**Savings patterns during Finland's industrial take-off:**

**Helsinki 1850-1900**

**- Savings behaviour in a society without public social security schemes.**

*History and statistics are indispensable in economic research: in order to test theories and to prevent them from becoming empty abstractions.*

Axel W. Liljenstrand[1] (1879)

*The fact that at every level of income there are people who save and people who do not save, illustrates that economic and demographic variables may not tell the whole story.*

Karl-Erik Wärneryd (1999)

**Master Thesis in Economic History**

**Stockholm School of Economics**

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[1] Liljenstrand (1821-1895), was Professor of economics and Commercial Law at the Alexander University in Helsinki.

# Abstract

This thesis analyzes household saving patterns during 1850-1900 in Finland's capital city Helsinki by examining aggregate net wealth per age cohorts, as well as net wealth per social class - defined broadly as working, middle and upper class - for each age cohort[2]. 1850-1900 corresponded to the first decades of Finland's industrial revolution, and a phase when its credit market – and indeed Europe's – was rapidly getting more sophisticated.

The main data set consists of 533 deceased inhabitants of Helsinki that were probated during 1850, 1875 and 1900. I compiled the data solely for this study and it is previously unpublished. Lindgren's (2002) method of inverted mortality ratios is used to reconstitute the estimated net wealth of Helsinki's living population during these three years.

The compiled data is tested against Modigliani & Miller's "life cycle hypothesis of saving" (LCH). My findings overall validate my two hypotheses that neither aggregate nor class-segmented household saving patterns follow that predicted by the LCH, which is consistent with the results of several studies. I for instance find that most middle class and upper class elderly die with net fortunes, while most working class people – irrespective of their age - have no savings at all. There are however also significant numbers of poor middle and upper class citizens, while there are numerous workers that have sufficient net wealth to warrant being categorised as savers, which supports the notion of saver segmentation put forward by several researchers.


[2] Net wealth is defined as total assets minus total debt. Total assets include real estate, movables and financial assets

# Preface and acknowledgments

My interest in History - and my curiosity about the causes underlying the rags to riches story of my native Finland - spurred me to approach Håkan Lindgren, Professor of economic History at the Stockholm School of Economics, to write my Master Thesis. He gave me advice on which specific subject to chose and he agreed to be my tutor.

I wanted the thesis to involve institutional economics – i.e. looking at specific strengths in Finnish institutions which could explain Finland's success story. The study should also encompass transition economics in terms of looking at Finland's transformation from a rural to an industrial society. This made studying the 19th century very interesting, as it was the century during which the industrial revolution commenced in Finland.

This thesis is the product of Håkan Lindgren's suggestion: a study of household savings in Helsinki between 1850 and 1900, using the life cycle hypothesis of savings as the theoretical framework.

I originally considered studying a smaller Finnish city where Swedish was the majority language at the time, such as Nikolainkaupunki – Vaasa's name between 1855 and 1917 - Jakobstad or Ekenäs[3].

The reason for studying a smaller city was twofold: firstly I wanted to survey a city of a similar size as Sweden's Kalmar, which Lindgren had studied[4]. I was going to use the same type of data and method as him, and although the subject was different, choosing a same-sized city would enable comparative studies to be carried out in the future. Secondly, I wanted to make sure that all the collected data was in Swedish, as I didn't master Finnish well at the time.

For practical reasons, I however decided to study Helsinki instead: I needed to collect all the necessary data in Helsinki, and this was not possible for the other cities, as the data had to be collected from various local and regional archives.

I have gathered the data for this thesis from a vast collection of archives and databases: from various sources in Helsinki's city and church archives; in Finland's and Sweden's national archives, at Finland's statistical authority's archives; in digital databases; and in odd places such as at the Helsinki's orthodox and protestant cemeteries.

I wish to thank all the archivists who have helped me compile the data. I am indebted to my tutor Professor Lindgren for his valuable feedback and his immense patience, which has enabled me to work full-time and complete the thesis on my spare time. I finally wish to thank Saara, as well as family and friends for all their encouragements.

*Key words: life-cycle theory of savings; probate inventories; 19th century; industrial revolution; financial revolution; Finland; Helsinki; Helsingfors; household savings; capital markets; financial institutions; social classes.*

[3] The names are listed in the current majority-language in the cities in question – in accordance with Finnish laws on national minorities. The Swedish spelling of the first city is Nikolaistad (Vasa), while the latter two cities' Finnish spellings are Pietarsaari and Tammisaari respectively.
[4] Lindgren (2002): concerning the modernisation of the city's credit market.

# Section 1: Introduction

## 1.1 Purpose

The purpose of this study is to test Modigliani & Brumberg's life cycle hypothesis of savings with cross section data of household net wealth from an agricultural country undergoing a rapid industrialization. We wish to validate or reject two hypotheses which are specified on p.14.

An abundance of economic history research regarding financial institutions has been performed. Few studies have however been carried out on households' use of credits and savings[5].

The findings of this thesis will automatically be of interest and have a high credibility – subject to the data set being reliable – as it is based on data collected in an environment devoid of public social security schemes[6]. This effectively eliminates the need to take into account the unclear influence of these schemes on test results, as detailed on p. 9-10.

Furthermore Wärneryd states that "little is known about how these (saving) reasons vary among population groups and over time", and the number of tests of the LCH using 19th century data is limited[7]. It is therefore worthwhile to conduct this additional study of the validity of the LCH.

## 1.2 Why studying Finland is relevant

*Quality of the data*

The world-class availability and reliability of Finnish - just as Swedish - data on assets and liabilities, as well as demographic statistics, assures a good empirical validity of the presented findings[8].

*Contributing to an increased knowledge of savings in Finland*

Foreign and domestic coverage of Finland's industrial revolution and household savings is poor. The existing Finnish literature on savings, such as Urbans (1974 and 1975) and Kuusterä (1999), is centred on the development of Finnish savings and cooperative banks, and little attention is paid to the development of Finnish household saving patterns. Although there is a general interest in the economic boom in the Nordic region, most foreign studies focus on Sweden, Norway and Denmark[9].

*Rags to riches tale*

Finland started to industrialize relatively late, and was perhaps the poorest and most agrarian European country during the 19th century, and it was also for a long time one of the poorest Nordic countries. It must however be stressed that the emerging Finnish manufacturing industry was not backwards in comparison to that of its richer Swedish neighbour, and that all Nordic countries were predominantly agrarian during the whole of the 19th century.

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[5] Söderberg and Magnusson (1998), p.7.
[6] Finland's first public social security schemes was the law regarding work injuries for industrial workers (industrial accident insurance) from 1895, i.e. right at the end of the studied period. The next major steps in building up a comprehensive set were taken during the 20th century, in 1917, 1936 and 1948 when legislation was passed on unemployment insurance, means-tested old age relief/pensions respectively. A national pension independent of a means test was passed in 1957. See Kuhnle and Hort (2004), p. 7 and 12.
[7] Wärneryd (1999), p. 298
[8] Lindgren (2002), p. 817-818; Turpeinen and Kannisto (1997), p. 5-7; Markkanen (1978), p 67-71; Kuuse (1974), p. 22-24.
[9] See for instance O'Rourke and Williamson (1995).

Today however, due to tremendous economic growth during both the 19th and the 20th century, Finland is one of the richest economies – in terms of GDP/capita and various measures of welfare - both in the world and in the Nordics[10].

## 1.3 Choice of time period

1850-1900 closely tracks the beginning of the country's industrial revolution. Significant legislative reforms were carried out in Finland during the 1860s: a prohibitive order on the establishment of steam-powered sawmills was repealed (1857); for the first time 1809, a new Parliament was reconvened for (1863); Finland adopted its currency, the Markka (1860-1865); trade guilds were abolished (1859 and 1868); etc. The 1860s is regarded by many researchers as the decade of Finland's industrial revolution, and the legislative reforms as major growth catalysts. Between 1850 and 1911, Finland's gross domestic product rose fivefold, reflecting the rise of the Finnish timber industry in central Finland to serve the wood-processing industries of Central Europe[11].

As a response to the growing wealth, and the financing needs of the industry, and large-scale state infrastructure projects, Finland also experienced a rapid modernisation of its credits markets during this period. Important new credit institutions are established, such as mortgage banks, merchant and commercial banks, life insurance companies, a share market as well as corporate bonds[12].

Douglas North and other economists underline that the modernization of financial markets – i.e. the financial revolution – preceded the industrial revolution in industrialised countries[13].

## 1.4 Outline

The outline of this thesis is as follows:

- Section 2: historical background
- Section 3: hypotheses
- Section 4: relevant theories for the study
- Section 5: presentation of the data used
- Section 6: method
- Section 7: analysis
- Section 8: suggestions for further research
- Appendices

This thesis has required a great deal of effort in collecting data from archives, and then subsequently in manipulating and segmenting it. An emphasis has therefore been placed on sections 5 (data) and 6 (method), in order to provide a detailed account of all the steps required to generate the final data set, which could then be analysed and used to test my hypotheses.

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[10] Hjerppe (1989) p. 42; Lindmark and Vikström (2003), p. 46; Kuhnle and Hort (2004), p.4.
[11] Hjerppe (1989), p. 19; and Markkanen (1978), p. 67.
[12] See appendix 3.
[13] North and Weingast (1989), p. 803-832; Rousseau and Sylla (2001), p. 39.

## Section 2: 19th century Finland and Helsinki

*Finland*

For about 650 years, Finland was an integral part of the Kingdom of Sweden, sharing for instance its currency, laws and political institutions. In 1808-1809 – in the midst of the Napoleonic wars – Sweden's perennial enemy Russia, once more invaded Finland, and this time definitively conquered it. Finland became an autonomous territory within the Tsarist Empire[14].

In 1850 Finland's population was about 1.6 million, increasing to about 2 million and 2.7 million in 1875 and 1900 respectively. As a comparison, the population was bout 5.2 million in 2004[15].

During the 19th century, the country was, just as it is today, bilingual. Swedish speakers were concentrated along most of Finland's coastline, and in cities. Finnish speakers on the other hand lived in the inland and were increasingly gaining the numerical upper-hand in the cities as a result of the urbanisation fuelled by the industrial revolution. In 1850 and 1875, the share of Swedish speakers (mother-tongue) among Finland's total population was about 15%, a share that decreased slightly to 13% in 1900. As a comparison, the share of Swedish-speakers is about 6% today, although this number excludes bilingual speakers who have registered Finnish as their mother-tongue in the Finnish population statistics[16].

At the end of the studied period, Finland was still an agrarian society. The urban population as a share of the total had increased to about 13% in 1900 versus 6% in 1860[17]. The other urban centres were of a semi-rural character: in many cases the majority of their inhabitants were engaged in agriculture.

*Helsingfors - Helsinki*

During the period studied, Helsinki was internationally known by its Swedish name Helsingfors, because the majority of the city's inhabitants were Swedish-speaking. Another important reason is that the administrative language of Finland for a large part of the period was Swedish[18].

Helsinki was 1812-1917 the capital of the Grand-Duchy of Finland - an autonomous part of the Russian Empire – and the country's largest city during the studied period. Helsinki is today the capital of the Republic of Finland, which declared independence from Russia in 1917.

Based on the population data that I have collected from all of Helsinki's parishes, the city had about 21,000 inhabitants in 1850, a figure that had risen to about 34,000 by 1875 and finally to about 94,000 in 1900[19]. Today the population of Helsinki is about 560,000, or about 1.3 million when including greater Helsinki[20].

Helsinki' inhabitants were mainly Swedish- and Finnish-speaking Protestants. There was however a significant minority of Orthodox Russians, and a small minority of German Protestants and Catholics. The Russians were merchants, soldiers, and workers. The Germans were mainly merchants.

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[14] Beijar, Ekberg, Eriksson and Tandefelt (1997), p. 7-21.
[15] http://www.tacitus.nu/svenskhistoria/befolkning.htm; Väestöliitto (2005), p. 191-198.
[16] The status of being bilingual is not recognized in Finnish statistics. Beijar, Ekberg, Eriksson and Tandefelt (1997), p 5-10 & 64-65.
[17] Väestöliitto (2005), p. 191-198; Turpeinen and Kannisto (1997), p. 5.
[18] Two imperial decrees, in 1883 and in 1886, put in place Finland's first bilingual administrative model. Full equality between the languages was granted in 1902 through another imperial decree. See Beijar, Ekberg, Eriksson and Tandefelt (1997), p. 20-21.
[19] See appendix 1.
[20] www.hel2.fi

The majority of the city's population during the studied period was Swedish-speaking. The city was however gradually becoming more Finnish-speaking as the city's growing industry needed an increasing labour force. The inflowing workers were mainly Finnish-speakers from inland Finland, although there was also a significant influx of Swedish-speakers from the coastal regions. In 1900, the city's main language groups were roughly of equal size[21] .

Key statistics on the population of Helsinki are presented in Appendix 1.

[21] Schofield (1996).

# Section 3: Applicable theory on household savings

## 3.1 Life cycle hypothesis of savings

Modigliani & Brumberg's life cycle hypothesis of savings - -referred to as LCH in the study – from 1954 is systematically referred to in all the studies on household savings that I have consulted. It is indeed said to be a path breaking theory on household savings - and the most influential one[22]. Franco Modigliani won the 1985 Nobel Prize in Economics for it, along with his theory of corporate finance, which he developed with Merton H. Miller.

Wärneryd states that the LCH is based on the assumption that people restrain their consumption in certain periods to be able to afford about the same consumption in other periods when income is lower (see figure 1). People are assumed to want to spend about the same amounts at each stage in the life cycle ("permanent income"). Young people may borrow money to be able to afford the consumption they want, middle-aged people save money for old age, and the retired dissave to maintain a desired level of consumption[23].

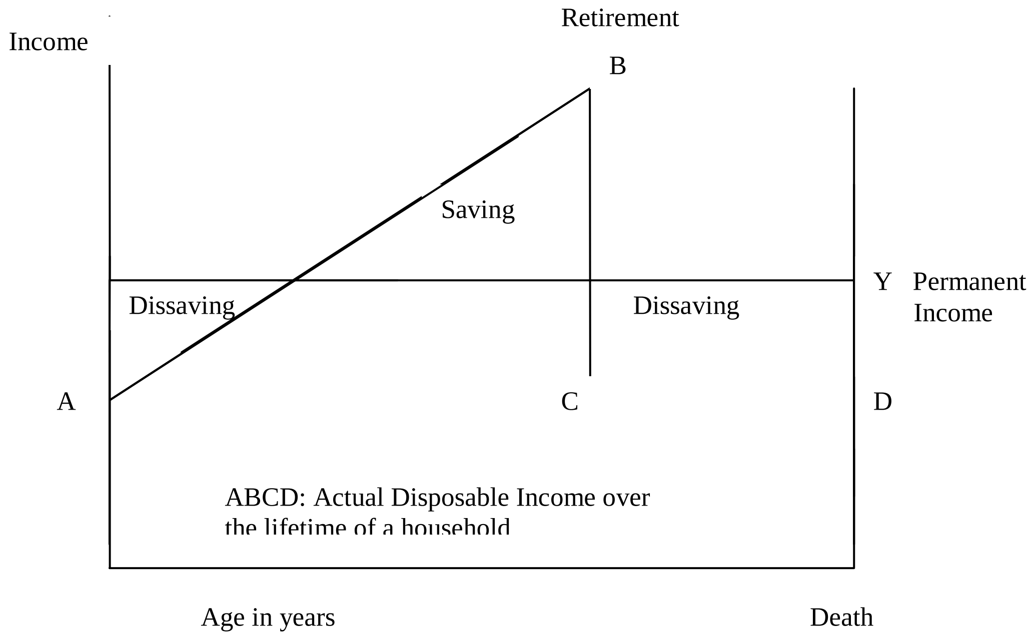


*Figure 1 The pure Life-Cycle Hypothesis of savings*[24]

## 3.2 The unclear influence of public social security schemes

A number of empirical studies have generated negative findings compared to what Modigliani & Brumberg's LCH – or the "pure" life cycle hypothesis as it is also known as - states. Many overviews of empirical studies show that the LCH may fail to predict the saving of the young and the elderly: young people save more than expected and old people do not dissave to the expected extent[25].

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[22] Danziger et al. (1982), p. 208.
[23] Wärneryd (1999), p 74
[24] Wärneryd (1999), p. 47
[25] Wärneryd (1999), p. 137-146; Danziger et al. (1982), p. 210.

It has caused economists to reflect on whether there are some external factors that distort households' normal "LCH type" savings behaviour. The most suspected distorting externalities are public social security schemes – such as old-age pension systems, poor relief and unemployment benefits.

Economists have therefore extended the theory so as to encompass the effects of public social security schemes on economic behaviour. Numerous tests have indeed been carried out on the effects of these schemes on saving, most notably those of public pension schemes, as they obviously have a direct effect on the purchasing power of retired people.

Feldstein was one of these pioneering economists, and is therefore one of the most quoted: he stated that "for the great majority of Americans, the most important form of household wealth is the anticipated social security retirement benefits"[26]. Households' knowledge - well ahead of retirement - that there are public pension schemes in place, may indeed arguably make them less likely to save, as they are aware that they will have access to a publicly-financed "safety net" anyway.

Barro, on the contrary is Feldstein's most famous opponent, stating in a seminal paper that the argument for public social security schemes having a negative effect on lifetime savings of households is just as convincing as it having a positive effective[27].

Finnish economists Koskela and Virén examined several studies, and stated that the empirical evidence of public social security schemes' depressing household savings hypothesis is mixed[28].

## 3.3 Additional saving motives

Economists have also looked to the existence of key saving motives – other than that of providing for one's retirement - as a reason for the LCH often being rejected.

Large surveys of household saving behaviour indeed indicate that although the retirement motive is very important, there are many other reasons for saving. For instance, the six latest (U.S.) Federal Reserve Board's Surveys of Consumer Finances (SCF) – presented in table 1 - pinpoint eight different reasons for households to save. "Retirement" on average actually ranks second among them[29].

**Rankings of reasons to save according to SCF (% of respondents)**

| Ranking | | Average 1989-2004 | Adjusted 1989 | 1992 | 1995 | 1998 | 2001 | 2004 |
|---|---|---|---|---|---|---|---|---|
| 1 | Liquidity | 32,0 | 34,2 | 33,9 | 33,1 | 29,8 | 31,2 | 30,0 |
| 2 | Retirement | 26,9 | 18,4 | 19,4 | 23,7 | 32,8 | 32,1 | 34,8 |
| 3 | Purchases | 10,5 | 13,5 | 9,7 | 12,8 | 9,7 | 9,5 | 7,7 |
| 4 | Education | 10,3 | 8,1 | 9,1 | 10,8 | 11,0 | 10,9 | 11,6 |
| 5 | Home | 4,6 | 4,9 | 4,0 | 5,1 | 4,4 | 4,2 | 5,0 |
| 6 | Investments | 4,1 | 8,0 | 7,6 | 4,2 | 2,0 | 1,0 | 1,5 |
| 7 | Family | 3,7 | 3,1 | 2,6 | 2,7 | 4,1 | 5,1 | 4,7 |
| 8 | No reason | 1,1 | 1,1 | 1,7 | 0,8 | 1,3 | 1,1 | 0,7 |
| | **Do not save** | **6,9** | **8,7** | **12,0** | **6,8** | **4,9** | **4,9** | **4,0** |
| | **Total** | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

*Table 1. Compilation by Patrick Nylund. Sources: Federal Reserve Bulletin January 1997; Aizcorbe, Kennickell & Moore (2003); and Federal Reserve Bulletin 2006.*

[26] Feldstein (1974), p. 905.
[27] Barro (1974), p. 1116.
[28] Koskela and Virén (1983), p. 225.
[29] The survey is carried every three years. During 1989-2004 the retirement motive significantly increased in importance, and as of 1998 the retirement motive is the first ranking motive, just ahead of the liquidity motive.

The surveys show that during 1989-2004 the first ranking saving motive was “liquidity”, being on average 32% of the respondents’ answer. This motive corresponds well to the concept of “precautionary saving”, i.e. holding liquid assets – or in accounting terms cash and cash equivalents – is a means to reduce the various uncertainties about the future (health problems, unemployment, etc.). Holding liquid assets may also be warranted by the wish of thrifty or economically-minded individuals to have funds available for “the unforeseen opportunity to buy something cheap”, a motive which according to Wärneryd is usually not related to “precautionary saving”[30].

The 3rd and 6th in the SCF – namely purchases and investments – are to a large extent inter-linked. They fit Katona’s (1975) concept of “discretionary saving”, which means that people can choose to save at their own discretion since there is money left after the basic needs have been satisfied (if one assumes that education is not a basic need). “People may decide to save for may reasons such as wanting to purchase an expensive durable, to go on a long vacation, or just desiring to have money available if opportunities for attractive spending arise” (please note that Katona therefore assigns the “buying cheap” aspect of having liquid assets to “discretionary saving”)[31].

The 4th and 5th motives - namely education and home – corresponds well to Katona’s (1975) concept of “contractual saving”, namely a contractual commitment for later saving which has arisen from instalment purchases since the debt must be amortized. In a modern society the largest instalment purchase is that of a house. It is indeed so large that Browning and Lusardi (1996) speak of a “down-payment motive”. Required down payments for a house represent a large financial burden for most households. In the U.S., for instance, households must save, on average for two and half years to buy their first home[32]. Education is also a significant instalment purchase, with for instance university students taking state-subsidised or state-guaranteed loans to fund their studies.

Another saving motive could be the wish to build up wealth in order to pass it on to the next generation of relatives – so called bequests or private inter-generational transfers – or in other words altruistic behaviour. This is for instance the view of Kotlikoff, who sees altruistic behaviour as the major explanatory factor as to why the bulk of U.S. wealth is held by older age groups – these infamous “retirees in Florida” whose pension fund savings are invested in for instance listed Finnish or Swedish shares – and why these people are thus in fact accumulating wealth instead of dissaving. This motive is maybe partially reflected in the “family motive” – ranked 7th in the Federal Reserve’s SCF[33].

The 8th and last motive, listed as “no reason” in the SCF, could well correspond to what Katona (1975) refers to as “residual saving”, i.e. “the money that the owner failed to spend” because revenues and expenditures are not perfectly synchronized, and because revenues may at least temporarily happen to exceed expenses[34].

The motives highlighted by the SCF therefore actually serve as a good summary and relative quantification of additional reasons for saving. Please note however that the saving motives are not mutually exclusive. Wärneryd states that “a person or a household can very well save money for more than one of the reasons at the same time”. He further comments that “it also seems likely that someone who carefully controls her/his expenditures would also like to leave some bequest because that belongs to the idea of what is proper behaviour. It is likely that the saving motives may vary over the individual’s and the household’s life cycle”[35].

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[30] Wärneryd (1999), p. 269-272.
[31] Wärneryd (1999), p. 58.
[32] Quoted in Wärneryd (1999), p.58 and p. 144.
[33] Wärneryd (1999), p.272-276.
[34] Wärneryd (1999), p. 58 and p. 265.
[35] Wärneryd (1999), p. 265.

## 3.4 Theories on saver segmentation

Another response among economists to negative findings in empirical studies has been to highlight the systematic differences among individuals – i.e. the existence of sub-groups or segmented saving behaviour.

Danziger et al.'s results for instance showed that the elderly spent less than the non-elderly at the same level of income and that the very oldest of the elderly had the lowest average propensities to consume. The propensity to consume decreased with age in each income bracket. People with income above the median in their age cohort tended to have a decreased propensity to consume. The elderly dissaved only when their incomes were very low relative to the incomes of others in their cohort.

Some potential explanations that they put forward is the existence of different categories of retirees, stating that the "old saver" illustrated by aggregate figures is maybe not representative: some individuals are not included in the statistics because they failed to save before retirement, and may have found it impossible to maintain independent households, and as a result live in nursing homes, or as dependents in households headed by relatives; secondly a minority of the elderly with large wealth may have been saving with the intent of leaving a bequest[36].

Kotlikoff states that "it may well be that we live in a mixed society consisting of a minority of quite wealthy, altruistic households, and a majority of rather poor, life cycle households". He is thus - just as Danziger et al - putting the onus on differences between the very wealthy, and the ordinary citizens[37]. Looking at the SCF table above, it was indeed only on average 3.7% of the respondents who stated that the family was the main reason for saving, and they might to a large extent be wealthy individuals. Similarly, many of those who save for liquidity reasons - on average 32% of the SCF respondents – may have a constrained financial situation.

The concept of fundamental differences in individual behaviour in a general sense - is in fact a cornerstone in for instance psychology or marketing. In marketing, a resulting theoretical pillar is that of market segmentation, a matter studied extensively by Kotler. He for instance lists four factors – cultural, social, personal and psychological – which explain a consumer's behaviour. Each factor contains sub-factors, such as social class – which is studied in this thesis – adding up to a total of 16 sub-factors[38].

## 3.5 The use of the LCH in research on 19th century savings patterns

Noteworthy examples of studies of 19th century savings patterns using the LCH are France's Hautcoeur and Le Quéré (2000), as well as Sweden's Lilja (2004) and Larsson (1989). All three used widely different methods, based on French and Swedish data respectively.

Lilja carried out an advanced micro study based on comprehensive data set from three sources in the central Swedish city of Falun city : actual borrowing and lending records of Falun's local savings bank; the book-keeping of the Stora Kopparberg mining company – the city's main employer by far; as well as probate records drawn up in the city.

[36] Danziger et al. (1982), p. 224-225.
[37] Kotlikoff (1983), p. 82-83.
[38] Kotler (1997), p.172-188

Larsson's small micro study of 19th century savings is based on Swedish wage data from the Bredsjö mill in Central Sweden, covering the period 1830-1905. As a time-series study requires continuous net wealth data from individuals preferably over the whole life cycle, Larsson decided to fix the minimum years of employment of a worker at 25 years. Based on the overall modest amount of employees at the mill from the onset, this method generated a small sample of 11 individuals. Larsson's intent was however to test the mechanism of using the LCH and his method, rather than aiming to draw any general conclusions[39].

Hautcoeur and Le Quéré's macro-study using French macroeconomic data compiled by other French economists. Their study is also more of a compilation of other economists' findings regarding savings patterns during the 19th century, and it is therefore more of a pamphlet than a study. The study anyhow provides a valuable insight into the of 19th century savings patterns outside of the Nordic region. They reason in terms of social classes and saver segmentation, but they only refer to other studies and do not provide any own empirical data.

These three studies constitute good benchmarks for evaluating my data collection, my methodology and my findings.

A study that Håkan Lindgren recommended me to consult, but which I had to disregard out of time constraints is Perlinge (2005), who examines the credit market in a Southern Swedish parish 1840-1900 using probate records as well as Lindgren's "age adjustment" method to reconstitute an estimate of the living population's net wealth[40]. Lilja also uses Lindgren's method on the probate record segment of her data. Lindgren himself plans to carry out a life-cycle study based on his material from Kalmar[41].

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[39] Larsson (1989), p. 361.
[40] See section 6.3 of this thesis, i.e. p. 20-21, for an account of Lindgren's method.
[41] Lindgren (2002), p. 830.

## Section 4: Hypotheses

Wärneryd points out that all these studies that seem to reject the LCH have not led to the rejection of it by the main body of economists. Kotlikoff for instance states – regarding the possible effect of altruistic behaviour – that these findings do not however preclude “the possibility that the majority of households conform to the selfish model”[42].

Despite Wärneryd and Kotlikoff’s comments, I argue that the possibility of heterogeneous individual savings behaviours fundamentally questions the validity of the LCH.

The life cycle hypothesis fundamentally assumes a rational behaviour from a uniform set of individuals, i.e. a common reasoning regarding savings among men and women. I intuitively do not believe in the prevalence of an “economic man”, but rather on the prevalence of different behavioural patterns, depending on for instance social class, gender or heterogeneous aptitudes to act rationally.

This is why I have chosen to postulate two hypotheses, namely that the LCH can be rejected on both a “class segmented”, as well as an aggregated level:

1) The life cycle hypothesis of savings will be contradicted when analyzing per capita savings of the whole population, regardless of the studied year.

2) The LCH will not either hold when looking at social classes, regardless of the studied year.

[42] Wärneryd (1999), p. 142-143; Kotlikoff (1983), p. 82.

# Section 5: Data

## *5.1 Data selection*

*Type of data*

The present study is solely based on unpublished data. Several categories of data have needed to be compiled in order to conduct a life cycle study of historical savings in Helsinki. Consequently a tremendous amount of time has therefore been spent on manually collecting the required data from various archives in Helsinki. Luckily all data was available in the City centre of Helsinki.

To compile data on net wealth, I have chosen on my tutor Håkan Lindgren's advice to collect data from one source, namely probate records. The information is thus from deceased people. Probate records is also the sole source of Lindgren (2002), and it is one of the sources of Lilja (2004). The estate data has been collected from two sources: the City of Helsinki's Archives, for the year 1850, and the Finnish National Archives for the years 1875 and 1900[43].

As Finnish inventories do not register age at death, the life cycle hypothesis can not be tested without the collecting of data on the age of the deceased. The best source of data for this purpose is the list of deaths recorded by each Finnish parish. For structural or "human errors in reporting" reasons, there was missing "age at death" data, which was tediously, but very successfully, collected from several sources, till almost no data was lacking. The sources used were the church archives; the city's orthodox and protestant cemeteries; the Hiski database of the Finnish Genealogical Society; obituaries in Helsinki newspapers; lists of deceased at Helsinki hospitals; select biographies over famous people; as well as lists of graduates of the Helsinki University. In the method section I describe how I managed to overcome the structural challenges and gather most of the missing data.

The final data sets that were collected were that of total deaths and total living population per each Helsinki parish, and per each age cohort used to show savings over a life cycle in this study. This data was collected from the archives of the state authority Statistics Finland.

*Data points*

To make a comparison over time, I have chosen three data points – 1850, 1875 and 1900. Choosing these particular years enable me to capture the transition from a predominantly agricultural country in 1850 - with a large amount of barter trading, and - as shown by my collected data - a credit market basically only consisting of promissory notes – to a country which in 1900 was quickly getting more industrialised year by year, and whose financial institutions were already quite sophisticated. The increasing sophistication of financial institutions is indicated by the large number and increasing variety of securities held by the probated individuals (see appendix 3).

Helsinki is an interesting City to study because it is Finland's capital and largest city, and one of the leading industrial and commercial centres in the country. Its inhabitants should thus have access to all the emerging financial instruments available in Finland, and they should have the most diverse income, savings and debt structure.

[43] Probates drawn up before 1880 probates are stored at the Helsinki City Archives; those recorded between 1880-1960 probates drawn up until 1960 are kept at the Finnish National Archives; while subsequent probates are stored at the Helsinki County Court's archives in Salmisaari.

## *5.2 Utility of the data in comparative studies*

*Geographic relevance*

On a domestic level, given the rural nature of economy, it is doubtful whether Helsinki' saving patterns are at all comparable with that of rural Finland. The findings may be representative for other Finnish industrial cities such as Turku, Viipuri, Tampere, and Nikolainkaupunki (today's Vaasa)[44].

Although was as mentioned earlier poorer than its Nordic neighbours, the data is probably worth using also for Nordic comparisons. This would not only make sense due to the similarities between the Nordic countries, as emphasized by for instance Erickson, but also because all the countries were "tiger economies" at the time. Indeed, O'Rourke and Williamson stress that recent research suggests that the rapid catching up on the world's rich countries was common to all four Nordic countries between 1870 and 1914[45].

On a more international level, the data is obviously not relevant for comparisons with richer and more industrialised countries such as France and the UK, except to highlight differences of course. Targeted comparisons might however well be worthwhile, such as with non-Nordic countries which where at a similar development stage at the time, or maybe even with some emerging markets today.

*The study's large sample size*

As mentioned in the beginning of this study, the amount of studies examining saving patterns with the help of probate records is limited. A further limiting factor is that some study's reliability is lessened by the low sample size, such as Larsson's, which is based on 11 households.

With 570 probated individuals, whereof 37 outliers, and thus effectively 533 individuals, this study belongs to those with the largest sample sizes. Lilja studies 463 individuals after excluding outliers; Lindgren and Markkanen have populations of 886 and 1,259 deceased respectively.

Out of these three studies, only Lilja and Lindgren examined urban savings – namely the Swedish cities of Falun and Kalmar respectively – and only Lilja tested the LCH. This study is thus a meaningful contribution to the research on life cycle saving patterns with the help of probate estates, and in the case of a country without public social security welfare schemes.

[44] The spellings in Swedish are Åbo, Viborg, Tammerfors and Nikolaistad (today's Vasa) respectively.
[45] Erickson (2005), p. 5-6; O'Rourke and Williamson (1995), p. 5; and Hjerppe (1989), p. 50-53.

# Section 6: Method

The study of the living population's savings patterns was conducted in three steps: collecting the data on the deceased; segmenting it; and then converting it using the "age adjustment" method. Below I also analyse the reliability of the sources and method.

## 6.1 Cross-section study based on probate records

A life cycle model can according to Jackson be tested by using either cross-section data comparing the individuals of different ages at the same time, or by using time-series data comparing the same individuals over time[46]. Using a questionnaire can in this case be ruled out from the onset given that all potential "interviewees" died a long time ago. A time series study would require completely different data – as probate records obviously are unsuitable as people only die - and therefore get their net wealth registered – once. Time-series studies by definition probably require a more tedious collecting of data than for a cross-section study, and the sample would therefore by necessity - and by the scarcity of comprehensive 19th century time-series - need to be smaller.

I have therefore chosen to carry out a cross section study, using probate records and three data points - 1850, 1875 and 1900. Larsson on the other hand chose to do a time series "test" study on 11 households at the Swedish iron mill Bredsjö, arguing that it is required to not only have data on income and savings, but also data over a long period of time from the same individuals. Such time series data is available from several Swedish mills. Larsson consciously excluded many data points, by requiring that the monitored individuals should have worked at least 25 years continuously at the mill[47]. Larsson's statistically insignificant sample size illustrates the caveat of using time-series data.

Probate records, which the study is based on, is an increasingly used data source, especially by Nordic scholars such as Lilja (2004); Lindgren (2002); and Markkanen (1978).

The reliability of probate data, as well as the flaws in using a cross-section study when testing the LCH, is discussed below under section 6.5 "Source and method criticism".

## 6.2 Data segmentation

*Age groups*

The data has been divided into five age cohorts: 15-19; 20-35; 36-49; 50-64; and 65+. This is the same age classification as in Lindgren (2002), which facilitates a potential future comparison of the two studies, and data sets. Apart from the first age-cohort, the age intervals are large – 15 years or more – which provides the broad outlines of the age cohorts envisaged in the life cycle hypothesis – thus facilitating the hypothesis testing. It also enables the gathering of more individuals per cohort, thus increasing the statistical reliability. When I segmented the material according to social class, I was forced to combine the 15-19 and 20-35 age cohorts due to the statistically insignificant number of 15-19 year olds.

Lilja on the other hand divided the probated individuals into 12 cohorts with 5-year intervals, aged between 20 and 79. She has not included the 39 individuals that were older than 80 years, as the number of individuals per age cohort would be too small to render statistically significant results[48]. This exclusion is sizeable - it amounts to about 8% of the total number of age-determined individuals - and is unfortunate as more valuable data is lost. It is a consequence of having narrow age-intervals.

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46 Jackson (1998), p. 54.
47 Larsson (1989), p. 361.
48 Lilja (2004), p 166-167.

Lilja's age cohorts are arguably also needlessly narrow to test the LCH, and put at risk the statistical significance of her findings, given the lower number of individuals per age cohort.

*Eliminating outliers*

I have needed to eliminate certain probates from my study for two reasons: I lacked the age at death of some of them, whereas others had died much earlier than the year of probate, which thus arguably does not make their wealth representative of the living population's wealth during the selected year. I have made an arbitrary decision that those individuals who died more than 4 years prior to the data point were outliers.

I have thus excluded 37 probates from the study: 7 of which for lacking age data, 24 because the individuals had died more than 4 years before the year studied, and 6 due to a combination of both before mentioned reasons.

*Defining social classes*

I begin by studying saving and borrowing patterns on an aggregate level. This is a necessity given that the life cycle hypothesis of savings - as all neoclassical theories – studies behaviour on an aggregate level. The LCH presupposes that all individuals are rational and utility optimising, and that the behaviour of one individual can therefore be narrowed down to a collective behaviour.

I however believe that differences in income, education and social mobility warrant a split of the sample into roughly homogenous groups – especially in the rigid 19th century society devoid of a welfare state. I therefore as a next step study behavioural patterns in different social groups for each respective year. I broadly define these social groups as working, middle, and upper class. This classification corresponds to the one used by Lindgren, and it also broadly conforms to the classification of parishioners – according to three social classes - used by the Finnish Lutheran Church in its church records.

I have used the profession listed at the time of death as a basis for segmenting the sample population into social classes. Lilja's detailed account of the segmentation of her sample into four social categories based on profession inspired me to decide on a general framework for allocating each probated individuals into one of the three social classes.

Out of my understanding of 19th century Finnish society gathered during the course of the thesis work, I have defined the social classes as follows:

- Working class: workers; journeymen; peasants / fishermen; seamen; low-ranking civil servants (e.g. police- and postmen); and "rank and file" soldiers
- Middle class: burghers; merchants; sea captains and first mates; middle-ranking civil servants (e.g. police captains or customs surveyors); and non-commissioned officers
- Upper class: nobility; academics and high-ranking civil servants (e.g. judicial courts officials); and officers

These definitions deviate somewhat from Lilja's, who for instance also included wealthy merchants in the upper class, whereas I allocated them to the middle class. She also split the working class into two segments: qualified and unqualified labourers. This distinction is very valid as for instance Hautcoeur and Le Quéré point out. They state that qualified labourers during the 19th century earned incomes above the subsistence minimum, and that the evolution of their incomes often followed the pattern postulated by the LCH: revenues were stable or increasing during the working life, enabling them to save for their retirement once their children were grown up and left the household. Furthermore Lilja actually split her social groups into a total of eight sub-segments, such as for instance female servants in one group or unqualified workers, apprentices, journeymen and farmhands in another. This is possible an over-zealous division given the relatively limited size of her sample[49].

I am aware that the allocations that I have made are not 100% in accordance with my definitions, although I am confident that the degree of correctness is very high, given that the professions are clearly stated in the probate Estates. Errors may have arisen mainly due to me not understanding the meaning of a named 19th century profession. Many of these professions do not exist any longer, and it was particularly difficult to determine whether some professions belonged to a middle-ranking civil servant (middle class) or a high-ranking civil servant (upper class).

Two examples of allocation errors that I almost made were the cases of two men - deceased in 1850 and 1875 respectively - whom I believed were members of the upper class, whereas I in fact much later discovered that they belonged to the working class. Their professions were called in Swedish "kursor vid universitetet" and "universitetspedel", and I assumed that these were university academic titles, and their upper class sounding surnames seemed to confirm that. Luckily I finally found out by searching on Google that both titles mean "school or university genitor"...

For reasons of transparency, I let the reader judge whether I have categorised the individuals correctly by listing in appendix 4 all of the 284 professions that I have identified and grouped per social class. The names of the Swedish professions have also been translated into English, in order to give the English-speaking reader full access to the material, but also to enable an extra check if I have correctly interpreted the meaning of these 19th century professions.

*Delimitation between a saver and a pauper*

A surprising discovery when I collected the material was that I immediately noticed that there was a significant number of paupers among the probated, as evidenced for instance by the high incidence of people listed in the probate inventories as having "insufficient means to cover their funeral expenses, and people who neither had assets nor debt. These people were almost all from the working class. My interpretation is that the authorities, and/or lenders and heirs must have expected these people to have assets.

What distinguishes a saver from a pauper? By definition, in order to be said to have savings an individual has to possess financial means that exceed a certain minimum level required for subsistence. I have not come across any data on living cost indices in Helsinki, and what such poverty thresholds may have been in 1850, 1875 and 1900 respectively. I have therefore determined these thresholds myself through "back of the envelope" calculations, by going through the available data in my collected probate inventories, and getting a feeling for the cost of a basket of basic necessities in life in Helsinki: levels of housing rents per month on the market; purchasing costs of movables (mainly clothes and furniture); as well as funeral expenditures.

[49] Lilja (2004), p. 210-212; Hautcoeur and Le Quéré (2000), p. 7-8.

The result of my quick overview has been to select the following thresholds:

| *FIM (net wealth)* | **1850** | **1875** | **1900** |
|---|---|---|---|
| **Poverty threshold** | 200 | 250 | 500 |

*Table 3. Source: Patrick Nylund on the basis of the collected probate data*

Although some people turned out to be paupers, they should not be excluded from this study because its focus is wider than only capturing the savings patterns of people with a sufficient net wealth. The focus is instead on aggregate savings per capita, as well as savings per capita for each of the three social classes. Furthermore, it is imprudent to exclude data in case the delimitation between saver and pauper would be changed in a future study, i.e. that a lower level of net wealth would be sufficient to be classified as a saver.

The break-down of the probated individuals between savers and paupers – and per social class - is shown in table 4 on p. 26, as well as in appendix 2 (broken-down also by age cohort).

## 6.3 Inverted mortality ratios: Lindgren's "age adjustment" method

*General principle*

This study collects data from deceased people, whereas we in fact wish to get a picture of the savings of the living population.

To solve this problem I have used Lindgren key "age adjustment" method of calculating inverted mortality ratios to estimate the living population's savings. The method consists of first calculating mortality ratios per age cohort, and then inverting the ratios in order to use them as multipliers of the savings of the deceased. When cross-referencing estimated and actual bank lending, Lindgren found his method to be sufficiently reliable to yield a reasonable approximation of the debts – and thus consequently the assets – of the living population based on probate records[50].

Calculating mortality ratios by age cohorts by definition requires data on the living population per age cohort during given years, as well as the annual mortality per the same age cohorts during the same given years.

*Aggregate mortality ratios*

The very good Finnish population statistics have enabled me to calculate almost exact aggregate mortality ratios in Helsinki during 1850, 1875 and 1900 for the following reasons: during the 19th century every Finnish parish had a legal obligation to compile every five years statistics on the living population – per sex and 5-year age groups - and 1850, 1875 and 1900 happen to coincide with these 5-year intervals; the data on deaths were also reported annually by parishes, using the same sex and age classification[51]; most importantly also, all relevant statistical series from Helsinki's various parishes are complete[52].

[50] Lindgren (2002), p. 823-825.
[51] Turpeinen & Kannisto (1997), p. 6.
[52] The compiled statistics, and the calculated mortality ratios, are listed in tables A1:5-A1:13 of Appendix 1.

*Class-segmented mortality ratios*

A difficulty that I encountered was to find the proportion of working, middle and upper class individuals in the living population, and in each age cohort. I needed this information in order to be able to reconstitute the per capita savings of the living population per social class. I spoke to Lecturer Simo Laakkonen at the University of Helsinki – whose specialty is Finnish business and social history – and he gave me some rough “guesstimates” of the breakdown during 1850, 1875 and 1900.

I finally however settled for a practical and modern day guidance from Kotler. Listing another researcher’s work, he stated that the US population could be divided into seven major social classes, with the following percentual breakdown: 1) upper uppers (1%); 2) lower uppers (2%); 3) upper middles (12%); 4) middle class (32%); 5) working class (38%); 6) upper lowers (9%); and 7) lower lowers (7%).

Grouping 1-2 into the upper class, determining 3 as the middle class, and combining 4-7 as the working class, I thus got the following split which I thus used in my data manipulation: upper class 3%; middle class 12%; and working 85%. The split corresponds well to Lecturer Laakkonen’s guesstimates.

In the end however I did not have access to statistics on per social class deaths in the whole population, and so I was not able to establish exact mortality ratios per social class. I instead assumed that each of these ratios is equal to that of the aggregate mortality ratio for the same age group. This is of course a blunt assumption, as for instance rich people obviously have a lower mortality ratio than poor people at every age level, due to a better access to proper medical care, more hygienic living conditions, less exhausting jobs, etc.

The consequence of this approximation is that the estimates of the net wealth of the total population per social class are skewed: working class net wealth is inflated – as the multiplier is too high – whereas upper class net wealth is undervalued due to the multiplier being too low. The data from 1850 is particularly skewed given that the excess mortality resulting from the cholera epidemic especially affected the poor, as they were more exposed given lower hygienic conditions (little or no access to clean water; insufficient education as to good hygienic habits, etc.).

## 6.4 Currency adjustment

The data from 1875 and 1900 is in Finnish Markka, Finland’s national currency from 1860 until 2002 - when Finland adopted the Euro. In 1850 the national currency was however Russia’s silver Rouble. To make data more comparable, I have therefore converted the 1850 values into Finnish Markka, using the actual 1860 conversion rate of 4 Finnish Markka per silver Rouble.

## 6.5 Source and method criticism

*The use of a cross-section versus time –series data*

Cross-section data is more readily available and easier to collect than time-series data, but it is less well suited to testing the LCH because there is no control for systematic cohort differences within the cross-section sample. Time-series data, can by contrast follow a single cohort through its life cycle, and thus correspond more closely to the LCH. However it must be stressed that even when time-series studies of modern day savings have been conducted, no consensus has been reached on the validity of the LCH[53].

[53] Jackson (1998), p. 54.

*Reliability of population statistics and probate estates*

Laurikkala (1947) – as quoted in Markkanen - has emphasized the reliability of Finnish probate inventories, just as Lindgren has emphasized that of Swedish ones. As Lindgren points out, the two countries' standards for setting up probate inventories in fact originate from when Finland was an integral part of the Kingdom of Sweden, namely by the drafting of the Royal Ordinance of 1698, and reiterated in the Civil Code of 1734[54].

Probate estates contain certain structural flaws, such as the fact that real estate was generally listed at its taxation, and not its sale value, meaning that real estate was systematically undervalued in both Finnish and Swedish estate inventories. According to Markkanen, Finnish real estate was thus generally recorded at about only 60-70% of its market value. Lindgren experienced a similar level of discrepancy in Kalmar, and in his Kalmar study he also refers to Isacson (1979) who found that physical property in the Swedish parish of By had been undervalued by roughly 25%[55].

Unfortunately, I have not tried to assess what the disparity was in Helsinki during my studied years. To adjust for this data bias I have instead used a proxy of 75% of the market value, meaning that in order to correct for this bias I have thus divided the probated real estate values by 75%.

Finnish – and Swedish - population statistics are also regarded as highly reliable[56]. My own gathering of data on the age of the deceased confirms this view, although many individuals could not be found in the Helsinki parishes' death statistics for structural reasons, such as a large influx of people from the country-side - making it more difficult to keep records up to date - as well as due to human errors in data entries.

As mentioned above, I encountered difficulties in finding the age of several deceased. There were mainly three structural reasons that made it difficult to locate individuals in Helsinki: there were a significant amount of parishes to monitor – six in 1850 and 1875, and seven in 1900[57]; the influx of people to the city was great due to the city's rapid industrialisation, and a large number of people were therefore born in other municipalities, and not always properly accounted for[58]; it was finally challenging to locate Russian citizens, due to me not being to read Russian church records, and that several of them were not members of the Russian parish in the city.

This problem has been faced by several researchers: for instance Lilja states that she could determine the age of 464 individuals, out of 605 probated individuals in the Swedish city of Falun between 1820 and 1902, i.e. an age determination ratio of 77%. Markkanen states that out of 1,311 individuals between 1850 and 1911, he has established the age of 1,259 of them, i.e. an age determination ratio of 96%. Lindgren on the other hand, actually managed to pinpoint the age of every single deceased – bar two individuals - among the 886 estate inventories drawn up in Kalmar 1841-1845, 1871-1875, and 1901-1905, i.e. an age determination ratio of almost 100%[59].

[54] Markkanen (1978), p. 68; Lindgren (2002), p. 816.
[55] Markkanen (1978), p. 68; comment by Lindgren during a thesis tutorial and Lindgren (2002), p. 817.
[56] See Markkanen (1978), p. 68.
[57] A further complicating element was the fact that parishes records were kept at different places: the undivided Finnish and Swedish Lutheran parish's records are kept at the Helsinki Church Archives (the parish was divided on a linguistic basis in 1906); the rest of the parishes' records are kept at the Finnish National Archives. In several cases it was impossible to know in advance whether an individual's death was recorded in for instance the German, the Sveaborg, or the Finnish and Swedish Lutheran parish statistics.
[58] In 1910 for instance, about 40% of Helsinki's total population were born in other municipalities, according to Helsinki statistics at that time.
[59] Lilja (2004), p 166; Markkanen (1978), p. 73; Comment by Lindgren during a tutorial.

I have been able to determine the age of 556 individuals out of a total of 570 individuals probated in Helsinki in 1850, 1875 and 1900, i.e. an “age determination ratio” of about 98%. There are mainly two factors that explain why I have been able to determine the age of almost every individual that were not listed in the death books of the Helsinki parishes:

Firstly, judging from their profession, most deceased were clearly “high profile individuals” - leading civil servants, well educated people, and more or less affluent businessmen – and so their deaths did not go passed unnoticed. This was for instance the case of most Russians. Most of the missing thus had obituaries, which included age at death, published in several of the Helsinki newspapers.

Secondly, Finland has a first rate database of vital statistics, which is internet-based, and thus accessible from any location: the Hiski database. It has been put together by the Genealogical Society of Finland and Finland’s parishes[60]. Its weaknesses are that it seldom covers entries after 1860, and that there are data series that have not been entered yet, or that actually are missing in the church statistics.

The Hiski database is an ongoing project to digitalise the vital statistics of Finnish parishes. It contains records of births, marriages, deaths, and migration in every Finnish parish, and several Finnish parishes abroad. The time period covered for each variable – and whether all the variables are available - depends on how much data the parishes have entered into the database until now. Using the database was very time-consuming but by trying to pin-point parishes, or roaming through neighbouring parishes it was possible to locate a great number of people.

In the case of both men and women the deceased people’s age was determined through the records of baptisms, which indicated when the individuals were born. In the case of women further opportunities to determine their age were given in the church marriage records and the data on the parents of the christened children[61].

To make sure that the right individual was found, I gathered all available family data from the probate records; each probate record indeed included data on the heirs of the deceased, their profession, the age of their children – in the event they were minors – and sometimes the place of residence of the heirs. The match of individuals in the probate records and the Hiski database – and thus also the Helsinki church records - was complicated by the fact that surnames were in many cases spelt differently in the differently in each record – even varying in the parish records depending on the date of entry.

Several alternative sources were also of great assistance: university alumni registers from the Alexander University in Helsinki (current University of Helsinki)[62]; hospital records for the odd probate from 1900; birth data from tombstones in the Russian and Lutheran parishes’ churchyards. Biographies on prominent individuals were also of use: in for instance Tigerstedt’s biography over Finnish officers in a particular regiment, I located Captain Gustaf Adolf Weber, who died in Helsinki in 1850, at the age of 71. In biographies of prominent Russians in Helsinki, I found references to Russians that I was looking for, but their age was not given or possible to find out deductively, and so they remain among the handful of individuals whose age at death I still lack: this is for instance the case of Kosma Vetroff who died in 1875, but where the only clue of his age is the birth year of his wife, namely 1834[63].

[60] www.genealogia.fi/hiski.
[61] In many cases the age of the wife or the mother was stated.
[62] Autio (1971) in the case of August Fredrik Krogerus who died in 1875 at age 33; Carpelan (1930) in the case of Nestor Tallgren who died in 1875 at age 50.
[63] Tigerstedt (1908), p. 60, in the case of Weber; and Piiroinen (2002), p. 107, in the case of Wetroff.

*Size of sample segments*

In terms of reliability, a total sample size of 533 individuals is acceptable, however when broken down into age groups, and more particularly into even smaller units such as age groups per social class, the sample size may well be too small. The sample size is however reasonable for a master thesis, and the results are at least indicative. Furthermore, other researchers can increase the validity of the results for instance by expanding the data set with probated estates from adjacent years - e.g. 1849 and 1851 in the case of 1850.

*Single-year data points*

The use of single-year data points clearly increases the incidence of random deviations. To mitigate the incidence, for instance Markkanen, chooses to use four sets of two-year periods, while Lindgren uses three sets of five-year periods. My study is therefore less reliable than many others. I however believe the study anyway captures important aspects of saving patterns in Helsinki. It can also constitute the groundwork for a more elaborate study by another researcher – for example in a doctoral thesis such as Lilja's.

*Validity of the selected years: "event risk"*

Based on national mortality statistics from Statistics Finland, the three selected years were not particularly deviant for the adjacent decades. Would I for instance have chosen the years around 1866-1868, I would have stumbled across a period heavily marked by the last famine in Finland - with ensuing depleted savings and poverty. About 80 thousand people died of famine in 1868, or about three times the normal mortality rate at the time[64].

Confident that there was thus no excess mortality in 1850, 1875 or 1900, I proceeded with collecting probate data. I however later noticed that there was in fact a Cholera epidemic in 1848-1850, which ravaged Finland's coastal areas[65]. As may be seen in appendix 1, the mortality ratio of Helsinki's population aged above 15 (the age group covered in this thesis), is at 3.1% in 1850 almost twice as high compared to 1875 – our second selected year.

As we do not have any data on mortality ratios in adjacent years to 1850, we can not measure with any exactitude the level of excess mortality; it is however clear when looking at table A1:1 in appendix 1, that about 15% of the total fatalities during the epidemic in Helsinki were from cholera, and that other cities were more severally affected. The share of dead from cholera among the probated individuals in 1850 is at least 15% (13 individuals), but it is probably higher as I failed to register the cause of death of 11% of the probated (10 individuals). It is therefore unclear if the collected data misrepresents the total population as far as this parameter is concerned; this issue is however mitigated by the fact that excess deaths due to diseases should have little impact on savings[66].

[64] Turpeinen and Kannisto (1997), p. 8-11.
[65] See appendix 1 for a table showing the effect of the cholera epidemic on the mortality in Helsinki and some neighbouring cities during the affected years.
[66] See the discussion in the next section (method) on the potential data bias caused by medical costs prior to death

In terms of selecting a year that was not a misleading year in terms of business cycle (exceptional boom or economic crisis), and which thus arguably project abnormal levels of net wealth, 1875 happened to be a poor choice: 1875 corresponded to the peak year – in both Helsinki and the whole of Finland - of a seven-year long economic boom. In 1875 housing prices and rent levels in Helsinki had for instance reached record levels, to the benefit of the wealthiest members of the middle and upper class, who owned valuable real-estate, but to the detriment of mainly the poor working class. A reversal in fortune ensued almost immediately when the so called "long depression" started 1876-1878. It was one of the deepest and most protracted economic crises that Finland's has incurred ever since 1860. Finland did not return to its 1877 level of economic activity before 1882[67].

It may be noted that in 1900 "Jordbruks- och Industri Banken i Finland" (Maanviljelyspankki in Finnish) - a major bank at the time – went bankrupt as a result of fraud. It is however not reflected in the probated material from 1900, as no mentioning of a bankruptcy is made as regards to the four individuals who are listed as having savings in the bank, or owing money to it.

*Time lag between death and probation*

Due to a time lag between the actual death of the individuals and the establishing of probate estates, the collected probate estates are only partially from 1850, 1875 and 1900. This does however not significantly impair the results, as mortality ratios – apart from in 1850 – and levels of net wealth - apart from in 1875 – were not due particularly misrepresentative due to illnesses or exceptional economic conditions (marked boom or recession) respectively.

*Other issues of data representativeness*

Just as Lindgren, I have also tried to adjust for these biases by deducting funeral costs, and the administrative charges levied by the city magistrate for recording the probate, as well as medical expenses prior to death. As far as medical expenses are concerned, the level of savings of the deceased may thus have been impaired, and not be representative of that of a healthy individual of the same age in the living population. Lindgren however concludes that there is no such evidence in his study, most probably because people died so quickly that medical costs did not have time to significantly impact their savings, as well as because poor people could not afford medical care, whereas for rich people medical costs constituted only a fraction of their wealth[68].

I have not tried to make an own assessment if medical expenses are a source of bias in the case of Helsinki. I have assumed that Lindgren's conclusion is correct, and ignored this factor.

*Use of basic statistics but not regression analysis*

Econometric modelling is not used in this study. It is solely based on the processing of gathered data through the use of basic statistical computations in Microsoft Excel sheets, namely percentages, sums, mean, median, maximum and minimum values. I then analyze these numbers, and draw conclusions based on relevant theory and findings from previous studies.

In my opinion descriptive statistics, supported by historical and modern empirical studies, suffice to draw significant conclusions from the collected data.

[67] Jonung & Hagberg (2005) p. 10-14; Hjerppe (1989) p. 56-57 and 64; Urbans (1975) p. 11-13; Klinge (1996) p. 256 and 470.
[68] Lindgren (2002) p 819.

# Section 7: Evidence of life cycle savings?

In order to be consistent with the LCH, net wealth should be hump-shaped, as illustrated in figure 1 on page 9.

## 7.1 Aggregate saving patterns in Helsinki 1850-1900

**Active population's per capita total net wealth**
**(FIM, nominal prices): estimate of living population**

| Age / Year | 1850 | 1875 | 1900 |
|---|---|---|---|
| 15-34 | 228 | 398 | 3 690 |
| 35-49 | 661 | 6 376 | 3 996 |
| 50-64 | 916 | 3 952 | 10 508 |
| 65- | 15 | 28 577 | 15 334 |
| **Life cycle hypothesis validated?** | Yes | No | No |

*Table 3. Source: Author on the basis of the collected data*

A study of table 3, the estimated living population's per capita savings – disregarding social classes – reveals that the life cycle is clearly validated for 1850 but likewise clearly rejected for 1875 and 1900. In 1850 the savings pattern is hump-shaped over the life cycle, whereas in 1875 and 1900 the elderly (+65s) have the largest net wealth per capita, and their net wealth are significant also in absolute terms. The findings for the first hypothesis are therefore mixed.

| | Savers | Paupers | *Total* |
|---|---|---|---|
| **1850** | | | |
| Working | 13 | 23 | 36 |
| Middle | 24 | 11 | 35 |
| Upper | 10 | 8 | 18 |
| *Total* | 47 | 42 | **89** |
| **1875** | | | |
| Working | 26 | 41 | 67 |
| Middle | 44 | 17 | 61 |
| Upper | 41 | 6 | 47 |
| *Total* | 111 | 64 | **175** |
| **1900** | | | |
| Working | 53 | 74 | 127 |
| Middle | 71 | 13 | 84 |
| Upper | 64 | 4 | 68 |
| *Total* | 188 | 91 | **279** |

Poverty thresholds:
1850: net wealth < 200 Mk (50 Rub)
1875: net wealth < 250 Mk
1900: net wealth < 500 Mk

*Table 3. Number of savers versus paupers, per year and class. Source: Author on the basis of the collected data*

Table 4 provides some indications on what distinguishes 1850 from the other years. We notice a sharp increase in savers relative to paupers between 1850 and the other years: in total 47 savers to 42 paupers in 1850, versus 111 to 64, and 188 to 91 for 1875 and 1900 respectively. The increasing aggregate ratio of savers to paupers could indicate that the rapid economic growth has increased the net wealth of households to such an extent that for instance the possibility of leaving bequests is available to a larger number of people. The large disparities between the saver to pauper ratios per social class and their respective development, however supports my intuition and Hautcoeur and Le Quéré's claim that a study of the respective social classes will yield firmer conclusions[69].

[69] Hautcoeur and Le Quéré (2000), p. 7. See p. 39 (appendix 2) for more detailed tables over the split between savers and paupers during the three years.

## 7.2 Saving patterns by social class

Are the findings different if one breaks down the living population into social classes?

**Active population's net wealth (FIM, nominal prices) per capita: estimate of living population per social class**

| Year | 1850 | | | 1875 | | | 1900 | | |
|---|---|---|---|---|---|---|---|---|---|
| Age / Class | Working | Middle | Upper | Working | Middle | Upper | Working | Middle | Upper |
| 15-34 | 8 | 85 | 7 036 | 190 | 1 686 | 1 128 | 96 | 7 658 | 89 622 |
| 35-49 | 65 | 4 515 | 2 126 | 63 | 43 790 | 35 588 | 323 | 14 320 | 66 773 |
| 50-64 | 8 | 1 462 | 24 459 | 405 | 27 354 | 10 842 | 240 | 50 845 | 140 075 |
| 65- | 48 | 30 | -964 | 50 | 86 472 | 605 254 | 460 | 86 869 | 150 625 |
| **Life cycle hypothesis validated?** | | | | | | | | | |
| | No | Yes | No | No | No | No | No | No | No |

*Table 5.Source: Author on the basis of the collected data*

The LCH seems to be rejected in the case of working class savings. In 1850 the evolution of net wealth has a “double hump” shape: savings undulate with peaks at ages 35-49 and 65+. No consistent peak in savings may be spotted: in 1850 the peak is at 35-49; in 1875 at 50-64; and in 1900 at 65+-

As we see in the table above, the net wealth pattern of the upper class does not follow that prescribed by the LCH during any of the studied years. In both 1850 and 1900 net wealth is highest among those aged 20-34, while in 1875 it is those aged above 65 that have the highest net wealth. This is in total violation of the LCH, as both age groups are supposed to be dissaving.

Middle class savings in 1850 are the only ones that seem to follow the LCH. In 1875 and 1900 however, the LCH is firmly rejected as savings are by far the highest at age 65+.

The significant net wealth accumulated by the +65 of both middle and upper class individuals during 1875 and 1900 compared to the previous age cohort, indicate important bequest motives in these two classes. Similarly, the net wealth of the working class is arguably too low in each age cohort for any intergenerational cash transfers to be possible[70].

## 7.3 Overall conclusion

The compiled data is tested against Modigliani & Miller’s “life cycle hypothesis of saving” (LCH). My findings overall validate my two hypotheses that neither aggregate nor class-segmented household saving patterns follow that predicted by the LCH, which is consistent with many other cross section studies[71]. I for instance find that most middle class and upper class elderly die with net fortunes, while most working class people – irrespective of their age - have no savings at all. There are however also significant numbers of poor middle and upper class citizens, while there are numerous workers that have sufficient net wealth to warrant being categorised as savers, which supports the notion of saver segmentation put forward by several researchers.

Almost all of these cross section studies have been carried out over the past decades on data from modern day industrialised countries offering public social security schemes.

[70] Lilja also finds support for the existence of bequests. See Lilja (2004) p. 185.
[71] Jackson (1997), p. 54, provides a long list of such studies, e.g. Lydall (1955); Mirer (1979); King and Dicks-Mireaux (1982); Danziger et al. (1982); Blinder, Gordon and Wise (1983); Menchik and David (1983); Wiseman (1989); and Börsch Supan (1992)

The three reference studies which I have quoted all through this thesis, namely Hautcoeur and Le Quéré's, Lilja's, and Larsson's studies, yielded mixed results. Hautcoeur and Le Quéré rejected the LCH based on French macro-economic data and empirical observations from other French economists[72]. Lilja on the other hand validated it based on her comprehensive set of data[73]. Larsson's time-series study also validated the LCH. His conclusions however have a very poor explanatory power already from the onset as his sample is constituted of only 11 individuals, as opposed to for instance my sample of 569 individuals.

Why is the life cycle theory contradicted? Empirical studies list a number of possible reasons. One of the reasons is that individuals can not predict their life expectancy. In the 19th century, death was considerably more random than today, be it in Finland, Helsinki, or in any other European country or city. In France for instance, workers were reluctant to allocate money to pension funds as they deemed it impossible to live long enough to receive a pension. People just simply did not know when they would die given the prevalence of epidemics combined with an undeveloped healthcare system, and insufficient medical expertise[74].

As we noticed from the probates, numerous members of the working class managed to save. However when we compute these figures into per capita values for the whole social class, we see that these people misrepresented the level of wealth of the whole working class, as the probated workers were indeed the richest ones.

Looking at the abysmally small per capita savings of the working class, compared to the two other classes, this study also verifies Markkanen's observation that "the poorest group owned only the barest minimum of clothing and other odds and ends, while those of small means possessed some additional property; the well-to-do generally owned their own dwelling, and the wealthy, and very rich, possessed almost every kind of property"[75]. It would have been interesting to see whether a split of the working class into qualified and unqualified workers – as we earlier mentioned was done by both Lilja and Hautcoeur & Le Quéré – would have generated different results.

In the specific case of Helsinki, this is supported by the fact that contemporary surveys show that most of the income of Finnish workers in Helsinki at the end of the 19th century went to food consumption. In 1890 for instance, based on a sample of 157 individuals, about half of the income was devoted to food. Furthermore, about 1/5 of the income was devoted to housing (rent, heating and lighting), making as housing costs were significantly higher in cities than in rural areas. It is noteworthy that only 10% of income was devoted to other items than the basic necessities, i.e. food, beverages and tobacco, clothing and footwear, as well as housing[76].

Arguably, the lack of public social security schemes significantly impacted the savings levels of the working class, effectively strangling it, as many member of the working class were living on subsistence wages for the entirety of their lifetime. This is the argument put forward by Hautcoeur and Le Quéré, who observed that the French 19th century unskilled working class had subsistence levels of income, low life expectancy and specific social and spending habits that made them reluctant to increase their savings, in spite of the many institutional innovations directed to them[77].

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72 Hautcoeur and Le Quéré (2000) p. 5-9.
73 Lilja (2004), p. 184-185.
74 Turpeinen and Kannisto (1997) p. 11-12; Hautcoeur and Le Quéré (2000) p. 7-8
75 Markkanen (1978), p. 82-83.
76 Heikkinen(1998), p. 61.
77 Hautcoeur and Le Quéré (2000), p. 7-8.

Finally, the general poverty of Helsinki's working class illustrated in this historical study of a society without public social security schemes arguably has public policy implications. It provides further support to Hautcoeur's claim that the main lesson of studying 19th century savings – in terms of the current policy debate on reforms of the pension systems in developed countries - is that you can not rely on individuals to save sufficiently to finance their retirement[78]. An increased reliance on private pension schemes could therefore lead to a precarious financial situation upon retirement for some of the less precautious segments of the working and the middle class. Larsson's small study on the other hand found that the lack of social safety net instead stimulated the workers at the mill to save, and that they were fully capable to save during the top of the business cycle in order to have the means to face the hardships of a recession[79]..

[78] http://www.delta.ens.fr/hautcoeur/LeMondeEcoMai2003.htm
[79] Larsson (1989), p. 373-374.

# Section 8: Suggestions for further research

## *8.1 Estimating the size of the “informal” Finnish credit market*

Such a study would be based on the method used by Lindgren: with the evidence of probate records he estimates the size of the so-called informal or un-intermediated credit market in the Swedish city of Kalmar 1840-1905. Lindgren’s main finding is that by 1905 bank-based credit had finally surpassed the informal loans; however, at that time outstanding promissory notes still equalled about 40% of the total credit available in Kalmar and loans from financial institutions other than banks[80].

## *8.2 Comparative studies of savings in Finnish and Swedish cities*

Comparative analyses could be carried out between Helsinki and Kalmar in terms of the modernization of credit markets, or variations in individual savings behaviour during the transition from an agricultural to an industrialised society.

The figures are comparable on a like for like basis given that I have more or less used the same methods as Lindgren – as well as his excel sheets with collected Estate data as blue-prints to gather my data – and that available historical data sets are structured in an identical way in both countries, due to their shared history. An initial comparison between saving patterns in Helsinki and Kalmar, can serve as an example for future comparative studies of Finnish and Swedish savings and credit.

As highlighted in the data section, a comparison is relevant and may generate interesting results as the two neighbours had during the 19th century - and indeed still have - virtually identical institutions, a similar industrial base, and experienced strong economic growth. Both countries now accordingly also belong to the world’s richest economies

## *8.3 Asset management among Helsinki’s social classes at the time*

The amount of data collected, and the segmentation carried out, would permit me to study the asset management strategies of Helsinki’s social classes at the time. The basic principle of portfolio management is to not “put all your eggs in the same basket”, i.e. to diversify the risk. To which extent was this principle followed at the time?

As far as portfolio allocation is concerned, the general poverty of Helsinki’s working class means that they have no portfolios, and that the study would principally concern the middle and the upper classes.

What are then the saving strategies of the middle and upper classes? Into which asset categories and sub-categories did they save? Are there interesting differences in saving strategies? And ultimately then, which saving motives seem to underlie the choice of investment portfolios? Lilja’s findings on this matter could furthermore enable an interesting comparison[81].

If the current data set is used, then we would not break down savings per age cohort, as we need sufficient data points per social class and saving category. If we wish to take age into consideration, it would be advisable to expand the data set with years adjacent to 1850, 1875 and 1900.

Appendix 3 shows which saving and debt instruments were used by the deceased during the period. It indicates an increasing sophistication of the portfolio management and financial instruments in 19th century Helsinki and Finland.

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[80] Lindgren (2002), p. 829-830.
[81] Lilja (2004) p. 81-98; see also Wärneryd (1999), p. 191-192, for details on two Swedish studies by Wahlund and Gunnarsson (1996; 1997), identifying six groups of savers, each with an unique financial strategy.

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c) Dödsböcker för Helsingfors odelade församling 1847-1850 (so called death books): microfilm kk 20

d) Register of probate Estates 1899-1903: Ao 17

Terveydenhoitovirasto (later known as Terveydenhoitolautakunta) 1876-1978

a) B. Luettelot: Kuolleiden luettelot (deaths at Helsinki hospitals) 1896-, Bb:4 and Bb:5

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a) Probate records 1900: EC: 56-58

b) Register of probate Estates 1899-1903: Ao 18

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a) Microcards of death books from the relevant years covering the period 1850-1900

Statistikcentralen / Tilastokeskus (Statistics Finland), Verkstadsgatan 13, FIN-00022 Helsingfors. Tel: +358 9 17341.

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a) Väkilukutaulut /befolkningsmängdstabeller: 1850; 1875; 1900

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[82] Probate records carried out before 1880.
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# Appendix 1: demographic data

## EXCESS MORTALITY IN SOUTHERN FINLAND DURING 1848-1850

**Cholera epidemic 1848-1850**

| *City* | *Period of local epidemic* | *Nr of dead* | *% of fatalities during year(s) of local epidemic* |
|---|---|---|---|
| Loviisa (Lovisa) | Aug-Dec 1848 | 55 | 43% |
| Porvoo (Borgå) | Aug 1848-Oct 1849 | 83 | 22% |
| Hamina (Fredrikshamn) | Aug-Oct 1848 | 20 | 27% |
| **Helsinki (Helsingfors)** | Jun 1848-Nov 1850 | 351 | 15% |
| Turku (Åbo) | Jul-Sep 1848 | 106 | 13% |

*Table A1:1. Source: Hiski database – accessed through http://www.genealogia.fi/hiski*

## POPULATION

**Helsinki's population in 1850 per parish**

| *Russian Orthodox* | *Helsinki's mixed Swedish & Finnish Lutheran* | *Sveaborg's Lutheran (artillery)* | *Första Finska sjöekipaget (Navy)* | *Livgardets Finska Skarpskytte-bataljon (infantry)* | *Helsinki's German parish* | *Total* |
|---|---|---|---|---|---|---|
| 927 | 15489 | 1284 | 1504 | 1541 | n/a | **20745** |

*Table A1:2. Source: compilation by Patrick Nylund of data from Statistics Finland*

**Helsinki's population in 1875 per parish**

| *Russian Orthodox* | *Helsinki's mixed Swedish & Finnish Lutheran* | *Sveaborg's Lutheran (artillery)* | *Första Finska sjöekipaget (Navy)* | *Livgardets Finska Skarpskytte-bataljon (infantry)* | *Helsinki's German parish* | *Total* |
|---|---|---|---|---|---|---|
| 545 | 30793 | 307 | 216 | 1231 | 520 | **33612** |

*Table A1:3. Source: compilation by Patrick Nylund of data from Statistics Finland*

**Helsinki's population in 1900 per parish**

| *Russian Orthodox* | *Helsinki's mixed Swedish & Finnish Lutheran* | *Sveaborg's Lutheran (artillery)* | *Livgardets Finska Skarpskytte-bataljon (infantry)* | *Helsinki's German parish* | *Helsinki Roman Catholic* | *Methodist Episcopal* | |
|---|---|---|---|---|---|---|---|
| 1328 | 90046 | 433 | 395 | 795 | 516 | 64 | **93577** |

*Table A1:4. Source: compilation by Patrick Nylund of data from Statistics Finland*

## MORTALITY RATIOS

### ***1850***

**Total dead aged > 15 (working age & retired) in 1850 per parish**

| **Age / Parish** | *Russian Orthodox* | *Helsinki's mixed Swedish & Finnish Lutheran* | *Sveaborg's Lutheran (artillery)* | *Första Finska sjöekipaget (Navy)* | *Livgardets Finska Skarpskytte-bataljon (infantry)* | *Helsinki's German parish* | ***Total*** |
|---|---|---|---|---|---|---|---|
| 15-19 | 2 | 19 | 1 | 2 | 3 | n/a | 27 |
| 20-34 | 5 | 73 | 16 | 26 | 45 | n/a | 165 |
| 35-49 | 7 | 116 | 15 | 13 | 7 | n/a | 158 |
| 50-64 | 3 | 51 | 19 | 1 | 0 | n/a | 74 |
| 65- | 3 | 35 | 9 | 0 | 0 | n/a | 47 |
| Total | 19 | 294 | 60 | 42 | 55 | | 470 |

*Table A1:5. Source: compilation by Patrick Nylund of data from Statistics Finland*

**Total living > 15 (working age & retired) in 1850 per parish**

| Age / Parish | Russian Orthodox | Helsinki's mixed Swedish & Finnish Lutheran | Sveaborg's Lutheran (artillery) | Första Finska sjöekipaget (Navy) | Livgardets Finska Skarpskytte-bataljon (infantry) | Helsinki's German parish | Total |
|---|---|---|---|---|---|---|---|
| 15-19 | 102 | 1 262 | 58 | 95 | 82 | n/a | 1 599 |
| 20-34 | 323 | 5 009 | 438 | 977 | 991 | n/a | 7 738 |
| 35-49 | 171 | 2 863 | 357 | 258 | 233 | n/a | 3 882 |
| 50-64 | 73 | 1 313 | 104 | 12 | 25 | n/a | 1 527 |
| 65- | 28 | 391 | 22 | 1 | 1 | n/a | 443 |
| Total | 697 | 10 838 | 979 | 1 343 | 1 332 | | 15 189 |

*Table A1:6. Source: compilation by Patrick Nylund of data from Statistics Finland*

**Mortality ratios of the active & retired population in 1850 per parish**

| | Russian Orthodox | Helsinki's mixed Swedish & Finnish Lutheran | Sveaborg's Lutheran (artillery) | Första Finska sjöekipaget (Navy) | Livgardets Finska Skarpskytte-bataljon (infantry) | Helsinki's German parish | Total |
|---|---|---|---|---|---|---|---|
| 15-19 | 1,5% | 1,5% | 1,7% | 2,1% | 3,7% | n/a | 1,7% |
| 20-34 | 1,5% | 1,5% | 3,7% | 2,7% | 4,5% | n/a | 2,1% |
| 35-49 | 4,1% | 4,1% | 4,2% | 5,0% | 3,0% | n/a | 4,1% |
| 50-64 | 3,9% | 3,9% | 18,3% | 8,3% | 0,0% | n/a | 4,8% |
| 65- | 9,0% | 9,0% | 40,9% | 0,0% | 0,0% | n/a | 10,5% |
| Total | 2,7% | 2,7% | 6,1% | 3,1% | 4,1% | | 3,1% |

*Table A1:7. Source: compilation by Patrick Nylund of data from Statistics Finland*[85]

## ***1875***

**Total dead aged > 15 (working age & retired) in 1875 per parish**

| Age / Parish | Russian Orthodox | Helsinki's mixed Swedish & Finnish Lutheran | Sveaborg's Lutheran (artillery) | Första Finska sjöekipaget (Navy) | Livgardets Finska Skarpskytte-bataljon (infantry) | Helsinki's German parish | Total |
|---|---|---|---|---|---|---|---|
| 15-19 | 0 | 15 | 0 | 1 | 0 | 0 | 16 |
| 20-34 | 3 | 110 | 0 | 1 | 9 | 0 | 123 |
| 35-49 | 4 | 102 | 0 | 0 | 5 | 2 | 113 |
| 50-64 | 4 | 85 | 1 | 0 | 3 | 2 | 95 |
| 65- | 1 | 81 | 1 | 0 | 1 | 0 | 84 |
| Total | 12 | 393 | 2 | 2 | 18 | 4 | 431 |

*Table A1:8. Source: compilation by Patrick Nylund of data from Statistics Finland*

**Total living > 15 (working age & retired) in 1875 per parish**

| Age / Parish | Russian Orthodox | Helsinki's mixed Swedish & Finnish Lutheran | Sveaborg's Lutheran (artillery) | Första Finska sjöekipaget (Navy) | Livgardets Finska Skarpskytte-bataljon (infantry) | Helsinki's German parish | Total |
|---|---|---|---|---|---|---|---|
| 15-19 | 62 | 2 624 | 27 | 27 | 62 | 44 | 2 846 |
| 20-34 | 126 | 10 615 | 94 | 100 | 725 | 123 | 11 783 |
| 35-49 | 97 | 6 075 | 59 | 35 | 164 | 98 | 6 528 |
| 50-64 | 43 | 2 679 | 28 | 18 | 23 | 40 | 2 831 |
| 65- | 15 | 822 | 7 | 2 | 12 | 14 | 872 |
| Total | 343 | 22 815 | 215 | 182 | 986 | 319 | 24 860 |

*Table A1:9. Source: compilation by Patrick Nylund of data from Statistics Finland*

[85] NB: for 1850, I have not found population data from the German parish & mortality data from the Russian parish. For the Russian parish, I have assumed that the mortality ratio is the same as that of the Helsinki Lutheran parish.

**Mortality ratios of the active & retired population in 1875 per parish**

| Age / Parish | Russian Orthodox | Helsinki's mixed Swedish & Finnish Lutheran | Sveaborg's Lutheran (artillery) | Första Finska sjöekipaget (Navy) | Livgardets Finska Skarpskytte-bataljon (infantry) | Helsinki's German parish | Total |
|---|---|---|---|---|---|---|---|
| 15-19 | 0,0% | 0,6% | 0,0% | 3,7% | 0,0% | 0,0% | 0,6% |
| 20-34 | 2,4% | 1,0% | 0,0% | 1,0% | 1,2% | 0,0% | 1,0% |
| 35-49 | 4,1% | 1,7% | 0,0% | 0,0% | 3,0% | 2,0% | 1,7% |
| 50-64 | 9,3% | 3,2% | 3,6% | 0,0% | 13,0% | 5,0% | 3,4% |
| 65- | 6,7% | 9,9% | 14,3% | 0,0% | 8,3% | 0,0% | 9,6% |
| Total | 3,5% | 1,7% | 0,9% | 1,1% | 1,8% | 1,3% | 1,7% |

*Table A1:10. Source: compilation by Patrick Nylund of data from Statistics Finland*

## ***1900***

**Total dead aged > 15 (working age & retired) in 1900 per parish**

| | Russian Orthodox | Helsinki's mixed Swedish & Finnish Lutheran | Sveaborg's Lutheran (artillery) | Livgardets Finska Skarpskytte-bataljon (infantry) | Helsinki's German parish | Helsinki Roman Catholic | Methodist Episcopal | Total |
|---|---|---|---|---|---|---|---|---|
| 15-19 | 0 | 45 | | 2 | 0 | 0 | 0 | 47 |
| 20-34 | 5 | 195 | | 1 | 1 | 8 | 2 | 212 |
| 35-49 | 1 | 199 | | 2 | 1 | 2 | 0 | 205 |
| 50-64 | 1 | 199 | | 2 | 3 | 2 | 0 | 207 |
| 65- | 5 | 184 | | 0 | 3 | 4 | 0 | 196 |
| Total | 12 | 822 | 0 | 7 | 8 | 16 | 2 | 867 |

*Table A1:11. Source: compilation by Patrick Nylund of data from Statistics Finland*

**Total living > 15 (working age & retired) in 1900 per parish**

| | Russian Orthodox | Helsinki's mixed Swedish & Finnish Lutheran | Sveaborg's Lutheran (artillery) | Livgardets Finska Skarpskytte-bataljon (infantry) | Helsinki's German parish | Helsinki Roman Catholic | Methodist Episcopal | Total |
|---|---|---|---|---|---|---|---|---|
| 15-19 | 141 | 7 331 | 35 | 28 | 60 | 19 | 0 | 7 614 |
| 20-34 | 366 | 26 519 | 98 | 71 | 228 | 115 | 27 | 27 424 |
| 35-49 | 296 | 20 529 | 101 | 127 | 178 | 111 | 16 | 21 358 |
| 50-64 | 199 | 9 172 | 61 | 36 | 97 | 101 | 8 | 9 674 |
| 65- | 19 | 3 056 | 27 | 6 | 46 | 16 | 3 | 3 173 |
| Total | 1 021 | 66 607 | 322 | 268 | 609 | 362 | 54 | 69 243 |

*Table A1:12. Source: compilation by Patrick Nylund of data from Statistics Finland*

**Mortality ratios of the active & retired population in 1900 per parish**

| | Russian Orthodox | Helsinki's mixed Swedish & Finnish Lutheran | Sveaborg's Lutheran (artillery) | Livgardets Finska Skarpskytte-bataljon (infantry) | Helsinki's German parish | Helsinki Roman Catholic | Methodist Episcopal | Total |
|---|---|---|---|---|---|---|---|---|
| 15-19 | 0,0% | 0,6% | 0,0% | 7,1% | 0,0% | 0,0% | #DIV/0! | 0,6% |
| 20-34 | 1,4% | 0,7% | 0,0% | 1,4% | 0,4% | 7,0% | 7,4% | 0,8% |
| 35-49 | 0,3% | 1,0% | 0,0% | 1,6% | 0,6% | 1,8% | 0,0% | 1,0% |
| 50-64 | 0,5% | 2,2% | 0,0% | 5,6% | 3,1% | 2,0% | 0,0% | 2,1% |
| 65- | 26,3% | 6,0% | 0,0% | 0,0% | 6,5% | 25,0% | 0,0% | 6,2% |
| Total | 1,2% | 1,2% | 0,0% | 2,6% | 1,3% | 4,4% | 3,7% | 1,3% |

*Table A1:13. Source: compilation by Patrick Nylund of data from Statistics Finland*

# Appendix 2: Descriptive statistics of the probated individuals

## OVERVIEW

**Total probated individuals**

| | 1850 | 1875 | 1900 | Total |
|---|---|---|---|---|
| **Used in the study** | 89 | 167 | 277 | 533 |
| **Outliers** | 5 | 16 | 16 | 37 |
| **Total** | 94 | 183 | 293 | **570** |

*Table A2:1. Source: compilation of probate record data*

As mentioned on page 23, 37 individuals were discarded from the study for not being representative, as I had not found their age at death, or they had died much earlier than the studied years. Much earlier is defined as more than 4 years prior to the studied year.

**Probated individuals - excluding outliers**

| Age / Year | 1850 | 1875 | 1900 | Total |
|---|---|---|---|---|
| 15-19 | 1 | 3 | 0 | 4 |
| 20-34 | 20 | 41 | 49 | 110 |
| 35-49 | 40 | 44 | 88 | 172 |
| 50-64 | 23 | 43 | 72 | 138 |
| 65- | 5 | 36 | 68 | 109 |
| **Total** | 89 | 167 | 277 | 533 |

*Table A2:2. Source: compilation of probate record data*

## PROBATION RATIOS

**Probated individuals**

| Age / Year | 1850 | 1875 | 1900 |
|---|---|---|---|
| 15-19 | 1 | 3 | 0 |
| 20-34 | 20 | 41 | 49 |
| 35-49 | 40 | 44 | 88 |
| 50-64 | 23 | 43 | 72 |
| 65- | 5 | 36 | 68 |
| Outliers | 5 | 16 | 16 |
| Total | 94 | 183 | 293 |

*Table A2:3. Source: compilation of probate record data and unpublished mortality statistics from Statistics Finland.*

**Probation rates (% of total deceased)**

| Age / Year | 1850 | 1875 | 1900 |
|---|---|---|---|
| 15-19 | 3,8% | 18,8% | 0,0% |
| 20-34 | 12,1% | 33,3% | 23,1% |
| 35-49 | 25,3% | 38,9% | 42,9% |
| 50-64 | 31,2% | 45,3% | 34,8% |
| 65- | 10,8% | 42,9% | 34,7% |
| Outliers | | | |
| **Total** | 20,0% | 42,5% | 33,8% |

*Table A2:4. Source: compilation of probate record data and unpublished mortality statistics from Statistics Finland.*

## SAVERS VS PAUPERS

**Total dead aged > 15, per social class, age group & divided into savers and paupers**

| | Savers | Paupers | *Total* |
|---|---|---|---|
| **1850** | | | |
| *Working* | | | |
| 15-19 | 0 | 1 | 1 |
| 20-34 | 2 | 7 | 9 |
| 35-49 | 9 | 12 | 21 |
| 50-64 | 1 | 2 | 3 |
| 65- | 1 | 1 | 2 |
| Sub-total | 13 | 23 | 36 |
| *Middle* | | | |
| 15-19 | 0 | 0 | 0 |
| 20-34 | 5 | 3 | 8 |
| 35-49 | 9 | 3 | 12 |
| 50-64 | 10 | 4 | 14 |
| 65- | 0 | 1 | 1 |
| Sub-total | 24 | 11 | 35 |
| *Upper* | | | |
| 15-19 | 0 | 0 | 0 |
| 20-34 | 2 | 1 | 3 |
| 35-49 | 3 | 4 | 7 |
| 50-64 | 4 | 2 | 6 |
| 65- | 1 | 1 | 2 |
| Sub-total | 10 | 8 | 18 |
| *Total* | 47 | 42 | **89** |

| | Savers | Paupers | *Total* |
|---|---|---|---|
| **1875** | | | |
| *Working* | | | |
| 15-19 | 1 | 0 | 1 |
| 20-34 | 5 | 18 | 23 |
| 35-49 | 6 | 19 | 25 |
| 50-64 | 9 | 6 | 15 |
| 65- | 2 | 1 | 3 |
| Sub-total | 23 | 44 | 67 |
| *Middle* | | | |
| 15-19 | 1 | 0 | 1 |
| 20-34 | 8 | 4 | 12 |
| 35-49 | 9 | 6 | 15 |
| 50-64 | 12 | 7 | 19 |
| 65- | 11 | 3 | 14 |
| Sub-total | 41 | 20 | 61 |
| *Upper* | | | |
| 15-19 | 1 | 0 | 1 |
| 20-34 | 4 | 6 | 10 |
| 35-49 | 7 | 1 | 8 |
| 50-64 | 7 | 2 | 9 |
| 65- | 18 | 1 | 19 |
| Sub-total | 37 | 10 | 47 |
| *Total* | 101 | 74 | **175** |

*Table A2:5-6. Source: segmentation of probate record data based on the selected poverty thresholds*

| | Savers | Paupers | *Total* |
|---|---|---|---|
| **1900** | | | |
| *Working* | | | |
| 15-19 | 0 | 0 | 0 |
| 20-34 | 6 | 22 | 28 |
| 35-49 | 15 | 36 | 51 |
| 50-64 | 10 | 21 | 31 |
| 65- | 10 | 7 | 17 |
| Sub-total | 41 | 86 | 127 |
| *Middle* | | | |
| 15-19 | 0 | 0 | 0 |
| 20-34 | 8 | 3 | 11 |
| 35-49 | 16 | 10 | 26 |
| 50-64 | 15 | 8 | 23 |
| 65- | 18 | 6 | 24 |
| Sub-total | 57 | 27 | 84 |
| *Upper* | | | |
| 15-19 | 0 | 0 | 0 |
| 20-34 | 6 | 5 | 11 |
| 35-49 | 9 | 3 | 12 |
| 50-64 | 17 | 1 | 18 |
| 65- | 23 | 4 | 27 |
| Sub-total | 55 | 13 | 68 |
| *Total* | 153 | 126 | **279** |

*Table A2:7. Source: segmentation by of probate record data based on the selected poverty thresholds*

## Appendix 3: Financial institutions and instruments

This data collected in this study shows that the citizens of Helsinki had access to a broad range of financial institutions to lend to and borrow from, as well as financial instruments to invest in. Except mutual funds, hedge funds and derivatives – all creations of the modern sophisticated financial system – all kinds of financial instruments were gradually made available by 1900.

The list of financial instruments and institutions used by the deceased during the period are broken down as follows: private promissory notes; three charity funds; two "trade union" pensions funds; pensions payments[86]; two central banks[87]; eight saving banks; two mortgage banks; six commercial banks[88]; three fire insurance companies[89]; nine life insurance companies; 17 state and municipal bonds; 4 corporate bonds (including Nokia); and 98 shares[90].

A fraction of these saving alternatives – but none of the debt - were foreign, such as Russian state and municipal bonds, and Swedish and British life insurance policies. All shares held were domestic, bar two British shares held by a Finnish merchant who died in London in 1900.

Lending by the probated individuals to foreigners was probably – just as today – difficult due to agency problems, and a lower transparency of the borrowers' credit worthiness vis-à-vis domestic borrowers. Holding foreign state and municipal assets, as well as policies from well-known and trustworthy foreign insurance companies, was however arguably regarded as more safe than putting trust in less well-known and monitorable foreign shares. Other reasons for not holding foreign shares may have been a lack of access to foreign stock markets, due to regulation or high transaction costs. As far as raising debt is concerned, the same logic can be applied to private individuals in Helsinki: foreigners could not assess their credit risk, as well as monitoring potential credits to them.

[86] Mainly for high ranking civil servants judging by the collected probate material.
[87] Bank of Finland and Bank of Sweden. Swedish currency was used in parallel with the Russian rouble - despite Finland being severed from Sweden already in 1809 - until Finland's currency reform in 1840, when the gold rouble became the only means of payment.
[88] One of them, Maanviljelys ja Teollisuus Pankki (Jordbruks och Industri Banken i Finland), went bankrupt in 1900 due to fraud, i.e. during the last year of this study.
[89] Whereof two were mutually-owned by Finnish cities, and only borrowed from Finnish households, but did not lend money to them.
[90] In terms of value, investments in shares were mainly made in a limited number of banks and shipping companies.

# Appendix 4: Social group classification according to profession

| Title (swedish) | Title (English) | Social class |
|---|---|---|
| Arbetare / Arbetskarl / Dräng | Worker | Lower |
| Arbetarhustru / Arbetskarlshustru / Fabriksarbetarhustru | Worker's wife | Lower |
| Arbetskarl dotter | Worker's daughter | Lower |
| Arbetskarlsänka | Worker's widow | Lower |
| Bergborrare | Rock-driller | Lower |
| Boktryckerifaktor | Foreman at a printing works | Lower |
| Dränghustru / Bryggeridräng hustru / Senatsdrängshustru | Man servant's wife | Lower |
| Elektrisk montör | Electrician | Lower |
| Fd Jordbrukare / Fd Lantbrukare | Peasant | Lower |
| Filarehustru | Filer's wife | Lower |
| Fiskare | Fisherman | Lower |
| Fiskarhustru | Fisherman's wife | Lower |
| Fångknekt | Jailor | Lower |
| Fångvaktarfru / Fångvaktarhustru | Jailor's wife | Lower |
| Förman | Foreman | Lower |
| Förmansdotter | Foreman's daughter | Lower |
| Förmanshustru / Drängfogdehustru | Foreman's wife | Lower |
| Förmanssonshustru | Foreman's son's wife | Lower |
| Garvaregesällshustru | Journeyman tanner's wife | Lower |
| Gipsarbetare | Plaster worker | Lower |
| Gjutarhustru | Caster's wife | Lower |
| Hushållerska / Hushållerska och borgaredotter / Spishållerska | Housekeeper | Lower |
| hyrkusk / Hyrkuskdräng / Kusk / Lastkusk | horse-carriage driver | Lower |
| Hyrkuskenka | Horse-carriage driver's widow | Lower |
| Hyrkuskshustru | horse-carriage driver's wife | Lower |
| Järnsvarvarhustru | Iron turner's wife | Lower |
| Järnvägsbromsare / Bromsare | Railway-brakesman | Lower |
| Järnvägsbromsarehustru | Railway-brakesman's wife | Lower |
| Kakelugnsmakaregesäll | Journeyman stovemaker | Lower |
| Kopparslagargesällshustru | Journeyman coppersmith | Lower |
| Kosthållare | Butler | Lower |
| Kypare | Waiter | Lower |
| Lokomotivförarhustu | Train driver's wife | Lower |
| Lykttändarhustru | Lam lighter's wife | Lower |
| Maskinist | Steamship engine mechanic | Lower |
| Maskinisthustru | Steamship engine mechanic's wife | Lower |
| Matros / Sjöman | Sailor | Lower |
| Matroshustru / Matroshustru (i finska marinen) | navy sailor's wife | Lower |
| Montörshustru | Electrician's wife | Lower |
| Murare | Brick-layer | Lower |
| Murarehustru | Brick-layer's wife | Lower |
| Murargesällhustru | apprentice brick-layer's wife | Lower |
| Murarlärling / Murargesäll | Apprentice brick-layer | Lower |
| Målare (i en fabrik) | Factory painter | Lower |
| Målargesäll / Målargesäll (Målarmästare according to estate) | Journeyman painter | Lower |
| Målarhustru | Painter's wife | Lower |
| Nattvakt | Night watchman | Lower |
| Parmmätarhustru | Hay measurer's wife | Lower |
| Postiljon / Extra Postiljon / Fd Postiljon | Postman | Lower |
| Postiljonsdotter/Fotograf | Postman's daughter | Lower |
| Postiljonsänka | Postman's widow | Lower |
| Rusthållardotter | Farmowner's daughter | Lower |
| Rusthållaränka | Farmowner's widow | Lower |
| Rörläggarhustru | Plumber's wife | Lower |
| Sadelmakargesällen | Apprentice sadelmaker / saddler | Lower |
| Silverarbetare | Silver craftsman | Lower |
| Sjuksköterska | Nurse | Lower |
| Sjöförmannen | Sea foreman | Lower |
| Sjöförmansänka | sea foreman's widow | Lower |
| Sjöman / kofferdiesjöman | sailor | Lower |
| Sjömanshustru | sailor's wife | Lower |
| Skarpskytt / Fd Gardist / Fd signalist | Soldier | Lower |
| Skarpskytte hustru / Fd gardessoldatshustru | Soldier's wife | Lower |
| Skomakargesäll | Apprentice shoemaker | Lower |
| Skomakargesällshustru | Apprentice shoemaker's wife | Lower |
| Skräddargesäll | Apprentice tailor | Lower |
| Smedgesäll | Apprentice blacksmith | Lower |
| Smedlärlingshustru | Apprentice blacksmith's wife | Lower |
| Snickaregesällänka | Carpenter's widow | Lower |
| Snickarlärling | Apprentice carpenter | Lower |
| Soldatänka | Soldier's widow | Lower |
| Sotareänka | Chimney-sweeper's widow | Lower |
| Stadsbarnmorska / Barnmorska | Midwife | Lower |
| Stenarbetarhustru / Stenhuggarhustru | Stone worker's wife | Lower |
| Stentryckeriarbetare | Printing worker | Lower |
| Sågarbetarhustru | Sawyer's wife | Lower |
| Sömmerska | Seamstress | Lower |
| Tapetarbetarhustru | Upholstery worker's wife | Lower |
| Timmerman / Snickare / snickargesäll / Snickeriarbetare / Timmerman, Gårdsägare | Carpenter | Lower |
| Timmermansdotter | Carpenter's daughter | Lower |
| Timmermanshustru | Carpenter's wife | Lower |
| Timmermansson | Carpenter's son | Lower |
| Timmermansänka | Carpenter's widow | Lower |
| Tjänarinna / Fd Tjänarinna / Tjänstejungfru | Maid | Lower |
| Torpare | Crofter | Lower |
| Vakmästarhustru | Genitor's wife | Lower |
| Vaktmästare / Universitetspedellen / Kursor vid Universitetet | Genitor | Lower |
| Vaktmästaränka | Genitor's widow | Lower |

*Table A4:1. Source: compilation of professions in probate records. Translations from both physical and online dictionaries.*

| Title (swedish) | Title (English) | Social class |
|---|---|---|
| Avskedad underofficer | Retired non-commisioned officer | Middle |
| Bagarmästare | Master baker | Middle |
| Bagarmästarhustru | Master baker's wife | Middle |
| Bleckslagarmästare | Master Iron plater | Middle |
| Bläckslagaränka | Iron plater's widow | Middle |
| Bokbindaränka | Bookbinder's wife | Middle |
| Bokförarhustru | Bookkeeper's wife | Middle |
| Boktryckeri Konstförvanten | Typesetter at a printing works | Middle |
| Borgare | Burgher | Middle |
| Borgaränka | Burgher's widow | Middle |
| Borgmästardotter | Mayor's daughter | Middle |
| Brandmäster änka | Chief of the fire brigade's widow | Middle |
| Byggmästar hustru | Master builder's wife | Middle |
| Börsmäklare | Stock exchange trader | Middle |
| Cigarrverkmästaren / Verkmästare | Factory general manager | Middle |
| Dekorationsmålare | Artist (painter) | Middle |
| Fd Fabrikant | Factory owner / Manufacturer | Middle |
| Fd Fältväbel / Fd underofficer | Non-commisioned officer | Middle |
| Fd Fältväbelshustru / Fd Underofficershustru | Non-commisioned officer's wife | Middle |
| Fd Garvare | Tanner | Middle |
| Fiskhandlarhustru | Fishmonger's wife | Middle |
| Fiskköpare | Fishmonger | Middle |
| Folkskolelärare | School master | Middle |
| Folkskolelärarinna / Skollärarinna | School mistress | Middle |
| Fotograf | Photographer | Middle |
| Fältväbelsänka / Underofficersänka / Sergeantsänka/underofficersänka | Non-commisioned officer's widow | Middle |
| Färgarmästare | Master dyer | Middle |
| Gatläggare | Road construction entrepreneur | Middle |
| Glasmästarhustru | Glazier's wife | Middle |
| Grosshandlare | Wholesale trader | Middle |
| Guldsmedsmästare | Master goldsmith | Middle |
| Guldsmedsänka | Goldsmith's widow | Middle |
| Gårdsägare / Villaägare | House owner | Middle |
| Gårdsägarhustru | House owner's wife | Middle |
| Gårdsägarinna | House owner (woman) | Middle |
| Handelsbokhållare | Merchant's bookkeeper | Middle |
| Handlande | Merchant | Middle |
| Handlandeenka | Merchant's widow | Middle |
| Handlandehustru / Fd Handlandehustru | Merchant's wife | Middle |
| Kattuns Tryckare | Cotton cloth factory owner | Middle |
| Kofferdie Kapten hustru | Sea captain's wife | Middle |
| Kofferdiekapten / Sjökapten / Skeppare | Sea captain | Middle |
| Kommerserådshustru | Wife of a merchant with an Honorary title | Middle |
| Kontorist / Bokförare | Office clerk / Bookkeeper | Middle |
| Kontorsföreståndare vid Frenckells boktryckeri, fd studerande | General Manager of a printing house / book printing works | Middle |
| Kopparslagarhustru | Coppersmith's wife | Middle |
| Korkskärarhustru | Corkcutter's wife | Middle |
| Kronolänsmansänka / Poliskonstapelsänka | Police Constable's widow | Middle |
| Kronomätar änka | Middle ranking civil servant's wife? | Middle |
| Kvartersmästarhustru | Quartermaster's wife | Middle |
| Landsgewaldiger | Rural police commissioner / Police captain | Middle |
| Lanthandlaränka | Country shopkeeper's widow | Middle |
| Maskinistmästare | Master steamship mechanic's wife | Middle |
| Matvaruhandlerska | Provisions / victuals merchant (female) | Middle |
| Målarmästare | Master painter | Middle |
| Målarmästarhustru | Master painter's wife | Middle |
| Organist, Sånglärare | Organist / Songteacher | Middle |
| Organistänka | Organist's widow | Middle |
| Plåtslagaremästare | Iron-plate master | Middle |
| Polisinspektör Kaptens hustru / Polisöverkonstapel hustru | Police captain's wife | Middle |
| Poliskonstapel / Stadsbetjänt | Police Constable | Middle |
| Poliskonstapelshustru / Politiekarlshustru | Police Constable's wife | Middle |
| Restauratör | Restaurant owner | Middle |
| Rörmästare | Master plumber | Middle |
| Sadelmakare | Sadelmaker | Middle |
| Sadelmakarmästaränka | Saddle maker's widow | Middle |
| Sjökaptensänka / Skeppareänka | Sea Captain's widow | Middle |
| Sjötullsuppsyningsman | Customs supervisor /inspector | Middle |
| Sjötulluppsyningsmansdotter | Customs supervisor /inspector's daughter | Middle |
| Skeppsbyggmästarhustru | Master shipsbuilder | Middle |
| Skomakararbetarhustru / Skomakarhustru | Shoemaker's wife | Middle |
| Skomakardotter | Shoemaker's daughter | Middle |
| Skomakare / Skomakeriarbetare | Shoemaker | Middle |
| Skomakarmästaränka | Master shoemaker's widow | Middle |
| Skomakaränka | Shoemaker's widow | Middle |
| Skorstensfejarmästarhustru | Master chimney sweeper's wife | Middle |
| Skräddarmästare | Master tailor | Middle |
| Skräddarmästarhustru | Master tailor's wife | Middle |
| Skräddarmästaränka | Master tailor's widow | Middle |
| Slaktarmästare / Slakteri näringsidkare | Master butcher | Middle |
| Smedhustru | Blacksmith's wife | Middle |
| Sockerbruksmästaränka / Verkmästaränka | Factory owner's widow | Middle |
| Stationsinspektorshustru | Railway station-master's wife | Middle |
| Styrman | First mate | Middle |
| Tapetserare | Upholsterer | Middle |
| Tapetserarhustru | Upholsterer's wife | Middle |
| Torghandlare | Market salesman | Middle |
| Trädgårdsmästare | Gardener | Middle |
| Tulltjänsteman | Customs official | Middle |
| Tändsticksfabrikanten | Match factory owner | Middle |
| Urmakarmästare | Master watchmaker | Middle |
| Vagnmakarmästarhustru | Master carriage maker | Middle |
| Viktualiehandlare / Viktualiehandlande (vid Sveaborg?) | Provisions / victuals merchant | Middle |
| Viktualiehandlaränka | Provisions / victuals merchant's widow | Middle |

*Table A4:2. Source: compilation of professions in probate records. Translations from both physical and online dictionaries.*

| Title (swedish) | Title (English) | Social class |
|---|---|---|
| Adjoint hos Direktören för Lots och Fyrinrättningen i Finland, Överste och Riddare | Assistant Director of Finland's Pilot & Lighthouse Authority | Upper |
| Advokat- & Vicehäradshövdingshustru | District / Assize-court assistant judge's wife | Upper |
| Arkitekt / Ritare | Architect | Upper |
| Avskedad löjtnants hustru | Retired lieutenant's wife | Upper |
| Bankdirektörerska | Bank Director's wife | Upper |
| Bankdirektörsänka | Bank Director's widow | Upper |
| Bergskommissarie-, Bergmästare-, Filosofiedoktoränka | Senior civil servant's widow | Upper |
| Biträdande Kamrer vid Överstyrelsen för väg och kommunikationer | Assistant accountant at the Ministry of Transport | Upper |
| Contreamiral | Rear Admiral | Upper |
| Direktören i Finlands Statskontor, Kammarjunkare | Director of Finland's State Treasury | Upper |
| Doktorshustru | Doctor's wife | Upper |
| Dotter till Lektor vid Helsingfors Universitet | University lecturer's daughter | Upper |
| Enkebiskopinna | Bishop's widow | Upper |
| Enkedoktorinna | Doctor's widow | Upper |
| Enkefriherinna | Baron's widow | Upper |
| Enkegeneralska & Friherinna | General's widow | Upper |
| Enkerektorska | Headmaster's widow | Upper |
| Fd Bankkommisarien | Director of the Bank of Finland | Upper |
| Fd kamreraren i Portdirektionen | Accountant at Helsinki's Port Authority | Upper |
| Fd Lantkamrerare | County head clerk / accountant | Upper |
| Fd revisor / Förste Revisor / Kamrer / Revisor | Auditor / Accountant | Upper |
| Fd tullförvaltare, Hovråd, Riddare och Friherre | Customs collector / surveyor | Upper |
| Filosofie Magister | Holder of a Master of Science degree | Upper |
| Fröken | Miss / Demoiselle | Upper |
| Fältskärshustru | Army surgeon's wife | Upper |
| Föreståndare för Tullstyrelsens statistiska avdelning, Vice-Häradshövding, | Head of the Custom Authority's statistical department | Upper |
| Förste Kamrer i Finlands Statskontor, Hovråd | First accountant at Finland's State Treasury | Upper |
| Förste konduktören vid intendentskontorets änka | Head architect at the public buildings authority's widow | Upper |
| Förste stadsfiskalen, Guvernementssekreterare | Senior civil servant | Upper |
| Generalmajorska | Major-General's wife | Upper |
| Generalpostdirektörerska | Director of Finnish Postal Services' wife | Upper |
| Hovrådinna och Riddare hustru | Wife of a civil servant with an Honorary title | Upper |
| Hovrådsdotter | Daughter of a civil servant with an Honorary title | Upper |
| Hovrättsauskultant | Assize-court trainee | Upper |
| Hustru till Adjoint hos Direktören för Lots och Fyrinrättningen i Finland, Överste och Riddare | Wife of the Assistant Director of Finland's Pilot & Lighthouse Authority | Upper |
| Häradshövding | District / Assize-court judge | Upper |
| Häradsskrivaränka | District / Assize-court clerk's widow | Upper |
| Ingenjör / Ingenjör vid General Lantmäterikontoret / Civilingeniör | Engineer | Upper |
| Ingenjörshustru | Engineer's wife | Upper |
| Ingenjörsänka | Engineer's widow | Upper |
| Justitierådmanshustru | Wife of a civil servant with an Honorary title | Upper |
| Kammarförvandtsänka | Assistant Chief Accountant's wife | Upper |
| Kanslíråd | Civil servant with an Honorary title | Upper |
| Kapten i Gardets hustru | Captain's wife | Upper |
| Kapten vid Skarpskyttebataljon, Riddare / Stabskapten / Kapten / Kaptenlöjtnant | Captain | Upper |
| Kaptens änka | Captain's widow | Upper |
| Kaptensdotter | Captain's daughter | Upper |
| Kassör | Treasurer | Upper |
| Kollegie Assessors och Riddarehustru / Kollegiiassessorshustru | Deputy judge's wife | Upper |
| Kollegieregistrator, tjänsteman vid Generalguvernörskansliet / Registrator / Aktuarie | Ministry registrar | Upper |
| Kollegieråds änka | Widow of a civil servant with an Honorary title | Upper |
| Kollegiiassessor | Deputy judge | Upper |
| Kopisten i Prokurators-Expeditionen vid Kejserliga Senaten för Finland | Senate copist / transcriber | Upper |
| Kronofogdeänka | County Police Commisioner's widow | Upper |
| Kyrkoherdeänka | Vicar's widow | Upper |
| Kyrkosysslomansänka | Church treasurer's widow | Upper |
| Lagman | Chief judge of the District Court | Upper |
| Lagmansdotter | Chief judge's daughter | Upper |
| Landssekreterare | County Secretary | Upper |
| Lanthushållare | Country squire | Upper |
| Ledamot i Överkrigsdomstolen, Överste & Riddare | Member of the military supreme court | Upper |
| Lektor vid Universitetet i det engelska språket / Lektor | University lecturer | Upper |
| Länsarkitektsänka | County Architect's widow | Upper |
| Medecine- & Kirurgiedoktor / Filosofie magister, Medecine & Kirurgie doktor | Surgeon | Upper |
| Musikdirektör & Klockare vid Helsingfors svensk-finska församling | Musical director at a parrish / Cantor | Upper |
| Pastorsadjunkt | Assistant vicar | Upper |
| Pastorshustru | Vicar's wife | Upper |
| Postexpeditörs- och Riddarhustru | Head of the Finnish postal services' wife | Upper |
| Professorshustru / Professor-, Philosophie doktor & Riddarehustru | Prefessor's wife | Upper |
| Prokurist | Managing clerk / Procuration holder | Upper |
| Prostsekreterareänka | Vicar secretary's widow | Upper |
| Protokoll sekreterare | Recording secretary | Upper |
| Protokollsekreterarhustru | Recording secretary's wife | Upper |
| Provisor/Apotekare | Pharmacist | Upper |
| Revisorsdotter | Auditor's daughter | Upper |
| Senator, Geheimeråd, Riddare | Senator | Upper |
| Senator-, Riddarhustru | Senator's wife | Upper |
| Senatorsdotter | Senator's daughter | Upper |
| Stadsfogde | County Police Commisioner | Upper |
| Statsrådinna | Wife of a civil servant with an Honorary title | Upper |
| Statsrådsdotter | Daughter of a civil servant with an Honorary title | Upper |
| Studerande / Teknologie studerande / Fd Politekniker | Student / Engineering student | Upper |
| Tandläkaränka | Dentist's widow | Upper |
| Tingskrivare | Court registrar | Upper |
| Universitets Ritlärar hustru | University teacher's wife | Upper |
| Universitetsdocenthustru / Friherinna, Docent hustru | Assistant professor's wife | Upper |
| Universitetsrektors-, doktors och riddarehustru | University headmaster's wife | Upper |
| Vice-Häradshövding | District / Assize-court assistant judge | Upper |
| Vice-Ordförande i Kejserliga Senatens Justitiedepartment, Verkliga Geheimerådet, Friherre änka | Vice-President at the Ministry of Justice | Upper |
| Välborna fröken, Majorsdotter | Major's daughter | Upper |
| Änkefrun / Enkefru | Widow | Upper |
| Överarkitekt vid överstyrelsen för allmänna byggnader i landet / Förste konduktören vid intendentskontoret | Head architect at the public buildings authority | Upper |
| Överdirektör vid Tullverket, Kollegiråd | Director of Finland's customs authority | Upper |
| Överdirektören i allmänna revisionsrätten, statsråd | Director of Finland's court of auditors | Upper |
| Överkonduktör | Senior civil servant | Upper |
| Överkontrollören vid Statsjärnvägarna, Kollegiiassessor | Senior civil servant at the Finland's state railways | Upper |
| Överläkare, Professor | Chief Doctor & Professor | Upper |
| Överste / Överste & Magasinförvaltare | Colonel | Upper |
| Överstedotter | Colonel's daughter | Upper |
| Överstelöjtnantsänka | Lieutenant-Colonel's wife | Upper |
| Övertranslator vid Kejserliga Senaten för Finland | Senior Translator | Upper |

*Table A4:3. Source: compilation of professions in probate records. Translations from both physical and online dictionaries.*