

Mobility, Economic Opportunity and Wealth Accumulation during the Wheat Boom Era: 1870 to 1930

Livio Di Matteo (Lakehead University) and Herb Emery (University of Calgary)

Paper Prepared for the 50th Anniversary Meetings of the Canadian Network for Economic History, Kingston, October 16-18, 2015.

Preliminary Draft: Comments Welcome.

Abstract:

Migration to Canada's west during the "Wheat Boom" period 1896-1911 provided opportunities for income and wealth accumulation not available in Canada by the 1890s as evidenced by the sustained net emigration after Confederation. Western Canadian labour markets paid lower real wages than central Canada, but longer hours of work over the year resulted in a convergence of annual labour earnings across the labour markets. However, the equivalence of average incomes across regions masked the issue of higher earnings volatility in the western economy. To illuminate the importance of economic mobility arising from migration to the resource-producing frontier, we exploit time series data on the wealth holding of probated decedents in Hamilton/Wentworth County, the Lakehead/Thunder Bay District and Winnipeg/Manitoba over the period 1870 to 1930. Wealth holdings in the resource-producing west increased rapidly during the Wheat Boom period compared to those of central Canadians but nearly all of the increase was through real estate holdings. The evidence suggests that the effects of the wheat boom were transitory with the boom expanding the overall stock of wealth – real estate wealth in particular – but not the real per capita amounts. Our wealth estimates show that in the west, real estate was a volatile asset in contrast to the financial wealth accumulation of central Canadians, which was the key reason for the lack of sustained impact of resource exports on the standard of living. Failure to convert resource rents into assets external to the resource economy resulted in the income volatility translating to wealth volatility.

Introduction

Migration to Canada's west during the "Wheat Boom" period 1896-1911¹ provided opportunities for income and wealth accumulation that were not available in Canada by the 1890s as evidenced by the sustained net emigration after Confederation. (Inwood, Emery and Thille 2007). Western Canadian labour markets paid lower real wages than central Canada's during the Wheat Boom era but longer annual hours of work resulted in a convergence of annual labour earnings across the labour markets (Emery and Levitt 2007). The opportunity for higher earnings was also acquired through a willingness of migrants to the west to accept earnings with greater volatility than those in Central Canada (Norrie 1975, Norrie 1977). Higher earnings likely allowed for opportunities for greater wealth accumulation. Di Matteo (2012) argues that the western Canadian agricultural frontier reduced wealth inequality in Canada as the west had higher and more dispersed rates of land ownership. Thus one interpretation would be that the emergence of the western Canadian economy allowed geographic mobility to translate into improved earnings and economic mobility.

This interpretation of the Wheat Boom as an engine of economic mobility is at odds with some of the historical and more recent scholarly literatures positing natural resource exports do little to increase per capita incomes (Chambers and Gordon 1966) and may even reduce per capita incomes over the long run as per the "Resource Curse" (Sachs and Warner 2001). Natural resource exports have played a key role in Canadian economic development² and research has focused on their impact on per capita income growth and, by extension, the relevance of staple exports in Canadian economic growth. Chambers and Gordon argued that the contribution of the wheat boom to per capita income growth was small.³ Counter arguments to this view have centred on revising the estimate of the wheat boom's contribution upward by moving from a narrow to a broader economic interpretive framework.⁴

The Chambers and Gordon and Resource Curse perspectives applied to western settlement, however, focus on factor markets with ostensibly fixed factor prices due to elastic supplies of labour and capital for a small open economy, which translate into static steady state incomes in the absence of technical progress. What is missing in this view is the discussion of wealth accumulation that occurs due to the increase in prices of the fixed factor (land) and through the transitory scarcity, increased rents to factors in the

¹ This footnote is really here to honour Pat Coe who at the 2002 CNEH argued that a CNEH meeting is not formally complete until someone says "wheat boom". The Canadian wheat boom era traditionally covers the years 1896 (when wheat prices began to rise) to 1914 though the entire period from 1870 to 1930 can be considered the nation-building phase of the Canadian economy. Revised GNP estimates by Urquhart show the period 1901-11 to be one of substantial growth (See Urquhart, 1986). For an overview of resource development and the wheat boom era in Canadian economic history, see also McInnis (1986, 2007), Altman (1987), Pomfret (1981, 1993), Caves (1971), Harley (1986), Lewis (1975),

² Keay (2007)

³ Chambers and Gordon (1966).

⁴ For example, see Lewis (1975), Caves (1971), Carlos (1988).

short run.⁵ As Sachs and Rodriguez (1999) point out the lasting effects of a resource boom are really the product of the steady state consumption stream arising from the investment of transitory resource rents. As Di Matteo, Emery and Shanahan (2014) have argued, wealth and the composition of assets in which it is held could be considered a better measure than income for gauging the long run impacts of resource booms. Even if income increases are transitory short run phenomena, when one examines wealth during the settlement boom, the question is whether any increases in wealth are also transitory with the boom expanding the overall stock of wealth or assets but not real per capita amounts. As McCallum (1979) and Sachs and Rodriguez (1999) have argued, sustained benefits of resource booms are apparent in the capturing of lateral linkages to resource exports such as a financial sector or manufacturing or investment of short term resource rents into financial assets external to the resource sector if not the resource economy (e.g. no local real estate).⁶

While Chambers and Gordon (1966) consider the static rents earned by “land” in the Wheat sector, they claimed that fixed factor and non-tradeable sector rents were not captured/retained in the Canadian economy, which contributed to their pessimistic assessment of the contribution of wheat exports to Canadian incomes. In their expanded model with “Cheese” and “haircut” sectors, if tariff protection and Canadian ownership requirements for railways and other key infrastructure increased the size of capital investment in the Canadian economy, then the capitalization of resource rents in local land values, where branch plants located, and in assets like Canadian shares in railways, would be examples of rents due to wheat exports ignored by Chambers and Gordon.⁷

Additionally, while the Canadian wheat boom has been examined from a macroeconomic and regional perspective, its effects should also be apparent at a local level, particularly in urban areas.⁸ Indeed, substantial urban population growth marks the development of western Canadian cities during the wheat boom era and urban land values were not part

⁵ Modelling the transitory impact of a resource boom via a neoclassical adjustment process can also be accomplished using ‘booming sector’ frameworks. See Corden and Neary (1982), Corden (1983).

⁶ The Hartwick Rule has also posited that the efficient policy for non-renewable resource production is to invest all rents into financial assets thereby converting natural wealth into financial wealth. Norway would be an example of an economy, which has followed this kind of strategy.

⁷ Green (1971). Chambers and Gordon’s expanded model has a “cheese” industry, domestic or export which has diminishing returns from the application of labour to land but which faces no increase in demand during the wheat boom. The effect of tariff protection, however, could have been to switch western Canadian consumer demands from imports to the domestic cheese industry that would have shifted demand and increased land rents in the cheese sector. Consider the case of agricultural implements where both domestic producers and branch plant production in Canada would have seen increases in demand for output and increases in local land values in urban areas where the firms located. The “haircut” sector, which is an industry protected by tariffs and transport charges services, sees an increase in demand but Chambers and Gordon argue that there was no capital or land used in production so the increased rents in the industry are not captured by any factor of production. If haircuts represent rail transport and grain handling services, with controls on foreign ownership, then the rents arising from increased demand for “haircuts” during the wheat boom could have been captured.

⁸ For regional perspectives using probate, see Di Matteo (2012, 2004, 1993).

of Chambers and Gordon's calculations.⁹ Between 1871 and 1931, Canada's urban population as a percentage of the total grew from 19 to 54 percent with 1911 near the peak of the boom era saw urban population share at 45 percent. Even Manitoba saw its urban population as a percent of the total grow from 4 percent in 1871 to 43 percent by 1911.¹⁰ In particular, between 1901 and 1911, the population of Canadian cities exploded with western Canadian cities like Winnipeg more than tripling in population.¹¹

This paper analyses probate wealth data for three urban areas in Canada – Winnipeg, Manitoba (377 estates for the period 1874-1927), Hamilton, Ontario (1777 estates for the period 1872 to 1927) and The Lakehead, Ontario (1646 estates for the period 1885 to 1931) – in an effort to gauge the impact of the wheat boom era on wealth levels and composition. Wealth is a function of saving plus the return to assets and saving is in turn related to income. Probate provides a valuation of wealth at a point in time – a spot estimate – for all assets but especially for real estate, which reflect land prices. If the impacts of the boom are indeed transitory then one should also expect the real value of real estate assets to eventually decline after the peak of the boom. There should be an impact on portfolio composition both during the boom and afterwards during the bust period.

The results of an analysis of probate wealth data show booms in real estate and wealth in both Winnipeg and The Lakehead with peaks during the period between 1910 and 1914 followed by declines. The boom and bust is most pronounced in the wealth and real estate for Winnipeg where wealth and real estate levels in real terms by 1927 were where they had been in the 1890s – just prior to the boom. The Lakehead also saw a boom in wealth and real estate but the bust period was more subdued than Winnipeg's. Meanwhile, Hamilton Ontario saw declining average wealth and real estate levels over the entire period. Real estate was the most important component of wealth in Winnipeg and much less so in Hamilton, Ontario. The evidence suggests that the effects of the wheat boom were indeed transitory with the boom expanding the overall stock of wealth – real estate wealth in particular – but not the real per capita amounts.

⁹ On page 320 Chambers and Gordon (1966) report that the increase in average rental paid per acre paid on all farms under lease applied to total acreage in agriculture in the three prairie provinces would have increased aggregate land rents by \$40.4 million between 1901 and 1911.

¹⁰ See Appendix 1a.

¹¹ See Appendix 1b.

The Data

The data consists of probated estates for three urban areas in Canada – Winnipeg, Manitoba (377 estates for the period 1874-1927), Hamilton, Ontario (1777 estates for the period 1872 to 1927) and The Lakehead, Ontario (1646 estates for the period 1885 to 1931). The data for these urban areas represent subsets of probate records taken from three regions in Canada: Wentworth County, Ontario (2516 estates), Thunder Bay District, Ontario (2338 estates) and Manitoba (826 estates).

Hamilton & Wentworth County

The Hamilton-Wentworth region at the western end of Lake Ontario shared in the early 20th century boom period in terms of its overall economic and population growth.¹² Wentworth County consisted of the city of Hamilton and the town of Dundas, plus a number of adjoining rural townships¹³ with its history rooted in the original European settlement of Upper Canada in the wake of the Loyalist expulsion. Wentworth County's population was 57,599 in 1871 and by 1911 had grown to 111,706 and went on to reach 153,567 by 1921. Between 1871 and 1921, the population of Wentworth County grew by 167 percent while Ontario's population grew 81 percent and Canada's population grew 138 percent. Thus, Wentworth County was part of the economic and population growth underway in Canada during the late nineteenth and early twentieth centuries.¹⁴

The Lakehead and Thunder Bay District

The coming of the Canadian Pacific Railway in the 1880s joined the Thunder Bay region to both the Prairie wheat economy and central Canada and allowed its major metropolitan centers of Port Arthur and Fort William to serve as a transshipment and storage point for western grain as the "Lakehead".¹⁵ As well, a substantial portion of the economy was also rooted in local manufacturing development, resource extraction and local agricultural development.¹⁶ The population of the Thunder Bay District grew rapidly with the

¹² The boom period seemed to spark more extensive rather than intensive growth in the Hamilton-Wentworth region as per capita wealth did not rise as dramatically during the boom as in more western regions of Canada. See Di Matteo (1993, 2004).

¹³ East and West Flamborough, Beverly, Ancaster, Glanford, Binbrook and Saltfleet.

¹⁴ Wentworth County's history of permanent European settlement dates from the late eighteenth century and by the latter half of the nineteenth century was undergoing a process of urbanization and industrialization. Hamilton and Dundas competed to be regional centers but by 1850 Hamilton emerged the winner and proceeded to dominate its hinterland. Hamilton's prominence as a commercial and later as an industrial centre was the result of its strategic position at the head of Lake Ontario that enabled it to reap the benefits of being a transshipment point. With the development of the Prairie wheat economy, Hamilton acquired an industrial sector that emphasized iron and steel products.

¹⁵ The Lakehead became the world's largest grain port during the period prior to World War II. For references on the economic history of the Lakehead see Di Matteo (1991, 1992, 1993). For work on the Thunder Bay probate wealth data, see Di Matteo (2004).

¹⁶ The wheat economy made a substantial contribution to the regional economy. It has been estimated that gross regional product in the absence of the wheat boom at the Lakehead would have

greatest expansion between 1901 and 1911 when the population nearly tripled to approximately 40,000. This growth paralleled that of other western Canadian cities. By 1921 over 70 percent of the District's population was at the Lakehead.

Winnipeg and Manitoba

After an initial history rooted in the fur trade, the coming of the railway, prairie settlement and agricultural development sparked an economic boom in Manitoba that saw its population soar from 25,000 in 1871 to 700,000 by 1931 as the result of substantial European immigration.¹⁷ Manitoba's population grew much faster than Canada's during this period with an implied annual growth rate of 5.6 percent compared to 1.7 percent for Canada. Manitoba also developed an extremely diversified economy during this period with agricultural production as well as substantial trade and manufacturing and commercial functions in Winnipeg, which served as the gateway to Western Canada and was according to Norrie, Ogram and Emery the "undisputed apex of the Prairie urban hierarchy in the years before 1914".¹⁸

Probate Data Sources and Construction

The primary data source for Wentworth County (and for the Thunder Bay District) is the probate records of the Ontario surrogate courts.¹⁹ The number of probated estates from Hamilton, Ontario - which is the focus of this analysis - total 1,777 or 71 percent of all the estates probated in Wentworth County for the selected years.

The data for Wentworth County contains 444 previously collected census-linked core probated decedents for the years 1872-1902 which have been augmented with the addition of 76 decedents for 1892 and 54 for 1902 who could not be census-traced for the original data set but for whom data on real and personal estate and other characteristics was available from probate.²⁰ This increases the total data set available for 1872 to 1902

been 42 percent smaller (Di Matteo, 1993, 611). In addition, there was agriculture in the area surrounding the Lakehead. By 1921, there were 24 rural townships surrounding the Lakehead accounting for 1,534 farms and supporting a rural population of 7,397. Source: Census of Canada 1921. Forestry also employed thousands in extraction in the surrounding region, at sawmills and at the three pulps mills either operating or under construction by 1921.

¹⁷ Census of Canada

¹⁸ Norrie, Ogram and Emery, *A History of the Canadian Economy, 193-211*. See also: Morton, *Manitoba: Birth of a Province*; Artibise, *Gateway City: Documents on the City of Winnipeg 1873 - 1913*.

¹⁹ Under the *Surrogate Courts Act, 1858* (Statutes of Canada, 22 Vict., Cap. 93, 1858) a surrogate court with the power to issue grants of probate and administration valid throughout the province was established in each Ontario county, completely replacing the centralized Court of Probate established in 1793. Probate was an institutional arrangement, which transferred property from the dead to the living and one applied for probate in the county or district where most of one's property was located. The process of probate served to grant administration over the estate of the decedent. In intestate cases (without a will) the application to the court for administration was made by an interested party (usually the widow or next of kin but sometimes a creditor) and once granted, distribution of the estate was made according to law. See Howell (1880: 155).

²⁰ For information on the collection of the original Wentworth County Data set of 405 census-linked observations and criteria and approach to linkage, see Di Matteo and George (1992). An additional 39 decedents for 1902 were census-linked later bring the data up to 444. For 1872 and 1882,

to 574 individuals. Moreover, this core data was expanded by adding data for all the estates probated for the years 1907, 1912, 1917, 1922 and 1927 which adds another 1,942 probated decedents with data on their residence, occupation, marital status, number of children, date of death, whether they had a will and the value of the estates.

The Thunder Bay data set was constructed from taking down all the probate records of the District of Thunder Bay Surrogate Courts over the period 1885 to 1930. Prior to the creation of the District of Thunder Bay in 1885, the few estates from the region were probated in the District of Algoma. Being in Ontario, the records are of the same quality and format as those for Wentworth County. The Thunder Bay District Wealth data contains 2,338 estates covering the years 1885 to 1930 (4 estates are actually from 1931). Of these, 1,646 are from The Lakehead – the twin cities of Port Arthur and Fort William.

The Manitoba probate data set is constructed from the probate records of the Winnipeg Estate Files (Eastern Judicial District of Manitoba) that are available at the Archives of Manitoba. The Eastern Judicial District covered not only the City of Winnipeg but also the county court districts immediately to the north, south and east of Winnipeg.²¹ The records are not microfilmed or available online and were accessed via a series of onsite visits. The legal system for probate and estates was for all intents and purposes identical to that for Ontario and was governed by the Surrogate Courts Act (Revised Statutes of Manitoba, c. 37, s.1) and the Devolution of Estates Act (Revised Statutes of Manitoba, C.45, s.1). A sample of 826 Eastern Judicial District estates was collected at approximately 5-year intervals for the period 1873 to 1927.

The inventory and valuation of property was of key importance for all three datasets. The inventory was conducted by the executor of the estate (administrator in intestate cases) and in practice was brought in voluntarily without awaiting the compulsory summons.²²

probate only provides personal estate and therefore the real estate data for these original census-linked estates was obtained from assessment rolls and therefore no additions were made to the data for these years. However, had these estates been utilized there would be a total of 72 for 1872 and 115 for 1882.

²¹ These judicial districts were formally established in 1881 (See An Act for dividing the Province of Manitoba into Judicial Districts and establishing Courts therein," Statutes of Manitoba, 44 Vic. CAP.XXVIII. The Eastern Judicial District was residual as the portions not included in the central and western district but generally included the county court districts of Gimli, St. Laurent, St. Francis Xavier, Elm Creek, Carman, Morden, Cretna, Morris. St. Norbet, Stonewall, Inwood, West Selkirk, Beasejour, Ste. Anne, Joly, Emerson, Winnipeg and St. Boniface.

²² According to Howell's *Law and practice*, pp. 325-326: "The inventory should contain a statement of all the goods, chattels, wares and merchandize, as well moveable as not moveable, which were of the person deceased at the time of his death within the jurisdiction of the court. A proper inventory should enumerate every item of which the personal estate consisted, and should specify the value of each particular. But unless by order of court, or in obedience to a citation, an inventory does not set forth the goods and chattels in detail." Probate instructions do not specify how asset value was assigned. For real estate, livestock and personal property the evidence suggests that it was market value. Sometimes, property was sold and its selling price recorded in the inventory, whereas more often it was an estimate of what the property would fetch if sold. Financial assets by their nature were precisely recorded. Mortgages held, the amount of insurance payments, and bank account

For the Manitoba records, the period of the 1870s and early 1880s like Ontario saw mainly personal estate reported in the records but by the mid-1880s the inventory provides estimates of wealth grouped into 16 categories²³ resulting in separate estimates of real estate, financial assets and personal property over a substantial period of time. The probate records also include information on gender, place of residence, date of death, number of offspring and occupation.

Some additional features of probate records require comment. First, probated decedents were generally of higher socio-economic status than the general population. Indeed, not all estates went through probate although the proportion doing so seems to have remained stable over time. For example, in Wentworth County, the number of adult deaths as reported in the Census of Canada was 308 in 1871, 450 in 1881, 640 in 1891 and 962 in 1902. The total number of estates probated was 72 in 1882, 115 in 1881, 231 in 1892 and 215 in 1902. Based on these numbers, the proportion of dead adults who were probated rose from 23.4 percent in 1872 to 36.1 percent in 1892 and then declines to 22.3 percent in 1902.²⁴ Evidence on deaths from the 1901 Census and the number of probated estates for 1900-01 suggests that about 20 per cent of all deaths in the Thunder Bay District were probated.

A similar comparison for Winnipeg and Manitoba is not possible to make as the estates were a sample rather than all those probated in a given year. However, again based on the total number of adult deaths in Manitoba from the Census of Canada and an estimate of total number of estates probated annually in the Eastern Judicial District based on the range of estate file numbers in the archival listing, proportions seem similar. The estates probated in the Winnipeg Court comprises about 17.5 percent of all adult deaths in Manitoba in 1881, 22.4 percent in 1891 and 28.1 percent in 1901.²⁵

Second, the wealth data may be affected by whether the probated decedents died unexpectedly or had been ill a long time and therefore run down their assets.²⁶ Third, the presence of estate taxes may provide incentives for estate administrators to underestimate inventoried wealth. Like Ontario, Succession Duties came into effect in Manitoba in the 1890s (Revised Statutes of Manitoba, "The Succession Duties Act, 56, V., c.31, s.1) but

balances were precise amounts. In addition, real estate was usually recorded net of any mortgages outstanding.

²³ The inventory categories were: (1) Household goods and furniture, (2) Farm implements, (3) Stock in trade, (4) Horses, (5) Cattle, (6) Sheep and Swine, (7) Book Debts and Promissory Notes, (8) Moneys secured by mortgage, (9) Life Insurance, (10) Bank stocks and other shares, (11) Securities, (12) Cash on hand, (13) Cash in bank (14) Farm produce, (15) Real estate, (16) Other personal property. For further discussion of the construction of the data see Di Matteo (1990,1997, 2004 and 2012).

²⁴ See also Di Matteo (1990:46).

²⁵ It should be noted that the actual rate of probate is probably higher during this time period as greatest proportion of estates probated were for males but deaths were more equally distributed across gender.

²⁶ Information on cause of death was not available in the probate records.

they allowed for numerous exemptions especially to immediate family and hence provided no reason to underestimate the value of the estate for most decedents.²⁷

Analysis

Summary statistics for the three regions are provided in Table 1 and include information on basic characteristics, occupation, average wealth by category, and portfolio composition. In terms of these characteristics, the Winnipeg and Lakehead decedents were the least likely to be testate (have a will), most likely to be male, and less likely to be widowed. The average number of children was highest in Hamilton, followed by Winnipeg and then The Lakehead. The occupational composition reveals that the proportion employed in manufacturing was highest in Hamilton while that employed in trade and merchandising was highest in Winnipeg. Meanwhile, the proportion employed in both government and as general labour was the highest at the Lakehead.

Average nominal wealth was highest in Hamilton at \$11,678, followed by Winnipeg at \$8,950 and then The Lakehead at \$8,817. Average real estate was highest in Winnipeg at \$5,788 followed by The Lakehead at \$3,687 and then closely after Hamilton at \$3,668. In general, the value of financial assets²⁸ was highest in Hamilton followed by The Lakehead and then Winnipeg. The averaged value of moneys secured by mortgage was highest in Hamilton at \$1,497 followed by the Lakehead at \$1139 and then Winnipeg at \$612. Banks stocks and shares were highest in Hamilton at an average value of \$2,756 followed by The Lakehead at \$1,248 and then Winnipeg at \$372.

These differences in wealth are reflected in portfolio composition differences that show wealth in Winnipeg marked more heavily by a reliance on real estate while wealth in Hamilton and to a lesser extent The Lakehead marked by greater shares of financial assets. Real estate accounts for almost two-thirds of wealth in Winnipeg but only 31 per cent in Hamilton and 42 per cent at The Lakehead. Meanwhile, financial assets

²⁷ The presence of estate taxes raises the issue of *inter vivos* transfers meaning that an unknown portion of wealth may be unaccounted for by the probate. Though estate taxes did not seem to present a major obstacle to intergenerational wealth transmission in either Manitoba or Ontario, nevertheless, there is potential for a portion of wealth to be unaccounted for in these data sets. In Manitoba, the provincial Succession Duty Act did not apply to: a) To any estate the value of which after payment of all debts and expenses of administration, does not exceed four thousand dollars per year, nor b) To property passing under a will, intestacy or otherwise, to or for the use of the father, mother, husband, wife, child, grandchild, daughter-in-law or son-in-law of the deceased...where the value of the property so passing does not exceed twenty-five thousand dollars in value...These exemptions were somewhat less generous than Ontario where its Succession Duty Act did not apply :(1) To any estate the value of which, after payment of all debts and expenses of administration, does not exceed \$10,000; nor (2) To property given devised or bequeathed for religious, charitable or educational purposes; nor (3) To property passing under a will, intestacy or otherwise, to or for the use of the father, mother, husband, wife, child, grandchild, daughter-in-law, or son-in-law of the deceased, where the aggregate value of the property of the deceased does not exceed \$100,000 in value.

²⁸ Financial assets are defined as the sum of Book Debts & Promissory Notes, Moneys Secured by Mortgage, Life Insurance, Bank Stocks and Shares, Securities for money, Cash on Hand and Cash in Bank.

accounted for 62 per cent of wealth in Hamilton and 48 per cent of wealth at the Lakehead but only 27 per cent in Winnipeg.

The summary aggregate statistics suggest that the wheat boom resulted in a rise in real estate wealth on the western frontier but not necessarily in eastern Canada. An examination of wealth and real estate trends over time provides a better indication of the potential effects of the wheat boom. Figure 1 plots the annual average of a LOWESS smooth²⁹ of nominal wealth and real estate by year of available data for the broad period from 1870 to 1930 for Winnipeg, Hamilton and The Lakehead. Both Winnipeg and Thunder Bay show a steep increase in nominal wealth and real estate with a peak approximately circa the World War I era.

Winnipeg's total wealth peaks in 1917 at \$11,735 but its real estate peaks in 1912 at \$8,629. Winnipeg then demonstrates a steep decline whereas the Lakehead profile's decline is more gradual. The Lakehead's wealth peaks in 1912 at \$9,427 and real estate peaks in 1911 at \$4,405. On the other hand, Hamilton shows a declining profile for real estate whereas total wealth shows a steeper upward trend after 1900. Between 1901 and 1927, wealth in Hamilton rises from \$9370 to \$13,627. These results suggest a differential impact of the wheat boom era on wealth in Hamilton versus the Winnipeg and the Lakehead, which were both more directly impacted by the wheat boom. Winnipeg and The Lakehead exhibit a boom bust profile whereas Hamilton does not.

Figure 1 uses nominal wealth data and therefore does not take into account the steep price increases of the pre World War I boom era. Figure 2 plots the LOWESS profiles with wealth and real estate deflated (\$1900) using the Urquhart and Green GNP Implicit Price Index.³⁰ The profiles for Winnipeg and the Lakehead again exhibit a boom and bust hump shape with more distinct peaks in total wealth at \$8,924 and \$7,368 respectively with both peaks occurring in 1908. Hamilton's profile, however exhibits a decline in both wealth and real estate over the entire period.

Of course, the Urquhart-Green price deflator is a national aggregate and may not reflect local market conditions. Table 2 presents price indexes for Hamilton and Winnipeg for the period 1900 to 1927 done by Emery and Levitt (2002) as well as estimated extrapolations for 1870 to 1900 based on the Urquhart-Green Implicit Price Index. Emery and Levitt (2002) estimate price indices for thirteen Canadian cities for 1900 to 1950 and demonstrate large regional differences in cost of living until 1914. After 1914 regional price levels converged. Before the war, western Canadian cities had the highest cost of living while after 1920 cities in Ontario had the highest cost of living.

²⁹ Locally Weighted Scatterplot Smoothing (LOWESS) is a non-parametric curve fitting method which starts off with a local polynomial least squares fit and then attempts to make the estimate more robust by using weights from the local neighborhood around the observation point. See Cleveland (1979, 1985, 1993).

³⁰ See Green and Urquhart (1987: 183-184), Urquhart (1988).

Figure 3 again plots the inflation adjusted LOWESS profiles using the Emery-Levitt deflators but this time only for Hamilton and Winnipeg total wealth and real estate.³¹ Winnipeg again demonstrates the boom and bust profile with a quite pointed peak that occurs in 1906 at \$13,401 for total wealth and \$9,711 for real estate. However, Hamilton demonstrates an even more pronounced drop in wealth and real estate values after 1900.

Two additional pieces of corroborating evidence are shown in Figures 4 and 5. Figure 4 plots the index of monthly rents relative to rents in Toronto for Winnipeg and Hamilton (Emery and Levitt 2002). Land scarcity in Winnipeg led to higher monthly rents than in Hamilton and TBD with the period from 1900 to 1913 showing a big increase in monthly rents in Winnipeg, and less of an increase in Hamilton. This is eventually followed by a collapse in rents. Figure 5 takes the current dollar value of rents per month in Hamilton and Winnipeg and divides by the hourly wage rate of carpenters in the city to estimate the hours of work per month needed to pay for rent. The results here suggest some real wage growth in Winnipeg, from lower real wages, than Hamilton and much more steady real wages in Hamilton.

These results are interesting for the insights that they shed on the process of wealth accumulation and portfolio composition during this boom period as well as the timing of the boom itself. First, the wheat boom itself in keeping with the analysis of Chambers and Gordon appears to have been a largely extensive growth experience. While overall wealth and income grew, wealth and income per capita at the end of the boom period was not any greater than at the start. In Winnipeg and at the Lakehead, real wealth per capita at the end of the boom period was approximately where it was at the start. As for Hamilton, real wealth per capita after the boom was actually lower than before the onset of the boom period.

Second, in Winnipeg and The Lakehead, the chief beneficiaries of western expansion, the rise in wealth was largely driven by an increase in property and real estate values. Once the boom ended and property prices collapsed, wealth levels reverted to their pre-boom levels. The wealth gains of the boom were entirely short-term and of most benefit to those best able to time their entry and exit from the real estate market. However, all three cities were hit by a real estate collapse.

While Winnipeg had the highest portfolio share in real estate, The Lakehead, despite its higher financial asset shares was also hit hard by the collapse of real estate prices. This is because their financial asset portfolios at the Lakehead had a heavy concentration of mortgages, which in the end had value that was linked to real estate markets. For the period after 1900, 13 percent of Winnipeg probated decedents reported moneys held as mortgages in their probate asset inventory whereas 22 percent of those in Hamilton but only 12 percent at the Lakehead.

As Figure 6 illustrates, all three cities saw the value of mortgages grow rapidly during the boom period but both the amounts and growth were most pronounced in Hamilton and the Lakehead. However, what is also interesting is that during the bust period, the value

³¹ There was no Emery-Levitt price index constructed for Port Arthur-Fort William.

of mortgages held in nominal terms does not collapse in either Winnipeg or Hamilton like it does at the Lakehead.

This suggests there may have been some unique factors in operation at the Lakehead particularly during the 1920s. The proportion of mortgage holders at the Lakehead was equivalent to Winnipeg but the values held on average were much higher suggesting there may have been a greater speculative frenzy driving real estate purchases at the Lakehead during the boom period. This is certainly reinforced by the severity of the collapse in mortgage values compared to either Hamilton or Winnipeg in Figure 4.

Figure 7 expands the analysis of portfolio composition by plotting the annual average values of the LOWESS smoothed plots of the real estate share of wealth and the financial asset share of wealth for the three cities.³² During the boom period in Winnipeg and The Lakehead, the real estate share of wealth rises dramatically while that of financial assets stays flat. During the same period, Hamilton's real estate share actually declines somewhat while the financial asset share rises steadily. Financial asset shares in Winnipeg and at The Lakehead begin to rise after the boom ends. The rise in the financial asset share is particularly pronounced in Winnipeg where it goes from 0.3 in 1910 to over 0.5 during the 1920s. The rise in the financial asset share during the 1920s is marked by increases in the value of stocks in the portfolios of probated decedents and coincides with the stock market boom of the 1920s.

Third, the timing of the boom in terms of when activity peaked also obtains some insight from these wealth and real estate profiles and portfolio shares. While the boom period is traditionally seen to have ended in 1913 with the upturn in world interest rates and the onset of World War I in 1914, wealth and real estate holdings per capita in Winnipeg peaked well before that period when values are adjusted with more regionally based price indexes. If one wishes to time the boom by the peak of real estate as a share of wealth, then that peaks in Winnipeg at about 1908 and at The Lakehead in 1910.

³² It should be noted that pre-1885, financial assets were often not reported separately but included in other personal property thereby biasing the financial asset share estimate for Hamilton and Winnipeg downward before 1885.

Conclusion

During the Wheat boom era, Canada's western region was settled and provided opportunities for income and wealth accumulation that were considered to no longer be available in Canada's established regions. Indeed, until the opening of the Canadian west, there was net emigration until the 1890s – largely to the United States. Western Canadian labour markets paid lower real wages than central Canada's during the Wheat Boom era but longer hours of work over the year allowed for convergence of annual labour earnings across the labour markets over time. Thus one interpretation would be that the emergence of the western Canadian economy allowed geographic mobility to translate into earnings and economic mobility.

To illuminate this mechanism of economic mobility, we exploit time series data on the wealth holding of probated decedents in Hamilton/Wentworth County, the Lakehead/Thunder Bay District and Winnipeg/Manitoba over the period 1870 to 1930. Wealth holdings in the resource-producing west increased rapidly during the Wheat Boom period compared to central Canada but nearly all of the increase was through real estate holdings. These remained a volatile asset in contrast to the financial wealth accumulation of central Canadians. Moreover, rapidly growing urban populations meant that urban wealth was also an important dimension of this process.

This analysis illuminates the trade-offs afforded to potential migrants. Migration to the resource frontier offered higher incomes and opportunities to purchase real estate, but higher wealth came with higher risk than the alternative waged labour opportunities with slower wealth accumulation in the industrial heartland. The evidence also suggests that the effects of the wheat boom were indeed transitory with the boom expanding the overall stock of wealth – real estate wealth in particular – but not the real per capita amounts.

The seminal Chambers and Gordon (1966) model predicts that the effect of the economic boom brought about by the settlement of the prairies in the end would increase the size of the economy but not raise per capita incomes to any substantial degree. Again income increases would be transitory short run phenomena. When one examines wealth during the settlement boom, the question is whether any increases in wealth are also transitory with the boom expanding the overall stock of wealth but not real per capita amounts. Wealth is a function of saving plus the return to assets and saving is in turn related to income. Probate provides a valuation of wealth at a point in time – a spot estimate – for all assets but especially for real estate, which reflect land prices. If the impacts of the boom are indeed transitory then one should also expect the real value of real estate assets to eventually decline after the peak of the boom.

A necessary condition for natural resource export booms to have sustained long-term impacts is that rents generated in the short term are saved and invested. Under the Hartwick Rule for non-renewable resources the efficient approach is to invest all resource rents into financial assets, which will then generate a stream of income. In essence, resource production converts natural wealth into financial wealth. Similarly Sachs and

Rodrigues argue that resource rents need to be saved in financial assets external to the resource producing economy to provide a sustainable income source beyond the resource boom. This is most commonly associated with sovereign wealth funds like Norway has from its North Sea Oil or the Alaska Permanent Fund. McCallum (1979) suggested an alternative channel was to ensure that the income and wealth of grain exporting farmers in Ontario was retained in the local economy and used to invest in lateral linkages – industries not directly dependent on the natural resource itself. The domestic financial sector arising from the savings of resource producers allows for domestic capital to be channelled in projects, which promote the industrial development of the economy.

Table 1: Summary Statistics of the Probated Decedents				
		Winnipeg 1874-1927	Hamilton 1872-1927	The Lakehead 1885-1931
<i>Characteristics</i>	<i>N</i>	377.0	1777.0	1646
	<i>Percent Male</i>	74.8	60.3	73.8
	<i>Percent Testate</i>	46.2	68.0	48.2
	<i>Proportion With Children</i>	54.6	61.7	51
	<i>Average Number of Children</i>	1.8	2.0	1.6
	<i>Percent Married</i>	60.2	49.5	55.8
	<i>Percent Spouse Deceased</i>	13.9	33.4	16.3
<i>Occupation (%)</i>	<i>Agriculture</i>	5.6	1.9	3.0
	<i>Building Trades</i>	5.6	5.1	6.7
	<i>Domestic and Personal Service</i>	4.5	2.1	3.6
	<i>Civil and Municipal Government</i>	4.8	3.4	5.9
	<i>Fishing and Hunting</i>	0.0	0.0	1.0
	<i>Forestry</i>	1.0	0.0	1.0
	<i>Manufacturing</i>	5.6	10.8	4.9
	<i>Mining</i>	0.0	0.0	1.0
	<i>Professional</i>	8.8	5.1	4.6
	<i>Trade and Merchandising</i>	10.3	8.3	8.0
	<i>Transport and Communication</i>	6.4	3.4	13.1
	<i>General Laborer</i>	3.7	4.6	12.5
	<i>Gentleman, Esquire, Retired</i>	3.7	12.5	5.5
	<i>No Occupation/ Other Occupation</i>	40.3	42.9	30.2
<i>Average Wealth (\$)</i>	<i>Household Goods & Furniture</i>	96.28	159.82	140.72
	<i>Farm Implements</i>	1.90	1.90	8.93
	<i>Stock in Trade</i>	114.91	149.39	474.51
	<i>Horses</i>	31.05	13.39	14.81
	<i>Horned Cattle</i>	3.68	0.67	4.65
	<i>Sheep and Swine</i>	0.00	0.55	1.73
	<i>Book Debts & Promissory Notes</i>	-232.39	356.20	-35.93
	<i>Moneys Secured by Mortgage</i>	612.27	1496.72	1139.22
	<i>Life Insurance</i>	648.19	658.08	800.37
	<i>Bank Stocks and Shares</i>	372.42	2756.38	1247.92
	<i>Securities for money</i>	224.56	1018.93	294.89
	<i>Cash on Hand</i>	112.44	90.00	38.99
	<i>Cash in Bank</i>	651.17	889.62	742.20
	<i>Farm Produce</i>	0.13	5.09	11.90
	<i>Real Estate</i>	5787.98	3667.84	3686.60
	<i>Other Personal Property</i>	525.36	412.94	248.86
	<i>Total Wealth</i>	8949.95	11677.53	8817.37
<i>Portfolio</i>	<i>Real Estate Share (%)</i>	64.67	31.41	41.81
	<i>Financial Asset Share (%)</i>	26.69	62.22	47.95

Figure 1: Annual Average of LOWESS Smoothed Nominal Wealth and Real Estate, Winnipeg , Hamilton and The Lakehead (bandwidth=0.8)

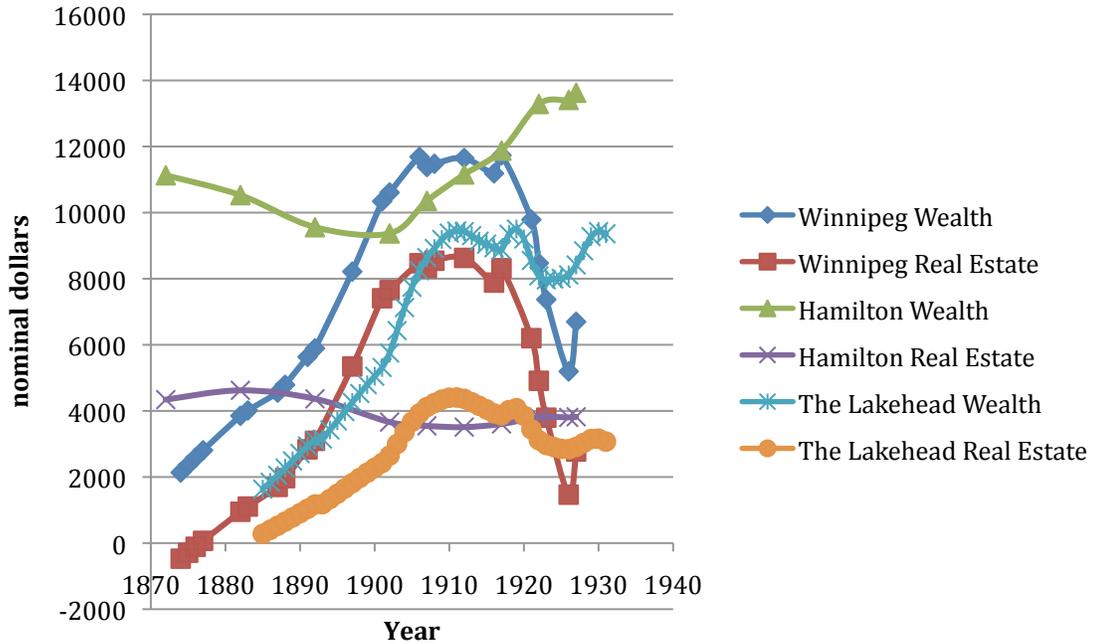


Figure 2: Annual Average of LOWESS Smoothed (Bandwidth-0.8) Real Wealth and Real Real Estate (1900 dollars: Urquhart Green Implicit Price Index)

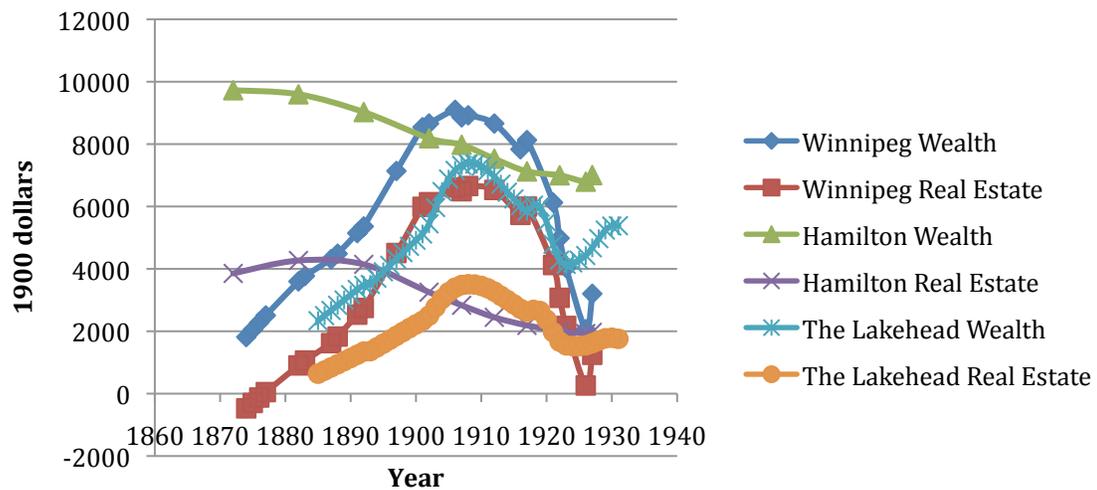


Table 2: Intertemporal Inter-urban Price Indices for Hamilton and Winnipeg (Toronto 1913=100)		
Source: Emery & Levitt (2007)*		
Emery Levitt Index		
Year	Hamilton	Winnipeg
1900	59.8	81.1
1905	63.2	87.2
1909	74.7	97.2
1910	80.6	98.4
1911	84.5	101.9
1912	89.4	110.9
1913	89.7	116.2
1914	90.5	105.4
1915	96.9	106
1916	112.5	114.5
1917	136.5	137.8
1918	151.3	148.7
1919	149.1	174.8
1920	164.1	183.4
1921	136.9	150.1
1922	139.8	145.1
1923	142.4	150.5
1924	138.7	147.2
1925	145.9	151.3
1926	146.6	149.1
1927	142.5	149.1
<i>1874</i>		<i>91.643</i>
<i>1875</i>		<i>87.588</i>
<i>1876</i>		<i>87.588</i>
<i>1877</i>		<i>84.344</i>
<i>1882</i>		<i>91.643</i>
<i>1883</i>		<i>90.832</i>
<i>1887</i>		<i>85.966</i>
<i>1888</i>		<i>82.722</i>
<i>1891</i>		<i>84.344</i>
<i>1892</i>		<i>84.344</i>
<i>1897</i>		<i>77.045</i>
<i>1872</i>	<i>69.966</i>	
<i>1882</i>	<i>67.574</i>	
<i>1892</i>	<i>62.192</i>	

- Italics denotes estimate. Pre 1900 Emery-Levitt Index for Hamilton and Winnipeg an estimate based on the Urquhart-Green GDP Implicit Deflator from 1870 to 1900. The ratio of the Urquhart Deflator in years prior to 1900 to its value in 1900 was applied to the value of the Emery-Levitt Index in 1900 and used for years prior to 1900.

Figure 3: Annual Average of LOWESS Smoothed (Bandwidth=0.8) Real Wealth and Real Real Estate (Toronto 1913=100 dollars: Emery-Levitt Index)

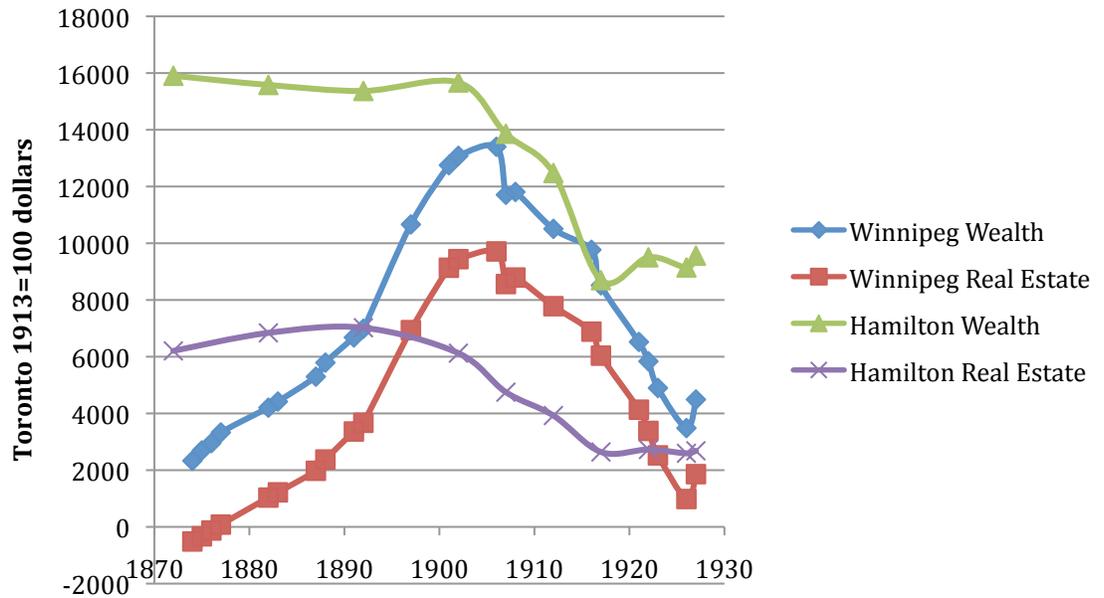


Figure 4: Index of Rents for 6 room dwelling with sanitary conveniences (Toronto 1913 rent = 100)

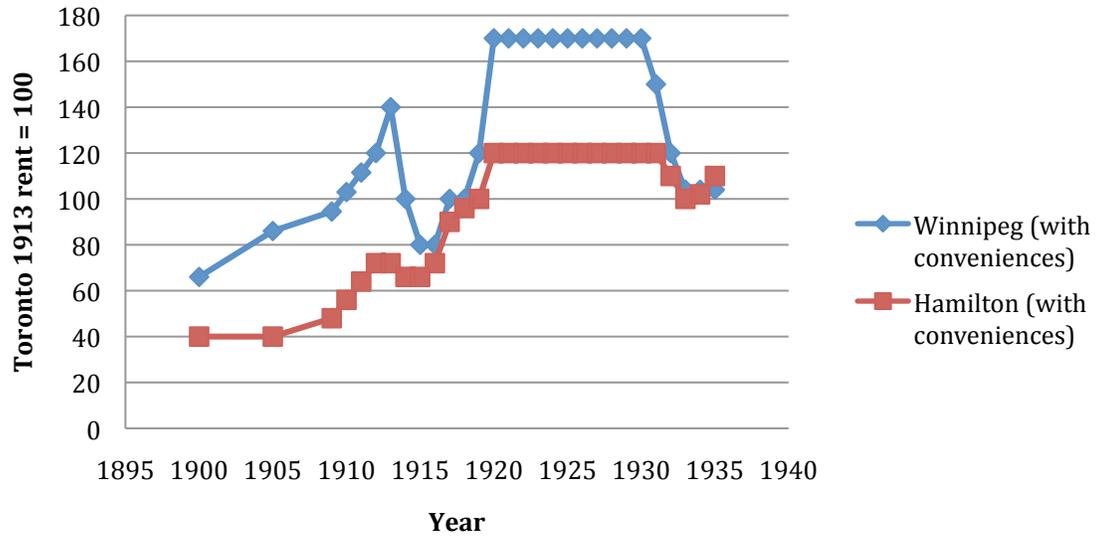


Figure 5: Hours of work required to pay for one month's rent in Winnipeg and Hamilton, 1900 to 1950 (monthly rent for 6 room dwelling with sanitary conveniences divided by hourly wage rate for carpenters)

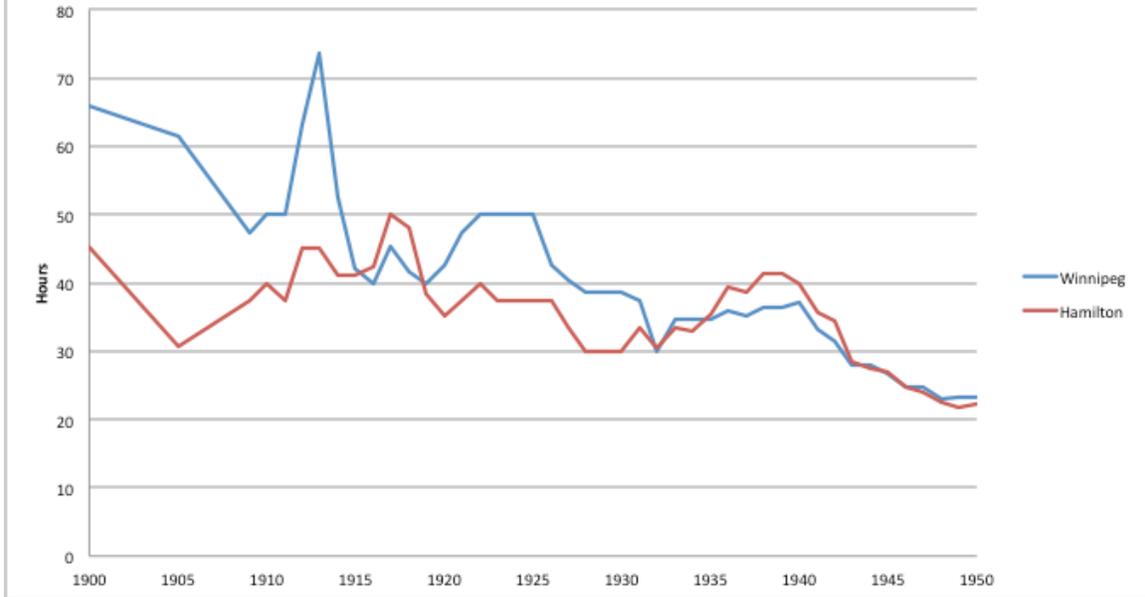


Figure 6: Annual Average of LOWESS Smoothed Nominal Mortgages, Winnipeg , Hamilton and The Lakehead (bandwidth=0.8)

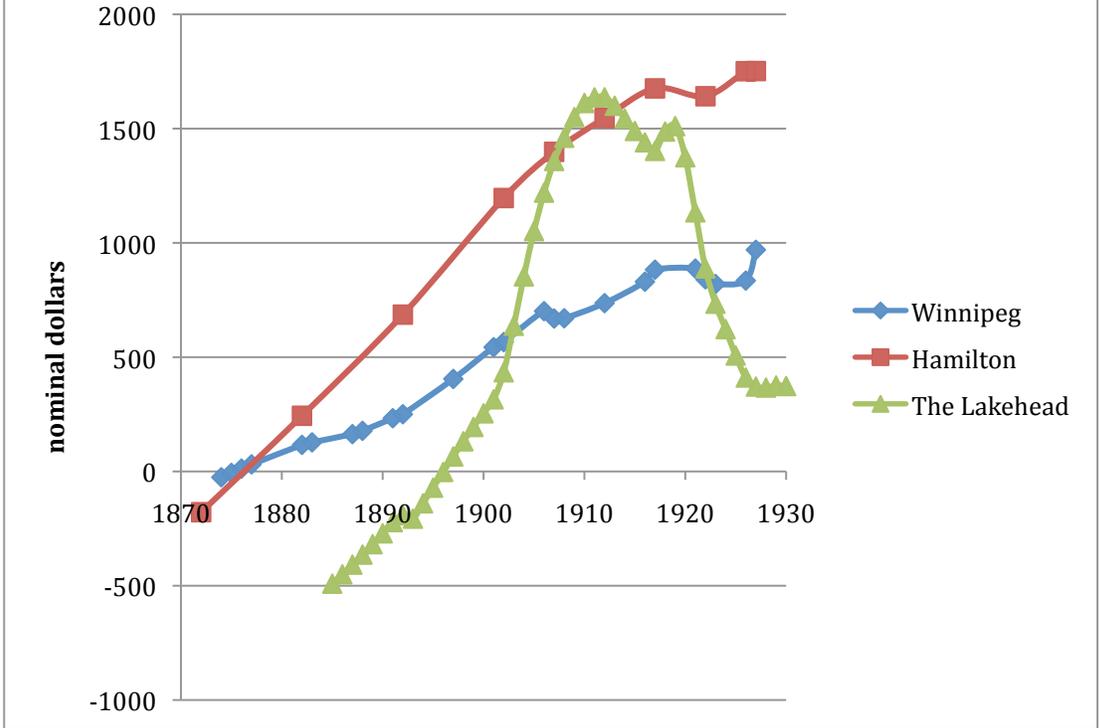
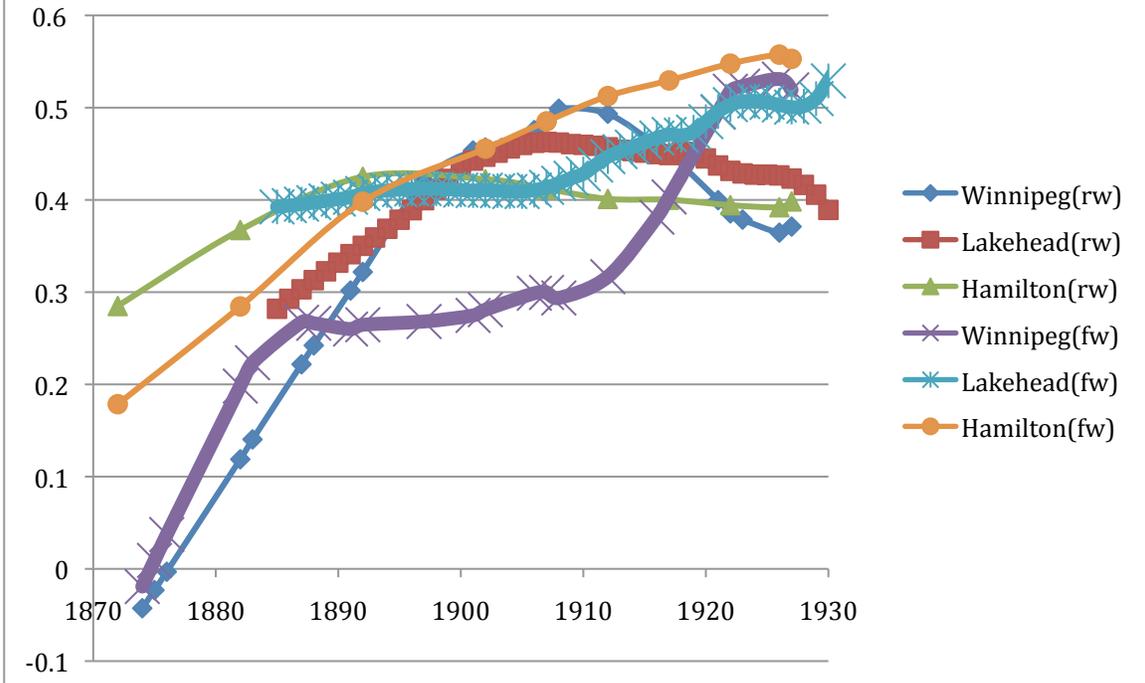
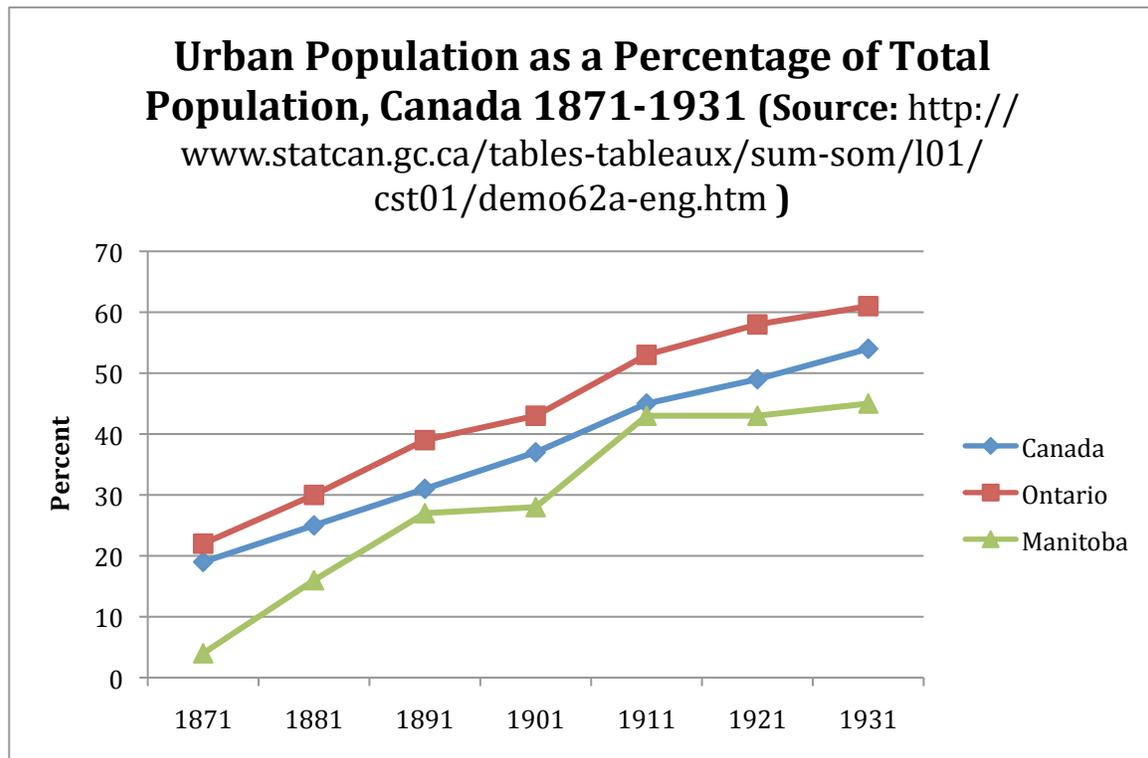


Figure 7: Annual Average of LOWESS Smoothed Portfolio shares: Real Estate (rw) and Financial Assets (fw)



APPENDIX 1A



APPENDIX 1B

Population of Select Canadian Urban Centres, 1901-1911

City	1901	1911	Percent Change
Calgary	4392	43704	895
Edmonton	2626	24900	848
Regina	2249	30213	1243
Saskatoon	113	12004	10523
Brandon	5620	13839	146
Winnipeg	42340	136035	221
The Lakehead	6847	27719	305
Hamilton	52634	81969	56
Toronto	208040	376538	81

Source: Census of Canada, 1911, vol. III, 350-54.

References

- Altman, M. (1987) "A revision of Canadian economic growth: 1870-1910 (a challenge to the gradualist interpretation)," *Canadian Journal of Economics*, 20, 1, 86-113.
- Artibise, A.F.J. (1979) *Gateway City: Documents on the City of Winnipeg 1873-1913*, Manitoba Record Society Publications Vol. V.
- Carlos, A.M. (1988) "Land Use, Supply, and Welfare Distortions Induced by Inefficient Freight Rates" *The Canadian Journal of Economics / Revue canadienne d'Economie* Vol. 21, No. 4 (Nov., 1988), pp. 835-845
- Caves, R.E. (1965), 'Vent for surplus' models of trade and growth. In R.E. Baldwin et al. eds, *Trade, Growth and the Balance of Payments: Essays in Honour of Gottfried Haberler* (Chicago: Rand McNally).
- Caves, R.E. (1971), Export-led growth and the new economic history. In J.N. Bhagwati et al. eds, *Trade, Balance of Payments and Growth* (Amsterdam: North-Holland).
- Chambers, E.J. and Gordon, D.F. (1966), Primary products and economic growth: an empirical measurement. *Journal of Political Economy*, 74: 315-32.
- Cleveland, W.S. (1993) *Visualizing Data*, Hobart Press, Summit, New Jersey.
- Cleveland, W.S. (1985) *The Elements of Graphing*. Wadsworth Advanced Books and Software, Monterey, California.
- Cleveland, W.S. (1979) Robust Locally Weighted Regression and Smoothing Scatterplots, *Journal of the American Statistical Association*, December, Vol, 74, No. 368, 829-836.
- Corden, W.M. and J.P. Neary (1982) "Booming Sector and Deindustrialization in a Small Open Economy" *Economic Journal*, 92, 825-848.
- Corden, W.M. (1983) "The Economic Effects of a Booming Sector" *International Social Science Journal*, 35, 441-454.
- Di Matteo, L. J.C.H. Emery, M. Shanahan (2014) "Natural Resource Exports and Development in Settler Economies during the First Great Globalization Era: Northwestern Ontario and South Australia, 1905-15," in A. Smith and D. Anastakis, eds., *Smart Globalization: The Canadian Business and Economic History Experience*. Toronto: University of Toronto Press, 108-132.
- Di Matteo, L. (2012) "Land and Inequality in Canada, 1870-1930," *Scandinavian Economic History Review*, 60,3, 309-334.
- Di Matteo, L. (2004), 'Boom and Bust, 1885-1920: Evidence from Probate', in: *Australian Economic History Review* 44, no. 1, 52-78.
- Di Matteo, L. (1997), 'The Determinants of Wealth and Asset Holding in Nineteenth Century Canada: Evidence from Micro-data', in: *Journal of Economic History* 57, no. 4, 907-934.
- Di Matteo, L. (1993), 'Booming Sector models, Economics Base Analysis, and Export-led Economics Development: Regional Evidence from the Lakehead University', in: *Social Science History* 17, no. 4, 595-617.
- Di Matteo (1992) "Evidence on Lakehead Economic Activity From the Fort William Building Permits Registers, 1907-1969", *Thunder Bay Historical Museum Society, Papers and Records*, XX, 37-49.
- Di Matteo, L. (1991) "The Economic Development of the Lakehead During the Wheat Boom Era: 1900-1914", *Ontario History*, December, 297-316.
- Di Matteo, L. (1990), 'Wealth Holding in Wentworth County, Ontario, 1872-1892' (phil. Diss., McMaster University)

- Emery, J.C. H. and C. Levitt (2002) "Cost of living, real wages and real incomes in thirteen Canadian cities, 1900-1950," *Canadian Journal of Economics*, 35,1,115-137.
- Emery, J.C.H., K. Inwood and H. Thille (2007) "Heckscher-Ohlin in Canada: New Estimates of Regional Wages and Land Prices," *Australian Economic History Review*, March, 47, 1, 22-48.
- Green, A.G. and M.C. Urquhart (1987) "New Estimates of Output Growth in Canada: Measurement and Interpretation," *Perspectives on Canadian Economic History*. Ed. D. McCalla. Copp Clark Pittman, 182-199.
- Harley, C.K. (1986), Resources and economic development in historical perspective. In D. Laidler, ed. *Responses to Economic Change, Royal Commission on the Economic Union and Development Prospects for Canada*, vol. 27. (Toronto: University of Toronto Press).
- Howell, A. (1880), *The Law and Practice as to Probate, Administration and Guardianship in Surrogate Courts*, Toronto: Carswell.
- Keay, I. (2007) "The Engine or the Caboose? Resource Industries and Twentieth-Century Canadian Economic Performance," *Journal of Economic History*, 67,1,1-32.
- Lewis, F. (1975), The Canadian wheat boom and per capita income, new estimates. *Journal of Political Economy*, 83: 1249-57.
- Lewis, F. (1981), Farm settlement on the Canadian prairies 1898 to 1911. *Journal of Economic History*, 41: 517-35.
- McInnis, M. (2007) "Canadian economic development in the wheat boom era: A reassessment". Queen's University Economics Department. Mimeo.
- McInnis, R.M. (1986) "Output and Productivity in Canadian Agriculture, 1870-71 to 1926-27", in S.L. Engerman and R.E. Gallman, eds., *Long Term Factors in American Economic Growth* (Chicago, University of Chicago Press), 737-778.
- Morton, W.L. (1957) *Manitoba, a History*. Toronto: University of Toronto Press.
- Norrie, K (1975) "The Rate Of Settlement Of The Canadian Prairies, 1870-1911", *Journal of Economic History* 35, pp. 410-427
- Norrie, K. (1977) "Dry Farming and the Economics of Risk Bearing: The Canadian Prairies, 1870-1930" *Agricultural History*, Vol. 51, No. 1, Agriculture in the Great Plains, 1876-1936: A Symposium (Jan.), pp. 134-148
- Norrie, K.D. Ooram and J.C.H. Emery . (2008), *A History of the Canadian Economy*, Toronto: Thomson: Nelson.
- Pomfret R. (1981), Staple theory as an approach to Canadian and Australian economic development. *Australian Economic History Review*, 21: 133-46.
- Pomfret, R. (1993), *The Economic Development of Canada*, 2nd edition, (Toronto: Nelson).
- Sachs, J.D. and A.M. Warner (2001) "Natural Resources and Economic Development: The Curse of Natural Resources," *European Economic Review*, 45, 827-303.
- Sachs, J.D. and F. Rodriguez (1999) "Why do Resource-Abundant Economies grow more Slowly?" *Journal of Economic Growth*, September, 4, 277-303.
- Urquhart, M.C. (1986) "New Estimates of Gross National Product in Canada, 1870-1926: Some Implications for Canadian Development", in S.L. Engerman and R.E. Gallman, eds. *Long Term Factors in American Economic Growth* (Chicago, University of Chicago Press), 737-778
- Urquhart, M.C. (1988) *Canadian Economic Growth, 1870-1980*. Queen's University Economics Department Discussion Paper No. 734.