

# **REGIONAL EFFECTS OF THE WHEAT BOOM: EVIDENCE FROM THE SUDBURY DISTRICT**

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## **Chapter 1: Introduction**

The wheat boom occurred from 1896 to 1914. The surge of western settlement coincided with a new expansion in world economic activity.<sup>1</sup> Literature on the wheat boom is surrounded by controversy as to the relevance the 'boom' actually had on Canadian development. A combination of circumstances (improvements in wheat varieties and farming practice, railway extension and transportation cost decline, growth of overseas markets, etc.) made it profitable by the early 1900s to grow wheat widely on the prairies. Hence Canada experienced immigration and western settlement and at the same time, an acceleration of aggregate economic growth. Obviously the prairie economy expanded but there are difficult questions to answer including the implications for (I) people and communities east of the prairies (backward links, etc) and (II) individual well-being and wealth (i.e. distinguishing per capita from aggregate).

Dr. Livio Di Matteo uses a model to answer both of those questions for a frontier area linked to, but outside of, the boom region, Thunder Bay. I follow Di Matteo's model to answer those questions for a similar type of community but different in the aspect of which natural resource is in abundance. I look at the Sudbury district, which is also linked to the boom region, but has a mining industry rather than a wheat industry. The area was developed as a rail town much like other areas along the Canadian Pacific Railway. It quickly became known that there was a large amount of ore in the area that had potential to be mined. This mining led Sudbury to become the largest producer of nickel in the world. The differences between Sudbury and Thunder Bay are striking and give good reason to be compared.

Individual wealth data was collected from estate records from 1888-1925, found at the probate court of Ontario. The key determinants of wealth, similar to Di Matteo's, are marital status, number of children, literacy and occupation. The results of the Sudbury district individual wealth are strikingly different than that of Thunder Bay. There is similar growth during the 1888-1900 period of both Thunder Bay and Sudbury. Thunder Bay then leaps into accelerated growth through until 1909, while Sudbury remained at a plateau. In the 1910-1914 period Thunder Bay experienced growth but Sudbury experienced decline. In the 1915-1920 period Thunder Bay experienced a drop back to the 1905-1909 wealth levels while Sudbury started to grow. This continued growth led to the extreme growth in the period just after the war. These results suggest that the wheat boom effects were not identical across the Canadian economy. The Sudbury economy may have used the boom in the first decade of the twentieth century to accelerate during and after the war. The rise in immigration and transportation during the wheat boom seemed to have permanent effect on the per capita wealth levels in Sudbury but not until after the boom ended for the Thunder Bay area.

## **Chapter 2: The Wheat Boom in Canada**

### **2.1 Introduction**

The controversy surrounding the wheat boom stems from the staple theory. The staple theory was developed by Harold Innis to explain economic growth and cultural change of newly developed countries.<sup>2</sup> “The central concept of the staple theory is the spread effects of the export sector, that is, the impact of export activity on domestic economy and society.”<sup>3</sup> The export of staple products is the main focus. There is considerable agreement with early economists that “the pace of economic development in Canada was determined fundamentally by the exports that enabled Canada to pay its way in the world.”<sup>4</sup> Whether or not the wheat boom had an impact on Canadian development may be the topic of much debate, the point still remains that the wheat boom was an economic driver in that period. Agreed, but the impact of these early staples on individual communities is not clear nor is their consensus on the per capita effect.

### **2.2 The Wheat Boom**

The completion of the Canadian Pacific Railway (CPR) and the increase in wheat prices spurred the growth of the nation in the late nineteenth century. The ease and relatively cheap transportation of resources gave the country the comparative advantage to export goods to the United States and Great Britain. The CPR also opened up remote areas which developed into towns and cities which supported the rail employees who then expanded into other promising ventures. Virtually all settlements were within 10 miles of a railway because of the limited availability of sub-humid areas and the lack of access to the remote areas.<sup>5</sup>

Demand for agricultural products to supply the newly expanding world economy led to an increase in the export of agricultural, animal, mineral, and wood products from Canadian producers.<sup>6</sup> It was the vast availability and supply of these products that gave Canada a comparative advantage over other exporting countries during the last decade of this century.<sup>7</sup>

Exports dropped between 1900 and World War I, but yielded an investment boom in capital supplies from 1901 to 1910.<sup>8</sup> This investment boom helped stimulate the economy and provide employment for many immigrants. It also allowed for the development, implementation and construction of new technologies of dry farming, technological change to farming equipment, the building of a grain port in the Lakehead and the construction of a new refining process for mining.<sup>9</sup> This created accessibility to more land and to land further away from the railway lines. Railway lines were expanded to include even more remote areas with semi-arid lands that now could be cultivated with the new technology of dry farming.

The new availability of resource rich areas and promise of new economic opportunities prompted the inflow of immigrants to the west. Under Laurier, the Canadian government offered one half of a section of free land to settlers as long as they were able to cultivate it within three years. The government also increased its funding to the immigration promotion from \$200,000 in 1878-1896 to \$750,000 per annum from 1897 to 1911.<sup>10</sup> The expanding rail lines along with the increase in funding to promote immigration and the abundance of economic opportunity, led to a massive surge of immigrants from 1896 to 1914. Close to 2.5 million immigrants came to Canada with approximately forty percent of them settling in the prairies. Nearly one million of the

immigrants were British and one million American.<sup>11</sup> The labour force from the new immigrants grew by forty-eight percent pushing the number to over 2.8 million workers in Canada with immigrants making up over two-thirds of the new labour.<sup>12</sup>

The increased population and industry in the west created an increase in manufacturing in the east. The railway linked the east to the west allowing the growth of wheat, mining and forestry operations to create economic linkages to the manufacturing companies. The main linkages were backward linkages rather than forward. The farmers and miners needed equipment and the manufacturers produced them. Both wheat and mining depended heavily on the transportation of their goods to other parts of the country as well as to the rest of the world.<sup>13</sup> Through the expansion of the export trade and the newly found reliance on manufactured goods in Canada the government implemented tariffs on imports to persuade the corporations to either buy locally or for manufacturers to produce locally. "The high tariff policies of the federal government received much credit for protecting existing industries and encouraging the creation of new enterprises."<sup>14</sup>

The rise in prairie land rents, the increased tariff revenues, the increased need for manufacturing, the excess demand of the greater labour force, the decline in transport costs and the increase in technological change all facilitated the increase in national income.<sup>15</sup> This growth in national income worked well to unite the country and to enable the country, both east and west, to continue their experience of growth during the first decade of the twentieth century through to the First World War.

The war reinforced a downturn that began during the second half of 1913. The threatening war caused the world prices of many commodities to drop including that of wheat and minerals. It also caused the increase in interest rates in Britain that led to a



reduced capital outflow. The boom from 1901 to 1911 had created “an economic sector reliant on continued growth in order to pay off the debts associated with establishing a farm and buying equipment.”<sup>16</sup> With the drop in world prices and the reduced capital outflow this continued growth was not possible. There was a tightening of farm credit in Canada. Those farms that were deeply in debt could not acquire the help needed from the federal government during the recession, causing them to collapse.<sup>17</sup> The war also created a barrier for immigration slowing down national expansion.

For the mining industry in the Sudbury basin however, the beginning of the war created an economic boom. The strength of nickel steel was an asset to the allies. The nickel from Canada was used to produce the armour plates on the tanks as well as bullet shells. The wheat industry did not pick up again until 1917 when prices once again rose and the Canadian allies began to purchase wheat from Canadian farmers. The growth continued for the wheat economy after the war until the early 1930's but for the mining industry the over production during the war created huge inventories to which there was no demand. The mining industry experienced a temporary slowdown until it was able to deplete its inventories and to advertise for more demand.

### **2.3 Literature Review**

Many economic historians generally do not accept the staple theory of economic growth or the primary significance the wheat boom had on Canada's economic development today. Although the growth of the wheat economy from 1896 to 1914 is recognized as an important part of Canadian history, most economists recognize the contribution of a variety of factors to the wheat expansion and more generally, the development of the Canadian economy. Controversies surrounding the wheat boom in the

single question: If there was no wheat boom then what really led to the growth of the Canadian economy?

In 1966, Kenneth Buckley was one of the first economists to argue that the staple theory provided an explanation for Canadian development until that point. He argues that the staple theory developed by both W.A Macintosh and Harold Innis was helpful to understand the Canadian economy before 1820 but then broke down when the fur trade slowed and timber and wheat trade became more prevalent. He states that while it is true that the volume of staples increased, the growth of the economy not related to the staple industry grew even faster. Buckley created another approach to attempt to verify his hypothesis. He questioned opportunities based on geography and natural resources and replaced it with economic opportunity without specifying determinants and determining the productive capacity of an area, industry or an entire country. His conclusions were that the staple theory is a good interpretation of history but in regards to an economic theory of growth it breaks down after 1820.<sup>18</sup>

In 1963, Melville Watkins attempted to determine the relevance the staple theory had on Canada's economic development past. He argues that there is a distinct type of economic growth the staple theory can be applied to and reconsiders the relevance of a staple approach to the Canadian case. He concludes "the periods from 1896 to 1913 were undeniably an example of a classic staple boom. The basic determinants of Canadian growth are the volume and character of her staple exports and the ability to borrow, adapt, and marginally supplement foreign technology."<sup>19</sup>

In 1966, Edward Chambers and Donald Gordon thwarted Watkins in an attempt to resolve the issue of the relevance of the staple theory. Chambers and Gordon

constructed a model to measure the overall effect the wheat boom had on per capita income. They use two models, 'The Simplest Model' and "The More Complicated Model". They set up the Simplest Model by using a counterfactual alternative to the resource rich prairies and a crude general equilibrium model. They set up the model with a wheat industry and a gadget industry, where the gadget industry needs little to no land to produce its product. They do not include population growth, capital or other industries. They concluded that had there not been a wheat boom, per capita income would have been \$5.61 below its actual figure of \$288.75. This accounts for 8.4 percent of the total growth small enough to contradict earlier predictions of staple theorists. In the More Complicated Model, they introduce capital, other industry and population effects into the model, indicating this as being a better-fit model for the period. This model implies that the wheat boom accounts for only 5.2 percent of the total growth in per capita income. Their conclusions are that the majority of income growth in developing countries is attributable to sources other than staple production and export. They suggest that the application of technology may be a source of growth for Canada during this period.<sup>20</sup>

In 1973, Gordon Bertram set out to prove that Chambers and Gordon's conclusions, even after their rejoinder in 1967, are theoretically and empirically incorrect. Bertram does admit that the original paper by Chambers and Gordon was an important milestone in economic history and development but indicates that they measured their most important contribution, agricultural rents, incorrectly. He also states that, although their use of agricultural rents is a good beginning, it is not adequate enough to be the sole measurement. Bertram's paper begins with the discussion of the agricultural rents used in the Chambers and Gordon paper then estimates his own rent assessments. With his new

estimates, Bertram concludes that, earlier views the wheat boom impact had on Canadian development was much closer to reality than that of Chambers and Gordon's conclusions.<sup>21</sup>

In 1980, Robert Ankli questions "first, if the growth of per capita income accelerated during this period and, second, if there was a rapid per capita growth during this period, due to a wheat boom or more broadly an export boom." His paper examines the supply and demand factors of production that led to the rapid growth. To examine the supply and demand factors, he looks at the exports of Canada during the last part of the nineteenth century and the first part of the twentieth century. He concludes were that there "was an export boom in the economy that was followed by a rapid increase of labour and capital supplies between 1901 and 1911 which increased per capita growth, but there was no wheat boom in the first decade of this century that made a substantial contribution to per capita growth."<sup>22</sup> Conclusion of acceleration in aggregate, but not per capita, replicated with time series methodology.

Kris Inwood and Thanasis Stengos in 1991 test the hypothesis that Canadian economic growth changed structurally as a result of the wheat boom and war. They identify exogenous events that changed the growth path of the Canadian economy with the Dickey-Fuller test used to discriminate between stationary and non-stationary series. They conclude were that the structure of Canadian growth changed with each of the two World Wars as well as the wheat boom. Inwood and Stengos further stamped these two structural breaks with their rejoinder in 1995.<sup>23</sup>

In 2004, Livio Di Matteo used a micro approach (perhaps the first time since Bertam) to answer whether or not the wheat boom had any significant impact on the

development of Canada. Di Matteo uses wealth information in Thunder Bay, Ontario to provide a case study of the effect of a resource boom on a frontier linked to, but outside of, the boom region. Di Matteo uses probate records for the period of 1885-1920 in the Thunder Bay District with Ordinary Least Squares regressions to determine that there is a break during the 1900-1914, which exhibits higher wealth than before 1900 or after 1914, pre-1900, and the post 1914 time periods. He also determined that "the boom did not have a permanent effect on per capita wealth levels."<sup>24</sup>

The Thunder Bay District is similar to the Sudbury District in that it was outside the boom region but linked by the CPR. Sudbury also had its own boom during the 1896-1920 period originating in mining rather than wheat. In this paper I follow Di Matteo in the application of a micro analytic approach to a northern region, in this case Sudbury rather than Thunder Bay. The Sudbury District is an excellent location for this analysis due to the extreme development that occurred through the mining industry during that time period.

## **Chapter 3: The History of The Sudbury District**

### **3.1 Geography of Sudbury**

The Sudbury district is situated in and around what is now known as the Sudbury Basin<sup>25</sup>. The Sudbury Basin is oval shaped and around “38 miles long and 17 miles at its greatest width”.<sup>26</sup> There are many theories as to how the basin was created and why there is such an abundance of ore found within its boundaries. During the first half and into the second half of the twentieth century it was believed that:

“during Keweenawan times a mass of molted matter deep within the earth was forced by subterranean pressure towards the surface. ... Then, owing to the weight of the overlying sediments and lack of underlying support, the centre of the intrusive mass sank into the chasm from which it had emerged, displacing and disrupting the formations newly established as well as the sediments above, which ultimately settled into their present synclinal position.”<sup>27</sup>

Today’s theories differ quite significantly. The majority of geologists now believe that the ore deposits and the Sudbury basin are the remnants of a meteorite impact crater and ore deposits were exposed when the meteorite hit the earth’s surface.<sup>28</sup> These ore deposits are what became of primary importance to the Sudbury District. As a result, mining became the base industry in Sudbury.

### **3.2 Building the Canadian Pacific Railway**

The Sudbury district began in 1883 when the Canadian Pacific Railway (CPR) set up an operating mill on Lake Ramsey in McKim Township. The original survey of the area determined that the route of the CPR was to be on the south side of Lake Ramsey, through what is now known as Chelmsford, and to continue west. However, William Allen Ramsey, chief of the survey party, came to the area and re-evaluated the region, determining that it was best to build the railway around the north side of the lake.<sup>29</sup>

Unknown at that time, this decision was the key factor in determining the fate of the economic significance of the Sudbury Basin.

To support the building of the CPR, many towns were formed to sustain establishing industries. The first industry was a lumber industry, which set up a lumbering camp to supply wood for the railway.<sup>30</sup> Accordingly the areas first well-off citizens were connected with the lumbering industry.<sup>31</sup>

### **3.3 Discovery of Copper and Nickel**

The position of the lumber industry as the main source of income for the area was very short lived. James Worthington, CPR superintendent of construction, came to the area with a rock cutting crew and began work to prepare the land for the railway.<sup>32</sup> While cutting away the excess rock, a blacksmith with the crew, "Thomas Flanagan, noticed some of the rock covered with gossans."<sup>33</sup> Intrigued by the gossans he continued to investigate the rock around the vicinity and discovered copper sulphate. Understanding the significance of this discovery, Worthington named the town Sudbury after his wife's birthplace, near London, England.<sup>34</sup> Worthington had planned on naming a town on the rail line he thought would be important.

The discoveries of the copper sulphate led to the influx of prospectors in early 1884, to survey the land and determine if there was enough copper for excavation to occur and be profitable.<sup>35</sup> Through the prospecting, it was discovered that "other places [in the Sudbury area] had ore that contained even greater values of nickel."<sup>36</sup> Before beginning the excavation of nickel and becoming a mining community, the Sudbury district needed to overcome the negative image that northern Ontario had of mining communities. During the middle of the nineteenth century, Bruce Mines, which lies just

west of Sudbury, opened a mining pit that collapsed. This made it an obstacle for turning Sudbury into a mining community with the support of its area residents.<sup>37</sup> A second obstacle was that nickel was difficult to separate and extremely expensive to send to the smelting companies in New Jersey. Therefore, it would take a large amount of financial resources to fund the mining production.

In 1869 the Ontario government enacted the General Mining Act to stimulate and regulate the industry, "placing only minimal constraints on the location and development of mining properties."<sup>38</sup> Because of the minimal constraints, the first prospector to make a claim was Thomas Murray of Pembroke who purchased the land for one dollar an acre.<sup>39</sup> His site later became known as Murray Mine. This claim was the beginning of a scramble to make claims in 1884. Speculators knew that with the lenient regulations on owning and operating mines in Ontario as a result to the General Mining Act, the owners of such claims would reap almost the entire benefit of the profits.<sup>40</sup> Even though acquiring the land was relatively cheap, as already mentioned, the problem lied in the costs associated with production. It was those costs that eventually led to the failure of many of the small mining companies, which initially made a claim.<sup>41</sup>

Sam Ritchie from Ohio was able to acquire enough financial assistance from associates in Ohio to develop what was to become a monopoly in Sudbury mining. In 1886, Ritchie, President of the Canadian Copper Company (CCC), purchased the failing mines of Copper Cliff, Creighton, Frood, Stobie and Evans.<sup>42</sup> All of these mines seemed to have promise with the right management and enough financial backing to buy the capital. The success of Ritchie was exceptional. Sudbury's subsequent expansion was largely dependent on the success of Ritchie's CCC.<sup>43</sup>



### **3.4 The Town of Sudbury**

Sudbury was incorporated as a town 1893.<sup>44</sup> Its population generally consisted of Anglo Saxons, Finns, Poles, Ukrainians, Italians and French Canadians.<sup>45</sup> The population mostly consisted of males as rail and mining dominated the regional labour market. As mines continued to develop around the area, small communities began to grow as a number of roads were constructed to neighbouring communities.<sup>46</sup> By 1913 the population of Sudbury had reaching 6,494 people, up from 2,027 in 1901 and 4,150 in 1911.<sup>47</sup>

Community infrastructure and social organization developed slowly. Electricity, water and sewage services were not installed until 1887; telephones in 1902. Telegraph services remained expensive, and regular communication with other communities was limited. No alcohol was allowed for the railway workers and as a result there was significant bootlegging until the railway camp left. Sudbury teams nevertheless participated in lacrosse, curling and gymnastics competitions with teams from North Bay, Bruce Mines and Sault Ste. Marie.<sup>48</sup>

The most ironic part of Sudbury's dependence on mining is that no mine lay within the city's boundaries. The city's importance came from its function as a commercial and financial centre for all of the mines in the Sudbury basin.<sup>49</sup> CPR connection to nearby villages and to lake ports and other urban centres in the north provided the communication and transport on which Sudbury's business evolution depended.

### **3.5 Growth and Fluctuation of the Mining Companies**

By 1890, the CCC had essentially built a monopoly in Sudbury and the surrounding area for nickel mining. Ritchie had developed a relationship with Robert Thompson who owned the Orford Copper Company and the process of refining the ore into copper and nickel. Through this relationship, Ritchie was able to negotiate a contract to send the ore to New Jersey to be refined with the Orford process and the Orford Copper Company.<sup>50</sup>

In 1899, Dr. Karl Langer and Dr. Ludwig Mond, discovered a new process for refining ore, which was much cheaper than the Orford process. After unsuccessfully attempting to sell the process to CCC and to Great Britain, Dr. Mond decided to open his own refinery in Wales. He then purchased land in Victoria Mines just west of Sudbury and in 1900; the Mond Nickel Company was incorporated as a British firm.<sup>51</sup> The Mond Nickel Company was able to establish itself despite the monopoly the CCC had on the Sudbury area, because of their British connection and lower refining price.

The success of the Mond Nickel Corporation and the new competition in the nickel industry created an even more economically stable environment in the Sudbury area. Investors' confidence in the area grew and as a result wealth and stability also grew. Employment in mining increased from 200 to 4000 in the thirty years between 1871 and 1901.

In 1902, the Canadian Copper Company and the Orford Copper Company merged to form the International Nickel Company (INCO), which had almost complete control of the Sudbury area through its monopoly in nickel production. Indeed ownership of the refinery in New Jersey also gave them an enormous amount of influence over the

provincial government. The provincial government wanted to enforce the local manufacturing of the ore. As early as 1885 Ritchie had promised to locate his refinery in Canada. The Ontario government in the early twentieth century decided it was time for Ritchie to follow through with this promise and they attempted to persuade him by implementing export duties and bounties. In the end once again, "both the provincial and federal governments backed down in the face of vociferous opposition from the [CCC]."<sup>52</sup>

The entire Sudbury district was dependant on the mining companies, which in turn relied on an uncertain demand for nickel and copper. At first nickel was used almost entirely in "the production of cheap costume jewellery."<sup>53</sup> Ritchie set out to discover new uses for nickel. He marketed the fact that you could get the same strength of ordinary steel with only two thirds of the weight in nickel steel.<sup>54</sup> He had some success in the form of a contract with the United States Navy for armour plates. Meanwhile, Mond captured the British market for nickel steel. The prosperity originating with contracts for nickel for use in nickel steel plates fell back in 1913 as commodity prices dropped and the north Atlantic economics entered a recession.

The outbreak of war and consequent increase in demand for military metals softened the effect of the recession on Sudbury. In 1914, with the accessibility of the railway and the excess of nickel matte, Sudbury was producing and distributing 90 percent of the world's nickel. War-related metal demand meant "life went on very much as usual in Sudbury and the surrounding communities."<sup>55</sup> This was contrary to the 'bust' described by DiMatteo for other parts of northern and western Canada.<sup>56</sup> In 1914, Sudbury produced 46 million pounds of nickel and 30 million pounds of copper. Both of

these figures almost doubled by 1918 as 93 million pounds of nickel and 48 million pounds of copper were being sold mainly to the United States and Britain for their war efforts.<sup>57</sup>

Refining the nickel was the main source of concern about the mining industry for the Canadian government because both major companies had refining plants outside of Canada. INCO still refined its matte in New Jersey and Mond in Wales. There were estimates of up to \$1,000,000 in lost wages to Canadian labour as a result of having no existing plant in Canada.<sup>58</sup> When the Ontario government discovered there were shipments of nickel from New Jersey to Germany during the first years of the war they appointed a commission to identify if Ontario had the capacity to refine nickel. The commissions' conclusions were that Ontario had the capacity to successfully refine the ore. As a direct result of the royal commission's findings, INCO built a refinery in Port Colborne. The refinery came into operation by the end of the war.<sup>59</sup>

For much of Canada the end of the war has been described as a time of economic stability and growth. This was not the case for mining in Sudbury. The end of the war created excess supply and production of nickel which inevitably affected INCO and Mond. INCO had to suspend its operations entirely for 12 months during 1921 and 1922 due to the lack of demand from the United States. Mond was able to remain open but at a much lower production rate with its business to Europe.<sup>60</sup> A number of miners abandoned Sudbury to attempt gold mining elsewhere.

In response to this challenge INCO and Mond set out to promote new ways nickel could be used. Nickel is extremely tough metal and can only be used for things such as heavy equipment, airplanes and refrigerators because they have to be durable to

withstand the heavy abuse they endure. Everyday moderate use items such as coins, utensils and golf clubs were also on the list of Ritchie's nickel uses. The increasing use of nickel in the fast-growing automotive industry proved to be particularly important in the recovery and growth of Sudbury mining. To this day, Sudbury remains an important regional centre in northern Ontario as a result in part of its continuing role as a substantial source of nickel for world markets.

## **Chapter 4: Data**

Although much has been written about the nickel companies, few sources allow us to identify with any precision the year-to-year pattern of growth for Sudbury and its people. The national census reports population and various indicators of economic activity at ten-year intervals but of course a great deal happened within each of the decades. I follow the example of Dr. Livio Di Matteo who uses the evidence of wills or estate records to follow the year-by-year trajectory of another northern community, Thunder Bay.<sup>61</sup> My goal is to consider the impact of the wheat boom, war and other large external influences on health held by Sudbury residents and property owners, and to do so in a way that permits comparison with Thunder Bay.

It has been possible to locate estate records for 972 people who died in the Sudbury District between 1888 and 1925.<sup>62</sup> These records from the Court of Probate and Surrogate Court of Ontario contain all the documentation needed to grant Letters of Probate of Administration including the original signed will, if applicable, and a tally of assets. I am particularly interested in the tally of assets as it documents the changing wealth of individuals living in Sudbury during this time.

The population statistics for Canada, Ontario, the Sudbury District and Thunder Bay district are presented below.

Figure 1

**Population Statistics**

Year	Canada	Percent Change	Ontario	Percent Change	Sudbury District	Percent Change	Thunder Bay District	Percent Change
1881	4306118	-	1926922	-	-	-	4056	-
1891	4801071	10%	2114321	9%	4842	-	8006	49%
1901	5318606	10%	2182947	3%	16103	70%	11219	29%
1911	7179650	26%	2527292	14%	29778	46%	39496	72%
1921	8775853	18%	2933662	14%	43029	31%	49560	20%
1931	10362833	15%	3431683	15%	58251	26%	65118	24%

Source: *Census Canada (1931)* 1 67-83.

From the estate records I also obtain personal information such as gender, marital status, occupation, literacy, number of children, the fixed place of abode, date of death and 16 specific categories of wealth collected.<sup>63</sup> Unfortunately age at death was not available in the and therefore could not be measured against wealth. The significance of age against wealth is understood, however, as the correlation age may have had on variables such as number of children and marital status and it is acceptable to leave that variable out. The significance of these variables is more obvious due to the omission of age.

In this and in other ways I try to follow Di Matteo's procedures for data collection and analysis in order to be able to compare the experience of Sudbury with that of Thunder Bay. One difference is that Di Matteo uses the time period of 1885-1920 while I examine the years from 1891 to 1925. Sudbury had few settlers until the late 1880s. Even the Canadian Pacific Railway crews in 1883 did not list their fixed place of abode as Sudbury; therefore their estate would not have been probated in the Sudbury area. The first available estate record appears in 1888. Along with comparing the Sudbury District to the Thunder Bay district from 1890-1920, I will also analyze the effects the "boom"

may have had after World War I and determine if there was a break in wealth accumulation before, during or after the war.

Before 1908 the administrative district of Sudbury did not exist.<sup>64</sup> The area was divided between two districts, the Algoma District and the Nipissing District.<sup>65</sup> 145 estate records from 1891 until 1908 were collected for the Sudbury area from the Algoma and Nipissing probated records. From 1908 until 1925, 831 documents were collected from the probated records in the Sudbury District. The result is a 35-year time series/cross sectional data set. Each time period varies in size, increasing as more people settled into the area; the first period in the analysis from 1888-1894 included only eight records while the last period from 1920 until 1925 included 291 records.

A number of dummy variables are constructed from the personal statistics for each of the individuals.<sup>66</sup> These personal statistics are shown in figure 2.

Figure 2

<b>Personal Information Variables</b>	
Gender	1 if Male 0 otherwise
Married	1 if marries 0 otherwise
Children	Number of Children
Testate	1 if testate 0 otherwise
Literate	1 if literate 0 otherwise
Miner	1 if miner 0 otherwise
Labourer	1 if labourer 0 otherwise
Agricultural	1 if agricultural 0 otherwise
Construction	1 if construction 0 otherwise
Services	1 if service 0 otherwise
Government	1 if government 0 otherwise
Resources	1 if resources 0 otherwise
Transportation	1 if transportation 0 otherwise
Manufacturing	1 if manufacturing 0 otherwise
Trade	1 if employed in a trade 0 otherwise
Professional	1 if a professional 0 otherwise
Retired	1 if retired 0 otherwise
Soldier	1 if soldier in WW1 0 otherwise
Unknown	1 if occupation unknown 0 otherwise
No Occupation	1 if no occupation 0 otherwise
Widower	1 if a widower 0 otherwise
Widow	1 if a widow 0 otherwise



Figure 3

<b>Personal Statistics</b>						
	Number of	Number of			Average	
	Observations	Women	Male	Married	Number of	Testate
					Children	
1888-94	8	1	86%	86%	2.9	0%
1895-99	16	3	81%	75%	1.3	63%
1900-04	62	11	82%	68%	1.5	35%
1905-09	115	24	77%	73%	1.9	37%
1910-14	197	32	83%	69%	2.0	32%
1915-20	289	64	76%	72%	2.2	34%
1920-25	284	59	76%	73%	1.9	50%
1888-1925	971	194	78%	72%	2.0	39%

Figure 3 gives the personal statistics of the estate records. About 80 percent of the decedents were male. Seventy two percent of the deceased were married and there were, on average, two children per deceased individual. Another weakness of the model with probated records is the accuracy in determining the number of children. If the children were not mentioned in the will or were not known by the executor of the will they would not have been recorded. This number is expected to be a slight bit higher in reality than here. I will still use this number in the analysis because it still gives a good sample of the area. 38.6 percent of the deceased had a will and 30.9 percent literate.<sup>67</sup> The results from each period are also available in figure 3 above. Each of the personal statistics remained relatively stable throughout the period with literacy increasing only in the last year.

I have aggregated occupational descriptions into a small number of categories: miner, labour, agricultural, construction, services, government, resources, transportation, trade and merchandising, professional, retired (which includes anyone retired), any

gentlemen or esquires, soldiers, unknown, no occupation, and unclassifiable. Figure 4 depicts the percentages of each occupation for the entire period of 1888-1925 as well as the individual periods. Of considerable interest to this analysis are the mining and labourer categories. One fifth of the decedents in 1895-1899 were miners, another fifth were labourers. Twenty-five years later these shares had declined to 6 percent and 12 percent. The diversification of occupational structure reflects a number of processes: migrants who initially came for mining opportunities later brought their families after they became settled; the mines occupied a growing number of people who were not miners; the local service sectors expanded; and so on.

Figure 4

**Occupational Composition**

	1888-94	1895-99	1900-04	1905-09	1910-14	1915-20	1920-25	1888-1925
Miner	0%	19%	15%	8%	12%	8%	5%	9%
Labourer	14%	13%	19%	20%	20%	11%	12%	15%
Agriculture	0%	0%	16%	21%	17%	14%	19%	17%
Construction	14%	0%	2%	6%	6%	4%	3%	4%
Services	14%	6%	5%	3%	6%	2%	8%	5%
Government	29%	6%	2%	2%	1%	2%	1%	2%
Resources	0%	0%	3%	3%	1%	2%	1%	2%
Transportation	0%	0%	6%	4%	3%	5%	4%	4%
Manufacturing	0%	0%	0%	1%	0%	0%	1%	1%
Trade and Merchandising	14%	0%	8%	8%	7%	4%	5%	6%
Professional	0%	0%	3%	3%	6%	2%	4%	4%
Retired	0%	13%	5%	3%	4%	3%	5%	4%
Soldier	0%	0%	0%	0%	0%	2%	1%	1%
Occupation Unknown	14%	25%	5%	3%	8%	19%	8%	11%
No Occupation	14%	19%	11%	19%	16%	22%	23%	20%

Labourers could have been miners however specific occupations were not recorded for those individuals. Due to the considerable farming industry in the area there is a significant number of individuals in the agricultural section. As for women, one percent of the service and transportation employees were women in the 1905-1909

period. One percent of the government's employees in 1915-1919 were women and one percent of the construction industries' employees in the same period were women. The individuals who did not report an occupation were categorized as unknown and women who had only 'married woman' were categorized as no occupation. The increase in the no occupation and the increase in number of women probated in figure 3 indicated there were a larger number of women holding wealth to be probated.

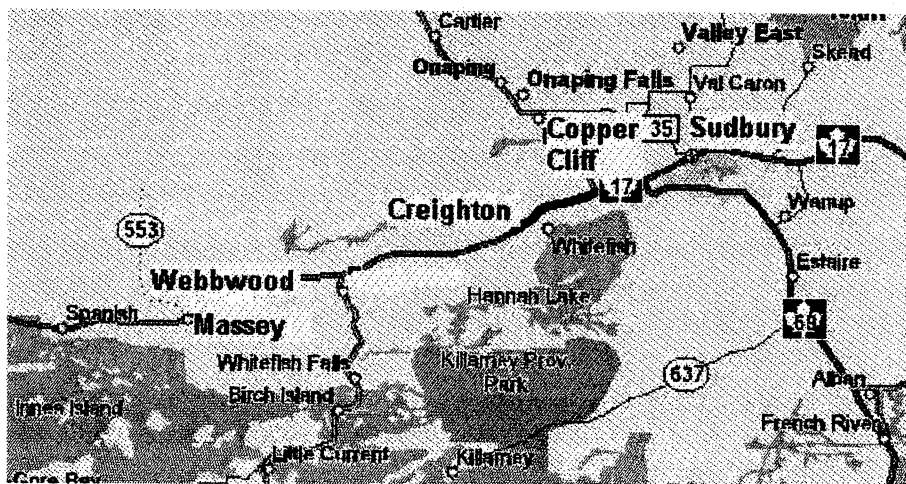
Dummy variables were also used to analyse the residency of the deceased as illustrate in Figure 5 and 6.

Figure 5

<b>Residency</b>	
Sudbury	1 if in Sudbury 0 otherwise
Copper Cliff	1 if in Copper Cliff 0 otherwise
Webbwood	1 if in Webbwood 0 otherwise
Massey	1 if in Massey 0 otherwise
Creighton Mines	1 if in Creighton Mine 0 otherwise
West	1 if West of Sudbury 0 otherwise
East	1 if East of Sudbury 0 otherwise
USA	1 if in the United States 0 otherwise
All of Sudbury	1 if in the rest of the Sudbury district 0 otherwise

Figure 6

### Map of the Sudbury Area



Sudbury, Copper Cliff, Webbwood, Massey and Creighton Mine are all towns within the Sudbury District. The townships not included in that list which are part of the Sudbury district are categorized in 'All of Sudbury'. Any cities of residency outside of the Sudbury district were categorized western Canada, eastern Canada or the United States.

Figure 7

<b>Residency Composition</b>								
	1888-94	1895-99	1900-04	1905-09	1910-14	1915-20	1920-25	1888-1925
Sudbury	14%	69%	23%	37%	35%	48%	36%	39%
Copper Cliff	0%	0%	19%	10%	14%	8%	6%	9%
Webbwood	14%	6%	5%	3%	3%	3%	2%	3%
Massey	0%	13%	3%	1%	2%	3%	4%	3%
Creighton Mine	0%	0%	3%	2%	2%	6%	3%	4%
West	0%	6%	2%	1%	3%	2%	0%	2%
East	0%	0%	2%	1%	3%	2%	0%	2%
United States	0%	0%	0%	1%	3%	1%	0%	1%
All other Sudbury Distri	71%	6%	45%	45%	37%	27%	48%	38%

Figure 7 outlines the 'fixed place of abode' of the deceased. Over 95 percent of the deceased came from the Sudbury district. By 1895 Sudbury grew to be the hub of the district with 68.75 percent of the deceased residing in the town. As the area settled and became increasingly important economically, the residency diversified. Sudbury remained the core of the area but the size of the city declined to approximately 38 percent of the district's population.

Figure 8 shows the nominal and real wealth for the time period in question. Wealth grew with both real and nominal wealth peaking in the 1920-1925 period with a slight dip in the 1910-1914 period, but growth through the 1915-1919 period. The

Thunder Bay District peaked in the 1910-1914 with a massive drop in the 1915-1919 period. Real wealth was constructed from Urquhart's estimates of Gross National Product.<sup>68</sup> It is important to use real wealth because inflation in Canada was approximately 102 percent from 1888-1925, including periods of extreme inflation of 154 percent just after the war and deflation from the war period until 1925.

Figure 8

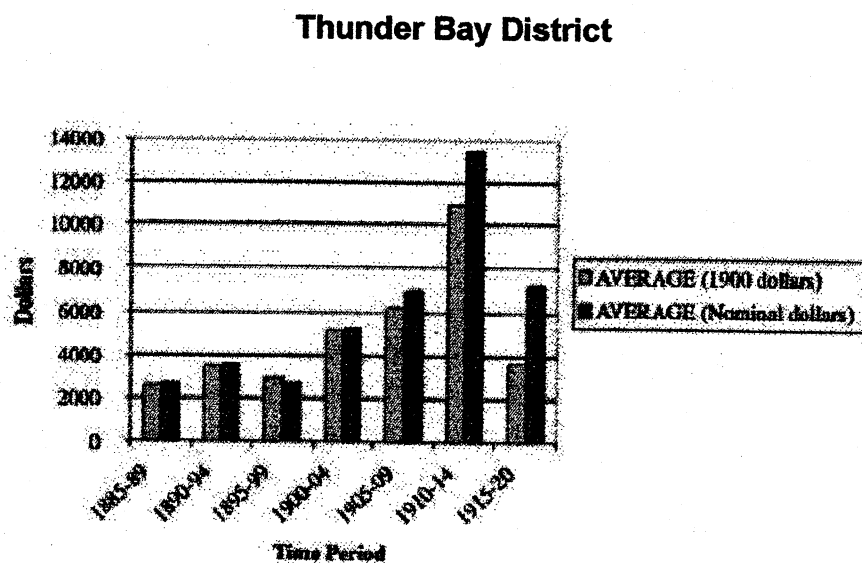
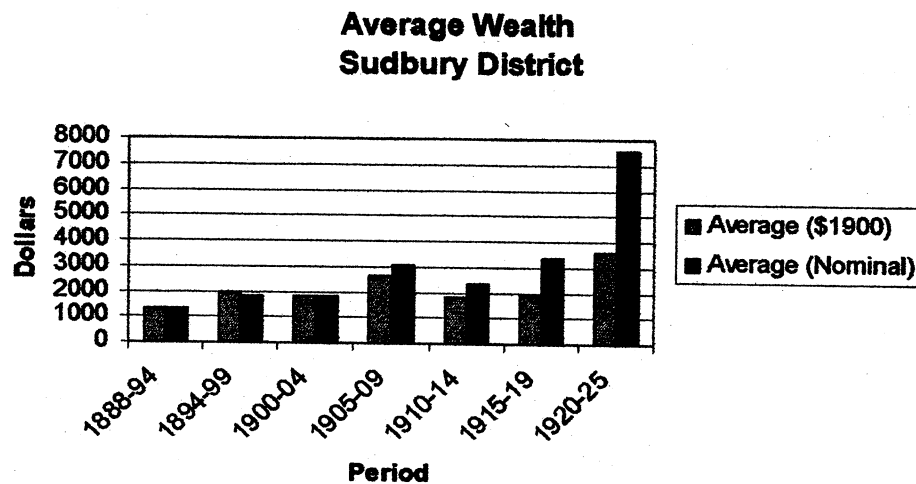


Figure 9, provides a description of the real estate as well as real financial statistics measured in 1900 dollars.<sup>69</sup> These results are also compared to Di Matteo's results. Sudbury and Thunder Bay seemed to follow a similar trend however Sudbury much lower real wealth in both real estate and financial assets. Sudbury peaks in 1905-1909 and starts to decline in 1910-1914 but continues growth throughout the war period. Thunder Bay peaks in 1910-1914 and starts its decline in 1915-1920 while Sudbury grows.

Figure 9

**Average Real Wealth Assets  
(\$1900)  
Sudbury District**

Period	Average Wealth	Average Real Estate	Average Financial Assets	Average R/W	Average F/W
1888-94	1323	466	465	35%	35%
1895-99	1836	813	911	44%	50%
1900-04	1854	729	954	39%	51%
1905-09	3064	954	1445	31%	47%
1910-14	2320	850	765	37%	33%
1915-20	3339	1112	552	33%	17%
1920-25	7544	941	1542	12%	20%
1890-1920	4191	955	1021	23%	24%

**Thunder Bay District**

Period	Average Wealth	Average real estate	Average financial assets	Average R/W (%)	Average F/W (%)
1885 9	2,581	685	1,173	10	53
1890 4	3,472	1,852	1,006	52	28
1895 9	2,915	1,407	1,191	46	39
1900 04	5,146	2,145	2,375	42	48
1905 09	6,188	2,593	2,892	43	44
1910 14	10,971	5,506	5,025	53	36
1915 20	3,647	1,561	1,744	44	46

## **Chapter 5: Empirical Analysis**

While it is still widely debated what effect the wheat boom had on the whole Canadian economy, it is beneficial to also determine what, if any, effect the wheat boom may have had on smaller local economies. First attempts to do this, by Livio Di Matteo, used individual probate records to follow the trajectory of individual wealth at death for residents and property owners in Thunder Bay. The example of Thunder Bay invites comparison with other communities. Was its experience typical of Canadian communities? Was it typical of northern Ontario communities? Real wealth measured in 1900 dollars is more pronounced in figure 8 showing the boom beginning in the 1915-1919 period with the greatest jump in the 1920-1925 period. With a small bust during the 1910-1914 Di Matteo's conclusions in Thunder Bay was a boom in the 1910-1914 period and a bust throughout the war period in 1915-1920.<sup>70</sup>

Wealth is a useful indicator because it reflects the full range of income earning opportunities available to an individual. Most other historical sources document individual activities or sources of wealth but they may not capture the entire range of activities undertaken by individuals. Using individual wealth figures provides us with a look at the opportunities of an area as well as the process of development of that community.<sup>71</sup> Wealth is created through savings and investment. One can sustain wealth by saving in financial assets, human capital or investing in consumer durables. The probate records enable us to look at each of these sections individually through the influence of personal characteristics and other non-choice variables in figure 3, such as gender. We also have access to choice variables such as human capital investment through their occupation and literacy in figure 4. Other choice variables include their

location, marital status and the option to have children in figure 3. Furthermore, the records include the financial assets such as stock in trade, cash on hand, cash in bank and securities for money.

Di Matteo, along with many other economic historians, have regressed wealth on these types of socio-economic characteristics to make inferences about the nature of the nineteenth century wealth accumulation.<sup>72</sup> This approach will also be used in this analysis of the Sudbury district to determine if there was a shift in wealth accumulation and if so, to reveal if the shift was during the wheat boom or during another period.

Ordinary Least Squares (OLS) was used to regress the log of real wealth, in 1900 dollars, on the personal statistics, gender and marital status, number of children, literacy, occupation, and residency.<sup>73</sup> Shift Dummies were used to capture the time period effects of the cross-sectional data. To determine the periods to which shift dummies were assigned the data was smoothed with a curve fitting technique, locally weighted scatterplot smoothing (LOWESS).<sup>74</sup> The data was plotted on a graph in figure 9 to locate breaking points, if any.

With the 0.2 or 20% bandwidth there is a slow but steady decrease in the log of real wealth with a small jump from 1900 until 1904. A sharp steady decrease follows the dip in 1914 until it peaks again then hits another decline in 1917. This follows Di Matteo's results with the exception of the increase in real wealth after 1913. Di Matteo found a sharp decline in the log of real wealth after 1913 that continued until 1920.

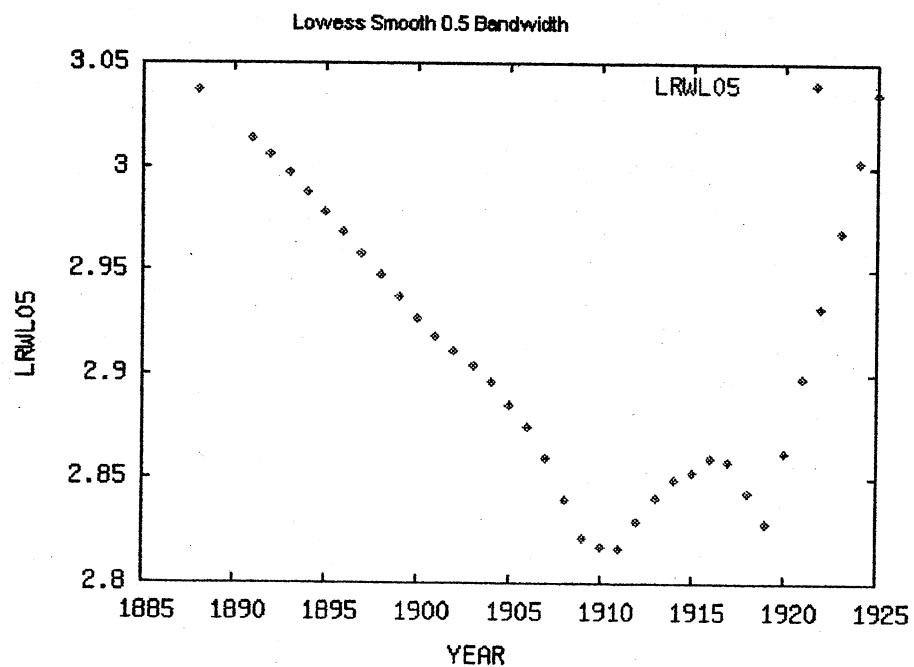
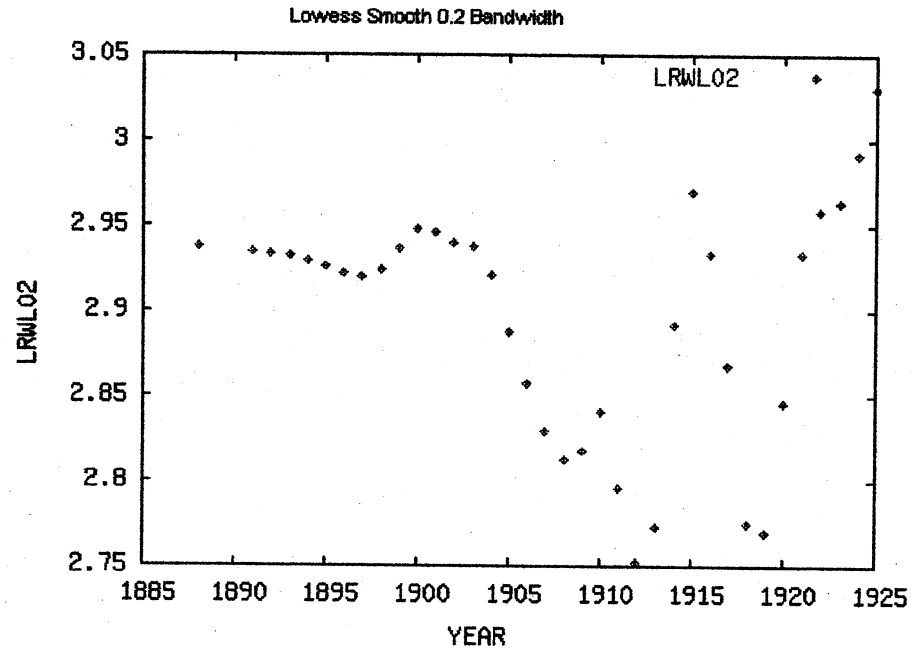
With the larger bandwidth 0.5 or 50% illustrates a steady decrease in the real wealth from 1888 until 1912 with an increase around 1910. The spurt begins to slow just



after 1917 then continues its growth through 1925. The results from the LOWESS analysis conclude that it will be beneficial to

Figure 9

Sudbury District



use Livio Di Matteo's time periods because the different shifts are caught in the middle of some of the periods.

The omitted category for the shift dummies was 1910-1914 to follow Di Matteo's model.<sup>75</sup> The omitted category for the place of residence was Sudbury while the omitted category for occupation was Miners. With the log linear model the coefficients are represented as percentages. The relationship between Di Matteo's result of Thunder Bay and the results of the Sudbury District can be seen in Figure 10.

Massey, Creighton Mine (Figure 6), Eastern Canada, Western Canada and the United States each had a result of no significance at the five percent significance level on the real wealth of individuals in the Sudbury District. Copper Cliff was negatively related at the 5 percent significance level with the decedents reporting approximately 16 percent less wealth than those of the town of Sudbury. The rest of the Sudbury district also had a negative relationship showing approximately 16 percent less wealth. Webbwood was also significant with 64% more wealth relative to Sudbury.

The results also suggest that there was no significance at the 5 or 10 percent level of the gender of the deceased. With the relatively small number of women in each period it is possible that the numbers are too small to expect to find any influence on the dependant variable. This is contrary to the results obtained by Di Matteo who showed a 66 percent increase in wealth if the individual was male.<sup>76</sup>

Figure 10

Subsidiary District			
Ordinary Least Squares for all Dependents			
Subsidiary (Dependent Variable is LITWELL)			
Variable	Coefficient	T-Statistic	
CONSTANT	2.39	20.16	
PER84	0.02	0.12	
PER88	0.02	0.13	
PO004	0.19	2.39	*
PO509	0.24	3.56	*
PI519	0.01	0.18	
PA026	0.09	1.61	
MALE	-0.01	-0.07	
LIT	0.40	8.75	*
MARRIED	0.24	5.31	*
WIDOW	-0.11	-1.27	
WIDOR	-0.14	-1.44	
CHILD	0.03	8.89	*
CORCL	-0.17	-2.67	*
WEB	0.04	4.94	*
MAS	-0.12	-1.12	
CREMIN	-0.15	-1.63	
EAST	0.17	1.06	
WEST	0.09	0.54	
USA	-0.17	-1.00	
ALBLD	-0.16	-3.49	*
AGRICULT	0.21	2.82	*
CONSTRUC	0.19	1.79	
RESO	0.26	1.89	
SERVICE	0.26	2.85	*
GOV	0.28	1.85	
MANU	0.14	0.53	
LABR	-0.02	-0.33	
TRADE	0.47	4.75	*
PROF	0.29	2.46	*
RETI	0.39	3.28	*
SOL	0.05	0.23	
TRANS	0.17	1.61	
UNION	0.02	0.31	
NOOCC	0.15	1.36	
R-squared	0.26	Mean of Dependent	2.87
Adjusted R-squared	0.23	S.D. of Dependent	0.61
S.E. of Regression	0.61	SSR	345.43
Durbin Watson Stat	1.92	F-Stat	6.47
Log Likelihood	-842.09		
* Significant at 5%			
** Significant at 10%			

Thunder Bay District			
Removes loans and loans, 1985-1990, regional results evidence from public records			
Ordinary Least squares results for all dependents (dependent variable is LITWELL)			
Variable	Coefficient	T-Statistic	
Constant	0.1371789	20.73571	
DE589	-0.7916607	-2.1953417	
DE094	-0.4428662	-1.9815080	
DE599	-0.5195091	-2.6560257	
DO004	-0.3301016	-1.7127089	
DN006	-0.1066169	-0.7803111	
DI320	-0.7453729	-6.0367235	*
MALE	0.6578961	2.6862228	*
LITERATE	0.5915497	10.647578	*
MARRIED	0.5088924	4.5050681	*
WIDOW	0.0654956	4.2030732	*
WIDOWER	0.1079273	0.6200647	
CHILD	0.0684439	3.1589416	*
PORTW	-0.1331873	-1.3250630	
REBLD	-0.6576936	-3.8090834	*
OTHIDST	-0.1874042	-1.1830366	
WEST	-0.3083174	-1.4502884	
EAST	-0.4662320	-0.8880203	
USA	-0.1684564	-0.7643945	
RETI	-0.5791298	-1.0506972	
ALBLD	-2.3146673	-1.7144391	
AGRICULT	0.3388365	1.6900030	
CONSTRUC	0.2333835	1.2306656	
RESOURCE	0.2730716	1.0133924	
SERVICE	0.3987308	1.9786074	
GOV	0.1836204	0.8413637	
MANOF	-0.4357696	-0.2141420	
LABOUR	-0.3980675	-5.5307053	*
TRADE	1.1834302	6.7024635	*
PROFESS	0.2956448	1.0366308	
RETIRED	0.8819815	3.7010456	*
NOOCC	0.3032671	1.1583951	
UNCLASS	-0.3839273	-1.2313650	
KILLED	-0.3901982	-1.7468902	
R-squared	0.293189	Mean of dependent	7.089334
Adjusted R-squared	0.274662	S.D. of dependent	1.768807
S.E. of regression	1.506435	Sum of squared resid	2857.189
Durbin Watson stat	1.919073	F-Statistic	13.82344
Log Likelihood	-2847.262		

Being literate was significant with 40 percent more wealth being attributed to those individuals who were able to sign their name on their will relative to those who were not. If an individual did not have a will they were assumed to be illiterate. So, after correcting for a number of variables illiteracy was also tested on only those decedents who we know for sure were illiterate. Therefore we assumed everyone who did not have a will was literate as well as those who could sign their will. The results were not significant at the five or ten percent level. I also tested only those individual who were testate. There were 379 observations and the results were that those who were illiterate had 22 percent less wealth than those who were literate.

Being married and raising children were also significant while being a widow or a widower were not. Decedents who were married showed approximately 24 percent more wealth while those with children showed three percent more wealth at the five percent significance level.

Professionals and retired individuals reported having 29 percent and 39 percent more wealth respectively, relative to miners and were significant at the five percent level. Decedents who worked in agriculture, construction and services each reported 21, 19 and 26 percent more wealth relative to miners, respectively, while individuals in trade and merchandising reported 47 percent more wealth at 5 percent significance. Resources and Transportation were both not significant at 5 percent relative to those in mining respectively. Professionals, Labourers, manufacturers and unknown occupations were all not significant at the five percent level, along with those with no occupation and soldiers killed in the war.

The shift dummies for the Sudbury district tell a different story than those in the Thunder Bay district. The early years of development in the Sudbury district, 1888-1894 and 1895-1899 had no significance on real wealth relative to the 1910-1914 period. The lack of significance in the early years may be due to the limited number of observations during that time period in the Sudbury District. This result may also be due to the limited development that occurred during that time period. Thunder Bay, which had settlement much earlier than the Sudbury area, did have significance with 79 (1885-1889) and 44 (1890-1894) and 52 (1895-1899) percent less real wealth relative to the 1910-14 time period.

The two periods from 1900-04 and 1905-09 had significance in the Sudbury District at the five percent significance level with 19 and 24 percent *more* wealth relative to the 1910-1914 period. This result is significantly different than those of Di Matteo who showed 35 percent *less* real wealth in 1900-1904 relative to the 1910-1914 period. Di Matteo did not have significance in the 1905-1909 period. When both INCO and Mond began to capture the market in the United States and Great Britain that there was a significant amount of growth in the Sudbury area. Just before the onset of the war the area hit a recession due to the drop in world prices. The Sudbury area did not feel the boom from 1910-1914 that occurred in the rest of the nation.

The period from 1915 to 1919 was statistically significant in Thunder Bay but not in the Sudbury District. Thunder Bay saw 75 percent *less* wealth relative to the 1910-1914 period while in the Sudbury district the 1920-1925 period showed nine percent more wealth than the 1910-1914 period. This result suggests that the "wheat boom" may have had a longer term effect on the districts economy.

The differences in these results as compared to the Thunder Bay district are important because it sheds another light on the actual development of the nation as a whole. We have now been able to see the effects of the wheat boom on two significant areas outside but linked to the area with significantly different outcomes. While the wheat economy in Thunder Bay may have followed a 'typical' trend; the mining economy had a trend of its own.

## **Chapter 6: Conclusion**

The Sudbury district was characterized by substantial wealth development with minor busts from the late 19<sup>th</sup> century until at least ten years after World War I. Due to the significant mining in the Sudbury District these results may be of asset to the Inwood and Stengos argument that if there was a wheat boom it was a “wheat and other boom”.<sup>77</sup> These results also suggest the Sudbury District was not identical to the national so called ‘wheat boom’ but they did benefit from the boom with the increased transportation and labour force. The mining industry was able to establish itself during the period of prosperity throughout the nation and was able to capitalize on the demands of the war to induce growth after the war.

Di Matteo’s question as to whether his results are paralleled in economic performance across Canada has been answered in the negative. Both the Sudbury district and the Thunder Bay district were connected to, but outside, the boom region but the results of the effects are significantly different. The Thunder Bay district experienced a significant bust in 1913 that accounted for the lack of increased growth through the boom of the war. Sudbury experienced a bust in 1913 but it did not have long-term effects on the growth of the area. In fact, the small bust propelled the Sudbury District into a boom that was much more important to the economy than the effects of the national boom earlier in the century. These results imply that the longer-term wealth in the Sudbury district was an outcome of the increased demand for nickel rather than the increase in wheat prices as was the case for the rest of Canada.

I have been able to answer Di Matteo’s question as to whether his results for the Thunder Bay area are paralleled in economic performance across Canada. It is apparent

that the Sudbury District and the Thunder Bay district are almost opposites with respect to the pre and post 1913 period. However, with the exception of gender the key determinants of wealth, marital status, number of children, literacy and occupation, are similar to Di Matteo's.

With this new information about another community in the Canadian economy, I was able to uncover another piece of the puzzle on the effects of the wheat boom on Canadian development in the early twentieth century. Looking at other similar communities would heighten this analysis in determining if Thunder Bay and Sudbury were on opposite ends of the spectrum or if Sudbury had a trend of its own. Another interesting analysis would be to examine the effects of the great depression and World War II on the Sudbury and Thunder Bay areas. It would be interesting to see if the Second World War had the same effects as the first war.

Regardless of the many avenues and ideas that may be further explored in regards to this era, it is apparent that the results of this paper suggest that Sudbury experienced an economic boom that is in contrast to other similar areas. A further in depth look at other aspects of these results could definitely prove to provide even more economic theories to be tested and a better understanding of the many economic changes during this critical time period in Canada.



Appendix

Figure 11  
The Sudbury Basin

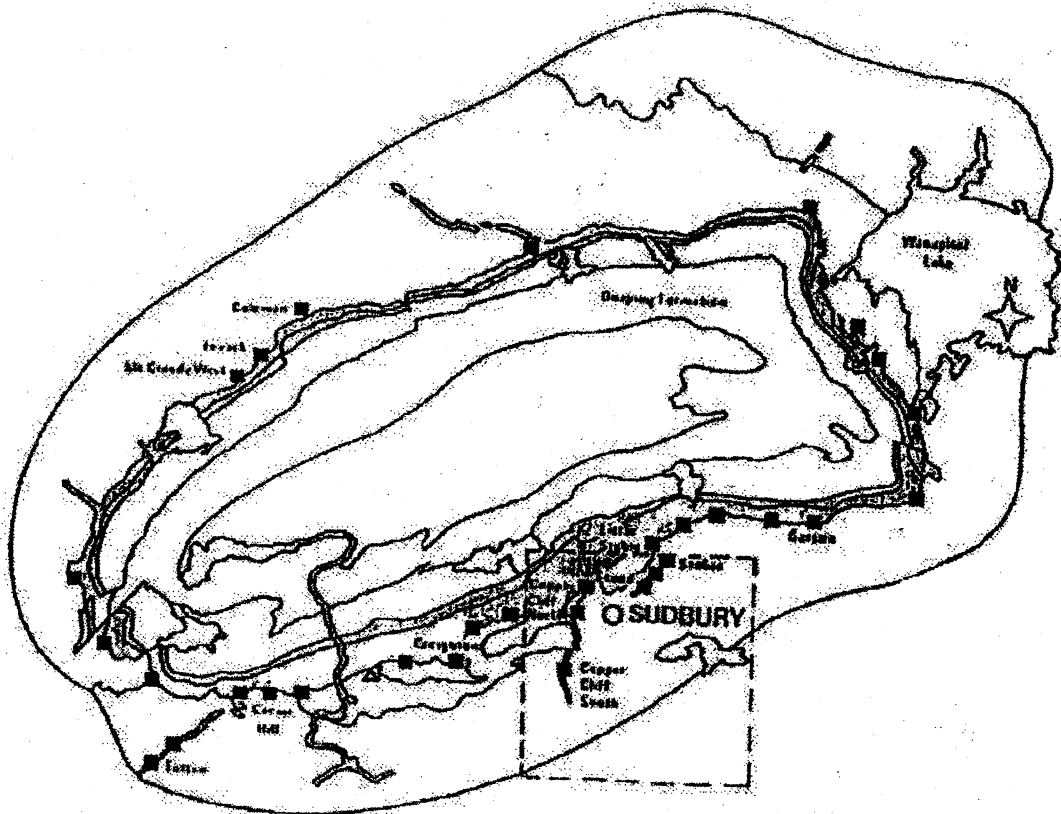
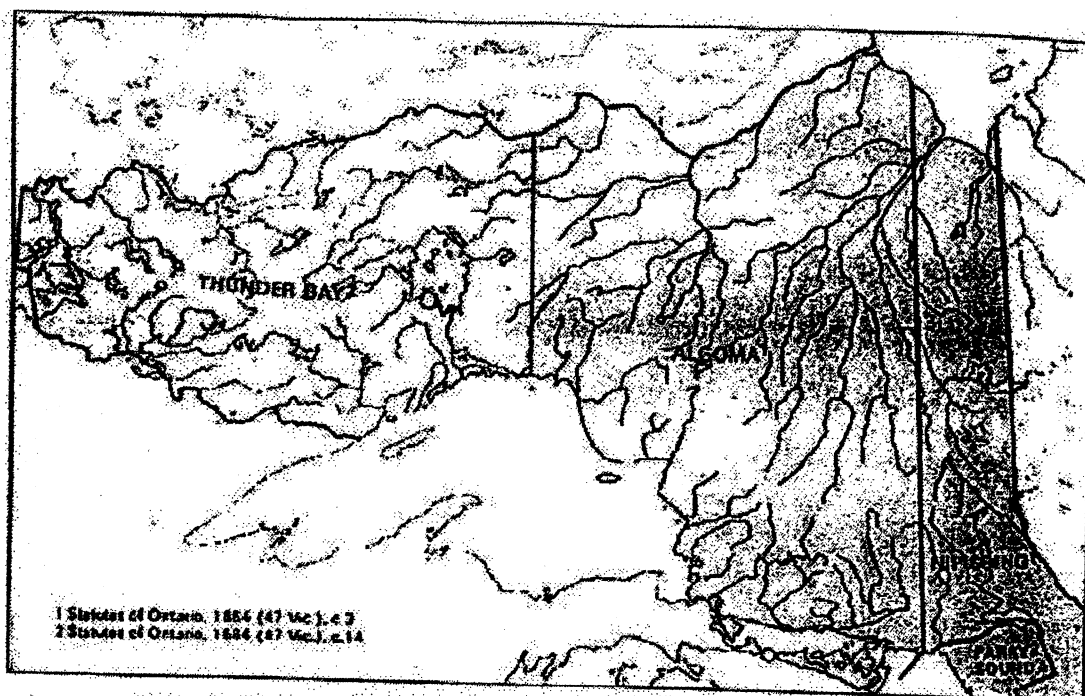


Figure 12

# Districts of Northern Ontario - 1884



# Districts of Northern Ontario - 1907

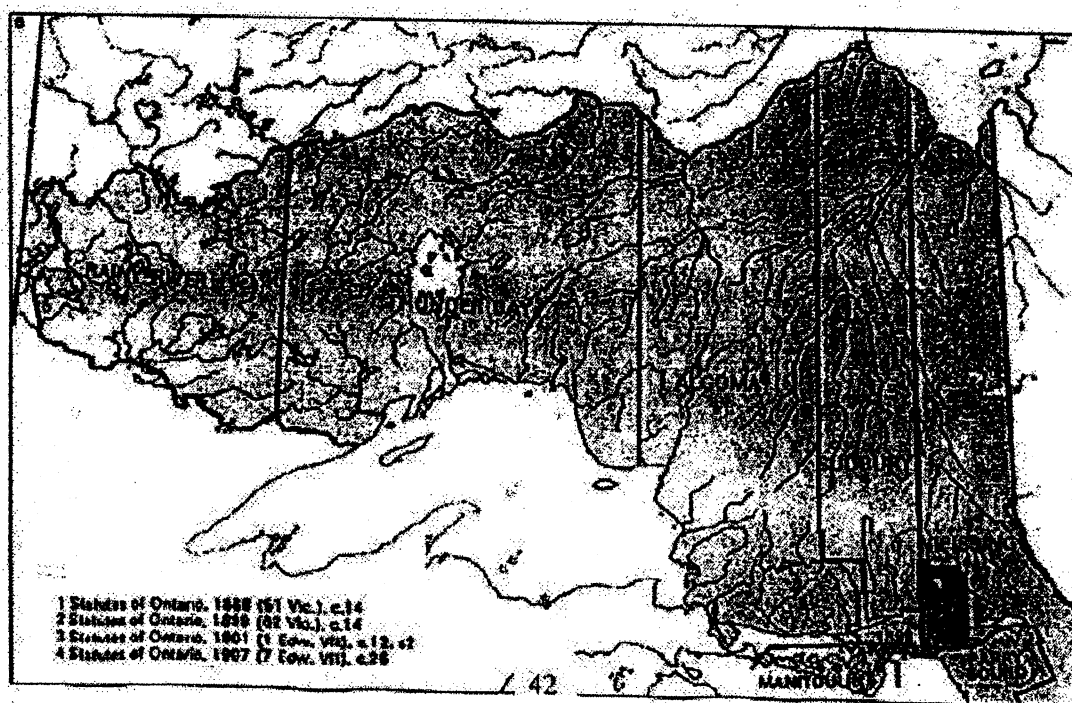


Figure 13  
Surrogate Court Record

In the Surrogate Court of the District Court of  
the State of Tennessee,  
In the Estate of Valentine Pollis,  
Inventory and Valuation of the property of the said decedent.

Valued on August 20, 1911.

Clothing and Jewellery	
Household Goods and Furniture	25.00
Farming Implements, etc.	
Cash in Trade	
Horses	
Horned Cattle	
Sheep and Swine	
Bank Debts and Promissory Notes	150.
Monies Secured by Mortgage	
Monies Secured by Life Insurance	
Bank Stock and Other Securities	
Securities for Money	
Cash on Hand	
Cash in Bank	600.
Farm Produce of all kinds	
Other Personal Property not before mentioned (if any)	
Real Estate	900.
	1675.00
	\$ 1675.00

LP

Beis L. L. L.

Figure 14

Occupational Classifications					
Classification	Occupation	Classification	Occupation	Classification	Occupation
<b>Miner</b>		<b>Services</b>		<b>Transportation</b>	
	Filler		Baker		Brakeman
	Jitney driver		Barber		Car Repairer
	Line Foreman		Bartender		conductor
	Miner		Boarding House Keeper		CPR employee
	Mining Captain		Book-Keeper		Engineer (Locomotive)
	Scaler		Butcher		Mechanic
<b>Laborer</b>			Carriage Worker		Railway Worker
	Janitor		Clerk		Road Supervisor
	Labourer		Cook		Teamster
<b>Agricultural</b>			Dispatcher	<b>Manufacturer</b>	
	Farmer		Employment Agent		Manufacturer
	Yeoman		Fire Ranger	<b>Trade and Merchandiser</b>	
<b>Construction</b>			Hotel Keeper		Black Smith
	Carpenter		Hotel Proprietor		Broiler Maker
	Construction		Manager		Electrician
	Contractor		Poule Sergeant		Lumber Merchant
	Painter		Priest		Machinist
	Pipe fitter		Purchasing Agent		Merchant
	Plasterer		Salesman		Insurance Agent
<b>Government</b>			Section Man	<b>Professional</b>	
	Bailiff		Storekeeper		Accountant
	Barrister		Tailor		Agent
	Constable		Telegrapher		chemist
	Mail Carrier		Watchman		Civil Engineer
	Officer	<b>Resources</b>			Dentist
	Post Master		Bushman		Druggist
	Post Mistress		Liveryman		Engineer
	Postmaster		Trapper		Foreman
	Provincial Constable	<b>No Occupation</b>			Health inspector
	Solider		In an Asylum		High school Principal
<b>Retired</b>			Infant		Mining Engineer
	Esquire		Married Woman		Physician
	Gentleman		No Occupation		Prospector
	Retired		Spinster	<b>Solider Killed</b>	
<b>Unknown</b>			Unemployed		Soldier
	Unknown		Widow		

The top and bottom 2.5 percent of wealth holders were omitted to control for any outliers that may have affected the model. Comparing these results to the results with all decedents it is clear that the statistics that were significant with all the deceased area all also significant with the top and bottom 2.5 percent omitted. Except for Webbwood, omitting the top and bottom wealth holders created no relationship with Webbwood as compared to the Sudbury district. Creighton Mine has now become significant at the 10% level with 15 percent less wealth than the Sudbury area.

Figure 11

Ordinary Least Squares omitting top and bottom 2.5% of Wealth holders  
Sudbury (Dependant Variable is LRWELT)

Variable	Coefficient	T-Statistic	
CONSTANT	2.50	26.30	
P8894	0.01	0.08	
P9599	0.04	0.31	
P0004	0.20	3.12	*
P0509	0.11	2.01	*
P1519	0.02	0.46	
P2025	0.07	1.70	**
MALE	-0.04	-0.50	
LIT	0.34	9.27	*
MARRIED	0.19	5.22	*
WIDOW	0.02	0.25	
WIDOR	-0.11	-1.39	
CHILD	0.02	3.21	*
COPCLI	-0.14	-2.82	*
WEBBWOOD	-0.12	-1.42	
MASSEY	-0.12	-1.32	
CREMIN	-0.15	-1.98	**
EAST	-0.11	-0.84	
WEST	0.02	0.20	
USA	-0.09	-0.62	
ALLSUD	-0.12	-3.35	*
AGRICULT	0.25	4.34	*
CONSTRUC	0.24	2.85	*
RESO	0.21	1.69	**
SERVICE	0.27	3.32	*
GOV	0.37	2.66	*
MANU	0.18	0.85	
LABR	0.01	0.20	
TRADE	0.48	5.68	*
PROF	0.24	2.62	*
RETI	0.38	3.93	*
SOIL	0.00	-0.01	
TRANS	0.24	2.87	*
UNKNO	0.07	1.08	
NOOCC	0.06	0.73	
R-squared	0.2731	Mean of Dependant	2.88
Adjusted R-Squared	0.2453	S.D of Dependant	0.52
S.E of Regression	0.4528	SSR	182.27
Durban Watson Stat	0.502	F-Statistic	10.03
Log Likelihood	-561.182		

Correcting for outliers the following chart describes the Average Real Estate and Financial Assets per period. Comparing this table with Figure 9 we notice there is a more even distribution of both real estate and financial assets than there was with the outliers included.

Figure 12

**Average Real Wealth Assets  
Top and Bottom 2.5 % of Wealth Holders Omitted  
Sudbury District**

Period	Average Wealth	Average Real Estate	Average Financial Assets	Average R/W	Average F/W
1888-94	1264	490	261	39%	21%
1895-99	1930	783	800	41%	41%
1900-04	1820	741	775	41%	43%
1905-09	1592.39	740.42	574	46%	36%
1910-14	1309.69	675.95	454	52%	35%
1915-19	1518.87	761.28	517	50%	34%
1920-25	1544.84	649.22	628	42%	41%
1888-1920	1568	692	660	44%	42%

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- <sup>1</sup> Edgar McInnis, *Canada; A Political and Social History* 3<sup>rd</sup> ed. (Toronto: Holt, Rinehart and Winston, 1969), 436.
- <sup>2</sup> Richard Pomfret, *The Economic Development of Canada* 2<sup>nd</sup> ed. (Scarborough: Nelson Canada, 1993) 43.
- <sup>3</sup> Melville Watkins, "A Staple Theory of Economic Growth", *The Canadian Journal of Economics and Political Science*, Vol 29, No. 2. (May, 1963), 144.
- <sup>4</sup> H.G.J Aitken, *American Capital and Canadian Resources*. (Cambridge: Harvard University Press, 1961) in Richard Pomfret, *The Economic Development of Canada* 2<sup>nd</sup> ed. (Scarborough: Nelson Canada, 1993), 43.
- <sup>5</sup> Marr et al. 356.
- <sup>6</sup> Robert Ankli, "The Growth of the Canadian Economy, 1896-1920: Export Led and/or Neoclassical Growth." *Explorations in Economic History* Vol 17. (1980), 260.
- <sup>7</sup> William Marr and Donald Patterson, *Canada: an Economic History* (Toronto: Gage Publishing, 1980), 353.
- <sup>8</sup> Ankli, 254.
- <sup>9</sup> Pomfret, 188; Dimatteo, 56; Roger Riendeau, *A Brief History of Canada*, (Markham: Fitzhenry and Whiteside, 2000) 174.
- <sup>10</sup> Ibid. 188.
- <sup>11</sup> Riendeau, 174.
- <sup>12</sup> Susan Crompton and Michael Vickers, "One Hundred Years of Labour Force" *Canadian Social Trends* Statistics Canada - Catalogue No. 11-008, (Summer 2000), 3.
- <sup>13</sup> Marr, 353.
- <sup>14</sup> Riendeau, 177.
- <sup>15</sup> The extent to which national income increased is difficult to determine due to the lack of data. Some authors have attempted to provide estimates of national income, O.J Firestone, Kenneth Buckley Urquhart and Robert Ankli.
- <sup>16</sup> Pomfret, 191.
- <sup>17</sup> Ibid. 191.
- <sup>18</sup> Kenneth Buckley, "The Role of Staple Industries in Canada's Economic Development", *The Journal of Economic History* Vol. 17 No. 4 (Dec 1958) 439-450.
- <sup>19</sup> Watkins, 158.
- <sup>20</sup> Edward Chambers and Donald Gordon, "Primary Products and Economic Growth an Empirical Measurement" *The Journal of Political Economy*, Vol. 74, No. 4 (Aug. 1966), 315-332.
- <sup>21</sup> Gordon Bertram, "The Relevance of the Wheat Boom in Canadian Economic Growth" *The Canadian Journal of Economics* Vol. 6 No. 4 (Nov. 1973), 545-566.
- <sup>22</sup> Ankli, 251.
- <sup>23</sup> Kris Inwood, T. Stengos, "Structural Change and Canadian Economic Growth, 1870-1985: The Effect of Wheat Boom and Wars", *University of Guelph Discussion Series*, (Guelph, 1988).
- <sup>24</sup> Di Matteo, 53.



- <sup>25</sup> A graph of the Sudbury basin is in the Appendix.
- <sup>26</sup> D. M LeBourdais, *The Sudbury Basin; The Story of Nickel*. (Toronto: Ryerson Press, 1953), 16.
- <sup>27</sup> Ibid. 17.
- <sup>28</sup> Greater Sudbury, Ontario - Reference Library,  
[http://www.campusprogram.com/reference/en/wikipedia/g/gr/greater\\_sdbury\\_ontario.html](http://www.campusprogram.com/reference/en/wikipedia/g/gr/greater_sdbury_ontario.html), (7/10/2004) 1.
- <sup>29</sup> Charles Dorian, *The First 75 Years; A headline history of Sudbury, Canada* (Ilfracombe: Author H. Stockwell Ltd, 1963)1.
- <sup>30</sup> Michael Solski, 'Coniston' in F.A Peake ed. *Industrial Communities of the Sudbury Basin; Copper Cliff, Victoria Mines Mond, and Coniston* (Sudbury: Sudbury District Historical Society, 1986), 45.
- <sup>31</sup> Ibid, 1.
- <sup>32</sup> Dorian, 2.
- <sup>33</sup> Ibid., 2.; Peter George. "Ontario's Mining Industry, 1870-1940' in Drummond, I.M *Progress Without Planning: The Economic History of Ontario from Confederation to the Second World War*. (Toronto: University of Toronto Press, 1987).56. ; Greater Sudbury,.
- <sup>34</sup> Keyfacts; *City of Greater Sudbury*. <http://www.city.greatersudbury.on.ca/keyfacts/index.cfm> 13/07/2004; Greater Sudbury, 1; Dorian, 2. ; LeBourdais, 24.
- <sup>35</sup> 6/8/2004, Heirloom Series. [http://collections.ic.gc.ca/herloom\\_series/Volume3/Chapter12/240-248.htm](http://collections.ic.gc.ca/herloom_series/Volume3/Chapter12/240-248.htm)
- <sup>36</sup> LeBourdais, 4.
- <sup>37</sup> George, 54.
- <sup>38</sup> George., 55.
- <sup>39</sup> HeirloomSeries, 3.; Dorian, 2.; LeBourdais, 36, states that the first to make application for a mining claim was Francis Charles Crean at Elsie Mine in May of 1884.
- <sup>40</sup> George, 55.
- <sup>41</sup> Some of the companies who failed include: Drury Nickel Company, the Lake Superior Power Corporation, Hamilton Nickel Company, the Great Lakes Copper Company, The Vivian Company (purchased Murray Mine from Thomas Murray) and R.R Gamey. W.H Makinen. "The Mond Nickel Company and the Communities of Victoria Mines and Mond" in Peake, F.A Ed. *Industrial Communities of the Sudbury Basin: Copper Cliff, Victoria Mines Mond and Coniston* (Sudbury: Sudbury Historical Society, 1986) 24.
- <sup>42</sup> Heirloom, 4.
- <sup>43</sup> Eileen Goltz, *Copper Cliff: The Pioneer Period* in F.A Peake ed. *Industrial Communities of the Sudbury Basin; Copper Cliff, Victoria Mines Mond, and Coniston* (Sudbury: Sudbury District Historical Society, 1986), 20.
- <sup>44</sup> LeBourdais, 5.
- <sup>45</sup> Goltz, 20.
- <sup>46</sup> LeBourdais, 5.
- <sup>47</sup> LeBourdais, 5.
- <sup>48</sup> Ibid, 5.
- <sup>49</sup> Heirloom, 4.
- <sup>50</sup> George, 55.
- <sup>51</sup> Makinen, 23.
- <sup>52</sup> Ibid, 69.
- <sup>53</sup> William Marr and Donald Patterson, *Canada: an Economic History* (Toronto: Gage Publishing, 1980) 356.
- <sup>54</sup> Canada, "Proceedings of the Selected Standing Committee on Mines and Minerals, Journals of the House of commons, Appendix No. 5" (1910), 12-17. In Kevin Burley, ed., *The Development of Canada's Staples 1867-1939* (Toronto: McClelland and Stewart Limited) 309.
- <sup>55</sup> Ibid., 119.
- <sup>56</sup> Livio DiMatteo, "Resource Boom and Bust, 1885-1920; Regional Wealth Evidence from Probate Records," *Australian Economic History Review* Vol. 44, No. 1, March 2004, 52-78.
- <sup>57</sup> LeBourdais, 129.
- <sup>58</sup> Canada, 308.
- <sup>59</sup> The United States remained neutral for the first few years of World War I, while Germany was the enemy for Canada who was part of the War. LeBourdais, 124.
- <sup>60</sup> LeBourdais, 130.

- <sup>61</sup> Livio Di Matteo, 'Resource Boom and Bust, 1885-1920: Regional Wealth Evidence from Probate Records' *Australian Economic History Review* Vol. 44, No. 1 (March 2004).
- <sup>62</sup> An example of the records recorded for this analysis can be found in the Appendix.
- <sup>63</sup> The 16 categories are Household Goods and Furniture, Stock in trade, Horses, Cattle, Sheep and Swine, Book Debts and Promissory Notes, Mineys secured by mortgage, Moneys secured by life insurance, Bank stocks and other shares, Securities for money, Cash on hand, Cash in Bank, Farm produce of all kinds, Other personal property and Real estate.
- <sup>64</sup> The Sudbury area includes the town and villages Sudbury, Salter, Espanola, Frood Mines, Creighton Mines, Coniston, Kelly Lake, Dunnett, Broader, Webbwood, Warren, Garson, Crean Hill, Copper Cliff, Naughton, Blezard, Worthington, Chapleau, Larchwood, Massey, May, Waters and a few other small areas within the district of Sudbury.
- <sup>65</sup> A map of the Districts is found in the appendix.
- <sup>66</sup> The equation to be estimates is  $\text{Log of Real Wealth} = \beta_1 + \beta_2 P8889 + \beta_3 P0004 + \beta_4 P0509 + \beta_6 P1519 + \beta_7 P2025 + \beta_8 \text{Male} + \beta_9 \text{Literate} + \beta_{10} \text{Married} + \beta_{11} \text{Widow} + \beta_{12} \text{Widower} + \beta_{13} \text{Children} + \beta_{14} \text{Copper Cliff} + \beta_{15} \text{Webbwood} + \beta_{16} \text{Creighton} + \beta_{17} \text{Massey} + \beta_{18} \text{West} + \beta_{19} \text{East} + \beta_{20} \text{USA} + \beta_{21} \text{AllSudbury} + \beta_{22} \text{Labourer} + \beta_{23} \text{Agricultural} + \beta_{24} \text{Construction} + \beta_{25} \text{Services} + \beta_{26} \text{Government} + \beta_{27} \text{Resources} + \beta_{28} \text{Transportation} + \beta_{29} \text{Manufacturing} + \beta_{30} \text{Trade and Merchandising} + \beta_{31} \text{Professional} + \beta_{32} \text{Retired} + \beta_{33} \text{Solider} + \beta_{34} \text{Unknown} + \beta_{35} \text{No Occupation}$
- <sup>67</sup> Literacy was based solely on the applicants who had a will and were able to sign their name on the will. If they marked the will with an X they were considered to be illiterate. Therefore this is not a good indication of literacy of the entire population.
- <sup>68</sup> M.C Urquhart *Gross National Product, Canada, 1870-1926: The Derivation of the Estimates*. (McGill Queens University press, 1993), 24-5.
- <sup>69</sup> A chart with the top and bottom 2.5% of wealth holders omitted is in the appendix.
- <sup>70</sup> Di Matteo, 61.
- <sup>71</sup> Kirk Hamilton and John A. Dixon, 'Measuring the Wealth of Nations' *Environmental Monitoring of Nations* 86:(2003) 76.
- <sup>72</sup> Di Matteo, 66.
- <sup>73</sup> The data was corrected for heteroskedasticity using shazam and the white heteroskedasticity-consistent covariance matrix. The categorization for the Occupations can be found in Appendix A.
- <sup>74</sup> Di Matteo used this technique as well. To follow his theory in order to compare the results of Sudbury and Thunder Bay the same technique will be followed here. The lower the bandwidth the lower the amount of data that is used to fit each local polynomial. So 20% bandwidth is 20% of the data.
- <sup>75</sup> Regressions omitting the 1915-1920 time period are in the appendix.
- <sup>76</sup> Di Matteo 68.
- <sup>76</sup> Inwood, 20.

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