

The Economic Determinants of the Rate of Settlement
of Saskatchewan During the Period 1901-1914:
Was the Wheat Boom Due to the Wheat Price?

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PART I. INTRODUCTION

This paper explores the fundamental causes of the wheat boom in the province of Saskatchewan. The wheat boom occurred between 1901 and 1914 and was characterized by a high rate of immigration and a high rate of western settlement. The flow of immigrants to Canada increased from 55,747 in 1901 to peak at 400,870 in 1913.¹ Capital inflows to Canada increased from \$8.4 million in 1901 to \$527.9 million in 1913.² During this era of wheat farming, farmers enjoyed both healthy rainfall and favourable growing conditions resulting in abundant harvests and the province of Saskatchewan evolved from an underdeveloped wilderness to become one of the world's most important wheat growing areas.

The traditional view regards the increase in the world price of wheat as the main cause of the wheat boom. This paper brings forth numerous other factors that determined the decision to settle and to acquire a homestead. It examines farmers' incomes as a function of not only the price of wheat, which is a function of its quality, but also the quantity of wheat, resulting from the productivity of the land. Furthermore, it examines the structural change that occurred as the transition from a common property to a private property system took place. The traditional view does not recognize the importance of the vast resources that were expended by the Liberal government to encourage immigration to the province. For these reasons the traditional explanation of the wheat boom

could be augmented by the examination of additional social, economic, political, environmental and technological variables.

Our hypothesis shall be that while the wheat price increase was an important factor contributing to the wheat boom it was only because it occurred within the economic context that existed at the time. In other words, the degree of the boom was affected by the economic, political, social, environmental and technological climate. The extent of the boom would have been reduced if these factors were not right for economic development. Indeed, we may go as far to say that the wheat boom would not have occurred without the presence of these factors.

This context included fundamental changes in the nature of the world economy. There was a decline in the relative importance of Britain and a dynamic growth of the new North American economies. "A 'new capitalism,' which many people called by the name of 'imperialism,' developed at the beginning of the twentieth century."³ It meant that capitalism would operate on a world scale, with the resultant increases in capital and labor mobility. Industrialization increased along with a booming population that was becoming more and more urbanized. There was an increasing need for imports of food to feed this expanding population, increasing the demand for wheat. Furthermore, this increasing population created an increasing pool of potential migrants from which the province of Saskatchewan could be settled.

There were many factors that determined the rate of settlement of the province of Saskatchewan in addition to the price of wheat. These factors include technological innovations in wheat production, and processing. They also include improvements in transportation, arguably driven by political forces to link Canada, as branch railway lines weaved their way across the prairies increasing the amount of farmland that was within economic distance of world markets. The increasing availability of jobs in railway construction camps had a favourable impact on settlement as immigrants were able to obtain sufficient capital to start their farms. The presence of such legislation as the Homestead Act also enabled settlement to proceed at a faster rate. These factors were not the only factors to influence settlement.

Climatic factors affected the rate of settlement. Rainfall was higher than normal during the period resulting in a lower incidence of drought. This lower incidence of drought would have attracted an increasing number of settlers as the environment for wheat farming improved. Temperatures were increasing during the period resulting in lower incidence of frost. These climatic factors were major influences on the rate of settlement as it attracted immigrants to what appeared to be land that was more fertile than what it was normally.

Push factors must not be ignored as possible determinants of the wheat boom. We will propose that during the time period an

extreme land hunger on the part of Europeans existed and that they saw in a Saskatchewan homestead the opportunity to own a valuable property, that was increasing in value as time passed. Others, such as the Russian Jews, sought to escape persecution in their home countries. Saskatchewan was seen as a haven where people were free from religious or political persecution. Furthermore, an increasing spread between wages and the standard of living in Britain and Saskatchewan caused homesteading in Saskatchewan to become more attractive. These push factors help to further explain the wheat boom by setting the context in which there was an abundance of mobile labour in the world market. An attractive wheat price would not have fostered settlement if labour was not being pushed off Europe.

There are numerous questions to answer in order to understand this period of Canadian economic development. Could the traditional view focusing on the price of wheat be further developed? What was the role of technological change? How did government policy affect the rate of settlement? What role was played by climatic factors? Were there any push factors affecting the decision to migrate at this time? Was Saskatchewan settlement primarily determined by the desire of the landless to own land? It is with these factors in mind that we seek to expand on the fundamental causes of the wheat boom.

PART II. The Wheat Price Argument

The generally accepted view regarding the determinants of the rate of settlement of the Canadian prairies was that the wheat price increase beginning in 1896 was the fundamental cause of the wheat boom. The high rate of immigration, and settlement characterized the wheat boom during the first decade of the twentieth century. After a long phase of stagnation the rate of settlement rose dramatically during this period. The question that most economic historians have asked is why the rate of settlement increased so profoundly during this period. The traditional view involving the key role of the wheat price increase had as its main proponent the economic historian Ken Norrie who argued that it was an improvement in all of the factors that would tend to make wheat farming more profitable, such as the development and diffusion of dry-farming techniques, improved strains of wheat, but that it was an increasing price of wheat that precipitated the wheat boom. His thesis focused on showing that there were precursor events that had to occur before it would be possible for the wheat boom to occur. Among these were the installation of the main line of the Canadian Pacific Railway, the exhaustion of the supply of free sub-humid land in the United States and Canada and the development and diffusion of dry farming methods. Once these events occurred he argued that a rise in the wheat price would be sufficient to bring about the wheat boom.

Norrie's paper discusses in great detail a popular view regarding the increase in the rate of settlement after 1896 which was the conjuncture of events hypothesis. This hypothesis states that it was the occurrence of certain fundamental prerequisite events in the mid 1890's that allowed the brisk increase in the rate of settlement of the Canadian prairies which then ensued. These events included the filling up of the American frontier, a rise in the price of wheat, lower transportation costs on wheat exports, the federal government's development policies, technological innovations regarding wheat production, transport, and processing, and an increase in labour migration and capital inflows. What were Norrie's feelings toward this approach of explaining the increased rate of settlement at the turn of the century?

Norrie was highly critical of this approach. He had several fundamental criticisms of this theory, some of which contradict the main arguments of his own thesis. First, in attacking the conjuncture of events hypothesis he points out that homesteading in the U.S.A. actually took place at a faster rate after 1896 than before. Later, ironically, he argues that the American west had been filled up in the mid 1890's leading to an increase in Canadian frontier settlement. This statement seems to contradict his assertion that the exhaustion of the supply of free sub-humid land in the United States and Canada was a prerequisite for the wheat boom. However, we feel that it is the exhaustion of

land of a certain type that was important. This would follow from the Ricardian model of land utilization. In this model Ricardo argues that before inferior lands are cultivated all superior lands will normally have to be brought into production. Capital and labour will yield higher returns on the land of the higher quality he argues. "It is only, then, because land is not unlimited in quantity and uniform in quality, and because in the progress of population, land of an inferior quality, or less advantageously situated, is called into cultivation, that rent is ever paid for the use of it."⁴ Therefore, according to this model we must have all of the land of a certain quality settled before land of the next quality could be settled. We feel that the American land tended to enjoy a greater amount of rainfall than Canadian land and therefore would tend to be more productive and therefore would tend to be of higher quality.

Another contradiction occurs when he asserts that wheat prices were much higher in the 1870s and early 1880s so the wheat price of the mid 1890s was nothing that the world had not seen before. This contradicts the core of his thesis which stated that the wheat price increase that started in 1896 sparked the wheat boom. Furthermore, he dismisses technological innovations in wheat production. "But dry-farming techniques were understood as early as 1860 in Utah and California and were being used at Indian Head, Saskatchewan by 1886, so there is a problem in suggesting that more extensive use of these innovations would have hastened

settlement."⁵ He also makes a contradictory statement regarding the importance of the development of earlier-ripening varieties of wheat. The statement "The importance of the development of earlier-ripening varieties of wheat such as Marquis has apparently been dismissed..."⁶ stands in stark contrast to his later statement. "Successful cultivation of the remaining Canadian lands would require...an earlier ripening wheat variety."⁷ It is such contradictions that seriously weakens the author's arguments.

Further, he argues that international capital and labour flows respond to economic conditions and do not create economic opportunity. Also, Norrie argues that such federal policies such as the Homestead Act can be dismissed. Although no precise explanation is given, he implies that federal policy can never have much of an effect on the rate of settlement of the Canadian prairies. This follows from the core of his thesis which implies that the rate of settlement was strictly due to economic factors.

What then are Norrie's key arguments? First he argues that it was not the end of the American Frontier that led to an increase in the rate of settlement of the Canadian prairies. It was the end of the supply of sub-humid land. He argues that until the supply of such land had been exhausted in the United States and Canada there would be no incentive to settle the semi-arid land of the Canadian west. The expected net returns would be lower, he argued, as the semi-arid land that characterizes much of the Canadian west would

be less productive. The main problem that characterizes the semi-arid plains is the higher incidence of drought. The higher incidence of drought would tend to decrease the expected returns to farming semi-arid land versus sub-humid land. He maintains that with the principal of expected value, people would be reluctant to settle land that had a lower expected return than land available elsewhere at the same price.

Another factor that Norrie felt had influenced the rate of settlement of the Canadian prairies was the adoption of dry-farming methods. Dry-farming is crop production without irrigation on dry land, by conserving soil moisture and growing crops that resist drought.⁸ Although these techniques are expensive, they can make farming semi-arid land more viable. Before the mid 1890s traditional farming methods were dominant whereas afterwards it was predominantly dry-land farming. Norrie argues that dry-land farming was introduced coincidentally at the same time that the supply of sub-humid land was running out in the mid 1880s. Necessity is the mother of invention, he conjectures. As dry-land farming methods became more readily understood and utilized, the expected net return to farming in the semi-arid region finally became high enough to warrant an increase in the rate of settlement of the Canadian prairies.

Norrie's main line of argument is quite simple. He maintains that a high relative net return will induce a high rate of

settlement of the Canadian prairies. The main determinant of the expected net return is the price that the commodity being produced will fetch on the open market. Since the main commodity being produced was wheat, the wheat price he argues will be the main determinant of the rate of settlement. He saw that it was this increasing price of wheat that would cause the expected net return to farmers working semi-arid land to increase, and that it was this higher expected net return that would cause the rate of settlement to increase.

In Norrie's paper he seeks to explain the lag between development and settlement policy and actual settlement on the Canadian prairies. He looks at the federal Homestead Act of 1872 and wonders why no significant settlement took place until 1896. There must be an explanation available that explains settlement in terms of general market conditions, he maintains. The generally accepted theory of the time, the conjuncture of events hypothesis, is simply not adequate for Norrie. This popular theory maintained that it was the simultaneous occurrence of key events that laid the basis for the wheat boom. Norrie is highly critical of this theory and he argued that all of these factors can be dismissed as probable explanations for the wheat boom. To Norrie there were three key events which occurred that explained the timing of the wheat boom. The first was the establishment of the basic transportation trunk line. The second was the disappearance of sub-humid land in Canada and the United States in the mid 1880s. The

third was the invention of dry-land farming techniques shortly after this time period, and the understanding of these techniques by the farming public. With these three events having occurred it was time for the wheat price increase in 1896 to ignite the wheat boom.

How does this theory stand up when closely scrutinized? Does it accurately reflect reality? Were there no other factors that could have influenced the decision to migrate at this time? Were the determinants of the rate of settlement strictly market related? These are questions that must be dealt with.

PART III. Criticism of the Wheat Price Argument

Ken Norrie pinned the blame for the increase in the rate of settlement in 1896 squarely on the nose of the increase in the price of wheat. This, however, also constitutes the principal weakness of his thesis. The problem with this idea was that it pinned the rate of settlement on one element when really it was due to numerous factors. For example, there are more factors at play when determining farmers' returns than just the price of wheat. The revenue of the farmer is a function of the quantity of wheat, and the price of wheat. The price of wheat is also a function of the quality of wheat. Many factors would influence this. For example, if frost had damaged the wheat it would not be worth as much as the quality would be lower. If drought had occurred there would be less

wheat as yields would be lower. There are still many other factors that affect both the rate of settlement and net returns to farmers that were ignored in this thesis.

There are good non market related reasons why actual settlement lagged behind government policy, reasons that were ignored by proponents of the traditional theory. The conditions which we were dealing with are unique in the history of Canada. These conditions include the transition from the common property regime of the natives to the private property regime of the North-West Territories. The period from 1873 to 1885 were crucial from the point of view of turning the prairies into a colony of eastern Canada. Numerous treaties were negotiated in this period and thus allowed relatively peaceful relationships with the natives. Treaty number 2 was negotiated with the Chippewa on August 21, 1871. Treaty number 4 was negotiated with the Cree and the Saulteaux on September 15, 1874. Treaty number 5 was negotiated with the Saulteaux and the Swampy Cree between September 20 and 24, 1875. Treaty number 6 was negotiated by September 1899 with the Plain and Wood Cree. Treaty number 8 was negotiated with the Cree, the Beaver, the Chipewyan, and the Slave on June 21, 1899. Furthermore, it was not until 1907 that treaty number 10 had been negotiated with the Chipewyan, and the Cree.⁹ How could the west be settled until these treaties had been negotiated? How could settlement occur without peace in the west? The main idea of calming the natives was to allow the construction of the C.P.R. to proceed

smoothly. Railway construction had as its corollary pioneer settlement.

Once the land had been cleared of its previous occupants it was still not ready to be settled. What was needed was a system of property rights and moreover the identification of those property rights. This meant that townships and individual sections would all have to be surveyed. A system of property rights needed a legal system and a law enforcement body. The North West Mounted Police's presence served this purpose. Their goal was to ensure a peaceful occupation and exploitation of the west. Conflicts between the natives and settlers would have to be minimized. It was thought that immigrants would not settle a violent west. Wherever Europeans concentrated a N.W.M.P. detachment was soon founded. This would allow immigrants to be quickly integrated into Canadian society, and acquainted with Canadian law and custom. For these reasons there had to be a long period of preparation after the Homestead Act had been passed before settlement on a massive scale became possible.¹⁰

In any case we must look at the original data of the time period and check some of these facts for ourselves. We have used the price of wheat as the benchmark for the price of agricultural produce. The basis for this is that wheat was the main cash crop at the turn of the century. Other crops were mainly used as inputs in production, or for home consumption. For example, most garden

vegetables were consumed at home by the farmers and their families. Hay and clover were used as feed for oxen, horses, cows and other livestock. Other cash crops were oats, and barley but they came a distant second for most farmers in terms of their importance in their total cash income. We have used total acreage patented as our indicator of the rate of settlement. This was chosen because it shows how much land had fulfilled the conditions for which the receipt of homestead patents depended. That is, it is an accurate measure of how much land was actually settled. Most economic historians have a tendency to use homestead entries for this purpose which is misleading because so much land is abandoned before the conditions for the receipt of patents are fulfilled.

TABLE 1: Number of Entries and Cancellations of Homesteads,
Western Canada¹¹

YEAR	ENTRIES	CANCELLATIONS
1901	8,157	1,682
1902	14,673	3,296
1903	31,383	5,208
1904	26,073	8,702
1905	30,819	11,296
1906	41,869	11,637
1907	21,647	14,110
1908	30,424	15,668
1909	39,081	14,677
1910	41,568	16,832
1911	44,479	22,122
1912	39,151	18,608
1913	33,699	17,280
1914	31,829	15,997

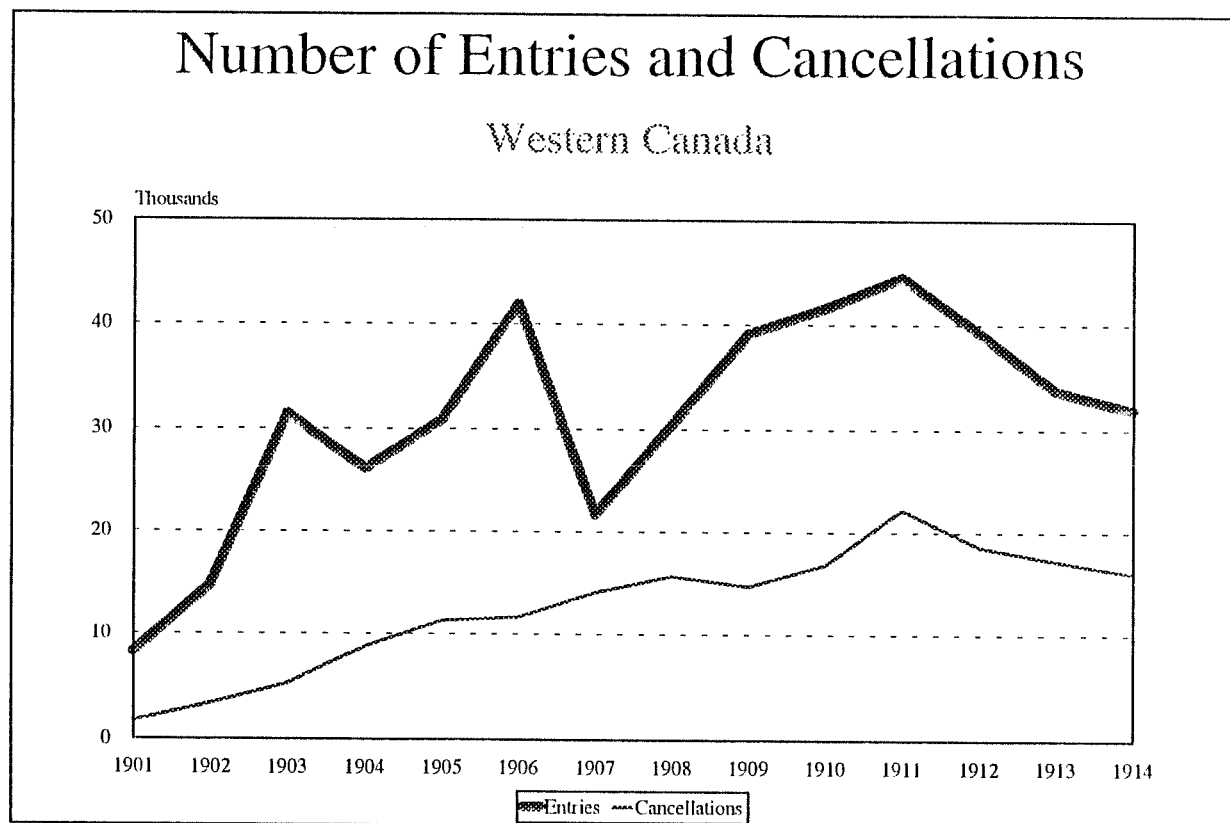


FIGURE 1: Number of Entries and Cancellations of Homesteads,
Western Canada¹²

Table 1 and figure 1 above shows quite clearly the high proportion of cancellations relative to the number of homestead entries. It was not uncommon for cancellations to represent in excess of 50% of homestead entries. For example, in 1913 there were 17,556 homestead entries in Saskatchewan as well as 8,288 cancellations. This translates into a cancellation rate of 47%. For this reason we will utilize the number of acres patented for our indicator of the rate of settlement of Saskatchewan.

The conditions which had to be satisfied before patents for the title of the homestead property were issued were quite precise. In 1884, the conditions on which the receipt of homestead patents depended were as follows: the pioneer must reside within three miles of the homestead for the duration of the three year period; he must live on the homestead in a house constructed by him for the three months preceding application for patent; in the first year 10 acres had to be prepared for crop and an additional 15 acres broken; in the second year 10 acres had to be seeded and an additional 15 acres broken; in the third year 25 acres were to be cropped, and 15 more prepared so that total cropland was 40 acres.¹³ These conditions are stringent enough to assure that in most cases the pioneer is actually farming the land and not simply a speculator hoping to make a quick profit. It is in satisfying these conditions that we believe constitute the settlement of the west.

Table 2 and figure 2 below shows the price of Ontario winter #2 wheat, measured on the last market day of each month at Toronto from 1881 to 1921. This table of the price of wheat tells an interesting story shedding some light on the actual situation which prevailed at the turn of the century. In 1896 wheat sold for 65.5 cents a bushel. For the next seventeen years the price of wheat moved in a sideways direction ranging from 65.5 cents a bushel and 109.0 cents a bushel. The trend can be described as flat during the period 1896 through to 1913. However, there does seem to be a large cyclical component as market forces drive the price within this range. From our analysis the wheat price series does not even seem to be increasing. This stands in sharp contrast to Norrie's thesis that it was the increase in the price of wheat that ignited the wheat boom.

TABLE 2. The Price of Wheat from 1881 to 1920 (Cents per Bushel)¹⁴

YEAR	PRICE	YEAR	PRICE
1881	126.3	1902	72.9
1882	121.2	1903	78.8
1883	111.4	1904	91.6
1884	100.1	1905	77.2
1885	88.7	1906	78.8
1886	80.8	1907	105.2
1887	83.4	1908	109.0
1888	93.3	1909	101.1
1889	99.3	1910	94.2
1890	84.6	1911	100.8
1891	93.1	1912	90.1
1892	80.1	1913	89.1
1893	73.3	1914	132.4
1894	61.2	1915	113.6
1895	71.8	1916	205.5
1896	65.5	1917	221.1
1897	78.7	1918	224.2
1898	93.2	1919	217.4
1899	70.9	1920	199.4
1900	74.6		
1901	75.2		

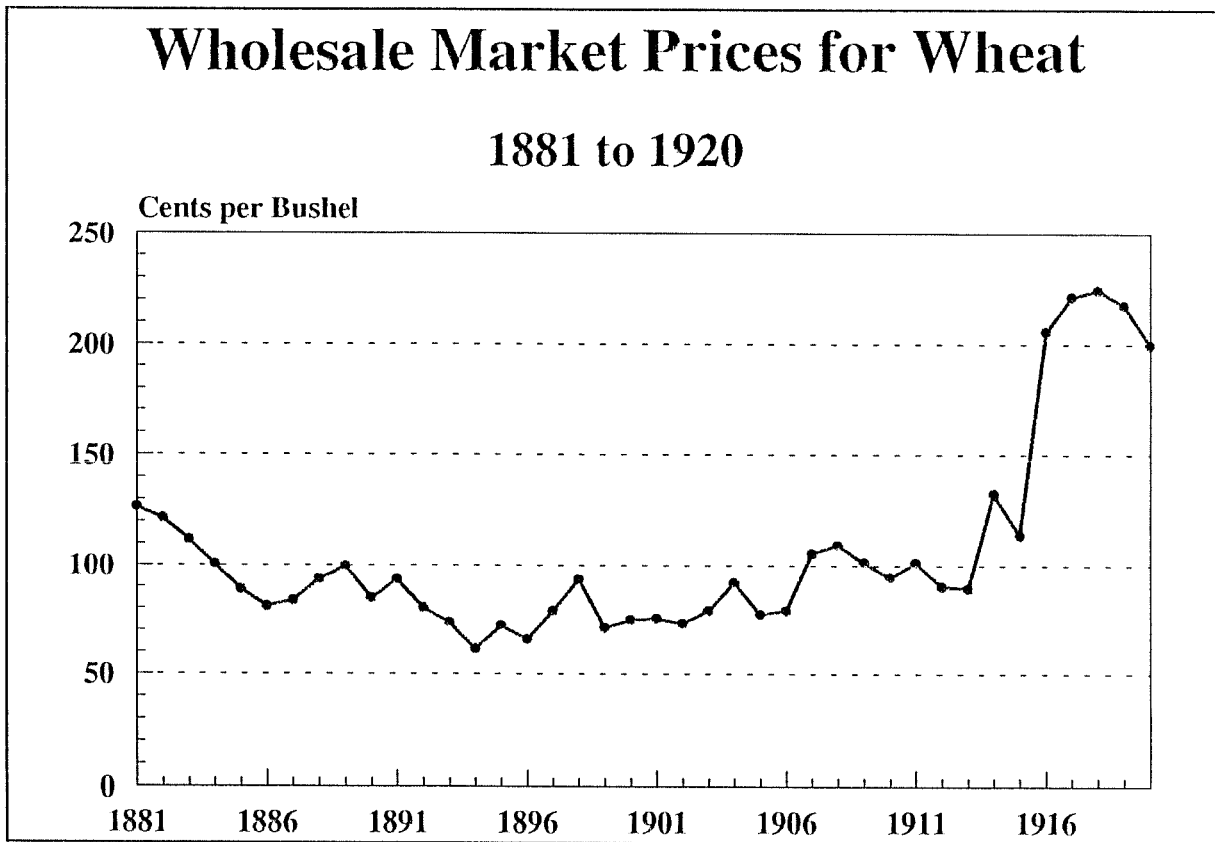


FIGURE 2: The Price of Wheat from 1881 to 1920.¹⁵

TABLE 3: Total Acreage Patented in Saskatchewan: 1885 to 1920¹⁶

YEAR	THOUSANDS OF ACRES	YEAR	THOUSANDS OF ACRES
1885	272.6	1903	564.7
1886	466.9	1904	647.4
1887	373.6	1905	928.4
1888	269.5	1906	1,366.5
1889	246.4	1907	1,417.5
1890	212.4	1908	2,300.7
1891	179.1	1909	2,072.7
1892	260.7	1910	2,049.4
1893	290.6	1911	1,860.3
1894	223.1	1912	1,611.8
1895	195.5	1913	2,161.9
1896	273.4	1914	2,791.7
1897	296.1	1915	1,987.6
1898	282.4	1916	1,346.1
1899	401.6	1917	1,109.4
1900	183.1	1918	1,251.7
1901	299.9	1919	729.3
1902	687.9	1920	740.8

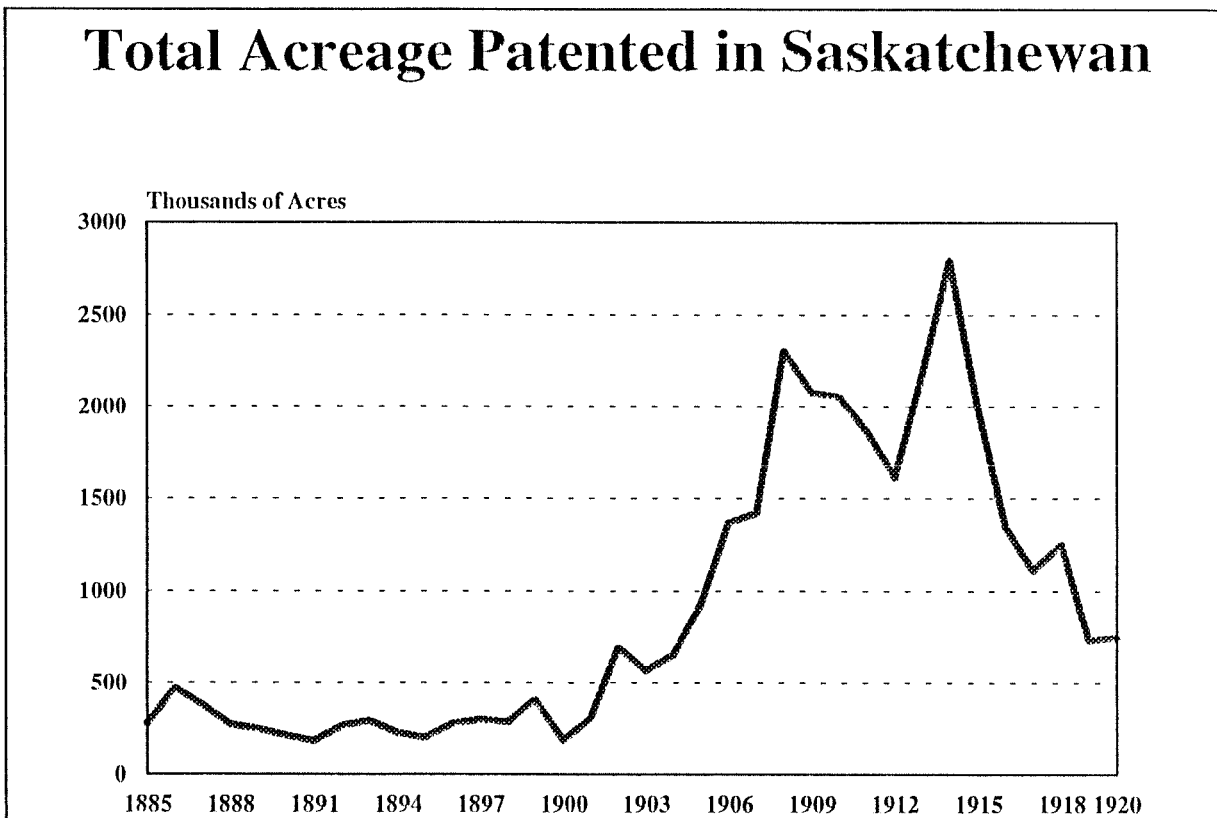


FIGURE 3: Total Acreage Patented in Saskatchewan: 1885 to 1920¹⁷

Table 3 and figure 3 above show the total acreage patented in Saskatchewan from 1885 to 1920. This table of total acreage patented is quite illuminating, and shows us what really happened during the wheat boom with respect to actual settlement. It reached a local minimum value in 1895 at 195,500 acres. It rose steadily until 1914 when it peaked at 2,791,700 acres. The wheat boom period from 1901 to 1914 can clearly be seen in terms of total acreage patented in Saskatchewan. If the wheat price had been the primary determinant of the rate of settlement total acreage patented should have increased after 1914 along with the wheat price. In 1918, the total acreage patented was less than half its 1914 value while the wheat price was almost double its 1914 value. This period of war and political turmoil illustrates that there must be other factors that effect the rate of settlement. Doesn't the international political climate affect international movements of labour? Norrie neglects to mention this. We cannot justify pinning the wheat boom's high rate of settlement solely on the price of wheat.

We are also highly critical of Norrie's rebuttle of the conjecture of events hypothesis. We believe that certain events, other than the factors Norrie accepts, must take place before settlement can occur on a massive scale. We believe that the price of wheat did play a role in the determination of the rate of settlement of Saskatchewan. However, not in the sense that there was a direct correlation between wheat prices and the rate of settlement. Wheat prices must be high enough to guarantee the

pioneer a sufficient return so that he and his family are adequately maintained. However, the price of wheat is not the only factor determining the returns to the prairie wheat farmer. Anything that tends to reduce costs or increase revenues would have a tendency to increase returns to the wheat farmer. For example if transportation costs are prohibitively high it will be impossible to market the grain and still assure a sufficient return. Therefore, falling transport costs on wheat exports were a necessary precursor event to the increase in the rate of settlement.

We feel that the development of earlier ripening varieties of wheat were an important precursor event to the rapid rise in the rate of settlement. We must remember that the frost free period of the Kindersley District of Saskatchewan is only around 99 days, only marginally longer than the period required to grow wheat. Early frosts were common and devastating to the Saskatchewan farmer. We believe that such innovations that lowered the growing season were a necessary precursor event to the increase in the rate of settlement of the prairies as the risk of frost would need to be minimized to increase expected returns.

Also, we feel that technical breakthroughs in the production, transportation and further processing of wheat were important precursor events. One of these innovations was the grain elevator, which rapidly increased in numbers throughout the prairies from

very few in the 1870s to quite numerous in the late 1890s. These highly efficient warehouses were built to store up to 25,000 bushels of wheat. Their big innovation was the fact that they poured the wheat into the cars by gravitation, thus causing the saving of time and railway cars for the railway. We find it strange that he would refute the importance of these factors as they were among the factors that would tend to make wheat farming more profitable.

Norrie also neglects to discuss the importance of the development policies of Clifford Sifton the Minister of the Interior. The basis laid by federal government development policies was a key event setting the stage for the increase in the rate of settlement of the Canadian prairies. The magnitude of the resources applied to the development of the west, and the aggressiveness of the Dominion Government's promotional advertising campaigns throughout the world should not be ignored.

One last precursor event was the resumption of international capital flows and labour migration. How can the wheat boom occur without massive inflows of external resources? Table 4 and figure 4 below show the net capital movement into Canada from 1901 to 1913. In 1901 net capital movements stood at only 8.4 million dollars. By 1913, net capital movement stood at 527.9 million dollars. This represents an increase of 6,285%.

TABLE 4: Net Capital Movement, Between Canada and all Other Countries, 1901 to 1913.¹⁸

YEAR	NET CAPITAL MOVEMENT (Millions of Dollars)
1901	+8.4
1902	+39.0
1903	+71.4
1904	+40.7
1905	+96.7
1906	+117.8
1907	+116.9
1908	+129.6
1909	+219.8
1910	+339.1
1911	+344.9
1912	+321.3
1913	+527.9

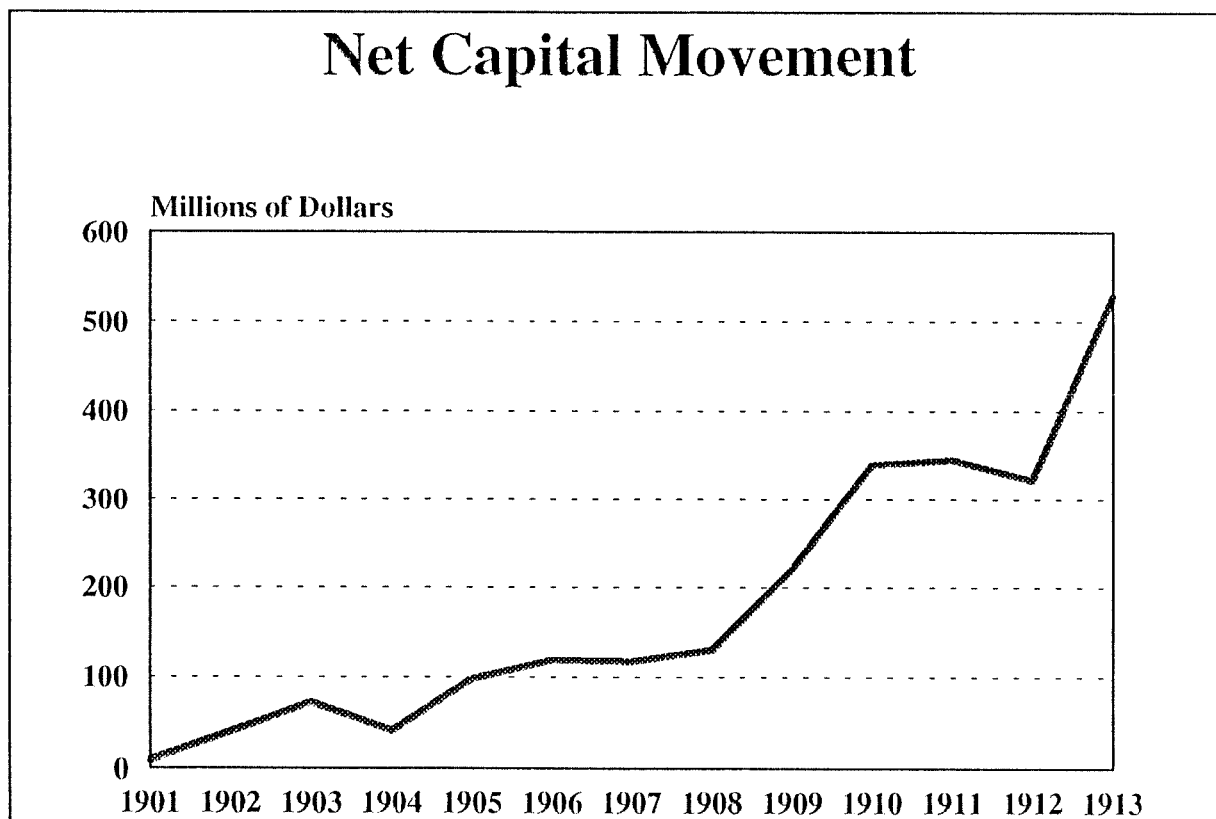


FIGURE 4: Net Capital Movement, Between Canada and all Other Countries, 1901 to 1913¹⁹

Table 5 and figure 5 below show the number of immigrant arrivals in Canada from 1896 to 1915. In 1896, the number of immigrants was only 16,835. By 1913, immigration had reached a feverish amount of 400,870. This represents an increase of 2381 % during this period. Therefore we argue that external capital was crucial to the development of the west and migrant workers formed the main thrust of the pioneering movement.

TABLE 5: Immigrant Arrivals in Canada, 1896 to 1915²⁰

YEAR	NUMBER
1896	16,835
1897	21,716
1898	31,900
1899	44,543
1900	41,681
1901	55,747
1902	89,102
1903	138,660
1904	131,252
1905	141,465
1906	211,653
1907	272,409
1908	143,326
1909	173,694
1910	286,839
1911	331,288
1912	375,756
1913	400,870
1914	150,484
1915	36,665

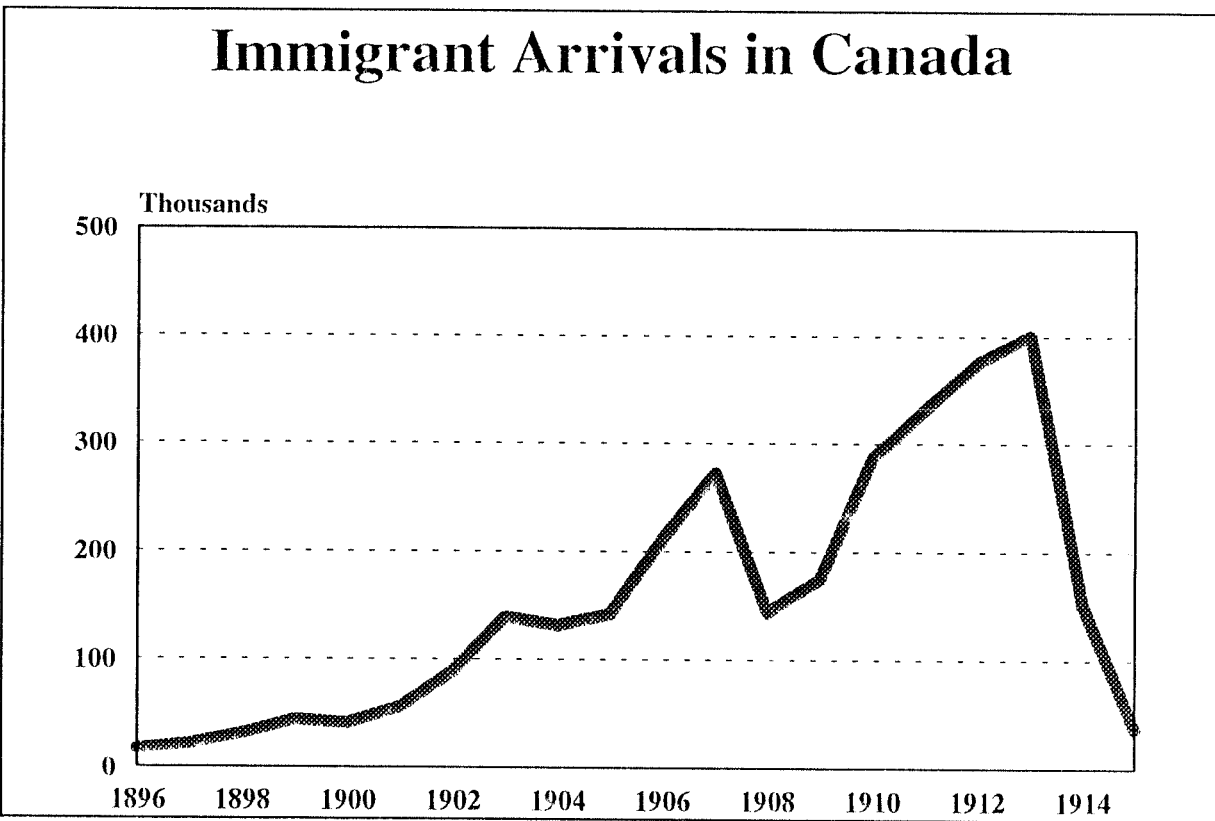


FIGURE 5: Immigrant Arrivals in Canada, 1896 to 1915²¹

The traditional view regarding the rate of settlement of the prairie provinces at the turn of the century was that the wheat price was the prime determinant. The famous paper published by Ken Norrie on the subject had many shortcomings and few strengths. He failed to see that there were good non market related reasons for the lag between settlement policy and actual development. How can the region be settled before it had been surveyed? How can it be settled before a system of private property rights was in place? One of his main weaknesses was pinning the rate of settlement solely on the price of wheat, when there were many other factors that came into play. He ignores all of the psychological and political reasons behind the pioneering movement.

The conjecture of events hypothesis is dismissed by Norrie as having little influence on the rate of settlement. This is one of the main shortcomings of the paper. There are other factors that come into play in the migrating decision than the price of wheat. The key role of the aggressive development policies of the Dominion Government cannot be dismissed. Vast amounts of resources were earmarked by the Dominion Government for the development of the west. Surely these resources must have been put to a use which would have increased the rate of settlement of the region.

Innovations in wheat production, transportation, and processing were downplayed by Norrie although they were important factors. These innovations would tend to make wheat farming more

profitable for the farmer either by lowering costs or increasing revenues. Also, it was important to the settlement process that international capital flows and labour migration resume. New capital and labour were key factors in the settlement of the west. Norrie says that international resource flows respond to economic opportunity rather than create it, and this is debatable. There are many other reasons that labour chooses to migrate among these push factors there are political persecution, wars, famines and economic instability.

Norrie's paper while it had some strengths it had many weaknesses. He pins the blame for the wheat boom on only one factor and ignores the dozens of other factors that could help to explain it. What about the role of the railway and the jobs that the railway provided to pioneers? What about branch lines of the railway and their role in improving the transportation system? How did rainfall and fluctuations in climate affect the rate of settlement? What was the economic situation in the home countries of immigrants arriving to settle the west and how would this affect prairie settlement? The development of artesian wells were an important predecessor to the settlement of the west, why were they not mentioned? The fact that these important factors were ignored by Norrie seriously undermines the credibility of his paper, and leads to further discussion regarding the rate of settlement of the Canadian prairies.

PART IV: OTHER FACTORS

A. Introduction

In this section we will attempt to show that factors other than the price of wheat had a significant influence on the rate of settlement of the province. Technological change allowed farming to occur at a lower cost and thus increased the returns to wheat farming. Indeed, the advent of such inventions as steel ploughshares, artesian wells, and barbed wire were necessary precursor events to the settling of Saskatchewan. Dry-farming techniques increased the returns from farming the semi-arid land of Saskatchewan. Innovations in transportation greatly influenced the rate of settlement. The weaving of branch railway lines increased the area that was within economic distance of wheat markets. Cash poor migrant workers were able to secure employment in railway camps and in so doing obtain enough capital to establish themselves on their farms. The railway enabled them to survive the initial harsh years of settlement.

The climate of Saskatchewan greatly influenced the rate of settlement. Drought and frost characterized the semi arid region and provided the greatest risks to settlers. A series of years without drought and frost was sufficient to prompt an influx of settlers to the region. Similarly, a few years of crop failure due to either drought or frost was sufficient to bring about a decline in the rate of settlement as pioneers sought out areas where they

thought they would be more successful.

Another factor influencing the rate of settlement was government policy. The free-homestead system was one of the key elements determining the rate of settlement. As regulations changed and free land was offered closer to the railway the value of the land rose in relation to its price. This caused the rate of settlement to increase as homesteaders sought to secure ownership of an increasingly valuable property. The aggressive development policies of the government also encouraged immigration and settlement of the province. The extensive advertising campaigns of the government brought the region to the attention of the millions of migrant workers.

B. Technological Change

The rate of settlement of Saskatchewan was greatly influenced by several key technological innovations. The invention of barbed wire, steel ploughshares, and artesian wells made farming the semi-arid plains possible. The adaptation of dry-farming techniques allowed the region to be farmed more profitably and with reduced crop failure. The development of grain elevators allowed wheat to be transported at a lower cost. These technological innovations made farming the Saskatchewan plains feasible and more profitable.

A factor restricting Saskatchewan settlement was the lack of

available surface water. Water was needed for the day to day operation of a farm. Cattle and swine needed a continuous supply of water, the family vegetable garden would have to be watered on a regular basis, and the household would need water to bathe, for household chores and for consumption. The Americans procured the windmills that were necessary to pump the water of the artesian wells beneath Saskatchewan to the surface.²²

The grain elevator was one innovation which greatly reduced the cost of transporting grain. The previous method of flat warehouses was expensive and slow. "From the point of view of the railway, and, we may add, of subsequent experience, this method was wasteful of time, primitive, and already antiquated."²³ Indeed the elevator rapidly grew in numbers from oblivion in the 1870s to 447 in the 1890s throughout the prairies. "The highly organized elevator built to store 25,000 bushels of grain and loading cars by pouring the wheat in by gravitation, easily and swiftly, was the institution of the future, for it enabled the railway to obtain the maximum of service from its cars."²⁴ This innovation allowed the rate of settlement to increase by reducing transport costs and thus increasing returns to farmers.

Dry-land farming was part of the agricultural scene in Saskatchewan during the 1880s. The main element in dry-land farming is summer fallowing, that is letting crop land lay idle for a summer so that moisture can be accumulated for the next year. A

special effort is also made to keep weeds down so that valuable moisture is not used. In drought conditions crops grown on fallow fields would still provide a healthy yield, whereas crops grown on stubble were a complete loss.²⁵ It would have been very risky to farm Saskatchewan soil using traditional technology as the risk of drought was so great.

The main problem was not the existence of dry-land farming techniques but their adaptation and use by the people of Saskatchewan. The early settlers were from the more humid areas of Ontario and were more familiar with traditional farming methods. To be successful farming in Saskatchewan what was important was the understanding of farming techniques that were adapted to this arid area. The Americans, who had been exposed to dry-land farming since 1860, were successful in using these techniques to their advantage.

For settlement to occur the land would have to be fenced and the prairie sod would have to be broken. The lack of trees in Saskatchewan, southern Saskatchewan in particular, made finding wood for fences difficult. The real problem was the need for wood, and transport costs were too great to allow importing the material for fencing from the east. Barbed wire would result in substantial savings in terms of time and actual cost. The development of barbed wire solved the problem of obtaining material for fencing the vast expanses of the prairies. It came by way of America, along with the solution to cutting the extremely tough prairie sod. It could now

be broken by the new steel plough which was invented by John Deere.²⁶ These two developments greatly increased the feasibility of farming the Saskatchewan prairie.

Without these technological innovations in agriculture farming the semi-arid land of Saskatchewan would have been less profitable. This reduction in profitability would have resulted in a lower rate of settlement in the province. Therefore, the existence of these innovations resulted in a higher rate of settlement than would have otherwise occurred.

C. Transportation

Innovations and changes in transportation had an important impact on the rate of settlement. The increased rate of construction of branch railway lines increased the area within economic reach of wheat markets. As this area increased so did the rate of settlement. The railway also helped to speed settlement in other ways. The more mileage of railways being constructed the greater the number of jobs available in railway camps. These jobs were important income sources for homesteaders during the initial crucial years. Thus, improvements in transportation had a favourable impact on the rate of settlement.

The development of the branch railway system was an important factor in determining the rate of settlement of

Saskatchewan. Farmers could economically transport their grain a maximum distance of ten miles. This implies that when the C.P.R. crossed Saskatchewan in 1882 much of the province was still out of reach for the economic transportation of grain. The lack of railway facilities was thus very acute at this time and posed a serious infrastructural impediment to the settlement of the province. It meant that numerous homesteads would be abandoned because their grain could not reach market economically.²⁷ Every additional mile of railway meant that the area available for farming within this economic transport zone would increase by 20 sections. "It must now be evident that here was an intimate relation between railway construction and immigration."²⁸ In other words the greater the area serviced by the railway the greater the area that would be economically feasible to settle. Between 1896 and 1914 railway mileage doubled in Canada meaning that 40 times as much land would now be in the range that farmers could transport their grain. We believe that it was this increase in the construction of railways that greatly influenced the rate of settlement of Saskatchewan. What other services did the railway provide to the settlers?

What is sometimes overlooked is the fact that most immigrant pioneers arrived with very little capital, and sometimes none at all. "Many of these settlers were faced, however, with the desperate need to secure enough money to survive the initial years of settlement."²⁹ The homestead would not be a producing farm the

instant the settler set foot on it. There would be a lag between the time of arrival on the homestead site and the time when the homestead would be a working farm able to support a farm family. Years would have to be spent breaking the land, constructing outbuildings, building a house, and acquiring livestock and machinery. The coming of the railway into a particular area would provide settlers with a job and an income source that would be necessary to allow the settler to establish himself as a farmer.³⁰

The railway life was a difficult one, one in which there were many trials and tribulations. There were extremely high accident rates and deplorable working conditions on the construction camps. The immigrants were often illiterate and prone to exploitation. They were, however, obedient and industrious workers because of their desperation.³¹ Their families were able to establish themselves in these new communities, they were able to acquire the livestock, the machinery, and the capital required to start their farms. The railway allowed the settler to survive the initial difficult years of settlement.

The improvements in transportation brought about by the construction of the railway and of branch lines of the railway caused an increase in the rate of settlement. Increased railway mileage caused the area within the economic distance of wheat markets to increase. This in turn caused an increase in the demand for homesteads as settlers sought to secure these increasingly

valuable properties. Also, the rapid rate of railway construction assured the newly arrived homesteader with an income source until he was able to establish himself on his farm.

D. Climatic Factors

The semi-arid plains of Saskatchewan were prone to frequent and extreme droughts. There is also a significant variation in the intensity of the droughts. Drought is defined as a moisture deficiency, this moisture deficiency will vary depending on the moisture storage capacity of the soil given the same amount of rainfall. The soil type that is the worst for drought is the coarse sandy soils because of their limited capacity for moisture retention. This soil type can be found in several parts of Saskatchewan. What were rainfall patterns like during the study period of 1896 to 1914?

Figure 6 below illustrates the annual precipitation for Saskatchewan. As can be seen from the above graph the decade 1895-1905 was a wet decade followed by a return to more normal conditions. We believe that it was this exceptional rainfall during the study period that was an important cause of the wheat boom. The higher than average rainfall would have led to an increase in yields during this period and would have allowed a greater rate of settlement of the province. Also, it would have caused something else to occur. This high rainfall period would have caused the

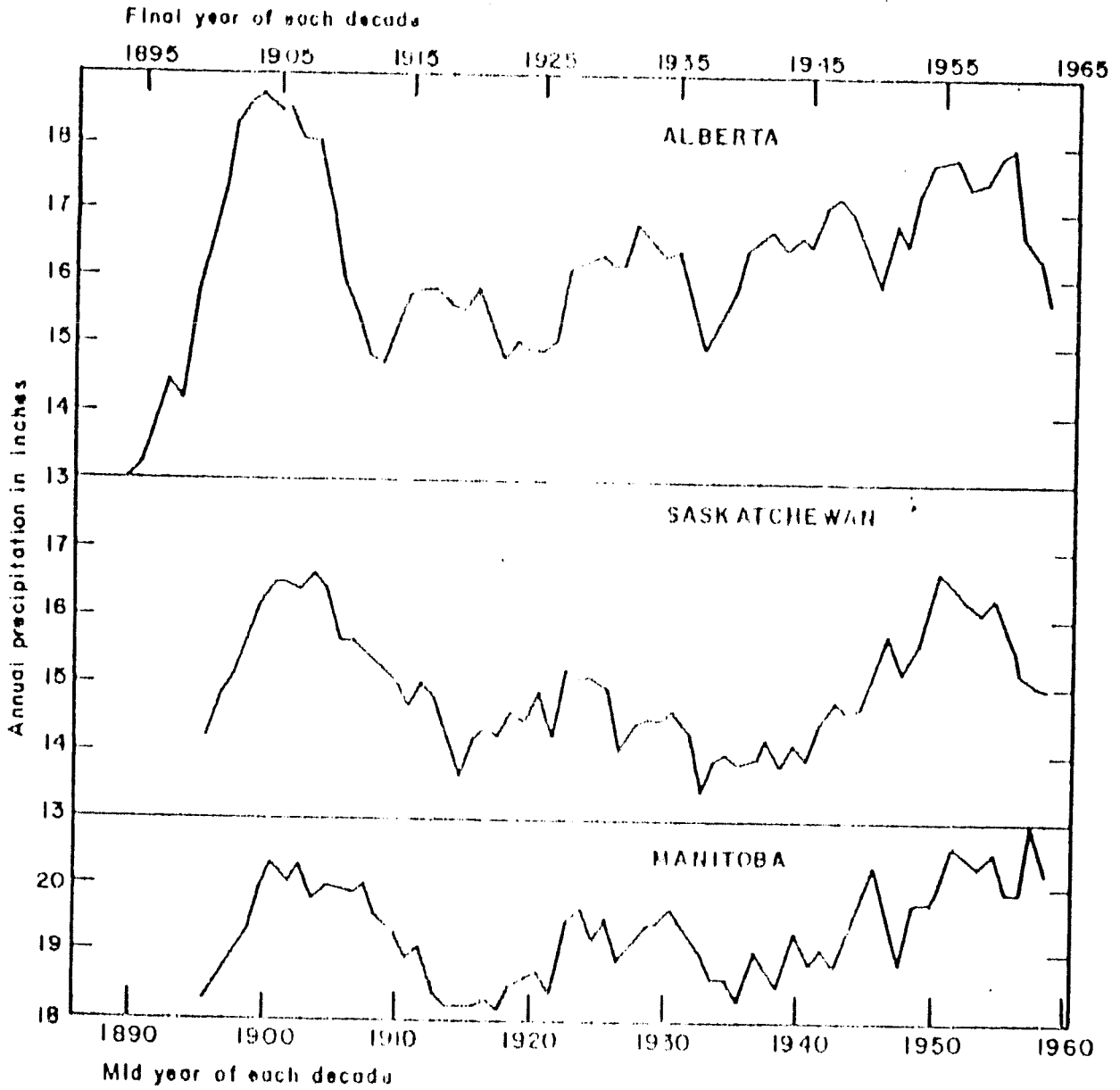


FIGURE 6. Ten Year Moving Means of Annual Precipitation³²

settlers coming to the province to believe the land was more fertile than it actually was. The presence of tall, lush wheat fields would have caused most settlers to believe that they were looking at extremely fertile and valuable farm land. This is what we believe caused more settlers to choose Saskatchewan during the study period.

The study period under question was one where rainfall was abundant and drought limited. This lack of drought allowed settlers to establish themselves and for others to follow. The rate of settlement was increased because of the favourable rainfall conditions that existed during the period.

Another significant problem facing the Saskatchewan farmer is the problem of frost. A short growing season is further threatened by the random probability of frost. The maturation period of Red Fife of 115 to 125 days is very close to the number of frost free days in the wheat growing areas of Saskatchewan.³³ For example, the Kindersley District has a frost free period of 99 days and is a wheat growing area.³⁴

This should illustrate the need for constant research into earlier-ripening varieties of wheat. An early frost would kill wheat that was in the process of ripening causing the head to shrivel up, destroying the grade of the wheat. Figure 7 below shows the ten year moving means of annual temperature in Saskatchewan.

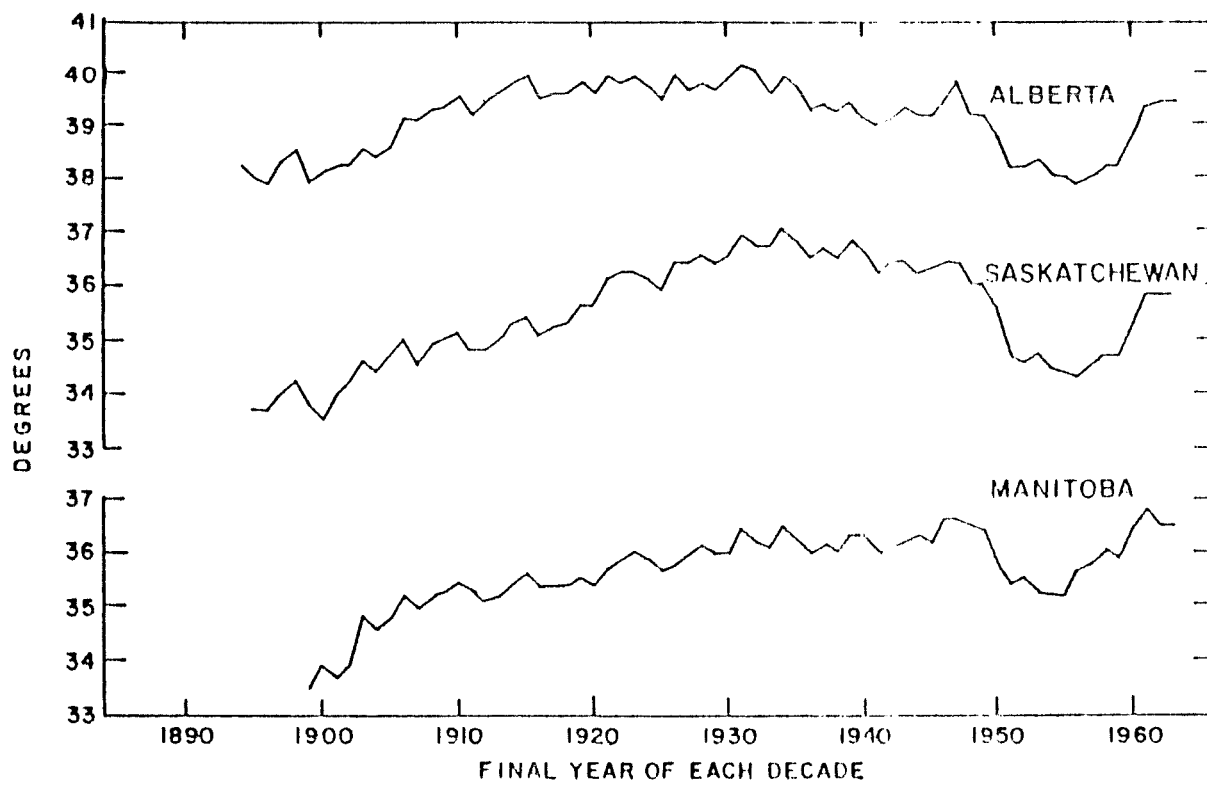


FIGURE 7. Ten Year Moving Means of Temperature³⁵

The temperature had a rising trend during the study period indicating that the risk of frost was decreasing. This decreasing risk of frost would have caused the rate of settlement to increase as settlers faced a decreasing probability of damage.

Frost is a major problem facing farmers in Saskatchewan due to its northern latitude and its extreme temperature variations. The decreasing probability of frost during the study period would have caused the rate of settlement to increase.

E. Government Policy

"The free homestead, nevertheless, remains inseparately associated with the "golden age" in the development of Western Canada."³⁶ The nationhood depended on effective settlement, and to provide as rapidly as possible a sizable pioneer population in western Canada. It fostered a new spirit of cooperation between the railway and the Dominion Government which had this common goal.

The first Dominion Lands Bill was passed in 1872, and it allowed for homesteads of 160 acres each on condition of a three year residence and payment of a \$10 registration fee.³⁷ It would be ten years before the main line of the C.P.R. would pass through Saskatchewan and even longer before homesteading would proceed at a rapid rate. At this time land set aside for homesteading was at a minimum distance of 20 miles from the railway, well beyond the 10

mile limit for the economic transportation of grain by the farmer. It was not until 1882 when new regulations were adopted that all even-numbered sections of land within the 48 mile railway belt were thrown open to settlement causing homestead land to be within economic reach of the railway.

The rapid settlement of the prairie provinces through the free-homestead system provided the government with vast revenues. Revenues from the increase in customs and excises gave the government more cash than that which would have been obtained by selling the homestead lands. "The interest of the Dominion is to secure the settlement of the lands, and whether with a price or without a price makes little or no difference."³⁸

The period after 1896 saw the widest application of the free-homestead system. "The free-homesteading system was serving a far reaching purpose in the settlement of western Canada."³⁹ It helps to explain the rapid increase in the rate of settlement of Saskatchewan in the period immediately following 1896. The closer farm land is to the railway the more valuable it is. Land at a considerable distance from the railway would have negligible value. As changes in the regulations concerning homestead land and railway land brought the free homestead area closer to the railway the value of the land relative to the price increased. It was this higher value of homestead lands that prompted the increase in settlement following 1896 as settlers were anxious to obtain

possession of a valuable property.

The free homestead policy and its evolution over the period greatly influenced the rate of settlement. Homestead policy adapted as the railways and the government increasingly needed a high rate of settlement to secure common objectives. Increasingly valuable land was offered under the policy prompting increasing settlement. The goal of providing as rapidly as possible a pioneer population in western Canada was achieved.

Clifford Sifton, The Liberal Minister of the Department of the Interior from 1896 to 1905, was among the most aggressive promoters of the development of the western provinces. He had clear ideas about how to solve the problem of national development. "The first thing to do was to settle the empty West with producing farmers; this was also the second, third, fourth and fifth thing to do."⁴⁰ What were the basics of his policy? What vision did this Minister have?

The Minister knew what he must do to attract settlers to the West. "This involved a change in government policy to ensure a future supply of land in the West for the hoped-for immigrants; the re-modelling of regulations which governed the relations between the individual settler and the government; and the re-organization of the department."⁴¹ These changes in policy were sufficient to make it easier for would-be settlers to cut bureaucratic red tape

and to get on with the business of settling. The new improved Department of the Interior was geared toward treating the settler as the client. Everyone in the Department was at his service. To ascertain a supply of land for the settlers the railway land grants were terminated and the railways were forced to make land selections.

Sifton also aggressively pursued the potential immigrant in his home country. The British immigrants were in great demand but in short supply, thus the immigration agents scoured the European continent for the ideal settler. "I think a stalwart peasant in a sheep-skin coat, born on the soil, whose forefathers have been farmers for ten generations, with a stout wife and a half-dozen children, is good quality."⁴² It was Sifton who allowed the Ukrainian population into the Dominion, and the Doukhobors when they were expelled from Russia. He was one of the few to view the United States as a source of settlers. The results of his efforts were impressive as both the number of immigrants and settlers increased in the coming years.

Sifton saw the crucial link between the railways and settlement. "...and as fast as they got railways the settlers would flock in."⁴³ With this vision he aggressively promoted railway construction. He was responsible for the arrangements for the construction of the Crowsnest Pass Railway from Lethbridge to southern British Columbia. This railway would ascertain an all-

Canadian route to the sea and bring prosperity to the Dominion of Canada.

Clifford Sifton was a man of great vision who saw the solution to the national development problem in the settling of the west. He actively transformed the Department of the Interior to serve the settler. The potential immigrant was actively courted in his home country. Peasants from the whole of the European continent were attracted to the province through this aggressive advertising and promotion of the opportunities of the West. He saw the important link between railways and settlement and actively promoted their construction. The results were the impressive increase in immigration and settlement during the period.

F. Push Factors

The primary reason for the increase in the rate of settlement of Saskatchewan at the turn of the century was the European hunger for land. They saw in the rich prairie sod a valuable property, and a means to alleviate the great poverty that they suffered. The pioneers who settled Saskatchewan were people who would be content to stay on the land. They were such people as the Scottish crofters, the Ukrainian peasants, and other farm workers who thought that engaging in farm work in Canada would let them achieve personal freedom and independence.

The Canadian government immigration agents were active in several countries, informing the increasing number of potential immigrants of the opportunity to escape economic hardship in their home country by emigrating to Canada. What did these poor immigrants bring with them? "...the only wealth most of the Welsh brought with them were strong arms, farming skills, and a determination to succeed in the new land"⁴⁴ It was the chance to own the means of production and to be your own boss that were the prime motivating factors behind the land hunger of the Europeans. "At eighteen I was the sole owner of an entire quarter section of the best wheat land in all Saskatchewan."⁴⁵ With the opportunity made available to them the Europeans were anxious to satiate their demand for land.

The chance to own a valuable property was a much more important factor influencing prairie settlement than was the price of wheat. This illustrates that the pioneers were not strictly motivated by the economic returns to wheat farming. The chance to gain personal independence and freedom were much more important.

The political persecution faced by the immigrants in their home countries was one of the main reasons behind the migration to Saskatchewan at the turn of the century. The migration decision was geared toward avoiding political persecution and seeking freedom in a new land. Freedom from harassment, on religious or political grounds was a big magnet for Europeans to the Canadian prairie

province of Saskatchewan. To illustrate our point we consider the case of two separate and distinct migrations, the Jewish migration from Lithuania by way of South Africa during 1906, and the Welsh migration from Patagonia from 1902 to 1914.

The Welsh had built up a prosperous settlement in Patagonia, the heart of the Argentinean Pampas. "They soon had plenty of horses, and agricultural machinery was introduced. Alfalfa was grown, and livestock production flourished. Patagonian wheat won gold medals at international exhibitions in Paris and Chicago."⁴⁶ Why would they chose to leave this established community for the unknown that was Saskatchewan? "In the 1890s the government at Buenos Aires decreed a policy of assimilation, and Spanish-speaking schoolmasters displaced the Welsh."⁴⁷ The government of Argentina also forced the Welsh to violate their religious convictions by having them undertake compulsory military training on Sundays. This political and religious persecution was too much for them, and prompted them to consider migration to Saskatchewan.

At this time, the Canadian government was actively promoting a migration from Patagonia. "In the summer of 1901 a two-man delegation was sent to Argentina to provide the Canadian government with precise and accurate information on the situation, to supply the prospective emigrants with information on opportunities in Western Canada, and to determine how many would be prepared to move."⁴⁸ The aggressiveness of the Canadian government in promoting

Saskatchewan was sufficient to convince the Welsh to migrate to Saskatchewan.

While the Welsh came to Saskatchewan primarily to find a safe haven free from political persecution they soon prospered and "The first four harvests were good"⁴⁹ They were not disappointed in their experience with Canada. "Although no fortunes were made in this district, most of the Welsh prospered..."⁵⁰ This illustrated that while it was not the market factors that were the primary determinants of the migration, favourable economic experiences helped to cement the settlement into the fabric of Canada.

The factor that was crucial to the success of the pioneers was the availability of employment opportunities for women and children. At a time when women and children faced the highest unemployment rates in the industrial centres, the acquisition of farmland would guarantee their employment. Prairie wives would make butter and sell it locally, they would sell eggs, and do laundry for cash. The main advantage to this kind of employment for the women was that it would permit them to work and care for their children at the same time. The children were readily employed on the family farm as labourers as well as working on other farms as hired labourers. Since whether you made good seemed to depend on the labour market and the local job opportunities for women and children, these factors would affect the rate of settlement.

The attractiveness of the Saskatchewan prairies to the world's migrant workers was greatly affected by working conditions elsewhere. Germany, France, Belgium, and Switzerland all used foreign labour. How did working conditions in these countries compare to those prevailing on the Saskatchewan homestead?

One of the big differences was in the way the migrant worker was treated in each country. In Canada, the migrant was given the chance to settle and then own a valuable property that was a homestead. He would then become a respected member of the community. Indeed, "As a self-proclaimed homeland for immigrants, Canada was prepared to extend civil rights to immigrant workers: after three years domicile they could achieve citizenship, and once this had been achieved they could vote in Canadian elections."⁵¹ The migrant was treated quite differently in the other countries that used migrant labour. In Germany, for example, the migrant worker was treated as subordinate to the rest of the population and would never be allowed to become permanent residents or citizens.⁵²

How did working and living conditions for the migrant worker in the Saskatchewan homesteads compare to those experienced in other countries? In Germany, "The accommodation provided...was overcrowded and primitive: a breeding place for crime, disease and social problems."⁵³ The working conditions in Germany for the migrant worker were typically exploitive with unsafe industrial practices. In contrast, the living and working conditions available

to the Saskatchewan homesteader were what he provided for himself. There was no one to exploit him, or to force him to work in unsafe conditions. If living conditions were poor, it was believed that it was due to the homesteader's lack of industry. Working under the blue skies of the prairies was preferable to the migrant worker than working in the unsafe mines and factories of Europe.

TABLE 6: Indices of Average Earnings in a Normal Week, 1891=100⁵⁴

YEAR	AGRICULTURAL WAGES IN ENGLAND, WALES, SCOTLAND
1901	110
1902	110
1903	110
1904	110
1905	110
1906	110
1907	110
1908	110
1909	110
1910	110
1911	112
1912	114
1913	118
1914	122

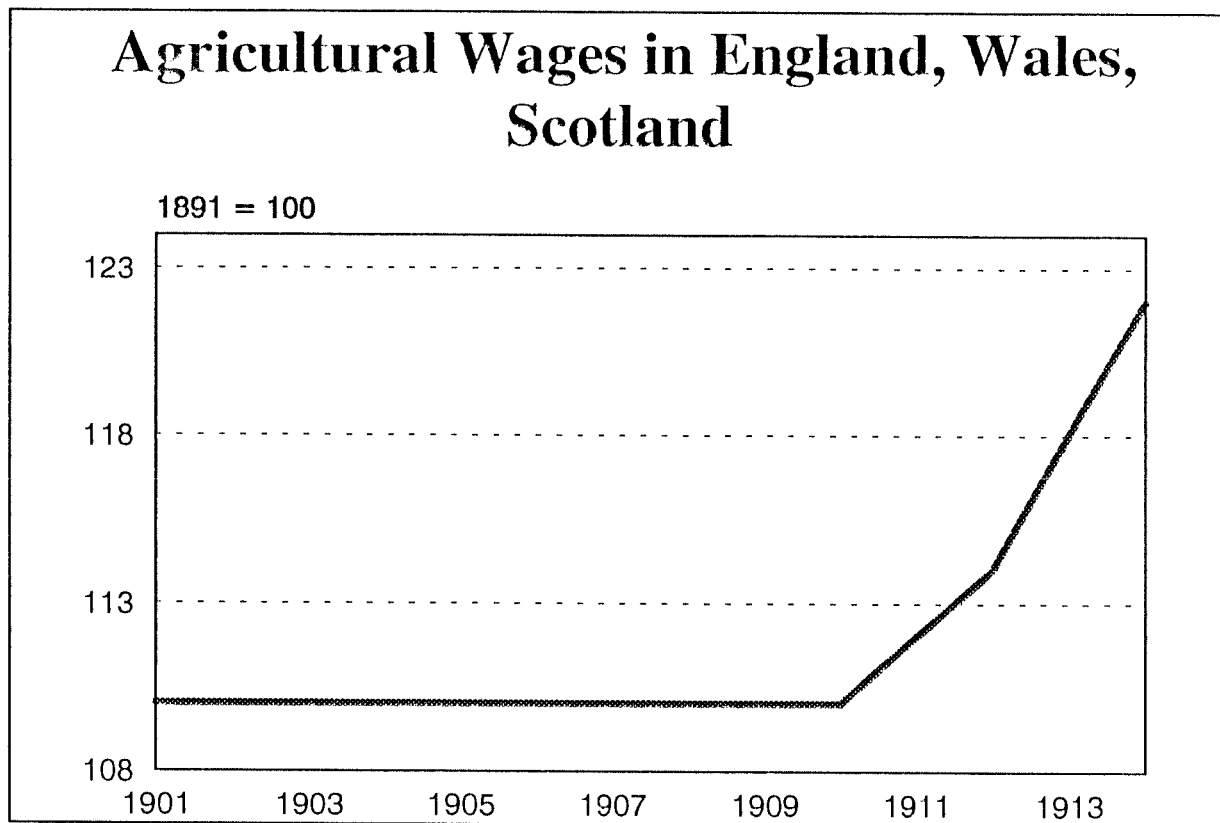


FIGURE 8: Indices of Average Earnings in a Normal Week⁵⁵

Another factor that must be looked at is the wages and the standard of living that were available during this time period in Britain, the favoured source of immigrants. Table 6 above and figure 8 above show the index of average earnings in a normal week in agriculture. During most of the period wages in agriculture were stagnant in Britain. The index stood at 110 from 1901 to 1910, before increasing from 112 in 1911 to 122 in 1914. These stagnant wages in Britain stood in stark contrast to the improving conditions in Canada for the immigrant homesteader. Land values were increasing causing an increasing return to the homesteader. Therefore, we can argue that there was an increase in the spread between the standard of living in Britain and the standard of living available to the Saskatchewan homesteader. This caused the option of emigrating to Canada to become more attractive to the agricultural worker in Britain.

Differences in the treatment of migrant workers, living and working conditions at the turn of century made homesteading more attractive than working in the industrial ghettos of Europe. The clean air and vast outdoors of the prairies provided a magnet that drew migrant workers from the heart of the world's industrial heartland to the heart of the wheat belt.

G. Conclusions

The price of wheat was not the only factor determining the rate of settlement of the province during the study period. The importance of technological change cannot be discounted. Indeed, without the invention of barbed wire, the steel ploughshare, and artesian wells farming would have been impossible. The development of dry-farming techniques rendered wheat farming more profitable.

The changes in transportation that came about with the construction of branch lines affected prairie settlement in a number of ways. First, it made wheat farming more profitable by reducing transportation costs. Second, it gave rise to capital gains on farmland as the economic distance to market was reduced. Third, it provided settlers with an income source in working in the construction camps while they established themselves on their farms.

The incidence of drought and frost influenced prairie settlement by affecting the quantity and quality of wheat grown. Drought would cause the quantity of wheat to be lower, while frost would cause the quality of wheat to be lower. The study period was characterized by high precipitation and thus lower incidence of drought. The temperature was increasing during the study period indicating that frost risk would have been decreasing. These two favourable climatic conditions would have caused the rate of

settlement to increase.

Government policy during the study period also had an influence on the rate of settlement. The free-homestead system was changed to make homesteading more attractive, by reducing the distance between the homestead and a railway. The increasing property value attracted pioneers who were anxious to own an increasingly valuable property. Clifford Sifton's policies were designed to populate the west with a large pioneer population. His re-organization of the Department of the Interior made the settler the centre of its attention. His aggressive advertising and promotion campaigns made the potential immigrant fully aware of the opportunity available to him in Saskatchewan. Most important, Minister Sifton saw the important link between railways and settlement and aggressively promoted railway construction.

There were numerous events occurring in the immigrants' home country that caused Saskatchewan to be attractive. The Europeans were hungry for land and saw the possibility of acquiring a valuable property by homesteading in the province. They also sought to escape the persecution they experienced in their home countries. The deplorable working conditions faced by migrant workers in most countries made the prospect of homesteading in Saskatchewan desirable. Also, the potential opportunity for the employment of wives and children was a major advantage to homesteading.

The price of wheat was not the only determinant of the rate of settlement of Saskatchewan. Numerous other factors influenced the profitability of wheat farming and the relative attractiveness of homesteading over other occupations.

PART V. CONCLUSIONS

We have shown that the mild increase in wheat prices was only one of the factors contributing to the wheat boom and only because it occurred within the context that prevailed at the time. Also, we have shown that the degree of the boom was affected by the economic, political, social, environmental and technological climate. Furthermore, we have shown that the extent of the boom would have been reduced if these factors were not right for economic development.

While it was important for the minor role of the price of wheat to be mentioned, it is the context in which the wheat boom occurred that we must stress. This context included the successful transition from a common property system to a private property system with the negotiation of treaties with the natives between 1871 and 1907. This context included favourable government policy, mobile capital and labour, technological innovations, improvements in transportation, the availability of jobs near settlement areas, favourable climatic factors, adverse environment in immigrant source countries, and the aggressive advertising and promotion of settlement by Minister Sifton. Without this context the rapid settlement of Saskatchewan that was the wheat boom could not have occurred.

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