LUND UNIVERSITY
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Master programme in Economic History

Wages in comparison
Scandinavia in the early modern period: Evidence from Scania

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Abstract: This study utilizes new archival data to develop a series of wages for unskilled workers, skilled worker, and women from early modern Scania in the south of modern-day Sweden. These series are used in combination with already-published data on builders' wages in Stockholm and other European regions to further the understanding of Scandinavia's position in early modern Europe during the Little Divergence.

Evidence from real wages and the skill premium indicates that Scandinavia was part of a poor and declining periphery outside the growth centers of Europe despite its strategic location at the mouth of the Baltic, previous military success, and the early emergence of a knowledge economy. The early modern period was characterized by volatile, stagnating, and declining real wages, an instable and increasing skill premium, and segregated markets. Additionally, there is substantial evidence that women in Scania earned a fair market wage for equal work, despite being restricted in their labor market options.

Key words: Little Divergence, Sweden, Stockholm, Denmark, Scania, Scandinavia, wages, real wages, skill premium, women's relative wages, early modern era.

EKHM52
Master thesis, second year (15 credits ECTS)
June 2014
Supervisor: Mats Olsson
Examiner: Anders Nilsson

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1. Introduction

Over the past few decades Interest in living standards and economic development before the nineteenth century has grown as researches have gained increasing access to historical sources. Wage and price histories are a fundamental component of these investigations; wages are the building blocks of an economy and of economic development and provide crucial insight into the basic relationships of labor and economic development. These basic understandings that we gain from wage histories allow us to further investigate the more complex relationships of historical economies and societies.

Early modern Europe was caught between the high wage period of the fifteenth century and the very low wages of the late eighteenth century. There is continued debate surrounding what development in-between these periods meant for real living standards: rising per capita GDP gives credence to optimistic interpretations of economic development, while stagnating and falling real wages present a pessimistic picture of struggling economies (van Zanden 1999). However, what is clear is that in this period there was a profound divergence of wage growth within Europe; this Little Divergence developed as the strong North-Sea region pulled ahead, leaving the remainder of Europe as a stagnant periphery. This thesis examines wage development in Scania in the south of modern-day Sweden in combination with wages in Stockholm to assess the relative placement of wages in Scandinavia in the Little Divergence during the sixteenth to eighteenth centuries.

While there is considerable knowledge about the evolution of wages in the most developed areas such as the North Sea region, and particularly in England, there is less known about development in Europe's periphery. Scandinavia in particular is missing from the historical record; within Scandinavia's early modern development, only wage development in Stockholm has received significant attention. Because there is very little known about other parts of Scandinavia before the nineteenth century Stockholm is often used to represent Sweden and all of Scandinavia and as a proxy for Northern Europe (see van Zanden 2009). However a closer look at price levels, economic development, and the historical context of Stockholm compared with what information does exist about other regions in Scandinavia and the Baltic show that using assumptions and data from Stockholm to try to understand development elsewhere is often inappropriate.

The focus on Stockholm in previous research is part of a tendency to rely on the development of more urbanized areas to explain development in all regions. Utilizing information from a broader geographic region and from different types of economies provides a stronger understanding of Scandinavian development during the early modern era. The present study's focus on a more rural and non-commercial region is an attempt to gain a broader understanding of wage development throughout Scandinavia and the Baltic.

The aim of the study is to develop new series of wages for unskilled workers, skilled workers, and women in Scania in the early modern period in order to investigate the primary research question of whether Scandinavia developed as a part of the poor European periphery, or if its proximity to the productive and strong North Sea region allowed Scandinavia to avoid economic decline through the early modern period. This study addresses the development of wages in Scandinavia through three primary research questions:

1. Did real wages in Scania and Stockholm experience an upward or level trend like the North Sea region, or did real wage levels overall decline, as in the majority of Europe?
2. Did the skill premium in Scania and Stockholm increase, indicating growing inequality and instability in Scandinavia, or did it decrease, indicating strengthening institutions and equality?
3. To what extent did Scandinavian women participate in the extra-household labor market, and what kind of remuneration did they receive?

According to Clark (2005) and Allen (2001) both urban and rural laborers were worse off in 1800 than they had been for the previous several centuries. Söderberg (2010) has already presented this as the case in Stockholm, and the data here are in agreement. The main conclusions of this study are that real wages in both Scania and Stockholm were essentially stagnant through the seventeenth century and declined considerably through the eighteenth century, clearly indicating Scandinavia's place in the marginalized European periphery; Stockholm's and Scania's real wage developments are highly congruent with the development of real wages elsewhere in Europe, with stagnation and decline throughout the early modern era.

The skill premium in both Scania and Stockholm was volatile and higher than the European average, and was increasing through the end of the period. Both skill premiums develop counter to the development of Scanian real wages, which is in accordance with the theory that a low skill premium is connected to higher wages. The skill premium is lowest in the sixteenth century when real wages are rising, but begins to climb again through the seventeenth century when real wages in Scania drop off. This again indicates a development more similar to Southern and Eastern Europe than to North Western Europe, and a pattern of institutional instability and rising inequality throughout Scandinavia. However, significant increase in the Swedish skill premiums in the eighteenth century is somewhat surprising given the early development of literacy and the knowledge economy in Sweden during the seventeenth and eighteenth centuries (Edvinsson and Söderberg 2011b). The development of both rural real wages and the rural skill premium indicate a segmented market that begins to integrate in the second half of the eighteenth century.

This thesis also finds strong evidence that women participated in extra-household labor, likely to a greater extent than is clear from the records. Women tended to receive a wage on par with men performing the same tasks, but were not able to access more specialized tasks beyond the least skilled. These conclusions are similar to those reached by Burnette (1997) who finds that in England women and men were typically paid comparable wages when adjusted for relative productivity.

Despite Stockholm and Scania's similar levels of development the data show that the two regions did not necessarily develop together; to the contrary, the development of both real wages and the skill premium appear to have slightly negative relationships. This contrary development is strong justification for further examination of Scania's rich, yet unutilized, archival sources and for further investigation of Scandinavian wages in the early modern period in general.

2. Contribution

This thesis will examine the development of workers' wages in Scania over the course of the sixteenth to eighteenth centuries, with an emphasis on wage differences between different categories of workers. Wage development will further be assessed in both a Scandinavian and

European context to understand Scandinavia's relative development in the Little Divergence within Europe in the early modern period.

The primary contribution of this thesis is the development of new series of wage data for unskilled and skilled workers, as well as series to a more limited extent for women and rural workers in early modern Scania. This will be accomplished through the use of heretofore unutilized archival data on payments for construction work in Scania between 1517 and 1776.

This work furthers the field by contributing new quantitative data on early modern wages in Scandinavia, a region which has previously only been represented in this time period by data from Stockholm. The data also contributes to the knowledge of wage development in a less urban area, which provides a more robust and complete understanding of the development of the entire region than data from Stockholm, the largest commercial center in the region, is able to provide alone. Additionally, by utilizing several comparative methods to investigate wage development this thesis provides a fuller and more robust understanding of historical wage development than what studies in the past have presented.

3. Contextual background

3.1 The Little Divergence

The early modern period between around 1500 to the early nineteenth century is one of the most important periods of global economic development and growth. It was during this period that growth in parts of North-Western Europe accelerated, leading the region to outpace the rest of Europe. This Little Divergence within Europe is considered to be the foundation of the Great Divergence between Europe and Asia in the nineteenth century and cemented societal and economic differences that continue to today (Pomeranz 2000; Allen 2001; van Zanden 2009; Parthasarathi 2005).

During the medieval period from about 900 to 1300 economic growth had been a generally pan-European phenomenon. Europe's population grew and became more urban at the same time as real wages increased. On some level economic growth continued through the early modern era. According to Angus Maddison's figures, GDP over all of Western Europe increased by a factor of three between the years 1000 and 1820, while the leading economies in England and the Netherlands increased 4.5 times over. While Maddison's estimations may overstate the extent of pre-industrial growth, it is undeniable that growing GDP was an important European phenomenon on a macro level (Edvinsson and Söderberg 2011b).

Following the overall growth in the medieval period, the early modern era was a period of divergence and of stagnation for many parts of Europe. The North Sea region was dominated by the strength of the Low Countries and England and by successful markets in London, Antwerp, and Amsterdam. At the same time as growth was taking off in the North Sea region other parts of Europe were returning to more 'normal' levels of development, as the temporary increases in productivity and growth that had followed the destruction of the Black Death dissipated and the recovering population increased competition for finite resources. The North Sea region was able to reach a higher level of productivity and retain this growth which led to a divergence in European growth trends. By the early modern period the shift was crystallized, and between 1500 and 1800 growth was concentrated in the North

Sea region of Western Europe, while the remainder of Europe was characterized by stagnation and decline (Allen 2003; de Pleijt and van Zanden 2014).

The combination of the North Sea's continued growth combined with the rest of Europe's stagnation led to the average wage level in the North Sea region outpacing that in the rest of Europe by a factor of two by the eighteenth century. This concentration of growth led to strong increases in inequality both between regions and within economies (van Zanden 2009). The extent of this divergence and what it meant for many of the regions outside of the North Sea is still a topic of interest for many economic historians.

3.2 Sweden and Denmark

At the beginning of the fifteenth century Denmark was the dominant power in the Baltic region and in Scandinavia, with a strong navy that allowed Denmark to control and tax access to the Baltic. By the early seventeenth century a restructuring of power resulted in Sweden emerging as the dominant Baltic power, and Sweden's dominance was only strengthened by the end of the Thirty Years' War in 1648. The early modern era was one of almost continual warfare between the two Baltic kingdoms. The sixteenth century was one of particular conflict in Scania; Denmark had a series of civil wars and leadership challenges and in the 1530s Scania was in rebellion over the selection of the king and Malmo was besieged (Johannesson 1984; Scansjö 1997).

From the later part of the sixteenth century and into the early years of the eighteenth Sweden remained a strong military power, both regionally and in the context of Europe more generally, and in control of a range of territory around the perimeter of the Baltic. This period of Swedish military power saw Sweden more or less constantly at war with its Baltic neighbors and rivals, including Denmark. As a result the extent of Sweden's territorial holdings was continuously changing. In 1658 Sweden captured Scania and the regions just to the north of Scania from Denmark, regions that remain a part of Sweden today. This was an important blow to Denmark's abilities to collect income from duties on trade through the sound and by taxation of Scanian residents (Myrdal 2011).

The constant warfare throughout Scandinavia and the Baltic and the necessity of maintaining territories took a considerable toll on the finances of the Swedish state, which were never particularly strong. Even in the middle of the seventeenth century maintenance of the military state was becoming difficult and the Swedish empire was significantly weakened; after the 1660s the military abilities of both Sweden and Denmark were depleted (Oakley 1992).

Territorial losses and military defeat after the Great Northern War in the early eighteenth century marked the end of Sweden's position as a European military power, though Sweden attempted several times throughout the eighteenth century to regain its former position. The loss of territory decreased Sweden's capacity for income, leaving the kingdom in an increasing state of indebtedness; the Crown was bankrupt, short on revenue, short on ways to create revenue, and short on ideas of how to solve their problems. Added to the lack of funds was significant financial instability; the government lacked any long-term, of even any short term, planning and recent political decisions had put it at odds with the international community (Karonen 2008).

Scania was hit particularly hard by the Danish and Swedish wars. As a result population was relatively stagnant in the plains areas, and Scania's population was fairly constant in the sixteenth and

seventeenth centuries at about 140,000, even as Sweden's population overall increased (Myrdal 2011: 104). The continuing warfare also led to a general increase of fortifications in Scania and surrounding regions. Kristian IV of Denmark devoted considerable effort to fortifying defenses against the Swedish, including the construction of Kristianopel in Blekinge, founded in 1609 and Kristianstad in in Scania in 1610. The military construction work is clear in the archival records used in this study, especially in work done renovating Malmo castle at the end of the sixteenth century.

Scania has always been dominated by agricultural production both for domestic consumption and for export. While Scania exported grain in the sixteenth century, indicating some degree of expansion, famine in 1649-1650 stopped all exports from Sweden and ushered in a period of grain imports. Famines in the 1690s continued the period of decline. Scania and the other regions that were acquired by Sweden after 1658 were not fully integrated into other Swedish legal regulations - for example, Scania was able to continue its international cattle trade even when it was banned in the rest of Sweden (Myrdal 2011: 107)

The transition of Scania from a Danish to a Swedish possession seems to have been a relative non-event for the majority of the occupants of the region. A strong indicator of this is the indoctrination of the Swedish language which appears to have been minimally intrusive: as David Kirby puts it, "In all likelihood, the natives of [Scania] gradually came to regard Swedish as the official language corresponding to their own dialect, in much the same way as they had earlier regarded Danish." (Kirby 1990: 283).

In Sweden, Stockholm was the most important commercial city, but did not become the administrative center of Sweden until the seventeenth century after which it gained increasing prominence. Sweden was in a state of financial crisis through the eighteenth century and so Stockholm was never an opulent city. Stockholm was not as directly impacted by battle as Scania was, which likely did not increase the demand for fortification and military building as warfare did in Scania. However, Stockholm's position as a growing European capital and naval port did mean that there was considerable demand for construction and shipbuilding (Oakley 1992; Söderberg 2010).

By the end of the eighteenth century Sweden and Scandinavia were emerging as leaders in Europe's developing knowledge economy. Sweden had a remarkably high literacy rate, was the first country to hold regular censuses in the middle of the eighteenth century, and was the first country to introduce banknotes in the same century (Edvinsson and Söderberg 2011). By 1686 Sweden had already introduced pioneering laws that were aimed at increasing literacy (Baten and van Zanden 2008), and a trend of rapidly increasing book production through the early modern period, as Swedish per capita book consumption jumped from 1.1 per 1000 in 1500-49, well below the majority of Europe, to 214.1 per 1000 in 1750-99, second only to consumption in the Netherlands (de Pleijt and van Zanden 2014).

Previous investigations of Stockholm have indicated that the city did not experience strong wage growth in the early modern era; real wages were generally stagnant and the skill premium was higher than much of Europe (Söderberg 2010; van Zanden 2009). Women's wages were high in the early seventeenth century but declined significantly by the end of the century. The addition of Scanian data into this comparison provides a stronger picture of Scandinavia as a whole in this era. Real wages in parts of Scania are known to have been relatively stable in the last decades of the eighteenth century (Bengtsson and Dribe 2002) but little is known before this period. While overall

real wage levels are unlikely to be radically different in Scania than in Stockholm it is reasonable to expect differences in the growth and decline of wages and different relationships between skilled and unskilled work. While wages may not be increasing across the period it is unlikely that they were as volatile as in Scania due to Stockholm's larger geographical distance from war, established status as Sweden's largest city, and greater dependence on commerce compared to Scania's reliance on agriculture. While Scania's position at the center of many military conflicts may have made living conditions uncertain, it is also reasonable that the demand for military building would increase wages. However the general instability brought about by warfare and the change in nationality are also likely to have made life in Scania uncertain and wages inconsistent.

4. Theory

Understanding historical wages and economic performance are essential components of understanding the living standards, labor markets, and basic economic functions of societies in the past. While there are numerous difficulties associated with interpreting historical wages they are still among the best tools for understanding historical living standards. Per capita GDP is also often used in historical contexts, but wage data are typically more reliable and are often the only source of quantitative information on living standards available before the late nineteenth or early twentieth centuries (Özmucur and Pamuk 2002).

4.1 Real wages

Wages are fundamental to a household's standard of living. A decrease in real wages causes standards of living to fall both directly by lowering the purchasing power of labor, as well as indirectly by acting on non-wage sources of income. It is theoretically possible for households to maintain the same level of consumption through increasing their labor output or productivity in order to maintain the same purchasing power as previously; however, this requires a trade-off with leisure activities and non-wage sources of income, and thus also represents a decrease in the standard of living (de Vries 1994; van Zanden 1999). Rapid changes and volatility in real wages increase short-term economic stress on workers and indicate an overall reduction in living standards. Real wages in rural areas are expected to be lower than those in urban areas due to reduced access to markets, reliance on agriculture, and less well-established infrastructure and institutions (de Janvry, Murgai, and Sadoulet 2002).

Real wages often offer more regional variability, and can reflect more directly on individual experiences than per capita GDP; GDP conceals class structures and inequality, which are vital components of living standards, and using wage data generated from actual workers' wages help alleviate some of this reduction (Chor 2005). However real wages are also prone to problems; they are extremely sensitive to how consumer price indices are constructed and make strong assumptions about preferences. Real wages also lack subtlety when compared between different income groups, such as between classes or between rural and urban areas; wealthy households consume a very different basket of goods than those that can only get by at a subsistence level, and rural consumption follows a different pattern than that in urban areas. During the early modern period especially the prices for staples developed differently than the prices for luxury goods, so an index of luxury consumption would have a very different development than that for a subsistence worker (Hoffman et al 2002; van Zanden 2005; Allen 2005; Hatcher 2011).

On a more basic level, the deflation indices used to calculate real wages are often based off of incomplete data where prices for certain commodities are missing. In some instances a price index can be based on a single commodity, such as the CPI for Denmark compiled by Albidgren (2010) which relies purely on grain prices for the period 1502-1712. At other times the contents of the underlying consumption basket change because of data shortages (see Phelps-Brown and Hopkins 1956).

Additionally, real wages can sometimes be a misleading indicator of the economy overall. De Pleijt and van Zanden (2014) argue that the real wage is highly dependent on changes in labor supply. This causes problems when assessing real wages in Europe in the early modern period especially, because of the much higher real wages following the Black Death, when high death rates lowered population and led to higher real wages. This leads to falling real wages through much of the early modern period as population and wages returned to pre-plague levels despite generally rising or stagnant GDP. The influence of labor supply on real wages leads to the case of cities with significant labor scarcity commanding high real wages, as in the case of Vienna, which has one of the highest real wage levels in Allen's (2003) analysis in 1400, but is not, as De Pleijt and van Zanden (2014) point out, an area commonly associated with high economic performance in the early modern era. A similar misleading real wage arises when wages are deflated by commodities that are disproportionately cheap or expensive relative to other prices.

Furthermore, estimates of real wages do not offer complete information on total household income, the number of days worked or unemployment statistics (Söderberg 2010) and thus cannot directly inform researchers as to the true income levels in historical periods – however, this is a problem common to almost all historical wage data. Van Zanden (2005) suggests using the real wage "as an important input in the decision-making process of households which determines the choices the members of a household can make." In this context, the standard of living can be viewed as "the degree of freedom a household has in its decision-making process" and ability to substitute goods or determine consumption patterns (185). However, despite these theoretical drawbacks of real wages they remain a very valuable tool for understanding the development of changes in wages and the relative value of labor.

Real wages are calculated by deflating nominal wages by a cost of living index (COLI) a consumer price index (CPI), or the price of grain or another vital commodity. While a COLI and CPI are not theoretically identical – a CPI is meant to measure the change in prices and is a good measure of inflation, while a COLI is specifically meant to calculate a cost of living and is used to calculate real wages – these two methods can approximate each other, especially if the consumption basket underlying the CPI is regularly adjusted, and separate indices are chained together when the baskets change (Edvinsson and Söderberg 2010). Because the COL indices are constructed to reflect a day laborer's consumption basket, the wages of unskilled male workers are typically used to generate the real wage with separate assessments of skilled real wages (see Allen 2001).

4.2 Skill premium

Comparing just the baseline cost of subsistence living through real wage comparisons, while valuable, is not revelatory of the entire picture of wage development, particularly as inequality within European countries was increasing. This is especially true as it was the growing upper and middle

classes that were pulling ahead that so greatly impacted the changing income distribution and intra-national inequality in early modern Europe (Hoffman et al 2005).

In recent literature the skill premium has been increasingly utilized as a robust addition to measurements of both wage and economic development. At its most fundamental, the skill premium measures the difference in earnings between skilled workers and unskilled workers, but also provides strong insight into other aspects of economic development. The skill premium itself represents the compensation that skilled workers receive for several years' investment in training during which they earned little or no wage combined with a high upfront cost; Van Zanden (2009) calls the skill premium the price of the skills acquired by the 'common workman', distinct from a more 'systematic' or scientific knowledge.

The skill premium has several advantages over other indicators: first, it requires less data than a real wage series – it is based solely off of wage data, and so there is no need to include price data or for a deflator. This allows wages to be as unaltered as possible, and allows fewer opportunities for contamination by poor data or calculation errors to enter the series. Second, because the skill premium is unitless it makes cross-cultural comparisons simple and straightforward. This comparison also avoids the difficulties associated with different consumption baskets between different groups (see Hoffman et al 2002).

The level of skill premium is a function of the operation of the economy at large and can offer many insights about the level of development and strength of an economy. Fundamentally, a low skill premium is associated with higher growth and stronger economic performance.

The mechanisms though which the skill premium reflects economic development can be easily understood by an extension of a supply / demand framework: if the supply of skilled workers is high, they are less likely to be able to command a substantially higher wage than if there were few (van Zanden 2009). There are several factors that determine the supply of skilled labor through the quality of institutions. Strong institutions, especially institutions connected to training and education, make it more profitable and more possible for individuals to invest in the training that is needed to become a skilled laborer. As van Zanden (2009) puts it, "This skill premium is determined by the long-run efficiency of the system of training and education in an economy, and is therefore of fundamental importance for economic development" (147). Investment in training and education is furthermore highly connected to interest rates that link foregone earnings during periods of training to potential future earnings and low interest rates are closely linked to strong institutions. Low interest rates increase investment into human capital since there is a lower opportunity cost to investment. A greater number of people investing in human capital leads to a higher supply of skilled workers, resulting in a lower skill premium. This relationship is in line with the predictions of new growth theory which holds that human capital is the fundamental propellant of economic growth in the long term (Lucas 1988; Romer 1990; Freeman and Oostendorp 2001).

One of the simplest extensions of the skill premium is as a measurement of wage and income inequality between different classes of workers. Chor (2005) uses the skill premium as a proxy for inequality in his study of institutions and inequality in the early modern era: the higher the premium, the larger the income differences between work classes. Inequality is connected to barriers to human capital attainment which is directly linked to institutional strength; when barriers to human capital

acquisition are lower, training and skill development is open to more people. This obviously led to a greater social mobility and in turn to lower levels of inequality.

The specific institutions that control skill formation, in this case early modern craft guilds, are important determinants of the skill premium. Typically a mason or carpenter learned his skill by apprenticing himself to a master for a period of seven years (Edgren 2006). The barriers both to entry into apprenticeship and the barriers to progression from apprenticeship to a journeyman or master could be steep. High skill premiums could indicate an institutional arrangement where guilds tightly controlled entry and costs to training were prohibitive (Clark 2005).

The skill premium also reflects the degree of segmentation in the labor market. A high skill premium can reflect fragmentation of markets across space, as in a rural-urban divide, or across the markets for skilled labor versus unskilled labor (van Zanden 2009). A market that is highly segmented and unconnected to neighboring markets will not have access to as wide a variety of skilled labor, and so unmet demand allows skilled workers to command a higher price and can cause an increase in the skill premium. From a supply side, a highly segmented market is also likely to have fewer opportunities available for training or human capital development; this too will lead to a higher skill premium, as the supply of skilled labor will be smaller. When rural markets are separated from urban areas, the wage schemes remain separated and there is a gap between rural and urban wages. When the market becomes more connected, wage levels will converge and rural wages will more closely approximate urban wages (Reis 2005). Thus, we can expect more integrated labor markets to have a lower skill premium, and rural areas in general to have a higher skill premium.

Because of Stockholm's higher level of development and reliance on commerce it is reasonable to expect a lower skill premium in Stockholm than in Scania. Based on the political instability that Scandinavia suffered in the early modern period the skill premium in both regions is likely to be higher and less stable than in much of Europe. The investigation of the skill premium in Scania and Stockholm will help uncover developments in inequality in the Scandinavian context and connect it to other regions as well as help to test the strength of institutions, which is an important component of economic development. A further test of differences between skill premiums between urban and rural Scania will help uncover the degree of regional heterogeneity.

4.3 Women's wages

Though often overlooked, women's role in the labor market and women's wages are an important component of the preindustrial economy. Claudia Goldin proposes that women's labor force participation progresses with a U shape with countries' development. Less-developed economies have high female labor force participation which declines with economic development as proto-industry emerges. As an economy develops a strong white-collar sector women's participation will increase again. When women are not educated their only source of income is manual labor; when they are more educated and society more developed they are able to partake in white collar work. As a result women are typically much more represented in the labor force of poorer economies, especially those dominated by agriculture. Often women's work is unpaid work on family farms or household business, though at times women also partake in paid work (Goldin 1994). In the context of Goldin's theory, we should expect a relatively high representation of women in the workforce overall; however it is possible that women will not be represented as frequently in this data due to its focus on construction, rather than agricultural labor.

It is also probable that women's work outside the home differed by marital status. Unmarried women were more likely to take year-long employment where they 'lived in' with their employers and received room and board, whereas married women were only able to access more casual day work (Humphries and Weisdorf 2013); in this case this data is likely to capture predominantly married women's work. While it is not possible in this context to compare compensation for the different types of employment, an examination women's presence in the data and of relative wages can give some indication of women's different wage-earning potential.

5. **Previous research**.

5.1 Real wages

The majority of preindustrial wage investigations have examined the wages of builders (Allen 2001). Builders are more likely to be paid a monetary wage and have that wage recorded, as opposed to peasants who often perform work on an exchange basis for their neighbors. Building methods and technology were fairly consistent across Europe and across time which means that the tasks performed are relatively similar in different regions and did not undergo systematic technological change that would impact productivity or the task that is reflected in payment. This absence of technological change and regional differences in job responsibilities, as well as straightforward cash payment, make building wages a valuable tool for international and historical comparison (Özmucur and Pamuk 2002).

Allen (2001) is the classic study on early modern European real wages. Allen conducts a comprehensive investigation of European real wages in the early modern era between 1500 and 1914 using wages from builders from a selection of European cities. Though Allen does not directly address a skill premium, he does separately compile wages for unskilled and skilled builders. The trends that he describes have in general been confirmed by other economic historians and are consistent with the development of the Little Divergence discussed above. Allen draws a primary distinction between the North Sea region, mainly the Netherlands and England, and the rest of Europe. The North Sea region experienced generally increasing real wages during the early modern period while the majority of continental Europe, especially the south and the east, was characterized by declining real wages and stagnation. Outside of the North Sea region real wages declined substantially between 1500 and 1700, falling by half in many cities (Milan, Naples, Valencia, Strasbourg, Munich, Vienna, Krakow, Lwow). Capital cities fared somewhat better, but there was still no real growth or development – as Allen puts it, "the nineteenth century pattern of relative prosperity in England and the Low Countries matched by wretched poverty in the rest of the continent was established by 1750" (430). Many authors have written subsequent papers to challenge the level of real wages that Allen presents or to develop comparable series for cities that were not in Allen's original paper (for example Ucendo and García 2014 and builders' wage in Madrid). This has added to the growing richness of highly comparable real wage data available on early modern European cities.

This thesis does not address GDP per capita in Scandinavia, but GDP divergence and the relationship between GDP and real wages remain an important component of the Little Divergence. Per capita GDP follows similar trends to real wages in several ways; the early modern period is characterized by upward growth trends in the North Sea region accompanied by poor performance throughout the rest of Europe. The large majority of Western Europe had relatively high levels of per capita GDP at

the end of the medieval period and following the Black Death, though Sweden is a possible exception (Bolt and van Zanden 2013). Economic development measured by real wages gives a different conclusion than estimations using per capita GDP. The 'early modem European paradox' saw long term rising GDP and long term declines in real wages, connected to Smithian growth, growing urbanization and trade, and the advent of protoindustrialization. This contradiction in development has been explained by de Vries (1994) by the 'industrious revolution', the trend whereby workers increased their working hours in order to compensate for lower real wages and to enable them to increase their luxury consumption. However, an assessment of the changes in working hours is outside the scope of this project.

Growing levels of inequality were a characteristic aspect of the Little Divergence; this phenomenon has already been shown between countries as the North Sea region pulled ahead of other European economies, but inequality was also increasing within countries, especially as better-off socioeconomic groups pulled further ahead of the poorest. The trend of a growing European economy overall was concomitant with increasing differences in income and inequality (Saito 2005).

Allen does not address Sweden or any part of Scandinavia in his 2001 paper. However, there are several studies that use the same type of data and methods in a Swedish context, though the time period is not as extensive. Jansson and Söderberg (Jansson, Palm, and Söderberg 1991) compile series of prices and wages for Stockholm from the sixteenth century until the beginning of the eighteenth century, with the primary focus on the years from 1600-1719. Wages are presented for masons, carpenters, and unskilled workers from the beginning of the sixteenth century, but these data are somewhat fragmentary. The series presents wages for women from 1600 onward along with a cost of living index. The authors find low real wages in the sixteenth century, increasing wages through the seventeenth, and declining wages again from the end of the seventeenth century and especially after the Great Nordic War in 1721.

There are few other studies on wages in Sweden, especially from before the sixteenth century. Jansson and Söderberg's wage data have been used to represent all of Sweden, and at times, represent all of Scandinavia and much of Northern Europe (see van Zanden 2009). The current Swedish CPI series from 1290 to 2008 used by the Swedish Riksbank is developed by Edvinsson and Söderberg (2010). However, these indices primarily reflect prices in Stockholm, especially for the period investigated in this study. Jörberg (1972) makes an extensive study of prices and wages throughout Sweden disaggregated by county and by commodity beginning in 1732; his work has been the foundation of much of the later work done on historical Swedish prices.

The rest of Scandinavia is even less well represented with historical wages. A new project under Peter Jenssen at the University of Southern Denmark proposes to develop historical wage series for skilled and unskilled workers, as well as women, for Denmark since the seventeenth century. However this work is still in its early stages and aggregate wage data are not yet available. A CPI for Denmark exists as far back as 1502, but from the period of 1502-1712 the series rests solely on grain prices. Wage series in Norway do not exist earlier than 1726, although a CPI from as early as 1516 is available from Norges Bank. The present study is thus an important addition to the field of knowledge in this area.

Due to the war and conflict in the sixteenth century in Scania and Scania's location outside of the North Sea center, it is reasonable to expect that real wages did not experience significant growth

through the period. However it is possible that the proximity to the Baltic and the several periods of high building demand will have kept Scanian real wages from suffering significant decline.

5.2 Skill premium

Van Zanden (2009) discusses the theoretical components of and extrapolations from the skill premium and conducts a broad overview of historical skill premium trends within Europe and global development more recently, drawing on data from Allen (2001). As with real wages, historical skill premiums are typically calculated using the wages of skilled builders such as carpenters and masons and the wages of unskilled builders.

Van Zanden's main findings are a confirmation of an inverse relationship between economic growth and the skill premium; that is, a lower skill premium is associated with stronger economic performance and stronger future growth. The inverse relationship between the skill premium and economic growth is a large component of many modern studies, like that of Kiley 1999, which directly examine the role of skilled labor demand, economic growth, and equality during the third industrial revolution in the twentieth century. The majority of these studies examine the rising inequality that the US experienced in the 1980s, following rapidly diminishing inequality in the 1970s (Krusell et al 2000; Nahuis and Smulders 2002), though some take a longer perspective at the 20th century in general (Caselli 1999; Mobius and Schoenle 2006; Mitchell 2005). However, van Zanden's work takes this into an historical and broadly comparative context.

Skill premiums in Europe develop in line with the Little Divergence, with lower levels in more economically strong areas. The skill premium in Western Europe is consistently lower than that in Southern and Central Europe from the fourteenth century through the beginning of the eighteenth century. Western Europe's skill premium experienced a steady decline from the twelfth century throughout the early modern period, while the development of the skill premium in Southern and Central European more erratic and not as low. The skill premium for all these regions range between approximately 40 and 80 throughout the sixteenth, seventeenth, and eighteenth centuries, which is the period covered in the present study. The implications from van Zanden's skill premium investigation support the findings of real wage studies, indicating growth and stabilization at the end of the middle ages, general stagnation through the early modern period, and a divergence within Europe that is cemented during the seventeenth century.

Clark (2005) finds that the rural skill premium in early modern England was generally higher than that in urban areas, though the decline over time was well in line with the urban trends. This is also in accordance with the theory which holds that skilled workers in a more isolated market are able to demand higher wages.

Because of the lack of available wage data, the data on the skill premium in Scandinavia are understandably limited. According to van Zanden's (2009) estimates, the skill premium for Stockholm is substantially above that for any other region from the sixteenth to the eighteenth century, including Eastern and Southern Europe, implying a lower development in Scandinavia than the majority of Europe. A sharp drop in the second half of the eighteenth century from the highest level in Europe to by far the lowest could reflect significant and rapid development in the underlying institutional structure and strength of Stockholm's economy; alternatively, it could indicate problems in the data.

Strong institutions have been found to have a positive impact on both skilled and unskilled wages within and outside of Europe and are associated with a low skill premium (Chor 2005). This relationship has been especially strong in Western Europe, where a network of guilds controlled skilled labor apprenticeships; van Zanden (2009) directly links the low skill premium in post-Black Death Europe to the efficiency of its institutions. A low skill premium indicates that these institutions did not erect strong barriers to entry or act as 'cartels' that restricted access to apprenticeships. This leads to more skilled laborers, a lower skill premium, and less inequality. Because of the role of guilds in determining builder's skill premiums we can expect Scandinavian skill premiums to decline in the eighteenth century as guild regulations are changed to require more inclusion (Edgren 1997).

5.3 Women's work

It is chronically difficult to study historical women's employment in the detail that researchers would like. Women's work has often been perceived as distinct from men's work in a variety of ways, many of which have led to women's work being under-recorded in the historical record. Preindustrial women's work was typically part of subsistence production and unskilled and unspecialized; it tended to be seasonal and irregular and often inconsistent, and often disappeared into the routine domestic unpaid work which women performed for their own households and families. However, it is increasingly apparent that women worked busy full-year schedules, frequently as paid workers, across different sectors and for different employers. This has been a standard system of employment for men; unskilled workers performed various jobs as they came and patched together a full year's work from different sources (Humphries and Sarasua 2012). Because the majority of unskilled work in the data analyzed in this study is short-term and unspecialized it is reasonable to expect that women participated alongside men.

One of the key questions in women's historical labor studies is to what extent women were paid differently than men. Burnette (1997) questions previous assumptions of 'customary' or non-market wages for women in industrial England and demonstrates that many wage differences can be explained by women's and men's different working patterns and work hours and by gender productivity differences. She finds strong evidence that women and men received the same payment for piece-rate work and when estimations are controlled for productivity. Though Burnette's work focuses on the Industrial Revolution in England, the principles which she investigates are extractable to preindustrial northern Europe.

Burnette (1997) finds evidence that women tended to work shorter hours than men; surveys from different locations around nineteenth century England indicate that women tended to work between eight and twelve hours, with a mean of 9.66 hours, compared to men's standard twelve hours. Women typically arrived to work later and returned home sooner in order to prepare meals and take care of family members. Assuming an equal hourly rate this difference in work hours would result in a male-female wage ratio of about 0.805. While this is outside of both the timeframe and geographical consideration of the current study, the tasks that impacted women's working hours were hardly unique to the region or time period and are likely to have impacted women in Scandinavia in the sixteenth to eighteenth centuries as well. This extendibility is further bolstered by the fact that the sources Burnette cites for this claim come from rural and agricultural contexts. Burnette does connect some of the gendered differences in productivity that lead to different historical wages directly to gender discrimination in access to human capital, as in the case of male

teachers having significantly better training than what was available to female teachers. This would be the case, too, in a situation where learning certain skills such as masonry or carpentry was not available to women or when women were blocked from accessing more specialized work tasks.

Burnette (1997) does find scattered evidence of wage discrimination, but only in industries where there was limited competition and tasks were separated by gender. Gender based wages could not last at equilibrium; women who took lower wages would either force men to also take lower wages or would edge them out of the market. Bernette further finds evidence that women were likely to be paid less when they were more frequently absent from the labor market, which is directly connected to women's role in childbirth and the period's high fertility.

Humphries and Weisdorf (2013) utilize an extensive number of sources to compile women's wage series for England, for both day labor and annual contracts. They propose that married women had a comparative labor advantage over unmarried women, because they were less constrained by the social restrictions that affected unmarried women, as well as more able to take better paying work through the connection of their husbands. Thus, unmarried women did not have financial incentives to delay marriage; instead, they had financial incentives to get married sooner.

Previous research has indicated that the dominant trend of the early modern era was the increasing divergence between the North Sea region and the remainder of Europe, with stable and growing wages in the North Sea region and falling wages in the periphery. Little information is known about Scandinavia, and what data there is comes from Stockholm. These investigations indicate that Stockholm was part of the poor periphery of Europe, with the skill premium high and real wages stagnant and declining in the seventeenth and eighteenth centuries. Women's relative wages in the building sector were relatively high in the beginning of the seventeenth century, but fell substantially by mid-century.

This thesis will expand the data on early modern wages in Scandinavia to develop a more thorough understanding of Scandinavia's place during the Little Divergence. It will also expand the body of data on women's wages and women's employment to develop the understanding of women's place in the early modern Scandinavian economy.

6. Data

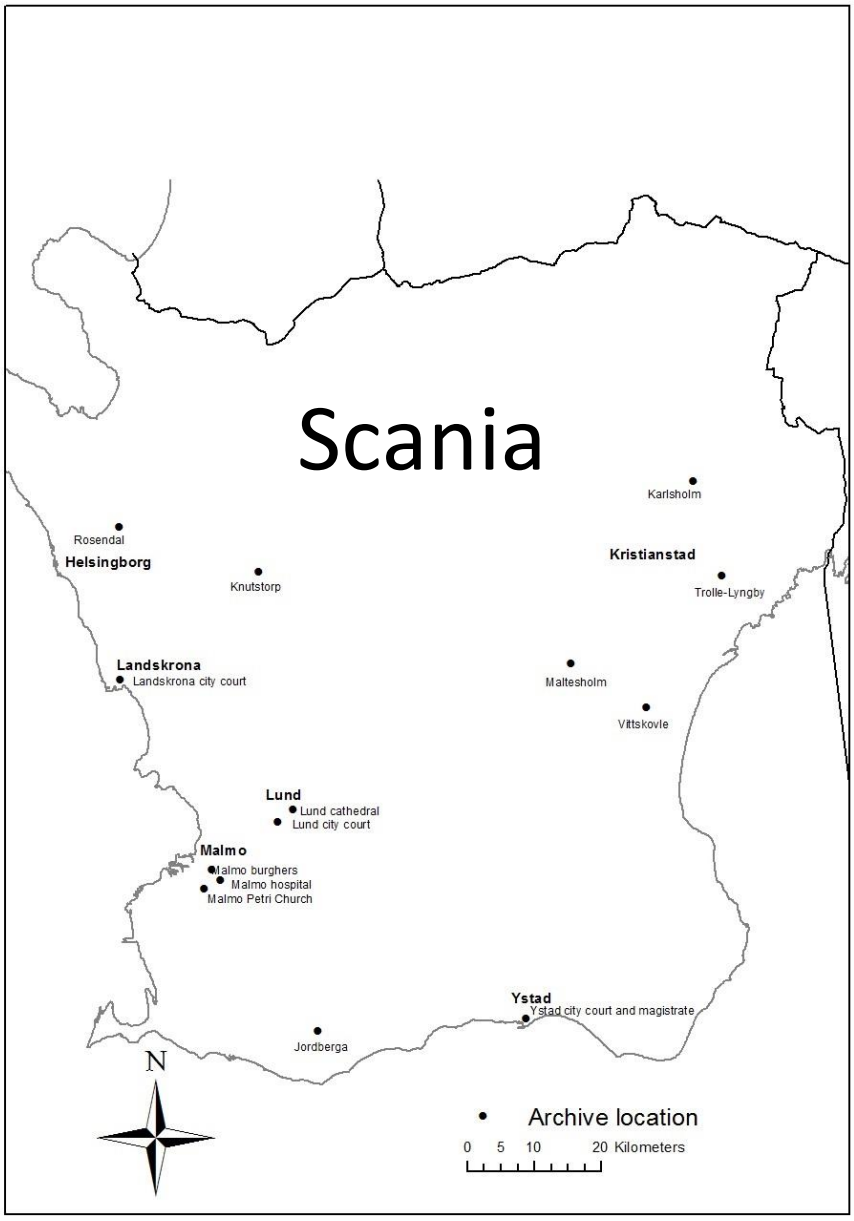
6.1 Sources

The primary data for this study comes from fifteen archives around the Scanian region in modern-day southern Sweden (figure 6.1). The data was collected within the research project "Growth and inequality before the industrial revolution: Scania 1650 to 1850", funded by the Swedish Research Council. The data come from a selection of different kinds of archives; some are relatively urban areas, such as Malmo burghers or Malmo hospital, whereas some are rural manor houses, such as Jordberga. The final sample of data used in this thesis contains over 7500 observations documenting payment for approximately 14,900 days' work made to construction workers from 1517 to 1776. This is restricted from an original sample of over 8700 observations, but due to deficiencies in the data (see cf. section 6.1.5) over 1000 observations were not included in the final sample.

Data entries contain information on the occupation of the worker, the task the worker completed, the number of days worked and number of individuals represented in each payment, the amount paid, and the year in which the payment was made. Many entries also include the name of the individual completing the work. Some entries further include a specific date, either numerically or in reference to a holiday; however this information will not be utilized in the present study.

It is important to note the distribution of the data from the sources (table 6.1). The vast majority of observations are from Malmo and the surrounding region. While Malmo was not the largest Scandinavian urban center in the sixteenth and seventeenth centuries it was one of the larger urban areas in eastern Denmark – later southern Sweden – and Malmo County was one of the most

Figure 6.1: Map of archive locations in Scania



Source: author's own map. With Fredrik Bergenfeldt.

populated counties. The concentration of Scanian observations from in and around Malmo is a logical progression from the demographic distribution

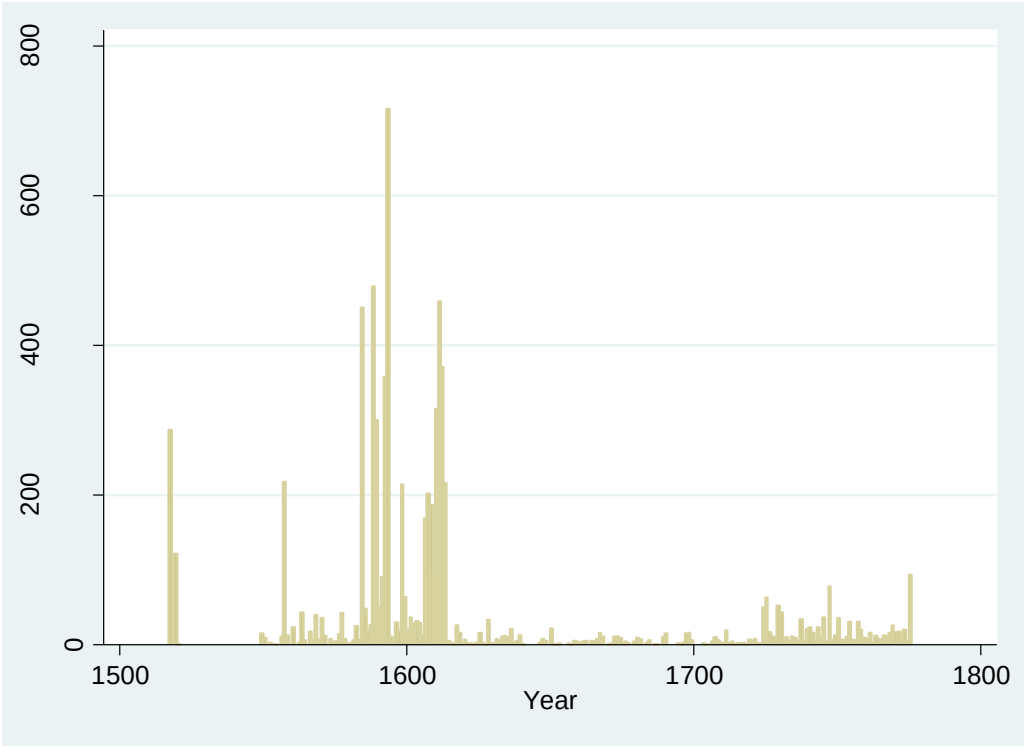
Table 6.1: Data sources and distributions

Archive name	Number of wage observations	Percent of sample	Date range	Percentage of skilled workers	Women (frequency)	Type of archive
Jordberga	44	0.59	1756-1772	11.4	-	Manor
Karsholm	1	0.01	1707	0.00	-	Manor
Knutstorp	19	0.25	1771-1776	68.4	-	Manor
Landskrona city court	190	2.53	1699-1776	20.0	-	City records
Lund cathedral	261	3.48	1683-1776	21.5	-	Urban church
Lund city court	98	1.31	1674-1757	0.00		City records
Malmo St. Petri Church	722	9.62	1556-1681	30.5	-	Urban church
Malmo burghers	4805	64.1	1517-1699	18.5	161	City records
Malmo hospital	760	10.13	1549-1675	46.6	7	City records
Maltesholm	13	0.22	1738-1770	23.1	-	Manor
Rosendal	1	0.01	1673	100.0	-	Manor
Trolle Ljungby	213	2.50	1721-1768	3.29	1	Manor
Vittskövle	296	2.84	1695-1766	4.73	3	Manor
Ystad city court and magistrate	78	1.04	1633-1698	70.5	-	City records
Total	7505	100.0	1517-1776	22.1	172	

Just as the data are concentrated from a particular region and a few large archives, so are they much more plentiful in certain years than others (figure 6.2). There are several instances of multiple observations from a large project.; for example in 1517 we find 271 observations of masons working on the wall at St. Gertrude's yard (Arbetat på muren vid S:t Gertruds gård) from the Malmo burghers archive, and over 400 entries in 1584 from the Malmo hospital archive for work done on the foundation of the hospital's church (Arbetat på grundvalen under muren i hospitalskyrkan). These large projects lead to some years having a large number of observations dominated by a single source, while data for other years rely on very few data points.

Two archives, Karsholm and Rosendal, have only one observation each. These data points were examined against surrounding wage levels and are highly in line with similar observations from contemporary payments. Thus it is unlikely that they represent outlying observations.

Figure 6.2: Number of observations per year in the final sample.



Source: see text. Author's calculations.

Despite large spikes in data points in some years the composition of skilled and unskilled workers is fairly consistent throughout the entire sample, excluding the tail ends where data is more scarce overall. This makes the development of a skill premium series relatively straightforward.

The archival data extraction remains ongoing; the results from this investigation are therefore preliminary.

6.1.1 Occupations and coding

The data is coded using the HISCO and HISCLASS systems which categorize historical occupations into sectors and skill level (Leeuwen et al 2002; Leeuwen and Maas 2011). Each occupation and task is categorized by HISCO into occupation categories. From the HISCO categories each occupation and task is further categorized into skilled work categories. In the data here the majority of workers fell into categories that represented unskilled / low skilled workers, such as day laborers; and medium skilled workers, including masons and carpenters. None were categorized at the highest skill levels or as managers.[1] A summary of the most common occupations is shown in table 6.2. Only those occupations which are represented in over one hundred observations in the data are described in the table, and so the quantities do not sum to one hundred percent. Summaries of the entire data set are included at the bottom of each section.

For the majority of the data information is available for both the worker's occupation and the work task for which the worker was being compensated. Occupation and task were coded separately. A third set of codes was developed to be used in the final analysis. In the overwhelming majority of

[1]The initial HISCO (Historical International Standard of Classification of Occupations) and HISCLASS (Historical International Standard CLASS) coding was carried out by Mats Olsson.

cases the occupation and task received the same code and so there was no need to make a judgment on which was more appropriate to the task being completed, and thus whether payment reflected skilled or unskilled work. In the instances where the occupation and task codes did not match contextual information was used to guide the final determination.

Table 6.2: Distribution of occupations and skills. Only occupations occurring over 100 times in the data are individually listed.

Tasks	Frequency	Percentage of total sample
Low skilled / unskilled workers		
Worker	2752	37.0
Day laborer	1641	22.0
Construction worker, specialization unknown	119	1.06
plasterer	767	10.3
Brick maker	111	1.49
Total all unskilled:	5798	77.5
Skilled workers		
Mason	1116	13.6
Carpenter	540	6.7
Total all skilled:	1707	22.5
Total (occupations shown) 7 unique tasks	7020	93.9
Total (full sample): 37 unique tasks	7505	100.0
Source: see text. Author's calculations.		

6.1.2 Conversions and currencies

The currency recorded in the sources changes several times over the period of interest and many payments are recorded in a combination of currencies. Table 6.3 presents the currencies that appear in the data and values per 100 Swedish Crowns. All wages have been converted into Swedish Crowns (SEK). This allows for extensions of the series into the nineteenth and twentieth centuries in future research.

The conversion factor which presented the most difficulty was the mark; the relative value of the mark fell from a known value of 3 marks per one daler in 1544 to a known value of 4 marks per one daler in 1572, with a few observations in intervening years (Aakjaer 1936). However, there are no clear indications of when this change occurred. A linear trend is created to span the period where the exact conversion of the mark is unknown.

Table 6.3: Summary of currencies that appear in the data				
Currency	Period of observation in data	conversion	Value(SEK) per 100 SEK	Notes
Daler	1595-1776	4 to one Swedish crown	25	
Öre	1595-1776	32 to 1 daler	0.78	
Mark	1563-1681	4 (3) to 1 daler	6.25 (8.33)	Conversion changed from 3 daler / mark in 1544 to 4 daler / mark by 1572
Skillingar	1519-1681	16 to one mark	0.391 (0.521)	
Albi	1517-1586	3 to one skilling	0.130 (0.174)	
Penningar	1517-1519	4 to one albi	0.032	
Source: data: see text. Conversions: Friis and Glasmann 1958; Aakjaer 1936.				

6.1.3 Women

There are 172 payments where it is clearly indicated that a woman is the worker. These observations span the majority of the period, from 1558 to 1760. Malmo Burghers is the main source of records of female employment; 161 of women's observations come from this archive. The second greatest number of observed women's wages comes from Malmo Hospital, with eleven observations. This leaves only five observations of paid manual work for women from outside Malmo, all of which come from rural sources.

A female worker can be identified in the sources in two ways; either her occupational title indicates that she is a woman, or a female name or female relationship title is listed along with payment information. All female occupation titles in the Malmo Burghers archive refer to women as 'diggers wife' (grävarens hutru). Other sources refer to women directly as 'women' (kvinnor), similarly to how workmen or men (arbetskarlar or karlar) are listed. The majority of the observations from Malmo Hospital list women this way, and none of them have any reference to a woman's husband or familial relationships.

The second method of identifying women relies on the names that are sometimes included in the records. Workers with female names are occasionally listed without their occupational title specifically identifying them as female. For example there are several women in the Malmo burgers archive who are listed simply as a digger alongside men, which makes names a valuable indicator as well as indicating that women's tasks were likely congruent with men's.

6.1.4 Rural wages

The data only differentiate rural wages from the beginning of the eighteenth century until the end of the period. There are 583 observations of rural building wages. Most of these come from Vittskövle and Trolle Ljungby, but some come from Jordberga and Karsholm as well. The majority of the rural wages are from unskilled workers; 93 percent are unskilled and seven percent are skilled. This is a much lower percentage of skilled workers than in the urban population. Even when the sample is restricted to the same time period for which rural wages are available to control for overall building

demand, the percentage of urban workers that are skilled is approximately thirteen percent, almost twice that as in the rural data.

6.1.5 Determination of individual day wages

There are two different ways in which wages are recorded in the data: as a total payment for more than one person-day's work or as an individual daily rate. Many entries record payment for more than one person, more than one day's work, or both, and present only a total payment for the entire project. This thesis is interested in the day wages earned by laborers, so wages in the first category must be converted to daily wages. In these cases the total payment is divided by the number of workers and days to determine the individual day wage. When individual day rates are recorded there is obviously no manipulation required apart from conversion of currencies.

In the large majority of cases when both daily wages and total payments are recorded the calculated day rate matches the day rate listed. However there are approximately 155 instances where the two wages are not identical. In these cases contextual clues, such as payments for the same task in neighboring entries, are used to determine the most appropriate value to use. This is almost always the individual day wage rather than the total rate (140 instances, as opposed to 4, respectively), which has a tendency to be less reliable. In 11 cases the disagreement between the individual daily wage and the calculated daily wage was so great, and contextual information too conflicting, to determine a reliable daily wage and these observations were excluded from the sample.

Careful notice was taken of extreme wage values. In approximately a dozen cases outliers that were determined to not accurately reflect an actual wage were dropped from the sample. This most often occurred in situations where only the total wage for multiple person-days of work was recorded and it was clear that this calculation yielded a value that was inconsistent with the surrounding data. This most typically occurred where there were also inconsistencies between the individual wage and total-price-calculated-wage in neighboring data points from the same source and period.

There were several categories of observations which were not included in the sample because it was impossible to determine the wages for a single person-day's work. These include observations where it was not possible to determine a single individual's payment, such as records where the total number of workers was not recorded, payment to workers of different skill levels performing different tasks was recorded as one group price, or where payment included remuneration for the use of carts and horses. Observations that recorded non-standard working conditions were also excluded, such as payment for night work or for prisoners' work, both of which received much lower wages than typical day labor. To control for the type of work being done and to make results comparable with the literature workers who were determined to be carrying out agricultural tasks (such as tröska råg, threshing rye) were excluded from the analysis, and only building laborers' wages used. Excluding agricultural tasks is especially necessary because it is clear that their payment was systematically lower than construction workers and that they were hired for much longer periods of time.

After excluding those observations where it was impossible to determine an individual's daily wage, the sample size was reduced from approximately 8700 observations to 7505 observations of payment.

6.2 Secondary data

Several series of data compiled by others will be used in this analysis to extend the analysis of Scania to a Scandinavian perspective and to compare Scandinavian wage development with Europe.

6.2.1 Scania and Denmark

Rye prices from Malmo and the surrounding region are used to estimate a real wage series and to compare with the official Danish CPI during the period when Scania was a part of Denmark. Rye prices from Burlöv, just outside of Malmo, are available from 1616 to 1661 from Tomner (1964). These are combined with rye prices from Malmo from 1662-1731 from Bengtsson and Dribe (1997) and from 1732 onward from Jörberg (1972) from Malmo county. All prices are converted into Swedish Crowns (SEK) per hectoliter.

The CPI for Denmark is compiled by Abildgren (2010) and uses data from the Danish Price History Project 1660-1800 and grain prices from the University of Copenhagen. The series refer to historical Danish borders, not current borders, and so Scania is included in the Danish CPI until 1658 when Scania was lost to Sweden. From the beginning of the series in 1502 until 1712 the series is based solely on a geometric average of grain price data from a variety of sources. From 1502-1660 these grain prices are only available expressed in grams of silver; Abildgren suggests that the CPI produced underestimates the true inflation that Danish currency experienced, which indicates that real wages in this period are probably a little lower than suggested by those calculated using the CPI. Albidgren argues that grain likely constituted a larger proportion of a consumer basket in the pre-1712 period, making the reliance on grain prices not inappropriate (Albidgren 2010).

6.2.2 Sweden and Stockholm

6.2.2.1 Wages

Wages from Stockholm for unskilled workers, masons, carpenters, and women between 1502 and 1719 are available from Jansson, Palm, and Söderberg (1991). These data come primarily from institutional sources in Stockholm, including the Town Council of Stockholm, Stockholm Castle, the Stockholm orphanage, and Danviken Hospital. These wages are reported in öre and marks before 1600 and daler kopparmynt after 1600. These are combined with data from Söderberg (2007) on unskilled wages from 1719 to 1776, also reported in daler kopparmynt. Grain prices, the skill premium, and women's relative wages in Stockholm are calculated directly from the currency that is recorded in the sources.

6.2.2.2 CPI and grain prices

Grain prices for Stockholm from 1539 to 1600 come from Söderberg (2002), from 1600 to 1749 from Jansson, Palm, and Söderberg (1991), and from 1749 to 1775 from Jörberg (1972a). Prices and volumes are converted to marks per hectoliter before 1600 and daler kopparmynt per hectoliter after 1600. The size of barrels used varied; the barrel size reported by each source is used in the conversion. Because nominal wages and grain prices are recorded in the same currencies in the same periods, real wages in Stockholm are calculated directly from the currencies in the sources.

The CPI for Sweden is the official Riksbanken CPI, compiled by Edvinsson and Söderberg (2007). Prices from the period 1290-1539 include some observations from Småland, in the south and bordering Denmark, and some observations from Finland, which was a part of Sweden at the time. However, the large majority come from the province of Uppland, which overlapped with Stockholm. The price index from 1540-1732, which covers the vast majority of the period covered in this study, is until 1719 based primarily on Jansson and Söderberg's (1991) Stockholm series, which is drawn from the same sources as their wage series. From 1719 until 1732, the series is based off of Fregert and Gustafsson (2005), which itself is based off of Stockholm prices in Jansson, Palm and Söderberg (1991). After 1732 prices are based primarily off of Lennart Jörberg's (1972) work on Swedish prices which are derived from annual market price scales. Because of the sources used to construct the series the official CPI for Sweden reflects primarily price changes in Stockholm.

7. Methods

This thesis uses real wages and the skill premium to investigate the comparative development of wages in Scania and Stockholm in the sixteenth and seventeenth centuries. Due to the characteristic problems that often affect historical data, including incomplete series and a lack of other contemporary data, econometric analysis is not currently practical. Like other studies of this type this thesis will rely primarily on descriptive quantitative comparisons.

7.1 Annual nominal wages

The unweighted arithmetic mean wage for unskilled workers, all skilled workers, masons, carpenters, and women was calculated for each year. Each record of one day of work was given equal weight within each year; in cases where a single observation recorded payment for more than one worker or more than one work day the relevant daily wage was weighted to account for each person-day worked.

7.2 Real wages

The real wage is calculated by deflating the nominal wages of unskilled workers by an indicator of living costs. There is some difficulty associated with determining an appropriate wage deflator that accurately reflects the costs of living specific to each region. The most appropriate choice in this context is local grain prices from each region to deflate regional wages. There are several reasons why this is the most appropriate choice.

Though long-term CPI for both Sweden and Denmark exist, in the context of this thesis neither of them are appropriate options as deflators for the entire wage series. In the case of Scania, which was a Danish possession until 1658, the Danish CPI could be considered an appropriate choice until 1658, but would not be an appropriate deflator after Scania was annexed to Sweden. After the Scanian War at the end of the seventeenth century, Sweden abolished grain exports and imported grain almost exclusively from Poland (Gadd 2011) so any reliance Scanian prices might have maintained on prices in neighboring Copenhagen was eliminated. Additionally the index is based on data from throughout Denmark which may not accurately represent Scania. Finally, this series is based entirely on grain data until several decades after Scania was annexed by Sweden; because of this, it does not provide enough additional information to be more appropriate than using local grain prices alone.

In the case of Sweden the CPI in this period is composed almost exclusively of data for Stockholm and is built on many different commodity prices beyond the price of grain. If the intent of this were to develop a precise real wage series (which has already been developed by others; see Jansson and Palm, 1991 and Söderberg 2010) this would be an ideal series. However the interest lies primarily in being able to compare Scania and Stockholm, and so using a complex CPI in Stockholm while relying on only grain prices in Scania would not be appropriate.

While the CPI are not used to calculate real wages they are still valuable; here they will be tested against the development of grain prices to estimate how closely grain price-deflated real wages approximate the development of real wages deflated by a CPI.

As mentioned nominal wages in both Scania and Stockholm will be deflated using regional grain prices, particularly rye prices. Relying on grain prices as the only source of a cost-of-living indicator is not ideal. A CPI built on multiple consumer prices, including food and consumables, clothing, and rent is obviously preferable. Additionally, bread prices are preferred in more recent CPI, with the reasoning that even in the early modern period bread, not grain, was the true consumer product and grain prices did not accurately reflect household expenditures (Hoffman et al 2005; van Zanden 2005). However, prices for bread and other commodities are less readily available for this period, and so we are forced to rely on the more old fashioned method of using grain prices as a deflator.

Rye was an important part of a Swedish diet and was the predominant grain in Sweden for much of the early modern era (Myrdell 211). The official CPI for Sweden gives rye a 30 percent weight during this period (Edvinsson and Söderberg 2011a), and so its use as a proxy is reasonable. The use of grain prices has several benefits; first, grain prices are available on a regional basis, and so can fairly accurately reflect differences between regions. Second, regional Swedish grain prices have fairly independent developments through the end of the eighteenth century; Jördberg (1972b) estimates that Swedish grain prices began converging around 1780, just after the end of this analysis. This supports the goal of representing the local conditions in both Scania and Stockholm.

The majority of prices for rye in Stockholm and Scania in the period considered here come from different sources, leading to some possibility that they might not be directly comparable. Therefore it is useful to examine a single source that provides grain prices for both regions that allows us to control for methodology as much as possible while assessing the differences in price levels and trends between Scania and Stockholm.

Jörberg (1972a) collects price information of many commodities from all of Sweden beginning in the eighteenth century. This source is particularly useful because prices are disaggregated by commodity and by county making it is easy to isolate the rye prices from each region. Because Jörberg's prices are presented by county it not possible to isolate the more urban areas in particular; however it is likely both that the prices of each county are driven by the prices in their respective urban areas and that the majority of the price data for each comes from urban sources.

There is a clear difference in the price of rye between Stockholm County and Malmo County throughout the eighteenth century (table 7.1). In the 1730s the ratio of Malmo to Stockholm prices indicates that rye in Malmo cost only 52 percent of what it did in Stockholm; throughout the whole period shown here Malmo prices are on average about 70 percent of the Stockholm price. There is a trend of convergence between Malmo and Stockholm, indicating that the price levels were possibly

even more distant in previous periods. This clear price difference legitimizes an investigation of regional economic developments.

It is also worth noting that while the rye price in Stockholm was not necessarily the highest in all years out of all the 24 Swedish counties it is certainly near the highest. Prices in Scania, on the other hand, are almost uniformly the lowest of all the counties (Jörberg 1972a, 1972b).

Table 7.1: Price of rye in SEK / hectoliter in Stockholm and Scania (with 156 L / barrel)				
	Stockholm	Scania	Ratio (Scania / Stockholm)	Average ratio (1732-1775)
1732-39	1.01	0.53	52.5	
1740-49	1.35	0.98	73.4	
1750-59	1.45	1.05	68.4	70.7
1760-69	2.16	1.75	73.0	
1770-75	2.61	2.24	86.1	
Source: Jörberg 1972a. Author's calculations.				

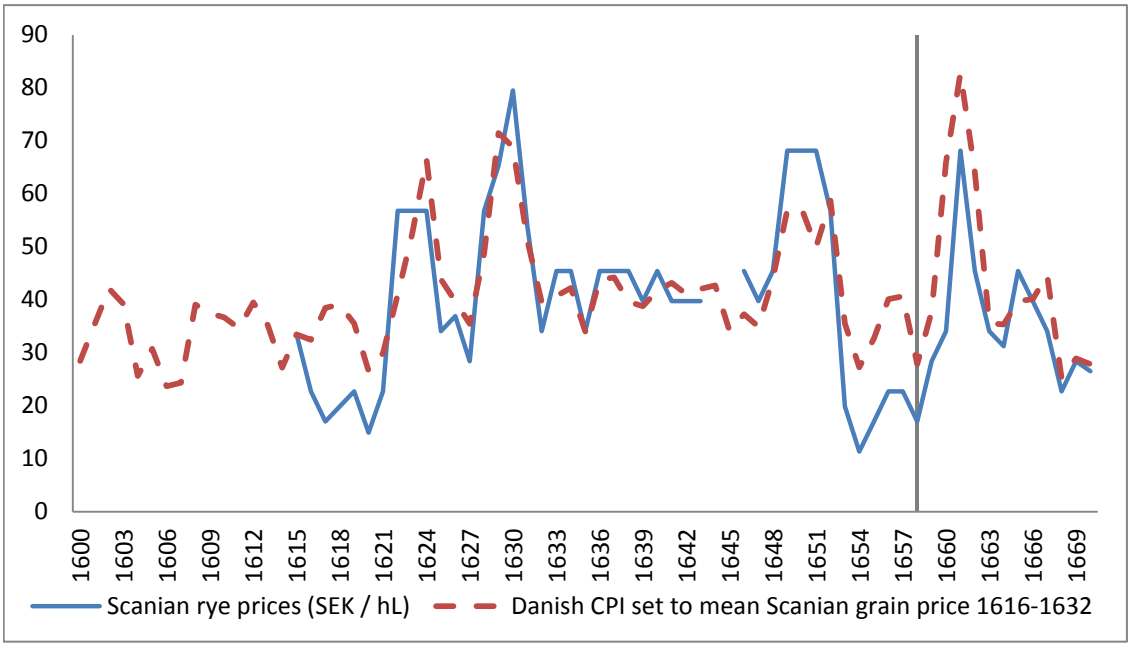
Before developing a grain-deflated wage series it is important to investigate the relationship of the grain prices to the official CPI for each region to establish to what extent the development of rye and grain prices match the development of the CPI. To test the correlation between the short-term fluctuations of the grain prices and the CPI the first difference is taken to remove the time trend. The non-differenced correlation is also presented. The results indicate a strong relationship between grain prices and the official CPI in both Stockholm and Scania (table 7.2).

Table 7.2: Correlations between grain prices and official CPI		
Correlation with Swedish CPI	First difference	Levels
Rye (1539-1620) N = 82	0.524	0.898
Grain – average of rye and barley (1600-1719) N = 120	0.903	0.962
Rye (1720-1749)N = 41	0.880	0.900
Rye (1750-1775) N = 41	0.730	0.909
Correlation with Danish CPI 1616-1658, N = 38		
Malmo Rye	0.748	0.843

The correlation of the first difference of the price of rye from 1539 to 1620 with the differenced Swedish (Stockholm) CPI is 0.52; the correlation of the price of grain (half rye and half barley) from 1600 to 1719 is 0.90; the correlation from the final period is 0.73. This higher correlation between the grain series and CPI is reasonable, since this grain series is used to construct the CPI. There is also a strong correlation between the Danish CPI and Malmo grain prices; the first-differenced series correlate with a coefficient of 0.75.

The correlation coefficients measure short-term variation in the price relationships. In order to be certain that the rye price series are appropriate proxies for overall development the trends between the series also must be tested. To do this the CPI are adjusted to the same level as the constructed rye series at the beginning of the period and the trends across the entire period are compared.

Figure 7.1: Development of Malmo grain prices and Danish CPI 1600-1670



Source: see text.

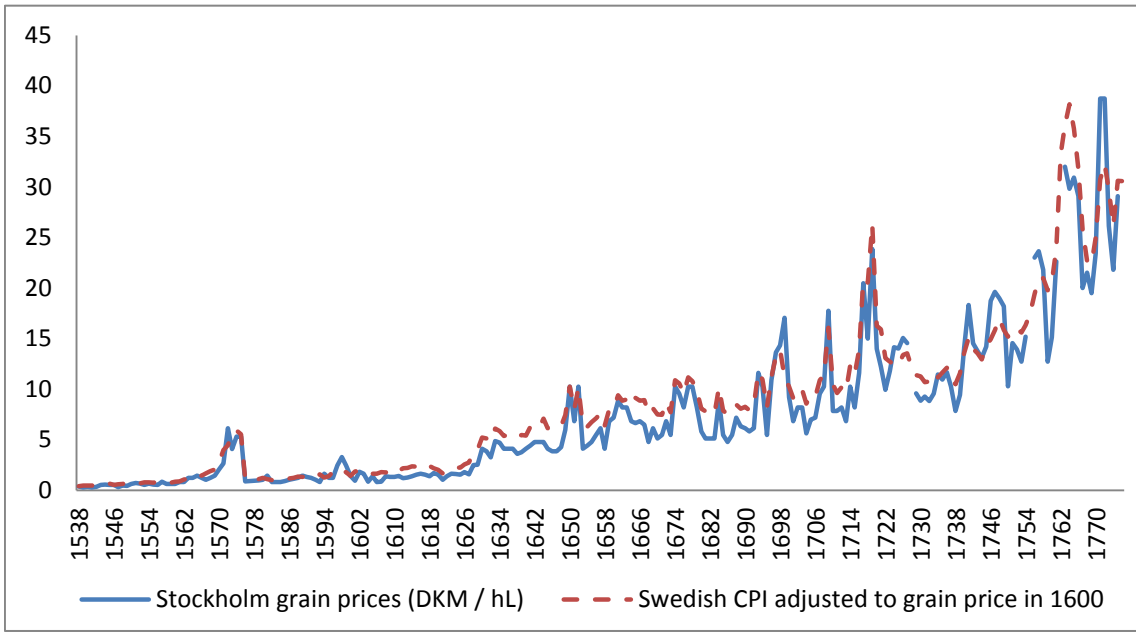
The vertical line marks 1658, when Scania was transferred from Denmark to Sweden.

For the most part the Malmo rye prices follow a similar trend to the Danish CPI between 1616 and 1658 (see figure 7.1). The only time when the relationship breaks is at the extremes and the points of turnaround; the Malmo rye prices have more extreme values than the Danish CPI. This is clearly due to the CPI's reliance on a geometric average, which dulls the extreme values. At the end of Scania's Danish period in 1658 (marked by a vertical line) there is a substantial difference in the Danish CPI and Malmo rye prices, but this is also the trough of a downturn. In the following years the prices are again in close alignment, even though Scania is no longer Danish. Though there are some differences in the extremes the trends of the series are very much in line.

Rye and grain prices in Stockholm also develop strongly in line with the Swedish CPI (figure 7.2). As in Scania, the main difference is that the grain prices tend to have more extreme values when the series change directions and stronger fluctuations. Overall it is clear that the grain prices are comparable to the CPIs in both the short and the long run and are reasonable proxies for costs of living in both Scania and Stockholm.

Because there is not sufficient grain data early enough in Malmo or Scania to compare with the wage data the Danish CPI values for before 1616 will be used instead. The CPI was set to reflect the cost of rye by setting the value of the CPI in 1616 to equal the average price of Rye in Malmo County from 1616 to 1621. The same was done with the Swedish CPI before 1539. The grain series for Stockholm between 1621 and 1719 is an average of rye and the cheaper barley, and is similarly adjusted to match rye price development. This is in line with adjustments made by Jansson, Palm, and Söderberg (1991) when calculating their original price series.

Figure 7.2: Development of Stockholm grain prices and Swedish CPI 1539-1775



Source: see text

7.3 Skill premium

The skill premium is calculated as the difference between the average skilled wage and the average unskilled wage, divided by the average unskilled wage. The skill premium series was constructed with the intention of being as comparable to other similar series as possible, and to this end only a selection of the available data is used to construct it. 'Skilled wages' are calculated as the mean of the average masons' wage and the average carpenters' wage for each year, with each wage series weighted equally. This means that the resultant series is not weighted by the number of observations of carpenters' or masons' wages for each year and excludes a small number of skilled observations that correspond to workers who are not masons or carpenters. Skill premium series that include these workers have been calculated and are almost identical to the series presented here, and so are not presented. The decadal series are calculated using the average skilled wage for the decade and the average unskilled wage for the decade.

There was some concern that systematic differences between masons wages and carpenters' wages might persist throughout the data, leading to a situation where the skilled wage used to calculate the skill premium might vary significantly in cases where it is based only on a carpenter's wage or only on a mason's wage. To this end, the ratio of carpenters' to masons' nominal wages was calculated and compared throughout the series for both Scania and Stockholm. The Scania carpenter / mason wage ratio is volatile, with values from 0.25 to 1.82. The mean indicates a fairly even ratio across the entire series, with carpenters wages approximately 95 percent of masons, but with a standard deviation of over 34 percent. In the Stockholm data, carpenters' wages are systematically lower than masons' wages; the minimum ratio is 0.281, and the maximum is 1.00. The mean is much lower, at 57 percent, with a standard deviation of a little over 17 percent. Unlike the ratio in Scania, in which we can see the variation fairly evenly distributed throughout the series, the development of the ratio in Stockholm follows a U pattern: until 1575, and after 1664, all value are over 0.5. From 1608 to 1645, only two values are above 0.5. An examination of the data shows that this occurs as masons'

(nominal) wages rise faster and earlier than carpenters' wages, leveling out in the middle of the seventeenth century and allowing carpenters' wages to catch up. This difference in trends between regions indicates that the comparison of the skill premium compares slightly different developments; however, this problem is addressed by analyzing decadal trends in the skill premium rather than relying on annual variation.

7.4 Women's wages

Women's wages are presented as a simple ratio of women's wages divided by unskilled men's wages. This is in line with the treatment of women's wages in previous literature.

7.5 Typical problems and limitations

The primary difficulties in using historical wage and price data have not been much alleviated since the earliest studies of this type (see Phelps-Brown and Hopkins 1956). The main problems are all connected to the supply of data. Wages are typically reported by the day, whereas a standard of living reflects a yearly income; thus, it is important to keep in mind the differences between wages, for which substantial information exists, and income, about which the historical sources offer little guidance (Özmucur and Pamuk 2002). There is very little information regarding the number of workdays in a year, or indicating if the number of workdays was consistent across time or over space (see Allen 2001). Söderberg (2010) notes that in 1675 the length of the work day for carpenters and masons in Stockholm was set to be from five in the morning to seven in the evening during the summer season and from sunrise to sunset in the winter season, following complaints that builders were only working from 6 a.m. to 6 p.m. in the summer. However it is not clear if this legislation was adhered to strictly; the fact that it had to be established at all indicates that these were not customary hours and workers resisted adhering to them.

For these reasons, the current analysis is restricted to comparative aspects of day wages and is not able to investigate annual or household income. Extending this work to approximate annual income, as well as changes in the number of annual working days and customary working hours, is a project for future analysis.

The data we do have is itself inconsistent; in some years we find hundreds of observations, while a subsequent year may have under half a dozen. This leads to considerable volatility in the data both in terms of annual wage series and to an even higher degree when the skill premium is calculated, since it is dependent on two underlying series. Additionally, it is occasionally the case where a single year has an observation for a skilled wage but not an unskilled wage, or vice versa. For this reason, the majority of the analysis is conducted using decadal averages. This decadal comparison will also alleviate some of the problems that the differences of the carpenter to mason wage ratio raise.

An additional problem relates to comparing wages in rural and urban areas, and between regions. Urban areas typically have more available data, and so there are a great deal more series available on urban wages than exist for rural wages (Özmucur and Pamuk 2002). The differences between urban and rural areas also come into play when prices, and thus indices, are considered. For instance, Allen (2001) finds significant differences between rents within the bounds of and just outside of London. As a result of regional and urban / rural divides, these wage series, especially those from the major cities or capitals, can hardly be considered nationally representative. Presenting wage series for

builders from a smaller town in a very rural context, as well as presenting a preliminary investigation of rural wages from the surrounding areas is one of the contributions of this thesis.

In the same line, it is difficult to compare cities of different levels between each other; it is most appropriate to compare wages between only cities that share a similar position on the urban hierarchy (Özmucur and Pamuk 2002). Thus, it makes sense to compare Malmö to other smaller and less urban areas. There are similar difficulties between different class groups; as Hoffman et al (2002) point out, the wealthy, middle class, and poor have substantially different patterns of consumption, and an increase in the cost of a basket of one of these groups may not have a similar effect on the cost of another group's basket. Ideally, different classes' wages could be deflated with a different set of consumption goods; however the data is too scarce to allow for separate deflations for skilled and unskilled real wages.

It is sometimes difficult to determine what, exactly, recorded monetary payments represent. It is often difficult to identify how much payment might have been in kind, and it is obviously another problem entirely to attempt to quantify in coin how much this compensation is worth (Söderberg 2010). This is typically a greater problem with agricultural work and yearly employment than it is with building and construction work; this is one of the reasons why construction work is preferred for this type of analysis. Furthermore if we were observing projects where a meal is part of the payment, as Söderberg (2010) occasionally observes in Stockholm, we would expect to observe records of cooks or kitchen workers paid to prepare food, as we observe payments to carters, guards, and others not directly engaged in building labor; however, these do not appear in the data. Overall, we can reasonably assume that payment in kind is not present in the data.

A further key is to what degree, if at all, the wages of builders were representative of the work force in general. Certainly there are some determinations of builders' wages that were specific to the construction industry; for example, seventeenth century Madrid carpenters and masons benefitted from inflows of silver from the Americas that stimulated the building sector (Allen 2001; Ucendo and Garcia 2014). It is possible that in the case of this investigation the prolonged period during which Sweden and Denmark were at war and the extent to which the war economy impacted Scania increased building demand and raising builders' wages while lowering the standard of living for the general population. However, as discussed above, the general consistency of the tasks and the technological level over time and space make building wages a strong medium for comparison.

Clark (2005) and Stephenson (2014) raise the issue of what recorded builders' wages actually represent in the English context. Before the nineteenth century the recorded wages paid to labor are actually the total sums paid to building contractors for all labor costs. Using data when observations for both contract payments and individual worker's payments are available Clark estimates that the typical laborer's wage was about ten percent lower than what is indicated by the larger payments to contractors. Stephenson argues that building contractors often extended substantial credit to those who hired them, and were often subject to late payments, further lowering the actual payment to workers. Contractors built in these expected discounts in their initial quotes to institutions so that their final payment would allow them to pay their workers leading to inflated recorded prices

While Stephenson's and Clark's examination is in the context of London, which certainly had a much larger demand for building labor and larger building projects than either Stockholm or Scania, the potential for overinflated quotes for large projects should be taken into consideration. An

examination of the average number of person days recorded per observation does indicate an increase over the period in question, especially in the later part of the seventeenth century when large contractual projects became increasingly common. However, this could also reflect recording trends in the data; there are many instances where a single named individual is listed as receiving payment in more than one observation dated on the same day, with each observation representing more than one person-day of work, and there are certainly large projects in the early part of the period. Investigating this relationship further is an avenue for further study.

Previous research has indicated that the dominant trend of the early modern era was the increasing divergence between the North Sea region and the remainder of Europe, with stable and growing wages in the North Sea region and falling wages in the periphery. Little information is known about Scandinavia, and what previous research does exist centers on Stockholm. Stockholm was part of the poor periphery of Europe; the skill premium was high and real wages stagnated and fell in the seventeenth and eighteenth centuries. Women's relative wages in the building sector were relatively high in the beginning of the seventeenth century, but fell substantially by mid-century.

This thesis will fill expand the data on early modern wages in Scandinavia to develop a more thorough understanding of Scandinavia's place during the Little Divergence. It will also expand the body of data on women's wages and women's employment to develop the understanding of women's place in the early modern Scandinavian economy.

8. Analysis

8.1 Real wages

8.1. Real wages in Scania and Stockholm

The real wage is calculated here as the liters of grain that could be purchased with an unskilled laborers' daily wage (figure 8.1). Skilled real wages are presented in the following section (figure 8.3). The annual real wage in Scania is very volatile and so the main analysis will rely on the polynomial trend and the decadal averages (figure 8.2).

The trends indicated by the real wages calculated for Stockholm here are in line with those described in Jansson, Palm, and Söderberg (1991) and Söderberg (2010) which is a strong indicator that the real wage estimates presented here are good approximations of those obtained with the official CPI. The general trend in Stockholm described by Söderberg (2010) is a decline in real wages through the sixteenth century followed by a recovery during the seventeenth century through about 1730, declining during the remainder of the eighteenth century. The decline in sixteenth century real wages presented here is slightly stronger and begins slightly earlier than Söderberg's (2010) series.

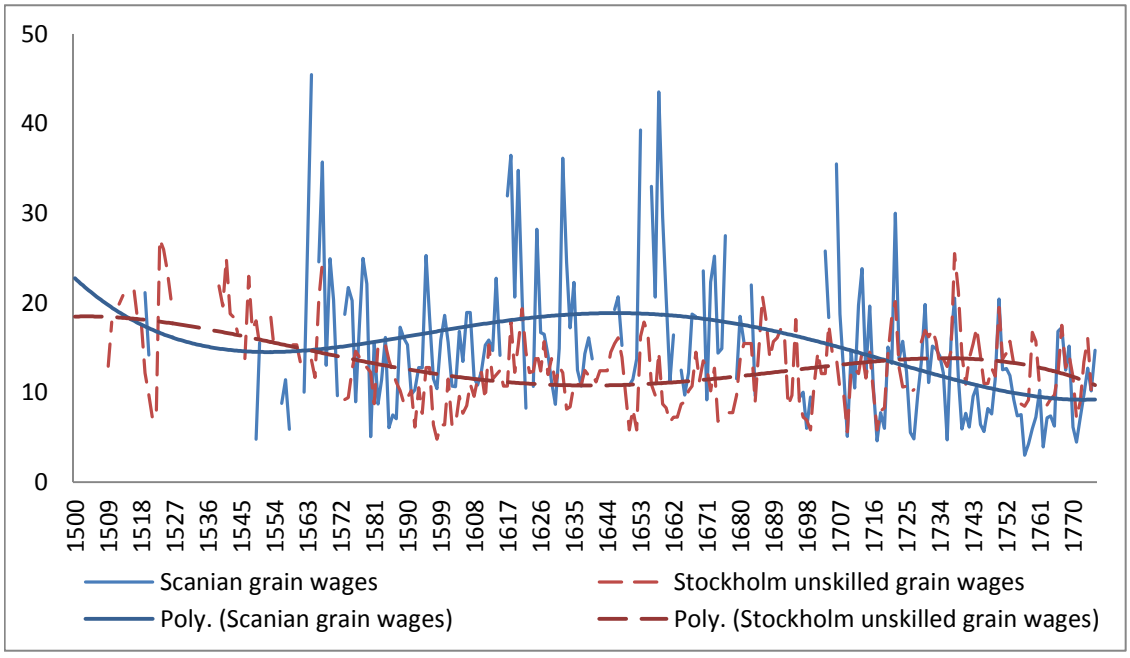
The real wages in Scania are much more volatile than those in Stockholm, especially through the sixteenth century. It is worth noting that the especially low decadal real wage for the 1540s is based on a single unskilled wage observation which is lower than those both in previous and subsequent decades (see figure 8.2). The very high value for the 1560s however is based on stronger underlying data; even if we are hesitant to rely on the low data point from the 1540s, the low wage value in the 1550s also points to a period of low real wages followed by very high wages and an overall trend of volatility through the sixteenth century, indicating heightened short-term economic stress and uncertainty.

The end of the century brought some stability and real wages tended to increase through the first half of the seventeenth century, as they did in Stockholm and internationally. Scanian wages reached a higher peak earlier than Stockholm, and began a clear secular decline from the 1660s through the end of the period in the 1770s. If the upturn in the 1650s is interpreted as a deviation from the trend, the downturn in Scanian real wages occurs throughout the seventeenth century. Scanian real wages are on average slightly above those in Stockholm but fall below Stockholm levels by the middle of the eighteenth century. It is worth noting that the sharp downturn in Scanian real wage development occurred about the same time as Scania became a part of Sweden. Bengtsson (2004) observes that from the 1760s real wages in Malmo County in Scania are fairly stable, while real wages in Sweden overall are falling. It is quite likely that this apparent stability of Scanian real wages in the last decades of the eighteenth and early nineteenth century are due to the early decline of real wages in Scania rather than more stable conditions in the region; Scanian wages fell earlier than elsewhere, as opposed to not experiencing a sharp decline.

One of the most important insights from this comparison is the counter-cyclical development between Scanian and Stockholm real wages, especially from about 1680 to 1730, after which both series decline. This independent development supports the hypothesis that real wages in the two regions had different trends were segmented markets, and highlights the need for data beyond Stockholm.

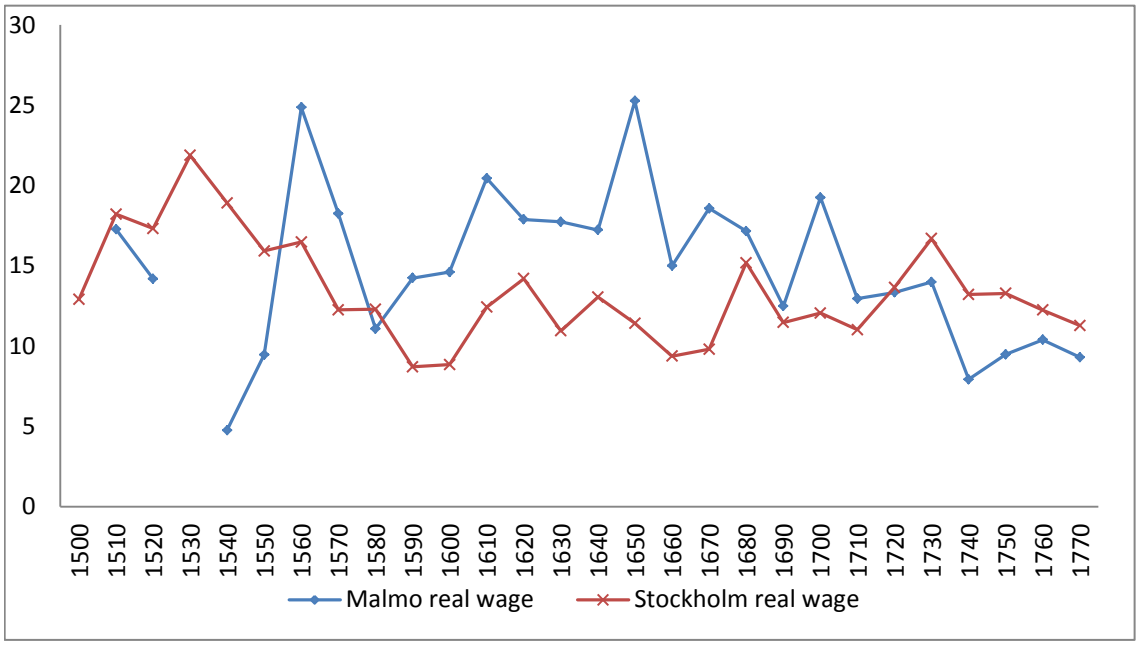
The decadal averages of the skilled real wages (figure 8.3) in Scania and Stockholm are very similar in the second half of the sixteenth century and the first half of the seventeenth, and have similar trends to unskilled real wages. In the later part of the seventeenth century skilled real wages decline in Stockholm and spike in Scania, but Scanian skilled wages also suffer a strong descent in the eighteenth century. This order of decline is opposite that for unskilled workers, whose wages decline

Figure 8.1: Real unskilled wages in liters of grain per day in Scania and Stockholm 1502-1776, annual series.



Source: see text. Author's calculations.

Figure 8.2: Real unskilled wages in liters of grain per day in Scania and Stoklcholm 1502-1776, decadal averages.



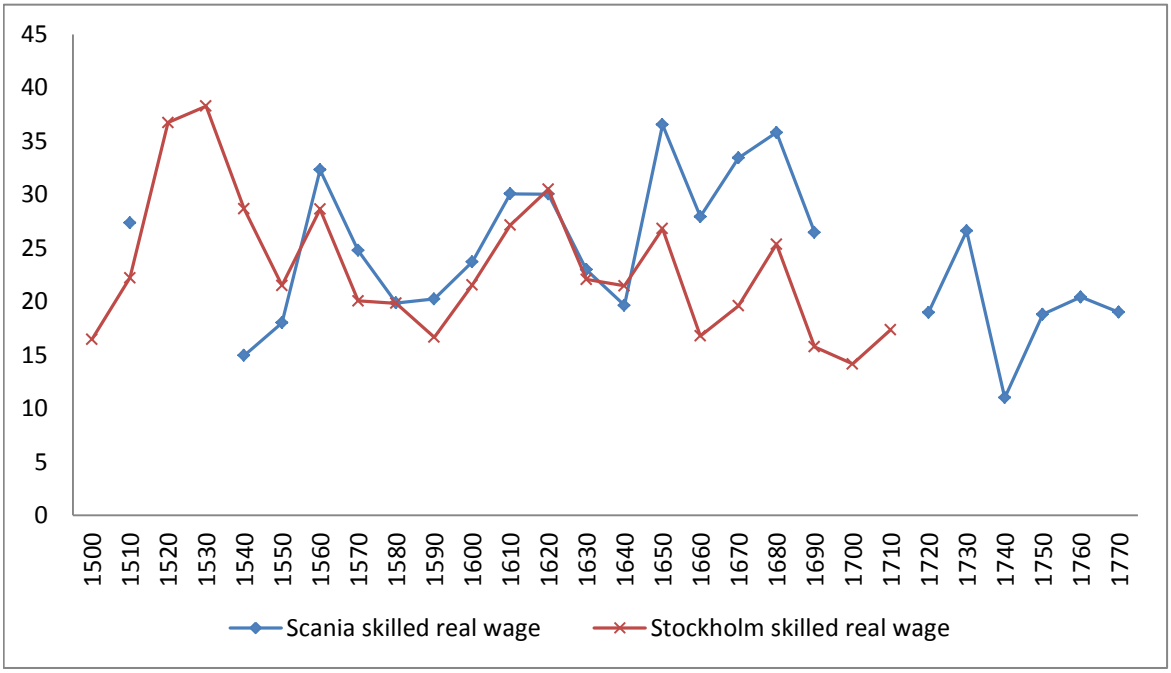
Source: see text. Author's calculations.

in Scania first. However the overall pattern of wage development is the same as unskilled wages: in Stockholm, higher wages in the sixteenth century followed by stagnation during the seventeenth and decline in the eighteenth; in Scania some increase in wages in the seventeenth century followed by steep decline in the eighteenth. These patterns are both in line with the development of the periphery during the little divergence.

Söderberg (2010) expresses surprise that real wages in Stockholm did not suffer during the seventeenth century and Sweden's period of military power and militarization, but comments that Stockholm's real wage growth was in line with real wage development of throughout Europe. Scanian wages on the other hand do seem to have been negatively impacted by the constant warfare in Scandinavia, even with the occasional wage spikes as in the 1560s. That Scanian wages would suffer more is not surprising given that much of the fighting took place in Scania due to its central location on the Baltic; Stockholm is in a location less well suited for easy access to Baltic warfare (Oakley 1992), and so may have felt less direct impact from the ongoing military campaigns. Scania was especially affected by sieges on Malmo during the Danish Civil War in 1524 and continued civil war in 1534 (Skansjö 1997). The presence of extended warfare in Scania can help explain the high volatility of wages during this period.

It is also important to consider Scania and Malmo's change in relative importance and status. As a Danish town Malmo was in a central and strategic location just across the Oresund from Copenhagen, a prosperous and well-established capital city (Söderberg 2010). When Malmo passed into Swedish hands it was downgraded to the status of a provincial backwater, distant from the capital and cut off from trade with Denmark across the sound (Myrdal 2011). This may be a large factor in Scania's declining real wages in the latter part of the seventeenth century.

Figure 8.3: Real skilled wages in liters of grain per day in Scania and Stockholm 1502-1776. Decadal averages.



Source: see text. Author's calculations.

There are other developments in the Scanian real wage series that can be connected closely to historical developments. Increased real wages in 1610 occur at the same time as increased building projects related to military defense (Oakley 1992). A fall in real wages in the 1690s corresponds to famine in Scania (Myrdal 2011).

Because of these real wages' dependence on grain prices it is important to consider systematic differences in grain price. Scania had consistently lower grain prices up until the end of the eighteenth century, and grain prices in southern Sweden in general were significantly below those in central Sweden and Stockholm; Jörberg (1972b) suggests that this is due to lower quality grain in Scania, and either similarly low quality grain in surrounding regions or the low quality Scanian grain driving down prices. It is also quite possible that laborers in Stockholm faced higher costs in other areas, such as rent, which was typically higher in cities (Allen 2001). Overall, it is not unreasonable to speculate that workers in Scania might have had a higher purchasing power from their wages than their counterparts in Stockholm through the seventeenth century.

According to Clark (2005) and Allen (2001) both urban and rural laborers were worse off in 1800 than they had been for the previous several centuries. Söderberg (2010) has already presented this as the case in Stockholm and the data here are in agreement. Though the data presented here on Scanian wages only reaches to 1776, the strong decline in real wages over the seventeenth and eighteenth centuries, dropping by a factor of over fifty percent between 1610 and 1770, indicates that the low point at the turn of the century also occurred in Scania. The development of real wages in Scania and Stockholm indicate that Scandinavia as a whole well in line with the stagnating and declining European periphery in the early modern era.

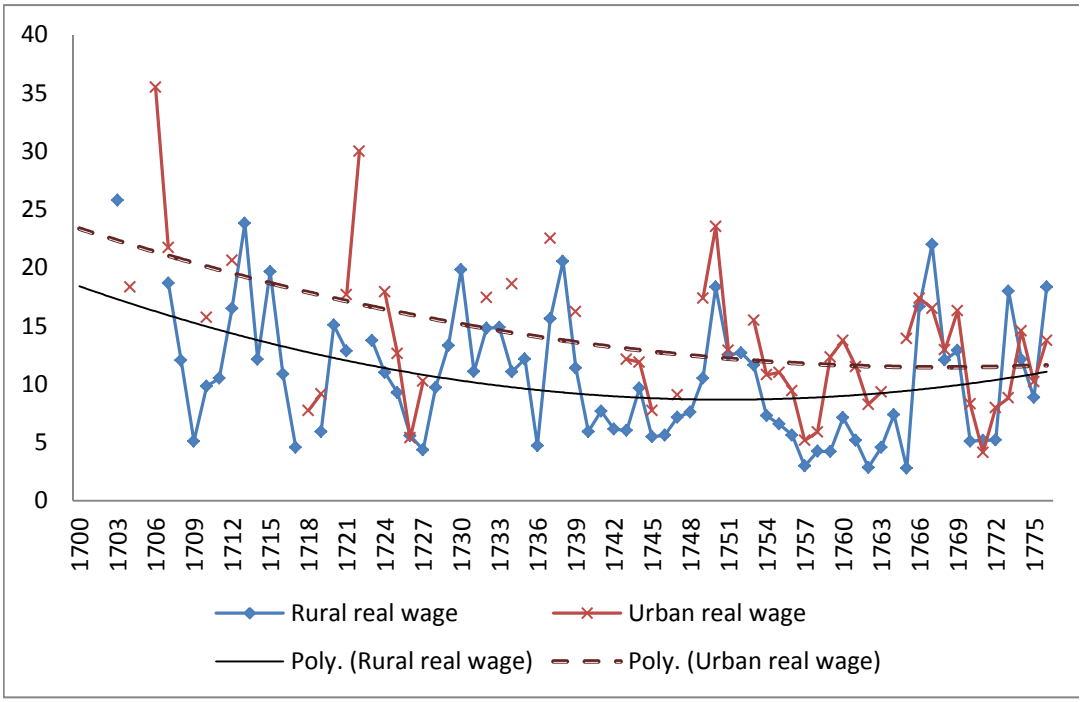
8.1.2 Urban and rural real wages in Scania

Urban wages are typically higher than rural wages (Allen 2001). This is connected to lower market access, weaker infrastructure and poorer institutions, and more traditional and agricultural occupations (Janvry, Murgai, and Sadoulet 2002). Because Sweden was predominantly rural and only about ten percent urban until the 1850s (Gadd 2011) the urban wages presented here are not representative of large metropolises. Nevertheless, there is a systematic difference between wages from towns and from the countryside.

Figure 8.4 shows the development or rural and urban unskilled real wages in Scania. Rural real wages for unskilled workers were consistently sixty to seventy percent of urban wages until the middle of the 1760s, when rural unskilled wages quickly caught up to and surpassed urban unskilled wages. The 1760s were also a period of high inflation in Sweden. Rural skilled wages (figure 8.5) follow a very similar pattern, averaging between 40 and 60 percent of urban skilled wages until the 1760s, after which they catch up to urban wages. The rapid convergence of rural and town wages indicates a growing integration of regional markets; this integration is in line with Jörberg's (1972) findings that markets throughout Sweden became increasingly integrated beginning around the 1770s. It is reasonable that Scanian rural and urban markets would become integrated before the entire country was integrated because of their closer geographic proximity.

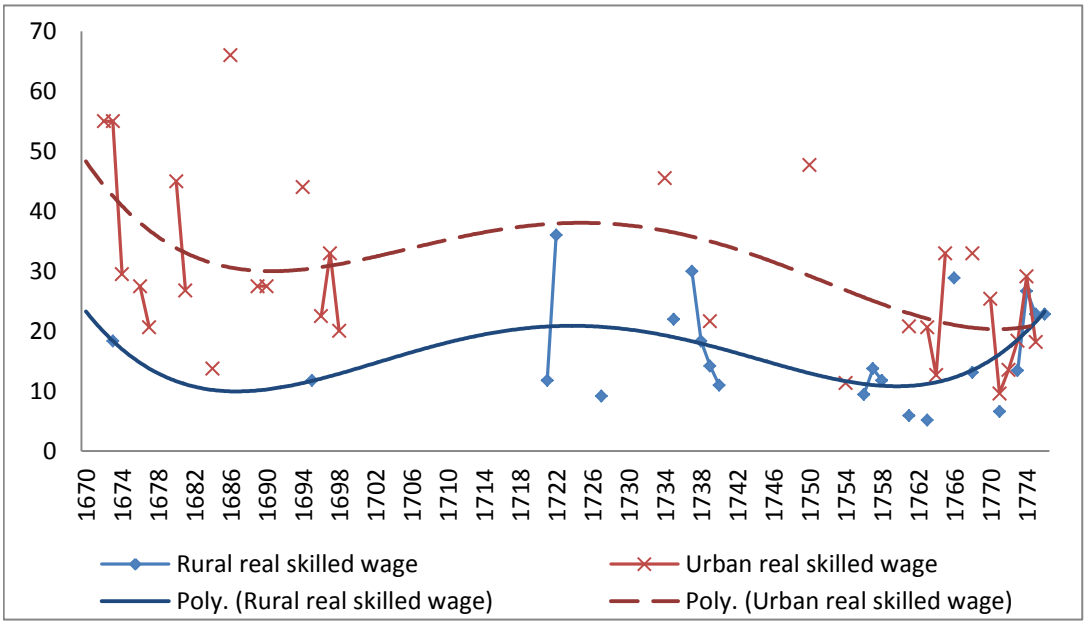
Söderberg (2010) compares the real wages of Stockholm and rural workers and finds that real wage decline was stronger for Stockholm workers in the 1730s than for rural workers. However if we compare Stockholm and Malmo, which, while a larger regional town is still in a rural context, we see that the decline in the 1730s and the surrounding decades was much stronger in Scania than in Stockholm. Additionally, the wages from rural areas surrounding Malmo do not appear to drop as quickly as those from the town, and even appear to recover slightly in the 1760s, indicating different

Figure 8.4: Rural and urban real wages in liters of grain per day in Scania 1700-1776



Source: see text.

Figure 8.5: Rural and urban skilled real wages in liters of grain per day in Scania 1670-1776.



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relationships between urban and rural wages throughout Sweden.

These results are best understood in the context of the systematic change that was occurring in agricultural Sweden at the time; the rural landscape was changing from the beginning of the eighteenth century and Sweden was undergoing an agricultural revolution with increasing agricultural productivity. Perhaps more importantly the tax system and labor structure in Sweden shifted dramatically after the end of Sweden's military period and the tax burden on farms fell, which in turn increased their value. In addition, rents were increasingly paid in cash, as opposed to in kind or through corvée, which drove up inflation in the eighteenth century. The combination of the agricultural revolution increasing yields, demographic changes, and the very real effects of Sweden transitioning away from its wartime economy may be responsible for the shift in the rural / urban wage structure, as well as for the huge spike in wage inflation that was occurring (see Myrdal 2011). At the same time, the catch up of rural wages to urban wages could be due to the fact that urban wages were falling at a much faster rate than rural wages.

8.1.3 Real wages in a European perspective

Van Zanden (1999) computes the grain wage of unskilled day laborers in several European cities; a table from his paper with this study's calculations on Stockholm and Scania inserted is reproduced here (table 8.1). The most striking feature of these values is the drastically higher grain wage rates in regions that are comparatively underdeveloped, especially in Poland. While Scania's grain wages are not as unexpectedly high as in Poland, they are higher than what would be expected on a European stage. However, these regions are all grain producing regions where high grain surpluses lead to low grain prices; it is likely that an especially low cost of grain gives the impression of wages higher than what was actually the case, as was previously discussed as a potential problem. Van Zanden (1999) even extends the effects of this grain-producing real-wage premium to Stockholm, which has grain wages above the wealthy North-Sea regions. However the Stockholm grain wages that are calculated in this study (indicated by KEG) are typically lower than van Zanden's (indicated by JLZ), and these

wages are closer in line with other Western and Central European cities, though still slightly above the average. The difference in wage calculations could arise from van Zanden's use of silver prices, whereas this study calculates the grain wage from the currency in which it appears in the sources.

Stockholm's development was reasonably in line with that of other larger European cities and capitals that experienced population growth and centralization through this period. Demand for labor in Stockholm was rising, especially for shipbuilding and construction. Copenhagen also experienced similar developments, as did Madrid and Paris (Söderberg 2010).

Scania demonstrates a similar trend to many of the European cities that Allen (2001) investigates. Scanian wages were extremely volatile in the sixteenth century, increased slightly through the early seventeenth, and were generally falling from the mid seventeenth century through the end of the period. Many of the non- North Sea cities that Allen investigates have a falling real wage throughout the early modern period, only turning around and increasing in the nineteenth century. North Sea regions experience slightly downward or stagnant wages in the sixteenth century followed by increases in the seventeenth century.

Apart from the potentially-inflated differences in levels, Stockholm's and Scania's real wage developments are highly congruent with the development of real wages elsewhere in Europe, with stagnation and decline throughout the early modern era. While Scania has some real-wage increase in the early seventeenth century that is contrary to the general pattern, these gains are reversed within the century and by the 1770s the grain wage is only sixty percent of this former peak.

Table 8.1: Real wages of unskilled workers in liters of grain (rye or wheat) per day in Europe 1500-1800

	1500-20	1600-20	1680-1700	1780-1800
In liters of rye				
Warsaw	-	38.5	25.3	22.8
Krakow	45.1	31.1	21.1	18.3
Lwow	41.3	10.5	-	-
Danzig	15.1*	10.6	13.1	8.5
Ausburg	8.1	5.7	7.2	5.9
Leipzip	-	6.4	12.1	-
Stockholm (JLZ)	-	14.4	17.0	8.7
Stockholm (KEG)	16.7	10.9	13.2	11.5***
Scania	16.2	18.2	14.8	12.4****
In liters of wheat				
Vienna	18.5**	8.8	8.1	5.7*****
Holland	14.0	11.4	16.6	9.9
Ghent	15.0	8.6	7.5	6.9
Southern England	13.2	6.0	8.1	8.1
Paris	11.9	9.1	7.9	9.9
Valencia / Seville	13.7	10.0	16.2	6.2
Florence / Milan	6.6	5.3	9.3	6.0

*1530-39; ** 1520-29; *** 1766-75; **** 1766-76 ***** 1770-79

Source: van Zanden 1999. Stockholm (KEG) and Scania: see text.

8.2 Skill premium

8.2.1 Skill premium in Scania and Stockholm

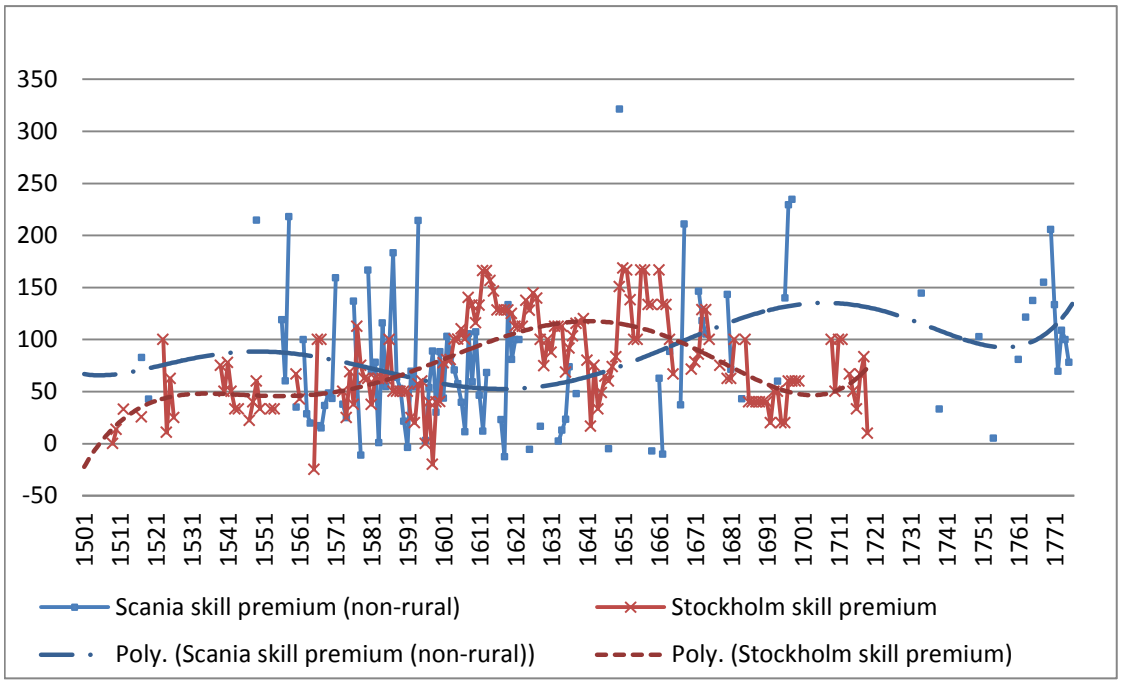
The skill premium measures the increase in wage that a skilled worker earns over an unskilled worker. Here a value of 100 indicates that a skilled construction worker (a carpenter or mason) earns 100 percent more than, or twice as much as, an unskilled construction laborer. The skill premium is strongly connected to levels of equality and the strength of institutions.

The annual skill premium series for Scania is volatile, with swings between a very low or even negative premium, and premiums of almost 250 percent (see figure 8.6). The volatility of the series is possibly due to years with fewer data observations. We can make a best estimate of which data points are most reliable based on the number of observations we have for skilled and unskilled workers in each year; for example, almost all data points where a negative skill premium is indicated are years in which there are few observations overall with only one or two atypically low values for skilled labor. For these reasons the majority of the interpretation will rely on the polynomial trend line and the decadal averages of the skill premium (see figure 8.7).

A polynomial trend indicates two cycles of the Scanian skill premium; the first cycle lasts from the beginning of the period in 1517 until the first part of the seventeenth century, the second from about 1640 until about 1760. The skill premium in the first cycle is on average slightly lower than that in the second; the first period has a trend between about a sixty percent premium and a ninety percent premium, and in the second the trend is between about ninety and 140 percent. However, the range of values in each period are similar, with premiums as low as about negative ten and as high as almost 230 (with one outlier of 321 percent).

The development of Stockholm's skill premium has a slight counter-cyclical tendency to Scania's; the

Figure 8.6: Skill premiun in Scania and Stockholm 1502-1776. Annual series.



Source: see text.

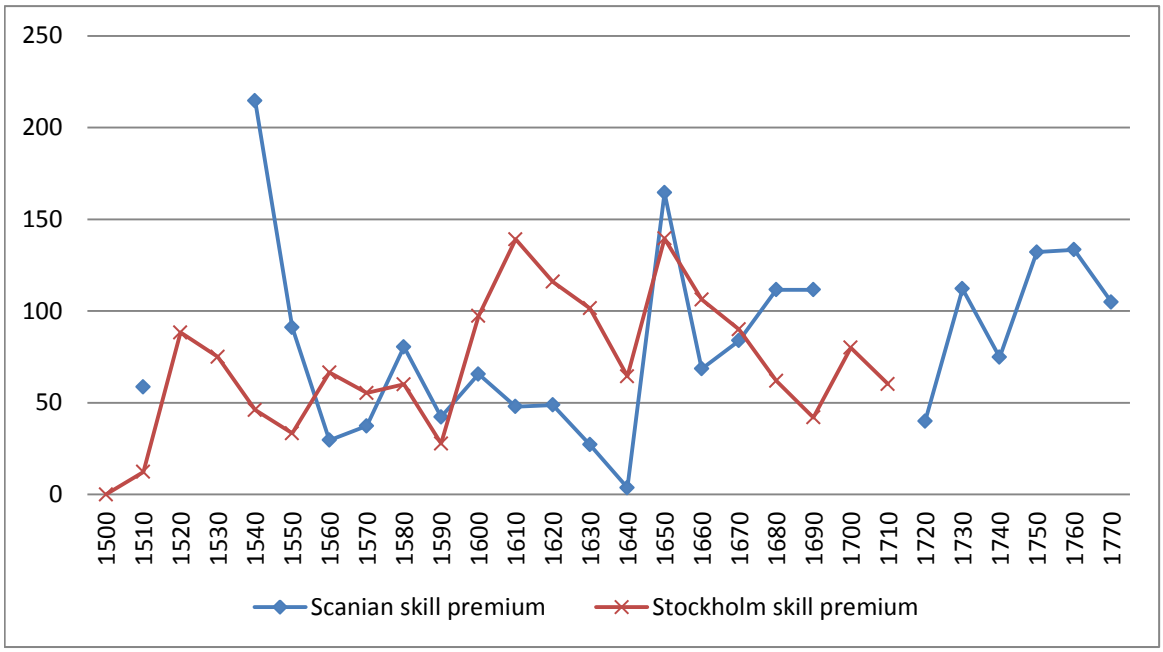
correlation is -0.22. The skill premium in Stockholm has lower values and is less volatile than the Scania series, with fewer extreme values. This is partially a function of the underlying data – overall, the published Stockholm wage series have less annual volatility in the underlying wage values than the new series for Scania.

The volatility of the Scanian skill premium in combination with the high values at the beginning and end of the period indicates that the Scanian economy was not particularly stable, had poor institutions, and growing inequality. This result is unsurprising given both the volatility of the real wage series above and the context of the ongoing warfare, change of nationalities, and weak government structures that characterized Scania through the period investigated here.

The skill premium in both Scania and Stockholm develops counter to real wages, which is in accordance with the theory that a low skill premium is connected to higher wages. The Scanian skill premium is lowest in the sixteenth century when real wages are rising, but begins to climb again through the seventeenth century when real wages in Scania drop off. The exception to this trend is in the 1650s when both real wages and the skill premium spike. While unskilled wages are strong throughout the decade, there are only skilled wage observations from 1650 and 1959; in 1650 the skilled wages are considerably higher than normal, though they fall back to the wages of the previous decade in 1659. This skilled wage distribution could be generating a misleading decadal skill premium, or this contradiction to theory could indicate a period of heavy building overall, when both unskilled and skilled builders were in high enough demand to increase both sets of wages considerably. Stockholm's skill premium increases through the sixteenth century and declines again in the eighteenth, the opposite development of real wages.

The outlying high value of the Scanian skill premium for the decade of the 1540s (figure 8.7)is based on the same single low unskilled wage value that produces the exceptionally low real wage value in the previous section, in addition to one observation each of a mason and carpenter's wage. Thus we

Figure 8.7: Skill premium in Scania and Stockholm 1502-1776, decadal averages.



Source: see text.

encounter the same problem as before and treat this value as suspect. Taken in the context of the preceding (1510s) and subsequent (1550s) value, it is reasonable to assume that the skill premium was likely somewhat lower than what is indicated for the 1540s.

The 1640s are also somewhat of an outlier. This decade is one with very few observations, especially for skilled work. There are three observations for carpenters that are not included in the final analysis because a joint wage was recorded for a carpenter and his helper which makes it impossible to isolate the actual wage paid to each worker. However, if our best estimate of the carpenters' and workers' wage is used the resultant skill premium would be about twenty percent. This is still lower than any other decadal observation for Scania but is not as strong of an outlier as the calculated value, which is under four percent.

Chor (2005) uses the skill premium to proxy inequality in his study on preindustrial institutions' effect on equality and growth; a higher skill premium indicates a more inequal society. If we take this same metric, both Scania and Stockholm appear to have increasing levels of inequality through the seventeenth and eighteenth centuries. This interpretation is in line with Söderberg's (2010) descriptions of growing trends of inequality between working groups in Sweden during the eighteenth century. Agricultural surpluses were distributed less equally than previously and the farmers who produced a surplus were able to profit. Farm prices also increased, as did rents. Small landholdings' prices were particularly impacted which encouraged the division of farms. All of these trends increased income inequality and drove up the number of landless laborers, especially after 1750 (Söderberg 2010).

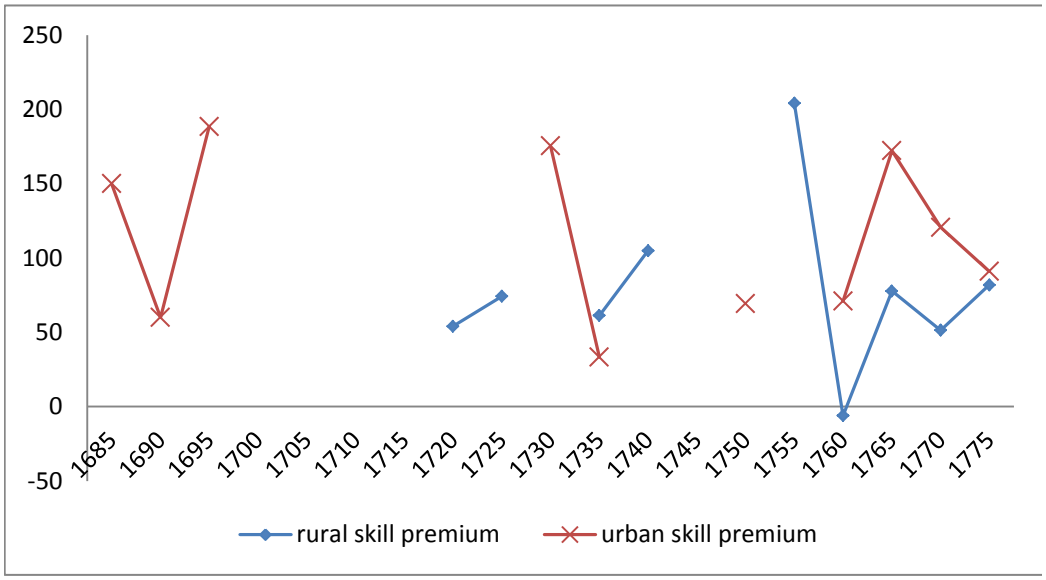
However, the significant increase in the Swedish skill premiums is somewhat surprising given the early development of literacy and the knowledge economy in Sweden during the seventeenth and eighteenth centuries (Edvinsson and Söderberg 2011b). It is also possible that a human capital gap developed as certain groups embraced the changes that came with the developments of the knowledge economy before others, leading to an initially higher level of inequality. The strong increase in skill premiums is also somewhat surprising in the context of changing guild regulations in Sweden at the time. From the 1720s the crown mandated changes in guild regulations that required guilds to grant more certifications than previously, which should have in theory increased the supply of qualified skilled labor as it reduced the barriers to attaining skilled status (Edgen 1997). However this growing inequality was in line with growing inequality throughout Europe. It is possible that the early advent of the knowledge economy in Sweden, despite Sweden's general backwardness, could be expected to decrease inequality in subsequent periods.

8.2.2 Urban and rural skill premium in Scania

Rural craftsmen work in more isolated markets where the supply of skilled labor is expected to be lower which allows skilled workers to command higher wages and in theory leads to a rural skill premium higher than in urban areas (Reis 2005; Clark 2005).

The rural Scanian skill premium (figure 8.8) performs counter to both theory and previous findings in other regions (see Reis 2005; Clark 2005). The rural Scanian skill premium remains essentially below the urban skill premium, with the exception of a few values in the 1750s, a period that corresponds to years with somewhat higher-than-normal rural skilled wages. However there are not as many

Figure 8.8: Skill premium in rural and urban Scania 1680-1776; five-year averages



Source: see text. Author's calculations.

points available as could be desired to make a truly consistent assessment for either skill premium series in this period, and so this remains a topic for further research.

The relatively low rural skill premium is possibly due to the pervasiveness of semi-skilled workers in Sweden. Gadd (2011) describes a system in which many peasant laborers and farmers labored on their own land for half the year but were engaged in some form of craft work during the periods when agricultural labor was impossible. This led to a system with large numbers of semi-professional amateur-skilled workers throughout non-urban areas of Sweden who were not officially reported as craftsmen. This phenomenon may have led to rural skilled builders having less market leverage than might have been the case with stricter control.

8.2.3 Skill premium in a European perspective

The development of Scania's and Stockholm's skill premiums can be better understood in a comparative European context. This comparison uses Allen's (2001) silver wages of building craftsmen (carpenters and masons) and unskilled builders to calculate skill premiums throughout Europe in the early modern era. Table 8.2 is similar to van Zanden's (2009) comparison of European and international skill premiums, which is also based primarily on Allen's data. There are some differences that can be attributed to rounding, van Zanden presenting two cities together in one series, or adjustments to the data that van Zanden made. There is, however, a significant difference between the skill premium values that van Zanden presents for Stockholm (indicated by JLZ) and the values that have been calculated here (indicated by KEG), despite their reliance on the same underlying data. A calculation of the 'mason premium', using only masons to represent skilled workers, results in a series in line with van Zanden's which explains the primary differences.[2] The

[2]Taking the opposite route and calculating only a 'carpenter premium' indicates a skill premium that is under 30 percent for every 50 year period except 1650-1700, when it is still only 50 percent. The difference between the skill premium, mason premium, and carpenter premium is profound; each indicates very different

analysis here will reflect the levels calculated using both masons' and carpenters' wages. Overall the skill premiums in both Scania and Stockholm are higher than the average for all regions except Eastern Europe / Poland in the early modern period. The Scanian series, along with those in Poland, is especially volatile.

Table 8.2: Skill premium in Europe in the early modern period

	1450-99	**1500-49**	**1550-99**	**1600-49**	**1650-99**	**1700-49**	**1750-99**
Antwerp	70	73	74	67	67	67	67
Amsterdam	-	48	49	44	40	31	29
London	60	57	49	59	50	40	55
Oxford / Southern England	50	66	48	48	50	47	52
Paris	59	61	47	64	61	67	78
Western Europe	**60**	**61**	**54**	**56**	**54**	**50**	**56**
Augsburg	-	59	32	55	35	52	24
Leipzig	-	-	75	92	82	71	65
Vienna	48	60	47	23	48	53	60
Central Europe	**48**	**60**	**51**	**56**	**55**	**59**	**50**
Florence	71	85	98	113	-	-	-
Milan	-	-	-	79	97	91	90
Valencia	34	56	30	17	16	16	17
Madrid	-	-	96	152	-	127	100
Southern Europe	**52**	**70**	**75**	**90**	**57**	**78**	**69**
Gdansk	-	38	114	77	79	79	39
Krakow	-	208	155	61	111	103	134
Warsaw	-	-	-	-	-	177	119
Lwow	-	62	62	45	22	-	-
Eastern Europe (Poland)	**-**	**103**	**111**	**61**	**71**	**120**	**98**
Stockholm (KEG)	-	51	52	93	84	47	-
Stockholm (JLZ)	-	67	103	195	111	74	17
Scania	-	100	46	36	101	62	136
Stockholm (KEG) and Scania	**-**	**75**	**49**	**65**	**92**	**54**	**136**
Stockholm (JLZ) and Scania	**-**	**83**	**75**	**116**	**106**	**68**	**76**

Source: Allen (2001); Stockholm (KEG): Jansson et al 1991; Stockholm (JLZ): van Zanden (2009) pp 155; Scania: see text.

As has been previously discussed, the North Sea region was economically advanced and outperformed the rest of Europe throughout the early modern era. As a result the skill premium in the North Sea region was fairly low and very consistent throughout this period as a function of the region's strong institutions and stability. This region was a powerful outlier to the rest of Europe and

trajectories of Stockholm's development. This highlights some of the methodological issues discussed above regarding systematic differences in pay between masons and carpenters.

so is not the best choice for a comparison with development in Scania and Stockholm. Instead Stockholm is most comparable with other developing national capitals such as Madrid or Vienna, while Scania, dominated by data from Malmo, is on par with second or third level cities, especially those engaged in agriculture.

The skill premiums in the Spanish, German, and Austrian cities represented here are, with the exception of Madrid, on par with those in the North Sea area and almost as consistent; by the middle of the sixteenth century the skill premium in Valencia was nearing fifty percent and falling and didn't rise above twenty percent from the seventeenth century until the end of the period. In Northern Italy the skill premium was also fairly stable and low, with the exception of Florence, which had a rising skill premium with more volatility than its neighbors in the sixteenth and seventeenth centuries.

Söderberg (2010) compares the development of Stockholm to Madrid in the seventeenth century; both were growing capital cities with high demands for building. Stockholm's skill premium is lower than that in Madrid and seems overall more stable, though it does grow considerably in the beginning of the seventeenth century. However, Madrid was in the middle of a construction boom that may have led to a higher-than-usual skill premium. All other capital cities in this data, with the exception of Warsaw which only has data from the eighteenth century, have much lower and stable skill premiums than Stockholm.

The most appropriate comparisons to Scania are cities from Poland which were close geographically and were also grain producers. Other smaller cities such as Augsburg are also good comparisons. Polish cities are the only ones in the data here than consistently have similarly volatile skill premiums to Scania at even higher values. Krakow is also the only city apart from Scania to have a significantly rising skill premium in the last half of the eighteenth century. Poland is also similar to Scania because of the large grain surplus, as mentioned earlier. Scania does not compare as well to Augsburg; Scania's skill premium is almost always higher, and is certainly less stable.

Stockholm's skill premium fits fairly well into the development of central and southern European cities and indicates some eighteenth century development in the economy and increasing stability, while Scania's development is more in line with the volatility found in Eastern Europe and gives indications of worsening conditions. When compared with the rest of Europe Scandinavia was not particularly developed and had higher levels of inequality and probably poorer institutions. However, Scandinavia does appear to have been at a higher level of development than Eastern Europe.

8.3 Women's relative wages

8.3.1 Women's relative wages in Scania and Stockholm

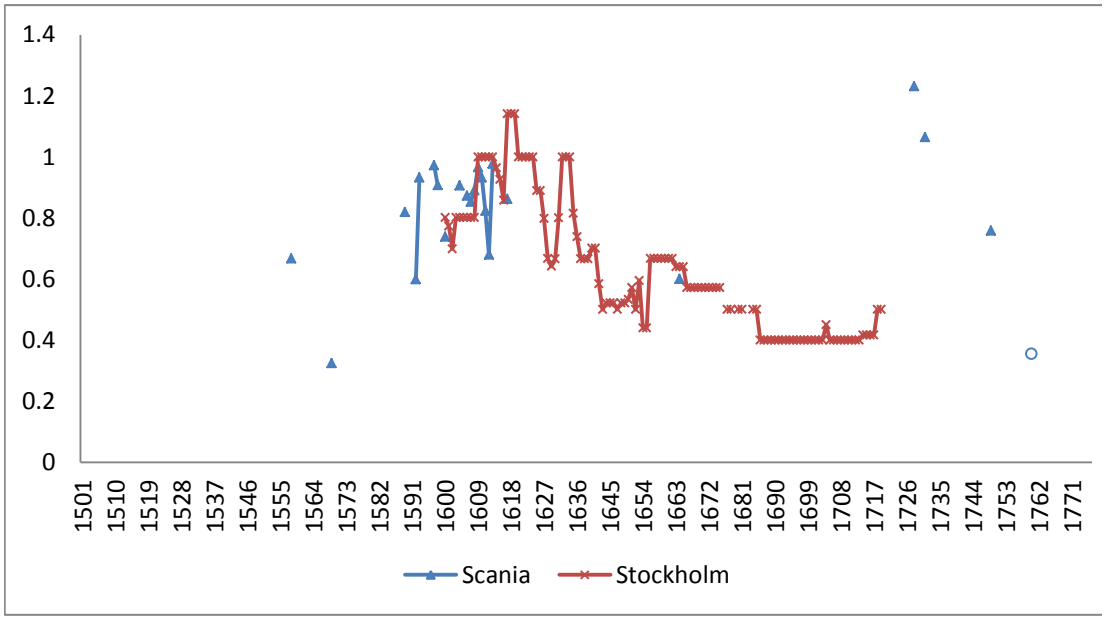
While the data on women's wages are not consistently available throughout the period they still provide us with some insight into the relative position of women through the development of women's relative wages and the ways in which women are represented in the sources. Because women's wages from Scania are based on raw archival data it is possible to examine women's relative wages on three different levels: as a group against all unskilled men, individually against men performing the same tasks, and again as a group against only the least skilled men, though not necessarily only those performing the same tasks.

The data utilized for this study reflect construction day labor, and this is true of female wage earners as well. Because the data only reflect this type of labor it is clear that a minority of women's work will be included; Gadd (2011) finds that Swedish women were more likely to do work in the home, especially those women married to landowning peasant farmers. While wives of landless workers or younger unmarried women were more likely to engage in temporary manual outdoor labor for pay, building work was still not the most common source of income for women.

Women's relative wages in Stockholm (figure 8.9) have a relatively clear trend, with a steep rise into the seventeenth century peaking at 14 percent above men's unskilled wages, followed by a steep decline over the seventeenth century and leveling out at about forty percent of men's unskilled wages by the end of the period. The data for women's wages in Scania are slightly more scarce, and so it is not possible to observe the development over an identical period. Like in Stockholm, relative wages rise to very high levels into the seventeenth century, and then appear to decline. What is different is the spike in relative wages in 1728 and 1731, which both indicate that women earned more than men, with continued higher relative wages in 1748. The data point in 1760 indicates a much lower relative wage, but this point represents a woman who has 'been in the kitchen and worked' (varit i köket och arbetet), and so should be interpreted within that context.

We can look to the historical record for a possible explanation for these peaks in women's' wages. Myrdal (2011) observes that in the late 1620s to the 1640s, and again in the early 1700s, Sweden underwent its most extensive military campaigns, during which the largest number of men were sent overseas to war. The effect of conscription and military deaths on the male population during this period was so extreme that the female to male population ratio was as high as 1.3 : 1. This change in the sex ratio had a direct impact on the distribution of labor leading women taking on a greater share of heavy physical labor, such as plowing, carting, and rowing, in addition to their more tradition-bound tasks such as household work and harvest-season labor. This shift in labor supply could be expected to increase women's wages during these periods. It is also not unreasonable to expect that the warfare in the Scanian region would increase impact of the war-time economy on the region, as

Figure 8.9: Women's relative wages in Scania and Stockholm in the 16th to 18th centuries



Source: see text. Author's calculations

well as increase the demand for construction work overall.

Like men, many of these women appear to have been hired as part of ongoing projects for more than one day at a time, and almost exclusively working on the largest projects represented in the data. These larger projects are valuable because we can assume that the task performed was the same for all involved and that the individual or entity doing the hiring and paying workers was the same. Examining the payment structures for these projects, independent of other jobs in the archives, can help isolate differences in payment to men and women when they are performing the same task.

One such project from 1613 has 13 entries that represent women hired to 'work on the trench passing through Rörsjön' (arbetat på diket som går igenom Rörsjön). There are 94 entries for this project in total. All women who are indicated are listed as 'diggers' wives', but none have their names included. They are all paid the equivalent of 0.051 SEK in a mix of currencies. The majority of male workers do not have their occupations indicated but are listed by name. These men also almost always receive the equivalent of 0.051 SEK for a day's work. Approximately every fifth worker is paid 0.063 SEK equivalent, but these workers are listed differently: they all have their occupation indicated as a 'digger', but do not have their name included. This indicates that there may have been something different about them to justify their difference in pay, likely acting in a minor supervisory role, though their task is not listed differently. However, the overall picture is one in which the least skilled men were paid the same as the women working alongside them, with some men in a higher position earning a different wage.

A project from 1607, 'working on the fortification', has a very similar pattern. The 24 unnamed diggers wives observed are paid the equivalent of 0.039 SEK for each day of work, as are the overwhelming majority of the approximately 150 named workers with no occupational title. It is only the unnamed, but titled 'diggers' and 'wagonmen' (hjulman) who earn more. Again, these unnamed diggers quite likely had some supervisory capacity, though it is not possible to tell from the way the tasks are recorded. This pattern is present in the majority of large projects where there is information indicating payment to women, including in 1593 (arbetat utanför Söderport) and 1606 (arbetat vid Österport).

The pattern is a bit different in a project in 1592, where all workers are listed as diggers and named, and there is slightly more diversity in the wages in general. In the project, of the seven women out of approximately 300 observations, three make the standard rate as men, eight skillings; three make six skillings; and one makes about ten skillings a day. The pattern is also not as strong in 1598, when a project, again at Söderport (arbetat på graven vid Söderport), records a less systematic distribution of wages than other projects.

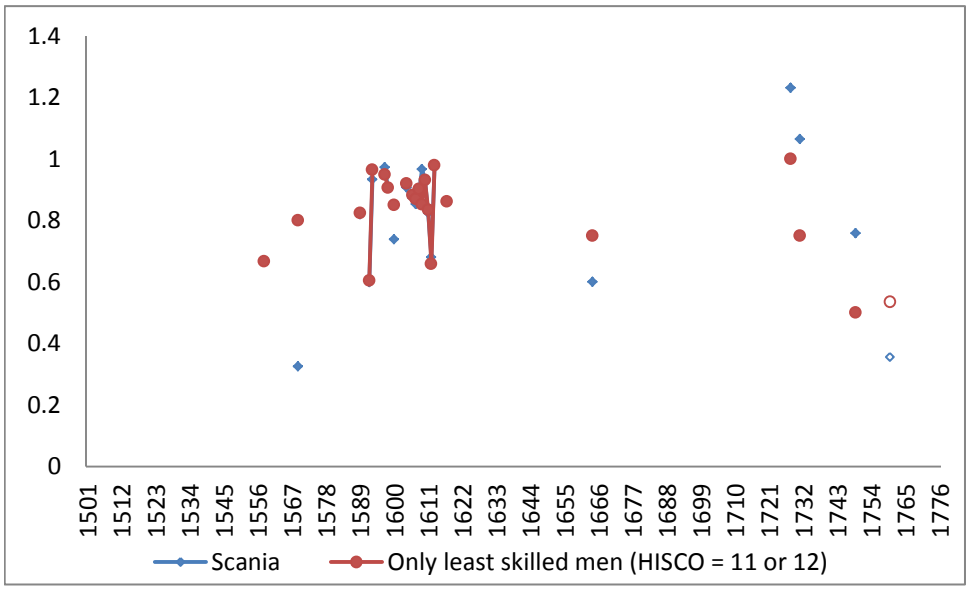
The probability that women's work often went uncommented upon can be seen in the multiple instances where the woman's gender was not specified in her occupation. As is mentioned previously in these cases the only way we can tell that a particular observation refers to a woman is because her name is listed in the records. Karine, wife of Niels the digger (possibly Niels Graffuer), is named in the data at least four times, and possibly a fifth, between 1589 and 1593. In each entry she is named somewhat differently; for example as Karine Nilssis (Nils' Karine) or Niels kvinna Karine (Neil's wife Karine). Karine's occupation is listed differently as well; she is twice listed as just a digger (grävare), rather than 'digger's wife' as it is in other instances. In 1592 another woman, Karine Wogns, most probably the wife of Wogns Jensön, is listed just after her husband in the payment rolls. Both

husband and wife are listed as 'digger,' and were working on what was most likely the foundation work for Malmo Castle's east tower. Karine received 12 skillings for a day and a half's digging, while Wogns Jensön received 8 skillings for a single day's labor; for both, the day rate is the same. For both women, their wages and occupational titles alone do not indicate that they are female and it would be impossible to tell their gender if their names were not included, especially because their wages were indistinguishable from men's wages. It is possible that there are many more women who do not have their names listed who are missed in the data. This is in line with Humphries and Sarasua's (2012) comments on both the invisibility of women's paid work and its general similarity to men's work.

It has been discussed above that it is probable that the least skilled men and women were typically paid similar wages for the same tasks, at least in larger scale projects, but that women's relative wages appear lower because the calculation compares them with other men who are performing more specialized, though still unskilled, tasks. Typical examples are hjulmen (wagon drivers) and the men who appear to be acting in some supervisory capacity. Figure 8.10 shows women's relative wages to men who are performing tasks in the least skilled HISCLASS categories compared to the relative wage series for Scania presented above. When women are compared only against those men who are performing the least skilled tasks their relative wages are much more consistent and hover around 0.8.

The data points in 1760 (represented with hollow markers) are not based off of manual labor wages, but a woman who has 'been in the kitchen and worked' (varit i köket och arbetet) in Vittskövle. This is the only clear instance of a woman performing a different task than men or a typically feminine task, and is one of the lowest relative wages recorded in both calculations of women's relative wages. Though it is only one example and is not the only low data point, it could connect to Burnettte's (1997) conclusion that systematic wage discrimination only persisted in occupations where women and men were separated. However, it could also be part of a declining trend in women's relative wages.

Figure 8.10: Two methods of comparing women's relative wages in Scania



Source: see text. Author's calculations

Which comparison of women's relative wages is the most accurate representation of women's earning power is debatable. There is a strong case for only comparing women against men who are completing the same task, indicating relative wage equality. However, it also becomes clear that women's lack of opportunities in the labor market constrain their earning potential more than for men; from this perspective it makes sense to compare unskilled women against all unskilled men, so that earning potential without formal training is compared.

These conclusions are similar to those reached by Burnette (1997), who finds that women and men were typically paid the same wages when adjusted for productivity. Burnette's calculation of women working about eighty percent of the hours men work could explain why women's relative wages in Scania, when measured against the least skilled men, tend to hover around eighty percent of men's wages. However, there is strong evidence that women earned the same rate as men when they were completing the same task.

Because of the reliance predominantly on one source, the relative lack of observations of women's work, and possibly different recording conventions between the sources and through time, it is only tentatively that we can make any suppositions about the relationship of women's marital status to employment opportunities. However, the data does indicate that women might have relied on their husbands' connections to gain access to manual day labor, as is suggested by Humphries and Weisdorf (2013).

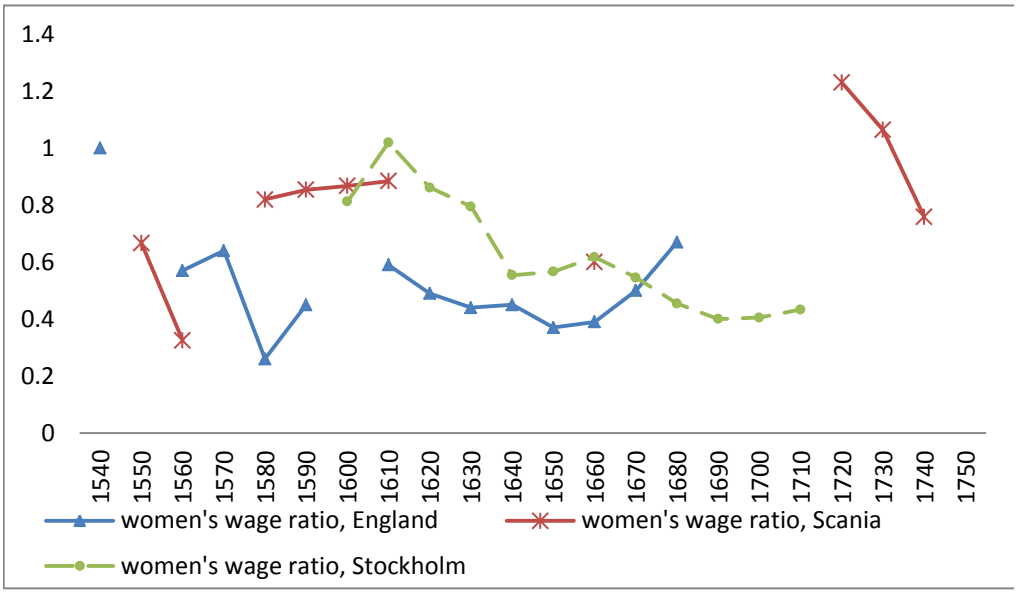
It is certainly suggestive that the Malmo Burghers data refer only to women's occupational titles as diggers' wives, and never as 'woman'. Furthermore, when women are identified by other characteristics they are often referred to in relation to their husbands. There are also several instances where women appear in the record in tandem with their husbands, either as a single entry or consecutively in the sources. Between Malmo Burgher's listing the vast majority of female workers as diggers' wives and the instances when women are listed as a wife there are fewer than twenty observations of women's wages that make no mention of a woman's marital status. The frequency with which women appear in the sources in conjunction with their husbands is strongly in line with Humphries and Weisdorf's suggestions that married women access casual work through their husbands' occupation. However, the infrequency with which we identify women does indicate that manual labor was not a typical occupation for women

8.3.2 Women's relative wages in a European perspective

An international comparison to women's wage ratios in England indicates that the women's relative wages in Scania, Stockholm, and Winchester College, from where the English data are taken, demonstrate a variety of trends (figure 8.11).

Women's wage ratios in both Scania and Stockholm are higher than those in England. However, the Stockholm and English series appear to follow a similar pattern, albeit with the Stockholm trend following the English data several decades later; women's wages at a fairly equal level to men's, followed by decline for about a century. The end of the observation period of both series shows an upward trend in women's wage ratios, which may indicate a shift in the trend. This upward shift is much stronger in the British data, which may be a function of the fact that trend is developing several decades ahead of Stockholm.

Figure 8.11: Women's relative wages in Scandinavia and England



Source: Scania and Stockholm: see text. England: van Zanden 2011.

The Scanian data is much more fragmented, and so it is difficult to determine to what extent the changes in women's remuneration reflect the same pattern as described above. It is possible that they follow a similar trend of relative equality, decline, and recovery; certainly the wages in the late sixteenth century are close to equal to men's wages, there is a lower point in the 1660s, followed by a considerable recovery in the first part of the eighteenth century. But the evidence for the decline rests on only one data point for the entire seventeenth century, and the recovery in the eighteenth century is far beyond what seems to be the case in Stockholm or England. Perhaps the relative rural character and low population of Malmo and Scania compared to Stockholm and especially England led to a lower labor supply or different pattern of labor demand that increased the demand for female labor. Alternatively, the ongoing position of Scania in a conflict zone may have both decreased the male labor supply and increased the demand for building, which led to a higher female wage ratio

9. Discussion and conclusion

This thesis has developed a new set of wage series for Scanian unskilled workers, skilled workers, and women in the early modern period, and used these data in combination with data from Stockholm to investigate the relative development of Scandinavian wages in a European perspective. The analysis provides strong evidence that Scania and Sweden were less developed and had poorer institutional structures and stability than the majority of Western Europe during the early modern era. The results presented here place Scania, especially, near the bottom of the performance of the regions investigated.

Stagnant and falling real wages in both Stockholm and Scania combined with a high and unstable skill premium indicate that Scandinavia fell behind more developed areas of North-Western Europe during the little divergence, even below the level of many parts of Central and Southern Europe. While grain-deflated wages give an impression of higher wages in Scania and Scandinavia than through much of Europe this is likely due to low grain prices rather than high wage levels, as in the

case in Poland. The trend of wage decline in combination with the high and rising skill premium presents a compelling image of Scandinavia as a poor periphery.

The skill premium in both Stockholm and Scania developed counter to the real wages. The theoretical agreement of the development of real wages and skill premium reinforces the interpretation made from each individual series, and makes clear the conclusion of Scandinavia's general decline during the Little Divergence. Stockholm and Scania's poor performance during the Little Divergence is likely related to the major transitions that Scandinavia as a whole, and particularly Scania, underwent during the period in question, as well as monetary instability, a shortsighted central government in Sweden (Karonen 2008), and civil unrest in Denmark (Skansjö 1997). The early development of the knowledge economy in Sweden did not prevent the skill premium from increasing substantially through the eighteenth century.

Evidence from the rural and urban real wages indicates a segmented market that became more integrated only in the latter part of the eighteenth century, a trend that is in line with previous investigations (see Jörberg 1972b). Evidence from the rural skill premium is less clear, but indicates that skilled workers were not able to monopolize rural markets to exact a high wage. This is possibly connected to the high proportion of semi-skilled Swedish peasant-farmers.

This study has also presented strong evidence that women in Scania received market wages for their work in the construction industry, even if their participation was not extensive and limited to the most basic tasks. Women's building work likely took place more often than what is indicated in the archival records; together with women's market wages this indicates that female laborers were fairly standard, if somewhat limited, part of the extra-household labor force.

Despite Stockholm and Scania's similar level of development, the data show that the two regions did not necessarily develop together. To the contrary, real wages and the skill premium in the two regions have slightly negative relationships. The differences in economic development are highlighted in Scania's downward wage trend pre-dating Stockholm's by a century. This contrary development to Stockholm is a strong justification for further examination of the rich data sources in Scania and in Scandinavia in general.

Primary data sources

Lunds Landsarkiv (Regional Archives in Lund)

Urban archives:

Landskrona rådhusrätt och magistrat *(Landskrona city court and magistrate)*

Lunds domkyrkas arkiv *(Lund Cathedral archive)*

Lunds stadsarkiv: Rådhusrättens och magistratens arkiv *(Lund city archive: City Hall Court and magistrate archive)*

Ystad stadsarkiv: Rådhusrättens och magistratens arkiv *(Ystad city archive: City Hall Court and magistrate archive)*

Manorial archives:

Jordberga godsarkiv *(Jordberga estate archive)*

Karsholms godsarkiv *(Karsholm estate archive)*

Knutstorps godsarkiv *(Knutstorp estate archive)*

Maltesholms godsarkiv *(Maltesholm estate archive)*

Rosendals godsarkiv *(Rosendal estate archive)*

Rydsgårds godsarkiv *(Rydsgård estate archive)*

Trolle Ljungby godsarkiv *(Trolle Ljungby estate archive)*

Vittskövle godsarkiv *(Vittskövle estate archive)*

Malmö Stadsarkiv (Malmo City Archives)

Urban archives:

Borgerskapet i Malmö 1517 – 1862 *(Burghers in Malmo 1517-1862)*

S:t Petri kyrkoarkiv *(Saint Petri church archive)*

Malmö Hospital 1528 – 1923 *(Malmo Hospital 1528-1923)*

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