strengthen individual farms by introducing the principle of private property in land, with mixed results.⁶⁶ The Stolypin reforms encouraged the peasants to withdraw from the commune by enabling them to claim title to their holdings. Kondratiev's policies in 1917 were in no way close to Stolypin, but by 1925 the essence of Kondratiev's policy was much nearer to that of the Tsarist Prime Minister.

Kondratiev never wrote a detailed study of the Stolypin reforms, either before 1917 or after this date. The SRs had attacked the Stolypin reforms when they were originally proposed in November 1906, and their implementation was at the time seen as a blow to SR morale.⁶⁷ In *The Agrarian Question* of 1917 Kondratiev explained that Stolypin's error was that he had attempted to eradicate the commune by force. This was not necessary, as it would have died out anyway in areas where it had outlived its usefulness. For Kondratiev the commune should neither be artificially propagated nor artificially destroyed. Local people should be given the freedom to decide what form of agriculture they thought was most appropriate to their conditions.⁶⁸ Preserving freedom of action for the peasantry was crucial to Kondratiev in 1917, just as it would be in the 1920s.

THE GRAIN MARKET (RYNOK KHLEBOV)

The scholarly culmination of Kondratiev's experience of managing food supply during the revolution, of his analysis of agrarian reform, and of his warnings against Bolshevik policy, was the first full-length monograph of the 'mature' Kondratiev, *The Grain Market and its Regulation at the Time of War and Revolution* (*Rynok khlebov i ego regulirovanie vo vremya voyny i revolyutsii*). In this work all of Kondratiev's interests began to intersect: his concern with food supply, his analysis of agricultural forms and structures, his conception of economic conjuncture, his views on mixed economies, and his method of analysing statistical data such as prices and yields. Figurovskaya described this work as the first Russian book devoted specifically to conjunctural investigation and as representing a decisive step on the road to establishing a specifically Russian theory and practice of conjuncture.⁶⁹

Kondratiev explained that *The Grain Market* was written at the end of 1918 and the beginning of 1919, and was originally to be part of a collection of works edited by S.N. Prokopovich. The Prokopovich

collection was never printed, probably due to the fact that Prokopovich had left the USSR before it could be published, and thus Kondratiev's contribution was published separately in 1922.⁷⁰ The fact that it was written in 1918–19, at the time when Kondratiev was having to come to terms with Bolshevik power, suggests that it might have suffered from an over-emphasis on policy questions or even theoretical doubt, but in fact this is not so. It is a brilliantly detailed empirical account of grain markets infused with theoretical awareness at the highest level. In many ways it stands as a blueprint for much of the subsequent work of the Conjunction Institute in areas such as price movements, the geography of prices, forms of market regulation, and analysis of local against national prices. Together with *The World Economy* (*Mirovoe khozyaistvo*), *The Grain Market* is Kondratiev's manifesto of conjuncture, comparable to Wesley Mitchell's early work on currency *A History of the Greenbacks, 1862–65* of 1903, in that this work set the detailed empirical backdrop for Mitchell's later and bolder approach to business cycles.

Kondratiev began *The Grain Market* by describing how the war fundamentally altered the conditions in which the Russian grain market functioned. To explain the significance of these changes he compared the grain market in the period just before the war with its position during the war. For the prewar period Kondratiev showed that total sown area grew from 93.4 million hectares in 1901–05 to 102 million in 1909–13. The sown area of winter and spring wheat, barley, oats, maize, and potatoes grew, whereas sown area of winter and spring rye, spelt, buckwheat and peas declined; sown area of millet, lentils and beans remained static. There was a gradual increase in the harvest in European Russia from 4.4 tsentners per hectare in 1861–70 to 6.5 tsentners per hectare in 1901–10, and this was evenly spread amongst all grain crops. Noticeably poor harvests for all crops occurred only in 1901, 1906 and 1911, with 1902, 1904, 1909, 1910, 1912 and 1913 being particularly good harvests. The gross harvest in 72 provinces and regions of Russia increased from 89.45 million tonnes in 1901–05 to 111.04 million tonnes in 1909–13.⁷¹

Kondratiev suggested that in order to fully explain the structure of the current Russian grain market, the portion of grain produced by the peasantry (*krest'yanstvo*) as against proprietors (*vladel'tsy*) needed to be calculated. According to data from the Tsarist Ministry of Internal Affairs, the sown area of the four main grains (for European Russia) was distributed between the peasantry and proprietors in a ratio of 66.8 per cent/33.2 per cent between 1896–1900, and 65.3 per cent/

34.7 per cent in 1906–1910. Thus the peasantry produced around two-thirds of the total in the prewar period. By 1916 the figures were 92.1 per cent/7.9 per cent for all grains and potatoes, the peasant portion having increased significantly. However, Kondratiev pointed out that as land rented from landowners by peasants was excluded from these calculations, the figures were an underestimate of actual peasant sowings, which he estimated at 85–90 per cent of total area in the prewar period. As regards the total balance of production and consumption of grain in Russia, until the war a surplus of 1.07 million tonnes of grain and 0.03 million tonnes of potatoes had been available for the period 1909–13.⁷²

For Kondratiev in the 1920s the question of the degree of marketability of agricultural produce was central to his view of agricultural policy. In *The Grain Market* Kondratiev explained that by the norm of marketability he understood the percentage relation of the quantity received on the grain market compared to the harvest. For the period 1909–13, norms of marketability ranged from 36.9 per cent for maize and 33.5 per cent for wheat, to 19.7 per cent for oats and 2.3 per cent for potatoes. The total volume of traded grain was 18.02 million tonnes on average between 1909–13. Regional figures indicated that the most traded grain was wheat, followed by oats, barley and then rye. The highest level of marketability was observed in regions with the largest surpluses and most water points such as the Central Agricultural region.

Disaggregating the marketability figures for peasants and proprietors showed that while the peasantry provided 78.4 per cent of the total sum of marketed grain, they produced 87.9 per cent of the total grain produced. This meant that grain produced by peasants had a relatively low level of marketability, which was explained by the smaller size of peasant farms compared to proprietary farms. Kondratiev deduced from this that the prewar Russian grain market was characterised by relative inertness, and also by a heavy reliance on proprietary farms in terms of their higher levels of marketability. It followed that a sharp fall in production on proprietary farms would lead to a crisis on the grain markets. In this dependence on the marketability of proprietary farms Kondratiev saw the root of the catastrophic crisis which was realised during the war and revolution.⁷³ In this analysis the origin of Kondratiev's concern with levels of marketability in the mid-1920s is found.

Turning to an analysis of prices, Kondratiev related that until the war rising prices for commodities, especially grains, was observed. This rising conjuncture began in 1894–96, and increased in index terms from 112.6 in 1901 to 138.8 in 1913.⁷⁴ However, grain prices grew

relatively slowly compared to prices of livestock, spinning materials, and minerals. Amongst grains the largest growth was observed for prices of wheat, barley, and oats, the smallest for rye and buckwheat. Kondratiev emphasised that it was common for indices of various countries to suggest that price rises had international causes, and that prices on national markets moved in strict coordination with international changes. Much analysis had seen the causes of the world price increase beginning in 1894-96 partly in terms of the depreciation of money, but other important factors were: changes to the internal structure of the world economy, the growth of demand, progress of industrialisation, the development of internal markets in various countries, a reduction in the territory devoted to agriculture, and the transition to more intensive forms of production. Kondratiev suggested these factors did influence the prewar Russian economy.⁷⁵ He noted that although in the Russian case the influence of the domestic harvest on grain prices was large, the international factor was still noticeable. Kondratiev proposed the general characterisation that the more a good was traded and the more it participated in world commodity turnover, then the weaker was the link between price and harvest, in particular the national harvest.⁷⁶

Moving on to the effect of the war on Russian grain markets, Kondratiev outlined that first of all sown area had declined, which led in turn to reduced production. As grain consumption actually increased during the war while production fell, the internal balance of production and consumption shifted to deficit. Given this tendency, a drastic fall in grain exports in the first year of the war helped to counteract the fall in grain supply. The marketability of grain declined during the war also, which led to a further fall in supply. Moreover, disturbances in transport links led to fragmentation of the national grain market, and credit facilities declined drastically for the grain trade as a whole. This combination of falling supply, increased demand, and disruption of the grain trade apparatus led to a steady rise in prices which began in the consumer markets but soon spread to the producer markets.⁷⁷ The overall impression conveyed from this section of *The Grain Market* is that Kondratiev saw the war as decoupling Russia from the world economy to an important extent.

THE GRAIN MARKET AND STATE REGULATION

The second part of *The Grain Market* was devoted to state regulation of grain markets during the war and revolution, and to changes in the

organisational structure of government control of the grain supply. This topic was particularly close to Kondratiev as he had been Minister of Food Supply for a short time in 1917. Kondratiev explained that the basic tasks of the state in this respect were: the procurement of grain, the regulation of grain prices, control over the transport of grain stocks, the regulation of distribution and consumption levels, and the creation of a network of food supply organs. There were two basic methods of controlling the supply of food: firstly, direct influence on supply through procurement and distribution of grain, and secondly indirect influence on supply by means of setting fixed prices, prohibiting exports, planning transport facilities and so on. Both methods were used in the period under review.⁷⁸

Kondratiev suggested that after the October revolution the food supply organs entered a critical period of their development. Although the majority of central government departments ceased to function after 25 October, the Ministry of Food Supply did continue to work, believing that food supply matters were outside the scope of the political struggles then occurring. In *The Grain Market* Kondratiev did not discuss his own role in this process in any detail, which as Minister of Food Supply must have been large, so it is difficult to judge how strong Kondratiev's opposition to the new Commissariat form of government was. Given that dual power in food supply matters lasted at least for three weeks, some degree of opposition from Kondratiev must be assumed to have occurred. In the 1920s Teodorovich would often act as a supporter of Kondratiev in policy debates, as outlined in later chapters, and hence the replacement of Minister Kondratiev by Commissar Teodorovich might not have been as radical a change as it initially seemed.

One point which Kondratiev was very keen on emphasising in *The Grain Market* was that the Soviet government did not (at least initially) introduce any new food supply policy, in fact it simply preserved the basic features of the policy of the Provisional Government.⁷⁹ The law on the grain monopoly had been introduced on 25 March 1917 and this remained the basic measure for regulation of procurement in the post-revolutionary period.⁸⁰ As regards price regulation, Kondratiev explained that this was of two basic types: fixing prices by state decree, and influencing the relation between supply and demand by controlling the level of state supplies on the market.⁸¹

During the war the gap between fixed and free prices for grains gradually increased. Fixed wheat prices grew from 21 kopeks per tsentner in 1914-15 to 105 kopeks in 1917-18, whereas free prices for wheat

grew from 15 kopeks per tsentner in 1914–15 to 179 kopeks in 1917–18. Similar changes affected rye, oat and barley prices. Until the autumn of 1916 fixed grain prices more or less approximated to free prices, but after this date free prices increased rapidly to twice the fixed price level. For Kondratiev this demonstrated that the policy of fixing prices was powerless to eliminate black market trading or to overcome the inherent dualism of the fixed price system. While in the early part of the war the fixed price policy temporarily restrained price rises, in the later years of the war it was a factor actually stimulating price rises on the black market.⁸² Kondratiev thus implied that price fixing could only be a short-term solution which often aggravated the problem it was trying to solve.

Kondratiev concluded *The Grain Market* by stressing that all the measures of state regulatory policy introduced during the war were organically connected. Procurement regulation was linked to price regulation; construction of supply and transport plans followed directly from the widening of regulation in the fields of price and procurement; regulation of distribution and consumption were a necessary complement to all the above indicated forms of regulation of supply; and finally the network of state food organisations were a necessary precondition and simultaneous consequence of the existence of all systems of regulation. Hence for Kondratiev this set of measures constituted an economic system in itself, one that the Bolsheviks found rather easy to accept and control. Kondratiev also noted that the development of state regulation was characterised by a tendency to centralisation and unification of all the organisational aspects of these measures, another feature which the Bolsheviks would develop. Finally Kondratiev cautioned that the idea of replacing the spontaneous factors in economic life with rational ones was very difficult to implement. As had been demonstrated throughout *The Grain Market*, the adoption of regulatory measures did not always lead to the desired results.⁸³ Kondratiev thus implied that in principle he believed a free economy to be superior to a regulated one, and his political turn rightwards after 1917 finds its complement in economic theory.

A contemporary evaluation of Kondratiev's *The Grain Market* was given in *Food Supply in Russia during the World War*, written under the direction of P.B. Struve. This stated that Kondratiev's data on surpluses and shortages of cereals in the war period 'we consider the most reliable'.⁸⁴ Comparison of *The Grain Market* with *The Development of the Economy of Kineshma Zemstvo* reveals Kondratiev's development and maturation between 1915 and 1918–19. While the latter

work hints at the relevance of the particular to the general, only in the former does Kondratiev really manage to go beyond the detail of the period under review to provide a more general analysis of the influence of state regulation and control on an economic structure in general.

CONCLUSION

The most noticeable feature of Kondratiev's development in political terms before the Conjuncture Institute was created was the turn rightwards during/after 1917. The young Kondratiev believed in the socialisation of land and in communal property holding, and these views were reflected in the Socialist Revolutionary programme in 1917. His study of the *zemstvo* indicated that he was also sympathetic to communal forms of government, although he was sensitive to the contradictions of some elements of *zemstvo* life. However, the experience of revolution had a profound effect on Kondratiev's political views, and led him to a speedy and fundamental review of his beliefs. During this review Kondratiev wrote several damning critiques of the extremist revolutionaries such as the Bolsheviks, and this review had its complement in Kondratiev's economic work of 1918-19 such as *The Grain Market*. Kondratiev's short term as Minister of Food Supply in October 1917 gave him first-hand experience of food supply and grain market questions which he would use to great effect in later studies, but the result of Kondratiev's shift rightwards would not be seen in full until NEP was at its height in the mid-1920s. Not all economists were turned rightwards by 1917. Jasny described how V.G. Groman took a sharp left turn after the revolution and became very enthusiastic about national planning, as seen in his eager support for supply planning in the spring of 1917.⁸⁵ Thus Kondratiev may have 'crossed' Groman politically during this period.

The timing of Kondratiev's turn rightwards is difficult to specify exactly, but the Bolshevik *coup* was a key point of reference. While in August 1917 Kondratiev was still arguing that land should ideally be in the hands of those who worked on farms, after October 1917 the tone of his writings changed noticeably. He began focusing his attention on the errors of the policies being pursued by the Bolsheviks. By 1918 he had come to the conclusion that the year of revolution had been a profoundly destructive sequence of events, both from the point of view of political reform and economic development. It may have been in part in response to this disillusionment with radical change

that Kondratiev began to focus his attention on more abstract questions of economic theory after 1918. It was also the fact that Kondratiev had been initially less impressed with the economic aspect of socialist theory than its moral dimension, that assisted him to move rightwards during 1917.

In economic terms, perhaps the most significant element in Kondratiev's early life was the fact that he was tutored by Tugan-Baranovskii. This led to a profound interest in business cycles which was to flourish fully only after the introduction of NEP in 1921, and which led to Kondratiev continuing the tradition of business cycle analysis began by his tutor. Even though he had already begun work on long cycles as early as 1918, this work was not to come to fruition until after the Conjuncture Institute was created in 1920. Apart from his influence on the SR agrarian reform programme and despite his persistent criticism of the Bolsheviks, Kondratiev was not a particularly influential figure in the revolutionary period of 1917. Although the SRs were an important party during 1917, their importance declined dramatically once Lenin had assumed control of the Russian state, and their split at the end of 1917 reflected this loss of influence. But this lack of influence does not make Kondratiev's pre-Conjuncture Institute work unimportant. This work provides much insight into his later development in both theoretical and policy terms, and in many ways the year of revolution contained the political events which influenced Kondratiev most profoundly.

3 Kondratiev and Economic Policy during NEP

Kondratiev was not the only participant in Russian revolutionary events to be turned rightwards by the experience. Lenin himself was the initiator of the New Economic Policy (NEP) in 1921, in which the freedom to trade was partially restored and the canons of financial orthodoxy were partially reinstated as official doctrine, albeit only temporarily. The first element of NEP was the replacement of the grain requisitioning of War Communism by a tax in kind, which was adopted in a government decree of 21 March 1921, and this led to further liberalisation in related areas.¹ For example concessions to foreign firms were allowed in certain areas of raw materials production such as mines, forestry and oilfields.² Lenin directed that communists should 'learn to trade' and proclaimed that the socialist elements of the Soviet economy should defeat the 'bourgeois' elements through victory in economic competition, not by political or military force. In the following chapter the consequences of this general move rightwards in Bolshevik policy for Kondratiev are examined.

However, while it took Lenin over three years to make the ideological leap to NEP, Kondratiev's change of heart had occurred simultaneously with the revolutionary events of 1917. Moreover, while Kondratiev's revision was grounded in a process of the acquisition of a deeper understanding of economic theory, Lenin's was at least partially forced onto him by the precarious economic position of Soviet Russia after three years of War Communism.³ The Kronstadt mutiny in March 1921 was a symbol of the level of discontent with the Soviet regime which existed among workers and peasants, one that was noted by Lenin in his draft of the 'Tax in Kind' pamphlet.⁴ Few historians doubt that there was little option for the Bolsheviks in 1921 but to adopt a more pro-market and pro-peasant stance; the really contentious issue is how much progress the Soviet economy could have made within this framework after (say) 1926. Since Lenin died in 1924 and had been seriously ill for some while before this date, his views on whether a Kondratiev path might have been successful after 1925 can never be known for certain. However, in his last writings such as 'On Cooperation' of January 1923, Lenin appeared to have undergone a

change of (political) heart in suggesting that what was required for socialism to be built in the USSR was simply 'everybody participating in the work of cooperatives'.⁵ Whether this could ever have led to a full-scale Kondratievisation of Lenin's views is debatable, but the possibility remains that Lenin might have opposed the turn away from NEP after 1925 at least to some extent if he had still been alive. It is very likely true that the only Bolshevik with sufficient accrued authority to make the Kondratiev path the official policy of the Soviet government was Lenin.

This chapter focuses on two questions. First, how influential was Kondratiev within the Soviet decision-making bureaucracy in the 1920s, and when was this influence at its height? Second, what elements made up the Kondratiev path of economic development for the USSR? Answers to aspects of this second question are contained in other chapters in the book also, most notably in the chapters on Kondratiev's agricultural plan and his approach to industrialisation, but important elements of the Kondratiev path are explored first in what follows. The chapter begins by examining Kondratiev's links with decision-making personnel and institutions within the USSR, then turns to Kondratiev's use of the quantity theory of money, to his analysis of important economic crises during NEP, then to his participation in special policy commissions, to his conception of agricultural tax policy, and it finishes with an account of his analysis of Soviet grain export prospects throughout NEP. Many of these topics were closely linked to the work of other Conjuncture Institute members, for example Vainshtein's work on taxation and Shaposhnikov's work on foreign trade, but this connection cannot be covered in full here.

THE MECHANISMS OF KONDRATIEV'S POLICY INFLUENCE

There are a number of ways in which Kondratiev's influence on economic policy can be measured and the mechanisms he used to bring this influence to bear can be traced. An obvious starting point is to focus on key individuals within the Soviet government who were sympathetic to the Kondratiev path of economic development. These can be divided into politicians and specialists, or Communist Party and non-party personnel. Within the People's Commissariat of Finance (NKFin) USSR G.Ya. Sokol'nikov and L.N. Yurovskii immediately suggest themselves, Sokol'nikov being a key political figure and Yurovskii a specialist in money and finance. Sokol'nikov was the People's Com-

missar of Finance between July 1923 and January 1926, and thus was a member of the Council of People's Commissars (SNK) during this period. He was also a member of the Council of Labour and Defence (STO) from 1923 to 1926 and a candidate member of the Politburo from 1924 to 1926. In 1929 he became the Soviet ambassador to the United Kingdom. It was on Sokol'nikov's direction that the Conjunction Institute became part of NKFin in 1922. Yurovskii was a leading economist within NKFin who masterminded the currency reform of 1922-24, and was a member of the collegium of NKFin from 1926 until 1929.⁶ Since the Conjunction Institute was part of NKFin it should be expected that this commissariat was very sympathetic to Conjunction Institute work. Thus within NKFin Kondratiev had access to the highest levels of decision-making relevant to public finance at least until 1926 through his relations with Sokol'nikov and Yurovskii.

Within the People's Commissariat of Agriculture (NKZem) RSFSR the commissar A.P. Smirnov and deputy commissar I.A. Teodorovich were Kondratiev's top-level connections to agricultural policy-making. Both Smirnov and Teodorovich were key political-administrative figures within NKZem who were involved with most of the decisions which NKZem was charged with making. During his time overseas in 1924 and 1925 it was Smirnov and Teodorovich who Kondratiev kept informed about progress during the trip, as Smirnov had asked Kondratiev to perform specific duties while he was in New York. Smirnov remained as People's Commissar of Agriculture until February 1928, when he was appointed to the Party secretariat.⁷ According to Cohen he was still actively pursuing rightist goals in 1932/33.⁸ Teodorovich had been Kondratiev's successor in 1917 when the Ministry of Food Supply had been replaced by the Commissariat of Food Supply, and remained a member of the collegium of NKZem from 1920 to 1928. Important economists within NKZem worked with Kondratiev in particular areas, notably N.P. Makarov on peasant farm structure and N.P. Oganovskii on agricultural planning, but these were specialists with the capacity only to advise. Hence although the Conjunction Institute was officially part of NKFin, Kondratiev's influence within NKZem should be seen as equally as strong as that within NKFin. Jasny believed that the 'domination of the neo-narodniks (headed by Kondratiev) was virtually complete in NKZem', and suggested that they also dominated the teaching of agricultural economics in various important institutes.⁹ While the description of Kondratiev's influence on NKZem as 'virtually complete' may be an exaggeration, it was certainly strong in many areas.

Kondratiev also had supporters within NKZem in other regions apart from Russia. For example Hughes related the story of the 'Siberian Kondratievtsy' within the Siberian branch of NKZem. This group was headed by P.A. Mesiatshev, a leading member of NKZem Siberia, and included the head of the agricultural section of Sibplan P.Ya. Gurov and the head of the department of land improvement V.E. Maksimov. According to Hughes this group was most influential between 1924–26 and was centred around the journal *Land Worker of Siberia* (*Zemel'nyi rabotnik sibiri*), although its members were later removed from office.¹⁰ This group actively promoted private forms of agriculture and accepted differentiation as a consequence of this, although Hughes gave no indication of whether they actually discussed policy-matters with Kondratiev in person or just had similar views to that which Kondratiev expressed in print. Given that the term *Kondrat'evshchina* was a method of demonising people regardless of real evidence, the latter is more likely to have been the case.

Kondratiev was closely involved with various particular organisations within NKZem RSFSR. The official NKZem planning organ, Zemplan, was headed by Teodorovich and included Kondratiev as its most influential member. Kondratiev was the representative of Zemplan in SNK, STO, and other state organs on all questions of economic policy, and it was from within Zemplan that the impetus arose for the development of Kondratiev's plan for agriculture and forestry 1924–28. Efimkin related that Kondratiev spoke on the question of the organisation of an agricultural bank in Zemplan in November 1923, and by February 1924 the Central Agricultural Bank of the USSR had been created.¹¹ This suggests that Kondratiev's use of Zemplan as a forum for policy suggestions was at least sometimes a successful strategy. However by 1935 Smirnov and Teodorovich, the leaders of NKZem, and their planning body (Zemplan) had been labelled 'tools of the counter-revolutionary Kondratievites', and in much official literature Kondratiev was painted as the leader of all the NKZem 'counter-revolutionaries'.¹² While such accusations were obviously an exaggeration, there was an element of truth in the implication that Kondratiev was the brain behind many of the policy proposals which emanated from NKZem and Zemplan in the period 1923–26.

Within the People's Commissariat of Foreign Trade (NKVneshTorg) L.B. Krasin was the People's Commissar from July 1923 to November 1925, this latter date being when NKVneshTorg was merged with the Commissariat of Internal Trade (NKVnuTorg). Within the merged Commissariat of Internal and Foreign Trade (NKVnuVneshTorg) Krasin

was first deputy commissar until 1926, when he died in London. Krasin was a member of SNK from July 1923 onwards and an affiliate member of STO from February 1924. In many areas his views were strikingly close to Kondratiev's.¹³ For example he continually argued that the USSR must expand its export of various types of grain, and was often optimistic about grain export prospects.¹⁴ He advocated the resumption of grain exports in the autumn of 1923 as a means of increasing domestic grain prices and of strengthening the alliance (*smychka*) between the peasantry and workers.¹⁵ He was also fully committed to encouraging foreign investment in the Soviet economy, and argued that foreign credits and loans were the only solution to the shortage of capital which the USSR faced in the mid-1920s.¹⁶ Dobb related that Krasin urged a liberal concessions policy in order to attract foreign capital, something which Kondratiev supported.¹⁷ Krasin also cited reduced agricultural marketability as a reason for why foreign trade recovered less during NEP than other branches of the Soviet economy, echoing Kondratiev's arguments on the importance of increasing marketability throughout the 1920s.¹⁸ Hence in the specific areas of grain export policy and investment from overseas it should be assumed that Kondratiev's views were shared wholeheartedly by the People's Commissar of Foreign Trade. In other areas such as agricultural marketability and the general relation between the peasantry and the workers, close similarity may be assumed to have existed.

Another important administrative body which Kondratiev had links with was the Central Statistical Administration (TsSU). This was established in July 1923 to provide the government with statistical information, and its director was P.I. Popov until January 1926, V.V. Osinskii after this date. Although Popov was a noted critic of Kondratiev, for example over the plan for agriculture and forestry 1924-28 and over tax policy (as outlined in what follows), Popov shared Kondratiev's framework of analysis in respect to the crises which occurred in the Soviet economy in the early years of NEP. This is discussed further in the section on crises. However, since the main function of the TsSU was to provide statistical information to government bodies, a rivalry no doubt existed between it and the Conjuncture Institute.

Although Krasin had been demoted from People's Commissar of NKVneshTorg to only a deputy in NKVnuVneshTorg in 1925, Krasin's death in London in 1926 can be seen as one of two key blows to Kondratiev's policy-making influence as regards links with high-ranking government personnel. The other was Sokol'nikov's removal as People's Commissar of Finance in January 1926. His replacement at

NKFin was N.P. Bryukhanov, someone much less sympathetic to the Kondratiev path than Sokol'nikov. Thus the period 1923–26 was when Kondratiev had his closest ties with important government officials. Although the theoretical work of the Conjunction Institute continued to develop in an impressive manner between 1926–29, its policy-making influence fell dramatically in this period. In terms of the development of official Bolshevik policy the Fourteenth Party Congress in December 1925 can be seen as marking the decisive turning-point away from Kondratiev-type policies. This was the Congress at which the opposition platform of Zinoviev and Kamenev was defeated and where Sokol'nikov was vilified personally by Stalin. Although Zinoviev was to the left of Stalin at this time, his warnings about the consequences of peasants 'enriching themselves' began to strike a chord in the party in general. After the Fourteenth Congress Kondratiev's position within the Soviet decision-making bureaucracy declined drastically.

An important question for evaluating Kondratiev's policy-making influence is his relationship with Bukharin, one of the most enthusiastic supporters of NEP within the Bolshevik leadership. No evidence has yet been found that they were particularly close in either personal or political terms, Bukharin remaining a loyal Bolshevik against Kondratiev's clear peasant leanings. In the spring of 1928 Bukharin condemned the Conjunction Institute for advocating a reduced rate of industrialisation, even though in the autumn of 1928 Bukharin's 'Notes of an Economist' would sing a similar tune.¹⁹ Anna di Biagio noted that a common political denominator might have been established between Krasin and Bukharin on foreign policy, specifically over the importance of Germany, a possible indirect link to Kondratiev.²⁰ However, although some similarity of approach is found between Kondratiev and Bukharin, Bukharin appears to have been reluctant to align himself directly with the Conjunction Institute in any respect at all. This may have been partly because Bukharin was more aware of the dangers of outright opposition, partly because Bukharin placed an unquestionable faith in the authority of the Communist Party, and partly because he realised that Kondratiev was something which he was not, a professional economist. It may also have been because Bukharin played an important role in organising a public trial of the leaders of the Socialist Revolutionaries (SRs) in 1922, and because Bukharin stressed that his cooperative path was still a path to socialism. A stronger alliance between Bukharin and Kondratiev from 1924 onwards may have strengthened both their chances of victory or even survival, but for the reasons indicated such an alliance was not forthcoming.

Apart from formal and informal links with important individuals, Kondratiev and other members of the Conjuncture Institute were officially members of various commissions in particular fields which prepared reports for consideration by decision-making bodies. For example both Kondratiev and Shaposhnikov were called upon to prepare documents for presentation to Zemplan in 1924.²¹ Vainshtein and Leontiev participated in the Finance-Economic Bureau (FEB) of NKFin, and Vainshtein worked closely within NKZem on agricultural planning. Kondratiev and Vainshtein were also members of the Special Commission for Agricultural Taxation within NKZem examined below. Since the Conjuncture Institute was a part of NKFin all members of the Conjuncture Institute were officially employed by this commissariat, and hence had access to NKFin officials. Clear evidence that those individuals identified above as Kondratiev supporters sometimes acted directly on Kondratiev's behalf is available. For example in a letter which Kondratiev sent to his wife on 7 February 1922 he wrote: 'It was very distressing that Teodorovich was not able to defend my draft of the tax in kind in the Supreme Economic Commission'.²² The fact that Kondratiev was distressed that Teodorovich had failed on this occasion suggests that on other occasions he might have succeeded. Efimkin related that Kondratiev had first proposed the idea of a tax in kind during the transition to NEP in 1921, and that Kondratiev's ideas for tax reform were developed in a draft NKZem proposal reviewed by Zemplan in January 1924.²³ This suggests that Kondratiev's use of Zemplan as a platform for policy proposals was sometimes effective.

If NKFin, NKZem, and NKVneshTorg are identified as the commissariats most sympathetic to the Kondratiev path, then other important commissariats, such as those for food supply (NKProd) and labour (NKTrud), and other important decision-making bodies such as the Supreme Council of the National Economy (VSNKh) and Gosplan, can be seen as less sympathetic to the work of the Conjuncture Institute. However, the influence of Kondratiev was not necessarily nil in these other bodies. For example A.I. Rykov was chairman of VSNKh for a short time between July 1923 and February 1924, Rykov being tried together with Bukharin in 1938 as a member of the right-wing opposition. Rykov's replacement at VSNKh was F.E. Dzerzhinskii, who tolerated non-party specialists within VSNKh to some degree. It was not until Dzerzhinskii died in August 1926 and V.V. Kuibyshev took over in VSNKh that the anti-Kondratiev current came to the fore. As regards Gosplan, although many economists within this institution such as S.G. Strumilin were well-known as opponents of Kondratiev, former

People's Commissar of Finance Sokol'nikov was vice chairman of Gosplan between January 1926 and May 1928, although by this time he had officially denounced his previous views. And one leading current of economic thought within Gosplan, the Groman-Bazarov current, was certainly less hostile to Kondratiev than Strumilin. Thus although major elements of such bodies as Gosplan and VSNKh were no doubt anti-Kondratiev, pockets of support or at least toleration may well have existed in even the most unlikely places until 1928-29.

KONDRATIEV AND THE QUANTITY THEORY OF MONEY

A key element of Kondratiev's analysis of economic policy issues throughout the 1920s was his use of the equation of exchange. This was crucial to his explanation of the scissors crisis of 1923, as will be seen in the next section, but it was also used to explain the hyperinflation of the ruble in 1922. There have been many different formulations of the equation of exchange, but they invariably involve the relationship between the price level (P), the quantity of money in circulation (M), the velocity of circulation of money (V), and the level of goods in circulation (Q). A common form of the equation linking these elements is $MV = PQ$. The origins of this idea go back as far as Henry Thornton's *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain* of 1802, but by the 1920s economists like Irving Fisher had subjected the equation of exchange to rigorous scrutiny.²⁴ However, it is important to stress that the equation given above assumes no particular causal relation to exist between the elements involved, rather the link hypothesised to exist between the elements remains to be specified. It is theoretically possible that an increase in one element, say M , could be counteracted by a fall in V , a rise in P , a rise in Q , or some combination of these changes, so that equilibrium is maintained. The quantity theory of money, which is sometimes confused with the equation of exchange, is the proposition that the price level varies proportionally with the quantity of money in circulation.²⁵ In stronger form it supposes that the effect of an increase in the quantity of money in circulation will (eventually) be solely on the price level, not on the velocity of circulation or the level of trade. Obviously other propositions involving the relationship between M , P , Q , and V are possible to formulate that are consistent with the equation of exchange.

One of Kondratiev's clearest uses of the equation of exchange occurred in an article entitled 'On the Question of the Stabilisation of

Commodity Prices' published in the summer of 1922. After the revolution in 1917 a devastating hyperinflation had gripped the Russian economy, resulting in the average level of commodity prices in Moscow being six million times higher in June 1922 than they were before World War I. However, from the beginning of May 1922 a tendency to price stabilisation had been detected, and this paper was Kondratiev's attempt to explain why the hyperinflation had come to a halt. To provide an explanation Kondratiev applied the equation of exchange in the form $P = MV/Q$. In the period from January to May 1922 the quantity of paper money in circulation had increased massively, by around 700 per cent. However, this increase in M had been counteracted by a number of factors. Firstly, developments in tax policy led to receipts from taxes rising by around 5500 per cent from January to June. As the collection of taxes grew faster than the emission of money, this had a stabilising effect, reducing the increase in emission from around 700 per cent to around 666 per cent in the period specified.

Kondratiev proposed secondly that a reduction in the velocity of circulation of money, caused by increased confidence in the ruble, had also occurred. But these two factors were only of secondary importance. The primary cause of the reduction in inflation according to Kondratiev was the widening of goods turnover, caused by the deepening hold of NEP and the improved financial policies of the State Bank. The transfer of a significant number of enterprises and institutions to economic accounting (*khozraschet*) which had taken place in the spring of 1922, and a tougher policy on the issue of credit by the State Bank, had been the major factors behind the deceleration in price rises. A relatively favourably harvest had also helped.²⁶

In terms of the equation of exchange, the increase in M had continued through the first five months of 1922, even though this was partially offset by changes in tax policy. The increased emission had in fact been counteracted mainly by a rise in Q , although a reduction in V was an additional compensating factor. This implied that, for Kondratiev, changes to the level of goods turnover was a more powerful factor in determining the price level than changes to the velocity of circulation, at least in the circumstances of the Russian hyperinflation. With this in mind Kondratiev wrote:

Emission is not quite an independent force. It certainly influences the price level, but the reverse is also true, that general price movements and the course of the ruble influence the level of emission. General price increases and a fall in the value of the ruble will

inevitably force increased emission. With stationary emission and all other things being equal, price movements will depend mainly on the level of goods turnover.²⁷

In *The Purchasing Power of Money* of 1911 Irving Fisher had put forward a similar view. Fisher wrote that 'prices vary inversely as the volume of trade, provided the quantity of money . . . and their velocities remain unchanged'.²⁸ Kondratiev's use of the equation of exchange was thus well within the mainstream of Western economics as it had developed by 1920. But how far does this imply Kondratiev's adherence to the quantity theory of money? In fact it was implicit in Kondratiev's analysis that the effect of increased money in circulation would ultimately be on the price level, not on goods turnover or monetary velocity. The post-revolutionary situation in Russia had clearly demonstrated this. What Kondratiev was proposing in this analysis was that other factors in the equation of exchange could offset increases in the money supply, something which was generally accepted within the framework of the quantity theory. However, as will be seen below, Kondratiev's opponents in the debates over Soviet economic policy in the 1920s did not accept the framework of the equation of exchange, and this led to the disputes examined in the next two sections.

KONDRATIEV'S ANALYSIS OF THE SCISSORS CRISIS

In this section and the next, examples of Kondratiev's analyses of specific economic crises which occurred in the USSR in the 1920s are discussed as a method of gauging his decision-making influence. The first example chosen is the scissors crisis of 1923, which concerned changes to the relative prices of agricultural and industrial goods. The problem was initially discussed by both Kondratiev and P.I. Popov at a meeting of the Presidium of Gosplan on 26 February 1923. Here Kondratiev identified a significant fall in grain prices which had begun in September 1922, which was caused by an unfavourable relation between supply and demand. A successful harvest and pressure from taxes widened the supply of grain, while the significant size of the tax in kind and the absence of exports reduced demand, leading to a price revolution.²⁹ The consequence of lower grain prices would be a reduction in rural income. This would be a hindrance to the process of accumulation in the countryside and would lead to delays in improvements to the productive forces of farms.³⁰ As a solution Kondratiev proposed

increasing exports, reducing the portion of taxes collected in natural form, strengthening the state, cooperative, and private grain trade apparatus, and devising measures for reducing the price of manufactured goods.³¹ At the February meeting of Gosplan P.I. Popov's analysis was constructed along similar lines to Kondratiev's, and he proposed comparable measures as a solution. However, some difference in emphasis can be detected between Kondratiev and Popov, as is discussed further on.

The price disequilibrium identified by Kondratiev and Popov grew in importance after February, and at the Twelfth Party Congress in April 1923 L.D. Trotsky presented a report on Soviet industry which pointed to the development of a 'price scissors' between industry and agriculture. This had continued from the end of 1922 to the autumn of 1923. Industrial prices were rising while agricultural prices were falling, in part due to the successful harvest of 1922. For Trotsky the price scissors had to be closed by lowering industrial costs, rationalising production, and by subordinating the budget to the plan. The development of the scissors indicated a fundamental imbalance between industry and agriculture which had to be resolved decisively in favour of industry. The alternative solution proposed by Sokol'nikov and supported by G.E. Zinoviev would according to Trotsky lead to a 'capitalist restoration'.³²

In an article published in September 1923 Kondratiev disagreed wholeheartedly with Trotsky's analysis and proposed a fundamentally different solution to the problem. Kondratiev explained the opening of the agricultural against industrial price scissors in terms of the growth of the quantity of money in circulation on the one hand, and the fall in the level of goods turnover on the other. In terms of the form of the equation of exchange given by Kondratiev ($P = MV/Q$), an increase in M and a fall in Q had led to a rise in P , assuming that V remained roughly constant. These two factors together therefore led to a growth in prices. However, due to the monopoly position of many industrial enterprises in relation to price setting and the relatively lax credit policy adopted by the government towards industrial enterprises, this encouraged a much faster rise in industrial prices as against agricultural and hence the opening of the price scissors.³³ This fall in rural purchasing power could have negative effects in that it might hamper the peasant's willingness to bring produce to market and could even discourage future sowings.

Kondratiev's analysis implied that the way out of the crisis was to restrict credit to industry, which would force industrial enterprises to realise the capital they could no longer obtain through credit by lowering

prices and hence increasing sales. A concomitant to this would be to alter government price policy in respect to grain purchases and to relax agricultural credit policy. Dobb implied that the actual policy adopted by the Soviet government to overcome the scissors crisis in the autumn of 1923 was essentially Kondratiev's. Certainly Kondratiev's theoretical analysis of the price scissors implied that such a solution was required, but how far did the official Politburo line reflect Kondratiev's specific approach? Dobb noted that representatives of industry did attempt to defend the maintenance of the scissors, and further that (for example) Strumilin attacked Kondratiev's proposal to raise grain prices on the grounds that productivity of agricultural labour did not warrant such a change.³⁴ Strumilin also argued that the prewar ratio of industrial to agricultural prices did not support the Kondratiev view, and hence that the idea of an equal exchange of labour power between the country and the city was being ignored.³⁵ Opinion in leading circles grouped around these two camps, showing that Kondratiev's analysis was not the only view which the government could have followed.

Carr related that these two differing approaches to the scissors crisis were reflected in two groups within the Central Committee. The majority grouping was reluctant to break with the *status quo* established by NEP, and did not contest that the peasantry was the victim and industry the villain of the scissors. The solution favoured by the majority involved applying pressure on industrial trusts to reduce prices, and bringing relief to the peasants by increasing grain prices and reducing agricultural taxes.³⁶ A committee had been established in September 1923 specifically to examine the problem of relative prices, and according to Carr this scissors committee 'was bound to range itself behind the official line, which was still the line of NKFin'.³⁷ The resolution drafted by the scissors committee was submitted to the Politburo in December 1923. On 24 December the Politburo adopted a resolution in which it was stated that the sales crisis was aggravated by a policy of high prices from industrial syndicates, and that industry was unable to sell its products due to a fall in purchasing power of the peasantry.³⁸ A report in the newspaper *Pravda* about L.B. Kamenev's speech on the work of the scissors committee contained a sub-title 'The Dictatorship of the Proletariat but Not of Industry', and warned of industrial goods lying in stores and of supplies being accumulated whilst the state provided credit for industrial development.³⁹ This analysis accepted by the Politburo clearly implied the Kondratiev solution, and thus it can be concluded that at least in 1923 Kondratiev-type views

on the relation between agricultural and industrial prices were dominant in government circles.

Wheatcroft related that although the solution of lowering prices of industrial goods was eventually adopted, Kondratiev failed to receive any official credit for this policy.⁴⁰ This suggests that even at the height of his policy influence Kondratiev as an individual was regarded with trepidation by party leaders. P.I. Popov was identified as someone who proposed a similar solution to the scissors crisis as Kondratiev. While this is partially true, a difference in emphasis between Popov and Kondratiev can be detected. For example in relation to regulating grain prices Popov argued that 'the worker-peasant state cannot leave private traders free to act on important question', whereas Kondratiev stressed that subsidies given to enterprises and local organs must be abolished as a means of restoring equilibrium between industry and agriculture.⁴¹ Also, the solution proposed by both Kondratiev and Popov in February 1923 was a little different to that suggested by Kondratiev in September 1923, suggesting that the crisis had developed in the intervening period.

It is true that Kondratiev-type views were held by some politicians at this time, as shown by the proposals of the scissors committee and Krasin's view of the importance of grain exports. But Kondratiev had presented his framework for analysing crises, the equation of exchange, in the summer of 1922. Moreover, Kondratiev's analysis was grounded in a current of economic theory, all implications of which he fully accepted. Other economists and politicians may have held this view in the autumn of 1923 out of expediency, but few were prepared to keep faith with this view as NEP progressed or accept the implications of the equation of exchange in other areas of analysis. In this sense Kondratiev can most clearly be identified with the solution to the scissors crisis which was eventually implemented.

KONDRATIEV'S ANALYSIS OF THE GOODS FAMINE

The change which occurred between 1923 and 1925 in the prevalence of Kondratiev-type views on the explanation of economic crises can be seen by comparing the above account of the scissors crisis of 1923, to the following account of Kondratiev and the goods famine in the second half of the 1920s. The goods famine first appeared in the USSR in 1925 and continued through to the end of NEP in 1929, and was characterised by industrial consumer goods being in short supply relative

to demand. Dobb outlined that the goods famine was often 'adduced as evidence of the lagging of industrial development' behind non-socialist or agricultural elements of the economy.⁴² In a 1925 article Kondratiev disagreed with the widespread allegation that the cause of this violation of equilibrium in the Soviet economy was disproportion between industry and agriculture. For Kondratiev it was clear that this disproportion could not be of an absolute nature, since agriculture outweighed industry within the economy considerably. Thus this alleged disproportion must be of a relative kind, but relative to what? A base period must be taken for comparison, and if the year 1924/25 was compared with 1923/24, data showed that industry grew by 63.4 per cent while agriculture grew by only 7.9 per cent. Gosplan control figures indicated that in relation to pre-war levels of production, industry had achieved a higher level of restoration (76 per cent) than agriculture (65 per cent) expressed in current prices.⁴³ Thus Kondratiev suggested that industry did not lag behind agriculture at all.

If Kondratiev rejected the disproportionality explanation of the goods famine, what was his alternative explanation? He believed that the cause must have appeared sharply in 1924/25 and cited the credit expansion of this period as an explanation. The economic year 1924/25 saw an increase in available credit of over two times the preceding year. Kondratiev gave the decisive month for this as being February 1925, when credit expanded around seven times from 10.6 million to 71.3 million rubles.⁴⁴ This credit expansion had huge significance since it allowed industry not only to expand production but also to partially withdraw from turnover, and this growth of industry led to increased demand for consumer goods. However, since increased industrial production took place to a greater extent in those branches of the economy producing means of production, and since the state adhered to its policy of holding down prices, there were insufficient consumer goods available and a goods famine developed.⁴⁵ Hence the real disproportion was not between industry and agriculture, but between urban purchasing power (effective demand) and the supply of ready-made consumer goods. Kondratiev explained:

What was violated was above all the precondition that on markets there is a place for only that demand which really flows from the internal mechanism of production and exchange.⁴⁶

An increase in demand created exogenously would inevitably lead to a disproportion, and for Kondratiev the credit expansion of 1924/25 was such an increase.

In theoretical terms Kondratiev's explanation of these crises in the Soviet economy had an affinity with the monetary explanation of business cycles exemplified by the work of R.G. Hawtrey and F.A. Hayek. In *Good and Bad Trade* of 1913, Hawtrey saw the essence of conjunctural swings in the 'lag of the demand for hand-to-hand currency behind an expansion or contraction of credit', which translated as a failure of banks to precisely tune credit policy to the exact needs of the economy.⁴⁷ In *Currency and Credit* of 1919 Hawtrey put this idea in even clearer language:

... credit is by nature unruly. It is always straining at its tether, or rather, it is perpetually starting to run away, and then being pulled up with a jerk when the limit of inflation ... is reached.⁴⁸

In a capitalist economy this meant adjustments in the rate of interest always tended to lag behind the rate appropriate for any specific instant; in the USSR this translated into the government directly providing an over-generous extension of credit to industry. In *Monetary Theory and the Trade Cycle* of 1929, Hayek explained that when the volume of money in circulation was elastic 'there may exist a lack of rigidity in the relationship between saving and the creation of real capital'.⁴⁹ For Kondratiev the provision of credit without genuine savings would inevitably lead to just the sort of crises which had been seen in the Soviet economy.

The fact that in the case of the scissors crisis in 1923 Kondratiev's explanation was shared by many of the important players, whereas his explanation of the goods famine of 1925 was less the generally-held view even though it involved similar reasoning to that of 1923, shows the degree of change which had occurred in policy-making circles in the intervening period. Throughout NEP Kondratiev held to a consistent framework of analysis in respect to crises, while the Bolshevik leadership swung between adherence to one view then another. Carr suggested that in October 1925 even Sokol'nikov believed that the goods famine might be overcome by currency emission leading to an expansion of production, although by November he was warning about the danger to currency reserves.⁵⁰ Both Preobrazhenskii and I.T. Smilga criticised the view promoted by Kondratiev as 'monetary fetishism' and Gosplan issued a memorandum warning against a deflationary policy, while from within NKFin M.G. Bronskii and L. Shanin gave arguments similar to Kondratiev's.⁵¹ However, while both Bronskii's and Shanin's views were published at the beginning of 1926, Kondratiev's analysis had been published towards the end of 1925. Hence while it

was likely that Kondratiev was not the only NKFin member thinking in these terms in 1925, this suggests that Kondratiev was always at the cutting edge of developments within NKFin.

Trotsky responded to the goods famine by arguing that the solution to the scissors crisis adopted in 1923 had not solved the fundamental imbalance between industry and agriculture, and that this imbalance would continue to pose serious problems if measures were not forthcoming to strengthen industry. In December 1925 Trotsky portrayed Sokol'nikov (and hence Kondratiev) as theoreticians of the 'economic disarmament of the proletariat *vis-à-vis* the countryside'.⁵² For Trotsky the goods famine was 'incontestable proof' that the distribution of resources between state industry and the rest of the economy had not 'acquired the necessary proportionality'.⁵³ Kondratiev might have responded to this as follows. Trotsky's idea of the imbalance between industry and agriculture was predicated on the belief that the USSR could industrialise and catch up with advanced capitalist countries in a relatively short period of time, if only the correct policies were implemented. In fact this aim was impossible to accomplish no matter what policy was chosen.⁵⁴ The real imbalance was between the Bolshevik conception of what was desirable and what in reality could be achieved. The suggestion that a country which was still semi-feudal in 1913 could reach advanced levels of development in a decade or so, especially so soon after a major war and a tumultuous political revolution, was incredible. Kondratiev's analysis was predicated on the idea of a continuation of existing relations between industry and agriculture because this was the only feasible option in the short term (10–15 years). On this view Kondratiev's explanation of the goods famine was anathema to people like Trotsky less because of the specifics of its reasoning, more because it simply did not accept instant industrialisation as an option.⁵⁵

THE TRIAL OF THE SOCIALIST REVOLUTIONARIES

Simultaneously with Kondratiev's economic views being taken seriously in the first years of NEP as witnessed by the scissors crisis, Kondratiev as an individual was still being treated as a undesirable counter-revolutionary by the Soviet authorities. Sorokin gave the following account of a frightening experience from 1922:

On August 10 1922 I left Petrograd for a few days in Moscow. From the station I went directly to the apartment of Professor

Kondratieff, who invited me to stay with him. We had breakfast and parted, arranging to meet at 5 o'clock in his apartment. Having attended to my business I returned to the apartment; but my friend was not at home. At six he had not come and I became a little uneasy. At seven a student came, asking for my friend's wife. I told him that neither she nor her husband were home, and offered to take any message he cared to leave. The student looked at me fixedly and asked: 'Who are you?' I introduced myself, and he said: 'Professor, get out of this apartment. Your friend is under arrest and the Chekhists may be here any moment.' I took my bag and left...⁵⁶

Sorokin was forced to leave the Soviet Union under threat of execution soon after this incident, which was directly linked to the first great show-trial conducted by the Soviet regime. In February 1922, 47 leading SRs were arrested for conspiracy. The ensuing trial of the SRs began on 8 June and lasted for two months, one of its main aims being propaganda against any opposition to Bolshevik dominance. Fourteen of the accused were sentenced to death, although these sentences were eventually suspended.⁵⁷

Kondratiev gave evidence at the trial, but was part of a more neutral group of witnesses who did not conform outright with the wishes of the Bolshevik prosecutors. Kondratiev admitted that he had been a member of the 'Union for the Regeneration of Russia' (*Soyuz Vozrozhdeniya Rossii*), an organisation of left-leaning liberals and rightist socialists formed in the spring of 1918 with the aim of establishing democracy in Russia. This organisation had received financial aid from the Allies with the intention of fighting both Germany and the Bolsheviks. Kondratiev admitted membership of the Union from the summer of 1918 to the end of 1919, and also that the Union had made contact with groups to the right of the SRs. For the prosecutors at the trial this was taken to imply a political bloc with the international bourgeoisie which reached as far as 'Black Hundreds elements'. Since the Black Hundreds were armed reactionary groups in Tsarist Russia, active from 1905-17 in pogroms against Jews and assassinations of liberal personalities, this was a grave charge indeed. The newspaper *Izvestiya* accused Kondratiev of giving evasive answers to questions put by the prosecution, and Kondratiev was arrested shortly after the trial in a search for 'counter-revolutionary' intellectuals.⁵⁸ He was soon released, but this suggests that while the Soviet authorities might have been willing to listen to Kondratiev-type suggestions for overcoming economic crises in the early years of NEP, they were never fully relaxed with his actual presence in the USSR. It is likely that few Bolsheviks

ever forgot about Kondratiev's involvement with the SRs during the revolution.

KONDRATIEV'S PARTICIPATION IN SPECIAL POLICY COMMISSIONS

As noted previously, Kondratiev participated in various commissions set up to examine specific areas of economic policy. One such commission was the Commission on Foreign Trade Policy within Zemplan, which included A.N. Chelintsev, N.S. Kuznetsov as secretary, Kondratiev as chairman, as well as members of the NKZem department of animal husbandry, and which met under the instruction of the People's Commissar of Agriculture himself, A.P. Smirnov. Chelintsev was later accused with Kondratiev of membership of the Labouring Peasants Party (TKP).⁵⁹ In an emergency session of this Commission on 12 June 1925 the trade agreement with Germany and the export of livestock products from the USSR to Germany were discussed. Chelintsev outlined that the minimum level of export of pigs for 1925/26 should be increased from a range of 40–80 thousand head to 70–150 thousand head. The Commission stressed that it viewed the draft agreement with Germany as a minimum, and Chelintsev's proposal suggested that they were prepared to intervene to achieve the aim of higher targets.⁶⁰ At an earlier meeting of the Presidium of Zemplan on 4 March 1925 at which Teodorovich and Makarov were present, Kondratiev had outlined his own views on aspects of the trade agreement with Germany as follows.

Kondratiev stressed that the turn to agrarian protectionism witnessed in Germany in June 1924 had weakened significantly in the very recent past. The leaders of protectionist sentiment had reverted to being opponents of protectionism, and the emphasis on protecting grain-producing farms had turned to protecting intensive branches of agriculture and livestock. In light of these changes Kondratiev suggested that for the USSR the most essential areas for export were grains and some intensive branches of agriculture. Of first priority for Kondratiev was the export of rye and wheat, followed by pigs, butter and poultry. This was because within the framework of the agreement with Germany, that is within three years, grain-producing farms would develop more in the USSR than livestock production. Teodorovich disagreed with Kondratiev by suggesting that butter and poultry were more important exports than rye and wheat. The order actually decided upon

was as follows: pigs, butter, poultry, rye and wheat, this option obtaining the majority of votes. Kondratiev's position was supported only by P.I. Lyashchenko.⁶¹ This suggests that Kondratiev was by no means always victorious in debates that occurred within Zemplan.

Kondratiev was not only concerned with the export and import of goods from the USSR, but also the import of foreign capital which could be used to develop Soviet agriculture. In February 1923 as a result of a document prepared by the agricultural section of Gosplan USSR, a resolution was adopted on the creation of a special commission which had the task of implementing the conclusions of the aforementioned document. In the chair of this commission was Krzhizhanovskii, and it included P.I. Popov, N.P. Oganovskii, and Kondratiev in his capacity as a member of NKZem RSFSR. The Gosplan document related that the idea that the import of capital into Russia could occur only in the form of concessions was profoundly mistaken and actually dangerous. The import of capital could theoretically occur in the following basic forms: in the form of credit, either monetary, state, cooperative, commodity or private; in the form of import of productive capital, either for mixed enterprises, for the organisation of new firms, or for leases or concession rights; and in the form of trading capital, for mixed enterprises or the organisation of new firms. From the point of view of the interests of the national economy the most desirable of these forms of import were credit and productive capital. The most significant for stimulating Russian agriculture would be to direct capital not only into agricultural production, but also into those areas which were necessary for the development of agriculture, such as transport, elevators, refrigeration, agricultural raw materials, cooperative credit and so on. The document concluded by stating that foreign capital should be sought not from only one country but from a number of foreign countries.⁶² This suggests that in 1923 the idea of integrating the USSR in the international economy was even shared by some elements of Gosplan, and hence that Kondratiev's position in this respect was not particularly anomalous at this time.

KONDRATIEV AND PEASANT TAX POLICY

There were a number of important agricultural tax reforms which occurred in the early years of NEP, and Kondratiev had analysed and contributed to these from within NKZem. The first was the replacement of grain requisitioning with a tax in kind which occurred in spring

1921, and in February 1922 Kondratiev commented on a draft NKProd proposal to create a single tax in kind. He was critical of the NKProd effort, since it partially conflicted with the NKZem proposals which had been in preparation for the previous seven months. For Kondratiev two basic changes in tax policy were necessary: to simplify taxation by introducing a single tax in kind, and to transform the system of taxation into a more positive policy tool in terms of its effect on agricultural development. The NKProd proposals failed to fulfil either of these requirements. Kondratiev also suggested that the total amount projected to be collected in taxes by NKProd, 350 million rye units (1 rye unit equalled 1 pud of rye or wheat), was too great a load for agriculture to bear. Instead he recommended that it be reduced to 240 million rye units, since a higher level would disrupt the restoration of agriculture.⁶³ As Carr related that the actual amount collected by the tax in kind in 1921/22 was 150 million puds, against an estimate of 240 million, this caution appears to have been warranted.⁶⁴

Carr told the story of changes in Soviet agricultural tax policy between 1923 and 1926 as follows. At the Twelfth Party Congress in April 1923 Kamenev had advocated proposals to convert the tax in kind into a monetary tax and to unify it into a single entity. Sokol'nikov had provided detailed support in which it was proposed that a reduction in the overall amount of taxes collected from individual peasants should take place in 1923/24.⁶⁵ Opposition to these proposals came from Yu.M. Larin and E.A. Preobrazhenskii, two of the leading figures of the left, but a decree of 20 May 1923 confirmed government support for the idea of a single agricultural tax and for the idea that payment could be made either in money or in kind.⁶⁶ The new single agricultural tax was assessed on the following basis: after the harvest NKFin fixed the total level of tax for the year, and divided this up by province based on the size of the provincial harvests. Taxation was progressive and regional differences were recognised,⁶⁷ but some complained that this system favoured the well-to-do peasants over the poor peasants. As regards the level of peasant taxation actual set in the early years of NEP, Davies related that in 1921 it was below the level of the requisitioning of the civil war period. Between 1922 and 1923/24 it was increased, but at a rate lower than the rate of expansion of the agricultural market.⁶⁸ After January 1924 the responsibility for collection of the single agricultural tax was transferred from NKProd to NKFin (NKProd was abolished in May), suggesting that NKFin and those associated with this commissariat increased in importance between 1921 and 1924.⁶⁹

On 7 May 1925 the annual decree on the rates of assessment for the agricultural tax was issued for 1925/26. This decree reduced the total amount of tax levied, reduced the rate of conversion for livestock, and fixed minimum holdings below which no tax was to be levied. According to Carr the first two changes were concessions to the well-to-do peasants, the third was a concession to the poorest peasants.⁷⁰ By the end of 1925 the turn against leniency in peasant tax policy had begun in earnest. A reversal of the tax reductions of mid-1925 was no longer contested after the defeat of the opposition at the Fourteenth Party Congress in December 1925, as the reduction in taxes was given as one of the factors enabling peasants to hold back their grain surpluses. Gosplan proposed that the amount of tax levied should be increased, the degree of progressiveness should be raised and the period of payment should be reduced, and in March 1926 SNK accepted these proposals.⁷¹ This short account of changes to tax policy suggests that in 1923 the Kondratiev conception of taxation was dominant, in mid-1925 concessions to well-off peasants were still being made, but by the end of 1925 the Kondratiev approach had been decisively rejected. How does this sequence tie in with Kondratiev's writings on taxation?

In January 1924 Kondratiev drafted a short list of resolutions on agricultural taxes for Zemplan, the aim being to outline a set of principles on which taxation should be based. These were as follows:

1. The source of taxation must be the income of peasant farms, above all that part which has a rent or additionally profitable nature;
2. Taxation should be structured regionally;
3. The calculation of income should be based on the totality of factors determining income, including land, cattle and so on;
4. Calculation of farm income to be based on the records of the previous 3-5 years;
5. The object of taxation should be ploughed field (*pashnya*) plus meadowland (*pokos*);
6. Taxes should be progressive.⁷²

Point one suggests that Kondratiev was keen not to overburden the peasantry with taxes. Davies explained that point five was a stimulus to the extension of sown area, but was also advantageous to richer peasants, these being able to sow a greater proportion of their total land.⁷³

Kondratiev returned to this question in more detail in February 1924 in a paper entitled 'Concerning a Single Agricultural Tax' ('O edinom sel'skokhozyaistvennom naloge'). Here he began by explaining that

the chairman of Zemplan, believing that the tax question would fade in importance in the near future, gave the task of elaborating this question to a special commission under V.I. Lenin. This commission elaborated two variants of the basic theses – the Kondratiev variant and the Lyashchenko variant – and eventually adopted Kondratiev's variant. For Kondratiev tax policy could be divided into two basic issues: the numerical level of taxation and the overall system of taxation, the first issue being less important than the second. Kondratiev explained that a transition to the principle of regionality (*raionnost'*) in tax assessment was being undertaken in 1924, based on the idea that a given amount of land in different regions gave different levels of profitability.⁷⁴ There were three possible variants of this idea.

The first was a mechanical calculation based on cattle, land and so on which was set differently for every region. The second entailed a calculation set differently for each region based on gross income (*valovoi dokhod*), and the third a similar calculation based on net income (*chisty dokhod*). Zemplan supported the third option, net income, but Kondratiev pointed out problems with this approach as follows. Suppose there were two farms with a net income of 100 rubles, one extensive and one intensive. The extensive farm would use less capital and labour per unit of land than the intensive farm, and hence its running costs would be lower. This meant that the intensive farm would be overtaxed and the extensive farm undertaxed, since profit as a percentage of outlay was much lower on the intensive than the extensive farms. Also, there were some differences within regions as well as between them which a simplistic regional division would ignore.⁷⁵

Kondratiev further outlined that the question of the elements which should be objects of taxation had also provoked dispute. Within Zemplan many argued for only land and livestock to be used, whereas representatives of NKFin supported using land, livestock, and labour power. Kondratiev and Teodorovich stood with the opinion of the majority within Zemplan. Kondratiev concluded by noting that agreement currently existed over the general characteristics of the system of taxation, but disagreement existed over the regionality element of taxation, the harvest element, and over fixing the precise objects of taxation.⁷⁶ This document shows that disagreements sometimes existed between Zemplan and NKFin on important policy issues, and that often Kondratiev was at the centre of these conflicts.

The Special Commission on Agricultural Taxation under Zemplan included V.I. Lenin, N.P. Oganovskii, N.I. Kostrov, G.I. Chubakov, P.I. Lyashchenko, as well as Kondratiev and Vainshtein. As was noted

above, during a meeting on 8 February 1924 the Kondratiev proposals on agricultural taxation were adopted as the official Zemplan Tax Commission position.⁷⁷ However, this was not without debate. The Kondratiev option involved calculating tax based on the net income of farms, the Lyashchenko variant on gross income. It was pointed out at another meeting of the Tax Commission that for some provinces use of net income resulted in negative quantities of tax being demanded. Kondratiev responded to this by suggesting that in these cases income from non-agricultural sources should also be included in the calculation.⁷⁸ Outside of NKZem Kondratiev's attitude to tax policy was often strongly criticised. For example at a meeting of the agricultural section of Gosplan in July 1924 P.I. Popov argued that the Kondratiev option of calculating agricultural taxes based on net income was incorrect, since the current goal of tax policy was the accumulation of maximum resources into state hands.⁷⁹ However, within NKZem Kondratiev's ideas were greatly respected.

Kondratiev returned to the tax question in 1925 with a paper entitled 'On the Question of Constructing Agricultural Taxes on the Basis of the Rent Principle' ('K voprosu o postroenii oblozheniya sel'skogo khozyaistva na osnove rentnogo printsipa'), which was the result of a meeting of Zemplan on 8 May 1925. Here he stated that the source of agricultural taxation must always be farm income. However, various forms of this idea were possible, most favourable for farms being a system based on the removal of differential rent. According to Kondratiev such a system was the most just and fair, the most agreeable to capital accumulation, and encouraged better land use. Objections to this principle could be raised, for example that it produced insufficient yield and that calculations were unduly complex. However Kondratiev gave a formula for this principle as follows:

$$[E - (c + v + i)]/a$$

where E = gross income, not including income from non-agricultural business (*promysel*), c = costs of basic and turnover capital, v = minimum wages, i = the interest rate, and a = the quantity of land. Kondratiev concluded by suggesting that work on the precise calculations for this tax should be done by the Central Statistical Administration (TsSU), and that an interdepartmental commission with representatives from Gosplan, TsSU, NKZem, and NKFin should provide general leadership.⁸⁰

In fact in the period November 1924 to January 1925 a number of different draft proposals on the rent principle had been presented in

Zemplan's tax commission by various economists such as Vainshtein, Makarov, and G.A. Studenskii. However, due to technical difficulties the collegium of Zemplan decided that it was only possible to begin using the rent principle from 1926/27. On 6 June 1925 Kondratiev's paper on the rent principle was presented to the collegium of NKZem, and Smirnov decided to approve Kondratiev's ideas for further elaboration with representatives of NKFin, TsSU and Gosplan.⁸¹ Davies related that a new system of assessing the amount of tax to be paid by peasants was indeed introduced in 1926/27. The new system involved calculating the total average income obtained by the peasantry from all sources, including non-agricultural work, per unit of land. Average income per unit was then multiplied by the amount of land held to obtain the amount of tax to be paid.⁸² However, the fact that Kondratiev explicitly excluded income from non-agricultural work in his tax proposals based on the rent principle (except in specific circumstances) suggests that the changes actually introduced in 1926/27 were not those proposed by NKZem. By 1926/27 Kondratiev's ideas were not taken seriously as policy proposals outside of NKZem, and opposition from TsSU and Gosplan most likely scuppered Kondratiev's suggestions on this issue.

KONDRATIEV AND PEASANT FARMS

Before 1917 Kondratiev was a keen supporter of communal forms of agriculture, in line with the *narodnik* current of Russian thought. In 1919 Kondratiev had written a short article in which the advantages of agricultural cooperation were stressed, suggesting that the shift rightwards during 1917 had not completely changed his attitude to peasant farms. In this article Kondratiev wrote:

Russia is in need of the development of its productive forces, and agricultural cooperation... is one of the most effective means of improving the productive forces of peasant farms.⁸³

Support for some aspects of agricultural cooperation continued into Kondratiev's writings in the 1920s. Some have argued that cooperatives were at the centre of Kondratiev's concern with the technical reconstruction of agriculture throughout the 1920s.⁸⁴ In fact by the mid-1920s Kondratiev was more concerned with questions of marketability and farm size, although for Kondratiev cooperatives still had a place as far as they harmonised with the other criteria proposed.

Kondratiev's shift away from support for a certain type of farm to alternative non-structural criteria in agriculture is illustrated by a short paper entitled 'On the Question of the "Draft of the Basic Principles of Land Use and Land Consolidation"' ('K voprosy o "Proekte osnovnykh nachal zemlepol'zovaniya i zemleustroistva KZP"') written in autumn 1926.⁸⁵ Here Kondratiev stressed that it was a very dangerous mistake to overestimate the process of differentiation and the significance of the *kulak* in the countryside. He continued:

... on the basis of this mistake it is easy to find *kulaks* in place of the healthy, energetic stratum of peasant farms with highest productivity of labour and fastest accumulation. If this mistaken path is followed, then it is necessary to see all its consequences, and to be reconciled to the dominance of the family-consumer order in peasant farms, with its low marketability, low accumulation, and slow growth of productive forces.⁸⁶

Kondratiev believed that the dominance of the family-consumer principle in peasant farms must be overcome, and the healthy initiative of the mass of agricultural producers should be given adequate space to develop. To assist in this process he proposed that the principle of free choice of form of land use must be established in law, as should definite rights in respect to the leasing of land and the hiring of labour.

Thus for the Kondratiev of the mid-1920s questions of grain marketability, labour productivity, and capital accumulation had come to outweigh the old *narodnik* conception of ownership structure as the dominant consideration in agriculture. In this change he was not only rejecting *narodnik* ideas, but Bolshevik views also, as the Bolsheviks constantly stressed the need for collective forms of agriculture. Moreover this meant that someone like A.V. Chayanov, who still supported agricultural cooperatives at the height of NEP, differed fundamentally from Kondratiev as to how Soviet agriculture should develop. The shift in Kondratiev's view between 1919 and 1926 may have been partly encouraged by his study of US farming techniques, examined in the following chapter, but it was also consistent with the direction his study of market conjuncture was taking. An embryonic concern with marketability is clearly present in *The Grain Market* written in 1918-19, and had its roots in Kondratiev's analysis of the collapse of the grain market during World War One. In respect of decision-making during NEP Kondratiev's views on peasant farms had very little (if any) actual influence on Soviet policy, as forced collectivisation was chosen at the end of 1929 as the solution to Soviet agrarian problems.

KONDRATIEV AND GRAIN EXPORTS

One topic of great importance which Kondratiev returned to again and again during NEP was the problem of grain exports. This topic was central to Kondratiev's conception of Soviet economic development, as expanding the export of Soviet goods would assist in integrating the USSR into the world economic system, and would also provide foreign currency which could purchase equipment from overseas for Soviet industrial development. Kondratiev's views in this area were similar to those held by Krasin in NKVneshTorg. Kondratiev wrote analyses of various aspects of export policy in 1923, 1925, 1926 and 1927, and these writings are examined in what follows.

'The International Grain Market and the Perspectives for Grain Exports' ('Mirovoi khlebnii rynek i perspektivy nashego khlebnogo eksporta') was written by Kondratiev in 1923 under the auspices of NKFin. In this paper Kondratiev was concerned to analyse the position of the international grain market for Soviet exports. Kondratiev began by applying his idea of long cycles to the position of international grain markets. He explained that long cycles were caused by the process of radical redistribution of accumulated capital, which was expressed in various ways such as industrial reforms and technical revolutions, in the opening up of new territories to production, and through the training of new cadres of labour.⁸⁷ The grain market was subject to these forces like any other market. In the second half of the nineteenth century, exports of cereal grains from Russia grew (measured in index terms) from 31 in 1850 to 187 in 1880, and for the USA from 16 in 1850 to 391 in 1880. This was a six-fold increase for Russia and a twenty-five-fold increase for the USA. However, this increase occurred on the back of the rising wave of the second long cycle, which turned to a downwave in the mid-1870s. After this time demand declined and insufficient capacity for the still-rising level of production was observed, and grain prices fell dramatically from a level of 108 in 1873 to 53 in 1896.⁸⁸

This world economic depression lasted until the mid-1890s when the rising wave of the third long cycle began, based on electricity and the development of a whole series of new industrial branches. In the third long cycle the further development of European industry coincided with the strengthening of industrialisation in the USA. In this period Russian and American wheat exports were as shown in Table 3.1.

This table shows that although the total amount of wheat exported from both countries grew between 1886 and 1913, it declined relative

Table 3.1 Level of wheat exports, 1886-1913 (millions of tonnes)

Year	USA			Russia		
	Produced	Exported	% export	Produced	Exported	% export
1886-99	11.55	3.91	33.9	11.37	2.82	24.8
1909-13	15.22	2.16	14.2	22.18	4.39	19.8

Source: Kondratiev, *Osoboe mnenie*, vol. 1, p. 214.

to the amount produced, for Russia from 24.8 per cent to 19.8 per cent. During the war the role of countries such as Argentina, Canada, and Australia in the international grain market increased, whereas the role of European countries and Russia declined. The high conjuncture of the world grain market during the war was used to advantage by North American states, for example US sown area increased from 80.35 million hectares in 1909-13 to 87.12 million in 1914-18. After the war the USA and Canada held dominant positions on the international grain market, the USA providing 82.4 per cent of international rye exports in 1919-21.⁸⁹

Kondratiev outlined that the rising wave of the third long cycle lasted until 1920, when a world crisis of relative overproduction was observed. In the USA wheat prices fell dramatically from 284.9 (in index terms) in 1920 to 140.6 in 1922 (1913 = 100). The cause of this crisis was overproduction of grain in relation to demand, as demand for grain products had been qualitatively altered by the war. European countries began to import more rye and wheat after the war than before, but the increase was greater for rye than wheat. Since rye was a cheaper product than wheat, demand had shifted in favour of the simpler grains. Moreover, demand in a number of important consumer countries like France, Italy and the Netherlands had declined after the war due to a fall in purchasing power of these countries. Thus exports of wheat from the USA fell from 8.55 million tonnes in 1920/21 to 5.05 million in 1922/23. Thus in 1923 the international grain market was in depression.⁹⁰

Turning to Russia Kondratiev noted that in 1923 grain prices were low.⁹¹ More importantly Russian prices were significantly below international prices, for example wheat prices in Moscow stood at 112 in index terms, compared to 158 in the USA and 168 in England. However, Russia had higher organisational and transport costs which tended to negate this price advantage. The greatest opportunity for Russian grain exports stood with rye, because of three factors: price, world

demand and past experience. In the previous year only rye exports achieved a significant level; out of 0.73 million tonnes of grain sold, 62.1 per cent was rye. From a geographical point of view the greatest opportunity for export lay with countries bordering Russia such as Germany, Finland, Latvia, and Poland, and through them Holland, France and England.⁹² Kondratiev believed that of the total collected harvest (including potatoes) of 49.14 million tonnes (3000 million puds) in Russia in 1923, 3.28 million tonnes or 6.67 per cent was free to be exported.⁹³ Kondratiev pointed out that it was likely that the population held additional supplies from previous years. Grain received by the government in taxes and held in storage by various state organisations could also be included in the calculation, increasing the figure of possible exports to 6.55 million tonnes. However, the level of available grain did not have decisive significance, as actual exports depended also on organisational and financial factors. The absence of organisations assisting export, inadequate links with the international market, high billing costs, and problems in crediting exports all tended to reduce the level of actual exports. Kondratiev believed that the actual amount exported would be in the range 2.46–3.28 million tonnes (150–200 million puds).⁹⁴

Roughly similar figures were given by Vainshtein on behalf of the Conjunction Institute in January 1924. Vainshtein related that while 7.91 million tonnes was the likely surplus from the 1923 harvest, 1.47 million of this would be collected in taxes and 3.52 million consumed, leaving 2.92 million for export. The addition of 1.52 million tonnes remaining in state organisations from the 1922 harvest and 0.49 million from NKProd reserves gave a grand total of 4.93 million tonnes available for export in 1923/24. However, problems with the trading apparatus, insufficient financial resources, and other unforeseen factors necessitated a reduction to between 3.28–3.44 million tonnes (200–210 million puds), a slightly higher estimate than Kondratiev's 2.46–3.28 million tonnes.⁹⁵

In 1925 Kondratiev wrote a paper entitled 'On the Conjunctural Conditions of Agricultural and Grain Markets in Particular' ('O sostoyanii kon'yunktur sel'skogokhozyaistvannogo i khlebnogo rynka v chastnosti') which was presented at a meeting of the presidium of Zemplan on 17 October. In this paper Kondratiev reviewed the harvest and procurement situation of the summer of 1925 and the consequences of this for exports. Kondratiev began by outlining that from July to September 1925 a rising conjuncture had been observed, caused by an excess of demand over supply. On the grain markets levels of procurement had

been significantly higher than the corresponding period of the previous year; for July, August, and September reaching 2.59 million tonnes against 1.20 million in 1924. However, concomitant with this there was a rise in grain prices which had negative consequences for grain exports. One of the causes of this according to Kondratiev was a statistical mistake in determining the harvest level, which was related to institutional conflicts between TsSU and Gosplan. The original figure was set at 61.75 million tonnes, this was then revised to 76.50 million, then reduced to 68.80 million. The highest of these figures would give a colossal surplus available for export in the region of 8.20–9.83 million tonnes. However, the NKZem plan for exports was around 4.91–6.22 million tonnes (300–380 million puds) for 1925/26.⁹⁶

Kondratiev explained that the position on the international grain market was now more unfavourable for Soviet exports. In the current year the world harvest had risen compared to last year, by 18 per cent for wheat and 30 per cent for rye. Harvests in European consumer countries were especially high. Thus a rise in Soviet grain prices coupled with a fall in international demand had led to an unfavourable position for Soviet exports.⁹⁷ However, Kondratiev recommended that export operations should not be curtailed because he believed that Soviet prices would soon fall. Writing on the same topic in the newspaper *Economic Life* (*Ekonomicheskaya zhizn'*) Kondratiev explained the declining conjuncture seen in 1925 in terms of the balance of international supply and demand for crops such as wheat. In 1925/26 the supply of wheat was projected at 20.68 millions tonnes, demand at only 16.54 million.⁹⁸ However, for Kondratiev this did not mean that a catastrophic fall in grain prices was imminent, rather he predicted a slow and smooth downturn. In 'O sostoyanii kon'yunktur' Kondratiev proposed that Soviet import organisations could temporarily subsidise exports in unprofitable periods by covering the losses generated. This was easier when the exporter and importer were part of the same organisation, hence this solution was feasible in the USSR because of the foreign trade monopoly. Kondratiev concluded by outlining two possible options if Soviet exports were to continue: either export losses were covered by importers, or Soviet grain prices should be reduced, making exports profitable.⁹⁹

It is clear from this that Kondratiev did want the USSR to continue exporting grain even in less profitable periods, although he was a little ambiguous as to how and when these exports would return to profitability. It is noticeable that by 1925 Kondratiev did not believe that the position on the international grain market was favourable to Soviet exports, this being a shift compared to 1923 when he was optimistic

about export possibilities. A year later in 1926 Kondratiev wrote an article entitled 'The International Market and the Problem of Flax Exports' ('Mirovoi rynok i problema eksporta l'na'). In this article he explained that in the USSR over the past three years flax production and export had grown sharply, for example in 1925/26 the flax harvest exceeded the previous year's by 42.6 per cent. However, world demand for flax depended on the position of textiles and the flax industry in importing countries such as England, France, and Belgium. The economic crisis which occurred in 1920/21 had hindered the rate of growth of the Western textiles industry and thus threatened the possibilities for Soviet exports.¹⁰⁰ Previously Russia had occupied an almost monopoly position in the supply of raw materials to international flax markets. During the war this Russian dominance created problems, causing flax prices to rise more than prices of other raw materials such as cotton, hemp or jute.

The above tendencies had according to Kondratiev led to the following developments. Firstly, European countries had attempted to increase their domestic flax production. Although this had been achieved to some extent, the fact that the flax harvest in Europe in 1920 was 0.25 million tonnes compared to Russian pre-war exports of around 0.28 million tonnes, showed that an increase in European sown area could not entirely compensate for Russian flax. Secondly, a shift from flax to cotton and hemp production had been observed, caused by flax being the most expensive of the textile raw materials. Finally, finished flax goods were relatively undervalued compared to flax raw materials. Kondratiev saw these developments as an opportunity for Soviet flax exports, and he gave the figures in Table 3.2 to show this.¹⁰¹

This table indicates the decline in flax exports on the world market from around 0.56 million tonnes in 1913 to around 0.22 million in 1924, and the corresponding decline in Russian/Soviet exports from 0.23 million tonnes in 1913 to 0.05 million in 1924. According to Kondratiev the paradox of the current position of world flax markets was as follows. Demand for flax raw materials grew only slowly due to relatively expensive prices, but a significant increase in flax exports was easily hindered given that the capacity of market demand was low. This vicious circle could only be broken through a growth in supply of flax, and by the restoration of equilibrium between flax raw material prices and prices of finished goods made from flax. Kondratiev concluded that flax exports could be further increased from the USSR, which would tend to reduce world flax prices and equalise them with other textile raw materials prices. Thus Soviet export organisations should be ready to take full advantage of this situation.¹⁰²

Table 3.2 International flax exports, 1909-24 (thousands of tonnes)

Year	World	USSR
1909-13	556.0	226.4
1920	86.7	1.5
1921	146.3	10.8
1922	198.5	46.8
1923	205.9	33.8
1924	211.7	49.6

Source: Kondratiev, 'Mirovoi rynok i problema eksporta l'na', p. 7.

In this article Kondratiev was preparing the ground for increased Soviet flax exports in 1926/27, based on the idea that changes in overseas production could make Soviet exports more feasible. This is a noticeable difference from the paper Kondratiev presented in October 1925, in which only domestic changes were given by Kondratiev as factors which could improve Soviet grain export prospects; hence by the beginning of 1926 Kondratiev had at least partially returned to his optimistic position of 1923. It is also noticeable that whereas in 1923 Kondratiev suggested that the most advantageous crop for the USSR to export was rye, in 1926 he had turned his attention to flax. Carr related that the partial failure of the 1924/25 grain harvest had led to increased flax exports, this being one possible contributing cause of Kondratiev's shift.¹⁰³

Kondratiev returned to the question of agricultural exports in 1927 in an article entitled 'The Export of Soviet Agricultural Goods' ('Eksport sel'skogo-khozyaistvennykh tovarov SSSR'). This article was a general examination of the factors which had helped and hindered Soviet exports in the 1920s compared to prewar levels. Kondratiev explained that the low-point for Soviet exports had been reached in 1919, when total exports fell to 0.01 per cent of the prewar level. Exports began to rise after 1920, and in 1926 they had reached one-third of the prewar level. The trade balance in the period 1920-23 was sharply negative, but it became slightly positive in 1923/24. In 1925 there was a slight deficit, in 1926 a slight surplus. Kondratiev pointed out that while in 1926 industrial exports had reached 91 per cent of the prewar level, the corresponding figure for agriculture was only 27.1 per cent, although agricultural goods were still 71.7 per cent of the total exported.¹⁰⁴

Kondratiev stressed that although Russian agricultural production declined between 1914-21, agricultural exports fell at a faster rate than production. Comparing Soviet exports to world exports over this period,

world exports of rye, oats and flax declined dramatically, but exports of meat and wheat did not fall. On the contrary Soviet levels of export were lower for all goods. What caused this lower level of Soviet exports compared to international norms? Kondratiev rejected the position of international markets as a possible cause, noting that from 1922 onwards a rising conjuncture had been observed on world markets. Moreover Soviet production of agricultural goods reached 92.8 per cent of the prewar level in 1926/27, so falling production could only be a relatively small factor.¹⁰⁵ According to Kondratiev the main cause was falling levels of marketability of agricultural goods, and he outlined five basic factors which contributed to this as follows.

- First, the liquidation of large capitalist farms which had levels of marketability twice as high on average as peasant farms. According to Kondratiev wheat marketability norms for peasant farms in 1909–13 were 51.3 per cent against 81.1 per cent for proprietary farms, for barley and oats the figures were 28.8 per cent and 65.8 per cent respectively.
- Second, the levelling of the countryside, which had reduced the number of large peasant farms and hence also reduced marketability.
- Third, the increased consumption of agricultural goods by the rural population compared to the prewar level.
- Fourth, changes in the system of peasant taxation. Income per person has declined in the countryside comparing 1925/26 to prewar levels partially as a result of tax changes, thus further discouraging the placing of goods on markets.¹⁰⁶
- And fifth, changes in the market position of agriculture had favoured industrial goods, making them relatively expensive for rural inhabitants.

These five factors together had all worked to reduce the marketability of peasant farms, which had in turn placed downward pressure on exports.¹⁰⁷

Kondratiev noted other factors which had also contributed to the fall in Soviet exports. First, the relation between Soviet and world prices. Although world prices were generally favourable to Soviet exports, in 1923/24 there was a sharp rise in agricultural prices which reduced the Soviet advantage. Second, the split between the exchange rate and the purchasing power of the *chervonets*. Despite the fact that the real purchasing power of the *chervonets* was lower than the purchasing power of equivalent foreign currency overseas, the official exchange rate was almost at gold parity. The *chervonets* was thus overvalued at around 16–24 per cent.¹⁰⁸ This overvaluation acted as an

export duty, reducing profits from foreign trade by around 20 per cent.¹⁰⁹ Third, export costs, which had risen from (for example) 1.9 kopeks per kilogram for rye in 1909–13 to 5.0 kopeks in 1925–26. If all these negative factors were taken into account it was apparent that Soviet exports could only be profitable if there was a very significant difference between domestic and world prices.¹¹⁰

Thus by 1927 Kondratiev appeared a little less optimistic about grain export prospects than he was in 1926. However, it is clear that many of the problems which he identified as being hindrances to Soviet exports were domestically generated. Examples of these were an incorrectly aligned currency, reduced marketability brought about by misdirected policy, and high export costs due to problems in areas such as transportation. Hence Kondratiev was implying that it was Soviet policies that were the main barrier to successful exports, not the position on international grain markets. Although Kondratiev shifted his opinion on the prospects for exports between 1923 and 1927 – in 1923 they were favourable, in 1925 less so, in 1926 more favourable, in 1927 again less so – he consistently stressed the idea that domestic policies must be designed to assist exports, not hinder them. Thus to argue that the USSR could not begin to industrialise using only the resources which it obtained through the exports which were actually seen between 1923 and 1927 is missing Kondratiev's point. His other policies were designed to improve the prospects for exports relative to that actually achieved, no matter what the position on international markets might have been. Relatively speaking Soviet exports would always have been higher under Kondratiev. Whether they would have been high enough for the task at hand is a much harder question to answer.

OBSTACLES TO KONDRATIEV'S EXPORT POLICY

Now that Kondratiev's analysis of export prospects has been presented, some speculation on the feasibility of the Kondratiev path in relation to export policy is appropriate. W. Arthur Lewis pointed out a possible hindrance to Soviet exports: several countries refused to recognise Soviet Russia in the early 1920s or to trade with them on principle. According to Lewis the annual rate of growth of trade in primary products remained at around 3.4 per cent between 1880 and 1913, whereas the rate of growth of manufactures increased from 2.5 per cent to 4.5 per cent in this period.¹¹¹ On this analysis possible Soviet grain exports would have had a ceiling related to the declining rate of world population

growth, which had fallen from 1.5 per cent in 1900 to 0.9 per cent in 1929.

However, even given such a volume ceiling, sufficiently low Soviet prices could have diverted trade away from other exporting countries. Kondratiev's export policy may have run into other obstacles as well. The international crisis of 1929 was caused at least partially by the fact that after the First World War the international production of primary commodities was in excess of demand. Moreover after 1929 tariff barriers were increased on a world-wide scale, nullifying to some extent the Soviet price advantage which had existed in the mid-1920s.¹¹² Robert Lewis outlined that the volume of international trade fell by one quarter between 1929 and 1932, and that world grain prices collapsed after 1929. As a consequence of this by 1932 the terms of trade the USSR faced had fallen to about 70 per cent of their 1927/28 level.¹¹³ On this view Kondratiev's reliance on grain exports to provide industrial equipment would have been unlikely to succeed.

However, arguments in favour of Kondratiev's policy are also possible. How long did the crisis last after 1929? Hunter and Szyrmer pointed out that in fact Soviet exports recorded a brief burst in 1931/32, suggesting it was possible to partially overcome the impact of the stock market crash of 1929 on world exports.¹¹⁴ The Soviet government was even accused of 'dumping' agricultural goods onto the world market in the early 1930s.¹¹⁵ And might not the specifically *capitalist* crisis have placed the USSR in an advantageous position to sell products which other countries could not have supplied? Also reliance on grain exports was only conceived of by Kondratiev as a short-term measure. Once sufficient means for industrialisation had been accumulated, a gradual reduction of the reliance on grain exports would have occurred. The capital equipment imported into the USSR would have been of better quality than any indigenous Soviet equivalent, hence industrialisation based on foreign-manufactured equipment would have been more advantageous in the long run. As to the hostility of capitalist countries to trading with a Soviet Russia, Kondratiev's policy would have been received favourably in the West and would have helped to ease any political tensions. Hence on this view Kondratiev's export policies cannot be straightforwardly dismissed.

Hunter and Szyrmer related that the ratio of exports to net national product for Russia from 1885 to 1913 was 8 per cent, while the equivalent ratio for the USSR in 1928-40 was 2 per cent.¹¹⁶ Their calculations showed that a hypothetical growth of Soviet exports by 20 per cent per year between 1928 and 1940 would have led to a 4 billion ruble

increase in the capital stock by 1940.¹¹⁷ Unfortunately Kondratiev did not specify in precise terms the level of grain and other exports which he believed would be required in order to assist overall Soviet industrialisation. However, he did state that he thought the maximum amount of grain available for export from the 1923 harvest (plus reserves) was 6.55 million tonnes, which compares to 2.69 million tonnes actually exported in 1923/24. Kondratiev also related that the NKZem plan for grain exports for 1925/26 was 4.91 to 6.22 million tonnes, which compares to an actual figure of 2.08 million.¹¹⁸ These figures suggest that between 1923 and 1925 Kondratiev and NKZem were continually pushing to export at least twice as much grain as that actually achieved.

In reality in the early 1930s the USSR did actually try to obtain foreign equipment by increasing exports, as recommended by Kondratiev. Soviet grain exports reached 5.13 million tonnes in 1931, compared to the highest level achieved in NEP of 2.69 million tonnes in 1923/24.¹¹⁹ But the 1931 figure was still only slightly more than half of the 1913 level.¹²⁰ The figure of around 5 million tonnes for 1931 is within the NKZem plan for grain exports in 1925/26 of between 4.91 to 6.22 million tonnes. However, this level could not be maintained for long, and grain exports fell to between one and two million tonnes from 1932 to 1937. This may have been in part a response to the worsening terms of trade, as while in 1930 2.3 times more grain was exported than in 1926/27, only about 6 per cent more funds were obtained in return. On this view Kondratiev's policy had little chance of success in the short term. The key point to make in response is that Kondratiev was not advocating increased grain exports alone, with all other policies held constant. Kondratiev was advocating a whole package of alternative policies which were designed to positively reinforce each other. Thus transforming Soviet farms into large-scale units with high levels of marketability would have increased export capacity; adopting a less confrontation attitude to the West would have eased trade restrictions; improving export channels would have assisted export profitability and so on. There is no doubt that the depression of the 1930s would have proved a big obstacle to the Kondratiev path, but Kondratiev-type policies may still have yielded greater rewards from exports than was obtained under Stalin.

Kondratiev appears to have given less attention to Soviet exports of oil or timber than to grain, although in his plan for agriculture and forestry 1924-28 some attention was given to timber. Export of these goods could have been a valuable additional source of funds for Kondratiev's industrialisation policy, as Carr related that timber and

Table 3.3 The foreign trade plan for 1925/26 (millions of rubles)

<i>Draft</i>	<i>Exports</i>	<i>Imports</i>	<i>Balance</i>
Gosplan	1200.0	1009.7	+190.0
NKVneshTorg (July 1925)	1105.2	1009.7	+95.5
NKVneshTorg (autumn 1925)	1000.0	950.0	+50.0
NKVnuVneshTorg	750.0	700.0	+50.0
NKVnuVneshTorg (Jan. 1926)	720.0	685.0	+35.0
Actual	667.0	756.0	-89.0

Source: R.W. Davies (ed.), *From Tsarism to the New Economic Policy*, p. 329, table 60. Compiled by M.R. Dohan.

oil accounted for 28.2 per cent of the total value of goods exported from Soviet Russia in 1922/23.¹²¹ Melanie Ilic explained that in actuality by 1930 the USSR had regained its dominant position on the international timber market. By 1935 exports had reached over 12 million cubic metres of timber products, very close to the 1913 level, against 4.82 million in 1927/28.¹²² According to Ilic this demonstrated the resilience of Soviet foreign trade in timber in the face of the depression.¹²³ However, a US embargo on Soviet timber made from forced labour introduced in February 1931, while subsequently lifted, indicated that many Western states were uneasy about trading with Stalin's USSR. Adoption of the Kondratiev path might have eased these sort of political tensions, but whether without forced labour the same or even higher levels of timber could have been produced is not certain.¹²⁴

Although Kondratiev's general position on the importance of exports was shared by Krasin in the People's Commissariat of Foreign Trade, it is unlikely that Kondratiev was personally involved in the detailed process of drafting foreign trade plans undertaken by NKVneshTorg. However, the fact that a NKZem plan for grain exports actually existed suggests that this commissariat was at least consulted by NKVneshTorg during the planning process. Table 3.3 shows the various drafts of the 1925/26 annual foreign trade plan as proposed by various institutions at various times.

The drastic reduction from 1000 million rubles for exports in the autumn 1925 NKVneshTorg draft to 750 million in the first NKVnuVneshTorg draft coincided with Krasin's demotion from People's Commissar of Foreign Trade to deputy commissar in NKVnuVneshTorg at the end of 1925. This suggests that from the 1925/26 plan onwards any influence which Kondratiev might have exerted on foreign trade targets via Krasin was annulled.

CONCLUSION

The period from 1922 to the beginning of 1926 has been identified as Kondratiev's most influential from the economic decision-making point of view. Kondratiev's real importance in policy terms began when the Conjuncture Institute officially became part of NKFin in 1922, and declined dramatically after the Fourteenth Party Congress in December 1925.¹²⁵ While this may at first appear a very short time to highlight, its significance from the viewpoint of the economic development of the USSR was crucial, and hence the importance of analysing Kondratiev's possible influence on decision-making in this period should not be underestimated. By focusing mainly on Kondratiev the above account may have given the impression that he was personally responsible for the all policies which were implemented between 1922 and 1924 which his framework of analysis suggested. In reality Kondratiev was part of a like-minded group of economists, including those in the Conjuncture Institute like Vainshtein and Shaposhnikov and those in other institutions as well such as Yurovskii, who supported market-based solutions to economic problems such as the scissors crisis. P.I. Popov was given as an example of someone outside the Conjuncture Institute whose viewpoint coincided with Kondratiev on a specific aspect of policy.

However, Kondratiev was one of the most consistent and unflinching of the pro-market group, rarely wavering from the proposals which his framework required. A political figure like Sokol'nikov, who supported Kondratiev-type policies in the early years of NEP, curtailed his allegiance to them when the drive to full-scale planning began in 1926-27. Kondratiev was still arguing his ground in 1928. In this sense Kondratiev can be identified as one of the most important 'guiding spirits' behind the pro-market policies of the first half of NEP. Of course without political support from NKFin and NKZem and without the necessity of the Soviet government assuming pro-market policies in general, it is unlikely that Kondratiev could have convinced any Bolshevik on grounds of principle to adopt such non-socialist policies. But conversely, would the Bolsheviks have gone so far in support for NEP without economists like Kondratiev and Yurovskii around to persistently argue for and demonstrate the benefits of this type of approach? And would the first half of NEP been so successful in restoring the Soviet economy to relative stability without the economists in NKFin?

In specific terms Kondratiev's proposals for a single agricultural tax and his solution to the scissors crisis in 1923 indicated that his influence

was at its height in 1922–24. By 1925 the turn away from Kondratiev-type views is illustrated by the official response to the goods famine and the raising of agricultural taxes in 1926. The Fourteenth Party Congress marks the decisive turning-point away from Conjuncture Institute policy, this being followed by Sokol'nikov's removal from NKFin in January 1926 and Dzerzhinskii's death in August 1926. By 1927 Kondratiev's views were regarded with open hostility within government circles, although small pockets of support continued until 1930. While this author has been careful to refrain from exaggerating the prospect that a Kondratiev path could ever have been adopted in full by the Bolsheviks, the following quote from Trotsky's *The Revolution Betrayed* suggests that there might have been a brief window when this caution was a little unwarranted:

In 1925, when the course toward the *kulak* was in full swing, Stalin began to prepare for the denationalisation of the land. To a question asked at his suggestion by a Soviet journalist: 'Would it not be expedient in the interest of agriculture to deed over to each peasant for ten years the parcel of land tilled by him?', Stalin answered: 'Yes, and even for forty years'. The People's Commissar of Agriculture of Georgia, upon Stalin's own initiative, introduced the draft of a law denationalising the land.¹²⁶

While Trotsky had good reason to exaggerate Stalin's 'zigzags' in economic policy when this quote was written in 1937, it still suggests that at least some affinity to Kondratiev's approach was felt in the highest echelons of the Bolshevik leadership at the height of NEP in mid-1925. The proposal for legalising the purchase and sale of land was quickly dropped when news of it reached party headquarters, as was a Belorussian programme for the encouragement of *kulak* farms in the same year.¹²⁷

Writing on the influence of Kondratiev-type ideas within NKFin R.W. Davies wrote:

The NKZem of the RSFSR had been dominated, until the end of 1927, by 'bourgeois specialists' strongly committed to the preservation of small-scale peasant agriculture; even after the expulsion of Kondratiev and his colleagues from its staff early in 1928 it continued to be a centre of resistance to the new agricultural policies.¹²⁸

This chapter suggests this characterisation is only partly true. While agreeing with the idea that even after Kondratiev's dismissal support for his policies was still found within NKZem RSFSR, the above

presentation indicates that during NEP Kondratiev's did not wholeheartedly support the preservation of small-scale peasant agriculture. While in 1917 he had been keen to campaign for an egalitarian redistribution of land, by 1925 he was at least implicitly arguing for an increase in large-scale semi-capitalist farming. This is clearly seen in the importance which Kondratiev attached to the question of marketability in his writings on grain exports throughout NEP, and was possibly in part conditioned by his experiences overseas in 1924 and 1925. During NEP Kondratiev came to accept that the future for agriculture lay in large-scale production, something which Stalin's collectivisation drive in 1929/30 also partially recognised. The key difference, however, was that in Kondratiev's view elements of private farming should be allowed within an overall framework of a mixed economy, and any decisions on changes to farm structure should be made freely by those working on the farms in question.¹²⁹

Kondratiev's analysis of Soviet export prospects throughout the 1920s demonstrates his consistent support for the idea of obtaining capital for industrialisation from overseas. This was in line with Krasin's overall approach to foreign trade. However, the various articles written by Kondratiev on grain exports between 1923 and 1927 show that he was prepared to take a flexible line on exactly what produce it was most profitable for the USSR to export at any particular conjuncture. By carefully forecasting changes on the international grain markets Kondratiev hoped he could optimise profits obtained from Soviet exports and thus maximise the level of capital equipment the USSR could purchase from overseas. It was the task of the theory of conjuncture developed by the Conjuncture Institute to assist in this process, and Kondratiev hoped that innovations in areas like the long cycle would give the Conjuncture Institute an advantage over similar forecasting attempts made overseas.

But Krasin's death in London in 1926 ended any influence Kondratiev might have hoped to exert on foreign trade plans through a like-minded commissar, and the export situation had worsened by 1927/28 to the degree that only 0.41 million tonnes of grain was exported. By this time most aspects of the Kondratiev path had been decisively rejected, and hence the feasibility of Kondratiev's policies cannot really be held to the empirical situation then existent. In December 1929 the Politburo approved all-out collectivisation of agriculture which led very quickly to the 'liquidation of the *kulaks* as a class'. NEP was finally over. As Stalin commented on 27 December 1929, a fundamentally new method of closing the scissors had been found.¹³⁰

4 Kondratiev's Trip Overseas, 1924–25

As befits a scholar of international standing, Kondratiev went on a long journey overseas during 1924–25 to visit institutions and individuals with similar interests as NKZem and the Conjuncture Institute. The idea of this trip was first proposed at a meeting of the Presidium of Zemplan on 15 November 1922, and final permission was granted by the People's Commissar of Agriculture A.P. Smirnov on 8 March 1924. Kondratiev was allocated 4000 rubles in order to spend one month in Germany, two months in the UK, and two months in the USA.¹ This trip was important to Kondratiev's intellectual development as it gave him direct contact with those economists who he had previously encountered only in print, such as Irving Fisher and John Maynard Keynes, and enabled him to study relevant institutions such as the US Department of Agriculture directly. This trip also gave Kondratiev's theoretical work an important boost by enabling him to discuss the idea of long cycles with the world's leading business cycle economist, Wesley Mitchell. In personal terms the trip must have been significant, enabling Kondratiev to see first-hand the economic systems of some of the most advanced countries in the world and to use his knowledge of English and German. According to Efimkin, during the trip several American universities offered Kondratiev the opportunity to stay in the USA and take up professorships.² Since Kondratiev rejected these offers it can only be assumed that he believed, at least in 1924, that NEP was indeed meant seriously and for a long time.

Documents relating to Kondratiev's application for a US visa show that at least one émigré who had left the USSR soon after the Bolsheviks came to power provided a reference for Kondratiev's visit. In a letter sent by the American consulate in Riga to the secretary of state in Washington, it is reported that Kondratiev was vouched for by Professor Pitirim Sorokin as a 'thoroughly reliable man, economically sound and anti-bolshevist', as a prominent Russian economist who was 'anti-Soviet and was arrested five times by the Bolsheviks'.³ This raises the possibility that Kondratiev visited his old student friend during the US part of his trip, even that Sorokin tried to persuade Kondratiev to stay in America, and suggests that interested parties outside the USSR knew

of Kondratiev's activities during NEP. References for Kondratiev's visa application were also provided by the Russian Agricultural Agency in New York and Moscow Narodny Bank in London, and this document confirms that Kondratiev was travelling as a representative of NKZem only, not of NKFin and the Conjuncture Institute. The US Department of State instructed a visa to be issued for Kondratiev and his wife on 26 July 1924 at the discretion of the American consulate general in London (Robert P. Skinner).⁴ Kondratiev actually arrived in the US in October 1924, after delaying his exit from the UK, and the visa correspondence suggests that he had no problem in gaining entry to North America.

THE CONTOURS OF THE TRIP

Kondratiev left the USSR on 9 June 1924 accompanied by his wife, and headed first through Riga to Berlin. He stayed in Germany initially for only four days, where he visited the German Ministry of Agriculture and important economists such as Ladislaus von Bortkiewicz. On leaving Berlin he travelled through Holland to the UK, arriving on 16 June. In London he visited the Ministry of Agriculture, the London School of Economics, the Royal Statistical Society, the British Museum, as well as important politicians such as the Minister of Agriculture. He also travelled to Oxford and Cambridge to visit the universities, and he contacted Soviet trading organisations in England. He remained in the UK until 4 October, when he began the onward journey to America. On his arrival in New York he visited the Soviet agricultural delegation and various agricultural organisations, and in Washington he visited the US Department of Agriculture, the Federal Reserve, and the Library of Congress. Kondratiev then travelled around the USA to cities such as Boston, Chicago, and Buffalo, and also over the border to Canada for a short time. He remained in America until 10 January 1925, when he began the journey back to the USSR, stopping off in Germany again from 20 to 28 January, before finally arriving back on Soviet soil on 31 January. In total Kondratiev spent six months 21 days overseas.⁵

The official purpose of Kondratiev's trip was to study the composition of and perspectives for the development of agriculture in the main producing countries of the West, and also to gauge the position of international markets with respect to Soviet exports. In his official report on the trip submitted to the Soviet authorities on his return he did

not mention that he visited any centres devoted to business cycle research in the UK, the USA, or Germany, but this was probably because he did not want to further endanger his position by providing opponents with information about his 'bourgeois' contacts overseas. He does mention that he visited J.M. Keynes and Bortkiewicz in the report but not that he met Wesley Mitchell or Irving Fisher. In a letter written while he was in jail in Suzdal in 1934 Kondratiev did reveal that he had met Irving Fisher at a conference in Chicago, something not mentioned in his official report, so it seems likely that he did not reveal all his activities in this report.⁶ In a letter to the People's Commissar of Agriculture A.P. Smirnov dated 11 December 1924, Kondratiev related that he had received an invitation from Wesley Mitchell to the American Congress of Economists and Statisticians to be held in Chicago at the end of December 1924.⁷ This is most likely where he met Fisher.

In the report Kondratiev explained that in London he worked mainly on the question of the market capacity of consuming countries in relation to grain and livestock products, as well as textile raw materials. He also visited various types of farms and agricultural cooperatives in London, Oxford, Cambridge and Manchester, and paid particular attention to the study of animal breeding and cotton production in certain countries of the British Empire such as Canada, Australia, New Zealand and India. Finally he visited various Soviet organisations in the UK such as the Central Union of Consumer Cooperatives (Tsentsosyuz), the Flax Producers Union (L'notsentr), and the Moscow Narodny Bank.⁸ With respect to his time in America Kondratiev related that in Washington he had contact with the Minister of Agriculture Henry Wallace and many others in this department, as well as various agricultural cooperatives, credit institutions, and exchanges. He also attended a conference of agronomists at Cornell University and a congress of the American Association of Economists in Chicago.⁹ While passing through Germany on the return leg of the journey Kondratiev reported that he paid particular attention to the question of the new turn towards agrarian protectionism in Germany, and he visited the German Ministry of Agriculture with this in mind. Some of the material which Kondratiev obtained during the trip was sent through diplomatic channels to I.A. Teodorovich in Moscow, and throughout the trip he sent information by letter to various colleagues in NKZem such as A.P. Smirnov.¹⁰

THE PURPOSE OF THE TRIP

As noted above, the main purpose of Kondratiev's trip was officially to gather information about the international competition which Soviet agricultural products faced. The People's Commissar of Agriculture A.P. Smirnov stated this explicitly in his instructions to Kondratiev, as well as asking Kondratiev to enquire into the methods used by the Americans for overcoming crises, the degree of mechanisation of US agriculture, the role of capital in US farms, and the most important types of farms in America. Kondratiev was further instructed to study the organisation of the Departments of Agriculture in the USA and Canada, the tasks of the various sub-sections of these bodies, the organisation of both domestic and foreign trade, and the electrification of farms.¹¹ In Europe Kondratiev was to investigate a different topic: the capacity of market demand for cereal and animal feed products on the one hand, and for intensive cultures such as flax on the other. He was also to search for information on the level of imports into the UK in 1924, the role of Russian flax in the UK market and its main competitors, and factors leading to price fluctuations on agricultural markets.¹² Kondratiev was further asked to investigate the timber industry in England and Canada, and the role of American timber in Japanese, Australian, and Chinese markets.¹³ The general impression given by these instructions was that Soviet agricultural institutions were aiming to increase the role of Soviet exports in international agricultural markets, a policy which Kondratiev keenly supported within NKZem.

Evidence of Kondratiev's activities during his trip overseas survives in the form of letters sent to and by him. For example Kondratiev met O.E. Baker, an economist in the US Department of Agriculture in Washington, at the end of October 1924, and discussed with him the statistical publications of the TsSU. In a letter to Kondratiev dated 29 October Baker proposed an 'exchange of publications with the [Soviet] Central Statistical Bureau', which he hoped might 'eventually lead to more intimate acquaintance between the personnel of the two bureaus'.¹⁴ Baker explained that in particular he was interested in obtaining copies of the 1923 Soviet census and the statistical annuals for 1922, 1923, and 1924, for use in preparing a revised edition of the *Atlas of World Agriculture*. In exchange Baker offered the eleven volumes of the 1920 US census, and any yearbooks from the Department of Agriculture which the TsSU might find useful. In response to Baker's letter Kondratiev wrote a letter to P.I. Popov on 3 November 1924, asking whether Baker's request could be fulfilled by TsSU, and noting

that Popov was well-known within US agricultural circles.¹⁵ Baker's request for statistical materials was eventually fulfilled, as the Russian/Soviet agricultural censuses for 1916, 1920, and 1923 were sent to the US Department of Agriculture.¹⁶

In a letter to A.P. Smirnov dated 3 November 1924 and sent from New York, Kondratiev reported that in the US Department of Agriculture he had studied many questions such as the structure of this department, the organisation of the US cereals market, the system of agricultural credit, methods used in the construction of indices, and levels of agricultural taxation. He had also visited three types of farms: those producing milk, poultry and fruit. However Kondratiev considered it impossible to outline his conclusions on these questions in a letter, and suggested it would be better to wait until his return.¹⁷ Smirnov was one of the political leaders within the Soviet bureaucracy most sympathetic to Kondratiev's approach to economic policy. For example in *Pravda* in April 1925 Smirnov warned against applying the term *kulak* to every strong and hard-working peasant household,¹⁸ and was accused in September 1925 of attempting to legalise the *kulak* by denying their existence.¹⁹ The exchange between Smirnov and Kondratiev presented below suggests that Smirnov respected Kondratiev's judgement at least on personnel matters.

A letter from Kondratiev to Smirnov dated 11 December 1924 gives an insight into Kondratiev's role in managerial decision-making within NKZem as it applied to overseas representation of NKZem. In this letter Kondratiev gave an evaluation of the head of the Russian Agricultural Agency in America, D.N. Borodin, and commented on the suitability of a possible successor to Borodin, I.Ya. Khurgin. Kondratiev prefaced his evaluation by stating that he only knew Borodin from his overseas visit, and cautioned that he did not know Khurgin well as an individual either. Kondratiev suggested it would be more appropriate for him to comment mainly on the idea of combining the post of President of Amtorg, Khurgin's job, with that of director of the agricultural bureau, Borodin's post. Kondratiev reported that in so far as he could observe, Borodin had established very good relations with many US government institutions. However, the matter was more complicated than this in that very often overseas transfers became overly complex and attracted large amounts of external interference. Moreover Borodin suffered from the fact that his words did not always coincide with deeds; as a rule words predominated over deeds. Kondratiev stressed that he believed the work of the bureau could be successful only if its personnel were sufficiently authoritative, something which he questioned in respect to Borodin.²⁰

Concerning Khurgin, Kondratiev pointed out that his appointment as director of the bureau would have both positive and negative repercussions. It would be useful in that it would greatly ease the tensions between the bureau and other Soviet organisations in America, but it might also result in a loosening of NKZem control over the bureau, and hence the bureau might develop in a direction not desired by NKZem. Kondratiev suggested that Khurgin had been employed too long as the President of Amtorg for him to spare sufficient time for bureau matters, and since Amtorg was a commercial organisation, Kondratiev felt he could not fully welcome Khurgin's appointment to the bureau. A likely consideration for Kondratiev here was that Amtorg came under the control of the People's Commissariat of External and Internal Trade (NKVnuVneshTorg) rather than NKZem.²¹ As a compromise Kondratiev suggested that Khurgin should be made director only temporarily, in order to give scope for further changes in bureau personnel at a future date. In conclusion Kondratiev accepted that any final resolution of this problem could not occur without a direct instruction from the People's Commissar of Agriculture in Moscow.²²

This letter suggests that those at the highest levels of power within NKZem consulted Kondratiev on personnel matters at least when Kondratiev could provide particularly relevant information. The tone of this letter suggests also that Kondratiev's own views on the future development of NKZem as an institution was similar to those held by the leadership of NKZem at this time (1924-25) as represented by Smirnov. Kondratiev's concern with strengthening Soviet-American relations through cooperation on agricultural and economic matters was likely the dominant view within NKZem in the mid-1920s, although even in 1925 these views were being attacked by those outside NKZem in journals such as *Bol'shevik*.²³

KONDRATIEV'S MEETING WITH WESLEY MITCHELL

Definite confirmation that Kondratiev met Wesley Mitchell comes from a series of letters they exchanged which are held in the Mitchell collection at Columbia University, where Mitchell was a Professor in the 1920s. Kondratiev contacted Mitchell at Columbia University some time in early November 1924, and Mitchell responded with a letter dated 12 November in which he related that he was most interested to learn of the Conjuncture Institute, and had placed a copy of the *Ekonomicheskii byulleten* in the hands of someone who reads Russian. Mitchell urged

Kondratiev to call to arrange a luncheon at which they could discuss matters of mutual interest.²⁴ Kondratiev responded with a letter dated 5 December (from New York) thanking Mitchell for his interest in the work of the Conjunction Institute, and Mitchell's diaries show that they first met on 10 December 1924.²⁵ Two days after this first meeting Mitchell wrote to Kondratiev that one of his students who was working on a subject connected to business cycles had told him that he had met Kondratiev 'in the old days in Petrograd': his name was Simon Kuznets.²⁶ Mitchell explained that he had given Kuznets Kondratiev's address, and offered to be of service to Kondratiev in any way he could. On 18 December Kondratiev responded (from Cambridge, MA) that he had studied the statistical tables which Mitchell had given him with great interest, and promised to give detailed comments on Russian fluctuations when they next met. Kondratiev did not remember meeting Kuznets in Petrograd, but would be glad to meet him in New York. He reported having met Professor F.W. Taussig in the Harvard Economic Service and thanked Mitchell for the reference he sent Taussig.²⁷

On his return from Cambridge to New York Kondratiev arranged to meet Mitchell again at 2.00 pm on 5 January 1925. Mitchell noted in his diary that this meeting provided the 'best revision of our Russian annals' which he had yet obtained.²⁸ Kondratiev clearly made a lasting impression on Mitchell, as Mitchell agreed to publish one of his papers (in translation) in *Questions of Conjunction* (*Voprosy kon'yunktury*). On 6 May 1926 Kondratiev (now back in Moscow) wrote to Mitchell thanking him for mentioning his work on long cycles, and informed Mitchell that his paper was now being prepared for publication.²⁹ On 5 June Mitchell responded with a letter in which he wrote:

What Kuznets tells me about your bulletin makes me regret increasingly my inability to read Russian. I hope heartily that you will take every opportunity to publish in English, French, or German, so that not only I but many others may profit by your contribution.³⁰

Mitchell's diary not only indicates when he met Kondratiev, but also the subjects he was working on at the time. For example in the entry for 5 January 1925, when he met Kondratiev for the second time, Mitchell wrote that he was writing notes on the methodology of determining seasonal variations in economic series.³¹ On 6 February he reported that he was reading Kuznets' dissertation on seasonal fluctuations in industry and trade.³² On 2 May 1927 he noted that he had begun work on the section 'hypothesis of secondary trends and of long cycles' in

his new work on business cycles.³³ This suggests that what became section three in chapter three of *Business Cycles: The Problem and its Setting* of 1927 was written exactly at the time of Mitchell's contact with Kondratiev, and hence the reference to long cycles was not accidental. Also Kuznets' work on seasonal variations was being developed at the time of most contact with the Conjuncture Institute, in which similar work on seasonal factors was being conducted. Thus cross-fertilisation of ideas between the Conjuncture Institute and the NBER definitely occurred.

Confirmation is also available that Kondratiev met his student friend Sorokin while in the USA. By 1924 Sorokin was based in Minnesota, and in his autobiography he wrote:

Of other memorable reunions in Minneapolis, that with my closest old friend, Professor N. Kondratieff, must be mentioned. As a foremost agricultural economist and expert on business cycles, he was permitted by the Soviet authorities to visit American universities and research institutions in his field. This task brought him to the University of Minnesota where he stayed with us for several days. It was a real joy for us to see him alive and well and to talk with him about our Russian friends, the economic and political conditions in Russia, and the basic problems of the world at large. Unfortunately this reunion was our last meeting . . . *Requiem eternam et lux perpetua* to you, our dearest friend!³⁴

Sorokin described Kondratiev as 'a wonderful man', and noted with apprehension that he was banished after the famous show-trials of the early 1930s, there to perish under circumstances unknown.³⁵ Sorokin remained implacably opposed to the Bolshevik revolution all his life, describing it as bringing ruin and disgrace to Russia. For Sorokin the 'face of revolution unveiled' was the 'face of a beast, of a vicious and wicked prostitute'.³⁶ Since Kondratiev was Sorokin's closest friend throughout the revolutionary period, some elements of Sorokin's political views were likely shared by Kondratiev.

THE RESULTS OF THE TRIP – UK

Kondratiev reported that his visit to the UK in general went very well. He received a lot of help and obtained easy access to all institutions and libraries. Efimkin related that while in London Kondratiev sent two articles to Moscow on 29 and 30 September 1924 for publication

in Soviet journals. These were 'The British Empire Exhibition' ('Vystavka Britanskoi Imperii') published in *Agriculture and Forestry (Sel'skoe i lesnoe khozyaistvo)* in 1924 and a short piece for *The Financial Gazette (Finansovaya gazeta)*.³⁷ Kondratiev's trip was so successful in fact that his deputy in the Conjunction Institute, Vainshtein, asked permission for a similar trip soon after Kondratiev's return. Vainshtein also wanted to travel overseas for a long study trip, as is apparent from a letter from Kondratiev to the chairman of the Finance-Economic Bureau of NKFin, M.G. Bronskii, dated 19 February 1925. In this letter Kondratiev argued that the Conjunction Institute must strengthen its ties with foreign institutes of a similar nature, and with this in mind he asked that Vainshtein be allowed to travel to Germany, France, and Italy for five months, Kondratiev himself having cemented ties with Britain and the USA.³⁸ This idea appears to have been rejected by NKFin as no mention of the trip has ever been found, and Vainshtein was not able to benefit from meeting with foreign economists as Kondratiev had done.

The first result of Kondratiev's trip in terms of publications was 'The British Empire Exhibition' published in December 1924. This had been sent from London on 29 September 1924, and was a report on Kondratiev's visit to the British Empire Exhibition in Wembley. Kondratiev was clearly impressed by the scale and scope of the exhibition, which he suggested indicated the cultural and economic dominance of the British Empire throughout the world. In theoretical terms Kondratiev characterised the colonies of the British Empire as being of two basic types, those countries proximate to the metropolis and those with original and/or primitive cultures. In the former category were Canada, Australia, and New Zealand, in the latter were India, Nigeria, Honduras and Sudan.³⁹ In a veiled reference to the position of the Conjunction Institute, Kondratiev pointed out the absolutely autonomous position of agricultural investigative institutes in Britain, which received only general leadership and financial assistance from the Ministry of Agriculture, not detailed instructions. In terms of characterising the trade relations of the British Empire Kondratiev related that almost half the import/export turnover of the UK was with its dominions. Moreover around 80 per cent of all food products consumed within the UK originated from within the Empire.⁴⁰

Kondratiev further characterised the British Empire as being constituted from a metropolis with an unusually large level of capital accumulation and very advanced scientific-technical knowledge, and dominions and colonies with a huge wealth of natural resources. In the former

there was a very high level of industrialisation; in the latter the agricultural way of life dominated. It was this combination of highly developed capital and advanced technique with easy access to natural resources which lifted Britain to its predominant position in the world economy. The history of the British Empire therefore consisted of an expansion of the accumulated industrial and financial capital of England, expressed through the colonial policy of the Empire. However, Kondratiev also believed that the system of British imperialism was inherently unstable. The export of capital from the UK had grown from £31.7 million in 1870 to £226 million in 1913, of which a third to a half went to the colonies and dominions. But the more capital that was accumulated in the colonies the more indigenous industry developed, and the more colonial populations grew the more powerful they became. Imports to the twelve largest colonies from the UK declined from 61.4 per cent of the total in 1880 to 43.2 per cent in 1923. Hence the internal forces of British imperialism inevitably led to an increase in economic independence of the colonies as their economies grew and prospered. As the industrial development of the colonies was inevitable, the framework of the British Empire must be regarded as fundamentally unstable.⁴¹

One of the works quoted by Kondratiev in this paper was *The Export of Capital* by C.K. Hobson, which was first published in London in 1914. A Russian translation of this work was published by the Communist Academy in 1928, but Kondratiev's reference to it suggests that it was well-known to Russian economists before this date.⁴² Hobson showed how the wealth of the UK had been increased by the high returns available from foreign investments and from the increased supply of food and raw materials this investment had brought, a theme clearly echoed by Kondratiev.⁴³ An undercurrent which might have existed in Soviet discussions in this area was the possibility of foreign investment in the USSR. Both Krasin and Kondratiev welcomed such investment, but many leading communists outside of NKFin and NKVneshTorg were very cautious about it. Kondratiev's analysis of the British Empire cleverly suggested that while overseas investment benefited both the provider and host in the medium term, the dominance of the providing state was not guaranteed as permanent due to the inevitable dialectic that foreign investment generated. Kondratiev was implying that the USSR could accept foreign investments from currently powerful states like the UK and Germany without fear of this leading to Soviet subordination in the long run.

THE RESULTS OF THE TRIP – USA

In Washington Kondratiev had more than 50 meetings with officials in the Department of Agriculture, including meetings with the Minister of Agriculture Henry Wallace. Kondratiev related that the Americans were in large measure impressed by the fact that he was first of all an academic economist who also had links with governmental organisations such as the Commissariat of Agriculture. One of the most obvious results of Kondratiev's trip was an article entitled 'The Organisation of Agricultural Assistance in the USA' ('Organizatsiya sodeistviya sel'skomu khozyaistvu v Soedinennykh Shtatakh Severnoi Ameriki') published in 1925. This article focused on the American system of assistance for agriculture, which Kondratiev explored to see if there was any lessons which could be learnt for use in the USSR, although he did not believe that the American solution could be transferred unconditionally to other countries.

Kondratiev began this article by stating that one of the characteristic features of agriculture in all countries was its decentralisation and dispersion throughout vast areas. This made it difficult for officials trying to assist agriculture to reach their desired targets, and this paper focused on the US experience in overcoming this problem. Kondratiev outlined that the American solution to the problem of increasing the effectiveness of agricultural assistance was based on the following points:

1. a wide-ranging study of all aspects of agriculture;
2. a wide distribution of agricultural education;
3. the concentration in the hands of organs governing agriculture not only technical-agronomical support for agriculture but also the economic regulation of it;
4. the construction of a flexible system of agronomical assistance;
5. the involvement of the agricultural population in assistance measures through the creation of professional farmers associations, the development of agricultural cooperatives and so on;
6. the wide availability of agricultural credit.⁴⁴

Kondratiev explained that in this paper he used the phrase 'agronomical assistance' (*agronomicheskii pomoshch'*) in the wide sense of the term. It meant not only 'help' in the narrow meaning, but also work in the field of extra-curricular distribution of agricultural knowledge, organisational work in the field of agricultural cooperation and so on. In America there was no equivalent term for *agronomicheskii pomoshch'*, rather the phrase 'cooperative agricultural extension work' was used,

which included the organisation of the rural population, domestic science and housekeeping. Turning his attention to specific features of the American system, Kondratiev explained that at the centre of this system was the Federal Department of Agriculture in Washington, while agricultural colleges operated in all the localities. The Department of Agriculture was a very powerful organisation with a staff of 23 000. This Department was unlike the usual state-bureaucratic institution, as nearly all its staff were also involved in the scholarly study of agriculture or the organisation of this activity in the localities. For Kondratiev one of the most interesting features of the US system was that the work of the local bureaus of extension work was very strongly focused on regional requirements. Local bureaus did receive general directives from the Department of Agriculture in Washington, but in their everyday activities they worked closely with regional agricultural colleges on specifically local issues.⁴⁵

As regards methods of work Kondratiev stressed that for American organisations, the idea of using compulsion in farming matters was absolutely alien. American farmers wanted leadership from their organisations, not dictat. With a high level of culture of farmers and the development of an entrepreneurial spirit (*predprinimatel'skii dukh*) on the basis of private profit, the methodological rules outlined above were completely natural.⁴⁶ Kondratiev concluded by discussing the success achieved by the American system, for example that 82 per cent of a sample of 1225 US farms had changed their practice under the influence of extension work. Approximately half of these changes were achieved through propaganda and lectures. Of the 1225 farms used in this investigation 61 per cent reported a positive relation to extension work, 20 per cent were indifferent, and only 6 per cent reported a negative relation.⁴⁷

Kondratiev was clearly implying that much could be learnt from the American system of agricultural organisation for use in the USSR. As this paper was published at the start of 1925, it is difficult to tell whether it was written before, during, or after Kondratiev's visit to the USA in the fourth quarter of 1924. Since Kondratiev did send material from London to Moscow which was published in 1924, it is possible that he did likewise with material from the USA. Whenever it was written Kondratiev's article on the American farming showed that he had a very positive attitude to the US system.

The influence of his trip overseas can also be seen in less obvious papers which Kondratiev wrote after 1925. 'Current Tendencies of International Agricultural Development' ('K voprosu o tendentsiyakh i

sovremennoi faze razvitiya mirovogo sel.khozyaistva i s.kh. rynka') of 1926 contained many references to US sources: statistical abstracts from 1920 and 1923, agricultural yearbooks published by the US Department of Agriculture in 1923 and 1924, reports on the agricultural crisis published in Washington in 1921 by the joint commission on agricultural inquiry, and books published in Washington such as H.C. Wallace's *The Wheat Situation* of 1923. The materials for this paper had thus been gathered by Kondratiev while in the USA in 1924-25.

In 'Current Tendencies' Kondratiev openly admitted that the possibility of continuing the recent rise in Soviet agricultural prospects came up against the problem of increasing exports on the world market. Drawing on his analysis of long cycles, Kondratiev suggested that internationally the post-war period from 1920 onwards could be characterised as a period of crisis and depression in agriculture, and that this would be a relatively long-term phenomenon. However, this crisis had affected various countries differently. Since growth in the productive forces after the war had been observed mainly in European countries, a process of the redistribution of productive forces had begun.⁴⁸ The role of the USA on the international wheat market began to fall after 1921, whereas the role of Canada and Argentina began to increase after this date. On the flax market after 1921 the role of Holland and France declined, whereas that of Belgium and especially the USSR increased. Kondratiev believed that this meant the role of European countries (including the USSR) was rising.

At the heart of the declining role of the USA in world agriculture Kondratiev saw two basic causes. First, the speed of industrialisation of the USA and the consequent growth of domestic markets for agricultural goods. Second, relatively high wage costs in US agriculture compared to competitors such as Canada and Argentina. Kondratiev concluded that the current favourable conjuncture of world agriculture had a temporary and unstable character, and hence in the near future a relapse into depression should be expected. This was based on the fact that the rising wave of the third long cycle came to an end in 1920, and that a period of long cycle downturn should follow.⁴⁹ Hence although Kondratiev forecast that depressive tendencies would dominate on the international agricultural markets after 1920, he did not believe this to be an insurmountable problem for the USSR.

THE RESULTS OF THE TRIP – GERMANY

Other papers Kondratiev published in 1925 were also directly linked to his trip overseas. 'The Problem of German Agrarian Protectionism' ('Problema Germanskogo agrarnogo protekcionizma') published in *Economic Review* (*Ekonomicheskoe obozrenie*) in 1925 was at least in part the result of his stay in Germany in January 1925, where he had explicitly focused his research on the renewal of protectionist sentiments. In this paper Kondratiev argued that the general policy of protectionism was linked to economic crises. The world agricultural crisis of the 1870s had given an impetus to European countries to shift towards agrarian protectionism, and the current crisis promised to do likewise. However, Kondratiev differentiated between selected import duties focused on particular goods, and protectionism erected as a general system, and it was this latter form that he was most concerned with in this paper.⁵⁰ Many considered that since price increases were a stimulus to increased economic activity, protectionism was a policy which had a favourable effect on the economy. However, Kondratiev called this approach primitive and mistaken, and argued that protectionist policies not only increased the price of the particular good subject to duty, but also altered relative prices throughout all branches of the economy:

Simultaneously it influences the redistribution of social income, and consequently affects the interests of various social classes and groups... it is necessary to investigate this influence.⁵¹

Using the German economy around the time of the First World War as an example, Kondratiev reasoned on the results of protectionism as follows.

If it was admitted that one of the characteristics of cereal production was the large scale on which it was produced, and that animal husbandry and the production of technical raw materials were concentrated in small peasant farms, then it became clear that the prewar system of German agricultural protectionism had a 'definite class spirit in accordance with the interests of the industrial and large-scale landed classes'.⁵² This was clearly seen in the fact that for example in 1913, rye and oats were both subject to an import duty of more than 30 per cent, whereas the corresponding figure for raw materials was 10.6 per cent, for pigs 6.2 per cent, and for hide 0 per cent. Thus protectionist policies could be directed towards satisfying the interests of particular class groupings. Kondratiev suggested that protectionist policies would not help Germany recover after the war, and he reasoned on this as follows.

The industrial development of Germany required reducing costs of production as a method of lowering prices and hence capturing new markets:

But the task of reducing costs of production presupposes a higher productivity of labour and relatively low wages. This possibility exists only on the basis of low price grain . . . Protectionism in relation to grain does not correspond with the idea of cheap grain.⁵³

Kondratiev concluded by noting that he had been concerned to criticise protectionism as a system, and that this did not mean that it would be in Germany's interest to promote absolute free trade in all agricultural products. From this article it is possible to suggest that although Kondratiev opposed protectionism as a system, he was not against all protectionist policies.

KONDRATIEV AND J.M. KEYNES

As was noted above, Kondratiev reported that he had met J.M. Keynes on at least one occasion while he was in the UK between 16 June and 4 October 1924. Keynes' engagement diary records that they were scheduled to meet at 1.00pm on 23 September 1924, and there is no reason to believe that this meeting did not take place.⁵⁴ Keynes visited Russia on three separate occasions, in 1925, 1928 and 1937, but there is no evidence that Keynes ever met Kondratiev in Russia.⁵⁵ During the 1925 trip Keynes had acted as the official representative of the University of Cambridge at the bicentennial celebrations of the Academy of Sciences between 5 and 14 September, and while in Moscow he gave two lectures on economic policy in England. One of these lectures was entitled 'The Economic Position in England', in which Keynes stressed the importance of population growth to unemployment. He wrote:

The high level of unemployment and the difficulty of transferring labour out of unprosperous industries into the prosperous industries is not a little due to the excessive growth of population . . . I believe that the poverty of Russia before the War was due to the great increase in population more than any other cause . . . I am told that now again there is a large excess of births of deaths. There is no greater danger than this to the economic future of Russia.⁵⁶

In the plan for agriculture and forestry 1924-28 Kondratiev also emphasised that population growth was a major problem which the

plan must attempt to overcome. This suggests that Keynes could have been echoing Kondratiev on this point, which in turn raises the possibility that they had discussed the NKZem plan during their meeting in September 1924.

Other members of Keynes' party who travelled to Moscow in 1925 included Maurice Dobb and Eli Heckscher. Dobb recounted that as an ex-Treasury official Keynes found himself very much in sympathy with NKFin. He even took the NKFin position in a debate against Gosplan, this being due according to Dobb to NKFin having 'stuffed him up with their viewpoint' the previous week.⁵⁷ However, since Keynes had met Kondratiev a year previous, it is likely that he received similar information from Kondratiev, and this would have given Keynes plenty of time to examine the issues in detail before meeting NKFin officials in 1925.⁵⁸

On his return from Russia in 1925 Keynes wrote three short articles on Russia, which were published separately at first in *The Nation* in October and then together under the title *A Short View of Russia* in December. Here Keynes wrote: '... almost all the members of the non-Communist intelligentsia with prewar educations are now in the service of the government, often in important and responsible posts'.⁵⁹ Perhaps here Keynes was thinking of Kondratiev. More extraordinary was the following passage:

The urban and industrial population... lives at a standard of life which is higher than its output justifies. This excess expenditure on the part of the town population is covered by the exploitation of the peasant, which is only practicable because the town population is a numerically small proportion of the whole country... The official method of exploiting the peasants is... by price policy.⁶⁰

Keynes continued that the monopoly of foreign trade and the strict control of industry allowed the Soviet government to buy grain from the peasantry at a price much below the world level, and to sell industrial goods to the peasants at a price far above the world level. Keynes warned that this policy involved two disastrous factors of inefficiency, in that it deterred the output of the rural sector from increasing and unjustifiably pampered the proletarian workers in the towns. For Keynes this condition of affairs served to enforce the lesson that 'bourgeois' economics was equally applicable to a Communist state.

Keynes' trip to Russia in 1928 was a shorter visit than that which he enjoyed in 1925, its purpose being to visit his wife's relatives in Leningrad during the Easter vacation. Keynes recorded the impressions

obtained of Russia from this second trip on one page of notes dated 7 May 1928. In these notes Keynes wrote of wrong relative prices, over-industrialisation, and shortages of goods. While during the first trip in 1925 he had obtained a sense of rapid progress, in 1928 he felt this sense of progress had dissipated. Observing a decline in the influence of the intelligentsia and the lack of political freedom, he felt that the regime was now prepared to jeopardise everything, but for what? According to Keynes a Communist should not abandon truth, liberty, justice, or beauty.⁶¹ Use of the phrase 'over-industrialisation' suggests Keynes agreed with Kondratiev that the industrialisation strategy being developed by the Soviet regime in 1928 was flawed. The textual evidence of Keynes' analysis of the Soviet situation published in 1925 supports the idea that during their meeting in September 1924, Kondratiev and Keynes had agreed over their general prognosis. It even suggests the possibility that Keynes might have obtained his views on Russia in part from Kondratiev and NKFin.

CONCLUSION

Kondratiev's trip overseas was a key period in his intellectual development. It enabled him to finally meet the great economists he had previously only read in books and journals, and it gave him the opportunity to freely explain his own work (both theoretical and applied) to the outside world, without any anxiety about creating a negative impression on the Soviet authorities. It is possible that Kondratiev's theoretical work on business cycles influenced Mitchell and that his policy work on Soviet agriculture affected Keynes. Although Mitchell remained sceptical about the existence of long cycles after Kondratiev's visit, he devoted a substantial section of *Business Cycles: The Problem and its Setting* of 1927 to presenting the evidence of long cycles to interested readers. And while Keynes would have heard similar views on agriculture from NKZem while he was in Moscow in 1925 as he did from Kondratiev in 1924, Kondratiev was first to present such views in person.

In terms of its influence on NKZem Kondratiev's trip was less successful. Although Kondratiev had been asked by Smirnov to report on specific arrangements relevant to Soviet-American relations, these were relatively minor matters without much impact. And his work on the lessons of the US experience in agriculture appear to have gone unheeded by the Soviet authorities. While towards the end of the 1920s the agronomist N.M. Tulyakov proposed the application of American

methods of extensive farming to Russia, the aspects of the US system which interested Tulyakov were different to those which had impressed Kondratiev.⁶² However, the knowledge which Kondratiev gained about the experience of US industrialisation helped him to crystallise his own views on the path of industrialisation appropriate to the USSR. When Kondratiev left the USSR in mid-1924 his influence in policy terms was at its height, but by the time of his return after the beginning of 1925 this influence was beginning to falter, perhaps due in part to his prolonged absence. By the end of 1925 his policy influence would be in terminal decline.

5 Kondratiev, Long Cycles and Economic Conjuncture

Kondratiev first mentioned the idea of long cycles in print in the monograph *The World Economy and its Conjuncture During and After the War* (*Mirovoe khozyaistvo i ego kon'yunktury vo vremya i posle voyny*) published in 1922, and an account of this pioneering presentation is given below. Kondratiev's first paper devoted specifically to long cycles was published in *Questions of Conjuncture* (*Voprosy kon'yunktury*) in 1925, and a version of this paper was translated and published in *The Review of Economic Statistics* in 1935. On 6 February 1926 Kondratiev read an expanded and revised version of his account of long cycles in the Institute of Economics in Moscow. This was a grand affair as the paper was discussed and criticised by many eminent economists such as V.A. Bazarov, S.A. Pervushin and M.V. Ignatiev, and the meeting was chaired by S.A. Fal'kner. On 13 February 1926 D.I. Oparin presented his very detailed critique of Kondratiev's analysis of long cycles, the most rigorous critique produced during NEP, and this encounter was the high-point of the debate on long cycles which occurred in the USSR in the 1920s.¹ An account of this meeting was published in book form in 1928, and Kondratiev and Oparin also published some aspects of their critical exchange in *Planned Economy* (*Planovoe khozyaistvo*) in 1926. Many other theorists entered the fray against Kondratiev in this period, for example Trotsky attacked Kondratiev for arguing that the long cycle was strictly periodic in nature.² Finally in 1928 Kondratiev published a detailed application of long cycle analysis to the interrelation of international agricultural and industrial prices, which was in many ways the *pièce de résistance* of his output on long cycles, and this paper was the last which he wrote on long cycles. Thus the key years for Kondratiev long cycle publications were 1922, 1925, 1926 and 1928.

Kondratiev explained that he had first arrived at the hypothesis of long cycles between 1919 and 1921. He did not know of S. de Wolff's work in this area until the beginning of 1926, and he did not know of J. van Gelderen's work either which was available only in Dutch, a language which neither Kondratiev nor any other member of the Conjuncture Institute could read.³ Thus Kondratiev implied that his hypothesis

of long cycles was entirely original. In fact Hyde Clark first mentioned the idea in 1847, and W.S. Jevons had found partial evidence of a long cycle in UK prices as early as 1884, as will be shown further on. While Jevons did not realise the full implications of this discovery, Kondratiev footnoted Jevons on many occasions and hence it is possible that this was the original source for Kondratiev's idea. Even if Kondratiev's work was not entirely original, it was certainly the most thorough attempt to detect long cycles which occurred in the 1920s, and thus the name 'Kondratiev cycles' which Schumpeter gave to long cycles is reasonably justified. In his work on long cycles Kondratiev acknowledged assistance from various members of the Conjecture Institute as follows. In the 1925 paper Kondratiev thanked N.S. Chetverikov and O.E. Pryakhina for assistance with statistical matters.⁴ In the 1928 article he also thanked Ya.P. Gerchuk, M.V. Ignatiev, A.L. Vainshtein, T.I. Rainov and E.E. Slutskii.⁵ As all these economists were members of the Conjecture Institute, it is clear that Kondratiev's work on long cycles was at least in part a collective effort. Rainov's attempt to detect long cycles in scientific innovations was directly linked to Kondratiev's work and is examined subsequently.

TERMINOLOGY

Kondratiev himself translated *bol'shie tsikly* as 'major cycles', and he stuck to this translation between 1925 and 1928, when the debate on this topic was at its height. The proof of this is that in the journal in which Kondratiev first published his work – *Voprosy kon'yunktury* – there appeared an English summary of each article, and in these summaries Kondratiev translated *bol'shie tsikly* as 'major cycles'.⁶ This allowed him to call 7–11 year business cycles 'minor cycles' (*malye tsikly*), which can also be translated as 'small cycles' or 'short cycles'. Further proof is found in a letter which Kondratiev sent to Wesley Mitchell in English, in which he wrote of his article entitled 'The Major Economic Cycles'.⁷ The Russian word for 'majority' is *bol'shinstvo*, for 'great/major' it is *bol'shoi*, and hence the most direct translation of *bol'shie tsikly* is 'major cycles'. The problem with this is, of course, that today everyone recognises the term 'long waves', which is the least accurate translation of *bol'shie tsikly*. However, the fact that Kondratiev chose 'cycle' rather than 'wave' is important. It implies that he believed the major cycle to be strictly periodic, and that he did not accept the criticism put to him after 1925 that this cycle did not

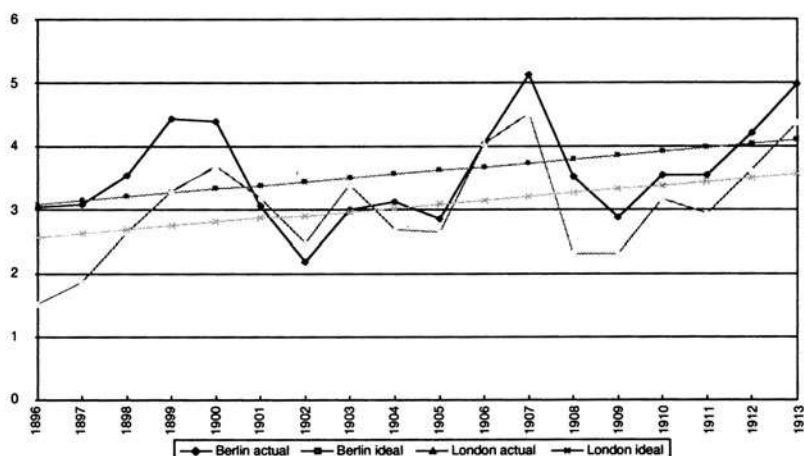
conform to a definite regularity, and hence would be better termed a 'wave'. Another reason for preferring 'cycle' to 'wave' is that Kondratiev referred to the major cycle as being composed of two segments, a rising wave (*povyshatel'naya volna*) and a declining wave (*ponizhatel'naya volna*). Thus for Kondratiev a 'wave' was half a 'cycle'. There are one or two occasions when Kondratiev used 'wave' as a synonym for 'cycle', but these occurrences are rare, and Kondratiev's idea of a wave as half a cycle is very clearly present in a number of his works.⁸ Hence for this chapter a 'wave' will be taken to be half a 'cycle'.

KONDRATIEV'S FIRST ANALYSIS OF LONG CYCLES

As noted above Kondratiev first gave a published account of long cycles in *The World Economy and its Conjunction During and After the War* of 1922. The section on long cycles appeared in the final chapter of this work, the culmination of all the preceding two-hundred pages of economic analysis. Kondratiev dated the long cycle in this work as follows: from 1789 to 1809 the first cycle achieved a maximum; from 1809 to 1849 the declining wave of this cycle; from 1849 to 1873 the rising wave of the second long cycle; from 1873 to 1896 the declining wave of this cycle; and from 1896 the rising wave of the third long cycle. This gives a very uneven first long cycle, with a 20-year rising wave and a 40-year declining wave, and Kondratiev was to revise the dates of this cycle in later articles as explained below. Kondratiev emphasised that within the period of the long cycle several small cycles occurred, some in acute form with a major crisis and others in a milder form without a serious crisis. As an example of this process Kondratiev discussed the small cycles which occurred within the rising wave of the third long cycle. During this rising wave two complete and one incomplete small cycles occurred. The first was from 1896 to 1903, with a crisis in the majority of European countries in 1900. The second lasted from 1903 to 1910, with a crisis in 1907. From 1910 a new small cycle upturn was detected, which was brought to an end in 1913 with the onset of war.⁹ Kondratiev noted that the duration of the small industrial-capitalist cycle ranged from 8 to 11 years.

Kondratiev then presented various data series to illustrate the long and small cycles outlined above. Figure 5.1 shows the data on short-term interest rates in London and Berlin between 1896 and 1913.

Kondratiev explained that in this data both the general rising tendency of the third long cycle and the 2.5 revolutions of the small cycle

Figure 5.1 Interest rates on short-term loans, 1896–1913

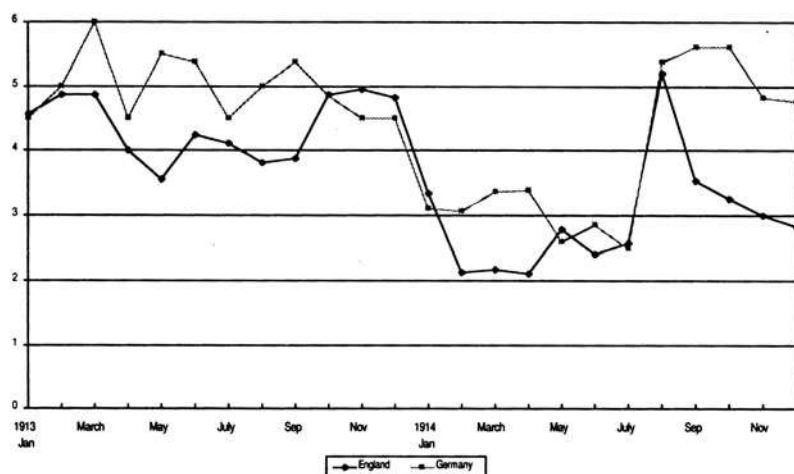
Source: Kondratiev, *Mirovoe khozyaistvo*, p. 244.

could easily be seen. The small cycles were found in the actual series, the long cycle in the ideal series (the trend). This data suggested to Kondratiev that in 1913 the world economy stood on the brink of the crisis of the third small cycle together with the turn from the rising to the declining wave of the third long cycle. In this regard Kondratiev wrote:

... the world war began at a moment when the world economy exited a period associated with an ascending long cycle; on the other hand this war began at a moment when the world economy entered a period of crisis or depression associated with a turning-point in the small cycle.¹⁰

Kondratiev explained that in the spring of 1913 a general economic depression began, and the war started at that moment when the small cycle switched from upturn to downturn. The crisis of 1920–21, which was a crisis of relative overproduction, also began at the end of the rising segment of a small cycle. However, if this latter crisis was viewed from the point of view of the long cycle, then it was apparent that the end of the small cycle upturn was superimposed onto a point where the long cycle achieved a maximum (from 1896 to 1920), and hence that 1920 was also a turning-point from the point of view of the long cycle.¹¹

Figure 5.2 Discount rate, 1913-14



Source: Kondratiev, *Mirovoe khozyaistvo*, p. 250.

A particularly interesting feature of *The World Economy* is Kondratiev's use of the interest rate, calling it a 'highly sensitive' (*ves'ma chutkii*) indicator of economic conjuncture. In Figure 5.1 he used the short-term interest rate to detect small cycles within the rising wave of the third long cycle, and he also used the interest rate to date the crisis associated with the First World War. Figure 5.2 shows Kondratiev's data on the discount rate in England and Germany in 1913-14.

Kondratiev outlined that at the start of 1913, between January and March, the interest rate achieved its maximum. It was accepted wisdom that the interest rate achieved its high-point at the turning-point of conjuncture from upturn to downturn, and Kondratiev noted in correspondence with this that on labour and commodity markets a depression began in April 1913. During the first part of 1914 the fall in the interest rate continued until May, and according to Kondratiev this decline was a characteristic sign of an approaching deep depression. However, the interest rate usually began to fall when the turning-point had already been reached, and not before this, and consequently Kondratiev attributed the turning-point to the earlier months of 1913.¹² Thus dating the turning-point by using the interest rate led to the conclusion that the economic depression began before the war, in the early months of 1913.

Kondratiev's idea that the interest rate achieved a maximum at the start of a crisis and only began to fall after the crisis had begun is found in the work of both Wesley Mitchell and Irving Fisher. Fisher's theory of the lagging adjustment of interest rates to price changes was outlined by Mitchell in 1913, Mitchell explicitly associating exceedingly high rates of interest with economic crises.¹³ Mitchell also distinguished between the effects of concern over future crises on short and long-term interest rates, less caution being observed by entrepreneurs when taking out short-term loans.¹⁴ Kondratiev did not appear to give any importance to the distinction between short- and long-term rates in *The World Economy*. However, in his 1925 article 'Bol'shie tsikly kon'yunktury' Kondratiev noted that there were various different measures of the interest rate, including short-term and long-term rates as well as the price of fixed-income bonds.¹⁵ In 1925 Kondratiev used the course of English and French bonds to test for long cycles in the interest rate.¹⁶

One of the most important relationships suggested by the analysis of long cycles was that between the price level and the quantity of gold being produced, and the exact nature of this relationship would prove to be controversial in many later accounts of long cycles. In *The World Economy* Kondratiev analysed data provided by Joseph Kitchen on the production of gold between 1810 and 1930, and this is shown in Table 5.1.

Kondratiev interpreted this data as showing that a period of the rising wave of the long cycle coincided with a period of high average yearly growth in the mining of gold, and a period of the declining wave of the long cycle coincided with a period of low average growth in gold production. The turning-points in the long cycle of 1849 and 1896 were clearly indicated by the high yearly growth figures for gold production given by Kitchen for 1847 and 1891.¹⁷ It is noticeable that Kondratiev's use of Kitchen's data was in fact quite sophisticated for this time. For example in *A Study of Industrial Fluctuation* of 1915 D.H. Robertson still used the rather vague phrase 'influx of gold' instead of Kondratiev's more precise average yearly growth of mining of gold. Robertson argued that the view that an influx of gold synchronised only with the boom phase of the industrial cycle was mistaken. Instead Robertson suggested that the effect of new gold on economic activity could be either medicinal, poisonous, or even intoxicating, depending on the phase of the cycle currently existent.¹⁸ A much more definitive account of international gold stocks would be provided in 1935 by Warren and Pearson's *Gold and Prices*, in which the volume

Table 5.1 Production of gold, 1810-1930

Date	Total mining of gold (millions of pounds sterling)	Average yearly percentage growth in recent period
1810	160	0.1
1847	207	5.5
1868	531	0.5
1891	733	4.1
1918	1916	0.7
1930	2277	—

Source: Kondratiev, *Mirovoe khozyaistvo*, p. 256.

of production of goods divided by stocks of gold was used as a measure of the adequacy of the gold supply, but Kondratiev's 1922 presentation was insightful.¹⁹

Kondratiev concluded *The World Economy* by outlining the features which he believed would dominate the forthcoming period of the declining wave of the third long cycle. It would be a period of strong relative overproduction together with a decline in prices of industrial goods. He stressed that the exceptionally fast industrialisation of transoceanic countries such as the USA, Canada and India would aggravate competition between industrial goods on the world market, and this would occur together with the current unprecedented decline in Russian agriculture and the growth of domestic agricultural markets in transoceanic countries. Since the 1920 crisis represented not only a definite stage in the small cycle but a very important step in the conjuncture of the long cycle, a new and original epoch in the economic development and social relations of the world economy should be expected in the near future.²⁰ Kondratiev could be interpreted as predicting a fundamental shift in international power relations between the newly-industrialising transoceanic countries and the existing world powers within Europe, brought on by the varying impacts of the war and the declining wave of the third long cycle. The fact that this might bring new social relations was also mentioned by Kondratiev, although he did not expand on this idea in any detail. This first 1922 presentation of long cycles clearly presented them as only one among many different types of cycle, and *The World Economy* should be judged with this in mind.

Kondratiev was defending the idea of long cycles against its Marxist critics as early as 1923.²¹ In an article in the journal *Socialist Economy* (*Sotsialisticheskoe khozyaistvo*), Kondratiev explained how his general

conception of conjuncture compared with the Marxist view of capitalist collapse. In respect of long cycles he wrote:

... we see the long cycle of capitalist conjuncture only as probable (*veroyatnyi*) ... This cycle, as is the small cycle, is realised only *ceteris paribus*, that is with all other conditions equal. In other words our judgement is not categorical, but conditional: if other conditions are preserved, then it is probable that the long cycle will occur.²²

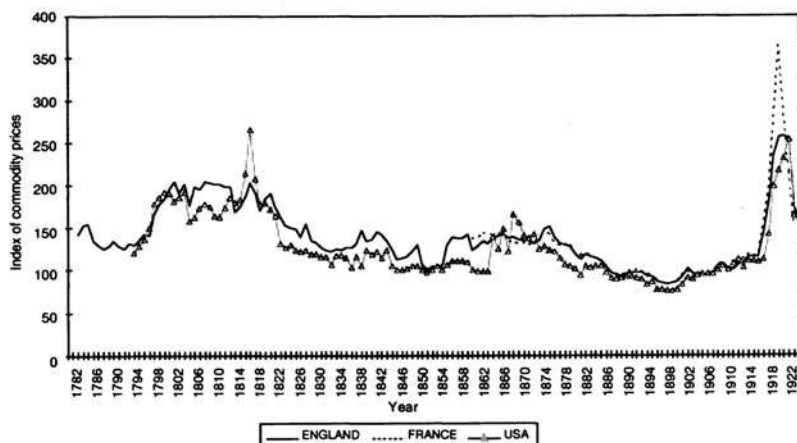
This meant that if capitalism was replaced as the dominant economic system, then the long cycle regularity may very well cease to continue. It also meant that within capitalism if key conditions altered, then the long cycle regularity may change as a consequence. In this sense Kondratiev's conception of long cycles was flexible.

PURE LONG CYCLE ANALYSIS

Kondratiev's first paper devoted solely to long cycles was published in 1925, three years after the idea was first mentioned in *The World Economy*. During these three years Kondratiev had undertaken a much more detailed analysis of long cycles than that presented in *The World Economy*, although this work was still focused on simply proving the existence of the long cycle, what might be called pure long cycle analysis. It is fitting to begin this section with a presentation of the famous graph in which Kondratiev first showed the (alleged) existence of the long cycle. Figure 5.3 shows an index of commodity prices for England from 1780 to 1925, for France from 1858 to 1925, and for the USA from 1791 to 1925 (1901–10 = 100).

From this data Kondratiev deduced that the rising wave of the first long cycle lasted from 1789 to 1814, and the declining wave of this cycle from 1814 to 1849. This meant that the rising wave was 25 years in length and the declining wave 35 years. The rising wave of the second long cycle lasted from 1849 to 1873, and the declining wave from 1873 to 1896. This gave a more even split of 24 years and 23 years. The rising wave of the third long cycle began in 1896 and ended in 1920, that is it lasted for 24 years, and the declining wave of the third long cycle began in 1920.²³ However, this description was disrupted somewhat by the fact that in the USA the rising wave of the second long cycle peaked in 1866, against the peak of 1873 for England and France. Kondratiev explained this discrepancy by the influence of the American Civil War. Although the duration of the long cycles detected

Figure 5.3 Kondratiev's long cycle, 1789–1922



Source: Kondratiev, *Bol'shie tsikly kon'yunktury*, pp. 244–5.

in this data varied between 47 and 60 years, Kondratiev confidently asserted that the existence of these cycles was 'highly probable'.

The basic empirical difference between Kondratiev's 1922 and 1925 presentations is the dating of the downturn of the first long cycle. In 1922 Kondratiev dated it at 1809, in 1925 he shifted the turning-point forwards to 1814. Unfortunately he appears not to have given any explicit reason for this change. In fact Kondratiev moved from fixing an exact date for long cycles in 1922, to providing 'probable limits' for these cycles within five to seven-year bands in 1925. In 1925 he gave the following probable limits for long cycles: 1789 to 1810–17, 1810–17 to 1844–51, 1844–51 to 1870–75, 1870–75 to 1890–96, and 1890–96 to 1914–20.²⁴ The reasoning for the idea of probable limits comes from Kondratiev's comparison of the dates of the turning-points found for various countries, most notably France, England and the USA. Table 5.2 shows the dates of the long cycles for various indicators and countries as given by Kondratiev in 1928.

From this table it is apparent that the periodicity of long cycles was not exact over all indicators and for all countries. Especially anomalous was the declining wave of the second long cycle in US prices, which began in 1866, against the 'probable limits' set by Kondratiev of 1870–75. As already noted Kondratiev explained this as a consequence of the American Civil War, but this explanation was problematic as Kondratiev already took account of wars and revolutions within the

Table 5.2 Kondratiev's dating of the long cycle

Element	First cycle		Second cycle		Third cycle	
	Upturn	Downturn	Upturn	Downturn	Upturn	Downturn
FRANCE						
Prices				1873	1896	1920
Interest rates	1816		1844	1872	1894	1921
Bank portfolios	1810		1851	1873	1902	1914
Bank deposits			1844	1874	1892	
Wages (coal)			1849	1874	1895	
Imports			1848	1880	1896	1920
Exports			1848	1872	1894	1914
Foreign trade			1848	1872	1896	1920
Coal consumption			1849	1873	1896	1914
Sown area of oats			1850	1875	1892	1915
ENGLAND						
Prices	1789	1814	1849	1873	1896	1920
Interest rates	1790	1816	1844	1874	1897	1920
Agricultural wages	1790	1812-17	1844	1875	1889	1921
Textile wages		1810	1850	1874	1890	1921
Foreign trade		1810	1842	1873	1894	1920
Coal mining			1850	1873	1893	1914
Production of iron				1871	1891	1918
Production of lead				1870	1892	1916
USA						
Prices	1790	1814	1849	1866	1896	1920
Production of iron				1875-80	1900	1920
Coal mining				1873	1896	1918
Cotton area				1874-81	1892-95	1914
GERMANY						
Coal mining				1873	1895	1915
WORLD						
Production of iron				1872	1894	1918
Coal mining				1873	1896	1914

Source: Kondratiev, *Bol'shie tsikly kon'yunktury*, p. 35.

long cycle scheme. If the earliest date for the declining wave of the second long cycle was 1866, then the latest date given by Kondratiev for this wave was 1881 (for sown area of US cotton), which gives a band of 15 years, more than double Kondratiev's officially-sanctioned 'probable limits' of 5-7 years.

In general many (including Oparin) concluded that Kondratiev's analysis proved the existence of long cycles less assuredly than he suggested. For example Garvy examined Kondratiev's method of dating the turning-points of the long cycle in the various data series, and concluded that 'closer conformity to his own rules for the determination of turning points would have resulted in a much less uniform picture than the one Kondratieff presented'.²⁵

According to Garvy, Kondratiev had originally dated the turning-points using the empirical data series which were dominated by the price element, even though it was supposed to be the smoothed theoretical series which indicated the existence of long cycles. Also Kondratiev extrapolated data series in some cases but not in others, without providing a rationale for this procedural anomaly. In general, Garvy characterised Kondratiev's methodology of dating turning-points as 'arbitrary'.

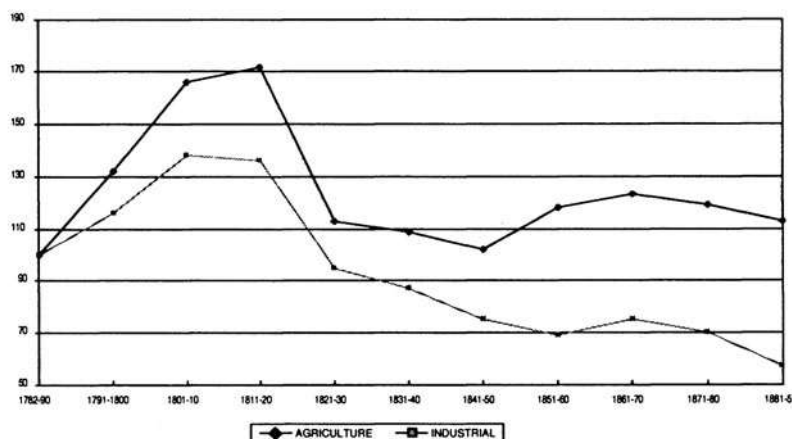
In Kondratiev's defence it is necessary to understand the extensive development of econometrics that occurred between 1925 and 1943, when Garvy wrote his critique. As Garvy admitted, Kondratiev was one of the first Russian economists to use mathematical statistics in any respect, and hence the fact that criticism of these techniques was possibly two decades later is not surprising.²⁶

POSSIBLE ORIGINS OF THE LONG CYCLE IDEA

According to J.J. van Duijn, the very first reference to the possible existence of a long cycle was in 1847. In a paper in the *Railway Register*, Dr Hyde Clarke suggested that from 1793 to 1847 a 54-year period was witnessed, in which five 10-11 year periods were found.²⁷ However, due to the possible existence of only one such cycle in 1847, work on any sort of periodicity for this observation had to wait many decades. The data which Kondratiev used to obtain the long cycle came from a variety of sources. For example for England he used the index of W.S. Jevons from 1782 to 1865 and the index of A. Sauerbeck from 1846 onwards. For the USA he used the index of A.H. Hanson for 1801 to 1825, the index of C.H. Jurgens for 1825 to 1839, and from 1890 onwards the index of the Bureau of Labour Statistics.²⁸ He also used Michael Mulhall's *History of Prices Since the Year 1850* of 1885, which contained Figure 5.4 showing price indices for agricultural and industrial goods.

In this figure the contours of the first and second long cycles can clearly be seen, something which Kondratiev was unlikely to have missed,

Figure 5.4 Mulhall's price level, 1782-1885



Source: Mulhall, *History of Prices*, pp. 130-1 (the graph) and p. 178 (the data).

although the second long cycle is more apparent in agriculture than in industry. Mulhall pointed to a separate trend for manufactures as against agriculture. He related that agricultural prices had risen by 11 per cent since 1850, whereas prices of manufactured goods had fallen by 25 per cent since this time.²⁹ This may have suggested to Kondratiev the inverse relation of agriculture and industry through the long cycle which he examined in the 1928 paper discussed further on.

Another original source for the long cycle idea was Jevons' *Investigations in Currency and Finance*, originally published in 1884, which was referred to directly by Kondratiev with respect to long cycles. In the chapter on the variation of prices and the value of the currency since 1782 Jevons wrote:

The curve of the general variation of prices is perhaps the most interesting. In this we detect a series of smaller undulations, riding as it were on one very great one . . . After the year 1790 an enormous and long-continued elevation presents itself. And when prices had reached their highest, about 1809, a still more surprising fall commences, reaching its lowest point in 1849.³⁰

This passage clearly suggested the idea of a long cycle, although Jevons did not use this term or any similar to it. Jevons did note Hyde Clarke's idea for a 54-year cycle, judging that it was 'deserving of further investigation',³¹ but did not embark on this investigation himself. Evi-

dence that Kondratiev did indeed take the idea originally from Jevons is suggested by the fact that in the work which first mentioned long cycles in 1922, Kondratiev had dated the end of the first long cycle at 1809, as Jevons indicated in the quote above. Only after studying the idea further did Kondratiev change this date to 1814 for the 1925 article in *Voprosy kon'yunktury*. This suggests that Kondratiev may have obtained the initial basic outline of the long cycle from Jevons, and only altered aspects of Jevons' outline after a more detailed statistical investigation. The fact that Kondratiev used Jevons' index of English prices between 1782 and 1865 to initially detect the long cycle further confirms this connection.

After 1900 the idea that general price movements in the nineteenth century followed a long-term pattern was a more commonly held view than it might at first be thought. For example Walter Layton's *An Introduction to the Study of Prices* of 1912, which was intended as a textbook for tutorial classes of the Workers' Education Association and which went through many editions, contained a graph showing wholesale prices and gold production from 1800. Layton wrote about movements in the wholesale price index during the nineteenth century as follows:

Starting from 1809 there is a general downward movement . . . until 1850. From that year until 1873 there is a halt in the downward tendency, and during this period prices tended to move upward. From 1873 to 1896 there is a steady downward movement once more, and finally from 1896 to the present time a renewed upward movement.³²

Like the previous quoted passage from Jevons this paragraph clearly suggested the long cycle, with the turning-points of 1873 and 1896 coinciding exactly with those given in Kondratiev's first presentation of the long cycle idea in 1922. Layton was also keen to associate these long-term movements with changes in the level of gold production, pointing out that new discoveries of gold in California and Australia around 1850 had coincided with the end of the first downward movement in prices from 1809, although he admitted this was only *prima facie* evidence of a causal link. This suggests that the intellectual atmosphere of the first two decades of the twentieth century made the 'discovery' of the long cycle highly likely at this time. However, it should be emphasised that neither Jevons, Mulhall or Layton actually named the long-term movements they identified a cycle, and they never suggested that this cycle should be studied within a framework of various lengths of cycle as part of an overall approach to economic

conjuncture. It was in this comprehensive approach to situating long cycles in a general framework of conjuncture that Kondratiev's real originality in economic theory lay.

KONDRATIEV'S LONG CYCLE METHODOLOGY

A fundamental point of contention between Kondratiev and his critics was the methodology used to detect long cycles. Kondratiev explained his method as follows. First of all the raw empirical series were obtained, yearly data for 1790 to 1920 being sufficient. For those series in which it was appropriate the data was then divided by figures for population size in order to take account of border changes occurring between countries. From the empirical series a theoretical series was calculated, which represented the secular trend or basic tendency exhibited by the empirical series.³³ According to Reijnders, Kondratiev calculated the theoretical curve by means of a least squares method.³⁴ The equations which Kondratiev used in this method were indicated by him in the corresponding table showing the raw data. For example for English consols (fixed-income bonds) the equation used was:³⁵

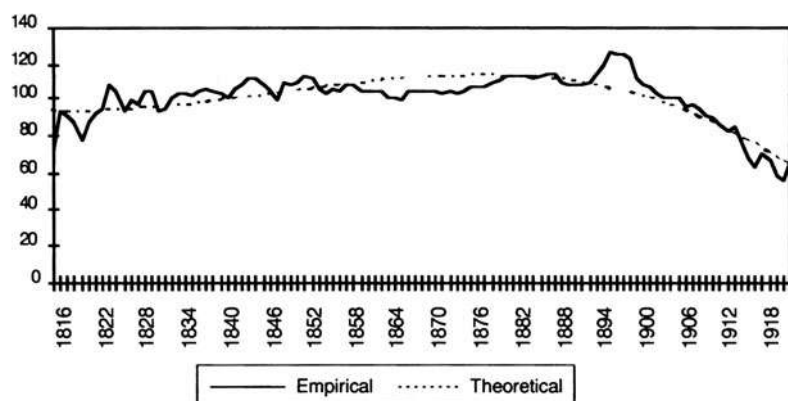
$$y = 112.57 + 0.26x - 0.012x^2 - 0.0002x^3$$

After calculation of the theoretical series it was then simply subtracted from the empirical series, the remaining series representing the empirical deviations from the trend. This latter curve contained all the remaining components from the original data, that is the various lengths of cycle, random fluctuations, seasonal factors and so on. In order to remove the 7–11 year business cycle the manipulated series was then smoothed by means of a nine-year moving average, and according to Kondratiev the remaining data set was then in a suitable condition to reveal the long cycle.³⁶

The result of this method as applied by Kondratiev to the course of English consols between 1816 and 1922 is illustrated in Figure 5.5. This figure shows the empirical series plus the theoretical series which represented the long-term trend. Figure 5.6 shows the deviation of the empirical series from the theoretical series, together with a nine-year moving average of this deviation. This latter series clearly shows the existence of the long cycle.

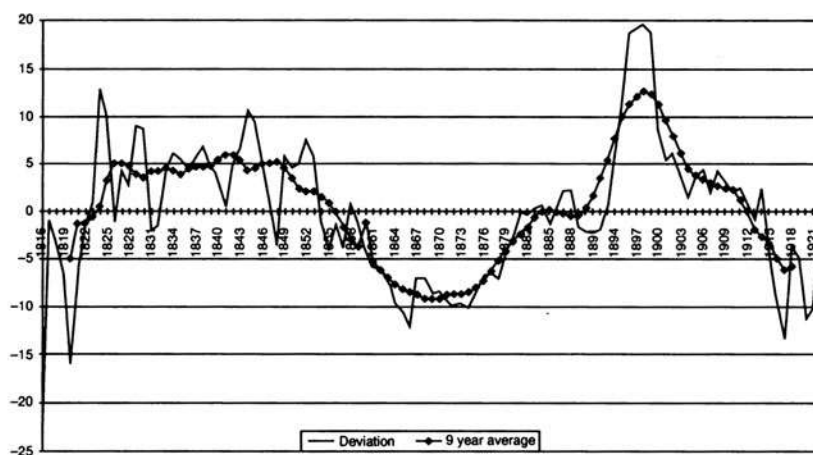
Oparin, who was Kondratiev's main critic on long cycles within the Conjuncture Institute, did not agree that Kondratiev's procedure was reliable or adequate to demonstrate the existence of long cycles. For

Figure 5.5 The course of English consols, 1816–1922



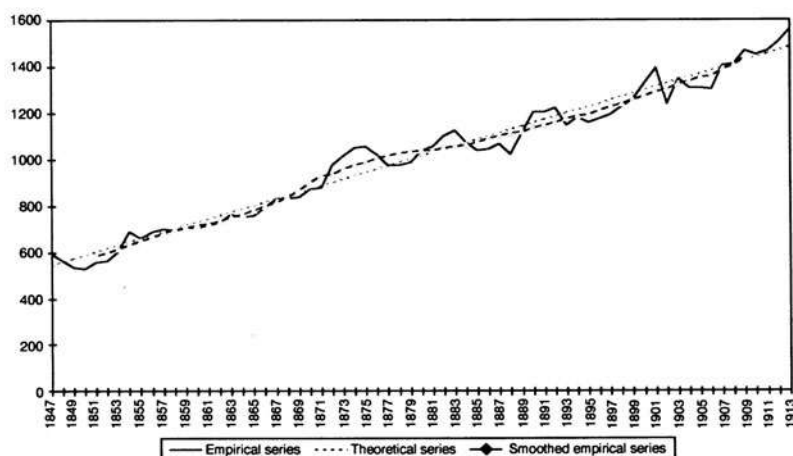
Source: Kondratiev, *Bol'shie tsikly kon'yunktury*, pp. 246–7.

Figure 5.6 Deviations of theoretical series from empirical



Source: Kondratiev, *Bol'shie tsikly kon'yunktury*, pp. 246–7.

Oparin Kondratiev was correct when he had stated at an earlier date that the long cycle should be viewed as the disruption and restoration of economic equilibrium over the long period.³⁷ This meant that the trend element should not be removed from the empirical series, as Kondratiev did, but rather it should be viewed as part of the cyclical

Figure 5.7 Wages in the French coal industry, 1847–1913

Source: Kondratiev, *Bol'shie tsikly kon'yunktury*, p. 277.

component which carried information about the long cycle. Hence instead of subtracting the theoretical trend from the empirical series, Oparin preferred to calculate a nine-year moving average of the original empirical series. The results of this method as applied by Oparin to wages of workers in the French coal industry are shown in Figure 5.7.

With this data on wages in the coal industry, smoothing the original empirical series by a moving average gave a line which failed to suggest a long cycle in any way at all. Thus according to Oparin, Kondratiev's methodology for detecting the long cycle was fundamentally flawed.

Reijnders pointed out that Kondratiev's use of a nine-year moving average to remove irregular elements and the shorter cycles was problematic for other reasons also.³⁸ Use of moving averages implicitly assumes that a series can be divided into at least two separate elements, and that the shape of these two elements can be clearly discerned. Moreover, moving averages can also affect that element which it is desired to preserve. Slutskii had shown in 1927 that the use of moving averages could generate the appearance of cycles even when no real cyclical element was present in a series. Since Kondratiev had personally requested that Slutskii join the Conjuncture Institute in 1925, he should have been well aware of the dangers of using moving averages. Slutskii was working on spurious cycles at roughly the same time as Kondratiev was developing his long cycle analysis, and con-

tact between them must have occurred. It is possible that Kondratiev did not realise the full implications of Slutskii's work for long cycle analysis. More likely is that much of Kondratiev's statistical work on long cycles was completed before or during 1925 and 1926, while Slutskii did not publish his work on the random causes of cycles until 1927. Even so it is striking that Kondratiev appears not to have made the required tests after this date, and never even noted that a problem might have existed.

APPLIED LONG CYCLE ANALYSIS

Kondratiev's idea of long cycles had both a pure and applied use. If the pure element was focused on the straightforward detection of the long cycle in various economic time series, the applied element can be seen most clearly in a 1928 paper entitled 'Price Dynamics of Industrial and Agricultural Goods' ('Dinamika tsen promyshlennyykh i sel'skogokhozyaistvennykh tovarov'), which was subtitled 'The Theory of Relative Dynamics and Conjuncture'. This paper was in many ways Kondratiev's most sophisticated development of the long cycle concept. In it he undertook a detailed statistical analysis of international agricultural and industrial prices from the point of view of long and short cycles for the period 1790-1920.

The basic idea of the paper was to establish the regularity of price dynamics between agricultural and industrial goods over the long term, in Kondratiev's terms to find the relative dynamics of conjuncture between industry and agriculture. Moreover, in this paper Kondratiev was concerned with disaggregating general conjuncture into the relative conjuncture of various branches and spheres of the economy, and with testing for synchronicity between the observed fluctuations in the various sub-sectors of the economy. This synchronicity would be examined both in terms of the period and the amplitude of fluctuation.³⁹ Kondratiev stressed the importance of this type of analysis by relating that in conditions of the free movement of capital, the portion of capital which was directed at certain branches of production was determined by the relative conjuncture of the particular branch in question. Hence analysing relative conjuncture was a way of tracing the ebb and flow of capital from one branch of the economy to another.

Beginning with the empirical part of the paper, Kondratiev analysed the price dynamics of agricultural and industrial goods using data on the UK and the USA from the end of the eighteenth century to the

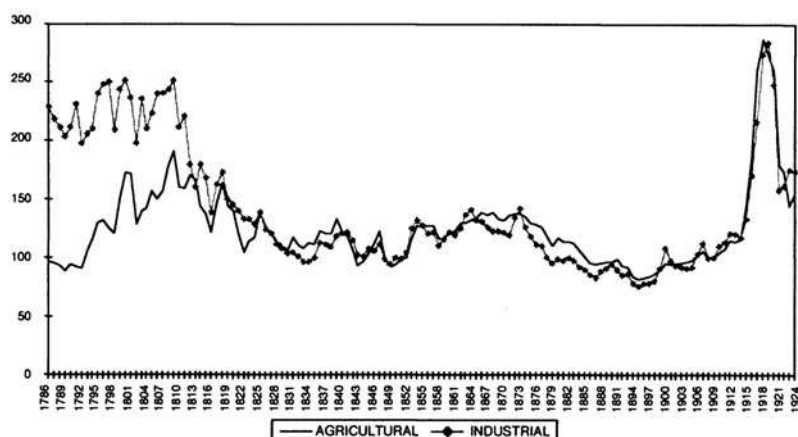
1920s. For this Kondratiev used various sources, such as for the UK Tooke's *History of Prices* of 1838 (the first edition of volumes one and two) and Jevons' *Investigations in Currency and Finance* of 1909 (the abridged second edition by H.S. Jevons). Starting with price indices for agricultural and industrial goods in absolute terms, Kondratiev detected a general declining tendency from the start of the nineteenth century until the First World War. Although this tendency was found in both the agricultural and industrial indices, it was more pronounced in the latter. During the war both indices rose to above the level found at the start of the nineteenth century, but from 1918-19 they fell sharply.⁴⁰ This is shown in Figure 5.8.

In this figure the long cycle is very clearly seen. Disaggregating the data further, Kondratiev revealed that the long-term tendencies of various agricultural prices were not identical. Prices of the products of animal husbandry showed a general rising tendency, whereas the prices of grain products and technical raw materials declined until the war. As regards industrial goods, textiles and metals showed a clear falling tendency which was less sharply expressed in the cases of vegetable oil and wood.⁴¹ The specific tendencies of the various sub-sectors were on the whole common to both the UK and US data.

Kondratiev's favoured explanation of the observed dynamics of the absolute price level was by the action of technical progress in the wide sense, which included the improvement of tools of production, means of communication, the organisation of enterprises and so on. Connected with technical progress was the growth of labour productivity which served to reduce costs of production. In conditions of heavy international and domestic competition this was the most important cause of the long-term tendency for prices to decline. Hence the growth of technique was, according to Kondratiev, the fundamental long-term determinant of the absolute price level, both of agricultural and industrial prices.⁴² Since Kondratiev was concerned with the relative purchasing power of various groups of commodities, it might be expected that similarity to Irving Fisher's *The Purchasing Power of Money* of 1911 would be found. In this work Fisher wrote:

We conclude that among the causes tending to decrease prices are increasing geographical or personal specialisation, improved productive technique, and the accumulation of capital. The history of commerce shows that all these causes have been increasingly operative during a long period including the last century. Consequently, there has been a constant tendency, from these sources at least, for prices to fall.⁴³

Figure 5.8 Index of commodity prices, 1786–1924



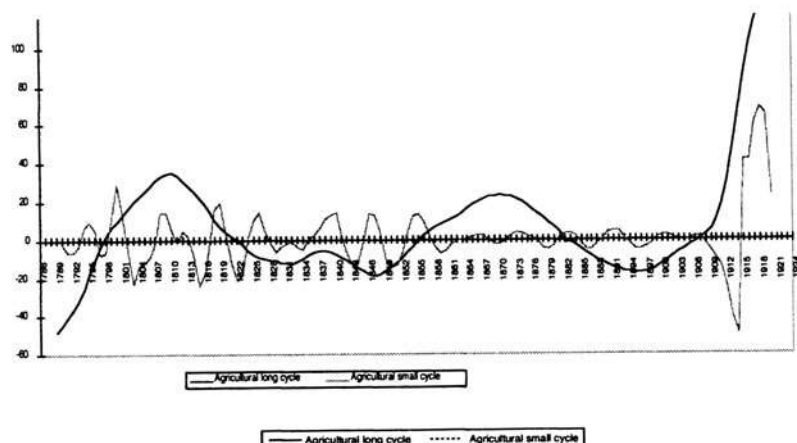
Source: Kondratiev, *Osoboe mnenie*, vol. 2, pp. 305–7.

Kondratiev's work on long cycles in purchasing power can thus be seen as an attempt to apply Fisher's approach of analysing short-term fluctuations in purchasing power to the long period.

After examining the long-term tendency of the general price level, Kondratiev turned to an analysis of cycles, both long and short period.⁴⁴ In order to reveal the existence of small cycles Kondratiev plotted the divergence of the empirical series from the secular trend, and in order to eliminate chance fluctuations he took a three-year moving average.⁴⁵ However, this latter point might be problematic, as Kondratiev's colleague Slutskii had shown how taking a moving average could generate chance fluctuations, not remove them. According to Kondratiev, Slutskii actually assisted with the statistical analysis undertaken for this paper.⁴⁶ Perhaps Slutskii was satisfied that in this case chance fluctuations were not generated, although this was not stated anywhere in the text. Whatever Slutskii's views on this matter, Kondratiev detected through this process the existence of a continuous cycle of 6–11 years in both agricultural and industrial prices, which he called the small cycle. Figure 5.9 shows the long and small cycle in agricultural prices as given by Kondratiev in 1928.

Kondratiev then proceeded to test the strength of relations over the small cycle between the elements of the general price index, starting with cycle periods. He found a correlation coefficient of 0.925 between industrial and agricultural prices, one of 0.478 between metals and

Figure 5.9 Long and small cycles – agricultural index, 1786–1921



Source: Kondratiev, *Osoboe mnenie*, vol. 2, pp. 305–7.

technical raw materials, and one of only 0.093 between metals and grains. Thus Kondratiev concluded that strict synchronicity was observed only between the general agricultural and industrial indices. Testing for synchronicity between amplitudes revealed an even larger disparity. For example the correlation coefficient between amplitudes of industrial and agricultural prices was -0.005 , between metal and coal prices was 0.365 , and between grain and livestock prices was 0.009 . Kondratiev concluded that there was no coordination at all between amplitudes of fluctuation among the various sub-sectors of the economy within the realm of the small cycle.⁴⁷ These results were somewhat different to those obtained by Wesley Mitchell. In 1927 Mitchell wrote:

On the whole our frequency distributions of the amplitudes of cyclical fluctuations are somewhat more regular than our distributions of their durations, and afford even less basis for supposing that there are two distinct species of business cycle.⁴⁸

This difference in the level of correlation between amplitudes was due to differences in both methodology and subject. While Kondratiev used simple correlation coefficients between manipulated series, Mitchell used a more sophisticated method of frequency distributions and percentage deviations of business indices from their trends. Another reason for the difference was that Kondratiev was testing for correlation between various sub-sectors of the economy over the same cycle period, whereas

Mitchell was checking different cycles against each other. This suggests that Kondratiev's approach to testing for conjunctural correlations was somewhat unique at this time.

Kondratiev moved on to analysing the dynamics of the relative price level between agricultural and industrial goods. The basic observation was a reverse movement in the purchasing power of agricultural as against industrial goods, that is the relative level of prices of agricultural goods rose for most of the nineteenth century whereas the relative level of industrial goods declined. This suggested the possibility that the rising tendency of relative agricultural prices over most of the nineteenth century may have been caused by the law of declining marginal productivity, although this did not explain why from the 1880s the reverse tendency was seen. In fact Kondratiev preferred the following explanation. Although throughout the nineteenth and twentieth centuries the productivity of agricultural labour increased and the costs of agricultural production declined, this process occurred more slowly in agriculture than in industry. This lag in the decline of agricultural costs of production behind industrial was the basic cause of the long-term growth in purchasing power of agricultural goods.⁴⁹

Kondratiev outlined that the changing purchasing power of agricultural goods occurred in reverse dependence on changes in the relative level of productivity of agricultural labour. Until the 1880s the relative productivity of agricultural labour declined and hence the purchasing power of agricultural goods increased. From the 1880s the productivity of agricultural labour grew and hence the purchasing power of agricultural goods declined. As regards the long cycle in the purchasing power of goods, Kondratiev related that the upturn in the absolute price level was concomitant with periods in which the purchasing power of agricultural goods increased and that of industrial goods declined. This meant that fluctuations in the purchasing power of agricultural goods moved with the direction of the long cycle in the overall price level, but fluctuations in the purchasing power of industrial goods moved contrary to the direction of the long cycle in the overall price level. Hence the purchasing power of agricultural goods moved inversely to the purchasing power of industrial goods. Kondratiev gave various possible reasons for this, namely that agricultural production was less elastic and less organised than industrial production.⁵⁰ Comparing the UK with the USA, Kondratiev found that the purchasing power of US goods followed the pattern established for the UK.

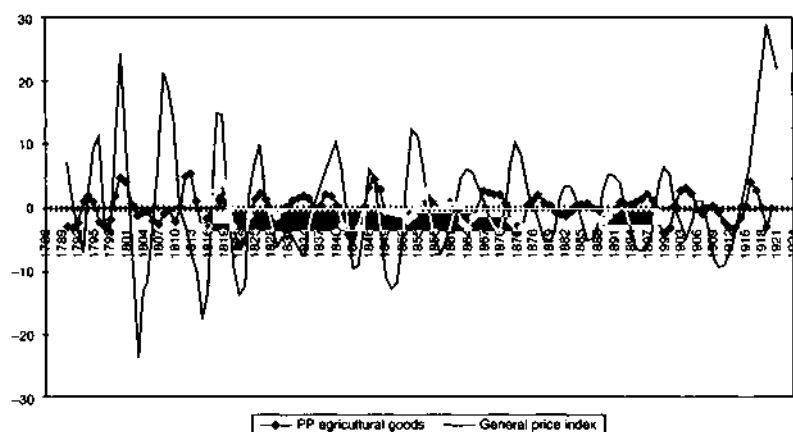
Turning to the small cycle in the purchasing power of goods, Kondratiev explained that he revealed the small cycle by taking the

divergence of the empirical series from the deviation of (secular trend) purchasing power from the curve of the long cycle, smoothed by means of a three-year moving average. By this method it was revealed that fluctuations in the purchasing power of both agricultural and industrial goods corresponded more or less to the rhythm of the small cycle, but that these fluctuations were exactly out of phase by half a cycle. Kondratiev deduced that years of maximum upturn in general conjuncture and in the general price level for the trade-industrial cycle were usually accompanied by a period of maximum increase in the purchasing power of industrial goods and a maximum decline in the purchasing power of agricultural goods. This regularity was seen more clearly in the second half of the nineteenth century than the first half, but it was present throughout.⁵¹ Figure 5.10 shows the small cycle in the purchasing power of agricultural goods against the general price level.

From this figure it is apparent that the cycle in the purchasing power of agricultural goods was out of phase with the general price level, whereas the purchasing power of industrial goods fluctuated in coordination with the general price level. Hence small cycles in the purchasing power of agricultural and industrial goods moved in contrary motion.

An important difference between the long and small cycles in purchasing power was that, if within the realm of the long cycle the period of the rising wave was also a period of the increasing purchasing power of agricultural goods, then within the realm of the small cycle a period of high conjuncture in general coincided with a period of declining purchasing power of agricultural goods. The causes of this lay in the particularities of agricultural production itself. The small cycle was above all a trade-industrial cycle. Its main spheres of activity were industry, trade, and credit, and hence it affected agriculture only mildly and indirectly. Agriculture also depended more on extra-economic factors not relevant to the period of the trade-industrial cycle. And since in the rising wave of the trade-industrial cycle demand was strongly concentrated on industrial goods, especially on means of production, it was clear why industrial prices grew faster during this time than agricultural prices, and hence why the purchasing power of the latter declined.⁵² This explained the reverse movement in the purchasing power of industrial and agricultural goods through the small cycle, and also suggested why the purchasing power of agricultural goods moved in opposition to the general conjunctural position within this cycle.

Figure 5.10 Small cycles – agriculture and general, 1786–1921



Source: Kondratiev, *Osoboe mnenie*, vol. 2, p. 298, diagram 21.

KONDRATIEV'S THEORY OF LONG CYCLES

It is well-known that Kondratiev provided a much more detailed empirical investigation of long cycles than he did a theoretical explanation for them. However, in 'Price Dynamics of Industrial and Agricultural Goods' ('Dinamika tsen promyshlennykh i sel'skogokhozyaistvennykh tovarov') Kondratiev explained that the existence of the long cycle was connected to the mechanism of increasing the fund of basic capital goods. A period of increased construction of these capital goods coincided with the rising wave of the long cycle, and the period of the abatement of this construction coincided with the falling wave of the long cycle. The creation of basic capital goods such as large construction projects, land improvement schemes, and the training of cadres of qualified labour demanded the outlay of huge amounts of capital, which required a series of preconditions as follows: (1) a high intensity of savings; (2) relative abundance of supply of cheap loan capital; (3) the accumulation of capital in the hands of powerful financial and entrepreneurial centres; and (4) low commodity prices, which stimulated savings. The low price level which was found at the beginning of the upturn of a long cycle was accompanied by a relatively high purchasing power of gold, which acted to stimulate the mining of gold.⁵³ This type of analysis is about as detailed as Kondratiev ever gave in terms of providing a theoretical explanation of long cycles.

Some clue to the origin of Kondratiev's 'basic capital goods' explanation of long cycles is found earlier in 'Price Dynamics of Industrial and Agricultural Goods' when Albert Aftalion's theory of cycles was presented. Kondratiev related that Aftalion's trade-industrial cycles were based on the length of time necessary for the production of basic capital, and thus Kondratiev may have taken this explanation from Aftalion and applied it without much modification to long cycles.⁵⁴ W.S. Jevons may have been another inspiration for Kondratiev's explanation of long cycles. While Jevons is usually known for his attempt to connect business cycles with sunspot activity, he also wrote the following passage:

... the remote cause of these commercial tides has not been so well ascertained. It seems to lie in the varying proportion which the capital devoted to permanent and remote investment bears to that which is but temporarily invested soon to reproduce itself.⁵⁵

Jevons explained how demand for goods produced for immediate use varied less than demand for goods produced over much longer time periods, this difference being a key component of commercial tides. Finally Karl Marx also employed a 'life period of capital goods' explanation of business cycles, although it was not a particularly sophisticated version of this theory that was found in *Capital*.

According to Garvy there were two central ideas in Kondratiev's theory of long cycles: (1) the discontinuous replacement of basic capital goods; and (2) the periodicity of capital investment.⁵⁶ For Kondratiev the material basis of the long cycle was the wear and tear, the replacement and the increase in the fund of basic capital goods such as big plants, railways and canals, large land improvement projects and so on. Garvy quoted Kondratiev as follows:

The replacement and the increase in this fund is not a continuous process. It takes place in spurts which are reflected in the major cycles of economic life. The period of increased production of these capital goods corresponds to the upswing.⁵⁷

However, a subtle but important difference may be noted between a 'life period of durable capital goods' conception of the cause of long cycles – in which it takes a certain fixed period for such capital goods to wear out and require replacing – and an 'increased production of durable capital goods' conception of the cause of long cycles – in which more of such goods are demanded and thus produced in the upturn and less in the downturn. In the former view it is the fact that

basic capital goods take a set period to expire that generates long cycles, in the latter view it is the fact that demand for basic capital goods rises and falls that causes long cycles. The former view may be called a purely physical conception whereas the latter view is a more demand-driven approach. It would be possible to postulate that the wearing out of capital goods causes increased demand, and thus that the two elements are part of the same explanation, but this is not necessarily the case. Production of basic capital goods could rise because of wear and tear, because of technical redundancy, because of entrepreneurs mistakenly predicting that greater profits can be made in this sector, because misdirected credit is given by the banks, because of government intervention and so on. Moreover, there seems little reason to suppose that such basic capital goods would all expire simultaneously, thus causing the cycle, a point made by some of Kondratiev's critics.

One theory which Kondratiev did use in his approach to explaining long cycles was Tugan-Baranovskii's theory of free loanable capital. This theory required that loanable funds be accumulated in the downswing and thus be available for investment in the upswing. Tugan-Baranovskii had argued that at the height of prosperity accumulated funds available for investment became exhausted and the interest rate reached its zenith. Investment then fell off sharply and in the following depression loanable capital began to accumulate. It took some while for industry's resistance to increased investment to be overcome, before the free loanable capital was transformed into fixed capital and a new expansion began.⁵⁸ However, against this analysis Kondratiev himself pointed out that such funds were never 'free' in the sense of not being invested at all, rather they were being transferred from one type of investment to another. Kondratiev tried to provide empirical support for the theory of free loanable funds with data on French savings-bank balances, but dispute still focused on whether this data revealed long cycles or not. In general it might be concluded that Kondratiev was more successful in the empirical identification of cycles using statistical data than in the explanation of these cycles using original theoretical concepts.

Mitchell's 1927 work *Business Cycles: The Problem and its Setting* contains a section on Kondratiev and long cycles, no doubt as a result of their meetings in 1924 and 1925. Mitchell noted that Kondratiev rejected the 'easy' explanation of long cycles based on accidental discovery of gold deposits and improvements in mining techniques, although he does not give Kondratiev's alternative explanation. Mitchell may have had in mind Layton's work mentioned above when speaking

of an explanation of long cycles based on the discovery of gold. Mitchell evaluated Kondratiev's work as follows:

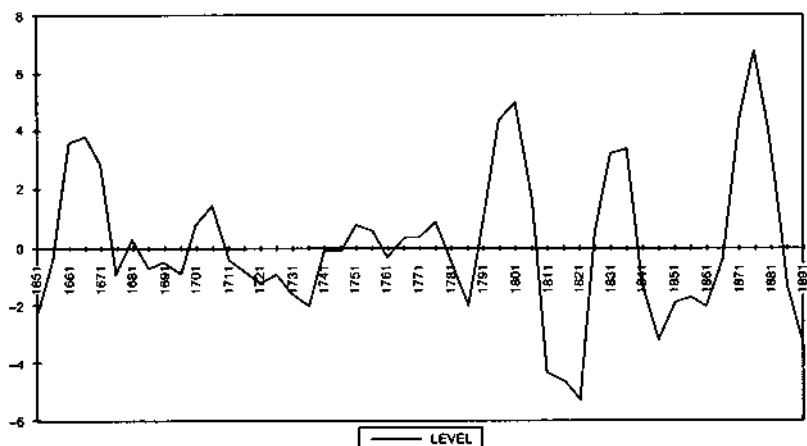
We may admit the probable validity of Kondratieff's statistical argument that two and a half long waves have occurred . . . and yet hold open the question whether the series will be continued. Two and a half recurrences do not suffice to establish empirically a presumption that any feature of modern history will repeat itself.⁵⁹

Mitchell admitted more than many by accepting that two and a half cycles had been probably established, this possibly being the result of his personal contact with Kondratiev in New York. Mitchell went on to note a difference in duration between Kondratiev's long cycle and the long-term secondary trends found by Simon Kuznets, the latter being 22–24 years in length.⁶⁰ He suggested that perhaps the European investigators – Kondratiev and the Conjunction Institute – paid insufficient attention to additional 'swerves' which attracted notice in a mind less preoccupied with long cycles. This was an implicit criticism of Kondratiev's approach, and it is likely that if Mitchell had to choose between Kondratiev's and Kuznets' methodology, he would have chosen that of his colleague within the NBER.

RAINOV AND CYCLES IN SCIENTIFIC DISCOVERY

One of Kondratiev's colleagues in the Conjunction Institute, T.I. Rainov, attempted to follow-up Kondratiev's observation about the relation between technical inventions and long cycles by conducting a detailed analysis of variations in the level of scientific discoveries during the eighteenth and nineteenth centuries. Rainov was second in command in the section of the Conjunction Institute devoted to methodology. Rainov's work on long cycles was presented in draft form at an internal meeting of the Conjunction Institute on 5 May 1928, where it was criticised by colleagues such as Vainshtein and Ignatiev, and it was finally published in *ISIS* in 1929. Using data on discoveries in physics in Germany, France, and England in the eighteenth and nineteenth centuries, Rainov outlined how the number of discoveries exhibited a distinct tendency or secular trend, how the rate of change in the number of discoveries varied over time, and how the overall fluctuations were uneven and interspersed with a series of 'zigzags'.⁶¹ After eliminating the secular trend and applying a moving average to remove the zigzags, the desired long tempo movements became apparent. The resultant graphs

Figure 5.11 Physical discoveries in England, 1651-1891



Source: Rainoff, 'Wave-like Fluctuations', p. 295 (the graph) and p. 309 (the data). Original data from the tables given by F. Auerbach, *Geschichtstafeln der Physik*, 1910.

affirmed the existence of long tempo fluctuations of several decades, although Rainov accepted that some doubts remained relating to the accuracy of the data used. Figure 5.11 shows five-yearly sums of the number of discoveries in physics in England, with the secular trend removed and with the application of a three-year moving average.

According to Rainov this figure demonstrated long tempo swings clearly. As an additional check Rainov then compared the first set of data on scientific discoveries provided by F. Auerbach with a second independent set of data constructed by Rainov, and found that the same long tempo swings did exist in the second data set as in the first. Hence Rainov concluded: (1) long swings of creative productivity of several decades did actually exist; (2) while not strictly periodic, they possessed a cyclical character; (3) waves of creative productivity in Germany and England were synchronised with each other, while those in France were less so.⁶²

Rainov then proceeded to relate swings in scientific inventions to the long cycles in economics identified by Jevons, Kondratiev and others. He suggested that the long cycle in the general price level in UK data moved in correspondence with the long tempo fluctuations of creative productivity in physics from 1790 to 1900, although this correspondence was direct until 1830 and inverted after this date. For the French

Table 5.3 Short cycles in economics and physics, 1833–95
(from one minimum to another)

<i>Physics</i>	<i>Economic life</i>
1836–41	1833–42
1842–47	1843–49
1848–53	1849–55
1854–58	1856–58
1859–69	1859–68
1870–76	1869–79
1877–83	1879–86
1884–92	1886–95

Source: Rainoff, 'Wave-like Fluctuations', p. 306.

and German data the correspondence was almost exclusively of an inverse nature.⁶³ Rainov went on to test for short cycles in creative productivity of around seven to eight years in length, and to relate these to the conventional business cycle. The method used to obtain the short cycles was roughly that for the long tempo swings, with the additional removal of the long swings and further use of moving averages. Rainov gave Table 5.3 showing the direct correspondence between short cycles in the development of physics and in economic life for England.

Rainov concluded that insufficient data was available for an explanation of these phenomena, and suggested that further work on discoveries in chemistry would be useful. While Rainov was content to posit some type of relationship between long cycles in scientific discoveries and price levels, it is apparent that the periods of the waves he identified in scientific discoveries were much less consistent than those suggested by Kondratiev for economic long cycles. Rainov used the vague phrase 'some or several decades' to identify the periods involved, which is obviously inadequate to prove any precise link with economic phenomena. As with Kondratiev's methodology, the use of moving averages in Rainov's work could be seen as ignoring the problems identified by Slutskii.

At the meeting of the Conjecture Institute in which Rainov's work was discussed it was noted that in general Kondratiev agreed with the methodology and results of Rainov's analysis. However, a number of others did have criticisms. For example Vainshtein argued that the expression of all scientific discoveries in the same unit of account was not satisfactory. Rainov simply summed the number of discoveries without any regard for their relative importance. For Vainshtein a discovery

was not important for the fact of discovery, but for its significance in developing a given field of science. Vainshtein suggested as a hypothesis the idea that in periods of economic upturn greater profitability led to people being pushed out of scientific endeavour towards economic work, and this may explain the inverse relation between the long cycle in scientific discovery and economic prosperity.⁶⁴ In contrast to Rainov, Vainshtein believed that it was not changes in the economic cycle which provoked fluctuations in scientific production, but fluctuations in scientific productivity which caused the observed economic rhythms. Ignatiev raised a further doubt that there might be some considerable period of time between the actual conception of a new scientific idea and its definitive formulation, and hence measurement of 'scientific discovery' was further complicated. Moreover the dynamics of conceptual productivity against actual discovery might differ, as well as the dynamics of publication of new ideas against their inception.⁶⁵

In general the reception of Rainov's paper within the Conjuncture Institute was, with the notable exception of Kondratiev, rather negative. It is thus clear why Rainov's contribution to the development of the idea of long cycles was not well-known outside the Institute. In the 1930s Schumpeter took up the role of technical progress in long cycles, and argued that basic innovations like the steam-engine and the railway (together with the 'swarming' of smaller, secondary inventions) could launch a long cycle.⁶⁶ It seems that Schumpeter was unaware of Rainov's work in this area. Someone who was aware of Rainov's work was Pitirim Sorokin, who used Rainov's work as evidence of the undulating character of scientific development.⁶⁷ Kondratiev's influence on Sorokin is analysed in more detail in the section on the legacy of the long cycle further on.

OPARIN'S CRITIQUE OF KONDRATIEV

Kondratiev's most important and rigorous critic within the Conjuncture Institute was D.I. Oparin, who also worked in Gosplan. Oparin's criticisms were based upon his own theory of 'schematic equilibrium' which he believed should be used to establish equilibrium schemes relating to particular economic variables.⁶⁸ It is worth analysing Oparin's criticisms in some detail, as his analysis was the most sophisticated undertaken by one of Kondratiev's colleagues in the USSR. First of all, Oparin questioned the existence of long cycles in respect to a number of economic indicators used by Kondratiev. Oparin inspected the

movement of foreign trade in England and France, and concluded that no long cycle could be detected. He came to this conclusion by using the following reasoning. Foreign trade turnover did exhibit long cycles in line with the general price level, but this movement was a consequence not of a real increase or decrease in foreign trade, but of the movement in the general price level itself. Excluding the general price movements from the foreign trade data resulted in the long cycle disappearing.⁶⁹ Similar reasoning was applied by Oparin to Kondratiev's data on wages, with similar results. Regarding Kondratiev's analysis of natural indicators, Oparin presented data on the production of iron in England from 1840 to 1920. According to Oparin this series did not exhibit fluctuations corresponding with the time-scale indicated by Kondratiev for long cycles. For example there was a significant turning point in 1866 which brought in a period of downturn until 1882, but this feature did not synchronise with the declining wave of Kondratiev's second long cycle (1870-75 to 1890-96).⁷⁰

Other aspects of Kondratiev's analysis of long cycles were also criticised by Oparin. Kondratiev had related that in the period of 20-25 years before the start of a long cycle and for five years after it had begun the largest number of technical inventions were observed, which were then realised in practice as the economic upturn developed. Oparin argued that many inventions must wait 20-30 years for their widespread application, and thus exact dating of the point of invention was difficult. In relation to the idea that in the period of the rising wave of the long cycle there occurred the largest number of social upheavals, Oparin calculated that during Kondratiev's first long cycle there were a total of 28 social upheavals, 13 in the rising wave and 15 in the declining wave. For the second long cycle there were 10 observed in the rising wave and 8 in the declining wave. Such figures did not confirm the idea of the concentration of social upheavals at certain points on the long cycle. Kondratiev had also asserted that the declining wave of the long cycle coincided with a long-term depression in agriculture, which was a consequence of the fact that agricultural prices fell more significantly than industrial prices at this time. Oparin presented data for the USA between 1790 and 1920 which showed a general increase in the purchasing power of agricultural goods, thus putting Kondratiev's proposition into doubt.⁷¹

One of the central elements of Kondratiev's explanation of long cycles was the lumpiness of investment in fixed capital. In relation to this Kondratiev had attempted to demonstrate that there were long cycles

in savings, and for this he used data for France in the nineteenth century. Oparin attempted to question this by relating the turning-points observed in France to organisational changes in banks and credit institutions which accompanied political changes. Moreover, Oparin used data for the USA which showed that long-term movements in savings were very smooth and did not exhibit long cycles. He argued that if long cycles in savings were observed in France then they were particular to this country and could not be assumed to exist for the world economy as a whole. Oparin concluded by suggesting that instead of calling Kondratiev's secular tendency a 'long cycle', it would be better to call it a 'long-term fluctuation', keeping the term 'cycle' for regularities such as the 7-11 year business cycle, which had been much more clearly established.⁷²

Kondratiev responded to Oparin's criticisms in a 1926 paper entitled 'On the Question of Long Cycles of Conjuncture' ('K voprosu o bol'shikh tsiklakh kon'yunktury'). As regards Oparin's concern with removing the effect of the movement in the price level from series such as wages, Kondratiev responded by asking in what theory of political economy were nominal wages regarded simply as a function of commodity prices, without their own regularity? If nominal wages were a simple function of commodity prices, as Oparin implied, then as a result of the division of wages by prices a horizontal line should be obtained. However, the actual line obtained continually declined and fluctuated. Oparin used the same argument against the long cycle in foreign trade turnover, to which Kondratiev responded by stating that dividing foreign trade by the price level yielded a series which did in fact indicate the existence of long cycles.⁷³

Oparin further questioned that natural indicators exhibited long cycles. To this criticism Kondratiev responded by arguing that Oparin failed to give enough attention to the question of branches in the international capitalist economy. The place of the English economy in world lead production was central, and thus if this economy exhibited long cycles for lead manufacture then it could be concluded that this was an international tendency, although this did not guarantee that counter-tendencies could never be observed in other areas of the world economy. As regards Oparin's idea that some of the detected long cycles were within the bounds of statistical error, Kondratiev stated that this was simply mistaken. Furthermore, whether the turning-points in the long cycles exactly coincided comparing one particular indicator to another was something that Kondratiev was not particularly concerned

with, since he never stated that all such minima and maxima should align perfectly. Kondratiev concluded by restating that the existence of long cycles was still highly probable.⁷⁴ It is apparent that Kondratiev accepted none of Oparin's criticisms.

THE INFLUENCE OF KONDRATIEV'S LONG CYCLE

Almost immediately after it was proposed, the Kondratiev cycle achieved a certain infamy among both Soviet and Western economists. It is probably true to say that much of the attention was negative, in that many economists were and still are unconvinced that any such cycle exists. For Soviet critics the idea of long cycles went counter to the desire for a final and decisive collapse of capitalism; for many Western critics there was insufficient evidence to support Kondratiev's hypothesis. Some Western economists incorrectly assumed that because the idea of long cycles emanated from the USSR, it must be Marxist in spirit, and criticised it and its originator on this basis.⁷⁵ However, a few Western economists took up the long cycle torch with enthusiasm, most notably Joseph Schumpeter, Walt Whitman Rostow, and Ernest Mandel. Schumpeter's two-volume *Business Cycles* of 1939 remains one of the all-time great accounts of economic fluctuations, and was heavily dependent on his own interpretation of the long cycle idea. Schumpeter decided to call the long cycle the 'Kondratiev cycle', and his work was full of terms such as 'the Kondratiev depression', 'the Kondratiev prosperity', and 'the Neomercantilist Kondratiev'. He also named the sequence of long cycles the first, second, and third Kondratiev. Schumpeter argued that a three-cycle scheme of Kondratievs, Juglars and Kitchens was convenient to use in describing the long-term evolution of capitalism, although he allowed that other cycles might also be detected.⁷⁶ In his use of the idea of interrelating cycles of various periods Schumpeter was following Kondratiev's footsteps in methodology as well as in concrete specifics.

Rostow's work in the 1950s on the process and stages of economic growth was also greatly influenced by Kondratiev's approach to analysing long-term change. In a letter to this author Rostow admitted that he knew of Kondratiev's work early on in his career, and linked his knowledge of long cycles with his work on long-term UK data series which eventually formed part of the two-volume study *The Growth and Fluctuation of the British Economy, 1790-1850*. In this letter Rostow outlined that two elements of Kondratiev's work in particular were

puzzling to him. Firstly, that Kondratiev did not have a theory of long cycles, and secondly whether wars could be related to long cycles.⁷⁷ Rostow tested the Revolutionary and Napoleonic wars, Bismarck's wars, and the First World War for correspondence with the long cycle, but he found that only the American Civil War was connected. Thus Kondratiev's long cycle hypothesis had an influence on Rostow's work on the British economy.

In *The Growth and Fluctuation of the British Economy* Schumpeter's use of Kondratiev's work was analysed in detail and Kondratiev was given credit for certain specific propositions. For example the tendency for prices to rise during the period when technical innovations were being introduced, but before they yielded lower costs and increased output, was called 'the Kondratiev factor'.⁷⁸ While remaining sceptical of many aspects of Schumpeter's interpretation of Kondratiev's hypothesis, Gayer, Rostow and Schwartz still used the terminology of 'Kondratiev depression' and 'Kondratiev prosperity'. Rostow went on to become an advisor on foreign affairs in the Kennedy administration and to write two further classics in growth theory, *The Process of Economic Growth* of 1952 and *The Stages of Economic Growth* of 1960. In the latter the mediated effect of Tugan-Baranovskii via Kondratiev was seen when Rostow analysed the take-off into economic growth in terms of the supply of free loanable funds.⁷⁹

Finally Mandel's quasi-Marxist approach to long cycles exemplified by *Late Capitalism* of 1972 is one of the most recent economic treatises utilising Kondratiev's idea. Mandel tried to relate the long cycle to Marxist concepts such as the organic composition of capital and the rate of surplus value, with mixed success.⁸⁰ Outside the purely academic realm the Kondratiev cycle has also been taken up with enthusiasm. For example two unconnected market analysts have attempted to use the long cycle as a way to reap excess profits on the stock market. Dick Stoken's *The Great Cycle: Predicting and Profiting from Crowd Behavior, the Kondratieff Wave, and Long-Term Cycles* was first published in 1978, and was reissued in 1993. Robert Beckman's *Powertiming: The Amazing Wave Principle* of 1992 also used Kondratiev's idea (together with Elliott waves) as a springboard for investment decisions, as did Beckman's earlier works *The Downwave* of 1983 and *Into the Upwave* of 1988. Although these market analysts are certainly not within the mainstream of investment management, their work demonstrates that the Kondratiev cycle is known outside the confines of academic business cycle theory.

Articles have also been written applying the long cycle outside the

realm of the economy, for example papers such as 'Kondratieff Waves as War Cycles' and 'The Geography of the Fifth Kondratieff Cycle'.⁸¹ One of the most all-encompassing attempts at applying long cycles to non-economic areas was undertaken by Kondratiev's closest friend before the revolution, Pitirim Sorokin. In his massive four-volume work *Social and Cultural Dynamics* of 1937, Sorokin analysed fluctuations in forms of artistic expression, systems of ethics and law, and social relationships, wars and revolutions from Ancient Greece to twentieth century USA. Outlining a grand scheme of cultural systems based on various types of cultural mentality, Sorokin tried to show how cultural systems changed and to identify patterns in this process. He identified both long- and short-term fluctuations and emphasised that the longer trends were of great importance. Sorokin believed that the period after 1929 had 'convincingly disproved' the business forecasts made prior to this date using short period techniques, and in this respect he wrote:

Only quite recently have appeared some scattered attempts to study somewhat longer fluctuations, but they are still very few and the periods rarely extend beyond some twenty-five to sixty years, periods of comparatively brief duration.⁸²

Sorokin thus suggested that forecasts which were made with the inclusion of long-term cycle techniques might be more accurate than those based on short-term techniques alone.

Some have suggested that there are long cycles of interest in the idea of long cycles, that is the idea is virtually ignored in long periods of prosperity, and only receives serious attention in periods of deep depression. There is some truth in this proposition. Kondratiev's original work in the 1920s was conducted in a period of fundamental decline in the world economy symbolised by the Wall Street crash of 1929, and Mandel's work in the 1970s was written in part in response to the oil shock of 1973 and the ensuing economic crisis. However, Rostow's work in the 1950s was conducted in a period of long cycle upswing, and thus counter-examples to this idea are available. What is beyond doubt is that the Kondratiev cycle has made for itself a lasting place in the history of twentieth century business cycle analysis.

DO LONG CYCLES EXIST?

It is beyond the scope of this book (and the expertise of the author) to provide a definitive answer as to whether Kondratiev cycles actually

exist or not, but various studies have recently subjected Kondratiev's hypothesis to more rigorous statistical testing. For example Jan Reijnders used spectral analysis and concluded that 'the Kondratieff is the most powerful element in the spectrum'.⁸³ Reijnders related that long cycles were more apparent in aggregate measures of economic activity such as GDP, GNP and employment, than in volume series.⁸⁴ Some current work has taken the Schumpeterian path of relating Kondratiev's long cycles to other economic fluctuations, notably Kuznets cycles. For example Brian Berry has argued that embedded within each long cycle were two Kuznets cycles which provided the growth impulses for the long cycle.⁸⁵ In response to Slutskii's implication that long cycles may be the result of applying moving averages to the data, Berry plotted a whole series of different moving averages, and also used chaos phase diagrams to plot growth rates at time t against $t - 1$. According to Berry these techniques conclusively demonstrated that long cycles in US price levels were real.⁸⁶

While Reijnders and Berry have provided support for Kondratiev's hypothesis, other economists have remained sceptical. One of the most fundamental problems is that since the alleged cycle is of such long duration, it can have repeated itself only a small number of times since 1790, and this is not sufficient repetition to establish the phenomenon as a truly periodic cycle. This criticism was first suggested by Mitchell, although it is certainly not conclusive proof that the long cycle does not exist.

There is some dispute as to what position on the long cycle the world economy resides today, but J.S. Goldstein has forecast a production upswing in the long cycle between 1995–2020.⁸⁷ This would be the fifth Kondratiev cycle to be identified, and would follow on from the fourth long cycle downturn which began around 1970. J.J. van Duijn noted two different approaches to dating long cycles, the 'strict' and the 'organic'. According to the 'strict' point of view, the 1990s will be a period of low inflation and depression; according to the 'organic' view, in the period after 1982 the upturn of a new fifth Kondratiev cycle began.⁸⁸ From a different angle Rostow recast Kondratiev's idea of long cycles in overall price indices into the form of long cycles in relative price movements.

Rostow explained these long cycles in terms of periods of relative shortage and abundance of agricultural and other basic commodities, which yielded the observed movements in relative prices.⁸⁹ Rostow's approach was similar to Kondratiev's 1928 paper on the relative dynamics of long cycle conjuncture. Rostow's reformulation of Kondratiev's

long cycle led him to write of the 'explosive entrance into the fifth Kondratieff upswing of 1972-74',⁹⁰ when most have labelled this period as marking the beginning of the fourth Kondratiev downswing. As Rostow gauged the development of the long cycle by means of relative prices, he cited the dramatic rise in grain prices of December 1972 as marking the decisive turning-point, although an increased role for oil prices after 1973 was acknowledged. Long cycle theorists will certainly relish the collapse of the Soviet-bloc countries after 1989, as it will allow an argument to be made about the fifth long cycle upturn being generated by the penetration of capitalism into major new geographical areas.

CONCLUSION

The picture painted of the success of Kondratiev's work on long cycles in this chapter has been decidedly and deliberately mixed. While Kondratiev's analysis was certainly the most detailed and sophisticated undertaken in the 1920s, there is little doubt that the existence of the long cycle was proved less assuredly than Kondratiev believed. Even within the Conjecture Institute there was heavy criticism from colleagues such as Oparin, and outside of Moscow many Western economists dismissed the idea as mistaken. A fair general characterisation of received opinion on this idea might be that the balance of probability is against the existence of long cycles in all economic time series, although it is not beyond a reasonable doubt that they might exist. In the general price level long cycles are clearly present, but dispute still rages about the exact relevance of this phenomenon. While long cycles might remain empirically unproven, it is beyond question that Kondratiev's work in this area provided a huge stimulus to other economists to examine related areas in much more detail than had hitherto been attempted. This is most clearly seen in the highly-regarded work of Schumpeter and Rostow, as well as the more contentious work of Mandel. The level of interest generated by Kondratiev's analysis made him famous amongst Western economists and it might have been partly in response to this prominence that the Soviet authorities treated him so harshly after 1928.

However, to conflate Kondratiev's contribution to economics simply with the idea of long cycles is missing the point entirely. Together with others like Wesley Mitchell and Ragnar Frisch, Kondratiev pioneered a fundamentally new approach to the study of economic con-

juncture within which the long cycle was only a small part. Whether long cycles actually exist or not has little bearing on the importance of this approach. Kondratiev attempted to integrate the study of various lengths and amplitudes of cycle, and to analyse movements in particular sectors and elements of the economy as parts of a conjunctural whole. This approach was most clearly seen in Kondratiev's 1928 paper on the relative dynamics of industrial and agricultural prices, this being why it was presented in detail. Kondratiev thus strived to further develop statics and dynamics in economics, a distinction which had existed in the subject for many decades.

Kondratiev's general conception of statics and dynamics was (unsurprisingly) similar to that of Frisch and Schumpeter, even to that of Jan Tinbergen, but was somewhat different to the equilibrium conception previously dominant and held by economists such as Leon Walras, Vilfredo Pareto and F.Y. Edgeworth. In Kondratiev's view statics was time independent whereas dynamics was time dependent, the aim of dynamics being to chart how elements, interrelations and regularities changed. In contrast to this in the equilibrium conception dynamics related to the study of movement towards an equilibrium or of a moving equilibrium, statics related to the study of the equilibrium state in itself.⁹¹ Like Wesley Mitchell, Kondratiev downplayed the importance of any 'stationary state' which was held to be in theoretical equilibrium and to which an economy was supposedly moving, in favour of a quantitative dynamics which made empirical data the motive force of economic models and which theorised about how economies developed, not how they reached stasis. While Kondratiev was certainly not the only economist moving in this direction in the 1920s, he deserves to stand alongside the other currently more famous pioneers. Detailed parallels with the work of Irving Fisher, for example over the role of the interest rate through the phases of the cycle, provided further evidence that Kondratiev's work was part of the new direction in economics which developed after 1900.

Kondratiev's work on conjuncture also attempted the integration of economic theory with economic policy, in that the theory of conjuncture was to be used to provide policy guidance in composing economic plans and in setting economic variables such as tax levels. Kondratiev may have been more or less successful in realising this goal in the concrete conditions of the USSR in the 1920s, but the general approach remains impressive. As regards its policy relevance today it should be noted that at a dinner hosted by the German Federation of Industry in 1996, the German president Mr Herzog raised

the prospect that Germany might miss out on the forthcoming fifth long cycle based on informational technology. Noting that Germany had been a technological pioneer in the second, third, and fourth long cycles, Herzog stressed the importance of investing in R&D to ensure that Germany played a full role in the fifth Kondratiev cycle.⁹² The Kondratiev cycle thus still remains in popular consciousness as far as economic policy-making is concerned.

6 Kondratiev and the Economics of Planning

This chapter examines both Kondratiev's views on the methodology and principles of planning, and his work on the creation of a concrete plan for agriculture and forestry for 1924-28. As always with Kondratiev, a concern with the interrelation of theory and policy is something which emerges as very important in this area. The plan for agriculture and forestry was composed together with other members of the People's Commissariat of Agriculture such as N.P. Makarov, not with other members of the Conjunction Institute, which was part of the Commissariat of Finance. Even so, the methodology which underlay Kondratiev's approach to planning was clearly indebted to his work on forecasting cyclical movements pursued in the Conjunction Institute.

KONDRATIEV'S THEORETICAL CONCEPTION OF PLANNING

In a paper entitled 'The Plan and Forecasting' ('Plan i predvidenie') Kondratiev outlined his views on the methodology of the planning process. As this article was published in 1927 he had accumulated at least six years of experience of attempting to draft plans by this time. Although this experience was mainly in connection with plans composed for the People's Commissariat of Agriculture (NKZem), Kondratiev had also closely followed the work done by Gosplan and TsSU. Other members of the Conjunction Institute such as Vainshtein had written detailed critiques of plans constructed by Gosplan, and it was likely that this criticism was in part a collective effort.

The main theme of the article on planning methodology, indeed of much of Kondratiev's work, was as follows:

Plans for future economic development have a close connection with forecasting this future. But if this is so then it is clear that methods of constructing plans must be in harmony with the possibilities of such forecasts.¹

Kondratiev, as did most Bolsheviks, contrasted planned with spontaneous (*stikhiinyi*) development. He noted that historically there had never been

an economy which had progressed without any influence or support from government management organs. This did not mean, however, that Soviet planning and capitalist planning were identical:

The influence of the state on economic life under private-capitalist order is limited to relatively narrow spheres of the economy and, as a rule, has an indirect (*kosvennii*) character. The state influences the economy through customs and tariff policy, and through legislation on entrepreneurial unions, on the duration of the working day and so on.²

Kondratiev contrasted this with the position in the Soviet economy. The state had concentrated into its hands almost all of industry and transport, almost all of the credit system, and a significant part of trade. In such conditions the role of the state was to lead directly.

Turning to the details of plans, Kondratiev explained that they were composed first of all from perspectives; perspectives on growth rates of particular industries, on the productivity of labour and so on, and he outlined two types of perspective. In the first perspectives were constructed solely on the basis of distant socio-economic aims. Since this method failed to produce feasible plans, Kondratiev rejected it. Instead he recommended that plans should be obtained first of all from an analysis of the possibilities of spontaneous development, and only then through an analysis of ways of influencing this spontaneous development into the desired channels:

... perspectives are not simply an expression of the spontaneous course of events, but are also not simply expressions of our wishes (*pozhelanii*). They are an expression of the desirable results of economic construction within the framework of possibility.³

Kondratiev objected to the view that the genetic method – the extrapolation of spontaneous tendencies – should be used for agricultural plans, whereas the teleological method – setting up desired targets independent of possibility – should be used for industrial plans. Such a categorical form of opposition was mistaken. Rather both methods had to be used to some degree in all types of plan. For Kondratiev a perspective plan was not only a directive, but simultaneously a forecast; not only a forecast, but simultaneously a programme of action. He quoted the following maxim in this respect: know, in order to forecast; forecast, in order to manage.

Kondratiev continued, if an attempt was made to look into the future, then this was inevitably based on knowledge connected with

zakonomernost' (translated as 'law-governed regularity' or 'logic'). Dynamic regularities were discovered through the study of past and present developments, and extrapolation of these developments gave a basis for forecasting future changes. Kondratiev outlined three possible types of economic forecasting. The first was concerned with events of an irregular nature, examples of which were the level of sales or production on a definite date, the level of exports or of prices and so on. This type of phenomena could not be included in law-like formulae, as in order to forecast them exactly almost ideal knowledge of economic conjuncture would be required. In order to prove this Kondratiev cited the State Planning Commission (Gosplan) control figures for 1925/26.

In the control figures Gosplan had attempted to predict the price level in each month and as a whole for the year. In reality prices not only failed to confirm the Gosplan predictions, but moved in exactly the opposite direction to that forecast. For example Gosplan predicted for 1925/26 that the average level of wholesale prices would fall by 8.3 per cent, whereas they actually increased by 2.7 per cent. And the control figures assumed that the wholesale price index for agriculture would decline by 8 per cent and for industry by 9 per cent. In fact the former increased by 0.7 per cent, the latter by 4.7 per cent. Hence this type of forecasting was liable to large errors.⁴ The second type of forecasting was of events of a more or less regular nature, for example business cycles or seasonal fluctuations. According to Kondratiev predicting these events was also difficult, but since such predictions were in the form of a confirmation of the probable occurrence of a regular event, such a prediction was more feasible than the first type. The third type of forecasting was a general expression of the development of a socio-economic tendency, and was not localised or quantitative in nature. It could be used in relation to predicting whether a particular branch of the economy would grow or not, or whether there would be a general price increase. For Kondratiev this type of forecasting was the most appropriate given current levels of knowledge.

The answer to these problems, according to Kondratiev, lay with the balance method of planning. This viewed every economic phenomena in connection with every other:

The balance method establishes the factual balance for the national economy at one or other moment in the past. Expressed symbolically, this gives us the possibility of establishing a quantitative expression of the connections between elements of the national economy A, B, C... X as they existed in the past.⁵

In order to use information about past regularities to predict future developments, it was necessary to know the laws of change over time of *A*, *B*, *C* and so on, and the laws of change of connections between these elements. This was where the theory of conjuncture was of primary importance, giving an indication of how elements of the economy had moved in relation to each other in the past. Kondratiev concluded that his analysis was not a critique of perspective planning in general, rather it was only a critique of mistaken perspective plans, of erroneous planning methodology.

Some key points which can be drawn from this are as follows. Kondratiev emphasised the limits to the accuracy of economic knowledge obtainable to humans, something which might be termed the 'Kondratiev uncertainty principle', in honour of the physicist Werner Heisenberg.⁶ He also favoured the genetic method of plan construction over the teleological, although he did not exclude the latter from the planning process. His conception of first discovering empirical regularities in past economic development and then using these as a basis for future planning was shared by many non-Bolshevik planners such as P.I. Popov and V.A. Bazarov, and hence was not unique. However, his emphasis on the empirical analysis of conjuncture was obviously of great importance to the planning process as he conceived it, and the role of a body like the Conjuncture Institute in this activity was apparent.

KONDRATIEV'S PLAN FOR AGRICULTURE AND FORESTRY, 1924-28

In economic policy terms Kondratiev is perhaps most famous for the plan he was in charge of creating for agriculture and forestry which was to run between 1924 and 1928, and which was one of the first prescriptive plans ever composed for an entire sector of a national economy. According to E.H. Carr this plan was predicated on the idea that the correct formula for the USSR was not 'through collective agriculture to the development of the productive forces', but *vice versa*.⁷ How far this was true will be seen in what follows. The body which was responsible for composing this plan was Zemplán (part of the People's Commissariat of Agriculture), and hence the role of other members of the Conjuncture Institute (part of the People's Commissariat of Finance) in this process was less significant. However, Kondratiev's plan gave an indication of how he believed Soviet agriculture could develop in the 1920s, and dovetailed with some elements of the policy work of the Conjuncture Institute.

The People's Commissariat of Agriculture (NKZem) first approved preparatory work on the plan on 12 June 1922, and by October 1922 the first sketches of the plan had been presented to the Agricultural Section of the State Planning Commission (Gosplan).⁸ The first actual draft of Kondratiev's plan was presented to Gosplan on 17 January 1924, a second draft was completed by 8 July 1924, and in July 1925 Kondratiev presented the third and final draft to Gosplan. The proceedings of the latter were published in *Paths of Agriculture (Puti sel'skogo khozyaistva)* in 1927,⁹ and the second draft was published in *Planned Economy (Planovoe khozyaistvo)* in 1925 (no. 8). In January 1924 the plan focused on the development of agriculture alone, but by June 1924 the forestry element had been added in detail. In July and August 1925 the Presidium of Gosplan discussed the plan in great detail, and counter-proposals were presented by P.I. Popov, V.G. Groman, L.N. Kritsman and others.¹⁰

While this plan is commonly called 'the Kondratiev plan', other economists in NKZem such as N.P. Oganovskii participated fully in its development, and hence any shortcomings which might be revealed cannot solely be attributed to Kondratiev. Jasny related that N.P. Makarov was also involved, and he described the plan as a 'great achievement'.¹¹ During an important period of development of the plan, between June 1924 and January 1925, Kondratiev was actually not in the USSR, and this accounts for the rather long period that elapsed between the second and third drafts. This suggests the possibility that Kondratiev might have lost interest in the plan to some extent after mid-1924, since it was due to begin operating in 1924. Kondratiev might also have paid less attention to planning after 1924 as his interests turned to other areas such as long cycles and export prospects. As the drafts of the plan were presented and discussed in NKZem and Gosplan, various criticisms were put forward by economists such as S.G. Strumilin from Gosplan and P.I. Popov from the Central Statistical Administration (TsSU). In what follows an account of the various drafts of the plan is given, together with some of the general criticisms aired, Kondratiev's response to the critics, and an evaluation of plan fulfilment.

THE GENERAL FEATURES OF KONDRATIEV'S PLAN

The first draft was presented in the agricultural section of Gosplan on 17 January 1924 by Zemplan, the planning agency of the People's Commissariat of Agriculture. Kondratiev stressed that this plan contained not only perspectives which were possible under the influence

of spontaneous factors, but perspectives which were considered expedient from a normative point of view, although the exact weighting of these two approaches was not indicated. Kondratiev began the analysis with an account of the tendencies of Russian agricultural development around the turn of the century. The first such tendency was the overall growth of agriculture. National income from agriculture in 50 provinces of the European part of Russia (without forestry and fishing) grew from 2985 million rubles in 1900 to 3995 million in 1913 (taking into account the growth in prices), or by 33.8 per cent. Population growth in this period was around 19 per cent, but this did not explain all the observed increase in income.¹² According to Kondratiev after excluding the population growth factor income per head increased by not less than 17 per cent. This appears to be an arithmetic error, as in fact it was around 12.5 per cent.¹³ For Kondratiev a significant part of the progress of agriculture must be attributed to improvements in labour productivity. Kondratiev did not make the point, but this period contained the Stolypin reforms of 1906–11.

The second observed tendency was that the growth of various branches of agriculture were unequal. The growth of income to 1913 was 44 per cent for technical cultures, 39 per cent for grains, and 27 per cent for cattle-rearing (*skotovodstva*).¹⁴ The high level of growth in income from cattle-rearing and technical cultures led Kondratiev to the conclusion that the intensification of agriculture was under way. The third tendency highlighted was a growth in differentiation of agriculture in the regions and a growth in the division of labour between them. Kondratiev outlined that the following regional specialisations had developed in Russia: intensive branches and cultures of agriculture were concentrated in the North West, Western and South West regions, and also in Turkestan, Southern Crimea, the Black Sea seaboard and Transcaucasia, and were linked to large urban centres. Extensive branches and cultures were concentrated in the East, the South East, and in the Northern Caucasus.¹⁵ Gatrell confirmed that (for example) in the North West between 1880 and 1900 peasants substituted flax and dairy produce for rye, while the Central Black Earth region missed out on these changes.¹⁶ Lyashchenko suggested that intensification was indeed under way by 1900, as was indicated by the increase in acreage of crops requiring greater capital investment which occurred after this date.¹⁷

The fourth tendency outlined by Kondratiev was the growth in the level of marketability (*tovarnost'*) of agriculture. For example, the percentage of grains transported grew from 27.9 per cent in 1901–05 to 37.4 per cent in 1911–13, for milk products the corresponding figures

were 49.4 per cent and 63.8 per cent. Hence marketability norms had grown over this period. The fifth tendency related to the growth of agricultural exports, which grew from 701 million rubles in 1901-05 to 1126 million in 1911-13, or by 61 per cent. These were the five basic tendencies of Russian agricultural development until the war.

The basic negative feature of Russian agriculture according to Kondratiev was the poverty of agricultural capital, both in terms of equipment and means of production. Capital insufficiency was also apparent in the poor state of the transport network. In the USA there were 41.8 kilometres of railway track per 10 000 people, in the European part of Russia there were only 4.1 kilometres per 10 000 people.¹⁸ Kondratiev's presentation of the prewar period as one containing improvements to labour productivity, marketability, and exports, as well as increased differentiation and intensification suggests he looked upon this period favourably.

Moving on to the period of war and revolution Kondratiev outlined that a reverse in tendencies seen up until the war had been observed. Gross national income from agriculture fell from 6177 million rubles in 1912 to 4634 million in 1920 (in pre-war prices), or by 25 per cent. An important element of this period was agrarian revolution. From a long-term perspective the importance of this agrarian revolution was huge, as it created the preconditions for the development of the agricultural productive forces which were imprisoned within the old land regime. But from a short-term perspective the agrarian revolution undoubtedly assisted the decline of agriculture, fragmenting farms into smaller units. Farms with sown area of one desyatina (1.0925 hectares) or less grew from 59.1 per cent of the total number of farms in 1917 to 74 per cent in 1919.¹⁹ After the introduction of NEP a period of economic restoration began. Important elements of this restoration were the development of regional differentiation and the growth of agricultural marketability. Marketability in the consumer region grew from 6.6 per cent in 1920/21 to 15.3 per cent in 1922/23.²⁰ The causes of this restoration of agriculture were as follows. Firstly, population growth. The agricultural population grew by 3.6 million people from 1920 to 1923, or by 3.5 per cent. Secondly, an increase in specialisation occurred. Thirdly, the restoration of markets provided a stimulus to the growth of agriculture, although market conjuncture was more favourable to the development of intensive cultures than extensive grain crops.²¹

Kondratiev finally turned his attention to the development of agriculture in the future. If past agricultural evolution was founded in deep

and fundamental causes, then it was clear that future development would possess a certain internal inertia, and serious attention should be paid to this factor. The basic features of future Soviet agricultural development as projected by Kondratiev can be summarised as follows. The first tendency was the relative strengthening of intensive cultures and branches of cattle-rearing. This would occur primarily in the North West, the West and the South West regions, and also in Turkestan, the Transcaucasus, the Black Sea region and Southern Crimea.²² Secondly, in the band of regions which supported the process of labour intensification, the role of grain cultures and the extensive system of farms would decline. Thirdly, extensive farms would develop further in the East, the South East, the North Transcaucasian regions and in the Asiatic. Grain producing farms would dominate in the East, South East, the North Transcaucasian and Asiatic regions, and cattle-breeding farms would dominate in Siberia and the Altai region. It is clear from the above that for Kondratiev regional differentiation would be an important element of agricultural development. Gatrell confirmed that (for example) in Siberia before 1913 farmers had mounted a successful campaign of diversification into dairy farming, hence these projections were based on previous developments in particular regions.²³

Kondratiev continued that it was clear that the creation of a raw materials base for industry, increasing the capacity of rural markets, and the absorption of the surplus agricultural population into the workforce presupposed the development of labour intensive branches of agriculture, in particular technical cultures and intensive branches of cattle-rearing. This meant technical and fodder crops, and the labour intensive branches of stock breeding (*zhivotnovodstvo*) such as dairy cattle-raising (*molochnoe skotovodstvo*) and pig breeding (*svinovodstvo*). These types of farm would develop in the North West, the West, the South West, parts of the Central region, Turkestan, parts of Transcaucasia, the Black Sea coast, and the south coast of the Crimea.²⁴ Gatrell confirmed that (for example) by 1916 in the Central Black Earth region the increased use of fodder crops was an important method of sustaining the livestock.²⁵

However, in order to improve export possibilities and to supply domestic industry with raw materials, Kondratiev proposed that the development of extensive farming was required. This encompassed all grain products, especially those high-priced grains for which there was a favourable market conjuncture. The best regions for this were the South, North Caucasus, the South East, the East, parts of Siberia, and Central Asia. However, a one-sided development of only grains on

these farms would be unstable, hence crops such as sunflower, maize, and field-crops should be encouraged, as well as pig breeding in the North Caucasus and cattle-raising in the South East. Finally, in order to supply industry with raw materials from livestock it was necessary to develop cattle farming in the South East regions of Russia like Kirgizia. Since all the above was predicated on regional specialisation, Kondratiev emphasised that differentiation and the development of a division of labour between regions was highly desirable. He also stressed that the accumulation of the necessary agricultural capital could only proceed gradually. The role of conscious intervention by state organs, with the aim of approximating the probable development to the desirable, would need to be considerable if the above tendencies were to be realised.

NUMERICAL EXPRESSION OF PLAN TARGETS

Kondratiev provided the following concrete expressions of the rate of agricultural development, which depended on both spontaneous and rational factors. Of the spontaneous factors four were particularly important: the rate of population growth, the provision of agricultural capital, the influence of markets, and the speed of land restructuring work. Analysis of the actual growth of population showed a yearly rate of 1.6 per cent, which gave over five years a growth of around 8 per cent, or from 103.4 million people to 111.7 million. Especially significant was the supply of working animals. The quantity of working animals had gradually fallen in recent times, only in 1923 was a growth of dairy livestock seen. This growth should continue in future years, but a serious increase should not be expected before 1926. Finally, Kondratiev pointed out that improvements could be brought about by a redistribution of existing livestock between regions. Regions such as Kirgizia and Siberia could afford to give up to 100 000 head of working animals to deficient regions, and this gave a method for increasing agricultural production independent from the natural growth of the animal population.²⁶

The portion of agricultural goods marketed (market turnover) in 1922/23 was 1200 million pre-war rubles, or around 30–32 per cent. Calculations of the speed of restoration of internal markets allowed Kondratiev to predict that by 1928, 2000 million rubles of market turnover of agricultural goods could be achieved. This was around 65–70 per cent of all pre-war market turnover. Table 6.1 shows the numerical perspectives for sown area of field-crop cultivation (*polevodstvo*) as outlined

Table 6.1 Planned sown area targets, 1923 and 1928 (millions of hectares)

Crops	Sown area			
	1923		1928	
Draft	Pre-17 Jan.	17 January	Pre-17 Jan.	17 January
Grains				
Winter rye	26.3	27.4	28.0	30.0
Winter wheat	4.4	4.4	7.1	7.5
Spring rye	0.3		0.4	
Spring wheat	9.9	10.0	21.2	20.2
Oats	10.6	11.0	15.7	20.2
Barley	6.8	7.0	9.2	10.9
Millet	5.9	6.1	4.3	4.8
Buckwheat	2.6	2.7	2.2	2.9
Maize	1.7	1.7	2.5	3.5
Total grains	68.5	70.3	90.6	100.0
Technical & intensive (T & I)				
Bean pods		0.5	1.4	1.6
Oil	2.4	2.1	3.9	3.3
Flax	1.0	0.9	1.6	1.4
Hemp	0.5	0.4	0.8	0.7
Sunflower	2.2	1.7	2.6	2.6
Beetroot	0.3	0.2	0.7	0.5
Fodder grass	0.7	0.8	2.9	2.7
Cotton	0.2	0.2	0.8	0.8
Tobacco			0.1	
Others	2.1	1.3	1.3	1.6
Total T & I	9.4	8.1	16.1	15.2
Total grains + T & I	77.9	78.4	106.7	115.2
Kitchen garden crops	2.6	2.6	3.5	3.5
All total	80.5	81.0	110.2	118.7

Source: columns 1 & 3, Kondratiev, *Perspektivy razvitiya sel'skogo khozyaistva SSSR*, p. 29; columns 2 & 4, RGAE, f. 478, op. 5, d. 3093, l.34. This archive draft includes a correction of 25%. Figures converted from desyatins.

by Kondratiev in the pre-17 January 1924 draft and in the 17 January 1924 draft.

In the pre-17 January draft comparatively modest growth was assumed for rye, almost corresponding with natural population growth, whereas a much higher growth was projected for the high-price grains such as wheat, oats and barley. Intensive and technical cultures were projected to grow overall at a much higher rate than grains. Given the

Table 6.2 Quantity of livestock, 1923 and 1928 (in millions of head)

Livestock Draft	1923		1928	
	Pre-17 Jan.	17 Jan. 1924	Pre-17 Jan.	17 Jan. 1924
Horses				
Working	16.5	16.0	19.0	20.8
One year to working	1.9	2.1	3.0	2.9
Foals	1.7	1.8	2.6	2.7
Total horses	20.1	19.9	24.6	26.4
Cattle				
Bullocks	2.3	2.0	2.8	2.4
Bulls older than 2 years	0.3	0.3	0.8	0.5
Cows	20.2	18.6	23.9	23.2
Cattle over one year	5.4	5.1	10.0	10.1
Calves up to one year	10.4	9.3	14.8	14.7
Total cattle	38.6	35.3	52.3	51.0
Sheep	56.5	45.4	75.5	69.6
Pigs	9.1	8.4	19.9	21.0

Source: columns 1 & 3, Kondratiev, *Perspektivy razvitiya sel'skogo khozyaistva SSSR*, p. 31; columns 2 & 4, RGAE, f. 478, op. 5, d. 3093, 1.35.

need to strengthen cattle-breeding, the rate of growth of seedling grass was especially high. Also projected to grow at a high rate was cotton and sugar-beet, whereas flax and hemp sowing was reduced. Overall, the area of intensive and technical cultures was to rise over the pre-war level by 45.4 per cent.

In terms of percentage composition of crops to be planted, spring wheat was projected to grow the most, from 12.7 per cent of the total in 1923 to 19.9 per cent in 1928, and winter rye to fall the most, from 33.8 per cent to 26.2 per cent. The total percentage of grain was projected to fall from 88.0 per cent to 84.9 per cent of the total, while that of intensive and technical cultures to rise from 12.0 per cent to 15.1 per cent. Table 6.2 shows changes in the quantity of livestock as projected in the Kondratiev plan.

From this table it is clear that in the pre-17 January draft the highest growth was projected for cattle, sheep, and pigs. The growth of horses was given as rather less than either of these categories. In conclusion Kondratiev stressed that no attempt had been made to outline the system of state measures required to achieve the above targets.²⁷ It is noticeable that in this plan Kondratiev projected a relatively modest

growth of both rye and flax. In his writings on export policy Kondratiev stressed the importance of rye exports in 1923 and flax exports in 1926. This suggests that he might have wanted to revise the plan at various points as the international situation changed. Such an approach to planning would be regarded as 'anarchic' by his critics.

While the forestry element of the plan was not its major component, some discussion of the forestry targets given in the plan is necessary. At the presentation of the plan in the Presidium of Gosplan on 4 July 1925 Kondratiev explained that the development of forests was projected to grow from 104.9 million cubic metres in 1923/24 to 142.8 million in 1927/28. Income from forestry was projected to grow from 37 million rubles to 75 million over the same period. However, Kondratiev stressed that these figures were 'undoubtedly cautious and probably minimal', since the development of the concessions policy could provide scope for significant increases. In fact the potential as regards forestry was unlimited.²⁸ This suggests that at least in respect to the forestry element of the plan Kondratiev viewed the targets given as being dependent on the success or failure of policies being pursued in politically sensitive areas like concessions. Kondratiev was deliberately being cautious in case such policies were not successful.

COMPARISON OF PLAN DRAFTS

Table 6.3 shows the various drafts of total sown area in Kondratiev's plan as they developed over time. It should be noted that the three figures given in Table 6.3 for the 17 January 1924 draft are not the appropriately corrected figures for total sown area; in fact they are all a little less than the actual corrected figure. For example the 1923 figure of 67.3 million hectares when subject to a 25 per cent upward correction should become 84.1 million, but the figure given is only 81.0 million. This suggests that either a further revision to the plan occurred when it was being corrected, or that the correction applied to only part of the total sown area figure. Since the sown area figures included technical and intensive cultures such as flax and cotton, the latter is more likely to have been the case. This means that fewer changes may have been made to the drafts of the plan than Table 6.3 initially suggests. Even so, since the question of whether to use corrections or not was important in itself, a draft which added or omitted corrections was still an important alteration.

Comparing the various drafts it is clear that changes in both upward

Table 6.3 Drafts of total sown area (millions of hectares)

<i>Draft of Kondratiev plan</i>	<i>1923</i>	<i>1928</i>	<i>Growth</i>
1st preliminary approximation (before 17 Jan.)	73.5	107.8	46.7%
17 January 1924 (with correction of 20%)	80.4	109.5	36.2%
17 January 1924 (without correction)	67.3	98.9	46.9%
17 January 1924 (with correction of 25%)	81.0	118.7	46.2%
4 July 1925	78.0	106.7	36.8%

Source: row 1 RGAE, f. 4372, op. 10, d. 172, l. 12; row 2 *Perspektivy razvitiya sel'skogo khozyaistva SSSR*, p. 29; row 3 *Osoboe mnenie* vol. 1, p. 326; row 4 RGAE, f. 478, op. 5, d. 3093, l. 34; row 5 *Osoboe mnenie* vol. 1, p. 356 and *Puti sel'skogo khozyaistva*, no. 4, 1925, p. 198.

Notes: Row 1 is an archive draft which appears to have been composed before the presentation of the plan to Gosplan in January 1924, row 2 comes from the original stenographed report which was presented to the agricultural section of Gosplan on 17 January 1924, rows 3 and 4 are taken from the version of the 17 January 1924 meeting in Gosplan which was published in the first edition of *Trudy Zemplana* in 1924, and row 5 comes from the stenographed report of the meeting in Gosplan on 4 July 1925 published in *Puti sel'skogo khozyaistva* in 1925. Row 2 differs from Table 6.1 due to rounding.

and downward directions were considered by Kondratiev and his co-workers as the plan was drafted and discussed by various interested parties. The first archive draft has a rather high level of growth (46.7 per cent) over the five-year period, but the second lowest figure for the 1923 starting-point (73.5 million hectares). Direct comparisons are difficult to make as any corrections included in the first and last drafts are not indicated. Kondratiev's original presentation to Gosplan on 17 January 1924 projected growth of 36.2 per cent in total sown area, but by the time this document was published this target had reached around 46 per cent, perhaps under pressure from external sources such as Gosplan. However, growth fell back to 36.8 per cent by the time of the July 1925 draft, indicating that the experience of the first year or so of the plan suggested a lower overall growth target was more realistic. Jasny related that Groman had criticised Zemplan for not revising the plan targets upwards between the presentation of the second and third drafts of the plan in July 1924 and July 1925.²⁹ The above account suggests that Kondratiev actually reduced overall growth rates during this period, although the initial point of departure for 1923 had been increased from 73.5 million hectares in the first preliminary approximation to 78.0 million hectares in the July 1925 version.

Table 6.4 Drafts of livestock levels
(in %: 1916 = 100)

<i>Draft of Kondratiev plan</i>	<i>1923</i>	<i>1928</i>	<i>Growth</i>
1st preliminary approximation (before 17 Jan.)	60.5	85.1	41%
17 January 1924 (stenograph)	71.9	92.0	28%
17 January 1924 (published)	60.5	85.1	41%
4 July 1925	71.9	92.0	28%

Source: row 1 RGAE, f. 4372, op. 10, d. 172, l. 14; row 2 *Perspektivy razvitiya sel'skogo khozyaistva SSSR*, p. 31; row 3 *Osoboe mnenie* vol. 1, p. 333; row 4 calculated from *Osoboe mnenie* vol. 1, p. 359.

It is also worth comparing the levels of livestock predicted by the various drafts of Kondratiev's plan over the five-year period, as shown in Table 6.4. This table shows that there were only two basic variants considered, a higher growth but lower starting-point option and a lower growth but higher starting-point option; opinion appears to have fluctuated between them on at least two occasions. The fact that a higher initial figure for 1923 was accepted in the July 1925 draft suggests that Kondratiev did recognise that his plan had been in some respects over-fulfilled.

KONDRATIEV'S PLAN AND CORRECTIONS TO GRAIN STATISTICS

S.G. Wheatcroft has established that a 19 per cent upward correction to prewar Russian grain output figures was first advocated by Strumilin in Gosplan in 1924, in order to make the prewar data comparable with post-revolutionary figures.³⁰ This correction was supported by Groman within Gosplan and N.P. Oganovskii from NKZem.³¹ The Zemplan balances presented by Kondratiev and Oganovskii did not make any corrections to the basic data on prewar grain output, implying that Kondratiev was sceptical of the need for corrections. When Kondratiev and Oganovskii compiled an agricultural statistical handbook in 1923, they did not make any corrections to earlier Central Statistical Committee (TsSK) evaluations or to the 1916 census results.³² Early in 1926 the responsibility for determining the level of current grain output was given to a newly formed Expert Soviet, which included Strumilin, Groman and Kondratiev. However, Kondratiev was soon removed from this body, and this marked an increase in power of those in favour of

Table 6.5 Sown area targets for 1928 (millions of hectares)

Culture	1928 Planned targets	
	With correction	Without correction
Grain cultures	100.1	80.1
Intensive & technical	15.3	15.3
Total (+ others)	118.8	98.9

Source: *Osoboe mnenie*, vol. I, pp. 326-8.

centrally-planned industrialisation. Wheatcroft concluded that the 19 per cent correction was adopted by Gosplan in order to increase the scope for rapid industrialisation and the volume of grain surplus that could be marketed, and was not justified by the available data.³³ This implies that Kondratiev's rejection of the correction was based on considerations of factual accuracy, not political positioning.

It appears that various drafts of Kondratiev's plan for agriculture and forestry took different positions as regards the need for corrections for underestimation of sown area. In the version presented to the agricultural section of Gosplan on 17 January 1924, it was noted that a correction of 10 per cent for 1913, 25 per cent for 1922, and 20 per cent for 1923 was used. The Gosplan correction for 1922 of 31 per cent was inappropriate to use, the plan noted, since TsSU data had improved in the later period.³⁴ However, some versions of the plan gave tables with and without corrections. This makes quite a difference to the planned targets, as Table 6.5 shows.

This reveals a total difference of 19.9 million hectares of sown area for 1928, or an extra 20.1 per cent of the uncorrected figure, depending on whether corrections were used. The acceptance of corrections was thus an important issue for plan fulfilment. The fact that both sets of figures were included in some drafts of the plan suggests that Kondratiev was unsure of whether to include corrections or not. Kondratiev himself noted that although the corrections did not change the relationships between cultures, they did alter the overall target figures significantly. He stressed that the corrected figures (for example 100.1 million hectares for grain sown area in 1928) should be viewed as a maximum target, and hence implied that a figure somewhere in between the corrected and non-corrected figure should be seen as more realistic.³⁵ This shows that for Kondratiev such targets were flexible guidelines, not absolute decrees.

CRITICISMS OF THE PLAN

A number of criticisms of Kondratiev's plan were published in various journals such as *Bol'shevik* and *Puti sel'skogo khozyaistva*. For example, in 1924 Ya. Berztys published a critique which articulated a number of common criticisms. Berztys's main criticism was directed towards the link which Kondratiev made between population growth and the division of labour. According to Berztys, Kondratiev argued that with the growth in population density inevitably went a further increase in the division of labour among the population, which occurred above all in the form of differentiation between country and city.³⁶ Berztys asked rhetorically whether this meant that the growth of population caused the division of labour, implying that such an idea was absurd. Against this idea Berztys pointed out that while in Russia before the First World War a fall in the size of the agricultural population led to a fall in agricultural production, in Prussia the same decrease before the war led to the large-scale mechanisation of agriculture and consequently to increased productivity. Berztys also criticised other aspects of Kondratiev's plan, for example that the progress of agriculture in the prewar period could be expressed in five basic tendencies. Berztys pointed out that the established tendencies of evolution between factors was only an empirical fact, from which it was impossible to obtain a fundamental determining cause. Kondratiev had introduced the idea of 'internal inertia' of agriculture to provide a theoretical basis for development, but Berztys was sceptical, comparing this Populist (*narodnik*) idea with the idea of God as used by the philosophical idealists.³⁷ Berztys concluded by stressing that the plan composed by Zemplan indicated the powerful influence of bourgeois agrarian specialists within leading government institutions.³⁸

On 6 July 1924 at a meeting of the agricultural section of Gosplan, P.I. Popov proposed the ultimate criticism of Kondratiev's plan: that it suggested that the progress of agriculture could be achieved only with the development of capitalist relations in the countryside.³⁹ On 9 July Popov expanded on this idea as follows. Kondratiev's suggestion of allowing the leasing (*arenda*) of land and of allowing hired labour to be bought and sold was fundamentally capitalist in spirit, as was his preference for the development of large-scale individual farms.⁴⁰ According to Popov, Kondratiev only paid lip-service to the idea of collectivisation of agriculture, and Popov's criticism of Kondratiev desiring private large-scale agriculture appeared in print in 1926.⁴¹ At the July

1924 meeting Teodorovich sprang to Kondratiev's defence. He pointed out that the plan was not the sole responsibility of Kondratiev, in fact it was the collective work of Zemplan and the opinion of all members of NKZem. Popov's view that the plan entailed the development of capitalism in agriculture was fundamentally wrong. The plan was actually devoted to maximising the development of the means of production in agriculture, which would be achieved partly through cooperative forms of agriculture.⁴² Thus while members of institutions such as TsSU and Gosplan criticised Kondratiev's plan, members of NKZem staunchly defended the plan as a group effort. From this it is clear that as early as 1924 Kondratiev's plan and his general approach to agricultural policy was accused of being 'bourgeois' and alien to Soviet power from institutions hostile to the People's Commissariat of Agriculture (NKZem).

KONDRATIEV'S RESPONSE TO HIS CRITICS

One of Kondratiev's major responses to his critics occurred at a plenary session of the Presidium of Gosplan on 1 August 1925, at which the plan had been exhaustively discussed by P.I. Popov, V.P. Bushinskii, L.N. Kritsman and S.M. Dubrovskii. Kondratiev began his response by thanking all who took part in the discussion for their frankness, and by noting that he would speak equally frankly.⁴³ Kondratiev emphasised that work on the plan had been going on not for months, but for nearly two years, and that over this time the work had been conducted in close contact with Gosplan. The basic features in outline were known to Gosplan before 18 January 1924, when the first NKZem document was presented in the Agricultural Section of Gosplan. Kondratiev quoted Krzhizhanovskii to the effect that the basic direction of the plan was absolutely correct, and noted that the Agricultural Section of Gosplan had fully approved the plan on previous occasions. Turning to Popov's article in *Bol'shevik*, Kondratiev picked out Popov's idea that in specific regions overpopulation did have a place, and pointed out that he spoke of the same idea also. Popov stated that there were two basic methods which could be used in the struggle against overpopulation. The first was the drawing off (*ottyagivanie*) of the rural population from overpopulated regions in connection with the development of industry, the second was increasing the intensity of agriculture. Kondratiev agreed with this, but noted that the construction of

industrial plans was the responsibility of the Supreme Council of the National Economy (VSNKh), not NKZem, and hence his plan should not be criticised for ignoring this area.

If Kondratiev had no principled disagreements with Popov over methods for overcoming overpopulation, then he did differ with Popov over evaluating the significance of intensification. Kondratiev did not accept that intensification was a minor method of overcoming overpopulation, and he valued this method higher than Popov. In fact in the NKZem framework this method had great significance. This was why the plan had a different approach to regional planning than Popov: extensive farms in non-overpopulated regions, intensification in overpopulated regions. Kondratiev then turned to Kritsman's criticisms, which encompassed virtually all aspects of the plan: principles, quantitative expression, arithmetic errors, even typographical problems. On the question of the relative rates of development of industry and agriculture, Kondratiev stressed that he never stated that agriculture and industry must develop at equal tempos, or that there must be a 'mystical harmony' between them. Instead Kondratiev believed that the particularity of the current Soviet economy was the prevalence of agriculture over industry, and that the task must be to increase the weight of industry within the economy. Kondratiev stressed that he did not assert, as Kritsman and Groman claimed, that industry would always grow at a lower rate than agriculture; only that the accumulation of industrial capital was a slow process, and that its acceleration required the growth of agriculture and of agricultural exports. Opponents of the plan deliberately confused these two notions.⁴⁴

Turning to Kritsman's critique of the quantitative expression of the plan, Kondratiev stated that it would always be impossible to give a final, conclusive plan for agricultural development, as any quantitatively expressed targets would inevitably require correction. Kondratiev examined the results of year one of the plan in Table 6.6.

According to Kondratiev, this table showed that for sown area his plan was sufficiently close to reality. The rate of development of total sown area and for sown area of grain almost exactly coincided with the plan, although the rate for intensive and technical cultures somewhat outstripped the plan. Moreover, the target figure for percentage growth was an average yearly figure for all the five years. Actual growth would be higher in the first years of the restoration process and would fall in the later years of the plan. Thus Kondratiev declared his plan to have been 'sufficiently accurate'.⁴⁵ However, Kondratiev admitted that for different cultures deviations from the plan were more significant.

Table 6.6 Growth of sown area of crops (in per cent)

Area	Planned	Actual 1924	Actual 1925	Average 1924-25
Total sown area	7.2	9.2	7.5	8.8
Grain	6.4	7.4	6.2	7.0
Technical & intensive	13.6	19.2	14.3	18.1

Source: Kondratiev, 'Perspektivnyi plan razvitiya sel'skogo i lesnogo khozyaistva: Zaklyuchitel'noe slovo', p. 128. The 1924-25 averages are compound averages.

Table 6.7 Growth of livestock (in per cent)

Category	Planned	Actual 1924	Actual 1925	Average 1924-25
Cattle	7.1	15.4	7.6	12.1
Cows	3.7	6.4	7.8	7.4
Sheep	6.7	20.0	14.6	18.8
Pigs	23.7	84.6	-2.3	40.2
Horses	3.0	2.8	4.0	3.5

Source: Kondratiev, 'Perspektivnyi plan razvitiya sel'skogo i lesnogo khozyaistva: Zaklyuchitel'noe slovo', p. 128. The 1924-25 averages are compound averages.

As regards the development of cattle-breeding, Kondratiev gave the figures shown in Table 6.7, which indicated actual yearly percentage growth compared to planned.

This showed that the actual growth of cattle, sheep, and pigs in 1924 outstripped the plan, although 1925 saw a much reduced rate of actual growth compared with 1924. It is apparent from Tables 6.6 and 6.7 that Kondratiev's plan did consistently (albeit mildly) underestimate the rate of growth of various elements of agriculture, rather than underestimate some elements and overestimate others. The charge brought against the plan by many critics, that it was conservative, did have some basis in reality, although given the extremely volatile situation these relatively small errors were not surprising. Kondratiev accepted very little of the criticisms which were made against the plan by opponents such as Kritsman and Groman. This formally mirrors Kondratiev's attitude to Oparin's criticisms of the long cycle idea examined previously. Kondratiev tried to argue that many of (for example) Popov's criticisms

were not really criticisms at all, since the plan had in fact addressed these issues, rather the critics had simply misunderstood the plan.

Much of the criticism which Kondratiev's plan received focused on the attitude it showed towards differentiation. As late as 1927 Kondratiev was still defending this attitude in terms of principle. In 'On the Question of Rural Differentiation' ('K voprosu o differentsiatsii derevni') Kondratiev asked rhetorically what the causes of differentiation were. He answered:

The basis and general precondition (*predposylka*) of the rural differentiation process is the existence and development of market relations. If market relations exist then we can say that there is a multitude of different concrete causes which are favourable to the rural stratification process.⁴⁶

Kondratiev claimed that if, given the presence of markets, all farms had absolutely the same chances of success in the struggles which arose on markets, then the differentiation process would not occur. However, this equality in chances of success did not exist. If one farm had less land and another more, if one farm had nearby transport links and another not, if one farm had a disaster and another not, then their initial conditions were not equal and they did not have equal chances of success. If a farm had an initial advantage then the existence of market relations allowed this advantage to grow and multiply, and conversely for a disadvantaged farm. Kondratiev went on to link the differentiation process under capitalism to the growth of productivity, the growth of accumulation and marketability, and to the growth of productive forces in general. Thus for Kondratiev differentiation was inevitable and progressive in certain circumstances, and he was prepared to argue this position in mid-1927 just as he had done in his plan during 1924 and 1925.

GOSPLAN'S ATTITUDE TO KONDRATIEV'S PLAN

A plenary session of the Presidium of the State Planning Commission (Gosplan) passed a set of resolutions on Kondratiev's plan on 1 September 1925, affirming the conclusions of the agricultural section of Gosplan. The general principles used in the construction of the plan were acknowledged as being correct, as was the methodology and the conclusions relating to past and future direction. However, Gosplan noted the absence of a causal analysis of the given tendencies, and

declared as 'insufficient' the analysis of current social-economic conditions. The Presidium stressed that although the plan calculated the level of overpopulation in agriculture, it did not solve this question satisfactorily. The plan also failed to give a complete analysis of peasant differentiation. The Presidium certified that the plan was sufficiently correct in its calculation of the rate of development of sown area, it was relatively close as regards to the rate of growth of large cattle, but for small cattle and machinery supply the plan was a significantly undercalculation. Even so, the basic factors of economic policy (prices, domestic and foreign trade, tariff levels, credit and tax policy) were deemed to be correct.⁴⁷

Gosplan proposed to add to the plan: (a) measures for completion of land consolidation work in the basic regions over a ten-year period; and (b) calculation of the necessary credit for this work. Also, having in mind the current deficiencies in land consolidation personnel, it was proposed that NKZem should urgently elaborate a plan for this area. As regards repopulation and colonisation, it was proposed that Zemplan should complete a plan for exploitation of uninhabited regions. The existing plan was correct to pay great attention to those branches and cultures which possessed the greatest degree of marketability and which stimulated accumulation of agricultural capital. However, it was noted that in several areas elements did not correspond with one another; for example fodder requirements and increases in cattle numbers appeared not to match, and the significant role of intensive cultures and the relatively small level of credit given to them appeared not to balance. Hence the Presidium asked NKZem to review the plan with these inconsistencies in mind.

As regards industrialisation and mechanisation of agriculture, the absence of a concrete plan for this was noted, especially in so far as it was a precondition of agricultural intensification.⁴⁸ The method used for the composition of the financial plan – calculation of an overall rate of growth of the state budget and the portion of this to be spent on agriculture – was considered correct. However, further work was needed to clarify certain areas such as agricultural credit, local budgets, and the circulation of funds. Also the distribution of factors over the length of the plan required adjustment, for example to shift the load on the state budget to the middle years of the plan, and to strengthen other sources of income such as local budgets in the later years. In conclusion it was resolved by Gosplan USSR that the plan presented by NKZem RSFSR should be adopted as a first approximation; having found all the above deficiencies, NKZem RSFSR was commissioned to

work together with Gosplan RSFSR on further improvements to the plan.⁴⁹

Although the Presidium of Gosplan certified that much of the NKZem plan was correct, NKZem proposed a series of corrections to the resolutions of the Presidium of Gosplan. Many of these concerned the precise wording of certain passages of criticism, often toning down the severity. For example NKZem pointed out that because the plan was composed in a period of monetary reform, there was not sufficient data on autonomous republics, hence the timidity and lack of detail in some financial aspects of the plan.⁵⁰ NKZem was thus trying to give reasons for why this was so, it was not disagreeing with Gosplan that further work was required. From the above summary of the debate between NKZem and Gosplan it is clear that at this time (autumn 1925) the dialogue between these institutions concerning Kondratiev's agricultural plan was positive and constructive in tone, and that Gosplan appeared genuinely out to improve on the plan rather than to destroy its intellectual foundations. NKZem in turn was receptive to many suggestions for further work, particularly those regarding the need to add extra detail. This contrasts a little with the debates between Kondratiev, Popov, and Kritsman, where the exchanges did become heated and the positions were a little more inflexible.

FULFILMENT OF KONDRATIEV'S PLAN

Vainshtein reported that total sown area for 1925/26 was actually 105.7 million hectares and for 1926/27 it was 112.4 million hectares.⁵¹ He gave the level of livestock for 1925/26 as 76.4 million head and for 1926/27 as 81.7 million head. Vainshtein's sown area figures indicated that Kondratiev's plan was a mildly conservative forecast, as the highest projected figure in all the drafts of Kondratiev's plan for 1928 was 118.9 million hectares and the lowest 98.9 million hectares. Vainshtein's actual livestock figures also suggested that the Kondratiev plan was an underestimate for livestock, being 81.7 million head in 1926/27 against the projected figure for 1928 of either 73.5 million or 79.1 million.⁵² In 1930 Strumilin gave the figures in Table 6.8 for sown area fulfilment levels against the Kondratiev plan targets.

According to Strumilin, these figures showed that Kondratiev's plan was more of a prognosis of existing tendencies rather than a programme of decisive action. However, examination of Strumilin's figures demonstrates that Kondratiev's plan was only slightly overfulfilled in its final year; in 1928 the Kondratiev target was 106.0 million hectares

Table 6.8 Fulfilment according to Strumilin (millions of hectares)

Year	Kondratiev plan	Actual level
1924	85.0	93.7
1925	90.6	100.1
1926	96.2	106.2
1927	101.1	108.6
1928	106.0	109.6

Source: S.G. Strumilin, 'Pervye opyty perspektivnogo planirovaniya', *Izbrannye proizvedeniya* (Moscow, 1963), vol. 2, p. 206.

Table 6.9 Planned and actual horses (millions of head)

Horses draft	1928 Planned		1928 Actual
	Pre-17 Jan.	17 Jan. 1924	
Working	19.0	20.8	23.9
One year to working	3.0	2.9	5.4
Foals	2.6	2.7	3.7
Total horses	24.6	26.4	33.2

Source: column 1, Kondratiev, *Perspektivy razvitiya sel'skogo khozyaistva SSSR*, p. 31; column 2, RGAE, f. 478, op. 5, d. 3093, l.35; column 3, Hunter and Szyrmer, *Faulty Foundations*, p. 103 and Carr and Davies, *Foundations*, vol. 1, no. 2, p. 941.

against the actual level achieved of 109.6 million. This corresponds to a 3 per cent overfulfilment. However, in the early and middle years of the plan the overfulfilment for sown area was noticeably higher. For livestock Strumilin gave an actual figure for 1928 of 79.1 million head, which matches the higher planned figure given by Kondratiev exactly. Strumilin failed to mention that Kondratiev's plan went through a number of drafts, and that one draft had a sown area target for 1928 as high as 118.7 million hectares. On this basis of this figure Kondratiev's plan was underfulfilled.

For Hunter and Szyrmer, a key constraint on agricultural development in the later years of NEP and the beginning of the 1930s was the level of tractive power provided by animals, mainly horses and some oxen.⁵³ Table 6.9 shows the planned level of tractive power provided by horses as given by Kondratiev's plan, and the actual level in 1928 as given by the control figures for 1929/30.

This table suggests that Kondratiev's figures for tractive power were

underestimates of what was actually achieved within NEP. Thus although in the text of his plan Kondratiev described the development of working livestock as 'especially significant', his numerical expression of its significance appears less striking. However, Kondratiev did point out that a more efficient use of the existing livestock supplies was important, suggesting that transfer from surplus to deficit regions should occur.

At this point it is important to raise a question about Kondratiev's intent in composing the plan. How far was the plan meant to show what Kondratiev believed would be possible within the framework of existing Soviet-style agricultural policies, and how far was it meant to show what Kondratiev believed could be achieved if an alternative path of economic development was implemented? The fact that Kondratiev specifically linked forestry targets with the success of the concessions policy suggests that the former was possibly the dominant feature. If this was the case then the mild underestimates can partially be explained as an attempt to deliberately err on the side of caution, given that Kondratiev believed many of the Soviet-style policies being implemented were inappropriate. Of all Kondratiev's major works during NEP the plan was one of the most politically charged projects, and hence some degree of 'political license' should be expected to have been taken.

It is also important to emphasise that Kondratiev did not view planned targets as absolutes. His conception of planning meant that a small revision to the plan which might occur before or even after it was supposed to come into effect was not particularly significant, rather this was within the natural bounds of error in this type of activity. This means that no great significance should be given to the revisions or even fulfilment levels which are identified to have occurred in relation to Kondratiev's 1924-28 plan, or at least less significance than is usually given to the five-year plans which operated in the USSR in the 1930s.⁵⁴ The fetishism of plan targets common after 1930 was something which Kondratiev would have mocked had he been free to do so. This approach was not based on a disregard for numerical accuracy but rather in the philosophical position that the economic future cannot be forecast with precise accuracy.

CONCLUSION

In some ways Kondratiev's attitude to planning was ambiguous. While he was critical of the attempts made by Bolsheviks to design plans for

specific sectors of the economy, he did not dismiss planning entirely; indeed much of his work in the Conjecture Institute was directed towards improving the economists' 'tool-bag' of techniques in this respect. However, in Kondratiev's view the activity of 'planning' should be seen as a close relative of economic forecasting, and hence the type of planning which Kondratiev practised was quite different to that envisaged by Bolsheviks. While this difference was very clear when principles were being debated, it became less obvious when the specifics of a given plan were being examined. Hence disputes over concrete plan targets between members of the Conjecture Institute and Gosplan, which on the face of it were differences over how participants wanted the Soviet economy to develop, where in many cases philosophical disputes about what 'planning' could actually achieve.

While it might appear to be stating the obvious, it is worth stressing that Kondratiev's plan for agriculture and forestry most certainly did not involve collectivisation of the type actually witnessed after 1929. Hunter and Szyrmer believed that in the absence of collectivisation an additional amount of fixed capital of between 34 and 46 billion rubles could have been achieved in the Soviet economy by 1941, a 30-40 per cent increase on the actual level.⁵⁵ What Hunter and Szyrmer did not include in their evaluation of alternatives is the path Kondratiev would have favoured in ideal circumstances, the encouragement of large-scale market-led farming with freedom to hire labour and land. This means that Kondratiev favoured neither collectivisation nor the *status quo*. Kondratiev's plan did not suggest that the state should allow the economy to develop spontaneously. Kondratiev continually stressed that state measures and direct state action would be essential if the desired targets were to be reached. However, the sort of state measures Kondratiev promoted during NEP were really of a type that were common to many capitalist economies: tax reforms, measures to encourage capital development, agricultural credit provision, rural education programmes and so on. Even so the Kondratiev path of development was a regulated market path, not a free market path.⁵⁶

During 1923 and 1924 the caution showed by Kondratiev in respect of agricultural plan targets was really part of consensus view about moderate growth which existed in many departments of Soviet government. It was only in 1925 that this view began to be challenged, and hence it was during 1925 that Kondratiev's plan started to come under fierce criticism. This was led by Strumilin from within Gosplan, and was at least in part an attempt to discredit NKFin so that Gosplan could rise in importance as a policy-making body. Strumilin's counter

to Kondratiev's cautious plan for agriculture and forestry 1924–28 was the control figures for 1925/26; these control figures turned out to be overestimates.⁵⁷ Even so Strumilin's strategy of eclipsing NKFin succeeded admirably. It was such a success that Strumilin himself was eventually eclipsed by more ardent supporters of planning after 1929.⁵⁸

Strumilin was one of the key members of the group involved in preparing the first general five-year plan for 1929–33. In 1927 Kondratiev published his comments on this effort under the title 'Critical Notes on the Plan for Development of the National Economy'. Kondratiev's basic criticism was that the criteria on which the projected targets were calculated were not given:

... the published materials tell us almost nothing of the methods and reasoning by which the targets for the future were described ... they give us no reason why industrial output is going to grow by 69.3% and agricultural by 24.1% ... The published material decrees these figures rather than substantiate them.⁵⁹

The implication of this was that Bolshevik planners had projected these figures because it was what they desired, questions of feasibility being ignored. For Kondratiev the correct method was to begin not with tables of numerical targets, but from an analysis of the basic problems of development. Kondratiev's plan for agriculture and forestry 1924–28 had done exactly this. It had started with a thorough analysis of the recent past, projected these past development into the near future, and only then gone on to give specific numerical targets. For Bolsheviks this method gave too much attention to past regularities, but for Kondratiev it was an inescapable part of any attempt at planning.

7 Kondratiev and Soviet Industrialisation Strategy

There is a whole school of 'liberal' economists in the industrial countries who urge upon the agricultural countries . . . that they should concentrate upon agriculture, and do nothing to advance their industry. The same school also extols the virtues of exporting . . . The follies of this school have their match in Marxist and nationalist dogmas, according to which the road to economic progress lies through concentrating upon industrialisation. In the heat of the passions aroused by these controversies it seems almost cowardly to take the line that the truth is that all sectors should be expanded simultaneously . . .¹

(W. Arthur Lewis, 1955)

While analyses of various aspects of Kondratiev's industrialisation strategy have been given in previous chapters, it is now appropriate to focus primarily on this issue. Kondratiev wrote specifically about Soviet industrialisation on a number of occasions; in an article on the interrelation of industry and agriculture published in 1928, in a report on his trip to America written in 1925, and in a paper on the need for capital improvements in agriculture. The work of other Conjuncture Institute members such as N.N. Shaposhnikov and A.L. Vainshtein was also relevant, but these cannot be examined in full here. In what follows the appropriate Kondratiev works are reviewed, together with a more general comparison of his approach with later writers on this topic such as W.W. Rostow and Alexander Gerschenkron. A short indication of the relevance of Shaposhnikov's work on net present value is also given.

In much historical work on NEP the Kondratiev path of Soviet industrialisation has been unduly ignored. This may have a political justification, in that the possibilities of implementing this path were minimal, but it does not have an economic or theoretical justification, since if the most rational path (from an economic point of view) was the Kondratiev path, then this should be examined in detail. Even if the Kondratiev path was flawed, as many might argue, since the question

of alternatives has played such a prominent part in debates over NEP, the continued neglect of Kondratiev's contribution is unjustified. In what follows an attempt is made to redress this imbalance. It should be stressed that the author has attempted to argue as strongly as possible in support of Kondratiev for scholastic purposes. He does not necessarily believe all the arguments given in favour of Kondratiev, or that Kondratiev was correct on all points. But since no previous work has adopted the Kondratiev perspective, it was thought valuable to try to take this viewpoint as far as was possible. Readers will no doubt come to their own conclusions as to the viability of a Kondratiev path.

KONDRATIEV'S FRAMEWORK FOR INDUSTRIALISATION

Kondratiev's most direct account of industrialisation was given in 'The Interrelation of Industry and Agriculture' ('*Industriya i sel'skoe khozyaistvo v ik vzaimootnoshenii*') of 1928. In this paper Kondratiev presented his views on how the framework for Soviet industrialisation policy should be determined and how the basic elements of industrial and agricultural growth were interrelated. He began by defining industrialisation uncontroversially as the process in which the percentage of industrial production in an economy increased. For Kondratiev every country possessed a definite degree of industrialisation, which defined their position in a 'stages' conception of economic development. Countries in which the portion of industrial production was below one third of total national production, and where the overwhelming part of the population was involved in agriculture, were only beginning to industrialise and could be called agrarian countries.² At the other end of the scale countries in which industrialisation had progressed to an advanced stage and where industrial production occupied more than two thirds of the total were considered developed industrial states. The portion of the population involved in agriculture in these industrial countries was small.

In between these poles, countries in which industrial production occupied between one third and two thirds of the total, and where a large part of the population were agricultural, could be called agrarian-industrial or industrial-agrarian countries, depending on the exact percentage of the population involved in agriculture. According to Kondratiev this schema meant that the USSR was an agrarian-industrial country, since 55.5 per cent of Soviet national income came from agriculture (compared to only 14 per cent in the USA) and the rural population vastly outnumbered the industrial-urban workforce.³ Kondratiev gave

Table 7.1 Relative proportions of national income

Country	Percentage of national income from	
	Agriculture	Industry
USSR (1925/6)	55.5	44.5
RUSSIA (1913)	52.5	47.5
FRANCE (1924)	32.9	67.1
GERMANY (1924)	29.5	70.5
USA (1924)	14.0	76.0
ENGLAND (1924)	7.7	92.3

Source: Kondratiev, *Osoboe mnenie*, vol. 2, p. 352.

the data shown in Table 7.1 as a guide to the relative position of various countries in the industrialisation process.

The main purpose of this article was not simply to categorise countries in respect to the stages of industrial progress, but to examine exactly how industry and agriculture were interrelated in the industrialisation process. Kondratiev explained that in Soviet conditions, with a high level of rural overpopulation, the development of industry depended on the composition and development of agriculture in a number of ways. First, the growth of industry required sufficient labour power, which could only be supplied from the countryside. Second, industrialisation increased the need for agricultural products such as grain, milk, meat and eggs. Since this increased demand could only be satisfied internally, industrialisation required the growth of domestic agricultural production. Third, industrial growth increased demand for agricultural raw materials, which at least in part had to be supplied domestically. Fourth, industrialisation had to be underpinned by an increase in market capacity for industrial goods. Growth in goods markets, in particular in rural areas, was thus a precondition (*predposylka*) of the development of industry. Fifth, the growth of industry required the use of equipment of the highest international standards. For a country which was only at the very first stages of industrialisation, a solution to this problem was not possible without the import of world-class equipment from overseas. In order to supply this equipment:

... the problem of industrialisation ... inevitably leads to the problem of the development of agricultural exports. It is necessary to categorically declare that without a solution to the problem of agricultural exports for a country with low industrial development, the problem of industrialisation is insoluble.⁴

Gosplan had determined the sum needed for imports into the USSR over the next five years as 3.5 milliard rubles. Given that this was unlikely to be provided free of charge, agricultural exports had to cover at least some of this expense.

Kondratiev then turned his attention to the question of the optimal relation between the rates of growth of industry and agriculture, or what might be called the best path of industrialisation for the USSR. He provided four basic criteria by which to measure the optimality of a given path as follows. The first was how far the national economy developed in a crisis-free manner; the second was to maximise the growth of real national income; the third was to obtain the fastest results from the investments chosen; and the fourth was to maximise the number of workers used and hence the application of labour power in the economy. Kondratiev recognised that these criteria would not always fit harmoniously with each other, and went on to provide a detailed account of each one in turn.

As regards the idea of crisis-free development, various preconditions for this were necessary as follows. Firstly, crisis-free development was only possible if the rate of growth of investment in production of means of production corresponded with the level of real savings in the country, both state and private. If a new factory producing machines was built, this would lead to the production of means of consumption only some time in the future. But the wages of those working in the new factory would increase demand immediately, and hence equilibrium would be maintained only if a similar sum as that paid in wages was saved by the population. Suppose that only half the amount was actually saved compared to that spent on wages. The rest of the funds would have to be provided by the printing press, and this would inevitably lead to a disproportion between supply and demand and eventually to a crisis.⁵ Crisis-free development was also only possible if there was an underlying proportion between:

1. the rates of growth of production of means of production and means of consumption;
2. between the development of industry using agricultural raw materials and the production of these raw materials;
3. between the growth of production of means of consumption and agriculture;
4. between the growth of industry and agriculture and the level of necessary imports/exports.

For Kondratiev these were the preconditions required for the crisis-free development of industry.

The second criteria of optimality required the careful selection of those branches of the economy, investment in which gave the largest growth of national income. To invest simultaneously in all branches of industry would result in delays to the growth of national income, as investment would be spread too thinly to yield an adequate return, and hence only those branches which gave the most immediate results should be selected, this being the third criteria of optimality.⁶ Kondratiev explained the fourth criteria of optimality as follows. The more a country was oversaturated with labour and undersupplied with capital, then the more it must aspire to use its abundance in labour power to best effect. This meant investment must be directed at those branches of the economy which were relatively more labour intensive and relatively less capital intensive.⁷

In the fourth criteria of optimality Kondratiev was clearly alluding to the idea of comparative advantage, since relative abundance in labour power was a factor endowment which the USSR could use to positive effect. The basic idea of comparative advantage was that a country would (and should) choose to obtain goods through foreign trade, when a unit of labour applied to exports would produce more goods for home use than that resulting from the application of labour to produce the goods domestically. David Ricardo's theory of comparative advantage was developed by Eli Heckscher and Bertil Ohlin in the interwar period by positing that differences in comparative costs arose due to differences in the relative scarcity of factors of production.⁸ These factors of production could be raw materials, technical knowledge, climatic conditions, quality of land, labour skills, or some other element. As Ohlin explained, each region was best equipped to produce the goods that required large proportions of the factors relatively abundant there.⁹ Kondratiev's idea of using the USSR's relative abundance of labour power and ability to produce low-price grain for export was thus based on the Heckscher-Ohlin version of comparative advantage.¹⁰

It is clear from the above that the real question for Kondratiev was to find the best path of industrialisation for the USSR, given a number of specific constraints. These constraints related to the level of possible exports and the existence of relatively low capital intensity throughout Soviet production. This conception of the industrialisation process was very different to that which eventually triumphed. In the Stalin path absolute growth targets in key areas such as steel production were set, in line with the goal of 'catching up' with advanced capitalist countries and preparing for war, and the other elements of the path had to fall in line with these targets. This meant that 'secondary' areas such as consumer goods industries suffered badly. The concept of 'optimum'

was entirely absent from the Stalin path, as to most Bolsheviks the idea of an 'optimum' in economic theory was closely associated with the 'bourgeois' doctrine of marginal utility. This had been decisively rejected by most strands of Marxist theory after 1870.¹¹

Although Kondratiev did not publish a detailed analysis of industrialisation until 1928, he had been arguing in support of specific points contained in this analysis for some years previous to this. For example in February 1926 Kondratiev presented a paper entitled 'On the Composition of National-Economic Conjunction' to NKZem. Here Kondratiev stressed that the USSR did not currently have the strength to support the speed of development of industry which had occurred in previous years, as full capacity in existing plant had now been reached. To help alleviate the capital famine Kondratiev recommended that resources obtained through foreign trade should be targeted at key branches of industry, and not spread evenly among all branches.¹² Thus Kondratiev had been arguing for the second criteria of optimality well before 1928.

KONDRATIEV AND AGRICULTURAL INDUSTRIALISATION

Kondratiev's view of the need for certain types of improvements to agriculture can be seen in a paper published in 1926 with the title 'Natural Accumulation in Peasant Farms and the Development of the National Economy' ('Natural'noe nakoplenie v krest'yanskoi khozyaistve i razvitiie narodnogo khozyaistva'). The topic of accumulation had been hotly debated by leading Bolshevik theoreticians such as Bukharin and Preobrazhenskii. Preobrazhenskii had proposed the concept of 'primitive socialist accumulation', borrowed from Marx's idea of capitalist accumulation, but Bukharin had criticised this idea for ignoring the laws of exchange between sectors of an economy. However, Kondratiev took a different approach to both Bukharin and Preobrazhenskii. In 'Natural Accumulation in Peasant Farms' Kondratiev argued it was not only the rate of accumulation of capital which was important but also the type and form of accumulation which mattered, as not all forms of accumulation had the same significance for economic development. As regards types of accumulation there was state and private, both of which occurred in the Soviet economy. Forms of accumulation divided into monetary and natural. In the state and industrial sectors of the economy accumulation was predominantly monetary in form, whereas in the agricultural sector, specifically on peasant farms, accumulation was mainly natural in form, and this could be problematic.¹³

There was no doubt according to Kondratiev that in recent years significant accumulation had occurred on peasant farms. In the last three years the quantity of cattle had increased by 24 per cent, the level of grain stocks had risen to around 6.9 million tonnes, and the amount of buildings and equipment had grown to a value of around 1.2 milliard rubles. However, all this had occurred in the form of natural accumulation. Kondratiev proposed that the beneficial effects of this form of accumulation had definite limits. While increases in cattle numbers gave more productive power and increases in grain stocks provided for greater stability, the benefits of accumulation without market methods of exchange and monetised holding of goods were limited. Once these limits were exceeded, such forms of accumulation were no longer beneficial, as they led to the hypertrophy and stagnation of exchange. According to Kondratiev the beginnings of this problem was now visible in the Soviet economy and threatened to hinder future progress.¹⁴

Kondratiev returned to the question of improvements to agriculture in 1928 with an article entitled 'Agrarian Overpopulation and the Level of Development of the Agricultural Productive Forces in the USSR'. In this paper Kondratiev outlined the negative consequences of rural overpopulation. Firstly, overpopulation was directly linked to the fragmentation of farms, which in turn tended to delay improvements in the productivity of agricultural labour. Secondly, since in overpopulated areas the overwhelming part of income from agriculture was expended on necessities, there was little scope for accumulation. And thirdly, overpopulation acted to prevent the growth of net marketability and hence exports.¹⁵ Net marketability in Russian prewar agriculture was 40 per cent, whereas currently it was only 33 per cent. This compared to 60 per cent in the USA and 81 per cent in Germany.¹⁶ Kondratiev called for the struggle against overpopulation to occur through intensification of agriculture, by improving equipment levels, and by reconstructing the technical base of agriculture. He suggested that this could be accomplished through cooperatives and collectivisation of agriculture, which allowed direction on a socialist basis.¹⁷

By 'collectivisation' Kondratiev did not mean anything resembling the forcing of peasants into state-controlled farms such as that seen after 1929. It was possible that this mention of socialist forms of agriculture in 1928 was linked to concerns about the shift away from pro-NEP sentiments after 1926, being designed to improve Kondratiev's standing in the eyes of those gaining ascendancy. If so it was certainly too little too late. Kondratiev's argument about the need for capital investment in agriculture was implicitly an argument for a transition

to large-scale estates, since this size of farm responded most favourably to such investments and yielded the required improvements in labour productivity. Kondratiev's figures on the cereal yield of private and allotment land between 1861 and 1910 were given in *The Grain Market* of 1922. These suggested that yield on private land was around 20 per cent higher than on allotment land (in absolute terms), and had also achieved higher growth in the period specified.¹⁸ Such figures illustrated Kondratiev's loyalties clearly.

KONDRATIEV'S TRIP OVERSEAS AND US INDUSTRIALISATION

Kondratiev presented an official report on his trip overseas at a meeting of the collegium of the People's Commissariat of Agriculture (NKZem) on 25 February 1925, a little over three weeks after his return, where it was discussed by members of NKZem such as A.P. Smirnov and V.I. Senin. In this report Kondratiev gave an indication of how he saw the experience of American industrialisation being relevant to the Soviet situation. Kondratiev emphasised that American farmers saw themselves as agricultural entrepreneurs, balancing profit and loss, and hence were far less conservative than their European counterparts. Basic features of US farming were a high degree of specialisation and a high level of marketability, the latter to such a degree that American farmers could not comprehend any form of economy other than commodity production. Moreover, US farmers always aspired to use capital in its highest technical form. For example on farms engaged in wheat production in Minnesota, labour costs were (on average) 15 per cent of total outlay, land rent was 25 per cent of total outlay, but outlay on capital was 50 per cent of the total.

This meant that US farms were capital-intensive with high levels of labour productivity. However, they had relatively low productivity of land. For example wheat production was (on average) 14.6 bushels per acre in the USA against 31 bushels in Germany. But while US farmers obtained on average less produce per unit of land than farmers in countries like Germany, they received a higher income per unit of labour. This allowed American farmers to produce enough goods to satisfy rural and urban demand, with an added surplus for export. It was this high productivity of agricultural labour which had served as a basis for US economic development since the civil war.¹⁹ To Kondratiev this analysis led naturally to the question of US industrialisation. The industrialisa-

tion of America proceeded at a very fast rate, as the ability of agriculture to provide resources increased dramatically between 1845 and 1890. Kondratiev connected changes in US agriculture to the path of industrialisation pursued as follows.

If after the civil war American industry began to develop at a fast tempo, then the cause of this was not only the easy availability of many natural resources, but also the fact that agriculture had created a base for the development of national industry in America. In the 1820s the agricultural population constituted 87 per cent of all working adults, by the 1870s it was down to 40 per cent, and in 1920 it was only 26 per cent. A huge transfer of population to urban industry had occurred due to the possibility of workers earning higher wages in industry, as well as the attractions of city life such as better educational facilities. Income from farms was on average \$444 per person per year in 1913 against \$723 from industry, a clear incentive to move. For Kondratiev the reverse aspect of the growth of industry was the growth of the domestic market for agricultural goods. Up until 1897 there was a strong growth of agriculture and grain exports, and in this period the beginnings of the development of American industry was seen. The end of the 1890s saw a turning-point (*perelom*), which was characterised by domestic markets growing faster than the evolution of agriculture, which was shedding workers. The export of agricultural goods began to fall, against the export of manufactured goods which began to rise.²⁰ This trend continued into the twentieth century.

Thus according to Kondratiev the US economy had made the switch from a primarily agricultural economy to an industrialised one by first of all becoming a successful exporter of agricultural products. High labour productivity was achieved by heavy investment in agricultural capital, and this was then accompanied by workers migrating to the cities to be employed in the new industries which were developing. The Kondratiev path of industrialisation for the USSR followed this route but applied it to Soviet conditions. A key element emphasised by Kondratiev in the US case was the *sequence* of developments; advances in agricultural development had to (in the main) precede the development of light and heavy industry, as the agricultural population provided both the market for the new industrial goods as well as the labour to produce them. Any industrialisation path which bypassed a period of capital investment in agriculture, or saw this as occurring strictly in parallel with the development of industry, would suffer; in the former case from the lack of domestic purchasing power, in the latter from a fundamental shortage of capital to be invested.

'STAGES' BEFORE AND AFTER KONDRATIEV

Kondratiev's use of a stages view of economic development was not unique. Notable economists from the nineteenth century who made use of a stages conception were Friedrich List, Karl Bucher, Gustav Schmoller and Werner Sombart, members of the German historical school. In his *National System of Political Economy* of 1841, List for example distinguished between five stages of economic development: the savage, the pastoral, the agricultural, the agricultural and manufacturing, and the agricultural, manufacturing, and commercial. He wrote:

The less agriculture has advanced the more external trade has had to do in exchanging the surplus of agricultural products and raw materials of the country for articles manufactured abroad . . .²¹

List recognised that increased agricultural productivity was stimulated by growing demand from the non-agricultural population and by the transfer of more efficient methods of production from manufacturing. However, for List protection of manufacturing could be used to establish new industries.

After the Second World War renewed attention was given to the question of economic development. In *The Stages of Economic Growth* of 1960, W.W. Rostow argued that industrial growth could be divided into five stages: a traditional society; the preconditions for take-off; the take-off; the drive to maturity; and the age of high mass consumption. The take-off was equated with a period of heavy industrialisation, when investment increased from around 5 per cent of national income to 10 per cent or more. Writing of the preconditions for take-off Rostow suggested 'revolutionary changes in agricultural productivity are an essential condition for successful take-off', and that in the period before the take-off 'a revolution in agricultural productivity [must be] at least begun'.²² In more direct language Rostow wrote:

The point is it takes more than industry to industrialise. Industry itself takes time to develop momentum and competitive competence . . . modernization takes a lot of working capital; and a good part of this working capital must come from rapid increases in output achieved by higher productivity in agriculture . . .²³

Rostow stressed that capital imports could help in this process, but these must be paid for with enlarged exports. Increased agricultural production was thus needed for three reasons: to feed the growing population in general, to feed the growing urban regions where industry

was mainly located, and to help meet the foreign exchange bill for capital development. Agriculture also entered the picture from the demand side, as the items of capital needed for increases to agricultural productivity could at least in part be provided by the new industrial sector, and the rising income from agriculture provided an important stimulus to the take-off in the industrial sector.

The question of the optimal allocation of given resources to promote economic growth received much attention from economists in the 1950s and 1960s with respect to developing countries like India and the Philippines. In many respects Kondratiev's work, while unknown to these investigators, was pioneering. For example the idea of using factor-intensity criteria to evaluate investment projects, specifically a low capital-labour ratio as recommended by Kondratiev for the USSR, was investigated in detail. Also, commonly-encountered arguments against the trade patterns produced by market forces were challenged. It was suggested that the market value of the stream of export earnings of a country should be adjusted for the characteristics of demand for exported goods, this demand often being highly volatile. Some argued that even given these characteristics, the corrected returns to exports could be more than that on alternative investments for local consumption. Also the supply of foreign capital for investment might be greater for export production.²⁴ While these sorts of arguments were by no means generally accepted, Kondratiev's industrialisation strategy was edging towards a similar framework as that developed some decades later.²⁵

Kondratiev's view of industrial growth was thus part of a well-established current in economic thought that had its roots in the early nineteenth century. After the Second World War Rostow developed this tradition explicitly as a response to the Soviet model.²⁶ But the first such response had come from Kondratiev in the second half of the 1920s.

SHAPOSHNIKOV AND NET PRESENT VALUE (NPV)

An additional element of the Kondratiev path of industrialisation was provided by Kondratiev's colleague in the Conjecture Institute, N.N. Shaposhnikov. Shaposhnikov's most important article, at least from an industrialisation point of view, was published right at the end of NEP in May 1929 with the seemingly uneventful title 'Concerning the Limits of Reconstruction' ('O predelakh rekonstruktsii'). In this work Shaposhnikov provided a criteria for judging the merits of competing capital investment projects based on the net present value (NPV) concept.

This principle is now at the centre of all textbook analyses of corporate finance, and in theory at least guides the investment decisions of all private companies. Brealey and Myers, authors of the standard textbook *Principles of Corporate Finance*, noted that NPV dated back to the work of Irving Fisher.²⁷ In *The Nature of Capital and Income* of 1906, Fisher had defined capital value as the discounted present value of a future income stream.²⁸ Shaposhnikov's attempt to outline this principle and apply it to Soviet planning decisions can be seen as one of the high-points of Soviet economic theory during NEP.

Shaposhnikov began 'Concerning the Limits of Reconstruction' by noting that in the first five-year plan now under discussion it was proposed that 2.5 milliard rubles should be invested in metallurgy, approximately half being assigned to new construction projects and half to the retooling of existing factories. Shaposhnikov did not doubt that both the creation of new capital and the reconstruction of old capital were required in some combination, but he raised the question of what quantitative criteria was to be used to decide when it was more expedient to reconstruct old capital and when to build new plant.²⁹ In Soviet discussions data on the relative costs of production of building new and rebuilding old factories were compared, this being used as a guide to the relative merits of each option. However, Shaposhnikov implied that this alone was insufficient, as it ignored a fundamental element that should be included in the decision-making process: the cost of capital over time.

Shaposhnikov explained that in a capitalist economy the calculation of the merits of competing investment projects was evaluated by using data obtained from the following set of equations; where A was the product obtained from a project restoring old capital, B was the product obtained from a project building new capital, each separate equation represented one year, and q was the interest rate:

<i>Year</i>	<i>Year</i>	<i>Year</i>	<i>Year</i>	<i>Year</i>	
<i>one</i>	<i>two</i>	<i>three</i>	<i>four</i>	<i>five</i>	<i>Restoring</i>
A	$A/(1 + q)$	$A/(1 + q)^2$			<i>old capital</i>
					<i>Building</i>
		$B/(1 + q)^2$	$B/(1 + q)^3$	$B/(1 + q)^4$	<i>new capital</i>

These equations demonstrated that when comparing the expediency of two competing projects, the products obtained from these projects in years one, two, three and so on had to be compared, taking into account the income which could have been obtained without any investment.

This income was the interest which could have been obtained by holding money.³⁰ In terms given by Brealey and Myers, present value was calculated by discounting future cash flow.³¹ Shaposhnikov described this process as 'capitalisation'. He wrote:

Entrepreneurs compare the relative merits of one or other use of capital by conceiving the capitalisation from a definite percentage of income received... Viewing capital as a source of a definite annuity or rent, they determine the present value (*nastoyashchaya tsennost'*) of this annuity.³²

Shaposhnikov suggested that what was being calculated in this process was a coefficient of transfer from the future to the present, in capitalism this being designated the interest rate. This quantity served as a means by which future projected income could be compared with costs expressed in current terms. Shaposhnikov then represented the outlays expended on capital projects over time in the same way as he represented income, in order that the two could be compared. If X_{rek} was the total income received from reconstructing old capital (adjusted to present value), Y_{rek} was supplementary outlay on this reconstruction, X_{nov} was total income from building new capital (adjusted to present value), Y_{nov} was supplementary outlay on new capital, K_{rek} was the size of capital outlay on reconstruction, and K_{nov} was the size of capital outlay on new capital, then the following condition must hold if reconstructing old capital was to be superior to building new plant:

$$(X_{rek} - Y_{rek})/K_{rek} > (X_{nov} - Y_{nov})/K_{nov}$$

If this condition was reversed, then building new plant would be superior to reconstructing old capital.³³

What was the relevance of this work to the Kondratiev path of industrialisation? Extrapolating Shaposhnikov's idea of using NPV to judge the merits of reconstructing old plant versus building new plant, a way of deciding between competing investment projects in general was found. This was then a rigorous method of fulfilling Kondratiev's second and third criteria of optimality for industrialisation, that the greatest and fastest growth of national income be obtained. Although Kondratiev did not mention Shaposhnikov's work on investment criteria directly, the fact that Shaposhnikov was a key member of the Conjuncture Institute means that Kondratiev must have been aware of it. Also Shaposhnikov's paper was not published until 1929, very close to when the Conjuncture Institute was closed down. However, given Kondratiev's stated interest in finding the optimal path of industrialisation for the

USSR, it is very likely that he would have taken up Shaposhnikov's work in this area after 1929 and applied it to the general question of competing capital investment projects, if he had been free to do so.

KONDRATIEV VERSUS GERSCHENKRON

One of the most famous commentators on the industrial growth of Russia was Alexander Gerschenkron. In works such as *Economic Backwardness in Historical Perspective* of 1962, Gerschenkron put forward his own theory of how 'backward' countries like Russia achieved industrial development. Gerschenkron was critical of people like Rostow who proposed that each stage of industrial progress was a necessary precondition for the next stage, and he disputed that all countries must follow the same sequence of development if industrialisation was to occur:

... it was the traditional view that industrialization cannot take place unless a number of 'necessary prerequisites' have been created. In the case of Russia quite respectable writers used to argue not only that industrialization required the prerequisite of a broad internal market, not only that a large bourgeoisie must first come into being, but that even radical changes in the national character of the Russian people was necessary before industrial development could begin.³⁴

Gerschenkron argued that this view was incorrect, in so far as number of 'substitutes' for the prerequisites of growth could function as replacements for them in certain circumstances.

For example the prerequisite of original accumulation of capital seen in the UK was replaced in Germany by investment banks, and in Russia the state budget had acted as a substitute. In Russia after 1861 industrialisation took place by means of rural demand being replaced by state demand, insufficient labour being replaced by labour-saving technology, improvements to low productivity of agricultural labour being replaced by pressure on the income levels of the peasantry, and indigenous technical knowledge being replaced by imports of technology and personnel. And in the 1890s the Tsarist state used its powers to collect funds from the population through taxation and pass them on to industrial entrepreneurs. Hence for Gerschenkron the Stalin path of industrialisation was based on the logic of substitutes for primary accumulation such as state demand and pressure on rural income.³⁵

A number of criticisms of Gerschenkron's argument from a Kondratiev-

type position are possible. Kondratiev might have responded that the substitutes which could be adopted ignored the need for balance in the economy. Crucially, with what funds were labour-saving technology and skilled personnel imported, and with what funds was the increased level of state demand financed? Where did the purchasing power to provide these substitutes originate? In the Kondratiev path improvements to agricultural productivity and exports of agricultural produce provided the extra resources to finance industrialisation; in a substitutes path, where improvements to agriculture were less of a priority, the source of funding for the necessary substitutes was never precisely explained. A substitutes path may justify itself in certain circumstances by reference to future improvements in performance. But to paraphrase Bukharin, was it feasible for today's factories to be built with tomorrow's bricks? What if future improvements in performance failed to materialise? Reference to increased taxation was also sometimes found as a way to provide funds for the required substitutes. For Kondratiev this inevitably meant that current consumption was reduced, which implied a fall in demand for the new goods being produced, and the problem of balance reappeared.

For Kondratiev, an indicator of the success of Russian industrialisation was provided by the world market. If certain Russian goods were successful on international markets now, this indicated that their production was rational from an economic point of view. Comparative advantage ensured that countries exported those goods which they had a factor endowment advantage in producing. Hence, industrialisation financed through the export of goods on the world market was optimal, in the sense that greatest use was being obtained from Russia's comparative advantage.³⁶ In the Stalin path of industrialisation no check on either the desirability or quality of the goods produced was ever made through an independent mechanism such as the world market. These arguments might have led Kondratiev to the concept of the 'quality of industrialisation'. Not all periods of great acceleration in industrial growth have led to the development of industry that was competitive on the world market. Poor quality industrialisation would likely suffer decimation when state support was withdrawn. Hence, on this argument, only industrialisation conducted in harmony with the world market could provide genuine long-term improvements to a nation's wealth; short-term gains might be made through 'industrialisation in one country', but these gains would collapse when faced with international competition.

A key measure of the success of industrialisation for Kondratiev was improvements to labour productivity. Wheatcroft and Davies related

that by the end of the 1930s, the labour productivity gap between Soviet agriculture and the rest of the economy was even wider than in 1928.³⁷ Collectivisation had led to a drastic decline in livestock, which was a key element of agricultural capital. The irony of this was that collectivisation was Stalin's way of guaranteeing grain supplies from the peasantry, given that his 'substitute' for the primary accumulation of capital was a price policy designed to forcibly extract resources from the peasant sector.³⁸ It should be stressed that Kondratiev never explicitly made the arguments given above against Gerschenkron or substitutes; these have been extrapolated by this author from the various elements of Kondratiev's work examined previously.³⁹

THE KONDRATIEV PATH AND WAR PREPARATIONS

Some people might argue that even if the Stalinist path of industrialisation was very inefficient, the speed of industrialisation which was achieved was crucial, given that in a little over a decade after 1929 the USSR would be at war with Nazi Germany. Stalin had declared that war was inevitable as early as July 1927, although he had accepted that this war could be delayed.⁴⁰ Recent historical work has suggested that overcoming economic backwardness in the shortest possible time was a major criteria for those in charge of the industrialisation programme.⁴¹ Moreover, R.W. Davies has outlined how in the early 1930s a series of external shocks impressed the Soviet political leaders with the urgent need to build a modern armaments industry quickly, as from 1933 onwards the threat of war clearly loomed over the European frontiers of the USSR.⁴² In this context the idea of an 'optimal path of industrialisation' might be irrelevant, as the USSR needed to produce armaments and win the coming war at any cost.

This is a strong argument against the Kondratiev path but various responses to it are possible. Firstly, the war which Stalin said he believed was coming in 1927 – an attack by the combined forces of the imperialist powers on the USSR – was not the one that finally broke out in 1939. Secondly, forced collectivisation did not at least initially assist the speed of industrialisation, since it led to a massive loss of agricultural capital. Thirdly, the prospect of war was partially linked to the fact that the USSR was regarded as politically hostile to Western countries. The widening of NEP required in the Kondratiev path would have led to the easing of diplomatic tensions. And finally, Stalin confused the idea of preparing for war with the choice of industrialisation path. These

were two separate issues. It would have been possible to prepare for war under a market-led industrialisation strategy, although changes to the pure form of this strategy might have been required. If the Kondratiev path was optimal, then it would have yielded the greatest economic benefits. The idea of focusing these results on defence preparations was not excluded from the Kondratiev path. Both Kondratiev and Shaposhnikov explicitly recognised that war industries were to some extent an anomalous case in terms of comparative advantage, since a state could not always rely on foreign equipment to defend itself.

There is no denying that in areas like munitions output and tank and aircraft production, the Soviet achievement in the 1930s was impressive. For example tank production began almost from zero in 1930–1, but by 1939–40 the T-34 tank was being mass produced in very large numbers. Soviet military aircraft were comparable in quality to those of the UK and the USA, and the Soviet ability to produce weapons in large numbers was a major factor in the Allied victory.⁴³ Whether the Kondratiev path could have produced similar results to this is impossible to tell, but certainly major investments in the relevant branches of heavy industry would have been required. It is possible that Kondratiev's concern for economic efficiency so narrowly defined would have made him less responsive to the need for significant investment in industrial branches like steel, and hence that the USSR would have been less prepared for war by 1940. On the other hand, it is also possible that Kondratiev could have avoided such mistakes as locating armaments factories in the Ukraine, these being seized by the invading force in 1941–2, and so prevented the loss of a significant part of Soviet industry. In Kondratiev's defence he was not really given the chance to properly adapt his analysis to the war threat, since he was jailed in 1930. It is not impossible that he would have adequately revised his thinking after this date if he had been free to do so.

CONCLUSION

Every problem is always and invariably more complex than is initially thought, and is also necessarily more subtle and unpredictable than can be accommodated in theoretical description. In this context this means that if the Kondratiev path had been adopted, foreseen and unforeseen problems would have inevitably arisen to complicate the situation further, and new challenges would have needed to be resolved. Perhaps those in charge would have failed in this task, and Russia/the

USSR would be no better off than it is today. Nothing about alternatives in this sense can be known for sure. However, in the opinion of this author criticisms based on later developments cannot rightly be levied against the Kondratiev path, since Kondratiev was not given the chance to respond to these after 1929.

It was suggested in the chapter on economic policy during NEP that the international depression following the Wall Street crash of 1929 would have likely been a big hindrance to the Kondratiev path in economic terms. This is undoubtedly the case, but it might be considered a rather short-term consideration. Kondratiev's analysis of US industrialisation made it clear that the time-scales being considered were not of a short-term nature. Both US and UK industrialisation would have faced similar problems, but had presumably overcome them in the long term. What gave the 1929 problem an extra dimension for the Soviet Union was the possible threat of war. For Stalin this made speed of industrialisation a crucial factor, one that (some might say) Kondratiev ignored. Stalin believed that the use of planning would give the USSR a decisive advantage in the industrialisation process. However, it should be recognised that to Marx the idea of using planning to industrialise would not make sense. Planning was the economic system which would come into being only after capitalism had developed the productive forces to the required degree, only after industrialisation had taken place.

As was already mentioned, perhaps the key difference between the philosophy of the Kondratiev path of industrialisation and that of the actual Stalin path was Kondratiev's recognition that while many different paths might be possible, only one would be optimal. Another key difference was Kondratiev's concern for the 'interrelatedness' of economic development; he consistently pointed out that the development of agriculture was not a luxury which the Soviet state could postpone, but a necessary prerequisite of industrial progress, since industry required agricultural raw materials, agricultural labour power, agricultural purchasing power and agricultural exports. This 'stages' view of industrialisation would be articulated most clearly by W.W. Rostow in the 1950s and 1960s, but Kondratiev was certainly a precursor in this area. Since Rostow knew of Kondratiev's work on long cycles it is not impossible that he had also obtained information about Kondratiev's approach to industrialisation. It is even possible that Kondratiev's approach to long cycles 'carried' a stages view of industrial progress embedded within it, although no direct evidence of this was found.

Kondratiev's trip to the USA gave him direct experience of the

American system of agriculture, in particular how the US system of farming had contributed to the industrialisation of America. In areas like the provision of credit to agriculture and the necessity of improving the productivity of agricultural labour, Kondratiev was concerned to directly apply this experience to the USSR. As will be seen in the next chapter, he was given very little chance to do so.

8 Kondratiev in the 1930s

Prison . . . has put an end to my scientific work, and put a stop to it at the most critical and interesting time; the years are passing and my scientific plans are disintegrating and being scattered like sand.

(Kondratiev, 26 May 1932)¹

The following chapter examines the demise of the Conjunction Institute between 1928 and 1930, the campaign against *Kondrat'evshchina* at the end of the 1920s, Kondratiev's arrest and interrogation in 1930–31, the Menshevik trial, Kondratiev's writings while in jail between 1930 and 1938 (including the letters to his wife), and the fate of other Conjunction Institute members after Kondratiev's arrest. Sources are still somewhat restricted in this area, so further revelations may change some of the details of this account, although are unlikely to alter the basic outline of the narrative. The story of Kondratiev's imprisonment and eventual fate is certainly a sad tale to tell. However, the fact that Kondratiev still continued working in such terrible conditions is a testament to the power of his vision of what Russian conjunctural economics might become. Alexander Solzhenitsyn described the campaign waged against Kondratiev by the Soviet regime as painting him as a 'future Prime Minister'.² Kondratiev was certainly a key player in any opposition that might have developed after 1928, one that Stalin felt was absolutely necessary to discredit.

KONDRATIEV'S ARREST AND THE CLOSURE OF THE INSTITUTE

On 2 May 1928 Kondratiev was officially dismissed from his own creation within the People's Commissariat of Finance (NKFin) 'for introducing ideology alien to Soviet policy into his work'.³ Other leading members of the Conjunction Institute such as Vainshtein were also dismissed soon after. On 8 May 1928 at the Council of People's Commissars (SNK) a resolution was passed transferring the Conjunction Institute from NKFin USSR to the Central Statistical Administration (TsSU), which took effect on 15 May. On 5 June SNK adopted a resolution 'On the organisation of conjunctural statistics in the USSR', which

purportedly aimed to create greater unity and to eliminate parallel activity in the field of conjunctural observation: the organisation, collection, and elaboration of conjunctural statistics was to occur exclusively through TsSU.⁴

It is revealing that when the Conjuncture Institute was actually transferred from NKFin to TsSU on 16 July 1928, I.N. Leontiev remained as deputy director, but in a document reporting this event a blank space was found next to the post of director, Ignatiev's name had been crossed out as manager of the section on indices and prices, and of the three senior consultant posts the two occupied previously by Vainshtein and Shaposhnikov were declared 'vacant'.⁵ A purge of key members of the Conjuncture Institute had clearly occurred during the transfer from NKFin to TsSU in July 1928. However, Slutskii and Konyus remained as members of the transferred Conjuncture Institute, as did Chetverikov, Gerchuk, Rainov and Zhirkovich. Altogether 42 staff remained after the transfer, suggesting that a few 'high profile' members of the Conjuncture Institute were seen as more dangerous politically than the general membership. A small number of Conjuncture Institute members such as Ozerov remained in NKFin rather than be transferred to TsSU.⁶

At the end of 1929 the Conjuncture Institute within TsSU was finally liquidated, and the place of the Conjuncture Institute within NKFin was taken by a seventeen-person Bureau of Financial Conjuncture. Kondratiev proceeded to work in the Timiryazev Institute of Agricultural Economy for a short time during 1929, but by this time his days were numbered. The momentum of the witch-hunt against Kondratiev accelerated rapidly after the November 1929 Plenum of the Central Committee of the Communist Party (TsK VKP(B)), at which a resolution was passed to support the necessity of strengthening the cadre of Marxist economists. At the First All-Union Conference of Agrarian-Marxists held towards the end of December, the struggle against *Kondrat'evshchina* was declared as one of the basic goals of Marxist agrarians.⁷ It was during December 1929 that the Politburo approved the programme for the full-scale collectivisation of Soviet agriculture.

Following the campaign against him Kondratiev was finally arrested on 19 June 1930, his arrest being followed by the banishment of some leading Conjuncture Institute members.⁸ After Kondratiev's arrest the propaganda campaign against him continued to developed dramatically. This campaign was in full-swing in major newspapers and journals by the end of 1930, when for example an article with the heading 'Work on Creation of a Minimal Five-Year Plan' in the newspaper *Izvestiya* labelled the 'Kondratiev-Chayanov group' as counter-revolutionary.⁹

This was perhaps the most serious political charge that could be brought against someone in the USSR at this time.

KONDRATIEV'S INTERROGATION

After being arrested in June, Kondratiev was interrogated by Ya.S. Agranov a number of times during the months of August, September, and October 1930. The statements which Kondratiev gave through this process remained in the Committee for State Security (KGB) archives until they were published in 1993, although no indication was given in these documents of the pressure that might have been applied to Kondratiev to make him confess to the 'crimes' which were alleged. Efimkin described Kondratiev's interrogator Agranov as 'one of the most feared Sadists in the Lubyanka'.¹⁰ One of the basic aims of the interrogation was to force Kondratiev to admit that a counter-revolutionary political organisation called the Labouring Peasants Party (TKP) had existed. In reality no such political party had ever been in existence, although Kondratiev had benefited from connection to a network of like-minded politicians and economists. It was this network that was transformed by the Soviet authorities into the TKP. The statements made by Kondratiev during his interrogation imply that the TKP did exist; Kondratiev was in no position to deny its reality given the powers held by his interrogators.

In the first interrogation session on 4 August, Kondratiev outlined the general programme of the Labouring Peasants Party (TKP), which included support for the principle of free choice of form of land use and type of farm for peasants. The TKP desired a partial denationalisation of industry, with small firms being placed in the hands of cooperatives and private capitalists, while the fundamental branches of heavy industry such as metallurgy and military production were to remain under state control. The monopoly of foreign trade was gradually to be abolished, a minimum wage was to be established, and the right to trade union organisation was to be given. In political terms the TKP supported the idea of a federal democratic republic based on the two most important classes – workers and peasants. Most political parties would be legalised, although extreme reactionary and anti-state parties would be excluded from the political process. Foreign policy would be geared to attracting foreign capital and overseas credits.¹¹

On 16 September Kondratiev answered the charge of 'sabotage' which had been levied at the TKP. Kondratiev responded by distinguishing

between technical and political sabotage. He stated that it was absolutely indisputable that the TKP did not ever participate in technical sabotage, that being the disruption of material supplies, deliberate defects being inserted into plans, the disruption of institutions such as collective farms (*kolkhoz*), and the destabilisation of the currency. However, it was true that the TKP desired the partial denationalisation of industry, it wanted the relative weakening of the socialist and the strengthening of the capitalist elements in the Soviet economy, and in this sense the TKP did participate in political sabotage activities.

Kondratiev admitted that the TKP was a criminal political party which was devoted to a struggle of world-views with the VKP(B), a battle which involved an ideological clash of opinions rather than any physical acts of wrecking of the economy. However, he suggested that if this type of political activity could be legitimately called sabotage, then the right wing of the VKP(B) was also guilty.¹² On 4 October 1930 Kondratiev discussed the mechanisms of influence of the TKP on economic organs within the USSR. Kondratiev explained that the influence of the TKP occurred through individual communists of the right orientation. For example A.I. Rykov, M.I. Kalinin, G.Ya. Sokol'nikov, I.A. Teodorovich, N.I. Bukharin, A.P. Smirnov and many others supported the rightist position in general, although these people were not necessarily actual members of any rightist organisations. The only concrete example given by Kondratiev of the mechanism of influence of the TKP was that Rykov's secretary had once approached the Conjunction Institute for statistical materials. He also admitted to meeting Kalinin on one occasion, where information about the political position in the USSR had been exchanged.¹³

Kondratiev concluded his 'confession' by admitting that the ideology of the TKP was absolutely incompatible with that of the VKP(B), and that the TKP aspired to overturn the line of economic policy established at the XV Congress: in this sense its activities were counter-revolutionary. However, Kondratiev again stressed that the TKP was never involved in technical sabotage activities or physical wrecking of the economy in any sense.¹⁴ It is apparent that while these interrogations provided some of the ammunition the regime desired for its campaign against *Kondrat' evshchina*, Kondratiev's careful concern to stress that the TKP was only ever involved in strictly political activities suggests that he was not prepared to totally pervert the truth no matter what the authorities were threatening.

Stalin took a keen personal interest in the arrest and trial proceedings relating to Kondratiev and the TKP. In a letter to V.M. Molotov dated

2 August 1930, Stalin recommended that the testimonies of Kondratiev and Groman should be sent to all the members of the Central Committee, calling them 'documents of primary importance'.¹⁵ A few days later Stalin wrote of the "'government" of Kondratiev-Groman', and urged that the investigation into Kondratiev must be continued 'very thoroughly and without haste'.¹⁶ Stalin speculated that a direct connection between Kondratiev/Groman and right-wing communists such as Bukharin and Rykov would eventually be discovered, this link operating through Sokol'nikov (the People's Commissar of Finance until 1926) and Teodorovich. Stalin also wrote in a letter to Molotov that it was now clear that the execution of Kondratiev, Yurovskii, and other leading 'economist-soundrels' was absolutely necessary, together with a purge of NKFin and the State Bank (Gosbank) and the execution of numerous saboteurs.¹⁷ Given such an attitude from Stalin it is surprising that Kondratiev survived for as long as he did after his arrest.

As well as plotting to restore capitalism, Kondratiev was even accused in some publications of developing a plan of support for the 'generals of counter-revolution' such as A.I. Denikin and A.V. Kolchak, and hence of aiding the White Army during the Civil War.¹⁸ Accusations relating to Kondratiev's activities before NEP appear not to have been discussed during the interrogation in 1930.

THE MENSHEVIK TRIAL

Naum Jasny related that Kondratiev was the 'star witness' at the Menshevik show trial of 1-8 March 1931, in which 14 economists and economic administrators were accused of traitorous activities. Among the 14 were V.G. Groman, I.I. Rubin and A.Yu. Finn-Enotaevsky. Kondratiev was scheduled to be a defendant in the proposed trial of the 'counter-revolutionary kulak-Socialist Revolutionary organisation Kondratiev-Chayanov' which was to follow the Menshevik affair, but this trial never took place.¹⁹ In the Menshevik trial the defendants were accused of various types of wrecking and sabotage activities, such as preparing absurdly low plan targets and of delivering conjunctural reports which confused the leading authorities (!). Kondratiev was alleged to be the leader of the neo-narodnik Labouring Peasant Party (TKP), which according to the trial documents had formed an alliance with the Mensheviks in 1929. Other leading members of the TKP were alleged to be Chayanov, Makarov and Yurovskii, and in total the TKP was supposed to have around 200 000 members.²⁰

Kondratiev testified that the Menshevik-TKP alliance was dedicated to forcing the liberalisation of economic relations, the compensation of capitalists and the establishment of a bourgeois-democratic republic, and the securing of external support in the form of foreign intervention.²¹ Jasny's judgement on the allegation of favouring intervention was that he could not believe that Groman or Kondratiev were in favour of intervention themselves, still less that they formed an organisation to promote this goal. Jasny had met Kondratiev personally some time before 1917 and knew Groman very well, and hence his judgement should be respected.

At the end of the Menshevik trial Groman was sentenced to ten years imprisonment and the other defendants also received jail sentences ranging from five to ten years. Kondratiev had been in jail for at least eight or nine months before the Menshevik trial, ample time for the authorities to 'persuade' him to testify as they wished. Kondratiev was regarded by the prosecutors as being one of the most right-wing of those arrested at this time, being bracketed with Litoshenko as a 'crazy counter-revolutionary'. Jasny judged that at the Menshevik trial Kondratiev's testimony amounted to a full capitulation. Kondratiev testified that after thinking the situation over (that is after spending many months in jail), he now thought that his previous political position was criminal. He had come to accept not only Stalin's general line, but also the formula of the annihilation of the *kulaks* as a class. However, Jasny also suggested that Kondratiev was not anxious to mention the names of other members of the TKP, and noted the courtesy with which he referred to many of the defendants. Although the substance of Kondratiev's testimony appears no less damaging than the testimony of some other witnesses, Jasny concluded that he was 'less completely broken' than most of the defendants in the Menshevik trial.²²

THE CAMPAIGN AGAINST *KONDRAT'EVSHCHINA*

Concomitant with Kondratiev's arrest went a coordinated programme designed to vilify Kondratiev and the Conjuncture Institute in the press. A prime example of the type of material produced in this respect was *Kondrat'evshchina* of 1930, which was a collection of articles devoted to exposing the 'counter-revolutionary organisation of Kondratiev, Chayanov, Groman, Sukhanov and Makarov', this group being the 'remnants of a petty bourgeois party' who were 'attempting a bourgeois restoration'.²³ The various contributors to this volume focused on topics

such as counter-revolutionary wrecking in agriculture, the tactics of the *Kondrat'evshchiny*, *Kondrat'evshchina* and the right wing, and *Kondrat'evshchina* in Belorussia. In this collection Kondratiev was described as one of the main agents of international capitalism within the USSR. The Conjunction Institute was described as an organisation of *Kondrat'evshchina* directly linked to foreign bourgeois institutions, to which it passed information about the internal position of the USSR. The bulletin of the Conjunction Institute was circulated to all bourgeois economic organs, and it informed the foreign bourgeoisie about the current position of Soviet credit institutions, developments in foreign trade policy, and many other important economic issues.²⁴ According to the authors of *Kondrat'evshchina* while studying the economies of foreign states, Kondratiev and the Conjunction Institute deliberately ignored the shocks which characterised postwar capitalism, and this material served to disarm socialist arguments showing the growth of crises in capitalism throughout the world.²⁵

The influence of *Kondrat'evshchina* among specialists was said to have been very great. In a series of economic organs such as NKFin, NKZem, Gosplan and VSNKh, through the journals *Planned Economy* (*Planovoe khozyaistvo*) and *Socialist Economy* (*Sotsialisticheskoe khozyaistvo*), and in various institutes such as the Institute of Agricultural Economy, *Kondrat'evshchina* was said to have held strong influence.²⁶ Kondratiev was alleged to have viewed capitalists as a progressive class, held the same view on the interrelation of industry and agriculture as Bukharin, and opposed key policies such as the nationalisation of the land and the monopoly of foreign trade. As regards capital investment targets, Kondratiev was charged with advocating a reduction of capital investment in industry and increased investment in agriculture. The total capital investment target given by Kondratiev and Makarov for the five-year period 1927–32 was said to be 3.194 milliard rubles, against the figure of 10 milliard for the first three years of the current five-year plan (1929–33). In only one year of the current plan – 1931 – more investment was planned to occur in agriculture than proposed in the entire period of Kondratiev's 1927–32 plan.²⁷ And whereas the Kondratiev plan forecast the production of 19 000 tractors over five years, the current plan proposed the creation of 100 000 tractors in the same period. Finally the social basis for *Kondrat'evshchina* inside the USSR was said to be the *kulaks* and the *Nepmen*, and on the international stage it was clearly the ruling classes of particular states.

These accusations against Kondratiev and the Conjunction Institute show how seriously the Soviet leadership took this group of economists

in 1930. Although the political leadership of any right-wing opposition which hoped to gain ascendancy towards the end of the 1920s lay outside the Conjuncture Institute, this group of economists would have made up a substantial and key part of the 'economic brain' of such a rightist grouping, together with NKFin economists such as Yurovskii and NKZem members such as Makarov. The destruction of the Conjuncture Institute can thus be seen as an important step in preventing any chance of a right turn, even though the right opposition in political terms had been defeated before 1930. The complete discrediting of Kondratiev-type ideas was an important motive for the campaign against *Kondrat' evshchina* waged by the Soviet leadership in 1930, as witnessed by Stalin's concern that copies of Kondratiev's repentant testimony should be distributed amongst Central Committee members.

Kondratiev was finally convicted of '*kulak*-professor' crimes by the collegium of OGPU (the Unified State Political Administration) at the beginning of 1932, and he was sentenced to eight years in prison. The matter of 'the Kondratiev group', which included Makarov, Yurovskii and Chayanov, was discussed by the Politburo on three separate occasions during January 1932. On 16 January, Stalin directed that OGPU be entrusted with the completion of the case against the Kondratiev group, on 23 January OGPU was permitted to judge this grouping, and on 28 January the sentence of not more than eight years was confirmed.²⁸ The fact that Stalin himself referred to this grouping as 'the Kondratiev group' suggested that he believed Kondratiev to be the most important member. In the minutes of the 28 January Politburo session the phrase Labouring Peasants Party was placed in quotation marks, possibly indicating that in top secret sessions of the Politburo it was acknowledged to be a fictitious creation.²⁹

In February 1932 Kondratiev was banished to Suzdal, where he was accommodated in the Spaso-Evfimiev monastery. In the following few years he wrote many letters to his wife and some academic work, much of which has survived. However, the strain of separation from his family and the general conditions of his imprisonment wore heavily on Kondratiev, and led to a nervous breakdown in 1935 and to many physical illnesses. In June 1935 Kondratiev returned to Moscow for recuperation in a prison hospital, but he was sent back to Suzdal in April 1936. After this time the authorities refused him ink and many of his later letters were written in pencil. His health was failing badly at this time, and by March 1938 he could hardly stand without assistance. On 17 September 1938 the Military collegium issued Kondratiev with a new jail sentence – ten years without the right to correspond with

the outside world: this phrase was code for a death sentence, and Kondratiev was executed on the same day it was issued.³⁰ Other alleged members of the TKP such as Chayanov and Yurovskii were also executed at this time. Kondratiev was not rehabilitated in the USSR until 16 July 1987, nearly 50 years after his death. However, many of the leading members of Conjecture Institute survived the purges of 1937–38 to become respected Soviet economists in the 1960s. Vainshtein, Konyus, Oparin, Rainov, Gerchuk and others re-surfaced in the USSR after Stalin's death in 1953, following a long period in political exile, while Slutskii died of natural causes in 1948. It appears that Kondratiev was the only member of the Conjecture Institute who was actually executed.

KONDRATIEV'S LETTERS TO HIS WIFE

Reading the letters Kondratiev sent to his wife while in jail it becomes abundantly clear how desolate Kondratiev must have felt in the last eight years of his life, and how desperately he missed his wife and family. The following selective summary attempts to give the flavour of these letters. On being transferred to Suzdal Kondratiev was held in solitary confinement (*izolyator*), although he was sometimes allowed to roam the grounds of the monastery and was very occasionally allowed visitors. On 17 February 1932 he described his jail with some irony as being 'very well-equipped and a cultured place', which was in keeping with the 'socialist character' of his confinement.³¹ The cell was spacious and warm, and the food was very good, 'little short of home cooking'. On 25 February he described his daily routine as consisting of exercises first, then tea, work and a short walk. After lunch work began again, followed by another walk. In the evenings he sometimes played chess, and then bed. The cycle was repeated the following day.

However, the irony soon gave way to resentment. On 10 March 1932 Kondratiev was complaining about the lack of necessary books and communications which were preventing him from working. He wrote that if these conditions were to continue, by the end of the sentence he would have lost all his intellectual abilities. By the spring of 1932 he was writing to OGPU asking for books and materials, and on 20 May 1932 he explained that he was sleeping very badly and his head was feeling clouded.³² He asked for copies of the USSR Criminal Code and the Soviet Constitution, and described his situation as 'intolerable' and his daily life as monotonous. By mid-1933 motivation had become a problem, Kondratiev writing that he increasingly wondered why he

should continue to work on probability, mathematics and so on given his probable fate. But he answered this question by admitting that he might go out of his mind without such an interest. On 12 May 1933 he related that 'mathematics fascinates me more and more', describing it as 'pure intellectual pleasure'.³³

On 1 June 1933 he wrote that his heart was gradually turning to stone, noting that it was only with extreme difficulty that he was able to prevent himself from (literally) banging his head against a brick wall. On 18 August 1933 Kondratiev wrote to M.I. Kalinin about his plight and this letter was passed on to the Central Executive Committee (TsIK), but nothing came of this protest. On 28 November 1933 Kondratiev found out that his father had died and his brother was seriously ill; a few days before learning this he had dreamt of his father lying in a white coffin.³⁴ At the beginning of 1934 he began to turn to the idea of fate to explain his predicament, although he was momentarily cheered by chocolate and cakes sent from his wife for his birthday in March 1934. On 12 September 1934 Kondratiev described his prison existence as 'slowly but surely cold-bloodedly killing me'.³⁵

Sometimes in the letters Kondratiev would discuss scholarly matters. For example on 21 March 1934 he wrote to Evgeniya mentioning Irving Fisher, describing him as a 'very significant world figure'.³⁶ A few weeks later, on 11 April 1934, Kondratiev thanked Evgeniya for sending a summary of an article by Fisher, who he this time described as 'one of the most authoritative and brilliant economists of our time'. Kondratiev was pleased that Fisher had cited his work as contributing to economic science; this was not simply out of courtesy arising from their meeting at a conference in Chicago.³⁷ In a letter dated 15 August 1934 Kondratiev noted that Fisher had given his work an even more positive review than Wesley Mitchell.³⁸ Here Kondratiev also gave a list of what he believed were his most important works (which did not include the 1925 paper on long cycles), and tried to demonstrate how important his work had been in the international arena by listing the journals which he had appeared in as well as the economists he had influenced. He even tried to enlist Stalin's support by pointing out that in a speech to a conference of Agrarian-Marxists, Stalin had promoted the topic of the dynamics of expanded reproduction, something which Kondratiev had investigated extensively.³⁹ The tone of this letter suggests that Kondratiev still believed that the authorities might release him at some point in the not too distant future.

After 1934 Kondratiev's condition took a turn for the worse both in a physical and political sense. Kondratiev's sister Mashutka and her

husband were removed from their jobs because of their association with the heretic economist, implying that in the outside world Kondratiev's 'crimes' were still growing in importance. By 1936 Kondratiev's health had declined dramatically, and he was suffering from a number of quite serious problems such as arteriosclerosis, rheumatism of the legs, functional derangement of the nervous system, and poor eyesight and hearing. Even so in 1935 Kondratiev provided a list of recommended reading for his daughter which included Jules Verne, Pushkin, Gogol, Tolstoy and Thackeray, and in this year he began thinking about applying for early release. By 1937 Kondratiev's health was so bad that he was transferred to a hospital for six months, where his health improved marginally. This was his second period of recuperation, the first being in 1935–36.

On his return to Suzdal he began actively petitioning for his release. In a document sent to the People's Commissariat of Internal Affairs (NKVD) he tried to appeal to the good judgement of his captors, pointing out that article 127 of the Stalin constitution of December 1936 guaranteed the inviolability of all citizens of the USSR. He catalogued in detail the illnesses which had afflicted him over the last four and a half years, and praised the 'Lenin–Stalin path' as the path of all the Soviet nation. He described Stalin as the 'leader of the nation', and accepted that serving the socialist homeland was the highest duty of every Soviet citizen.⁴⁰ However this repentance did him no good whatsoever, and on 31 August 1938, less than three weeks before his execution, Kondratiev wrote that in his life nothing was changing.⁴¹ On 17 September 1938 the Military collegium of the Supreme Court of the USSR sentenced him to death.⁴²

Whether Kondratiev was informed at any point about his impending fate it is impossible to judge. Many of the letters give the impression that he actually believed he would eventually be released, and also suggest that he failed to understand the true horrors which the regime was routinely carrying out by this time. He appears to have genuinely hoped that an appeal to his captors based on his poor health, some type of repentance, and his academic record would sway them to release him out of kindness. But throughout his imprisonment he never made anything more than a token gesture to hide the fact that his economic views remained constant, and hence in Stalinist terms he was still a danger. Perhaps it was simply impossible for Kondratiev to pretend to support the Stalin line in any genuine and prolonged manner. While Kondratiev's judgement on scholarly matters can rarely be faulted, his assessment of the dangers of holding divergent political opinions in

Stalin's USSR appears to have been rather inadequate: between 1 October 1936 and 30 September 1938 the Military collegium of the Supreme Court of the USSR sentenced 30 514 people to execution directly.⁴³ Estimates range for the actual number of executions performed during 1937 and 1938 from 680 000 people up to as much as one million. Kondratiev was thus one among hundreds of thousands who paid the ultimate price for their oppositional views.

THE FATE OF OTHER CONJUNCTURE INSTITUTE MEMBERS

Many Conuncture Institute members such as Vainshtein, Leontiev, Ozerov, Gerchuk, Zhirkovich, Chetverikov and Shprink were arrested at the beginning of 1930 and sent to the Gulag.⁴⁴ In a letter dated 18 December 1929 Vainshtein had published a statement officially renouncing his previous views and declaring support for collectivisation, but this did not prevent him from being arrested.⁴⁵ As it is known for certain that at least four members of the Conuncture Institute – Vainshtein, Konyus, Chetverikov and Gerchuk – resurfaced in the USSR in the 1950s, it is likely that many or possibly even all the arrested Conuncture Institute members survived their periods of exile, apart of course from the director. Efimkin described the survival of these economists until the Khrushchev thaw as 'miraculous', although he pointed out that they were prevented from discussing all aspects of their work completed in the 1920s until the 1960s.⁴⁶ Vainshtein went on to publish important studies of Soviet national income, and together with other Conuncture Institute members such as Gerchuk was an important influence on the mathematical school of Soviet economics which developed in the 1950s and 1960s. While no formal mention was ever made of the link to Kondratiev, everyone would have known where Vainshtein first worked, and Vainshtein even spoke about his links with Kondratiev to foreign visitors.⁴⁷ D.I. Oparin, Kondratiev's main critic within the Conuncture Institute on long cycles, also survived the 1930s. One of his publications was even translated into English in the 1960s under the title *Multi-Sector Economic Accounts*.

CONCLUSION

Kondratiev's treatment at the hands of Stalin's lieutenants is one of the most tragic stories ever told about a famous economist. Irving Fisher

may have lost much of his personal wealth in the Wall Street crash of 1929, but Kondratiev lost his liberty and eventually his life in the Stalin 'collectivisation crash' of 1929. The Stalin regime was certainly egalitarian in that it applied a similar level of deprivation to great scholars in the 1930s as it did to many ordinary workers, although Kondratiev was never sent to the Gulag to be involved in forced labour. Perhaps Kondratiev would have wished he had been sent to the Gulag, as many members of the Conuncture Institute who were sent to forced labour camps survived to tell the tale. In truth it was plain to see as early as 1928 that an oppositional figure of the stature of Kondratiev could hardly be left free to publish criticisms of a regime set on the Stalin path of industrialisation, as Kondratiev's reputation was internationally recognised and would forever remain a thorn in the Stalin flesh. As the true leader of the pro-market industrialisation path for the USSR, given the circumstances of the USSR at this time Kondratiev had either to triumph or to face at least political annihilation. Stalin's call for Kondratiev's execution as early as 1930 indicates he did not underestimate Kondratiev's importance in this respect.

As regarding the accusation made by the authorities that Kondratiev was involved in a counter-revolutionary conspiracy dedicated to overthrowing the Soviet regime, there is a (very limited) sense in which this was actually true. Kondratiev did build links with government organs such as NKFin, NKZem, NKVneshTorg and so on with the aim of promoting his particular policy options, and People's Commissars such as Sokol'nikov and Krasin did hold views close to the Kondratiev line. This was certainly not conspiratorial in the sense that these connections were developed in the full view of all those who watched, not in secret, but the anti-Stalinist nature of the views propagated by these people cannot really be denied. While no political organisation calling itself the Labouring Peasants Party (TKP) ever really existed, Kondratiev and the Conuncture Institute were key elements of a network of oppositional economists and politicians who published work implicitly critical of Stalin's economic policy. In his heart of hearts Kondratiev believed in the continual expansion of NEP, not in its eventual demise, and promoted this position through the Conuncture Institute right up until 1928 and even beyond. What is philosophically damning about the regime's response to the Kondratiev line is that it acted to destroy this opposition by force.

APPENDIX TO CHAPTER 8 – KONDRATIEV'S WRITINGS WHILE IN JAIL

Kondratiev had access to a very small number of books on philosophy, mathematics and economics while he was in prison, thanks to the efforts of his wife, Evgeniya Davydovna Kondratieva (1893–1982). However, in the letters to his wife he was constantly complaining about the lack of materials from which to work, and hence it is reasonable to assume that his work from this period might show signs of this problem. His plan of work while in jail was first of all to write a book about the concept of economic trend, to follow this with a work on long cycles, then to study small cycles and crises, to follow this with a work on methodology, and finally to write on the social-economic theory of statistics.⁴⁸ This was evidently a grand scheme which would have been truly amazing if completed in the circumstances, but unfortunately failing health, poor working conditions, and eventually his execution put an end to this plan.

Kondratiev's main surviving work written while he was in jail is *The Basic Problems of Economic Statics and Dynamics* (*Osnovnye problemy ekonomicheskoi statiki i dinamiki*), which was written in the period from the end of 1930 to the beginning of 1932, when Kondratiev was incarcerated in Butyrsk prison charged with membership of the TKP.⁴⁹ This is a 400-page treatise which covers economics, sociology, philosophy and the methodology of the social sciences, as well as touching on statistics, the structure of matter and the nature of causality. It gives Kondratiev's general views at the most abstract level of the nature of social science, and shows that even in the most adverse conditions Kondratiev was able to think creatively about economic science. A much shorter outline of a model of economic dynamics in a capitalist economy was given by Kondratiev in a letter dated 5 September 1934. In this letter he related that in order to determine the laws of dynamics of the national economy it was necessary to formulate the task mathematically. Kondratiev proposed that the basic elements of an economy could be expressed quantitatively as follows:

1. national capital – K ;
2. quantity of population – A ;
3. production of the means of production – P_1 ;
4. production of the means of consumption – P_2 ;
5. the total level of production – P ;
6. national income – E ;

7. wages – l ;
8. the interest rate – i ;
9. the sum of land rents – R ;
10. the level of capital accumulation – S .

In order to determine the laws of change of the economy it was necessary to construct a coordinated system of equations from these ten elements and then to solve them empirically. The equations Kondratiev constructed were as follows. Connecting national capital (K), population (A) and national income (E) gave the following expression:

$$E = (dE/dK) K + (dE/dA) A$$

Integrating this produced $E = m\sqrt{AK}$, where m was the level of technique. Kondratiev distinguished between those economic variables accumulated as funds, such as the working population and national capital, and other variables that were 'flows'. Other related equations were given by Kondratiev as follows:

$S = dK/dt$ – the course of accumulation;

$i = dE/dK$ – the course of the interest rate;

$l = dE/dA$ – the course of wages;

$P_1 = C + S$ – the course of production of means of production;

$P_2 = E - S$ – the course of production of means of consumption;

$P = P_1 + P_2$ – the course of the total level of production;

$R = iV$ – the sum of rents, where V = the value of land.

The purpose of constructing such a scheme was to be able to substitute empirically observed quantities into these equations for a given period of time, and by this means to discover the general laws of change of all the basic elements of economic life. After determining the relations of parameters on the basis of concrete facts for concrete countries, it was then possible to determine the law of trends for these countries over time. Phases of development such as ascent, decline and stabilisation could be found, and this would allow a general prognosis on the course of development for a particular country.⁵⁰ On 11 July 1934 Kondratiev wrote triumphally in a letter that he had made an important discovery. He had obtained a simple formula with which, given any two basic values describing the state of the economy in time (for example the number of gainfully employed people and the total national capital), it was possible to determine all other basic economic quantities. Kondratiev related that he was astonished when he

checked the equation against English and US data, since the checks proved the equation was very accurate.⁵¹ It is not absolutely clear that this referred to the set of equations given above, but it seems quite likely.

This fragment was part of a larger work which Kondratiev was writing in 1934 on the concept of trend, which included sections entitled 'Stochastic Analysis of Time Series and the Problem of Trend', 'Trend, or the Problem of the Theory of Economic Dynamics', and 'The Study of Trend in a Theory of Social Economics'. In a letter dated 29 May 1935 Kondratiev wrote that this work was dedicated to the theoretical-probabilistic basis of establishing trend in empirical data, that is to resolving the question of empirically testing the laws of trend.⁵² In a letter dated 7 November 1934 Kondratiev outlined that currently he was working on the section devoted to the stochastic analysis of time series, and that when this was finished he would have written one third of the book. However he was worried about obtaining the empirical data he needed for other sections of the book.⁵³ The fate of this manuscript on trend is unknown, as is the exact degree of progress Kondratiev actually made on this work. Kondratiev wrote of his work on the long-term development of human welfare that he was pursuing in 1934:

The conclusions to which I am coming are in many respects unexpected, even by myself, and are very gloomy . . . its results, if they should even see the light of day, will again probably give rise to an even bigger storm than my other work.⁵⁴

This mixture of optimism and pessimism accurately characterised Kondratiev's work from this period.

9 Conclusions

What has been argued throughout this book is that Kondratiev's work was important both in a theory and policy sense, moreover that these different aspects of economics were for Kondratiev two sides of the same coin. This can be seen (for example) in Kondratiev's concern with applying the long cycle to the analysis of grain export prospects for the USSR and to forecasts of changes in the international grain markets; in his concern to stress that economic planning was beset with fundamental flaws which limited the accuracy of any possible planning methodology, what was called the Kondratiev uncertainty principle; and in his view that transfers of capital between industrial branches was determined by the relative dynamics of conjuncture of the particular branches in question. This pioneering concern to integrate theory with policy can be seen as part of a larger movement in economics after 1900, which sought to move away from the 'grand theory' tendency of multi-volume accounts of the principles of economics, to more detailed analyses of specific empirical problems in economics such as business cycles and economic growth. The fact that Kondratiev was pursuing this approach from within the USSR suggests that the development of Soviet economics after 1929 could have been very different to that actually witnessed.

THE MEANING OF CONJUNCTURE

Now that a detailed account of Kondratiev's economic thought has been given, the reader is in a better position to understand the concept of economic conjuncture. For Kondratiev it meant the current position of the economy with respect to the logic of small cycles, medium cycles, long cycles, industrial growth, government policy, natural conditions, human actions, technological change, political movements and many other factors. Conjuncture was the totality and character of circumstances exerting an influence on the outcome of economic events. It was the interrelation of the movement of all the various elements over time which determined the position of the economy at any one moment, and hence only by understanding long-term, medium-term and short-term factors could current developments be explained. It should

now be clear how Kondratiev's work in the many different areas of economic theory and policy can be subsumed under the general heading of 'conjuncture'.¹

In the introduction it was asserted that Kondratiev and the Conjuncture Institute could be seen as part of a burgeoning econometric research programme in the 1920s and 1930s as exemplified by Ragnar Frisch. While this argument depends also on the theoretical work of other Conjuncture Institute members like Slutskii and Konyus which is not covered in this volume, Kondratiev's concern with the interrelation between business cycles has certain similarities with Frisch's work on decomposing time series into their constituent parts. In particular the work on the concept of trend which Kondratiev was pursuing while in jail in the 1930s was very close to Frisch's approach, although Kondratiev was not given the chance to complete this investigation. In his work on long cycles Kondratiev did use econometric techniques to detect various partially hidden patterns in long-run data, although some have criticised Kondratiev's methods as too simplistic. Nevertheless in the 1920s these methods were only beginning to be fully understood, and Kondratiev's work was an important impetus to further exploration in this area.

POLICY

In policy terms various aspects of the Kondratiev path of economic development for the USSR have been outlined as far as is possible given the sources available, although more of these elements will be found in the work of other Conjuncture Institute members such as Shaposhnikov and Vainshtein. In his review of *Faulty Foundations*, R.W. Davies suggested that the approach of Hunter and Szyrmer was open to criticism on two points: for adopting a starting-point of 1928, when the market had already been disrupted by Bolshevik policy, and for assuming that the peasantry would have happily accepted the provision of agricultural supplies to industry under the no collectivisation path.² In the opinion of this author these criticisms are partially correct and partially false. It is certainly true that an alternative non-collectivisation path should have been adopted well before 1928. The chronology of Kondratiev's policy influence as presented in this book suggests that the turn away from Kondratiev-type policies began in 1925, and hence this implies that the Kondratiev alternative would have needed to be adopted no later than the end of 1925. Thus Hunter and

Szyrmer's choice of 1928 for a starting date for policy alternatives is probably too late. However, it is less certain that the peasantry would have rejected a high industrialisation/no collectivisation path as suggested by Davies.

A key factor here which Hunter and Szyrmer and Davies ignore is: *who* would have presented and controlled such a policy? This question must at least in part turn on personalities. Was there an economic policy-maker who had consistently supported the peasants' point of view and argued for the interests of the peasants since 1917, and consequently who they would have been more likely to trust? The peasantry might have been open to certain settings of the terms of trade between industry and agriculture after 1925 if they believed it was being operated by sympathetic politicians rather than by Bolsheviks, the latter making no attempt to hide the fact that they represented the urban proletariat first and foremost. Kondratiev's membership of the SRs and his continual stress on the need to allow the peasantry the freedom to choose the type of farm which they wanted to work on and the type of goods they wanted to produce, would have made him an ideal candidate for this role. Obviously the peasantry would not have accepted simply any setting of the terms of trade if it was proposed by Kondratiev, but it seems reasonable to assume that they would have been more flexible in this respect if someone they trusted was in control. Peasants would have been more likely to believe that the fruits of any industrialisation policy pursued by Kondratiev would have been distributed fairly, and hence that they would benefit from this policy in the long term.

In case readers perceive this argument as bordering on an assumption of the 'great man' view of history, consider the following quote from Carr's *What is History?*:

The great man is always representative either of existing forces or of forces which he helps to create by way of challenge to existing authority.³

Carr suggested that historical actors summarise and represent societal forces which without them lack a voice. Kondratiev's policy position can thus be seen to (at least in part) represent the biggest social force within the Soviet Union, the peasantry. Chayanov might well be put forward as another economist with equal claim as Kondratiev to represent the views of the peasantry, and with good reason. But the key point is that in the 1920s the peasantry were never given the chance to make their voice heard by supporting Kondratiev, Chayanov or anyone

else. The debate about who best represented peasant views cannot finally be resolved, as the peasants who lived in the USSR in the 1920s are no longer around to ask. Even so, this author believes that the Kondratiev path of industrialisation would have had a better chance of being freely accepted by the peasantry than the Stalin path.

What has also been argued in the preceding chapters is that Kondratiev was certainly not against the industrialisation of the USSR in itself, as many of his opponents portrayed him as being, rather he was only against the particular path of industrialisation implemented by Stalin. As Hunter and Szyrmer imply, there were more rational and efficient paths of industrialisation open to Soviet leaders in the 1920s, but the Bolsheviks rejected them. Various reasons for the rejection of the Kondratiev option have been discussed. The orthodox view is that the need for industrialisation to occur as rapidly as possible, due to the threat of war, made the Kondratiev path less attractive. Reliance on grain exports would have and in fact did encounter major problems in the 1930s due to the world depression, creating even more difficulties for the Kondratiev option. This argument must be given some credence, but is less conclusive than it might at first appear. It implicitly accepts that Stalin made a rational choice between competing options, these options being fully comprehended and analysed by all concerned. This assumption is suspect, as it can plausibly be argued that it was ideological bias not rational comparison which led to the Stalin path being adopted. Marxist theory suggested that socialist revolutions would soon break out all over the globe and that capitalism would collapse on an international scale; if this prediction was believed, then a policy based on integration into the international economic order made little sense. However, as Kondratiev's exposition of the idea of long cycles suggested, not everyone in the USSR in the 1920s believed that capitalism was ripe for collapse.

The Kondratiev path might also have been rejected partly because of a lack of understanding of economic theory on the part of the Bolsheviks, and partly because the Kondratiev path implied political changes which the Bolsheviks were not willing to countenance: Kondratiev supported the idea of political democracy. It could be argued that it was only economists conversant in the latest advances in Western economics and less strongly attached to a particular ideology who were able to conceive of a market-led industrialisation strategy at all. It is also possible to argue that the Kondratiev path could have dealt equally effectively with the threat of war, and that Kondratiev's other policies would have at least partially overcome the export problems which were

encountered in the 1930s. In general this author believes the arguments usually given against the Kondratiev path are not conclusive, but neither is it possible to state with certainty that Kondratiev could or would have overcome all the acknowledged difficulties with the alternative path. But the Kondratiev option certainly merits further investigation.

An element which is often ignored in questions relating to the comparative performance of Soviet economic alternatives is that of individual responsibility, and the effect this can have on economic performance. The same levels of capital and labour employed under one system may yield more than that obtained from another system, depending (among other things) on the amount of individual gain that can be obtained under the different systems. In a market-led industrialisation strategy the role of entrepreneurs would be vital, as they assumed some of the risk of investing and hence had a direct interest in success. In a state-led industrialisation programme this risk was socialised, and hence in effect no-one had a direct responsibility for success. In the Kondratiev path of industrialisation some freedom to own enterprises such as farms and small businesses would have been given, and this assumption of direct responsibility could have produced improvements in performance compared to a state-led programme even assuming the same level of inputs.

A key landmark in the development of the theory of the entrepreneur was Frank Knight's *Risk, Uncertainty, and Profit*, first published in 1921. In this work Knight wrote: '... the crux of the matter [is an] insistence on the responsibility and risk of proprietorship as the essential attributes of entrepreneurship.'⁴ While Kondratiev appears not to have mentioned Knight's work specifically, it is unlikely that Kondratiev did not know anything about Knight's approach. Kondratiev's praise for the 'entrepreneurial spirit' he found in US agriculture, as outlined in the chapter on his trip overseas, suggests that he was well aware of its importance in practice if not in theory.

A possible criticism of Kondratiev's industrialisation strategy might be that while on the surface it concerned itself with industrial development, in reality it was a 'cover' for peasant interests, and hence it was a method for arguing for policies which favoured the peasantry now, delaying attention to industry to an indefinite time in the future. There is no conclusive answer to this charge which is provable beyond doubt, but this author believes this charge to be in the main false. It all depends on how genuine you believe Kondratiev's work to have been. For Sovietologists steeped in the tradition of (rightly) treating

Soviet doctrine with great scepticism and as a form of official code, it might seem difficult to accept that an economist active in NEP could have written simply what they meant. There is no doubt that Kondratiev's work was written from the point of view of the peasantry, but this was because Kondratiev genuinely believed that attention to peasant interests was the correct policy for the 1920s, and that this was part of an industrialisation strategy based on theoretical principles which would prove the best option for the USSR in the long run. Kondratiev did not look around for a doctrine which might give weight to peasant demands, and then adopt it out of expediency; rather his intellectual development led him to comparative advantage and a 'stages' view of industrial growth, principles which then entailed developing agriculture as a means of industrialisation. Kondratiev was eventually executed for adherence to these ideas; does this sound like someone who adopted theories out of expediency?

THEORY

While the idea of long cycles made Kondratiev famous in the West, it has been argued that this was not Kondratiev's greatest contribution to economic theory. His overall approach of analysing the relations between economic variables over the long period, of disaggregating these relations into branches and sectors of the economy, his attempt to integrate various cycles into an overall scheme of conjuncture, and his endeavour to find causation in areas like technical innovation, should be seen as his most important legacy. His work on long cycles was only one aspect of this approach. In many ways Kondratiev's work received its greatest expression not by Kondratiev himself, but by Joseph Schumpeter, whose *Business Cycles* of 1939 is inconceivable without the foundations laid by Kondratiev. In this work Schumpeter wrote:

... if innovations are at the root of cyclical fluctuations, these cannot be expected to form a single wavelike movement, because the periods of gestation and of absorption of effects by the economic system will not be equal ... There will be innovations of relatively long span, and along with them others will be undertaken which run their course, on the back of the wave created by the former, in shorter periods. This at once suggests both multiplicity of fluctuations and the kind of interference between them which we are to expect.⁵

Schumpeter's *Business Cycles* was heavily criticised by Simon Kuznets in *The American Economic Review* in 1940. Kuznets disputed that

entrepreneurial innovations came in bundles and that three economic cycles progressed simultaneously, criticisms which might be expected from the 'empirical data first' approach of the National Bureau of Economic Research. Kuznets also disputed that Schumpeter had proved the existence of the Kondratiev cycle.⁶ What Kuznets did not fully realise was that these ideas had all first been developed by Kondratiev and certain colleagues in the Conjunction Institute such as Rainov in the 1920s. Ragnar Frisch's reception of Schumpeter's study was somewhat different to that of Kuznets: Frisch described it as bringing him a 'greeting from a world of intellect and kindness and beauty'.⁷

Kondratiev's work on long-run dynamics also stimulated later work in indirectly related areas. For example W.W. Rostow's books on economic growth are Kondratievian in various respects. Rostow emphasised how not only the rate and direction of economic growth, but also the sequence of development was crucial to success. Kondratiev's trip to the USA allowed him to see this aspect of the problem clearly, although he did not integrate it into a complete theory as Rostow later would. Although in 1990 Rostow would write of a possible 'requiem for Kondratiev cycles', caused by the forces making for long cycles in relative prices disappearing, the fact that he was still using Kondratiev's framework sixty five years after the first paper on long cycles was published says much about Kondratiev's importance.⁸

In organisational terms Kondratiev's links with Mitchell's NBER suggest that, if the Conjunction Institute had been allowed to prosper and develop without interference, then US and Soviet economic theory could have developed along similar paths with considerable cooperation, rather than at loggerheads on diametrically opposed paths. In the opinion of this author this simple change could have had a profound effect on the development not only of economic theory after 1929, but also of international relations throughout much of the twentieth century. While it is obvious that Soviet economics was hideously distorted by the need to justify the Soviet form of planning, what is less recognised is that this also had an effect on Western economics; the implicit goal of some Western economics to justify the existing form of capitalism was given added impetus, which in turn had the effect of discouraging critical and independent thinking in the field. This may have been a relatively minor effect on Western economics, but the existence of the USSR was a major factor in much post-1945 strategic thinking, and hence some degree of influence on Western economic theory should not be ruled out.

It would have been economists like Kondratiev who could have bridged the gap between the market and planning, between the USA and the

USSR after 1929, through their knowledge and experience of socialism as a political philosophy and participation in the growth of Western economic theory after 1900. Researchers always tend to exaggerate the importance of their own fields of research, but this writer genuinely believes that people like Kondratiev could have made an importance difference to East-West relations after 1929. Of course the continued presence of pro-market economists like Kondratiev and Yurovskii in the USSR after 1929 is a very big and highly contentious counterfactual 'if', one that depends on many factors, including the actions of those in question. Trotsky has often been criticised for not organising faster and better after 1925 to fight Stalin's rise to power, and Kondratiev can also be criticised for a similarly naive view of what a Stalin regime might actually entail in political terms. Perhaps while in jail after 1930 Kondratiev came to wish he had remained in the USA, but in 1925 the horrors which Stalin would eventually bring were inconceivable to many. Looking back Kondratiev was at the peak of his importance on the trip overseas during 1924-25, and once he returned to the USSR his position was one of continual decline. Like many people and despite his expertise in economic conjuncture, he found it very difficult to accurately forecast the constellation of forces which determined his personal conjunctural position within the Soviet regime.

Notes

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30. For a general account of Yurovskii's work see Vincent Barnett, 'The Economic Thought of L.N. Yurovskii', *Coexistence*, vol. 31, no. 1, pp. 63-77.
31. S.L. Komlev, 'Kon'yunkturnyi institut: shkola N.D. Kondrat'eva', *Ekonomika i matematicheskie metody*, vol. 26 no. 1, 1990, p. 32.
32. A.P. Efimkin, *Dvazhdy reabilitirovannye* (Moscow, 1991), p. 133.
33. *Ibid.*, p. 149.
34. E.H. Carr and R.W. Davies, *Foundations of a Planned Economy*, vol. 1 no. 2, p. 733.
35. It appears that even while Leontiev was deputy director Vainshtein occupied a position above the other two consultants, as he earned an extra 75 rubles per month in the form of a bonus.
36. Leontiev earned 300 rubles per month, Vainshtein, Slutskii and Shaposhnikov 275 rubles per month. Cherkasskii and Stepanov earned 225 rubles per month, Ivanova 120 rubles.
37. Zhirkovich earned 225 rubles per month, Ozerov 200 rubles, and Ignatiev 225 rubles plus a bonus of 25 rubles. Konyus earned 200 rubles per month, Koval'skaya and Kustarev between 125 and 175 rubles.
38. Smirnitkii earned 225 rubles per month, Gerchuk, Utis and Sushkin between 150 and 200 rubles per month. Yakushkin earned 175 rubles per month, Chetverikov 225 rubles per month plus a 125 rubles bonus. Mekler earned 225 rubles per month, Karpov 175 rubles.
39. RGAE (Rossiiskii Gosudarstvennyi Arkhiv Ekonomiki), f. 7733, op. 5, d. 971b, l. 90.
40. Non-academic secretaries were responsible for the preparation and preservation of materials and papers. Technical editors were responsible for the preparation of materials for publication in the periodical and non-periodical issues of the Institute, and for general typographical matters. Section leaders were responsible for the work programmes of the section, regularly providing monthly, quarterly and yearly conjunctural reports on their sectors of the economy, and for participating in meetings, commissions and interdepartmental conferences as representatives of their sec-

tion of the Institute. Academic collaborators were responsible for the organisation of local organs in respect of the collection and preliminary preparation of statistical materials. Senior statisticians were responsible for the overall collection of statistical materials and for the development of these materials as regards the application of mathematical and statistical techniques. And finally statisticians were responsible for the collection of statistics for specific aspects of work of the Conjuncture Institute and for composing all tables and graphs to be used by the Institute. See RGAE, f. 7733, op. 5, d. 971b, l. 91–2.

41. For example see Moshe Lewin, *Political Undercurrents in Soviet Economic Debates* (London, 1974); Richard B. Day, *Leon Trotsky and the Politics of Economic Isolation* (Cambridge, 1973); and Stephen Cohen, *Bukharin and the Bolshevik Revolution* (Oxford, 1980).
42. Holland Hunter and Janusz Szyrmer, *Faulty Foundations: Soviet Economic Policies, 1928–40* (Princeton, 1992), p. 245.
43. Holland Hunter and Janusz Szyrmer, 'Testing Early Soviet Economic Alternatives', *Slavic Review*, vol. 50 no. 2, 1991, p. 263.
44. Hunter and Szyrmer, *Faulty Foundations*, p. 245.
45. Hunter and Szyrmer, 'Testing Early Soviet Economic Alternatives', p. 264.
46. See Andrzej Walicki, *A History of Russian Thought* (Oxford, 1988), p. 92 and p. 144.
47. N.O. Lossky, *History of Russian Philosophy* (London, 1952), p. 47.
48. R.W. Davies, Mark Harrison, and S.G. Wheatcroft (eds), *The Economic Transformation of the Soviet Union, 1913–1945* (Cambridge, 1994), pp. 1–2 and p. 131.
49. M.E. Falkus, *The Industrialisation of Russia, 1700–1914* (London, 1972), pp. 12–13.
50. Davies, Harrison, and Wheatcroft (eds), *The Economic Transformation of the Soviet Union*, p. 38.
51. N.D. Kondratiev, *Osoboe mnenie* (Moscow, 1993), vol. 2, p. 17.
52. Jens Christopher Andvig, 'Ragnar Frisch and business cycle research during the interwar years', *History of Political Economy*, 13:4 (1981), p. 699.
53. For example see Roger W. Babson, *Business Barometers Used in the Accumulation of Money* (Wellesley Hills, Mass., 1909).
54. Andvig, 'Ragnar Frisch and business cycle research during the interwar years', pp. 699–700.
55. *Ibid.*, p. 697.
56. *Ibid.*, p. 705.
57. *Ibid.*, p. 718.
58. N.D. Kondratiev, *Mirovoe khoziaistvo i ego kon'yunktury vo vremya i posle voyny* (Vologda, 1922), pp. 7–8.
59. Robert J. Gordon (ed.), *The American Business Cycle* (Chicago, 1986), pp. 743–4.
60. Christina D. Romer, 'Remeasuring Business Cycles', *The Journal of Economic History*, vol. 54 no. 3, p. 576.
61. A.F. Burns and W. C. Mitchell, *Measuring Business Cycles* (New York, 1946), p. 131.
62. W.C. Mitchell, *Business Cycles and Their Causes* (Berkeley and Los Angeles, 1959), p. 162.

63. Ueslei K. Mitchell', *Ekonomicheskie tsikly: problema i ee postanovka* (Moscow, 1930), translated by E.D. Kondratieva, O.E. Pryakhina and V.E. Sprink. This copy resides in the archive of the New York office of the NBER.

2 Kondratiev before the Conjuncture Institute

1. N.K. Figurovskaya and V.V. Simonov, 'Kondrat'ev i Rossiiskaya ekonomika chrezvychainogo vremeni', in N.D. Kondratiev, *Rynok khlebov i ego regulirovanie vo vremya voyny i revolyutsii* (Moscow, 1990), p. 3.
2. V. Zverev, *Put' v nauku (fenomen studenta N.D. Kondrat'eva)* (Moscow, 1992), pp. 6–7.
3. N.A. Makasheva, 'Biograficheskii ocherk', in N.D. Kondratiev, *Problemy ekonomicheskoi dinamiki* (Moscow, 1989), p. 8.
4. Figurovskaya and Simonov, 'Kondrat'ev i Rossiiskaya ekonomika chrezvychainogo vremeni', p. 6.
5. Makasheva, 'Biograficheskii ocherk', p. 10.
6. A.P. Efimkin, *Dvazhdy reabilitirovannye* (Moscow, 1991), p. 20.
7. N.D. Kondratiev, 'Kovalevskii kak uchitel', *Vestnik evropy*, no. 5, 1916, p. 188.
8. P.A. Sorokin, *A Long Journey: The Autobiography of Pitirim A. Sorokin* (New Haven, Conn., 1963), p. 61.
9. *Ibid.*, pp. 70–1.
10. Figurovskaya and Simonov, 'Kondrat'ev i Rossiiskaya ekonomika chrezvychainogo vremeni', p. 13.
11. Naum Jasny, *Soviet Economists of the Twenties* (Cambridge, 1972), p. 158.
12. M.I. Tugan-Baranovskii, *Periodicheskie promyshlennye krizisy* (Petrograd/Moscow, 1923), pp. 207–9.
13. *Ibid.*, p. 219 and p. 227.
14. *Ibid.*, pp. 253–4.
15. T.W. Hutchison, *A Review of Economic Doctrines, 1870–1929* (Oxford, 1953), pp. 377–9.
16. N.D. Kondratiev, *M.I. Tugan-Baranovskii (Osnovnye cherty nauchnogo mirovozzreniya)* (Petrograd, 1923), p. 16.
17. L.D. Shirokorad, 'N.D. Kondrat'ev v Sankt-Peterburgskom (Petrogradskom) universitete', *Vestnik Sankt-Peterburgskogo universiteta: ekonomika*, no. 4, 1992, pp. 6–7.
18. Terence Emmons and Wayne Vucinich (eds), *The Zemstvo in Russia* (Cambridge, 1982), p. 31 and p. 7.
19. N.D. Kondratiev, *Razvitie khozyaistva Kineshenskago zemstva Kostromskoi gubernii* (Kineshma, 1915), pp. 392–3.
20. *Ibid.*, pp. 394–7.
21. *Ibid.*, pp. 399–401.
22. *Ibid.*, p. 402.
23. R.P. Browder and A.F. Kerensky (eds), *The Russian Provisional Government 1917* (Stanford, 1961), vol. 2, p. 733.
24. *Ibid.*, p. 734.
25. V.V. Ivanov, 'Na istoricheskom perelome, 1917–18 gody', in N.D. Kondratiev, *Izbrannye sochineniya* (Moscow, 1993), p. 304.

26. *Izvestiya po prodovol'stvennomu delu*, no. 3 (34), September–October 1917, p. 79.
27. E.H. Carr, *The Bolshevik Revolution 1917–23* (London, 1950), vol. 2, p. 31.
28. Lenin criticised Maslov in 'O "samochinnom zakhvate" zemli', which was published in *Pravda* no. 62 on 2 June (20 May) 1917. Maslov considered the desire of the peasantry for the unauthorised seizure of land to be inexpedient at this time, but Lenin disputed Maslov's reasoning. See *Agrarnaya politika Sovetskoi vlasti (1917–18), dokumenty i materialy* (Moscow, 1954), pp. 90–2.
29. O.H. Radkey, *The Agrarian Foes of Bolshevism* (New York, 1958), pp. 424–5.
30. *Ibid.*, p. 448.
31. V.V. Simonov and N.K. Figurovskaya, 'Nikolai Kondrat'ev i Rossiiskie revolyutsii', in *Osoboe mnenie* (Moscow, 1993), vol. 1, p. 447.
32. Efimkin, *Dvazhdy reabilitirovannye*, pp. 48–50.
33. Ivanov, 'Na istoricheskom perelome', p. 305.
34. *Ibid.*, p. 306.
35. N.D. Kondratiev, 'Rech' tovarishcha ministra prodovol'stviya N.D. Kondrat'eva', *Izbrannye sochineniya*, p. 335.
36. *Ibid.*, pp. 336–9.
37. *Ibid.*, p. 341.
38. James D. White, *The Russian Revolution 1917–21* (London, 1994), pp. 103–4.
39. Kondratiev, 'Rech' tovarishcha ministra prodovol'stviya N.D. Kondrat'eva', pp. 308–9.
40. Galili y Garcia Ziva, 'The Menshevik Revolutionary Defensists and the Workers in the Russian Revolution of 1917' (Unpublished PhD Thesis, Columbia University, 1980), pp. 160–1. Jasny does not agree that Groman was solely responsible for the grain monopoly, but since Groman clearly supported the general principle of state planning at this time, he definitely supported this idea. See Jasny, *Soviet Economists of the Twenties*, p. 97.
41. N.D. Kondratiev, 'Prodovol'stvennyi krizis i zadacha organizatsii khozyaistva', in *Osoboe mnenie* (Moscow, 1993), vol. 1, p. 5.
42. *Ibid.*, p. 16.
43. Simonov and Figurovskaya, 'Nikolai Kondrat'ev i Rossiiskie revolyutsii', p. 447.
44. Tsuyoshi Hasegawa, *The February Revolution: Petrograd, 1917* (Seattle and London, 1981), pp. 135–7.
45. Figurovskaya and Simonov, 'Kondrat'ev i Rossiiskaya ekonomika chrezvychainogo vremeni', pp. 8–9.
46. White, *The Russian Revolution*, p. 174.
47. Carr, *The Bolshevik Revolution 1917–23*, vol. 1, p. 161.
48. White, *The Russian Revolution*, pp. 196–7.
49. Marc Jansen, *A Show Trial Under Lenin: The Trial of the SRs* (The Hague, 1982), pp. 17–18 and p. 118.
50. Efimkin, *Dvazhdy reabilitirovannye*, p. 62.
51. N.D. Kondratiev, *Agrarnyi vopros: o zemle i zemel'nykh poryadkakh*, in *Osoboe mnenie*, vol. 1, pp. 27–9.

52. *Ibid.*, p. 41.
53. White, *The Russian Revolution*, p. 175.
54. Carr, *The Bolshevik Revolution 1917-23*, vol. 2, p. 34.
55. The fact that both the SR 1917 agrarian reform and the 1920s market-led industrialisation strategy were eventually rejected makes Kondratiev doubly forsaken.
56. Carr, *The Bolshevik Revolution 1917-23*, vol. 2, p. 19.
57. N.D. Kondratiev and N.P. Makarov, 'O krupnokrest'yanskikh khozyaistvakh', in *Osoboe mnenie*, vol. 1, p. 43.
58. *Ibid.*, pp. 65-6.
59. *Ibid.*, p. 69.
60. M.I. Tugan-Baranovskii, *Propovednik natsionalizatsii zemli* (Petrograd, 1917), pp. 25-6.
61. M.I. Tugan-Baranovskii, *Zemel'nyi vopros na Zapad i v Rossii* (Moscow, 1919), pp. 83-4.
62. N.D. Kondratiev, 'God revolyutsii s ekonomicheskoi tochki zreniya', *Osoboe mnenie*, vol. 1, p. 71.
63. *Ibid.*, pp. 74-5.
64. *Ibid.*, p. 82.
65. *Ibid.*, p. 87.
66. P.I. Lyashchenko, *History of the National Economy of Russia to the 1917 Revolution* (New York, 1949), pp. 745-7. This is the same Lyashchenko who proposed alternative taxation methods to Kondratiev during NEP.
67. Maureen Perrie, *The Agrarian Policy of the Russian Socialist-Revolutionary Party* (Cambridge, 1976), p. 177 and p. 184.
68. Kondratiev, *Agrarnyi vopros: o zemle i zemel'nykh poryadkakh*, p. 32.
69. Figurowskaya and Simonov, 'Kondrat'ev i Rossiiskaya ekonomika chrezvychainogo vremeni', p. 44.
70. Kondratiev, *Rynok khlebov i ego regulirovanie vo vremena voyny i revolyutsii*, pp. 86-7.
71. *Ibid.*, pp. 88-92.
72. Kondratiev stressed that in explaining the structure of the Russian grain market regional surpluses and deficits had great significance. Important regions of surplus were the South East section of European Russia, all the Black Earth provinces except Astrakhan and Nizhnii Novgorod, Vyat and Stavropol provinces, Kuban and Tersk regions, Predkavkaze, and the Tomsk and Tobolsk provinces of Western Siberia. Deficit regions were located in the North Western parts of European Russia, Eastern Siberia, the Caucasus and the steppe regions. Thus within European Russia in the North West there was a deficit of grain and in the South East there was a surplus. See Kondratiev, *Rynok khlebov*, pp. 93-5.
73. Kondratiev, *Rynok khlebov*, pp. 98-100.
74. In percentage terms to 1890-99.
75. Kondratiev explained the international price rise by increased demand, for example imports of wheat in the main consumer countries of Europe grew in index terms from 100 in 1898-1902 to 143.1 in 1908-12.
76. *Ibid.*, pp. 115-17.
77. *Ibid.*, pp. 156-7.
78. *Ibid.*, pp. 160-4 and pp. 177-9.

79. *Ibid.*, p. 221.
80. The law of 25 March set ration levels for bread and cereals, and also set fixed prices for foods and ordered the calculation of grain stocks in every farm. See pp. 208–9.
81. *Ibid.*, p. 234.
82. *Ibid.*, pp. 265–6.
83. *Ibid.*, pp. 310–11.
84. P.B. Struve *et al.*, *Food Supply in Russia during the World War* (New Haven, 1930), p. 354.
85. Jasny, *Soviet Economists of the Twenties*, p. 100, fn. 2.

3 Kondratiev and Economic Policy during NEP

1. E.H. Carr, *The Bolshevik Revolution 1917–23* (London, 1950), vol. 2, p. 281.
2. V.I. Lenin, 'The Tax in Kind', in *Collected Works* (Moscow, 1965), vol. 32, pp. 345–6.
3. Carr noted that the decision of March 1921 to support a tax in kind was 'hurriedly taken in response to a grave emergency', this being the likelihood of mass famine and widespread unrest. See *The Bolshevik Revolution 1917–23*, vol. 2, p. 283.
4. V.I. Lenin, 'Plan of the Pamphlet "The Tax in Kind"', in *Collected Works*, vol. 32, p. 327.
5. V.I. Lenin, 'On Cooperation', in *Collected Works* (Moscow, 1965), vol. 33, p. 470.
6. For an account of Yurovskii's economics see Vincent Barnett, 'The Economic Thought of L.N. Yurovskii', *Coexistence*, March 1994, pp. 63–77.
7. Stephen Cohen, *Bukharin and the Bolshevik Revolution* (Oxford, 1980) p. 279.
8. *Ibid.*, p. 348.
9. Naum Jasny, *Soviet Economists of the 1920s* (Cambridge, 1972), pp. 34–5.
10. James Hughes, *Stalin, Siberia, and the Crisis of the New Economic Policy* (Cambridge, 1991), pp. 71–2.
11. A.P. Efimkin, *Dvazhdy reabilitirovannye* (Moscow, 1991), p. 140 and p. 143.
12. N. Rubinshtein, 'Partiya v bor'be s pravoii oppozitsiei', *Proletarskaya revolyutsiya*, no. 6, 1935, p. 94.
13. For Krasin's support of the monopoly of free trade see T.E. O'Connor, *The Engineer of Revolution: L.B. Krasin and the Bolsheviks* (Boulder, 1992), p. 176, and Lubov Krassin, *Leonid Krassin: His Life and Work* (London, 1929), p. 158.
14. O'Connor, *The Engineer of Revolution*, p. 195.
15. M.R. Dohan, 'Soviet Foreign Trade in the NEP Economy and Soviet Industrialisation Strategy' (PhD Thesis, MIT, 1969), p. 183.
16. O'Connor, *The Engineer of Revolution*, pp. 208–9.
17. Maurice Dobb, *Soviet Economic Development Since 1917* (London, 1978), p. 199.
18. E.H. Carr, *Socialism in One Country* (London, 1958), vol. 1, p. 444.

19. E.H. Carr and R.W. Davies, *Foundations of a Planned Economy*, vol. 1 no. 1, p. 311.
20. Anna di Biagio, 'Bukharin's International Alternative', in A. Kemp-Welch (ed.), *The Ideas of Nikolai Bukharin* (Oxford, 1992), p. 115.
21. N.D. Kondratiev, *Osoboe mnenie* (Moscow, 1993), vol. 1, p. 420.
22. N.D. Kondratiev, *Rynok khlebov i ego regulirovanie vo vremya voiny i revolyutsii* (Moscow, 1991), p. 481. By 'Supreme Economic Commission' Kondratiev most likely meant VSNKh.
23. Efimkin, *Dvazhdy reabilitirovannye*, p. 143.
24. Charles Rist, *History of Monetary and Credit Theory* (London, 1940), p. 114.
25. At least this is what was meant by the quantity theory in the 1920s. In the 1950s Milton Friedman reformulated it in terms of the demand for money. See Milton Friedman (ed.), *Studies in the Quantity Theory of Money* (Chicago, 1956), p. 4.
26. N.D. Kondratiev, 'K voprosu o stabilizatsii tovarnykh tsen', *Ekonomicheskii byulleten' Kon'yunkturnogo instituta*, no. 4–5, July–August 1922, pp. 1–4.
27. *Ibid.*, p. 4.
28. Irving Fisher, *The Purchasing Power of Money* (New York, 1912), p. 150.
29. RGAE, f. 4372, op. 1, d. 127, l.356–7.
30. N.D. Kondratiev, 'Otnositel'noe padenie khlebnykh tsen i ego znachenie', *Sel'skoe i lesnoe khozyaistvo*, March–April 1923, no. 8, p. 40.
31. RGAE, f. 4372, op. 1, d. 127, l.357–8. Krasin supported the idea of increasing exports as a way of controlling grain prices at this time.
32. Richard B. Day, *Leon Trotsky and the Politics of Economic Isolation* (Cambridge, 1973), pp. 81–2. Day suggested that in the mid–1920s Trotsky 'appealed for extensive trade links with the West and maximum foreign investments' (p. 6). For a somewhat different view see Ian D. Thatcher, 'Trotsky, the Soviet Union and the world economy', *Coexistence*, June 1993, pp. 111–24. Thatcher neatly showed how Trotsky's position was built on 'the contradiction between stressing the need for healthy capitalism if his plans for Soviet involvement in world markets were to work and his analysis of decaying capitalism if his hopes for coming revolutionary situations were to be justified' (p. 122). Since Kondratiev did not hope for world revolution, he avoided such contradictions.
33. N.D. Kondratiev, 'Povyshenie tovarnykh tsen', *Ekonomicheskaya zhizn'*, no. 217, 26 September 1923.
34. Maurice Dobb, *Soviet Economic Development Since 1917* (London, 1953), pp. 171–2.
35. S.G. Strumilin, 'Problemy tsenovykh "nozhnits"', in *Na planom fronte, 1920–30* (Moscow, 1958), pp. 52–4.
36. E.H. Carr, *The Interregnum, 1923–4* (London, 1954), pp. 90–1. Strumilin related much later that the Central Committee had already in September 1923 adopted measures to reduce prices that were deemed too high. See S.G. Strumilin, *Vospominaniya i publitsistika* (Moscow, 1968), p. 460.
37. Carr, *The Interregnum, 1923–4*, p. 108.
38. *Izvestiya TsK RKP(B)*, January 1924, p. 12.

39. *Pravda*, 30 December 1923, p. 4.
40. S.G. Wheatcroft, 'Views on Grain Output, Agricultural Reality and Planning in the Soviet Union in the 1920s' (Unpublished Masters Thesis, University of Birmingham, 1974), p. 20.
41. *Byulleten Gosplana*, no. 3-4, 1923, p. 71.
42. Dobb, *Soviet Economic Development Since 1917*, p. 195.
43. N.D. Kondratiev, 'Sovremennoe sostoyanie narodnokhozyaistvennoi kon'yunkturi v svete vziamootnoshenii industrii i sel'skogo khozyaistva', *Sotsialisticheskoe khozyaistvo*, no. 6 1925, pp. 46-7.
44. *Ibid.*, p. 52.
45. *Ibid.*, p. 57.
46. *Ibid.*, p. 61.
47. R.G. Hawtrey, *Good and Bad Trade* (New York, 1962), p. viii and pp. 267-8.
48. R.G. Hawtrey, *Currency and Credit* (London, 1919), p. 127.
49. F.A. Hayek, *Monetary Theory and the Trade Cycle* (New York, 1966), p. 102.
50. E.H. Carr, *Socialism in One Country, 1924-26* (London, 1958), vol. 1, p. 482.
51. *Ibid.*, pp. 485-6.
52. Day, *Leon Trotsky and the Politics of Economic Isolation*, p. 115.
53. *Ibid.*, p. 155.
54. The spreading of the Bolshevik revolution to Europe and the free provision of capital from overseas might have allowed the Bolshevik aim to be achieved. However, the revolution did not spread.
55. It is worth stressing one of the implicit assumptions held by participants in the debate over the causes of crises in the USSR, since it has recently been questioned. Kondratiev's analysis was based on the assumption that peasant demand for manufactured goods was (roughly) unit elastic. This meant that the demand curve declined at (approximately) 45 degrees, and hence that reductions in prices of manufactured goods would increase demand in a straightforward one-to-one relation. In contrast J.R. Millar has argued that for peasants, manufactured goods were price-inelastic in relation to demand, and hence the worse the terms of trade, the more peasants had to sell in order to obtain the manufactured goods they desired. While this is theoretically possible, it does not really fit the known facts about the situation in the mid-1920s. As Mark Harrison explained, under NEP the terms of trade faced by the peasantry were substantially worse than before the war, yet marketability of food products also fell in this period, implying that the peasants most certainly were not trying to make up for a deficit in manufactured goods by increasing sales, as the Millar hypothesis requires. See Mark Harrison, 'The Peasantry and Industrialisation', in R.W. Davies (ed.), *From Tsarism to the New Economic Policy* (London, 1990), p. 114. Even so Harrison concluded that it was very difficult to find positive proof for any of the major hypotheses in this area, since problems with the data were legion.
56. P.A. Sorokin, *A Long Journey* (New Haven, Conn., 1963), p. 192.
57. E.H. Carr, *The Bolshevik Revolution, 1917-23* (London, 1950), vol. 1, pp. 181-2.

58. Marc Jansen, *The Show Trial Under Lenin* (The Hague, 1982), p. 78 and pp. 100-1.
59. Jasny, *Soviet Economists of the 1920s*, p. 174.
60. RGAE, f. 478, op. 2, d. 282a, l.2.
61. *Ibid.*, l.34-5.
62. RGAE, f. 4372, op. 10, d. 125, l.350.
63. N.D. Kondratiev, 'K voprosu o sisteme edinogo naturaloga', *Ekonomicheskaya zhizn'*, no. 29, 7 February 1922, p. 1. A SNK decree of 21 April 1921 set the relation between 1 rye unit and the corresponding amount of rye, wheat, potatoes, oats, barley, beans, millet and so on which was equivalent to it.
64. E.H. Carr, *The Bolshevik Revolution* (London, 1952), vol. 2, p. 285.
65. E.H. Carr, *The Interregnum 1923-4* (London, 1954), pp. 18-19.
66. *Ibid.*, pp. 26-7.
67. E.H. Carr, *Socialism in One Country* (London, 1958), vol. 1, p. 250.
68. R.W. Davies, *The Development of the Soviet Budgetary System* (Cambridge, 1958), p. 69.
69. G.Ya. Sokol'nikov, *Soviet Policy in Public Finance, 1917-28* (Stanford, 1931), p. 161.
70. Carr, *Socialism in One Country*, p. 269.
71. *Ibid.*, pp. 318-20.
72. N.D. Kondratiev, 'Proekt postanovleniya plenuma Zemplana po voprosu o sel'skokhozyaistvennom naloge na 1924/5', *Osoboe mnenie*, vol. 1, p. 244.
73. Davies, *The Development of the Soviet Budgetary System*, p. 68, fn. 6.
74. N.D. Kondratiev, 'O edinom sel'skokhozyaistvennom naloge', *Osoboe mnenie*, vol. 1, pp. 246-7.
75. *Ibid.*, pp. 248-9. Archive discussion suggests that Kondratiev included cattle-rearing farms in those which could be damaged by calculating tax from gross income. See RGAE, f. 478, op. 2, d. 295, l.141.
76. Kondratiev, 'O edinom sel'skokhozyaistvennom naloge', pp. 250-1.
77. RGAE, f. 478, op. 2, d. 273, l.55.
78. *Ibid.*, l.50-2.
79. RGAE, f. 4372, op. 10, d. 170, l.2
80. N.D. Kondratiev, 'K voprosu o postroenii oblozheniya sel'skogo khozyaistva na osnove rentnogo printsipa', *Osoboe mnenie*, vol. 2, pp. 35-7.
81. *Osoboe mnenie*, vol. 2, p. 383.
82. Davies, *The Development of the Soviet Budgetary System*, p. 117, fn. 1.
83. N.D. Kondratiev, 'Osnovnye voprosy promyshlennoi deyatel'nosti sel'skokhozyaistvennoi kooperatsii', *Osoboe mnenie*, vol. 1, p. 99.
84. V.V. Simonov and N.K. Figurovskaya, 'Agramaya sfera v kontseptsii N.D. Kondrat'eva', in *Vzglyady M.I. Tugan-Baranovskogo, A.V. Chayanova, N.D. Kondrat'eva, L.N. Yurovskogo i sovremennost'* (Moscow, 1991), pp. 90-1.
85. The KZP was the Commission for Legislative Proposals.
86. N.D. Kondratiev, 'K voprosy o "Proekte osnovnykh nachal zemlepol'zovaniya i zemleustroistva KZP"', *Osoboe mnenie*, vol. 2, pp. 100-1.
87. N.D. Kondratiev, 'Mirovoi khlebnnyi rynek i perspektivy nashego khlebnogo eksporta', in *Osoboe mnenie*, vol. 1, p. 206.

88. *Ibid.*, p. 213. This was calculated using Augustus Sauerbeck's index.
89. *Ibid.*, pp. 216-20.
90. *Ibid.*, p. 224 and pp. 230-2.
91. For an analysis of grain price movements during this period see Vincent Barnett, 'Soviet commodity markets during NEP', *Economic History Review*, May 1995, pp. 329-52. Here it is shown that the level of integration of grain markets over various regions of the USSR in the 1920s was quite low.
92. Kondratiev, 'Mirovoi khlebnyi rynek', pp. 235-9.
93. Figures have been converted from puds to tonnes. In respect to grain exports this may give the impression that they were exact figures when usually they were rough estimates. The original figures in puds are thus also given.
94. Kondratiev, 'Mirovoi khlebnyi rynek', pp. 241-3.
95. A.L. Vainshtein, 'Perspektivy nashego khlebnogo eksporta v 1923-24 g.', *Sel'skoe i lesnoe khozyaistvo*, January 1924, pp. 16-7 and p. 23. Confirmation that Conjuncture Institute views on export prospects in 1923 were within the boundaries of accepted wisdom at this time comes from a volume on foreign trade edited by V.G. Groman of Gosplan. Here Oganovskii calculated that approximately 4.91 million tonnes of grain could be exported from Russia in 1923/24. The Grain Trade Commission under STO had determined a level of 3.69 million tonnes, but adding 0.66-0.82 million from additional regions brought the total to 4.35-4.51 million tonnes. Oganovskii also agreed with Kondratiev that the position on the rye markets of Central Europe and the buffer states made rye export prospects highly favourable, possibly reaching 15 per cent of total grain exports or 0.57-0.74 million tonnes in 1923/24. See V.G. Groman, M. Kaufman, and M. Zamengof (eds), *Vneshnyaya torgovlya Rossii v 1922-23 khoz. gody* (Moscow, 1923), p. 159 and p. 164.
96. N.D. Kondratiev, 'O sostoyanii kon'yunktur sel'skogokhozyaistvennogo i khlebnogo rynka v chastnosti', *Osoboe mnenie*, vol. 2, p. 79 and p. 81.
97. *Ibid.*, pp. 85-6.
98. N.D. Kondratiev, 'Kon'yunktura mirovogo khlebnogo rynka', *Ekonomicheskaya zhizn'* no. 247, 28 October 1925.
99. Kondratiev, 'O sostoyanii kon'yunktur', pp. 89-91.
100. N.D. Kondratiev, 'Mirovoi rynek i problema eksporta l'na', *Puti sel'skogo khozyaistva*, no. 1 1926, p. 3.
101. *Ibid.*, pp. 4-6.
102. *Ibid.*, pp. 7-8.
103. E.H. Carr, *Socialism in One Country* (London, 1958), vol. 1, p. 443.
104. N.D. Kondratiev, 'Eksport sel'skogo-khozyaistvennykh tovarov SSSR', *Puti sel'skogo khozyaistva*, no. 10, 1927, pp. 85-9.
105. *Ibid.*, pp. 90-4.
106. Kondratiev gave A.L. Vainshtein's *Oblozhenie i platezhi krest'yanstva* of 1924 as support.
107. Kondratiev, 'Eksport sel'skogo-khozyaistvennykh tovarov SSSR', pp. 95-9.
108. Gershenkron agreed that the ruble had been overvalued at this time. See Alexander Gershenkron, *Economic Relations with the USSR* (New York, 1945), p. 45.

109. For an analysis of *chervonets* convertibility see Vincent Barnett, 'As Good As Gold? A Note on the *chervonets*', *Europe-Asia Studies*, May 1995, pp. 663–9.
110. Kondratiev, 'Eksport sel'skogo-khozyaistvennykh tovarov SSSR', pp. 100–3.
111. W. Arthur Lewis, *Economic Survey 1919–39* (London, 1949), p. 31 and pp. 151–3.
112. *Ibid.*, p. 184, p. 196, and p. 59.
113. Robert Lewis, 'Foreign Economic Relations', in R.W. Davies *et al.* (eds), *The Economic Transformation of the Soviet Union, 1913–45* (Cambridge, 1994), pp. 206–7.
114. Holland Hunter and Janusz Szyrmer, *Faulty Foundations: Soviet Economic Policies, 1928–40* (Princeton, 1992), pp. 131–2.
115. Gerschenkron, *Economic Relations with the USSR*, pp. 41–8. Gerschenkron pointed out that Russian goods had to be priced particularly low due to their poor quality and because trading links were not well established (p. 44).
116. Hunter and Szyrmer, *Faulty Foundations*, p. 135.
117. *Ibid.*, p. 245.
118. R.W. Davies (ed.), *From Tsarism to the New Economic Policy* (London, 1990), p. 324, table 57.
119. Lewis, 'Foreign Economic Relations', p. 316, table 48.
120. Gerschenkron, *Economic Relations with the USSR*, p. 50.
121. Carr, *Socialism in One Country*, vol. 1, pp. 441–2.
122. M.J. Ilic, 'The Development of the Soviet Timber Industry 1926–40' (Unpublished MPhil Thesis, University of Birmingham, 1986), p. 181, table A3.
123. *Ibid.*, p. 45.
124. Rees explained that forced labour was widely used in the Soviet timber industry from 1929 onwards. See E.A. Rees (ed.), *Decision-Making in the Stalinist Command Economy, 1932–37* (London, 1997), p. 129.
125. This roughly conforms to R.W. Davies and O. Khlevnyuk's periodisation of the influence of specialists during NEP, in which Kondratiev was given as the dominant adviser between 1921 and 1925. See 'Gosplan', in *Decision-Making in the Stalinist Command Economy*, p. 37. 1922 is probably a more accurate starting date, this being when the Conjunction Institute became part of NKFin.
126. L.D. Trotsky, *The Revolution Betrayed* (New York, 1972), pp. 26–7.
127. Carr, *Socialism in One Country*, vol. 1, p. 287. Carr is sceptical that the proposal for denationalisation came from Stalin (fn. 1).
128. R.W. Davies, *The Soviet Collective Farm, 1929–30* (London, 1980), p. 5.
129. This raises the question of what Kondratiev would have done if peasants had chosen to remain in small-scale farms with low marketability, but this problem was never given the chance to actually arise.
130. I.V. Stalin, 'K voprosam agrarnoi politiki v SSSR', *Sochineniya* (Moscow, 1949), vol. 12, p. 160.

4 Kondratiev's Trip Overseas, 1924–25

1. N.D. Kondratiev, *Osoboe mnenie* (Moscow, 1993), vol. 2, p. 379.
2. A.P. Efimkin, *Dvazhdy reabilitirovannye* (Moscow, 1991), p. 147.
3. NARA (The National Archives and Records Administration), records of the Department of State, record group 59, decimal file 811.111 Russia/72, general visa correspondence 1914–40, p. 2.
4. NARA, records of the Department of State, record group 59, decimal file 811.111, visa case files 1924–32, p. 4.
5. RGAE, f. 478, op. 2, d. 360, l.2–7.
6. N.D. Kondratiev, *Izbrannye sochineniya* (Moscow, 1993), p. 512. The letter was dated 11 April 1934.
7. RGAE, f. 478, op. 3, d. 2832, l.44.
8. RGAE, f. 478, op. 2, d. 360, l.3.
9. *Ibid.*, l.5–6.
10. *Ibid.*, l.7.
11. RGAE, f. 478, op. 3, d. 2832, l.25–6.
12. *Ibid.*, l.28.
13. RGAE, f. 478, op. 3, d. 2831, l.8.
14. RGAE, f. 478, op. 3, d. 2832, l.32.
15. *Ibid.*, l.31.
16. *Ibid.*, l.33. The following publications were also sent to the agricultural bureau of NKZem in New York: *Sel'skoe khozyaistvo SSSR v 1923–4*; *Osnovy perspektivnogo plana razvitiya sel'skogo i lesnogo khozyaistva*; *Krest'anskoe khozyaistvo RSFSR v 1922*; and *Lesnoe khozyaistvo RSFSR*. See RGAE, f. 478, op. 3, d. 2832, l.43.
17. RGAE, f. 478, op. 3, d. 2832, l.29.
18. E.H. Carr, *Socialism in One Country, 1924–26* (London, 1958), vol. 1, p. 246.
19. *Ibid.*, p. 302.
20. RGAE, f. 478, op. 3, d. 2832, l.44.
21. C.B. Hoover, *Economic Life in Soviet Russia* (New York, 1932), p. 156.
22. RGAE, f. 478, op. 3, d. 2832, l.45–6.
23. Carr, *Socialism in One Country*, vol. 1, p. 302.
24. CUSMC, W.C. Mitchell, C35, p. 1.
25. W.C. Mitchell, *Diaries 1921–36*, Columbia University Libraries Special Collections, reel 3, 10 December 1924.
26. CUSMC, Mitchell, C35, p. 3.
27. *Ibid.*, p. 4.
28. Mitchell, *Diaries 1921–36*, reel 3, 5 January 1925.
29. CUSMC, Mitchell, C35, p. 5.
30. *Ibid.*, p. 6.
31. Mitchell, *Diaries 1921–36*, reel 3, 5 January 1925.
32. *Ibid.*, 6 February 1925.
33. *Ibid.*, 2 March 1927.
34. P.A. Sorokin, *A Long Journey* (New Haven, Conn., 1963), pp. 232–3.
35. *Ibid.*, p. 61.
36. P.A. Sorokin, *Leaves From A Russian Diary* (London, 1925), p. 112.
37. A.P. Efimkin, *Dvazhdy reabilitirovannye* (Moscow, 1991), p. 146.
38. RGAE, f. 7733, op. 18, d. 1306, l.15–6.

39. N.D. Kondratiev, 'Vystavka Britanskoi Imperii', *Sel'skoe i lesnoe khozyaistvo*, December 1924, pp. 141–3.
40. *Ibid.*, pp. 149–50.
41. *Ibid.*, pp. 165–6.
42. S.K. Gobson, *Ekspert kapitala* (Moscow, 1928). A foreword to the Russian translation pointed out the errors of the 'bourgeois economist' Hobson.
43. C.K. Hobson, *The Export of Capital* (London, 1963), p. xix.
44. N.D. Kondratiev, 'Organizatsiya sodeistviya sel'skomu khozyaistvu v Soedinennykh Shtatakh Severnoi Ameriki', *Puti sel'skogo khozyaistva*, no. 1–2 1925, p. 171.
45. *Ibid.*, pp. 172–4.
46. *Ibid.*, p. 176.
47. *Ibid.*, p. 179.
48. N.D. Kondratiev, 'K voprosu o tendentsiyakh i sovremennoi faze razvitiya mirovogo sel.khozyaistva i s.kh. rynka', *Puti sel'skogo khozyaistva*, no. 4 1926, pp. 12–17.
49. *Ibid.*, pp. 20–5.
50. N.D. Kondratiev, 'Problema Germanskogo agrarnogo protekcionizma', *Ekonomicheskoe obozrenie*, July 1925, p. 248.
51. *Ibid.*, p. 249.
52. *Ibid.*, p. 251.
53. *Ibid.*, p. 256.
54. Keynes Papers, PP/41/21/41, King's College, Cambridge.
55. R.F. Harrod, *The Life of John Maynard Keynes* (London, 1951), p. 365, p. 394, and p. 478.
56. J.M. Keynes, *The Collected Writings of J.M. Keynes: XIX Activities 1922–1929 The Return to Gold and Industrial Policy* (Cambridge, 1981), part I, p. 437.
57. *Sovetskie arkhivy*, no. 4 1987, pp. 87–8.
58. Heckscher's presence in Moscow makes it possible that both NKFin and Gosplan were lectured on the benefits of comparative advantage by a Western economist.
59. J.M. Keynes, *The Collected Writings of J.M. Keynes: IX Essays in Persuasion* (London, 1972), p. 262.
60. *Ibid.*, pp. 263–4.
61. Keynes Papers, PS/4/81, King's College, Cambridge.
62. M.B. Tauger, 'The People's Commissariat of Agriculture', in E.A. Rees (ed.), *Decision-Making in the Stalinist Command Economy* (Basingstoke, 1997), p. 155.

5 Kondratiev, Long Cycles and Economic Conjuncture

1. N.D. Kondratiev, 'Bol'shie tsikly ekonomicheskoi kon'yunktury', in *Problemy ekonomicheskoi dinamiki* (Moscow, 1989), p. 170.
2. For an account of the relationship between Kondratiev and Trotsky see Vincent Barnett, 'Trotsky, Kondratiev and Long Waves', *Journal of Trotsky Studies*, no. 2 1994, pp. 1–15.
3. N.D. Kondratieff, 'The Long Waves in Economic Life', *The Review of Economic Statistics*, November 1935, p. 115 fn. 1.

4. N.D. Kondratiev, 'Bol'shie tsikly kon'yunktury', in *Izbrannye sochineniya* (Moscow, 1993), p. 24 fn. 1.
5. N.D. Kondratiev, *Osoboe mnenie* (Moscow, 1993), vol. 2, p. 222 fn. 1.
6. See *Voprosy kon'yunktury*, vol. 4 1928, pp. 181-3.
7. CUSMC (Columbia University Special Manuscript Collection), *Mitchell*, C35, p. 5. Letter dated 6 May 1926.
8. For example on pp. 259-60 of *Osoboe mnenie* vol. 2 Kondratiev used *bol'shie tsikly* and *bol'shaya volna* together, but this is the only example which was found during the writing of this book.
9. N.D. Kondratiev, *Mirovye khozyaistvo i ego kon'yunktury vo vremya i posle voyny* (Vologda, 1922), pp. 242-3.
10. *Ibid.*, pp. 247-8.
11. *Ibid.*, pp. 252-4.
12. *Ibid.*, p. 251.
13. Wesley Mitchell, *Business Cycles* (New York, 1913), p. 17. Even D.H. Robertson admitted that Fisher's account was in this respect 'on solid ground'. See *A Study of Industrial Fluctuation* (London, 1915), p. 215.
14. Mitchell, *Business Cycles*, p. 490.
15. Kondratiev, 'Bol'shie tsikly kon'yunktury', *Izbrannye sochineniya*, p. 34.
16. Shiller noted a difference in both degree and form between the correlation of the price level with long-term interest rates as measured by bonds, and the correlation of the price level with short-term rates. See R.J. Shiller, *Market Volatility* (Cambridge, MA, 1989), p. 237. Even so he confirmed that correlation did exist in both cases.
17. Kondratiev, *Mirovye khozyaistvo*, p. 256.
18. D.H. Robertson, *A Study of Industrial Fluctuation* (London, 1915), pp. 228-30.
19. G.F. Warren and F.A. Pearson, *Gold and Prices* (New York, 1935), pp. 89-90.
20. Kondratiev, *Mirovye khozyaistvo*, pp. 257-8.
21. One of these critics was N. Osinskii. His book *Mirovye khozyaistvo i krizisy* was a sustained attack on Kondratiev's analysis of economic crises. Polemical in nature, it compared Kondratiev's approach to crises to that of Marx. See N. Osinskii, *Mirovye khozyaistvo i krizisy* (Moscow, 1925).
22. N.D. Kondratiev, 'Spornye voprosy mirovogo khozyaistva i krizisa', *Sotsialisticheskoe khozyaistvo*, nos 4-5, 1923, p. 73.
23. Kondratiev, 'Bol'shie tsikly ekonomicheskoi kon'yunktury', in *Problemy ekonomicheskoi dinamiki*, p. 181.
24. Kondratiev, 'Bol'shie tsikly kon'yunktury', in *Izbrannye sochineniya*, p. 45.
25. George Garvy, 'Kondratieff's Theory of Long Cycles', *The Review of Economic Statistics*, November 1943, p. 218.
26. If one wanted to criticise Garvy, it would be possible to point out that he did not even notice that Kondratiev had altered his dating of the turning-point of the first long cycle from 1809 to 1814. Also Garvy treated the criticisms of long cycles published in the USSR at the end of the 1920s at face value, when in fact they were part of a programme designed to vilify Kondratiev politically. For example Garvy used a paper published

- by L. Eventov in *Problemy ekonomiki* in 1929, which can hardly be taken as a balanced treatment of Kondratiev's work.
27. J.J. van Duijn, *The Long Wave in Economic Life* (London, 1983), p. 59.
 28. Kondratiev, 'Bol'shie tsikly ekonomicheskoi kon'yunktury', in *Problemy ekonomicheskoi dinamiki*, pp. 179-81, fn. 2. He also used for England the index of N.G. Silberling from 1779 to 1850, and for the USA the index of H.V. Roelse for 1791 to 1801 and the index of Falkner for 1840 to 1890.
 29. Michael Mulhall, *History of Prices Since the Year 1850* (London, 1885), p. 123.
 30. W.S. Jevons, *Investigations in Currency and Finance* (London, 1909), pp. 121-2.
 31. *Ibid.*, p. 204.
 32. W.T. Layton, *An Introduction to the Study of Prices* (London, 1912), p. 22.
 33. Kondratiev, *Problemy ekonomicheskoi dinamiki*, p. 182.
 34. Jan Reijnders, *Long Waves in Economic Development* (London, 1990), p. 11. Kondratiev related that he used parabolas of the second and third order to calculate the theoretical series. See Kondratiev, *Problemy ekonomicheskoi dinamiki*, p. 178. In the English translation published in 1935 it was related that Kondratiev used the method of Warren Persons as elaborated in *The Review of Economic Statistics* in 1919-20. See N.D. Kondratieff, 'The Long Waves in Economic Life', *The Review of Economic Statistics*, vol. XVII no. 6, November 1935, p. 105.
 35. Kondratiev, *Problemy ekonomicheskoi dinamiki*, p. 362.
 36. *Ibid.*, p. 179.
 37. D.I. Oparin, 'Kriticheskii analiz "Bol'shikh tsiklov kon'yunktury" Prof. Kondratiev', in *Problemy ekonomicheskoi dinamiki*, pp. 231-2.
 38. Reijnders, *Long Waves in Economic Development*, p. 70.
 39. N.D. Kondratiev, 'Dinamika tsen promyshlennykh i sel'skogokhozyaistvennykh tovarov', in *Osoboe mnenie*, vol. 2, p. 223 and p. 226.
 40. *Ibid.*, p. 238.
 41. *Ibid.*, pp. 240-1.
 42. *Ibid.*, pp. 246-54.
 43. Irving Fisher, *The Purchasing Power of Money* (New York, 1912), p. 76.
 44. Kondratiev, 'Dinamika tsen promyshlennykh i sel'skogokhozyaistvennykh tovarov', pp. 257-60. For long cycles the method Kondratiev used was as follows. The secular trend (*plavnyi uroven'*) was determined by least squares, and then the deviation of the empirical series from the trend was calculated. Nine-year and then five-year moving averages were finally taken. With UK and US data the long cycle in prices coincided closely between the two countries, although not exactly. It is worth noting that in the original 1925 article Kondratiev did not take a five-year average in addition to a nine-year average, he used a nine-year average alone.
 45. Kondratiev, 'Dinamika tsen promyshlennykh i sel'skogokhozyaistvennykh tovarov', p. 265.
 46. *Ibid.*, p. 222, fn. 1.
 47. *Ibid.*, p. 271.
 48. Wesley Mitchell, *Business Cycles: The Problem and its Setting* (New York, 1954), p. 352.

49. Kondratiev, 'Dinamika tsen promyshlennykh i sel'skogokhozyaistvennykh tovarov', pp. 278-9.
50. *Ibid.*, pp. 291-5.
51. *Ibid.*, p. 297.
52. *Ibid.*, pp. 300-2.
53. *Ibid.*, p. 263.
54. *Ibid.*, p. 231.
55. Jevons, *Investigations in Currency and Finance*, p. 24.
56. George Garvy, 'Kondratieff's Theory of Long Cycles', in A.H. Hansen and R.V. Clemence (eds), *Readings in Business Cycles and National Income*, (London, 1953), p. 457.
57. *Ibid.*, p. 446.
58. Roger Backhouse, *A History of Modern Economic Analysis* (Oxford, 1991), p. 179.
59. Wesley Mitchell, *Business Cycles: The Problem and its Setting* (New York, 1954), p. 229.
60. See A.F. Burns, *Production Trends in the United States Since 1870* (New York, 1934), pp. 175-7.
61. T.J. Rainoff, 'Wave-like Fluctuations of Creative Productivity in the Development of West-European Physics in the Eighteenth and Nineteenth Centuries', *ISIS*, vol. 12 no. 37, p. 293.
62. *Ibid.*, p. 300.
63. *Ibid.*, p. 303.
64. RGAE, f. 7733, op. 6, d. 745, l.111-2.
65. *Ibid.*, l.113.
66. Andrew Tylecote, *The Long Wave in the World Economy* (London, 1991), p. 15.
67. Pitirim Sorokin, *Fluctuation of Systems of Truth, Ethics, and Law: Social and Cultural Dynamics* (New York, 1937), vol. 2, p. 159.
68. Garvy, 'Kondratieff's Theory of Long Cycles', *The Review of Economic Statistics*, pp. 209-10.
69. D.I. Oparin, 'Kriticheskii analiz "Bol'shikh tsiklov kon'yunktury" Prof. Kondratiev', *Problemy ekonomicheskoi dinamiki*, p. 249.
70. *Ibid.*, p. 254.
71. *Ibid.*, p. 264 and pp. 271-5.
72. *Ibid.*, pp. 277-9 and p. 356.
73. N.D. Kondratiev, 'K voprosu o bol'shikh tsiklakh kon'yunktury', *Planovoe khozyaistvo*, no. 8, 1926, pp. 177-9.
74. *Ibid.*, p. 181.
75. For example W.W. Rostow wrote that: 'Kondratieff's faith in the association of wars with the upswing process of trend periods is an example of the crudity of much applied Marxist analysis'. See *The Process of Economic Growth* (Oxford, 1953), p. 140, fn. 2.
76. Joseph Schumpeter, *Business Cycles* (New York, 1939), vol. 1, p. 173.
77. Private correspondence dated 27 November 1995.
78. A.D. Gayer, W.W. Rostow and A.J. Schwartz, *The Growth and Fluctuation of the British Economy 1790-1850* (Oxford, 1953), vol. 2, p. 638.
79. W.W. Rostow, *The Stages of Economic Growth* (Cambridge, 1971), pp. 46-50.

80. For example Mandel related the turning-point of the late 1960s to 'the struggle for the rate of surplus value'. See *Late Capitalism* (London, 1978), p. 180.
81. J.S. Goldstein, 'Kondratieff Waves as War Cycles', *International Studies Quarterly*, vol. 29 no. 4, pp. 411–44; and P. Hall, 'The Geography of the Fifth Kondratieff Cycle', *New Society*, vol. 55 no. 958, pp. 535–7.
82. Sorokin, *Fluctuation of Systems of Truth, Ethics and Law: Social and Cultural Dynamics*, vol. 2, p. 202.
83. Reijnders, *Long Waves in Economic Development*, p. 227.
84. *Ibid.*, pp. 236–7.
85. Brian Berry, *Long-Wave Rhythms in Economic Development and Political Behavior* (Baltimore, 1991), p. 127. Readers worrying that economic cycles seem only to be named after authors whose surnames begin with the letter 'k' – Kuznets, Kondratiev, Kitchen – should note the alleged existence of Juglar cycles and Elliott waves.
86. Berry, *Long-Wave Rhythms*, pp. 17–31.
87. J.S. Goldstein, *Long Cycles* (New Haven, 1988), p. 353.
88. Yakob van Dein, 'V kakoi faze Kondrat'evskogo tsikla my nakhodimsya?', *Voprosy ekonomiki*, no. 10, 1992, pp. 79–80.
89. W.W. Rostow, *Theorists of Economic Growth from David Hume to the Present* (Oxford, 1990), p. 308.
90. *Ibid.*, p. 471.
91. Fritz Machlup, 'Statics and Dynamics: Kaleidoscopic Words', *The Southern Economic Journal*, vol. XXVI no. 2, October 1959, pp. 93–6. Kondratiev's view on this distinction was given in 'The Static and Dynamic View of Economics', *Quarterly Journal of Economics*, vol. XXXIX 1925, pp. 576–80.
92. Peter Norman, 'Economics Notebook', *Financial Times*, 1 July 1996.

6 Kondratiev and the Economics of Planning

1. N.D. Kondratiev, 'Plan i predvidenie', in *Problemy ekonomicheskoi dinamiki* (Moscow, 1989), p. 92.
2. *Ibid.*, p. 93.
3. *Ibid.*, pp. 96–7.
4. Carr confirmed that the 1925/26 control figures, drafted by Strumilin, Groman and Bazarov, were subsequently shown to contain three major errors. These errors were underestimating harvest difficulties, exaggerating currency emission, and exaggerating foreign trade. Even so Carr called them a 'remarkable achievement'. See E.H. Carr, *Socialism in One Country* (Macmillan, 1958), vol. 1, p. 502. The creators of the 1925/26 control figures were thus guilty of over-estimating economic prospects, an ironic compliment to their accusations that Kondratiev's plan for agriculture and forestry was guilty of under-estimation.
5. Kondratiev, 'Plan i predvidenie', p. 117.
6. According to quantum mechanics it is impossible to know exactly both the position and momentum of a particle at any given time, the limits to this knowledge being determined by Heisenberg's uncertainty relations. Heisenberg first proposed this idea in 1927, the same year as Kondratiev's

- paper on the inexactitudes of planning was published. See Max Jammer, *The Philosophy of Quantum Mechanics* (New York, 1974), pp. 56-84.
7. Carr, *Socialism in One Country*, vol. 1, p. 213.
 8. N.D. Kondratiev, *Osoboe mnenie* (Moscow, 1993), vol. 1, p. 424.
 9. Naum Jasny, *Soviet Economists of the 1920s* (Cambridge, 1972), p. 167.
 10. Kritsman's criticisms are discussed in Gary Littlejohn, 'The Agrarian Marxist Research in its Political Context: State Policy and the Development of the Soviet Rural Class Structure in the 1920s', *Journal of Peasant Studies*, vol. 11 no. 2, January 1984, pp. 81-4.
 11. Jasny, *Soviet Economists of the 1920s*, p. 169.
 12. N.D. Kondratiev and N.P. Oganovskii, *Perspektivy razvitiya sel'skogo khozyaistva SSSR* (Moscow, 1924), pp. 2-3.
 13. I am indebted to Professor R.W. Davies for bringing this error to my attention.
 14. Given in 1900 prices.
 15. Kondratiev, *Perspektivy razvitiya sel'skogo khozyaistva SSSR*, pp. 4-5.
 16. Peter Gatrell, *The Tsarist Economy 1850-1917* (London, 1986), p. 134.
 17. P.I. Lyashchenko, *History of the National Economy of Russia to the 1917 Revolution* (New York, 1949), pp. 730-2.
 18. Kondratiev, *Perspektivy razvitiya sel'skogo khozyaistva SSSR*, pp. 6-8.
 19. *Ibid.*, pp. 11-12.
 20. Data taken by Kondratiev from L.N. Litoshenko, *Krest'yanskii byudzhets v 1922-23g.* (Moscow, 1923).
 21. Kondratiev, *Perspektivy razvitiya sel'skogo khozyaistva SSSR*, pp. 14-15.
 22. *Ibid.*, pp. 18-20.
 23. Gatrell, *The Tsarist Economy*, pp. 136-7.
 24. Kondratiev, *Perspektivy razvitiya sel'skogo khozyaistva SSSR*, p. 22.
 25. Gatrell, *The Tsarist Economy*, p. 125. Lyashchenko related that the sown area of fodder crops increased by 79.3 per cent from 1900 to 1913. See Lyashchenko, *History of the National Economy of Russia*, p. 732.
 26. Kondratiev, *Perspektivy razvitiya sel'skogo khozyaistva SSSR*, pp. 23-5.
 27. *Ibid.*, pp. 33-5.
 28. N.D. Kondratiev, 'Osnovy perspektivnogo plana razvitiya sel'skogo i lesnogo khozyaistva', *Puti sel'skogo khozyaistva*, no. 4 1925, pp. 211-12.
 29. Naum Jasny, *Soviet Economists of the 1920s* (Cambridge, 1972), p. 169.
 30. S.G. Wheatcroft, 'The Reliability of Russian Prewar Grain Output Statistics', *Soviet Studies* vol. XXVI 1974, p. 157.
 31. *Ibid.*, p. 159. The justification was taken from Ivantsov, who argued that zemstvo statistics were more reliable than TsSK data, the former being on average around 9 per cent higher for yield and sown area ($1.09 \times 1.09 = 1.19$). The absolute figures were 4130 million puds for gross output according to the NKZem estimate for 1911-15, and 5134 million puds according to the Gosplan estimate for 1906-14. See the grain forage balances given by Wheatcroft between p. 178 & p. 179.
 32. S.G. Wheatcroft, 'Agriculture', in R.W. Davies (ed.), *From Tsarism to the New Economic Policy* (Macmillan, 1990), p. 82.
 33. Wheatcroft, 'The Reliability of Russian Prewar Grain Output Statistics', p. 174 and p. 177.
 34. Kondratiev, *Perspektivy razvitiya sel'skogo khozyaistva SSSR*, p. 32.

35. N.D. Kondratiev, 'Perspektivy razvitiya sel'skogo khozyaistva Rossii', *Osoboe mnenie*, vol. 1, p. 326.
36. Ya. Berztys, 'O knige Prof. N.D. Kondrat'ev i N.P. Oganovskii', *Bol'shevik*, no. 7-8 1924, p. 109.
37. *Ibid.*, pp. 110-11.
38. *Ibid.*, p. 113.
39. RGAE, f. 4372, op. 10, d. 170, l.1.
40. RGAE, f. 478, op. 2, d. 295, l.63.
41. *Puti sel'skogo khozyaistva*, no. 1, 1926, p. 191.
42. RGAE, f. 478, op. 2, d. 295, l.64. This was possibly a reference to Lenin, as the development of cooperatives had been one of his last concerns, as expressed in 'On Cooperation' of January 1923.
43. N.D. Kondratiev, 'Perspektivnyi plan razvitiya sel'skogo i lesnogo khozyaistva: Zaklyuchitel'noe slovo Prof. Kondrat'eva', *Puti sel'skogo khozyaistva*, no. 3, 1926, p. 120.
44. *Ibid.*, pp. 124-5.
45. *Ibid.*, p. 128.
46. N.D. Kondratiev, 'K voprosu o differentsiatsii derevni', *Puti sel'skogo khozyaistva*, no. 5 1927, p. 129.
47. 'Perspektivnyi plan razvitiya sel'skogo i lesnogo khozyaistva: plenarnoe zasedanie Prezidiuma Gosplana SSSR', *Puti sel'skogo khozyaistva*, no. 4 1926, pp. 137-8.
48. *Ibid.*, pp. 140-2.
49. *Ibid.*, pp. 144-5.
50. 'Popravki NKZ k projektu postanovleniya prezidiuma Gosplana SSSR', *Puti sel'skogo khozyaistva*, no. 4 1926, p. 155.
51. *Ekonomicheskii byulletin' Kon'yunkturnogo instituta*, no. 11-12, 1927, p. 1.
52. Kondratiev, 'Perspektivy razvitiya sel'skogo khozyaistva Rossii', *Osoboe mnenie*, vol. 1, p. 332, and 'Osnovy perspektivnogo plana razvitiya sel'skogo i lesnogo khozyaistva', *Osoboe mnenie*, vol. 1, p. 359. The figure of 79.1 million head is obtained by applying the percentage target of 92 per cent to the 1916 level of 86 million head given in the January 1924 draft.
53. Holland Hunter and Janusz Szyrmer, *Faulty Foundations* (Princeton, 1992), p. 106 and p. 109.
54. For an account of NKSnab planning during the second five-year plan see Vincent Barnett, 'The People's Commissariat of Supply and the People's Commissariat of Internal Trade', in E.A. Rees (ed.), *Decision-Making in the Stalinist Command Economy 1932-37* (Macmillan, 1997), pp. 176-202.
55. Hunter and Szyrmer, *Faulty Foundations*, p. 245.
56. In this respect it is worth noting that Kondratiev and members of the Conjunction Institute such as Shaposhnikov disagreed to some extent with the policy of subordinating the trade balance to the goal of stabilising the currency, as being advocated in NKFin by Sokol'nikov and Yurovskii for some time after the *chervonets* was introduced. It appears that Kondratiev was willing to accept a mildly negative trade balance in the short term, as long as this was being used to finance the improvement of capital equipment in agriculture. In the medium term this would allow the USSR to export more grain and raw materials, and hence a positive trade balance would eventually be restored.

57. Carr, *Socialism in One Country*, vol. 1, p. 502.
58. See 'Gosplan' in *Decision-Making in the Stalinist Command Economy 1932–37*, p. 37.
59. N.D. Kondratiev, 'Critical Remarks on the Plan for Development of the National Economy', in N. Spulber (ed.), *Foundations of Soviet Strategy for Economic Growth* (Bloomington, 1965), p. 445.

7 Kondratiev and Soviet Industrialisation Strategy

1. W. Arthur Lewis, *The Theory of Economic Growth* (London, 1955), p. 283.
2. Kondratiev did not specify exactly what he meant by 'total production', but GNP might be an appropriate measure in this respect.
3. N.D. Kondratiev, 'Industriya i sel'skoe khozyaistvo v ik vzaimootnoshenii', in *Osoboe mnenie* (Moscow, 1993), vol. 2, pp. 351–2.
4. *Ibid.*, p. 362.
5. *Ibid.*, pp. 366–7.
6. Ironically, in respect to the second five-year plan (1933–37) V.V. Kuibyshev argued a very similar point. See R.W. Davies and O. Khlevnyuk, 'Gosplan', in *Decision-Making in the Stalinist Command Economy, 1932–37* (London, 1997), p. 41.
7. Kondratiev, 'Industriya i sel'skoe khozyaistvo v ik vzaimootnoshenii', pp. 369–70.
8. Roger Backhouse, *A History of Modern Economic Analysis* (Oxford, 1985), p. 56 and p. 202.
9. Bertil Ohlin, *Interregional and International Trade* (Cambridge, MA, 1968), p. 7.
10. Kondratiev did not explicitly mention either Ricardo or Heckscher-Ohlin in this respect, but the intellectual origins of this idea were readily apparent. While Kondratiev likely believed that on a *a priori* grounds the comparative advantage argument was proved beyond a reasonable doubt, he accepted that real-world complexities might put into question the pure form of this argument in certain circumstances. Such complicating factors might be infant industries, defense, tariff barriers, or some other factor. However, the key difference with the Stalinist path of industrialisation was that Stalin rejected comparative advantage in theory.
11. For a detailed investigation of Soviet economic theory in the 1920s see Vincent Barnett, 'At the Margins of the Market: Conceptions of the Market and Market Economics in Soviet Economic Theory During the New Economic Policy, 1921–29' (Unpublished PhD Thesis, University of Glasgow, 1992).
12. RGAE, f. 478, op. 1, d. 1925, l.22.
13. N.D. Kondratiev, 'Natural'noe nakoplenie v krest'yanskom khozyaistve i razvitie narodnogo khozyaistva', in *Osoboe mnenie*, vol. 2, p. 93.
14. *Ibid.*, pp. 96–8.
15. N.D. Kondratiev, 'Agrarnoe perenaselenie i uroven' razvitiya proizvoditel'nykh sil sel'skogo khozyaistva SSSR', in *Osoboe mnenie*, vol. 2, pp. 342–4.
16. *Ibid.*, p. 349.
17. *Ibid.*, p. 351.

18. N.D. Kondratiev, *Rynok khlebov i ego regulirovanie vo vremya voyny i revolyutsii* (Moscow, 1991), p. 89, table 3. Also given in Peter Gatrell, *The Tsarist Economy 1850-1917* (London, 1986), p. 122.
19. N.D. Kondratiev, 'Doklad o poezdke za granitsu na zasedanie kollegii Narkomzema RSFSR 25 Febralya 1925g', in *Osoboe mnenie*, vol. 2, pp. 12-15.
20. *Ibid.*, pp. 17-18.
21. Quoted in B.F. Hoselitz *et al.*, *Theories of Economic Growth* (Glencoe, Illinois, 1960), p. 200.
22. W.W. Rostow, *The Stages of Economic Growth* (Cambridge, 1971), p. 8 and p. 40.
23. *Ibid.*, p. 22.
24. H.B. Chenery, 'Comparative Advantage and Development Policy', in *Surveys of Economic Theory* (London, 1965), vol. 2, pp. 130-3.
25. According to Loveman and Davies, John F. Kennedy adopted Rostow's notion of communism as a disease of the transition to modernisation, and in response initiated the Alliance for Progress in August 1961 to combat the threat of Marxist guerrilla insurgency in Latin America. See Brian Loveman and Thomas Davies, 'Revolutionary Theory and Revolutionary Movements in Latin America', in Che Guevara, *Guerrilla Warfare* (Nebraska, 1985), pp. 21-2.
26. Kondratiev might have disagreed with Rostow's statements that the Russian take-off was under way by the 1890s (*Stages*, p. 95), and that the drive to maturity occurred in the three decades after 1928 (p. 98). Rostow related that the Soviet drive to maturity took place with a severe constraint on agriculture (p. 99); Kondratiev might have responded by stressing that without capital improvements in agriculture the idea of a drive to maturity was an unlikely proposition. In contrast to Rostow M.E. Falkus wrote that whether the Russian economy had entered the take-off even by 1913 was 'impossible to judge', and that in 1913 the level of Russia's per capita income made it one of the poorest countries in Europe. See *The Industrialisation of Russia, 1700-1914* (London, 1972), pp. 82-4.
27. R.A. Brealey and S.C. Myers, *Principles of Corporate Finance* (New York, 1991), p. 22.
28. Backhouse, *A History of Modern Economic Analysis*, p. 155. See also Irving Fisher, *The Theory of Interest* (New York, 1930), pp. 224-7. *The Theory of Interest* was a revised version of *The Rate of Interest* of 1907.
29. N.N. Shaposhnikov, 'O predelakh rekonstruktsii', *Puti industrializatsii*, no. 9 1929, p. 17.
30. *Ibid.*, p. 21.
31. Brealey and Myers, *Principles of Corporate Finance*, p. 23.
32. Shaposhnikov, 'O predelakh rekonstruktsii', p. 21.
33. *Ibid.*, p. 22.
34. Alexander Gerschenkron, *Europe in the Russian Mirror* (Cambridge, 1970), p. 107.
35. *Ibid.*, pp. 102-4.
36. In 1945 Gerschenkron appeared to accept this view, writing that 'if Russia dispenses with the rule that she should produce everything at home she will be able to utilize here resources better, to use her labor and

- capital more rationally, and to develop higher skills in certain branches of production'. See Alexander Gerschenkron, *Economic Relations with the USSR* (New York, 1945), p. 13.
37. R.W. Davies *et al.*, *The Economic Transformation of the Soviet Union* (Cambridge, 1994), p. 129.
 38. Gerschenkron related that one of the reasons for collectivisation was to obtain increased amounts of grain for export. See Gerschenkron, *Economic Relations with the USSR*, p. 50.
 39. Mark Harrison has explained how Gerschenkron's model of the Russian government using direct and indirect taxes to fund industrialisation has been heavily criticised. Harrison related that it was in part unofficial channels of 'unequal exchange' which transferred the funds from agriculture to industry in the Tsarist period, not the state budget. Large-scale industrial producers were able to exploit their position in the domestic economy, leading to unfavourable terms of trade for agriculture. See Mark Harrison, 'The Peasantry and Industrialisation', in R.W. Davies (ed.), *From Tsarism to the New Economic Policy* (London, 1990), pp. 104-6 and pp. 123-4. However, for the purposes of this argument this revision has little relevance. It only strengthens the Kondratiev argument if private profit and domestic savings were in part the source of Tsarist industrial growth, as Harrison suggested, since Kondratiev was arguing that this path should continue. See *ibid.*, p. 105.
 40. N.S. Simonov, "'Strengthen the Defence of the Land of Soviets": The 1927 "War Alarm" and its Consequences', *Europe-Asia Studies*, vol. 48 no. 8, December 1996, p. 1359.
 41. *Ibid.*, p. 1364.
 42. R.W. Davies, 'Industry', in *The Economic Transformation of the Soviet Union, 1913-45*, p. 144.
 43. *Ibid.*, p. 146.

8 Kondratiev in the 1930s

1. N.D. Kondratiev, *Osoboe mnenie* (Moscow, 1993), vol. 2, p. 615.
2. Alexander Solzhenitsyn, *The Gulag Archipelago 1918-56* (London, 1974), vol. I-II, p. 50.
3. RGAE, f. 7733, op. 6, d. 745, l. 109.
4. RGAE, f. 7733, op. 6, d. 729, l. 4.
5. *Ibid.*, l. 6.
6. *Ibid.*, l. 36.
7. A.P. Efimkin, *Dvazhdy reabilitirovannye* (Moscow, 1991), pp. 168-9.
8. N.K. Figurovskaya and V.V. Simonov, 'Nikolai Dmitrievich Kondrat'ev: kratkaya biografiya', in *Osnovnye problemy ekonomicheskoi statiki i dinamiki* (Moscow, 1991), p. 532 gives the date as just 'June 1930'. Kondratiev, *Osoboe mnenie*, vol. 2, p. 574, fn. 2 gives the date as '19 June 1930'.
9. *Izvestiya*, 28 November 1930, p. 3.
10. Efimkin, *Dvazhdy reabilitirovannye*, p. 174.
11. Kondratiev, *Osoboe mnenie*, vol. 2, pp. 687-9.
12. *Ibid.*, pp. 699-701.

13. O.V. Khlevnyuk, *Politbyuro mekhanizmy politicheskoi vlasti v 1930-e gody* (Moscow, 1996), p. 35.
14. Kondratiev, *Osoboe mnenie*, vol. 2, pp. 708-9.
15. L.T. Lih, O.V. Naumov and O.V. Khlevnyuk (eds), *Stalin's Letters to Molotov, 1925-36* (New Haven, 1995), p. 199.
16. *Ibid.*, p. 200.
17. *Kommunist*, no. 11, 1990, pp. 102-3.
18. Kondratiev, *Osoboe mnenie*, vol. 2, p. 579.
19. Naum Jasny, *Soviet Economists of the Twenties* (Cambridge, 1972), p. 63.
20. Efimkin, *Dvazhdy reabilitirovannye*, p. 188.
21. Jasny, *Soviet Economists of the Twenties*, p. 73.
22. *Ibid.*, pp. 176-8.
23. V.P. Milyutin, 'Kontrevolyutsionnoe vreditel'stvo v sel'skom khozyaistve', in *Kondrat'evshchina: sbornik* (Moscow, 1930), p. 5. Other examples of anti-Kondratiev propaganda include I. Vermenichev, 'Burzhuaiznye ekonomisty, kak oni est' (Kondrat'evshchina)', *Bol'shevik*, no. 18 1930; K. Gordeladze, *Kondrat'evshchina v Gruzii* (Tiflis, 1931); I. Vermenichev, 'O razlozhenii novonarodnichestva', *Na agrarnom fronte*, no. 2 1929; and A.A. Sadovskii, *Zavershit' razgrom Kondrat'evshchiny* (Moscow-Leningrad, 1931).
24. Milyutin, 'Kontrevolyutsionnoe vreditel'stvo v sel'skom khozyaistve', p. 9.
25. S.G. Uzhanskii, 'Teoreticheskie osnovy taktiki Kondrat'evshchiny', in *Kondrat'evshchina*, p. 33.
26. A.S. Bondarenko, 'Kondrat'evshchina v voprosakh sotsialisticheskogo stroitel'stva', in *Kondrat'evshchina*, p. 41.
27. Ya.P. Nikulikhin, 'Kondrat'evtsy i pravye v voprosakh industrializatsii strany', in *Kondrat'evshchina*, pp. 71-2.
28. RTsKhIDNI, f. 17, op. 162, d. 11, l. 127 and l. 156.
29. *Ibid.*, l. 161. I am indebted to Professor R.W. Davies for these RTsKhIDNI references.
30. Figurovskaya and Simonov, 'Nikolai Dmitrievich Kondrat'ev: kratkaya biografiya', p. 534.
31. Kondratiev, *Osoboe mnenie*, vol. 2, p. 612.
32. *Ibid.*, pp. 614-16.
33. *Ibid.*, pp. 617-18.
34. *Ibid.*, pp. 619-21.
35. *Ibid.*, p. 642.
36. N.D. Kondratiev, *Izbrannye sochineniya* (Moscow, 1993), p. 511.
37. *Ibid.*, p. 512.
38. *Ibid.*, p. 516.
39. *Ibid.*, p. 517.
40. Kondratiev, *Osoboe mnenie*, vol. 2, p. 666. This document comes from the KGB archive.
41. Kondratiev, *Izbrannye sochineniya*, p. 532.
42. Kondratiev, *Osoboe mnenie*, vol. 2, p. 671.
43. Efimkin, *Dvazhdy reabilitirovannye*, p. 205.
44. *Ibid.*, p. 148.
45. R.W. Davies, *The Socialist Offensive* (London, 1989), p. 175. The letter was published in *Voprosy torgovli*, no. 1 1930, pp. 126-7.

46. Efimkin, *Dvazhdy rehabilitirovannye*, p. 209.
47. As he did to Professor R.W. Davies.
48. N.A. Makasheva, 'Biographicheskii ocherk', in N.D. Kondratiev, *Problemy ekonomicheskoi dinamiki* (Moscow, 1989), p. 20.
49. N.D. Kondratiev, *Osnovnye problemy ekonomicheskoi statiki i dinamiki* (Moscow, 1991), p. 5.
50. N.D. Kondratiev, 'Model' ekonomicheskoi dinamiki kapitalisticheskogo khozyaistva', in *Problemy ekonomicheskoi dinamiki*, pp. 412–14.
51. Kondratiev, *Osoboe mnenie*, vol. 2, p. 632.
52. E.V. Belyanova and S.L. Komlev, 'Problemy ekonomicheskoi dinamiki v tvorchestve N.D. Kondrat'ev', in *Problemy ekonomicheskoi dinamiki*, p. 32.
53. Kondratiev, *Izbrannye sochineniya*, p. 520.
54. Kondratiev, *Osoboe mnenie*, vol. 2, p. 626.

9 Conclusion

1. The word 'conjuncture' is less common in English than in Russian, German or French, but is still sometimes encountered. Related words such as 'juncture' are more commonly seen in English.
2. R.W. Davies, *Europe-Asia Studies*, no. 1 1994, pp. 143–4.
3. E.H. Carr, *What is History?* (Harmondsworth, 1964), p. 54.
4. Frank Knight, *Risk, Uncertainty and Profit* (New York, 1964), p. 45.
5. Joseph Schumpeter, *Business Cycles* (New York, 1939), vol. 1, pp. 166–7.
6. Richard Swedberg, *Schumpeter: A Biography* (Princeton, 1991), p. 134.
7. *Ibid.*, p. 271, fn. 94.
8. W.W. Rostow, *Theorists of Economic Growth from David Hume to the Present* (Oxford, 1990), pp. 470–6.

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