A Study of Business Activity in South Dakota

David Overacre Mesick

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A STUDY OF

BUSINESS ACTIVITY IN SOUTH DAKOTA

By

David Overacre Mesick

Bachelor of Science Degree at South Dakota State College, 1934

A Thesis
Submitted to the Faculty
of
The South Dakota State College
of
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For the Degree of Master of Science

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ACKNOWLEDGEMENT

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INTRODUCTION

Need for an Index of General Business Activity

A casual glance at the financial page of a daily paper will show that business is "picking up," or "falling off." Many papers and magazines maintain indexes of their own of varying accuracy. The business of forecasting and predicting business activity has become a small industry in itself. Some of the foremost indexes are published in the "Analyst", "The Cleveland Trust Bulletin" and the "Federal Reserve Reports". These, however, are indexes of the nation's business activity. A state's business cycle, as a whole, often follows the nation's, but it may over a short period vary considerably from the national cycle; hence the need for regional and state indexes of business activity.

Both monthly and weekly indexes are published for the United States. The weekly indexes are generally not good indicators for more than a few months, since they are made from scanty data hastily gathered. Hence, monthly indexes are considered more accurate for indicating a definite trend in a series.

It may be of interest to note that in a period which has been so emphatically scientific, very little has been done until recently to judge business variations by some sound scientific basis. The inertia, however, now appears to have been overcome. All large corporations at present have their statisticians; the government, especially the Bureau of Agric-
ultural Economics, has developed the statistical part of agriculture studies. Perhaps the depression and its resulting hardships have done more than anything to turn the attention of the public and private organizations to the possible value of gathering and analyzing statistical data.

Purpose

This study is concerned, first with the presentation of the historical background of business conditions in South Dakota, and second, with the composition of a general business activity index for South Dakota. The author is interested in analyzing and discussing the general conditions as the business cycles of the various series portray them. No attempt is made to forecast or predict future business activities in any occupation. The index gives only a historical picture for the period 1923-1937.
THE COLLECTION OF DATA

This work is based upon data gathered through the Department of Agricultural Economics at South Dakota State College. The collection of the facts as presented in these series extends over a period of years, but for the purpose of this discussion, only the period from 1923 to 1937 will be used.

Glenn Aldrich Scott, in 1935, presented a thesis on "Economic Activity in South Dakota". In his thesis he determined and emphasized the methods of construction to be employed in finding the business cycle for any series. This thesis will add five new series to those used by Mr. Scott—new car sales, hog sales, sheep sales, cattle and calves sales and building contracts awarded. One series, prices paid by farmers, which Mr. Scott incorporated in his thesis, has been omitted from this study.

Bank Debits to Individual Accounts

This series is based upon reports published by the Federal Reserve Bank of the Ninth District, Minneapolis, Minnesota, for the following South Dakota cities: Aberdeen, Brookings, Deadwood, Huron, Lead, Madison, Milbank, Mitchell, Mobridge, Pierre, Rapid City, Sioux Falls, Watertown and Yankton. For the most part bank debits are checks against depositors accounts, and these represent payments for food, clothing, luxuries, services, rentals, wages and many other goods and services.
Building Contracts Awarded

Figures on this series have been gathered by F.W. Dodge Corporation, and are available for the last fifteen years. These data show the value of contracts awarded throughout the state. Their chief value lies in the fact that they quickly register industrial changes; and hence it was deemed necessary to add them to the index.

Life Insurance Sales

This series represents the sales of new ordinary life insurance policies in South Dakota (exclusive of group) by months from 1923 to date. The data which are expressed as the total face value of such policies are furnished each month by the Life Insurance Sales Research Bureau of Hartford, Connecticut, and are based on the reports of eighty-one companies. The sales reported by the Life Insurance Sales Bureau afford an excellent indicator of the trend of business as a whole since they are a measure of consumer purchasing power and follow closely the movement of retail trade.

New Car Sales

The data based upon the number of new car registrations each month is made available by months by the Motor Trades Association of Huron, South Dakota. As a current measure of retail trade items, this series must be considered worth while; the author has consequently included it in this study.
Business Failures

Business failures for South Dakota are furnished by quarters through the courtesy of R.G. Dunn and Company. These figures represent the liabilities of the business firms which have failed during the preceding quarters and are ordinarily regarded as valuable evidences of business conditions.

Index of Prices Received by Farmers

This series, which is made available through the Department of Agricultural Economics at South Dakota State College, represents an index of the prices of farm products whose base period is 1910-1914. The prices received by the farmer tend to determine the amount which he can spend thus serving as a measure of business activity.

Livestock Prices

The figures for livestock prices, which are obtained from the United States Department of Agriculture, Bureau of Agricultural Economics, are the average prices paid at the farm.

Livestock Receipts

The number of livestock received each month at packing plants and stock yards are obtained from the Federal Statistician of the United States Department of Agriculture at Brookings, South Dakota.
The data on livestock prices and receipts, combined into a sales index, are the best indicators of agricultural activities in a state; therefore the author has incorporated them in his index since South Dakota is almost entirely an agricultural state.

Electricity Production

The Federal Power Commission of Washington, D.C. publishes a monthly report by states on the production of electricity for public uses. The quantities given are based on the operation of plants engaged in generating electricity for public use, including central stations, both publicly and privately owned, electric railway plants, plants operated by steam railroads generating electricity for traction, Bureau of Reclamation Plants, miscellaneous federal and state projects, and that part of the output of manufacturing plants which is sold. The large number of uses of electric energy, many of which do not vary with either industrial production or consumer purchasing, have given this series a stability not present in many physical volume indexes.

Prices paid by farmers have been omitted from this study due to its unreliability as an indicator of business activity for South Dakota.

The data for all the series with the exception perhaps of building contracts awarded is sufficiently reliable and adequate for the purposes of this thesis.
METHODS OF ANALYSIS

The index of business activity, developed in this thesis, is largely an index of value in production and distribution. Data may be had in a yearly, quarterly, monthly and weekly form. However, that which is most useful and accurate for a business analysis is that which is available in monthly form.

Before any data may be used in an index, the variations due to a general growth in an industry, and to changes from month to month, must be eliminated from the data. Business activity also occurs in cycles due to drought, floods, strikes, etc.

Everybody is familiar with the fact that some industries are continually enlarging or growing in size while in other industries the amount of business is "falling off", and this industry is being replaced by some new industry. Therefore, in making comparisons in the data for a certain series, this growth factor or trend should be eliminated before making comparisons. With constantly changing methods of manufacturing it is evident that all industries do not grow or decline at the same rate. Witness the decline of the horse and buggy against that of the phonograph; or the growth of automobile manufacturing against the growth of electric power.

Very few occupations are entirely uninfluenced by seasonal changes due to climate and weather. Certain
holiday seasons, such as Easter and Christmas also heavily influence purchases, especially in certain lines, as ladies clothes and toys. These seasonal changes bring about peak months in sales during the year and naturally, to supply these peak sales periods, there are peak production periods. Sometimes, through careful advertising and sales campaigns, the peak periods, or low periods, are shifted, cut down or built up — witness car sales in December for the past two years.

The third natural movement of business is the business cycle. Business activity has a tendency to occur in wave-like periods called crests and troughs. These are not necessarily periodic. After a depression, instead of prosperity, one may witness a comparatively long period of stability, or vice versa. Since 1790, the United States has had an average of one and one-half years of prosperity to every year of depression.

Of course, no two business cycles are exactly alike in intensity or duration; but, all are characterized by complete price movements. All periods of rising prices must come to a halt and then a period of depression begins, characterized by decreasing production, falling prices, scarcity of employment, business failures, profit elimination and curtailment of credit.
THE SOUTH DAKOTA BUSINESS CURVE

In the construction of the composite business activity index, ten individual series were used and combined by an unweighted average. Some of the series are secured from private sources, others from government sources. It is believed that the indexes are reliable indicators of present conditions within the state. However, the Author does not contend that the series will continue in the future at the same trend as that at which they are now. Therefore, one should not attempt to predict future trends until one is cognizant of all modifying circumstances. That is, one may predict trends on the basis of present data and the present trend, with the idea that the trend of the business activity, or series, might change decidedly within a year or two. The adjusted data only indicate the trend to date, which under careful consideration may be used as a guide in forecasting future business activity.
BANK DEBITS

The data for bank debits to individual accounts are supplied by the Federal Reserve Bank of Minneapolis. Debits to individual accounts are reported to the Federal Reserve Bank from sixteen cities in South Dakota. Chamberlain and Dell Rapids are omitted from the series since they have been available only the past one and one-half years.

This series has not been deflated for changes in price levels of goods.

Bank debits represent expenditures for clothing, food, luxuries, rentals, wages, and many other commodities for which no series are available, and are included in this index since they do represent such a wide sampling of many activities which are not in the composite activity index. Seasonal variation.

An examination of the various principal lines of activity reveal that bank debits are influenced by the seasonal surges in these fields. However, bank debits will not fluctuate very much since they are really a summation of the influences from a number of activities.

Towards the end of the year, bank debits are influenced predominately by the holiday trade, and in other periods they are influenced by the marketing of grain and livestock. Outside of October and February, the long time seasonal variation in bank debits is slight. At a third period, the expansion in retail trade will affect bank debits.
Chart 1.

SEASONAL INDEX

BANK DEBITS

(1923-1934)
Chart number I shows that the seasonal index fluctuates from 82 per cent for February to 111 per cent for October. But if these two indexies are omitted, the seasonal fluctuation is only from 95 per cent to 106 per cent, and for eight months the variation is only 8 per cent.

Cyclical Movements

Comparing the relative movement of bank debits with the composite business cycle, one discovers that the long time swings of bank debits have about the same magnitude as those of the composite cycle, and the month to month fluctuations, though not always in the same direction, are similar in size. Bank debits, being a composite measure of month to month purchases of various business transactions, they should, no doubt, resemble a general activity index for the state of South Dakota due to its being almost entirely an agricultural state.

The trend for bank debits for South Dakota was upward until the middle of 1930. Then they declined steadily until reaching their low early in 1933. From that point the series have again shown a continually upward growth, but have not yet reached normal. South Dakota, of course, has been unfortunate in suffering both from the effects of a very severe depression, and an equally severe series of drought years. Either of these occurrences would, no doubt, have decreased bank debits considerably. Together they more than cut them in two.
Examining chart number II, one finds that business in the state was in a depressed condition from late in 1923 until early in 1924. It is also noticeable that so far as bank debits will indicate, South Dakota experienced a greater prosperity in 1925 and 1926 (and 1926 was a "dry year") than it did during the 1928 and 1929 "Stock Market Boom". According to individual bank debits, the years 1927, 1928 and 1929 were only slightly above normal. Consequently, when the depression hit the state in 1930, it suffered severely. The trough of the depression hit bank debits in March, 1933 when the "Bank Holiday" was declared. Since then, bank debits have shown a continued and steady recovery. Glancing at chart number II one will easily notice that the rate of fall in bank debits was greater than the rate of recovery has been. The individual bank debits for December, 1936, were the largest since June, 1931.
The plotted line indicates whether business as shown by check transactions was relatively good or bad during the years 1923-1937. The vertical scale indicates units of deviation (A.D.), the unit being a 20 per cent deviation from normal.
CATTLE, HOG AND SHEEP SALES

A little over one-half of South Dakota's population is engaged in some agricultural occupation. Therefore, in any business index, some indexes representative of this occupation must be incorporated. Prices alone are of little or no significance in showing business activity in agriculture. Often when prices are the highest, the farmer has little or no agricultural produce to market. Likewise, physical units are just as poor an indicator, for when the largest offerings are made to the market, the prices the farmer receives are often the lowest. Consequently, either prices or quantities taken alone will often create a wrong impression. In normal years South Dakota's total gross farm income is over two hundred and twenty-five million dollars.

After some investigation it was decided that cattle, hog and sheep sales would constitute a very reliable index for farm income. The number of cattle, hogs and sheep sold by South Dakota farmers are available by months, from the U.S. Department of Agriculture. The prices are available from this same department, by months, about the first of the following month.

It being impossible to obtain livestock receipts in any measure, other than number of animals, the price quotations cannot be applied directly to the receipts. However, with slight variations due to grain and livestock prices, it can be assumed that the weights of animals received at stockyards are
fairly constant over a period of years. A composite index, obtained from receipts and prices, is used instead of a value index, which might be found by multiplying the receipts in pounds by the average price if the former were accessible. Thus the index of cattle, and sheep income is the index which is derived from the product of the index for receipts and the index for the average prices and the series for hog sales is a value index. The seasonal and long time growth effects are removed from the data for both receipts and prices.
CATTLE SALES

Monthly cattle receipts are obtainable at the end of the year from the U.S. Department of Agriculture and cattle prices are obtainable each month from the same source.

Seasonal Variation

An inspection of charts number 3 and 4 illustrates that the seasonal movement in cattle prices is much smaller and more regular than it is in cattle receipts. The seasonal low of 93, in prices, occurs in December and the seasonal high of 105 occurs in June. The seasonal movement of cattle receipts is very erratic, the low of 60 coming in May and the high of 180 in October. There is very little or no correlation between the seasonal indexes for cattle receipts and cattle prices.

Cyclical Movements

In 1923 about 600,000 cattle and calves were shipped to market. This increased until 1926, when over 830,000 head were marketed. A decline in cattle marketings set in and a low of 325,401 was reached in 1935. In 1934, the number of cattle shipped was over 1,100,000. This all time high was due to the drought and the government buying program.

Cattle prices steadily increased from $5.60 for January, 1923 to $10.90 in June, 1929. A steady decline then commenced and a low of $3.25 came in November, 1933. Since
then cattle prices have been on a steady upward trend. In December, 1936 the average price was $7.00.

A scrutiny of chart number V brings out the fact that in 1923 and through to the middle of 1924, there existed a slump in income from cattle and calf sales. The years 1925 and 1926 witnessed a tremendous recovery in the cattle raising industry, a period which was more active for this industry than the years of 1928 and 1929. Another slump came in 1927 between the two periods of prosperity. Sales were abnormally high in 1934 due to the government's reduction and drought program.

When the depression hit, cattle income dropped very rapidly until the latter part of 1930 and it remained almost stationary for nearly a year. This was due to an increase in cattle receipts and not to an increase in prices which had continued to decline. After this period cattle income continued to decline very rapidly until the bottom was reached in June, 1932. Since then this series has followed a slow and erratic road to recovery, which has been due to increased prices rather than increased receipts, for the government buying program of 1934 and the drought of 1934 and 1936 have tremendously reduced the number of cattle in South Dakota.
Chart 3.

SEASONAL INDEX
CATTLE PRICES
(1923-1934)
Chart 4.

SEASONAL INDEX

CATTLE AND CALVES SHIPPED OUT OF SOUTH DAKOTA

(1923-1934)
The plotted line shows the relative activity in the cattle raising industry during the years 1923-1937. The vertical scale indicates units of deviation (A.D.), the unit being a 24 per cent deviation from normal.
SWINE SALES

Hog receipts are available by months for South Dakota. However, the complete data is not available until February of the following year. Hog prices, on the other hand, are available every month.

Seasonal Variation

If one investigates chart number VI it becomes evident that there are distinct seasonal movements in the value of swine shipped out. These vary from 70 per cent for September to 136 per cent for January based on an average month of 100 per cent. There are two seasonal swings during the year, the first peak coming in January and the second in June. The first cycle is five months in duration and the second is seven.

Cyclical Movements

Income from swine sales, as a reference to chart number VII will show, was below normal from the middle of 1923 to the end of 1924. There was a decided period of prosperity in 1925 and 1926, which was far greater than the prosperity period of the "Boom Days" of 1929. The income from hog sales was distinctly below normal in 1927 and 1928. In 1929 it again rose above normal, but not to the extent that it did in 1925 and 1926. After 1929 the farmers income from hog sales decreased very rapidly, the low point being reached in June, 1932. In August and September, 1933
there was an abnormally large increase in the volume of hog sales due to a government program for purchasing "piggy sows". The hog industry is one of the last industries in South Dakota to start its way back on the road to recovery. This is due to the fact that hogs must be raised on small grain and corn, of which there has been a noticeable scarcity for the last four years. The long continued slump in hog sales could not be attributed to prices because hog prices have varied from almost normal to above normal. The hog raising industry in 1936 exhibited signs of rapid recovery.
Chart 6.

SEASONAL INDEX

VALUE OF SWINE SHIPPED OUT

(1923-1934)
The plotted line shows the relative activity in the hog raising industry during the years 1925-1957. The vertical scale indicates units of deviation (A.D.), the unit being a 24 per cent deviation from normal.
SEASONAL VARIATION

Sheep receipts fluctuate more than any other livestock series in seasonal changes ranging from 10 per cent to 224 per cent for October, when the peak sales in fat lambs occur. Surprisingly, sheep prices fluctuate relatively little, varying from 89 per cent for October to 113 per cent for April. From a comparison of charts number VIII and IX, one can see that the seasonal indexes of sheep prices are reciprocals, as a whole, for the seasonal indexes of sheep receipts. That is, when one is high the other is low.

CYCLICAL MOVEMENTS

From 1923 through 1931, sheep receipts were on a decidedly upward trend. The receipts for 1923 were 244,000 head, and for 1931, they were 754,000 head tripling in eight years. The trend for the next year was downward and then it again began to increase until the middle of 1934, and since then there has been a distinct decline in the number of sheep marketed, but the figure is still above the 1929 figure.

Sheep prices increased from 1923 through 1925, but in 1926 they declined; however, the next year a new upward trend set in culminating in April, 1929. From then on sheep prices fell until they were $1.60 in November, 1932. For the next three years they rose and were $4.65 by March, 1936.
Chart 8.

SEASONAL INDEX
SHEEP PRICES
(1923-1934)
Chart 9.

SEASONAL INDEX

NUMBER OF SHEEP SHIPPED OUT

(1923-1934)
Chart number X demonstrates that the income from sheep sales has been extremely erratic. Sheep raising apparently has not suffered in the past six or seven years to the extent that hog and cattle raising have. In 1923, 1924 and 1925 the income for June shows a decided slump. This was caused by the combined effect of lower prices and less marketing of sheep. In 1923, 1924 and 1925, sheep raising was in a period of prosperity due to rising prices and an increase in the number of sheep marketed. From then on until the early part of 1930, the sheep industry was experiencing a minor depression relative to its rate of growth. A decided increase in income from sheep sales was experienced in the first half of 1930 and then the depression commenced to be felt, the low point coming in April, 1932. The rate of recovery in this series has, as in other series, been slower than the rate of decline. Sheep sales, as a whole, have been above normal for 1936.
The plotted line shows the relative activity in the sheep raising industry during the years 1923-1937. The vertical scale indicates units of deviation (A.D.), the unit being a 29 per cent deviation from normal.
PRICES RECEIVED BY FARMERS

An index of prices received by farmers is available each month from the Department of Agricultural Economics at South Dakota State College.

Seasonal Variation

This series season change is presented graphically in chart number XI. It is small, ranging from 95 per cent for December to 104 per cent for July. The seasonals are generally the reciprocals for the marketing movements of grain and livestock. That is, during those months when grain and livestock tend to come onto the market in larger quantities, prices tend to be lower. This index, however, does not vary seasonally as much as livestock and grain movements do since it is composed of a number of items which have seasonal peaks and troughs at different times of the year.

Cyclical Movements

In 1923 and 1924 the prices received by farmers were considerably below normal. Examining chart number XII, one notices that the prices received by the farmer were further above normal in 1925, 1926 and 1927, than during the "Boom" days of 1928 and 1929 when the United States as a whole was in a period of great prosperity, (even if somewhat artificial), thus demonstrating that for South Dakota, at any rate, the national "Boom Days" did not correspond. After April, 1929 prices received by the farmers fell rapidly until
Chart 11.

SEASONAL INDEX

PRICES RECEIVED BY FARMERS

(1923-1934)
The plotted line shows whether the prices of farm products were relatively high or low during the years 1923-1937. The vertical scale indicates units of deviation (A.D.), the unit being an 18 per cent deviation from normal.
the bottom was reached in February, 1935. From then on the rate of recovery was even more rapid than the rate of decline, and prices almost reached normal in March, 1935 and then suffered a decided slump. By November, 1936 prices had become normal.

There is, of course, one thing to bear in mind in regard to this series and that is that the prices received by the farmer may be high and yet he may have little income because he has little or nothing to sell. So in reality he is no better off than before. For that reason livestock sales more nearly represent the relative financial position of the farmer.

This series in its cyclical movements is very regular and tends to lead the composite index by several months.
BUSINESS FAILURES

The data on business failures has been obtained by quarters from R. G. Dunn and Company. The data is reported as number of firms failing and the total amount of liabilities. The data employed in this series is the amount of the liabilities. The number of business failures has a tendency to increase during business slumps and to decrease in periods of prosperity. The series, therefore, was plotted in an inverted order so as to correspond with the other series.

Seasonal Variation

A survey of chart number XIII shows considerable seasonal variation by quarters for business failures. The seasonal peak occurs in the fourth quarter of the year and the seasonal low comes during the third quarter. This is somewhat out of line with what one would naturally expect. It would seem more natural if business had a higher mortality rate in the first quarter rather than in the fourth.

Cyclical Movements

Studying chart number XIV, one notices that this series as a whole, follows the general trend of business from 1923 through 1932, showing a slump in 1924 and 1927 and periods of prosperity during 1925, 1926, 1928 and 1929. Early in 1930 the liabilities from business failures began to mount rapidly and continued to do so until 1933, when the government came to the aid of business. Since then business
Chart 13.

SEASONAL INDEX

BUSINESS FAILURES

(1923-1934)
Chart 14.

BUSINESS FAILURES (INVERTED)
(1923-1937)

The plotted line shows whether commercial failures were abnormally large or small during the years 1923-1937. The vertical scale indicates units of deviation (A.D.), the unit being a 60 per cent deviation from normal.
failure series has been considerably out of line with general business activity. The last quarter of 1935 saw an unduly large amount of liabilities from business failures in South Dakota. In 1936 and 1937 these failures have been below normal.
BUILDING CONTRACTS AWARDED

The construction of new buildings, and new residential homes is an excellent forecaster of business conditions since few industries use as much hand labor, and raw and finished materials from so many places. It also indicates the demand that will arise for furnishings for the newly constructed buildings, and it likewise is a fine indicator of the activity in repairing old buildings and in the demand for paint.

Figures on building construction are reported either in square feet or value. Building estimates are also available from two sources, building permits issued, and building contracts awarded. This index employs figures of value on building contracts awarded, which are secured from F. W. Dodge Corporation, since they are the most accurate measure. However, these are subject also to wide variations since contracts are frequently let several months before construction gets under way. For this reason, and due also to the lag in actual construction work, a three months moving average is used to smooth the data and to make it more truly representative.

The United States has experienced three boom periods since the World War. They were respectively, the agricultural boom, the urban real estate boom, and the stock market boom. South Dakota, however, was only affected by the last and the first boom.
Seasonal Variation

Even after smoothing the data there is considerable seasonal fluctuation as witnessed by chart number XV, in which the seasonal index varies from 50 per cent for January to 148 per cent for April. In every month, during the second and third quarter, the seasonal index is above 100 per cent, while it is below 100 per cent for the other two quarters. 67 per cent of the building contracts on an average, are let during the second and third quarters (the spring and summer months). Since 1933 the seasonal index has varied considerably, the tendency being to have months occur in the last quarter rather than in the second quarter of the year. In fact this trend was even noticeable in 1932 and has been adjusted for in the series. It is due no doubt to the government's policy of letting contracts in the fall and winter to help relieve the unemployment problem during winter months. Of course, actually a portion of the construction is put off, or does not occur, until the spring months.

Employment, although inclined to be seasonal in the building industry, is not as erratic as the building contracts awarded series.

Cyclical Movements

One is able to discern, from chart number XVI, that the building trade was above normal in 1923, and that it was slightly depressed in 1924. In 1925 it again was in a fairly
SEASONAL INDEX
BUILDING CONTRACTS AWARDED
(1923-1934)
Chart 16. BUILDING CONTRACTS AWARDED (1923-1937)

The plotted line shows the relative activity of the building industry during the years 1923-1927. The vertical scale indicates units of deviation (A.D.), the unit being a 25 per cent deviation from normal.
good position, but for the next three years it suffered from a mildly depressed condition. During the next three years building contracts awarded were again in a fairly prosperous condition, especially so in 1931. This favorable condition, in 1931, was probably due to the government's attempt to help relieve the effects of the depression. The years 1932 and 1933 were the only years when this occupation appears to have suffered considerably in South Dakota. Since then construction activities have been nearly normal to somewhat above normal.

This series seems to show less ill effects from the 1929 Stock Market Crash than any other series studied for South Dakota. The favorable position held by the building trade through the depression has been, no doubt, in a large measure due to the federal government's PWA and WPA construction programs. The businesses associated with building activity are not in as favorable a position as this series would indicate. Witness the decrease in the amount of sales in the lumber yards throughout the entire state, and also the curtailment in the number of employees on their payrolls. The fault of this series is that it fails to give figures representative of building on South Dakota farms, which were, in the large majority of cases, owner-operated; consequently much of the construction work on farm property does not appear in building contracts awarded figures. In other words, figures for build-
ing contracts awarded give a fair indication only of construc-
tion in towns and not on the farms. One should be careful,
therefore, not to give too much weight to this series.

In 1936, construction began to hit its stride with
the resurrection of the private builder through the United
States; but this did not occur to any extent in South Dakota.
LIFE INSURANCE SALES

Figures on life insurance sales for South Dakota are available through the Life Insurance Sales Research Bureau, Hartford, Connecticut. Life insurance sales are a measure of the consumer's purchasing power, and are subject to seasonal variations the same as other retail sales.

Seasonal Variation

Looking at chart number XVII, one may note how the seasonal index of life insurance sales varies from 82 per cent to 128 per cent based on an average month taken as 100 per cent. December shows the greatest activity in life insurance sales and January represents the season's low with February a close second. Eight of the months have their seasonal index lying within the range of 96 per cent to 108 per cent. The best period for the sale of life insurance policies, according to the seasonal indexes, would be in the spring and summer months in addition to December. It is difficult to explain the unusually high activity of life insurance sales in December.

Cyclical Movements

In South Dakota the activity in the life insurance sales field, roughly parallels the composite business activity cycle until 1933. In 1933, business as a whole in South Dakota started upon its road to recovery. Life insurance sales, however, remained in a decided slump and have to date
Chart 17.

SEASONAL INDEX

LIFE INSURANCE SALES

(1925-1934)
shown little or no signs of recovery except for a small upward spurt late in 1935 and early in 1936, which immediately fell back.

Life insurance sales were in a minor slump in 1923 and 1924. They then entered upon a prosperous period which ended in the middle of 1926 due to a crop failure over the state. From then on sales were in a small slump until the first part of 1928. In 1928, life insurance sales were practically normal for the entire year. Another period of prosperity began in 1929 and lasted until the middle of 1930, when this series descended into a major depression from which it has shown no evidences of recovery.

By glancing at chart number XVIII of life insurance sales, it is evident to the observer that this series experienced better times in the agricultural prosperity of 1925 than it did in the Stock Market Boom of 1929.

The recent depression has caused the cancellation of innumerable life insurance policies, and the federal government has entered upon a program of social welfare and old age pensions. What effect these two factors will have on life insurance sales, it is too early to suggest.
The plotted line shows whether the insurance business was relatively active or depressed. The vertical scale indicates units of deviation (A.D.), the unit being a 16 per cent deviation from normal.
NEW CAR SALES

The people of South Dakota generally spend, in a normal year, $25,000,000 for new cars. Consequently, a retail industry as large as this ought to be a fair indication of business conditions. It is usually recognized by statisticians, that used car sales would be more representative of business conditions than new car sales. However, no figures are available for the number of used car sales. The data for this series has been furnished through the courtesy of the South Dakota Motor Trades Association. New car sales are available only since January 1926.

Seasonal Variation

The high in monthly sales came in June 1930 when 4,402 cars were sold, and the low occurred in December 1932, which month witnessed the sale of only 90 cars. From chart number XIX, a person quickly perceives the seasonal nature of new car sales. There is one complete cycle during the year. The yearly low of 31 per cent occurs in December and then sales progressively increase to a high of 148 per cent for May, after which they steadily fall to December. About 63 per cent of the new cars are sold in the second and third quarters. Since 1935 there appears to be a distinct change in the seasonal factor for November, December and January. It is too early as yet to determine whether or not this change, which is in the nature of an increase, will become permanent.
Chart 19.

SEASONAL INDEX

NEW CAR SALES

(1926--1936)
Cyclical Movements

The peak of sales came in 1929 when 50,762 cars were sold. By 1932 this figure had dwindled to 3,914.

New car sales were less for 1927 than for 1926. This probably was caused by a suspension of production activities by Ford throughout the year. The business cycle experienced a slump in 1926, 1927 and the early part of 1928. After this period, the effects of good crops in 1927 and 1928, accompanied by the effects of the stock market combined to produce a period of prosperity in the field of automobile sales. Chart number XX shows that the 1926 depressed condition in new car sales was due to the falling off in sales after the middle of the year. By July 1, of that year, it had become evident that there would be a very light crop; one, consequently, draws the conclusion that the 1926 slump was due to the crop failure in South Dakota. The trough of the depression, in the series, was reached by the end of 1932, although the actual cyclical low came in April 1933. The peak of cyclical activity occurred late in 1928 and early in 1929. After that a steady decline set in. When recovery began, in the early part of 1933, it exhibited a continual upward trend until the middle of 1935; since then, however, the activity in the automobile field has remained practically stationary although the cycle itself has shown considerable fluctuation due to a shift in the seasonal variation.
The plotted line shows whether the automobile business was relatively good or bad during the years 1926-1937. The vertical scale indicates units of deviation (A.D.), the unit being a 59 per cent deviation from normal.
ELECTRIC POWER PRODUCTION


Seasonal Variation

There is some seasonal variation in the production of electric energy, as one will notice by inspecting chart number XXI. The seasonal movement, except from January to February, is uniform varying from 112 per cent in December to 92 per cent in April.

Cyclical Movements

The growth in power production during the past fourteen years, has been greater than the growth of any other large industry. This growth slacked off for only about five years, during the depression. 10,824,000 kilowatt hours were used in December 1930 -- an all time high until 1935. By December, 1935, 10,752,000 kilowatt hours of energy were sold in a month, and the use of electrical energy has continued to increase. This development has been due to increasing commercial uses, to new industrial processes and to new household appliances. The sale of household appliances, no doubt, has been the chief contributing cause in South Dakota of the increased consumption of electrical power. Some of these appliances, which all readers are familiar with, are refrigerators, radios, electric stoves, mechanical stokers and electric fans. All of these, and others, have combined to
SEASONAL INDEX
TOTAL ELECTRIC POWER PRODUCTION
(1925-1934)
keep the utility companies from suffering as serious consequences from the depression as many other industries have. There is one thing though to bear in mind, and that is that the actual cost of producing electrical energy is only a small portion of the costs computed in figuring the power rates. The principal costs are those of interest, depreciation, etc., on the fixed investment. Thus a small drop in revenue will affect this type of industry more than it would other industries.

The production of electrical energy is one of the most stable physical volume indexes. This stability is caused by the varying sources of demand for electrical power which arise both from the consumer and from industry. In South Dakota the bulk of electrical power is supplied to the consumer.

Chart number XXII illustrates the relatively depressed condition of power production in relation to the long time trend, from early in 1924 to the beginning of 1928. The industry then entered on a period of prosperity which lasted until the middle of 1929. The peak of this period came in 1929 and production of energy had begun to fall off before 1929. The series showed a brief period of recovery late in 1929 and during most of 1930, and then the production of electrical energy dropped rapidly until the cyclical low was reached in January 1935. Recovery immediately set in and the rate of recovery for this series has
The plotted line shows the relative activity of the electric power industry during the years 1923-1937. The vertical scale indicates units of deviation (A.D.), the unit being an 8 per cent deviation from normal.
been as rapid as the rate of decline. In 1934 there was an unusual upward spurt towards normal. This movement, however, dropped back within a few months. The production of power reached normal in February 1936 and since then it has advanced considerably beyond normal.

The public utility industry was among the first in South Dakota to recover from the depression.

It will be noticed that electric power production did not partake to any great extent, in the general agricultural prosperity of 1925 and 1926. The rapid comeback of electric power consumption was encouraged by the power companies lowering of rates which brought new customers or encouraged old ones to add more equipment. As a consequence of last fall's election a further reduction in rates and increased domestic consumption of electric power is to be anticipated.

The data for power production by fuels has also been worked into a time series analysis. As a whole, it follows closely the same trends as total power production. It is more erratic in its movements due to the highly seasonal variation of hydro-electric power. Most of the electrical energy used in South Dakota is generated from fuels. The seasonal index, which is graphed on chart number XXIII, for this series ranges from 96 per cent for March and April to 118 per cent for December. The cycle reached normal briefly
Chart 23.

SEASONAL INDEX

PRODUCTION OF ELECTRICITY BY FUELS

(1923-1934)
1934 and 1935, but it did not rise above normal for any
preciable period until February 1936. Chart number XXIV
presents the business cycle for this series.
The plotted line shows the relative increases and decreases in this series during the years 1923-1937. The vertical scale indicates units of deviation (A.D.), the unit being a 9 per cent deviation from normal.
COMPOSITE CYCLE

The composite cycle is composed of ten series weighted alike, and is graphically presented in Chart num-
ber XXV.

Conditions were approximately normal in 1923; how-
ever, they were below normal for 1924. During 1925 and most
of 1926, South Dakota was witnessing a period of agricultur-
al prosperity which exceeded the stock market boom prosper-
ity period of 1928 and 1929. Business conditions in South
Dakota were again suffering from a slump in 1927. A period
of "good times" began early in 1928 and continued until the
middle of 1930, when business activity in South Dakota began
to feel the effects of the oncoming depression very decid-
edly. The low point in business activity was reached in
March 1933. Since then there has been a continual improve-
ment in business conditions which was very rapid in 1936.
However, conditions have not yet reached normal in this state.

South Dakota, it should be remembered, has been
suffering from two major catastrophies — a major depression
and a series of severe drought.

A great deal of the recovery of business conditions
in South Dakota can be traced to various government programs
of relief, subsidation, etc.

In conclusion, the author wishes to state that at
the best, indexes cannot be considered as more than a broad
estimate of general business activity.
The upper plotted line shows the general business conditions in the Nation and the lower plotted line shows the general business conditions in South Dakota. The vertical scales indicate percentages of normal (%) and units of deviation (A.D.).
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