

House prices in Stockholm 1600–1730: From rise to decline and stagnation

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Introduction

This chapter presents a nominal and a real hedonic house price index for Stockholm 1600–1730, and discusses the method applied. This was a period of rapid urbanisation in Stockholm, ending with partial de-urbanisation due to the Great Nordic Wars (1700–1721) and the plague of 1710, which had a substantial impact on property prices. This chapter presents a regression to reconstruct the index from the Middle Ages to 1730, which also covers the period in the preceding chapter. The appendix with the index also covers the whole period 1283–1730. The period 1726–1730 overlaps with the next chapter.

The longest real estate price index that so far has been available is for Paris in 1200–1800 (d’Avenel, 1894–1912). However, that index only approximates the average price of homes for 25-year periods and does not control for quality changes. If there is a qualitative improvement in buildings over time, then such an index will tend to overestimate the secular change.

The two main methods used for the pre-industrial period to construct a house price index are first the repeated sales method, which compares sales of the same property over time, and second the hedonic regression model. The latter does not need to be based on information of the exact location of the properties, but controls for the qualitative characteristics of those properties. Internationally, there are only a few indices reconstructed for the period covered here for Stockholm that control for quality: for example, a hedonic repeated sales index for the district of Herengracht in Amsterdam back to 1628 (Eichholtz, 1997), a hedonic index for Beijing back to 1644 (Raff, Wachter and Yan, 2013), a hedonic index for Dublin back to 1708 (Deeter, Quinn and Duffy, 2016), and a hedonic index for Edirne, Ottoman Empire, back to 1720 (Karagedikli, and Tuncer, 2021). For the 17th century, the sample sizes of these indices are quite small: the Herengracht index contains just 371 sales in 1628–1699, the Beijing index around 50, and the other two indices none.

The disposition of this chapter is as follows:

First, there is a presentation of the sources used for this study. These are of different types from the one used for the index construction from 1730 onwards, and do not contain the same kind of information. Information on exact location is missing in most cases, although the plot size is presented for many transactions. This makes calculating a price index based on repeated sales difficult.

The subsequent section discusses the different currency units that were used in Sweden during the studied period, which necessitates a transformation to the main currency unit before a real value index can be constructed. Some payments were made in three or more types of gold, silver and copper coins, and in the late 1710s also in coin tokens. Some transactions also involved payment in kind.

Next follows a description of the method applied to reconstruct the hedonic price index. We estimate a regression that includes various qualitative dummies, with half-timbered houses in Stockholm's Old Town as the reference, and time dummies for various periods. The regression includes all properties for the period 1283–1629, but only properties in the Old Town for the period 1630–1730 due to the uncertainty of the quality changes of plots and houses outside the Old Town. Since there were qualitative changes made to most types of properties during the rapid urbanisation of Stockholm in the 1630s and 1640s, this study identifies half-timbered houses as the type of housing most likely to be constant in terms of quality over time. Therefore, only half-timbered houses are included in the index covering the 1630s and 1640s.

The subsequent section discusses the evolution of the house price index, which is related to the rapid urbanisation of Stockholm in the 17th century. The index shows that there was an increase in prices from the 1620s to the 1680s, the main phase of the urbanisation of Stockholm, followed by decline and stagnation. At the end, for a robustness check, material is presented where it is possible to follow individual properties sold over time. Unfortunately, there are too few cases to enable the reconstruction of a repeated sales house price index, but the evolution of prices of the identified properties corresponds quite well with the presented hedonic house price index, which is a reassuring result for this study.

The sources

For the period from 1726, so-called Legal and Procurement protocols (Stockholms stadsarkiv, Stockholms magistrat- och rådhusrätt, A 6 a Lagfarts-, uppbuds-, protokoll) contain information of sale prices, but these cannot be used for the period up to 1725. By 1694 the Legal and Procurement protocols regarding property business in the city were removed from the civilian cases like crimes. From then on, they were instead registered separately. However, the notes written during the first decades of the separately archived legal and procurement protocols have one major flaw: prices are rarely included.

For the period 1600–1725, we have used three different sources, while for the

period 1726–1730 data comes from the study presented in the next chapter. Up to 1635, a published series of *Stockholms Tänkeböcker* (Stockholms stadsarkiv, 1939–2009), the Memory Books, is used, which are minutes from the Stockholm magistrate, and contain information on sales, economic disputes, inheritance, etc. After 1636, various unpublished sources are available. For 1638–1647, the source is the so-called Burned Book (“Brända boken”) which contains copies of the property deeds distributed during this period. Some pages, along with the cover in the book, are burned. This has probably contributed to the book in the archive being referred to as the Burned Book (Wikström, 1970, p. 39). For the period 1648–1654, the unpublished series of *Stockholms Tänkeböcker* is used. For the period 1654–1725, we use the property deeds available in the Secretary’s minutes, “Sekreterarens protokoll” (Stockholms stadsarkiv, Stockholms magistrat- och rådhusrätt, B1a, Sekreterarens registratur). Regardless of which of these sources has been used and despite their many shortcomings, they can provide the following information: the date of registration and date of issued bill of sale, the price, the type of property (plot, house, shed, etc.), the property size and if any other buildings or plots were included in the sale.

The growth of the city and the increase in the number of other types of official

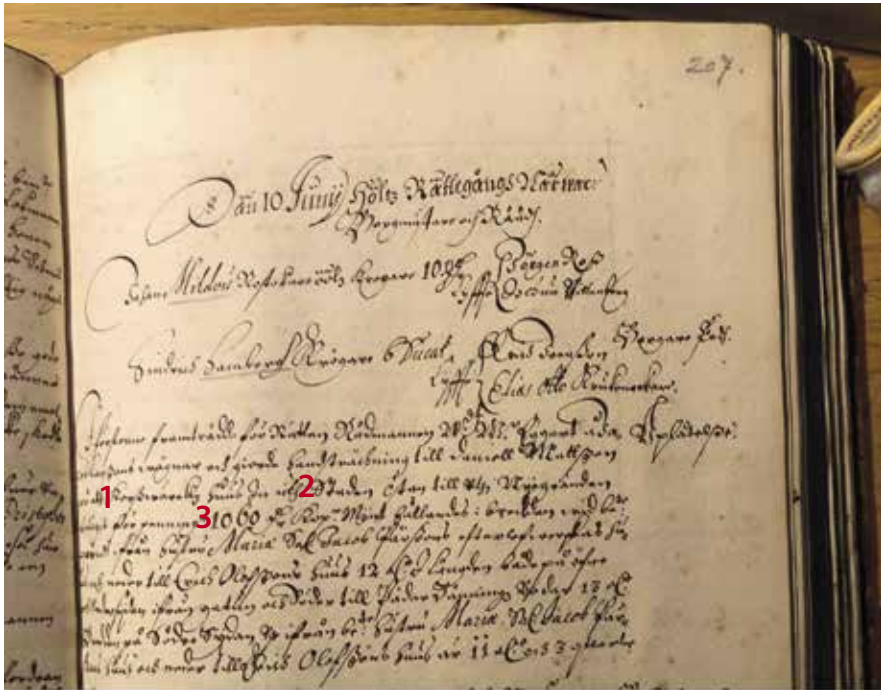


Photo of the Memory Book 1648. Illustration of a sale of a half-timbered house.

1 “korswärckcz huus” – half timbered house. 2: “Staden Östan till” – on the East side of the present Old Town. 3: “1060 D, kop.^r Mjnt” – 1060 daler kopparmynt, the price.

matters, entailed that what had previously been covered by “Citizens and Councils” now required this institution to be reformed. This reorganisation started in the mid-1630s and as a result, more and more cases were transferred to different subdivisions, or “kollegier” as they were called in Swedish. Because of this, the only cases that were left in the Memory Books were judicial in nature. In 1661, the functions were divided (in a somewhat inconsistent fashion) into two branches: one for criminal and one for civilian cases. With this split came the end of the use of Memory Books by the town hall court (“rådhusrätt”) that were of medieval origin (Wikström 1970).

Memory Books and the Burned Book

For 1601–1635, we have gathered 1166 excerpts from the printed Memory Books. The excerpts have been set up based on notices taken by the magistrate in 17 printed volumes carefully published by professional interpretations of the handwritten originals. As indicated above, property prices are unevenly distributed over time. The source material from Stockholm became more and more elaborate after its start in the early 15th century. A small number of the excerpts, roughly ten, are translated from the German language which confirms that German could still be used as an official language in Stockholm. Since the Middle Ages, a significant part of the population had German as its mother tongue. Not only language separated them from their Swedish neighbours, but religion also drove a wedge between people. People that were revealed to be devoted Catholics in the early 17th century had to choose between the death penalty or ostracism. In 1604, for example, “House-builder Lasse Rörby and his wife were deported from the country because of their deceitful Catholic religion” (Stb 13:97).

The printed source material of the Memory Books is transcribed from two parallel sources, so some transactions are printed twice. Even if the writing is formalised, there are some variations in the language depending to a large extent on which clerk was in charge. Many property transactions lack an articulated price. Generally, the main purpose of a notice of change in ownership of a property was not to establish the price but to make sure the transaction had been carried out legally. An example from a detailed transaction partly in translation from the notice of the magistrate of the 8 November 1634 is as follows (Stb 22:34):

In the same way came to the court on duty the honest and well-respected man, member of the municipal court Olof Erichson, aided by honest matron wife Karin Larßdotter, blessed widow after Callmar Anders Nilsson /---/ and authorised by her son /---/ lieutenant in the province of Värmland /---/ and transferred a stone house situated in [the street] Trångsund to honest and sensible man Nilß Oloffson, burgher and merchant in this town /---/ for eight hundred riksdaler. And as gift of honour, he honoured his mother-in-law Karin with a frock worth thirty-two riksdaler and gave his brother-in-law Nilß Anderßon 50 riksdaler; and those 800 riksdaler

daler as well as the honourable gifts confessed the authorised deputy to have collected on behalf of his principals from the first to the last penny as well as the gifts mentioned. [translation from Swedish]

Using a deputy, as is the case here, was common but not mandatory. The sellers and buyers often appeared themselves in front of the court. Here we lack data about a written bill of sale which is a common feature, so this can be an example of a notification more in line with an old-fashioned oral practice. Female buyers and sellers constituted a minority. It is well known that women who sold properties in pre-industrial times were often widowed, reflecting that they no longer could maintain such a palatial residence after the death of their husbands.

Of the 1166 transactions in 1601–1635, we find female parties, alone or together with other men or women, as the seller in 325 notices (28 percent) and as the buyer in 144 notices (12 percent). Here gifts of honour given by the buyer, such as the frock mentioned above, are included as a sign of ownership, but not when female consent is noted in the sources. Another source of error is that people are sometimes not mentioned by name, making it impossible to distinguish whether the parties were male or female. For example, the names of propertied children are often omitted.

Gifts of honour are almost always given by a male, often the buyer to the seller's wife. A rare exception, with a female giving a gift of honour can be found in 1634 when the widowed, high-nobility lady, Britta de la Gardie, gave the sellers 50 extra riksdaler in addition to the 650 riksdaler she had paid for a stone house. The house was bought from the three orphaned children of shoemaker Rasmus (Stb 22:14). The children are not mentioned by their names and this example illustrates that the donor had to be of a higher rank than the receiver (or at least not of a lower rank).

The Burned Book contains copies of the property deeds ("fastebrev" in Swedish) that were distributed between 1638 and 1647. This source got its name due to the city's original documents disappearing in the 1697 fire at the Tre Kronor castle whereby all those who received property deeds during the period in question were asked to send in copies of these deeds. Whether the book really contains all the property deeds is not known. The number of copies collected, in comparison with the number of deeds collected during other years and periods, indicates that if not all, then close to all, deeds are present in the Burned Book. Also, since this period coincides with the street regulation discussed below, it can be assumed that it was very important for the property owners that both the old and new plots were properly (and in accordance with the law) registered with the city's Magistrate Court. Registration of ownership was also of great importance if the property was to be sold through division of property in the future. In these cases, the property deeds had to be verified against the city's register. This was done to make sure that no one else had bought either shares or the entire content of the property deed after the copy kept by the owner had been issued. When dealing with property division, the deeds were



Photo of a burned page from the Burned Book (“Brända boken”).

important to show whether the property was part of a birthright (“bördsrätt”). In addition, creditors could not mortgage the property (as collateral for a loan) if the registration of the property deed was missing from the city’s archive (Holmbäck and Wessén 1966, pp. 70–74).

The Secretary’s register

In comparison with the Burned Book’s copies of issued property deeds, the so-called Secretary’s minutes consist of the substrates to the issued property deeds. Therefore, it is not surprising that both sources are perceived to be almost identically designed. They have the same structure throughout the period. The few exceptions were usually the result of the installation of a new secretary who had not yet fully adapted to the procedures. This is evident since the property deeds that differ from the rest are written in different handwriting compared to previously issued deeds. When these are followed over time, the design often aligns with the others after the newly installed secretary had written just two deeds. This indicates that the property deeds were standardised from at least 1637 and almost all the deeds include the information that is relevant to our research.

The property deeds were official letters about the change in ownership of a property. The property deeds were written, at the buyer's request, one year after the last "uppbud" (procurement) if no relative, or other person in close connection with the seller, had objected to the sale. These deeds were the new owner's insurance that no one else could claim ownership of the plot or building in question. The deeds regarding property in the City of Stockholm between 1653 and 1757 were written down and kept in the archive "the Secretary's register" ("Sekreterarens registratur"). From 1726, the Legal and Procurement protocols have been used instead, since they contain more sales.



Photo of the register of a property deed from the Secretary's minutes in 1667 (archived under the heading of "Secretary's register"). The first line reads: "Property deed for wife Cathar Wilde concerning a house in Town East, folio 6". 1: "fastbreef" (property deed), 2: "húús" (house), 3: "Östan till" (East side), 4: "gårdh" (courtyard), 5: Södermalm, 6: "steenhúús" (stone house), 7: "Stadzens Östra deel" (East part of the Town), 8: "2^{ne} Tompter" (two plots), 9: "gråmúnkeholm" (Gråmunkeholm, the present Riddarholmen).

The property deed usually includes prices, names and occupations of the seller and the buyer, the geographical location, the name of the bordering streets, and the owners of adjacent properties, the type of building and the size of the plot and/or house being sold. However, this was not managed in a consistent manner. Only some of the registered property deeds have an attached block name, most of them includes street names but a few only locate the plot or house by pointing out who owned the

surrounding houses. Most commonly, the information missing in the property deeds is the specific block name and number attached to the plot of land or building being sold. It is, therefore, not a very easy source to handle. Some properties were bought from several different owners at different times. Since the location of the properties is often also missing, or would require substantial research to determine, we have followed the price of different types of properties, which is also used for the period up to 1600 by Bo Franzén and Johan Söderberg.

Below follows a transcription of part of a property deed depicting the sale of a property in Stockholm's Old Town, in S:t Nikolai parish, in 1725. Noble lady Ulrica Stiernhof sold a stone house to the royal caretaker Jonas Weyman for 8000 daler koppermynt, equivalent to the pay for 5,333 days of work for a male worker (Söderberg, 2010). The house was located on Stora Nygatan (previously Stora Kungsgatan) and property number 24 in the block Galathea:

Deed of purchase for caretaker Jonas Weyman / Weijman

Our Mayor and Council of the Royal Residence Capital Stockholm informs all readers of this open letter that in the One Thousand Seventh Hundredth and Twenty-fifth year after our Lord's and Saviour's birth dated 12th of July when we held Our Town Hall Court came to us and our sitting court the Caretaker of the Royal Council Well-Respected Jonas Weyman, displaying one by Well-born Mrs Maria [should be Ulrica] Stiernhof dated 5th of May [this year] signed Contract of Sale whereby the mentioned Mrs Stiernhof for a sum of Eight Thousand Daler Koppermynt and in addition a gift of honour of 500 daler koppermynt to Caretaker Weyman make available and sell her stone house situated in the Town [present Old Town] at Kongsgatan at the corner of Måns the Weaver's Alley and next to the house of Captain Mr Carl Mäyer and Gold Worker Mr Gottfried du Bois as it is to the length and breadth with its own four walls, everything free and its own ground, under this sale a black pear tree Wardrobe and a Cistat corner cupboard are included.

And all the while Mrs. Stiernhof now only in the actual deed of purchase of the above-mentioned date confesses, without and through her brother Cavalry Captain Well-born Herr Georg Stiernhof house before the Court also acknowledged and confessed the pledged purchase price of 8000 daler koppermynt the last coin with the first to be properly put up and paid, making in addition to Weyman a friendly imbursement, who then paid a fee according to the law, for the sake of acknowledging and declaring caretaker Well-respected Jonas Weyman and his dear wife and children to the above-mentioned stone house and all its belongings given to him and them in full consideration of this power and permission to use, dig, possess, build on, mortgage or sell, and thereby do and dispose, as with all other his and their legally and correctly obtained property, happily and free from all blame

and prosecution now and in the coming times forever to... and here it has been processed according to city law, confirmed with the city seal and let it happen. Year, Day, and Place as Above. [translation from Swedish]

The text in the property deeds always begins with when and how the matter was raised before the town mayor and the town hall court council's members. Then comes a short description (name and occupation) of the buyer, seller, and any predecessors as well as which property or plot the sale refers to, the date of the bill of sale ("köpebrev") and the sale price. Following this is a description of the property or plot size and any other buildings, walls, etc. that were to be included in the sale. The text always ends with the seller renouncing all right to the property to the buyer and then it states that this buyer and his/her heirs have the right to build, renovate and in other ways change the property as they like. Lastly, it is always stated that the seller and the buyer have made an honest handshake ("handsträckning") and that the sale is thus approved by the mayor and the town hall court.

In itself, the date of registration for a property sale is of less value for this study, but in cases where the date of an issued bill of sale is unclear or missing completely, the date of registration is important for our assessment. The law demanded that before any property deeds were issued, the sale had to go through at least three rounds of so-called "uppbud", or procurements (see upcoming chapters). The system of "uppbud" entailed that every sale was announced publicly three times in three successive court sessions. It gave relatives, neighbours and others related to the seller a chance to protest against the sale. Due to this, no property deeds could have been applied for before at least three months had passed since the actual sale. In cases where the date of purchase is missing completely or if the property deed is issued before April (if the sale is made in December, the third "uppbud" cannot be made until March), this is important since it helps us determine the earliest possible time when a sale could have taken place. For this study, it is the year within which the sale took place that is of interest (and not the exact date).

Regardless of the source, there are always some cases where a long time could pass between the sale and the application for a property deed. This was sometimes because the purchase consisted of several partial sales (for example when the property had many sellers, often heirs). The process could also be prolonged when a relative or neighbour asserted her or his birth- or neighbour right to buy the property before others or when creditors were involved to deal with the previous owner's mortgage. It was also common that properties or plots were sold through the town's auction system. If so, the previous owner/s or their predecessors rarely participated and this led to a situation where the purchase itself had one date and the bill of sale had another one, often much later. In these cases, it has become clear to us too late in the process that different participants in this project have used different dates. While we have tended to register the date of purchase for earlier periods, for later periods we have mostly registered the date of the bill of sale. In most cases, this does not affect

our results, but some problems could arise if the auction was conducted at the very end of a year and the bill of sale is written the following year, especially if the sale took place at the interchange between two five-year periods. Another aspect of the auction sales is that the price for any type of property or plot tended to be lower than when they were sold through other processes. When looking at the price development for a specific property over time, there is often a price dip related to the property being sold at auction.

As mentioned above, the property deeds follow the same structure throughout the period and this gives us a good insight into the size and extent of different properties that were bought and sold. The description of the type of property is most often very straightforward, i.e. that the sale concerned a house, a plot, a stone house, a stable, a tavern, etc. Following that often comes a detailed description of the location of the property including street name, any well-known landmarks near the house and possible neighbours. For example, in the property deed depicted above, the house that Mr Weijman bought was located in S:t Nikolai parish on Stora Kongsgatan on the corner of the Måns Wäwaren alley next to Captain Mr. Carl Mäyer's and Gold Worker Mr. Gottfried du Bois' houses. However, even though this description is detailed, it does not give us the information we are looking for. From the property deeds, the location can often be deduced from the data from the 18th century, but this is increasingly difficult further back in time. First, the street names in use at the time are not the same ones that are in use today. In addition, block names and the associated numbering of the houses in each block were in those days established in the public consciousness, but these names are very rarely mentioned in the property deeds that apply to sales within St Nikolai parish during the 17th century. With the use of old maps, online archives and registers, address directories, probate inventories etc., it would probably be possible to locate the exact building in question in almost every case. Due to time restraints, however, this has not been done in a complete fashion in this study. Nonetheless, as a result of this study, we have started to build a database that will serve as an excellent starting point for future research regarding the specific blocks and houses involved in different sales.

The means of payment used

It is important to understand the currency system at the time. In addition, the sales prices could consist of different parts, and what (or who) was behind the sales could cause the process to drag on over a long period of time. For deflation of nominal prices, a Consumer Price Index is used (Edvinsson and Söderberg, 2010).

The means of payments used in the transaction of properties varied substantially. The same transaction could also be made in different types of currencies or means of payment. Even if commodities are mentioned occasionally for this period as payment, the property market seems to have been monetarised with an abundance of coins. Our database indicates that in 28 percent of the property transactions between

1297 and 1520 it was expressively stated that payment was made solely in coins. For 1601–1635, it increased to 43 percent.

The monetary system during the studied period was extremely complex especially after the introduction of a copper standard in 1624. Moreover, the parallel circulation of different silver and gold coins, whose market value fluctuated in relation to each other despite establishment of fixed exchange rates, also complicates the analysis. However, not only coins could be used as payments. Silver and other commodities, such as iron and grain, were also common means of payment. All transactions had to be transformed into gram silver, using exchange rates presented in Edvinsson (2010), and then transformed back to nominal values of the predominant currency unit in use (daler up to 1624, and thereafter daler kopparmynt).

Before 1624, the main means of payment was silver coins in mark and öre denomination counted in daler. One mark silver coin was worth 8 öre silver coins. In the 16th century, the daler was a coin of its own, but in the early 17th century it was called riksdaler (specie). The daler instead became a unit of account equal to 4 marks or 32 öre. The riksdaler and daler became two different currency units, and their exchange rate fluctuated during the whole period of investigation. During the 17th century, some payments were made in actual riksdaler coins, and these were especially common around the middle of the century.

The most common gold currency was the ducat, which was valued at two riksdaler. However, at least during the early stages of the 17th century, other gold coins were also used as payment. The value of gold coins was transformed into ducats mainly based on their gold content. One rosenobel is set equal to 2.5 ducats, one portugalös to 10 ducats, and one Hungarian gulden to one ducat.

When a copper standard was introduced in 1624, copper coins were minted in the denomination of öre. The state decreed that an öre in copper coins was equal in value to an öre in silver coins. However, quickly the öre copper coins fell in value relative the öre silver coin, while silver öre also fell in value relative the mark silver coins. By the late 1620s, one daler in copper coins was no longer equal to one daler in öre silver coins, which in turn was no longer equal in value to a daler in mark silver coins. Often it is specified in which coins a daler was counted. In the late 1620s and the early 1630s, many sums were denominated in daler without specifying whether they were in daler in copper coins or silver coins. The assumption made here is that, when not specified, the currency unit was in fact daler kopparmynt. There was actually an incentive to pay in daler kopparmynt, in accordance with Gresham's law that bad money tends to drive out good money. When the payment was to be made in a stronger currency, then it probably would have been specified.

In 1633, it was established that 1 daler silvermynt was to be valued 2 daler kopparmynt, which was appreciated to 2.5 daler kopparmynt in 1643. The parity between 8 öre in silver coins and 1 mark in silver coins was restored temporarily. In 1665, 1 daler silvermynt was set at 3 daler kopparmynt. The daler silvermynt and daler kopparmynt developed into units of account and did not necessarily refer to

actual silver or copper coins. For example, the copper plates that were minted were denominated in daler silvermynt. Actual silver coins, minted in mark and öre denominations, could be valued at more than their nominal value in daler silvermynt. Therefore, two separate silver currencies were established, daler courant that was counted in öre silver coins, and daler carolin that was counted in mark silver coins, in addition to the riksdaler that continued to circulate as an international hard currency throughout the copper standard era.

Admittedly, after 1630, purchases were most commonly made in daler kopparmynt, daler silvermynt or riksdaler. A daler in “white coins”, “white pennies”, “white silver” (“hvidt silver”) or “white round pieces” probably meant that payment was made in actual öre silver coins, later termed courant. How the price between daler silvermynt and riksdaler specie had been determined at the time of sale is often stated in cases when the buyer chose to pay in full or in part in, for example, riksdaler specie instead of daler silvermynt. In a few cases, there were also notes on the value relation between daler silvermynt and daler kopparmynt.

In the second half of the 17th century, some amounts are specified as riksdaler in “white coins”, ducat in carolins, riksdaler carolin, etc. This implies that the payment was not made in actual riksdaler specie or ducat coins, but in other types of coins and valued in riksdaler according to the official rate. While “white coins” referred to öre silver coins, the carolins referred to mark silver coins.

The market rate of the riksdaler and ducat was often above the official rate, which means that a riksdaler in white coins was valued less than a riksdaler specie, and a ducat carolin less than a ducat. For example, in 1659, one part of a payment was made in 800 riksdaler “vitt mynt” (“white coins”), using the official rate 1 riksdaler = 1.5 daler in silver coins, which means that the sum was equal to 1200 daler in öre silver coins. At the time, the market rate of the riksdaler was actually 1.62 daler in silver coins, so the actual sum paid was 739 riksdaler specie, not 800 riksdaler specie. One problem is when prices are expressed just in riksdaler, i.e. not specified whether it was in riksdaler specie or not. For many periods, a riksdaler was equal to riksdaler specie. Even if the payment is made in other coins, the difference is not very large. We here assumed that, without specification, the riksdaler was the actual riksdaler specie coin.

In 1670, out of 23 transactions for properties in the Old Town, 13 were made in riksdaler specie coins, 3 in daler kopparmynt, 2 in daler silvermynt, 2 both in daler kopparmynt and daler silvermynt, 1 in both riksdaler and daler kopparmynt, 1 in daler kopparmynt and outweighed silver, and 1 in riksdaler, daler kopparmynt and ducats. The common use of riksdaler, despite it not being the main domestic currency unit, reflects the large minting of riksdaler at the time, the need to pay larger transactions in coins of higher value, and the underdeveloped use of paper notes. Later during the 17th century, the use of riksdaler diminished.

At the end of the 17th century, the copper standard was briefly abolished, even if the daler kopparmynt continued to be in use as a unit of account. Copper plates disappeared from circulation, and only copper coins of lower denominations contin-

ued to circulate. However, in 1709, copper plates were being minted once again, and the copper standard was reintroduced.

At the end of the 1710s, large amounts of coin tokens, termed emergency coins, came into circulation as a consequence of the failed war with Russia. This led to price inflation, and coin tokens fell in value relative to copper plates and silver coins. When reconstructing a house price index, it is important to take into consideration which currency this index is following. The Consumer Price Index follows the coin tokens (Edvinsson and Söderberg, 2010). An index following better coins should therefore not be deflated by the Consumer Price Index, but first transformed into the same unit as used by the CPI before being deflated. Purchases of consumer goods were probably mostly made in coin tokens. However, most transactions in the housing market were made in proper coins, copper plates or silver coins. In some of the sources, it is explicitly stated, for example, that payment was made in copper plates or in “proper coins”.

A daler kopparmynt in coin tokens was officially equal to a daler kopparmynt in copper plates or silver coins. However, coin tokens quickly fell in value relative to copper plates and silver coins, which in turn fell in value against the riksdaler specie and the ducat. The sources for this period often state in which coins payments were made, for example, daler kopparmynt in carolins, in plates, in “good coins”, “white pennies”, or coin tokens. One payment in 1718 consisted of 8,000 daler kopparmynt in plates and 4,000 daler kopparmynt in coin tokens. Payments in coin tokens were still less common, and mostly noted in late 1718 and early 1719. The assumption is therefore made that payments that were only expressed in daler kopparmynt were made in proper coins, and not coin tokens. It is assumed that the premium on better coins was 6 percent in the second half 1716, 9 percent in the first half of 1717, 24 percent in second half of 1717, 3.5 percent in the first half of 1718, 13 percent in July–September 1718, 17 percent in October 1718, 50 percent in November 1718, 70 percent in December 1718, 80 percent in January 1719, 90 percent in February 1719, and 100 percent in March–April, based on sporadic information of the premium and a monthly price index for Gothenburg where payments for consumer goods were made in coin tokens (see Edvinsson, 2010). In 1719, coin tokens were de facto devalued by 50 percent.

When there was a payment in kind it was usually made in iron, silver ware, clothing, or other goods. In cases where silver ware was used as payment, it is always stated how many “weights” (“lod”) these wares consisted of. The lod weighed 13 grams, while the gross weight of the riksdaler specie was around 29 grams. The assumption is therefore made that one lod silver was valued 45 percent of the riksdaler specie. It is more difficult with iron, clothes, etc., as it is rarely clear what their monetary value was. When iron was used as payment, it is sometimes stated that it was valued with reference to the iron price in Stockholm at that specific time. This makes it possible to use various databases on prices.

In connection with the sale price, it is often, but not always, stated that the buyer

also paid a “gift of honour” (“äreskänk” in Swedish) as exemplified earlier. This phenomenon was sometimes also called a “friend gift” (“vängåva”) and could consist of, for example, a sum of money (sometimes in a different currency), silver (in the form of everything from teapots to jewellery) or various types of clothing, books and furniture.

One example of a sale where there is a gift of honour involved is in the transcribed property deed above. The buyer and royal caretaker Johan Weijman paid 8,000 daler kopparmynt for the property that he bought from noblewoman Ulrica Stiernhof in 1725, and in addition he also paid 500 daler kopparmynt as a gift of honour. The goods used as a gift of honour in the 17th and early 18th centuries included a hat (1673), a Bible (1692), a garment (1693) and two gilded silver goblets (1713).

There are also, a few cases where the gift of honour is not specified beyond statements like “a gift of honour” or “a gift of honour deemed reasonable by the buyer”. The gift of honour seems to have been higher in the first half of the 17th century. If not specified, it is assumed that a gift of honour equalled 5 percent of the regular payment up to 1647 and 3 percent afterwards.

On some occasions, the gift of honour was to be given to another person, i.e. it was not intended for the individual that was officially selling the property. This was, for example, the case in 1699 when nobleman Christopher Adlerflycht bought a stone house on Västerlånggatan in St. Nikolai parish. In addition to paying the actual purchase amount, Adlerflycht, according to the property deed, was also to pay a gift of honour (200 daler kopparmynt) to the seller’s wife.

There are also some types of property transactions that have been excluded from this study. Sales where the property is exchanged for another property without indicated price are excluded. Property sales that were conducted through city auctions are excluded for some periods. In many of these cases, the property deeds make it clear that the buyer only paid the amount he or she had lent against collateral in the property. There are only a few cases where the buyer paid more than the original amount of the debt. This was probably because there had then been several individuals involved in taking out a loan on the property and hence, several individuals took part in the bidding during the auction. Alternatively, there was a relative with a birthright who made a claim on (part of) the property. Even if this relative had priority in buying the property, it is clear in the notes that it only applied if they could pay the entire mortgaged debt within a reasonable time.

Finally, some sales took place in stages, especially when there were several stakeholders. Such sales could be time-consuming and sometimes extend over several years. An example of this is when the merchant’s wife Karin Trotzig bought the first third of a manor house from a woman named Brita. Brita was the wife of Mayor Jacob Grundell and had inherited the indebted house in 1634. The house had its own foundation and courtyard between Skomakaregatan and Prästgatan with the width along Vattubrinken (today called Tyska Brinken). Almost 3.5 years later, when the two women had become widows, Karin bought the remaining two thirds

of the property from Brita. When the price difference was large and when the time span meant that parts of the property were purchased in different years, as was the case in the example described above, the case is excluded from the analysis. On the other hand, when the various parts of the property were purchased within the same year and at the same price, the listing is included.

The index

Depending on the data, various methods to reconstruct an index can be applied (Eurostat, 2013, pp. 25–26). The simplest method is to calculate a central measure of sales in one period, such as the Paris index for 1200–1800 (d’Avenel, 1894–1912), which is biased since sales in one period may not be representative of the whole stock and there could be quality changes. In the literature, there are four main methods to adjust for quality changes. Stratification or mixed method entails the sales material being grouped into strata based on various constant qualities, which ensures that the aggregate holds these qualities constant. A repeated sales index involves sales of the same property at being compared at different points in time. A drawback of the latter method is that quality often changes for the same property. Hedonic regression methods entail the use of regression to control for various qualities – often time dummies are added. A Sale Price Appraisal Ratio (SPAR) is based on data on tax values, the ratio of market price to tax values and the regular appraisal of tax values. This method avoids the problem of sales perhaps not being representative of the whole stock, but it requires reliable tax values.

Since the location of the property is not known, the repeated sales method cannot be used for the period before 1726. The present index can be described as a mixture of a hedonic and stratified index. Wood (2005, p. 214) describes stratification as followed:

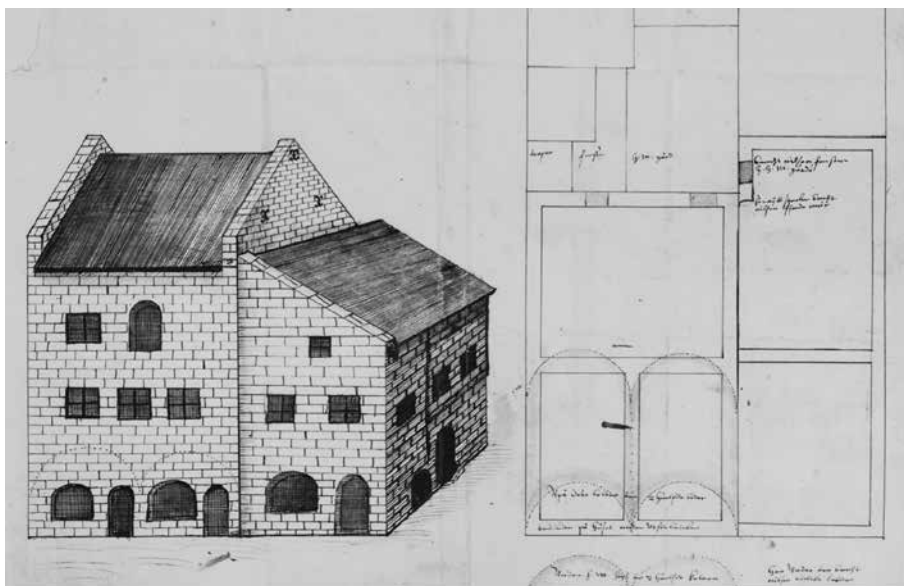
House price observations are grouped into sets or ‘cells’ of observations on houses with similar location and physical attributes... The mean prices in each cell are weighted together to give a ‘mix-adjusted’ price. A change in the composition of the sample will alter the number of observations in each cell. But if the cells are defined sufficiently precisely, so that all elements of the cell have similar prices and price trends, then such compositional changes will not systematically affect the mix-adjusted house price.

In this study, the logarithm of the real price, p_t , is regressed on m quality dummies, Q_i , and n time dummies, T_j (excluding reference categories):

$$LN(p_t) = a + \sum_{i=1}^m b_i Q_i + \sum_{j=1}^n c_j T_j + u$$

The quality dummies consist of various house types (stone house, house, half-timbered house, manor houses, etc.), additional quality characteristics (large, small, burnt down, etc.), locations for the period up to 1630, with the half-timbered houses in the Old Town without quality characteristics as the reference. The time dummies consist of various sub-periods, five-year periods from 1550, and ten-year periods 1420–1539, with one of the periods as a reference. The two time-dummies of 1283–1349 and 1350–1419 are also included, despite few cases in these periods – we consider our index reasonably reliable only from 1420 onwards. The cut-off year of 1350 is used to differentiate between pre- and post-Black Death conditions. For cross checks, 5-year periods from 1730 to 1874 are also included in the regression, encompassing only stone houses in the Old Town. For the period 1283–1599, 2,306 observations are used, for the period 1600–1730 1,889 observations, and for the period 1731–1874, 2,600 observations. However, our database covers more properties sold, but many of the observations are not used.

The composition of house types that were sold changed over time. Although these changes mainly reflected actual transformation of the composition of buildings, it cannot be excluded that some changes of terminology also occurred. For example, it was common that unspecified “houses” were sold.



A drawing from 1628 of a property consisting of one larger and one smaller stone house, today the property is named Hippomenes 6. The two buildings were constructed in the second part of the 15th century, and exemplify typical medieval stone houses. They were modernised in the 1680s.

Source: Wikimedia Commons.

Stone houses constituted a large share of the sales, and they were also generally the most expensive type of property. Their share of total sales increased over time, especially during the 17th century, reflecting the transformation of the Old Town where other types of houses were replaced. After 1730, almost all properties that were sold in the Old Town were stone houses.



Photo of “Vädersolstavlan”, The Sundog Painting, 1535. Illustration of various house types (multi-storied stone houses above) in the Old Town of Stockholm.

Source: Wikimedia Commons.

During the Middle Ages, the sale of courtyards (*gård*) in the Old Town was about as common as the sale of stone houses. However, after 1520 courtyard sales, as a share of total sales, decreased substantially, while sales of stone houses increased. It is possible that they were relabelled as wooden houses, which were a common property sold in the period 1540–1590, but quite uncommon before then. In the 1570s, substantial efforts were made to remove wooden houses from the Old Town. The last recorded sale of a property labelled as a “gård”, courtyard, in the Old Town was from 1685. However, courtyards were commonly sold outside of the Old Town in the 18th century as well.

In the 16th and 17th centuries, another house type on the market was the half-timbered house (*korsvirkeshus*). These were houses built with heavy timber, with filler material between the timbers. The first recorded sale of a half-timbered house in the Old Town was in 1549, and they were most common in the period 1580–1630. By the early 18th century, however, they had largely disappeared from the market.

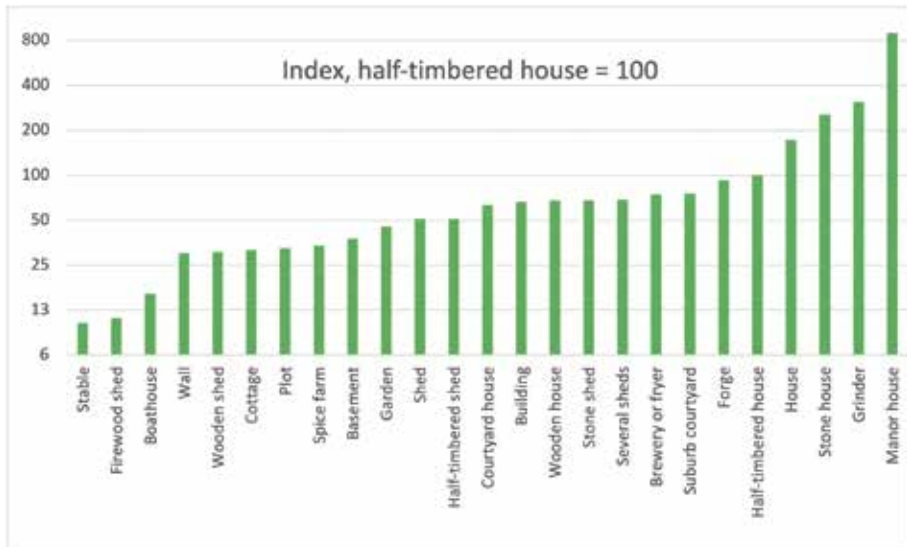


Photo of the The Bloodbath Painting, from 1524. This picture depicts various types of houses.
Source: Wikimedia Commons.

Many properties could undergo qualitative changes despite being labelled the same. In 1629, the first plot was sold on Skeppsbron, which previously had not contained any large buildings, and today is both a street and a quay consisting of some of the largest stone houses in the Old Town. During the 1630s and 1640s, it seems some buildings were transformed. One type of building that probably did not undergo substantial qualitative or conceptual transformations is the half-timbered house (*korsvirkeshus*). The prices of such buildings also increased much slower in the 1630s and 1640s than those of other types of properties. In the regression model of this study, the quality is assumed to remain constant for half-timbered houses, while an indicator variable is constructed separately for stone house, plots, stone sheds and other properties from 1650 onwards. For the period 1630–1649, only half-timbered houses are included in the regression, since the increases in prices for other properties likely reflect quality and conceptual changes.

Figure 6.1 presents the estimated values of various types of houses for the period before 1630, with half-timbered houses as the reference (index equal to 100), holding constant for location. Stone houses were substantially more expensive than half-timbered houses. The category of houses probably referred to different types of buildings, with a value somewhere between a half-timbered house and a stone house. After 1650, according to the regression analysis, stone houses increased in real value by 61 percent compared to half-timbered houses, unspecified houses by 89 percent, plots by 169 percent, stone sheds by 193 percent and other properties by 105 percent.

Figure 6.1: *The value of various types of properties up to 1629 according to the regression analysis in this study.*



Given the major transformation of Stockholm during the 17th century, where parts of the present inner town were urbanised, the major focus is to follow properties in the present Old Town. For the period 1630–1730, no properties are included outside of the Old Town in the regression. The reason is that including such prices probably would distort the index, given that it is possible that the prices of properties located in the urbanised countryside grew much faster than properties in locations not undergoing such change. The index would then be substantially affected by the composition of sales, which may vary from one period to another.

Price changes of properties outside the Old Town may contain information on price changes of properties in the Old Town. For the period before 1630, prices outside of the Old Town are also used, given the smaller number of transaction and that the main urbanisation of Stockholm took place in the 1630s and 1640s. For the period before 1630, the value relation between properties in the Old Town and north and south of the Old Town did not undergo any substantial change, except for properties in Norrmalm before and after 1540. An indicator variable is included for properties in Norrmalm for 1540–1629. The properties in Södermalm were valued, on average, 24 percent less than properties in the Old Town before 1630, while properties in Norrmalm were valued 62 percent less before 1540, and 24 percent less in 1540–1629.

In some periods, quite expensive houses could be sold, while in other periods the sale of such houses may have been less common. However, since logarithms are used, outliers do not distort the estimated values in any substantial way. The present study

henceforth de facto estimates the geometric average price of various properties, which gives higher weight to low-price properties than the arithmetic average.

Figure 6.2 compares the index according to a model where qualitative adjustments are made to the period 1630–1649 with a model where no indicator variables are included for property types from 1650. The main difference is for the growth from the late 1640s to the early 1650s. Although the index adjusting for quality changes records some growth in property prices in the first half 17th century, it is not as pronounced as the index without such adjustments.

Figure 6.2: Comparison of real property index with and without quality adjustments in the 1630s and 1640s for the period 1600–1730.



The series of the hedonic real house price index (HRHPI) is linked to the repeated sales real house price index (RSRHPI) from 1730 onwards discussed in the next chapter. An overlapping series of half-timbered houses is estimated for the whole period up to 1874, for splicing of the two series and robustness check. To estimate the final index for year t before 1730, the following formula is applied:

$$HRHPI_{t,final} = \frac{HRHPI_{t,1st\ approximation}}{\left(\prod_{i=1730}^{1769} HRHPI_{i,t,1st\ approximation}\right)^{1/40}} \left(\prod_{i=1730}^{1769} RSRHP_i\right)^{1/40}$$

A problem when splicing the two series, is that the hedonic real hedonic price index (based only on the Old Town) grew by much less than the repeated sales real house price index (based on the whole of the present inner city of Stockholm) from the late 1720s to the 1730s. The main reason is that prices developed differently for stone houses in the Old Town and properties in the rest of the inner town. At the end of

the Great Nordic Wars, property prices were substantially depressed, but more so for properties in the periphery of Stockholm. When prices rebounded in the 1720s and 1730s, the rebound was stronger for the peripheral properties. Focusing on the Old Town is probably best to hold quality constant, since properties in the periphery that were, for example, abandoned due to war could be expected to undergo substantial qualitative transformation. The problem of what should be included in the index, and how the components should be weighed, is a classical problem affecting all index constructions. Often different index construction yields the same result, but in some extreme situations, such as the 1720s in our study, that may interestingly not be the case.

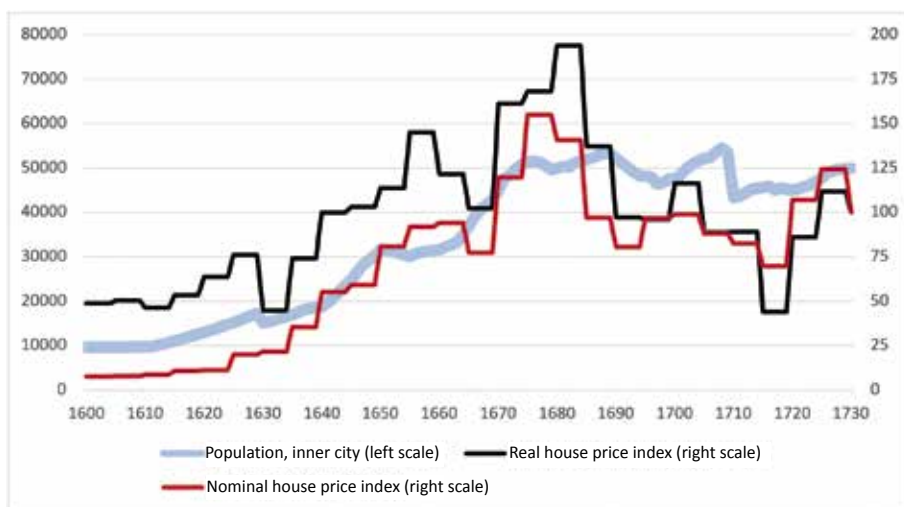
The development of house prices and urbanisation

Figure 6.3 presents the hedonic real and nominal house price index, and population in the present inner city of Stockholm in 1600–1730. Population data is from Palm (2001), but he may underestimate the size of the population in the late 17th century as well as the demographic decline following the plague in 1710. However, at present there are no other population series of higher quality.

The price of a property could be decomposed into a land-price component, which is largely determined by supply and demand, and the price of the building, which is largely determined by the building costs. In the pre-industrial period, real costs were probably quite stable. For example, real wages did not change much in the long-term (Söderberg, 2010). It is possible that, from the demand side, population impacted on property prices, especially if the land-price component of a property was quite large. Figure 6.3 shows that real prices increased from the 1620s to around 1680, only to decline and stagnate after that, which mirrors the development of population.

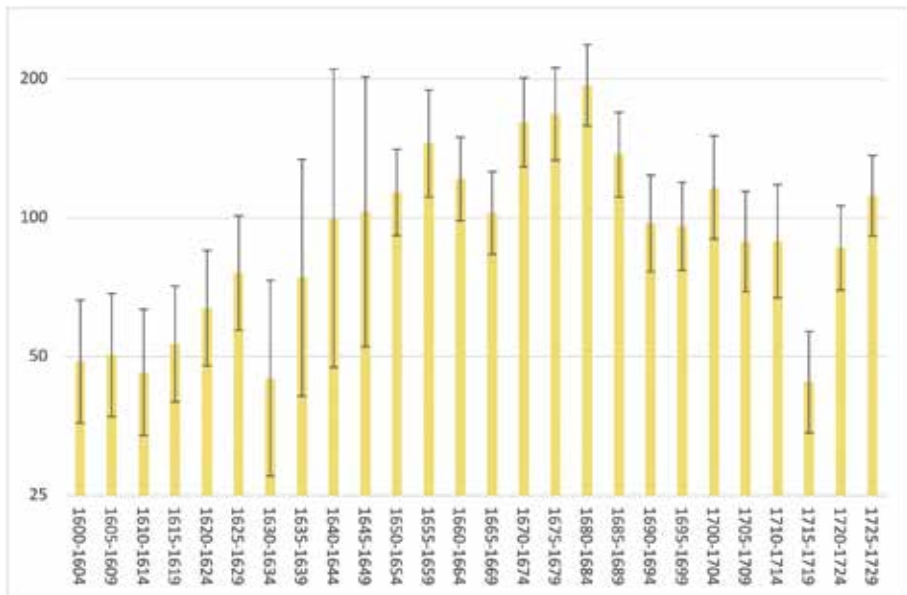
There were substantial declines in real prices in the early 1630s, in the 1660s, in the late 1680s and early 1690s, and in the early 1710s. Nominal prices increased more than real prices due to inflation. Some of the downturns in nominal prices were not as severe as in real prices, given that inflation episodes often eroded real prices, while nominal prices kept stable or declined only slightly. For example, while real prices declined by 41 percent between 1625–1629 and 1630–1634, nominal prices increased by 7 percent, and while real prices were halved between 1710–1714 and 1715–1719, the nominal prices only declined by 16 percent.

Figure 6.3: *The estimated hedonic real and nominal house price index 1600–1730 (1730=100) and population of the inner town. The population was probably substantially larger around 1680 than displayed in the figure.*



Standard errors of the time dummies in the regression to reconstruct the hedonic real house price index can be used to construct confidence intervals. Figure 6.4 displays error bars for the 90 percent confidence interval for the period 1600–1729. These intervals are large, but still do not take into account additional uncertainties, for example, concerning the changing qualities. Figure 6.4 shows that the largest error bars are for the period 1630–1649, which is when the index only follows half-timbered house, and therefore does not utilise the whole database that is available. The downturn in 1630–1634 was large, but not statistically significant even at the 10 percent level – in addition, there is uncertainty concerning the currency used in some of the sales in that period.

Figure 6.4: *The hedonic real house price index 1600–1729, with error bars for the 90 percent confidence interval based on the standard errors for the time dummies of the regression equation to reconstruct the index, 1730 = 100.*



In the beginning of the 17th century, two significant negative external factors affected everyday life in Stockholm including its land market, contributing to stagnating prices in the first decades of the century. One was frequent war, the other was plague. The Vasa royal family was split into two branches, one Catholic in Poland and one Lutheran in Sweden, which led to civil war in the realm in the late 16th century. There was also a war with Denmark ending in a loss in 1613 in which the taxpayers of Sweden had to pay an enormous ransom to recover the Castle of Älvsborg (in today's Gothenburg). It protected the only piece of land Sweden had on the Kattogat which gave the realm access to the North Sea. In 1630, Sweden entered the Thirty Years' War on the protestant side.

These negative factors can be traced in the empirical material. For example, in 1614, we find no property prices from the Old Town and only six from the suburbs Norrmalm and Södermalm. Plague is mentioned off and on (e.g. Stb 13:181 in 1623). 1601, 1622–1623 and 1629–1630 seem to have been periods when Stockholm was badly hit by plague – a disease that ravaged many other areas in contemporary Europe. It was not until well into the 18th century that Europe managed to get rid of the notorious Black Death. As mentioned earlier, real prices declined substantially in 1630–1634, following a dip in population, but inflation, due to the spread of copper coins that fell in value relative to silver coins, had a decisive impact. Inflation is also related to fiscal and economic strain.

During the studied period, the town of Stockholm was transformed both demographically and in terms of its cityscape. In the early 17th century, Stockholm was a minor town (Utrednings- och statistikkontoret, 2005). As during the Middle Ages, most of the population lived in the present Old Town, characterised by narrow streets and wooden houses. Two pictures show panoramas of Stockholm from Södermalm and Norrmalm in the 1570s, illustrating the compactness of the town.

During the reign of Queen Christina in 1632–1654, real prices increased markedly. It was also during this period that Stockholm grew substantially, reflecting the rise of Sweden as a great power in the first half of the 17th century. While the population of Stockholm was only around 10,000 in the early 17th century, which made dignitaries hesitant to invite foreign statesmen for fear of embarrassment, it increased to around 50,000 in the 1670s (Utrednings- och statistikkontoret, 2005; Sidén, 2002; Palm, 2001).

With the rise of Sweden as a great power, following the Thirty Years' War, Stockholm rose in importance as an administrative centre. Sweden became a major exporter of iron and copper, and most of the foreign trade went through Stockholm. The panorama from the late 17th century displays quite a different city to the one in the painting from the 1570s (see pictures), with some common landmarks, such as the Tre Kronor Castle (that burnt down in 1697). New larger stone houses, on Skeppsbron located on the eastern sea front of Stadsholmen (the main island of the Old Town), had also been built.



Photo of the picture “*Civitates orbis terrarum*”. Illustrating Stockholm in the 1570s. Top, a view from Norrmalm. Below, the view from Södermalm.



Photo of picture in Suecica antiqua et hodierna printed in 1693, showing how large parts of Södermalm (to the left of the Old Town in the middle) and Norrmalm (to the right of Old Town) became urbanised.

The government act of 1634 codified that Stockholm was to be the capital, and the royal court, government, parliament, and state administration were moved to the city. From 1630 and onwards, there was a pronounced political goal aimed at changing, and improving, Stockholm's street views. The great fires in the 1620s resulted in the widening of streets and alleys as well as an increase in the surface area of Stadsholmen, the main island of the Old Town, partly by tearing down the walls, partly by reclaiming land along the waterfront. Streets were widened to attract and impress foreign visitors to the city. Ideally, wooden buildings would be demolished and replaced with stone houses, especially inside the town and along the main streets (Rubenson 1897 pp. 222–227). The extent to which this street regulation, which was stipulated in law, was actually implemented is clear from all the property deeds that were distributed, especially between 1638 and 1647.

There were significant changes in the town's street network, and plots disappeared when the streets were widened from the 1630s onwards. This process was especially visible for Stadsholmen, given that the island's surface at the beginning of the century was also limited by the city wall fortifications (Dahlbäck, 1995, p. 40). During the 1630s and 1640s, a city plan was developed for Södermalm and Norrmalm, with more rectangular grids of streets and blocks, where the direction of the main streets pointed towards the Castle situated in the north of Stadsholmen. Without the demolition of the city wall, it would hardly have been possible to accommodate all the migrants who wished to settle on Stadsholmen (Hall and Källström, 1999, pp. 60–61). However, quite a few settled on Södermalm and Norrmalm. For instance, there were about 100 farms on Norrmalm in 1609. 26 years later the number increased to about 1,000 (Forsberg, 2001, p. 41). The material left over from the demolition of the city wall was used as construction material to extend the town along the waterfront. The best-known extension is the stretch along Skeppsbron and the one outside the Mälarmuren, the Wall facing Lake Mälaren (Dahlbäck, 1995 p. 42). The last refers to the stretch from Söderport (today Slussen) and past Åkaretor-

get (today Kornhamnstorg) to where Mälartorget is today (see, for instance, SSA: Stockholms magistat och rådhusrätt (M&R): Sekreterarens registratur: B1a: 13; Stadsingenjörskontoret E2a:2).

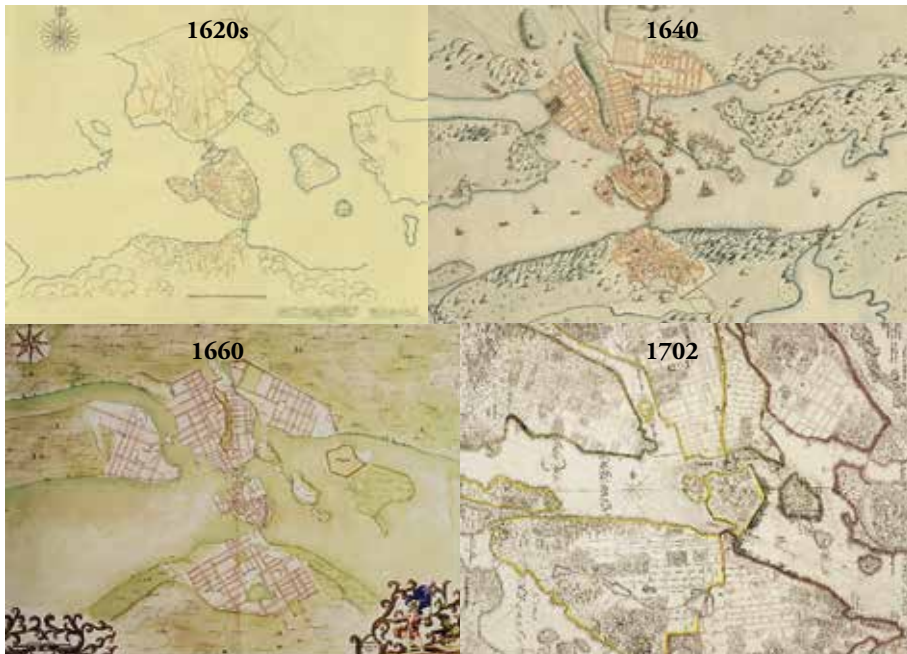
Where the new streets were to be drawn, the city bought the land that lay in the way. The previous owners were forced to demolish their buildings and clear the plots themselves. Admittedly, they normally received another plot of land of the same size as compensation, but these had to undergo a lot of groundwork before their previous or new building(s) could be set up. Compensation for all the work required was rare and in cases where the new plot (sometimes two smaller ones put together) was larger than the old one, the owners were forced to pay the difference. The few exceptions concerned those who were willing to build a stone house. They either got the surplus land at a reduced price or did not have to pay for it at all. The latter mainly applied to the nobility. Even after the street regulation, the need for housing and other buildings grew as migration to the town increased. Norrmalm became part of the city and the new urban area Ladugårdslandet (today's Östermalm and Gärdet) was established.

Even if the data that can be found are sporadic, it shows that the population in Stadsholmen increased by at least 44.4 percent between 1611 and 1652, and by an additional 23.1 percent between 1652 and 1676 (Sidén, 2006, ÖÄ: GIBA:4–5). According to the state's tax records (mantalslängder), (ÖÄ: GIAA:1–2), in 1699, it had risen in comparison to 1676 by another 42.5 percent. According to Söderström's (1975) data, there had been a significant population decrease between 1700 and 1727, although there was a rebound in the 1720s (Boëthius, 1943, pp. 30–31; Ericson Wolke 2001, p. 100; Nilsson and Lilja, 1996, pp. 324–325; Utterström, 1949, pp. 238–276; Aldman, 2006, pp. 105–108; Aldman and Lenander-Fällström, 2019, p. 23).

The population on Södermalm and Norrmalm rose even more. The migration of artisans, and also traders, increased after the Thirty Years' War in 1618–1648, and they mostly settled in Södermalm or Norrmalm. That population remained intact, at least until the Great Nordic War broke out in 1700. According to the 1652 state tax records, Stadsholmen including Riddarholmen accounted only for between 22 and 23 percent of Stockholm's population. The state tax records in the 17th century indicate that Södermalm had the highest population growth, followed by Norrmalm (SSA: Överståthållarembetet för uppbördsärenden (ÖÄ): Kamrerarexpeditionen; GIBA: 4-5: Mantalslängder; G1AA:1–2 Kronotaxeringslängder; Söderström 1975). It is clear from the source material that the street adjustments in Södermalm and Norrmalm make it exceedingly difficult to identify specific properties over time.

Various historical maps, clearly show the rapid urbanisation during the 17th century. Real prices reached a high point in 1680–1684, and nominal prices in 1675–1679. This also coincided with declining interest rates, which may be related to the development of financial institutions (Edvinsson, 2011). The first bank in Sweden, Stockholm Banco, was established in 1657, which was restructured as Riksens Ständers Bank in 1668, becoming the world's first central bank. While interest rates of 10–12 percent or more were common before these institutions were formed, a

maximum interest rate of 8 percent was introduced in 1666, and of 6 percent in 1687. After the 1680s, real house prices started to decline, coinciding with grave economic and demographic crises. Due to the Scanian War 1675–1679, the finances of the Swedish Crown had deteriorated. Therefore, in 1680, King Charles XI introduced the “Great Reduction”, through which the Swedish Crown recaptured some of the land that had previously been granted to the nobility (Åberg, 1958, pp. 93–111; Trager, 1979, p. 256; Rystad, 2003, p. 101). In the 1690s, Sweden was hit by several harvest failures (Edvinsson, 2009). By 1690–1694, both real and nominal house prices had been almost halved compared to the peak level ten years earlier.



Historical maps of Stockholm showing its rapid urbanisation during the 17th century.

After 1700 real property prices stagnated, reflecting the demographic development. According to Jansson (1991 p. 270), the growth rate in town decreased around 1680, and in 1720 the number of inhabitants was less than in 1688. After 1700, we know that the silk weavers, who had been recruited to Stockholm during the 1680s, started to leave the town and when the war was over, there was only one left. A major negative factor was the shortage of raw materials (Corin, 1958, p. 526 ff; Aldman 2006, pp. 10–11). On the other hand, Stockholm accepted quite a few refugees, who exclusively lived on Skeppsholmen until the end of the war (Marcus 1942, p. 32). After 1712, these refugees were allowed to run businesses for their own livelihood, whereby some chose to stay in the town even after the war had ended (Karlsson

1994, pp. 245–246; Aldman, 2006, p. 104). The decline in property prices accelerated during the Great Nordic Wars. At the battle of Poltava in 1709, Sweden suffered major losses. When the plague hit Stockholm in 1710, a large part of the population perished (Broberg, 1985), which was followed by declining real property prices. The inflation caused by the circulation of coin tokens at the end of the Great Nordic Wars caused real prices to fall even below the level they were at during the Middle Ages, although the decline in nominal prices was not as severe. By the 1720s, Sweden's role as a major European power was over, but real property prices and the population rebounded. From the 1730s, more artisans started to arrive in town, mainly settling in Södermalm and Norrmalm. However, in 1840, with a population of around 80,000, Stockholm was not much larger than 150 years earlier.

Tracing repeated sales of individual properties as a robustness check

As previously mentioned, given the difficulty to determine whether two sales at different times denote the same property, it is not possible to construct a repeated sales index. The street adjustments in the 17th century makes this even more difficult. Moreover, some property owners closed off passageways so that the property could be sold to two different individuals (SSA: M&R; Sekreterarens registratur: BIa:22 pp. 363 and 366).

There are, however, a few descriptions of exact locations, such as sources referring to the corner of two streets, where the buyer can be matched with the later seller or later legal certifications mentioning earlier sales. For the period 1600–1729, it is possible to detect at least 10 stone houses, one half-timbered and two houses with gardens that were sold multiple times. All stone houses and the half-timbered house were sold at least nine times, while the houses with garden were only sold four times. Table 6.1 summarises mean and median price per square ell (new Swedish aln) in daler kopparmynt of 1730 (Edvinsson and Söderberg, 2010) for those properties during six sub-periods covering 1580–1729. One new Swedish ell is about 0.594 metres (Owen Jansson, 1985 p. 18). The area refers to the plot size and not the size of the building. In most cases, the plot area consisted only of the land on which the building was standing, but in some cases, the ground area was slightly larger than the building area itself. For example, sometimes a piece of the pavement was included. Although the number of cases is too low to construct an index, the table may serve as a robustness check of the index presented in this chapter. There are additional stone houses and houses with garden that were sold more than once, but not included in Table 6.1. The length of periods in Table 6.1 are adjusted to the number of sales. No sales from the period 1700–1719 are included.

One of the stone houses was sold twice just one year apart in the 1680s. In this case, we have chosen to use the second sale for the period, since the price rose markedly between the two years. Additionally, the first sale indicates that the property was purchased in connection with the owner going bankrupt.

Table 6.1: Mean and median values for properties with repeated sales 1600–1730, price per square ell (new Swedish alm = 0.594 metres) in daler copper coins, fixed prices of 1730.

<i>Price per square ell</i>	1580– 1629	1630– 1649	1650– 1659	1660– 1679	1680– 1699	1720– 1730
Number of stone houses	9	9	10	9	9	9
Number of houses with gardens	2		2		2	2
Hedonic Real House Price Index, 1730=100	55	81	129	138	131	99
Stone house mean	31.9	42.2	45.6	45.1	70.4	54.0
Stone house median	26.0	31.5	31.3	43.9	75.7	49.5
House with garden, mean	7.29		23.2		54.2	41.2
Half-timbered house	12.3	23.1	21.4	25.4	25.7	10.0

Sources: Stockholms stads tänkeböcker 1580–1635 (printed); SSA: M&R: A1a:8–14; A6a:4–25; Sekreterarens registratur BIA:3–36; Stockholms Stadsingenjörskontor: E2a:2 (Brända boken) 1635–1647; Tänkeböcker, huvudserien, A1a:8–13; ÖÅ: GIIAA1–3 & G2: GIBA: 3–12; Söderström B. 1975 For fixed prices in 1730, see Edvinsson and Söderberg 2010.

From Table 6.1, it can be seen that the mean and median price for the identified stone houses rose marginally between 1630 and 1679, reaching a high point in 1680–1699, and decreasing thereafter, a development similar to the hedonic real house price index. It is reassuring that our reconstructed index reflects actual price development. The table also shows that, after the Great Nordic War, the mean and median price per square ell was markedly below the price for 1680–1699. The development for the identified houses with garden was similar. On the other hand, the price decline after the war was not as significant. This may to some extent be due to the value only having been measured from two properties, one of which was on Västerlånggatan, a street that seems to have been very attractive to the traders who migrated into the town up until 1730 (SSA: Bemedlingskommissionens arkiv: GIa:3–13).

While the stone houses had a more unsteady development during the period, the price of the half-timbered house remained quite stable after the rise prior to the 1690s. On the other hand, the price per square ell was more than halved in the 1720s, reflecting the general collapse in prices in the aftermath of the Great Nordic War, but it should also be considered that this house was over 100 years old.

Some houses were moved due to fires, decisions to tear down the city wall and the reclaiming of land from the sea after the 1620s (along Skeppsbron and all the way to today's Munkbrotorget) and the widening of streets and alleys (see e.g. Rubenson 1897, pp. 222–227). This development complicates the tracing of individual property over time, although some houses were just moved within the owner's plot. Some

of the plots decreased in size, but the size and the placement of the house compared to other buildings in the neighbourhood remained. It can be assumed that these properties were considered as being old by the buyers, which affected the price, especially when an increasing number of “modern” buildings had been constructed in the adjacent area.

Table 6.2 presents the price per square ell (new swedish aln) of 16 stone houses in four areas of the Old Town—East, South, West and Inner— in the constant prices of 1730. The Inner area is the oldest part of the Old Town. Only those stone houses that had been preserved during the whole period are included, regardless of whether they were renovated or additional building were added during the period. To have the same number of properties in each area, a few stone houses that were sold more seldom have been added compared to Table 6.1.

Table 6.2: Price per square ell (new swedish aln) divided into properties and area, 1580–1729, daler copper coins, fixed price of 1730, rounded to one decimal place

(Name of block) in 1729 year's numbers	1580–1599	1600–1629	1630–1649	1650–1659	1660–1669	1670–1679	1680–1689	1690–1709	1710–1719	1720–1729
(Marsyas) East 34		13.2	4.8	42.8	27.9	23.2	49.8	20.5	6.7	
(Bacchus) East 66		21.3	21.4		27.4	40.7			13.6	
(Phoebus) East 122 & 130	10.7	25.2			22.3	30.5	48.9			
(Pollux & Apollo) East 82 & 91		11.6	19.8				43.4		31.4	8.6
(Mercurius) West 67		15.0	52.6			37.2		60.9		38.2
(Cephalus) West 109		14.2	7.4		42.6	39.4	55.0	72.1		64.3
(Polyphemus) West 57		23.9		58.8	41.3		62.5	74.9	58.5	74.0
(Pyreneus) West 57		10.1	6.0				27.3	6.2		17.0
(Latona) South 21 & 31		20.4		33.9				33.6	8.6	
(Pandora) South 74		18.7	35.1		43.8					65.8
(Deucalion) South 55		28.0		44.1	32.7			59.0		10.9
(Trivia) South 23		21.5		82.9	66.5	80.1				46.4
(Ceres) Inner 69	15.8	9.4	50.4	31.3	91.4	84.6	70.2		13.7	34.0
(Phaeton) Inner 155	20.5	29.6		32.4	104.9	72.2	97.1	127		
(Echo) Inner 47	6.7	16.5		19.1		79.7		49.5		
(Hippomenes) Inner 5	4.5	22.1	54.7	53.5		51.2			6.8	59.0

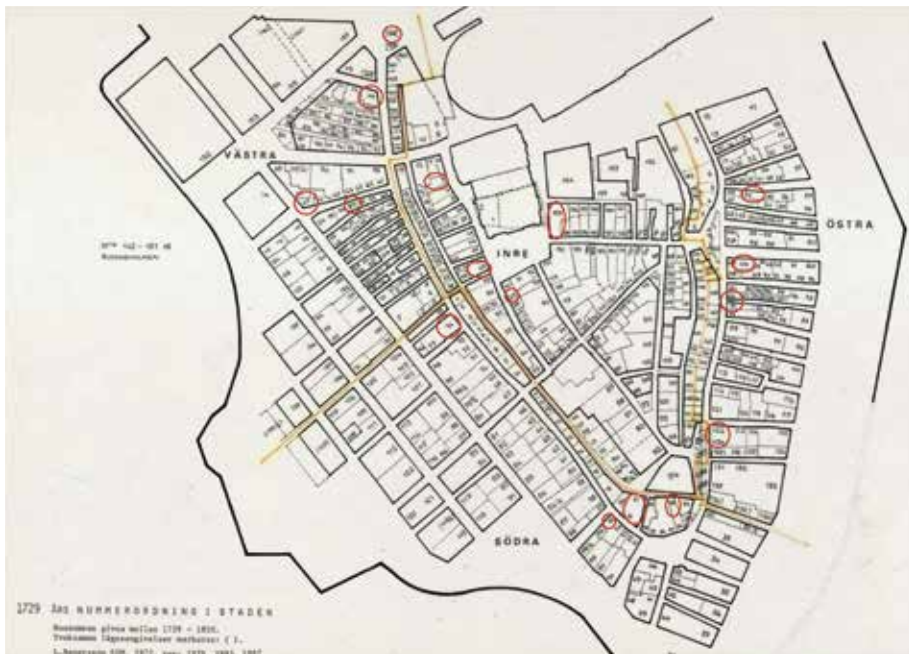
Sources: See Table 6.1

The location affected the price per square ell. After 1720, prices developed differently in Södermalm and Norrmalm compared to the Old Town, as discussed in the

next chapter. We have not reconstructed any price indices for Södermalm and Norrmalm before 1720, but prices may have developed differently.

As seen from the properties included in Table 6.2, the price development in different parts of the Old Town was similar. Even if the number of cases is low, these properties at least indicate how prices could change. The prices were normally highest for buildings in the Inner area. The property Phaeton, at the northern corner of Köpmannagatan at Stortorget, was one of the city's largest buildings. Earlier research (e.g. Ågren 2007) shows that rich merchants and iron exporters settled in the southern area. At least before the houses along the Skeppsbron were completed, it could have been expected that the price in the southern area would be higher, but those buildings were not more expensive than in other parts of the Old Town. Prices in the Eastern area remained quite low, even after the houses along Skeppsbron were finished. However, these buildings were older, as none of the new houses along Skeppsbron have been included.

Some of the downturns in the price of individual properties in Table 6.2 were related to surrounding fires and/or new construction in the same block or nearby. It is likely that renovation and/or adjustments to an extension increasing the building's footprint affected the price. The population increase was largely managed by new construction in the Old Town as well as in Norrmalm and Södermalm. However, at least from the 1650s until the 1680s, as well as after the Great Nordic War, there are signs that the price was affected by economic upswings and downturns.



The locations of stone houses displayed in Table 6.2 in the Old Town, marked by red circles.

Conclusions

This chapter is built upon a hedonic real house price index for the period 1600–1730, which bridges previous estimates of the development of house prices for the period up to 1600 discussed in the preceding chapter and the period 1730 onwards discussed in the next chapter. Qualitative adjustment consists of differentiating between various house types, addition qualitative markers and location in the Old Town, Södermalm and Norrmalm. For the period 1630–1730, only properties in the Old Town are followed due to the rapid urbanisation in Södermalm and Norrmalm, where the countryside was built on. This urbanisation may distort the development of prices in those marginal areas, which would reflect a transformation from countryside to city rather than an intra-city development. For the period 1630–1649, only half-timbered houses are followed, given that other house types, and especially the concept of what was considered to be a regular stone house, may have changed. A stone house at the end of the 17th century was larger than a stone house a hundred years previously. Half-timbered houses did not undergo any substantial qualitative transformation. Although we have not been able to present a repeated sales index based on the exact location of the properties, our index would still be superior to a non-hedonic repeated sales index given the rapid urbanisation of Stockholm. For a robustness check, we also investigate the development of prices of individual properties, whose location can be determined, which indicates a similar development as for the hedonic house price index.

The main picture is of substantial movements in real prices during the studied period. Prices stagnated up to the 1620s, but a major upwards shift took place in the 1630s and 1640s, coinciding with the transformation of Stockholm from a medieval small town of around 10,000 inhabitants or less to a city of more than 50,000 inhabitants (although there is considerable uncertainty of the size of the population). A high point was reached in the 1670s and 1680s, while prices tended to decline somewhat up to the early 18th century. Prices collapsed in the 1710s following wars and plagues, but rebounded in the 1720s, although below the level of the high point in the 1670s and 1680s. As discussed in the next chapter, the rise in real prices of the 17th century corresponds in magnitude to two other rises, one in the second half of the 19th century and one in the 1990s and early 21st century. These three price rises were accompanied by demographic expansion as well.

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Appendix

Table A6.1. *The estimated index of properties in Stockholm 1283/1420–1730 and related variables, (1730 = 100)*

<i>Period</i>	<i>Hedonic real index</i>	<i>Hedonic real index without quality adjustments 1630–1649</i>	<i>Hedonic index, silver price</i>	<i>Hedonic index, nominal</i>	<i>CPI, silver price, geometric average</i>	<i>CPI, nominal price, geometric average</i>
1283–1349	(105)	(63)	(98)	(1.62*)	(93)	(1.54*)
1350–1419	(89.9)	(55)	(63)	(1.38*)	(70)	(1.53*)
1420–1429	77.4	48	40	1.30	51	1.68
1430–1439	82.8	51	37	1.25	45	1.51
1440–1449	64.9	40	29	1.00	44	1.54
1450–1459	61.0	37	29	0.99	47	1.63
1460–1469	61.5	38	28	1.03	45	1.67
1470–1479	78.4	48	30	1.13	38	1.44
1480–1489	62.1	38	24	0.97	39	1.56
1490–1499	71.1	43	28	1.16	40	1.63
1500–1509	62.2	38	22	1.12	36	1.80
1510–1519	63.7	39	24	1.35	37	2.11
1520–1529	54.8	33	21	1.57** (2.35***)	38	2.86** (4.30***)
1530–1539	74.3	46	30	2.55	40	3.44
1540–1549	37.7	23	19	1.93	50	5.11
1550–1554	33.3	21	22	2.23	67	6.69
1555–1559	29.4	18	20	2.01	67	6.82
1560–1564	35.5	22	25	3.31	72	9.33
1565–1569	37.0	23	26	5.58	70	15.1
1570–1574	36.8	23	22	14.31	61	38.8
1575–1579	22.6	14	26	2.08** (13.50***)	113	9.2** (59.7***)
1580–1584	66.7	42	54	6.39	81	9.6
1585–1589	49.7	31	43	5.42	86	10.9
1590–1594	48.4	31	48	5.93**	99	12.2**
1595–1599	45.8	29	57	7.17	125	15.6
1600–1604	48.8	30	59	7.46	120	15.3
1605–1609	50.5	32	57	7.80	112	15.4
1610–1614	46.3	29	50	8.89	109	19.2

<i>Period</i>	<i>Hedonic real index</i>	<i>Hedonic real index without quality adjustments 1630–1649</i>	<i>Hedonic index, silver price</i>	<i>Hedonic index, nominal</i>	<i>CPI, silver price, geometric average</i>	<i>CPI, nominal price, geometric average</i>
1615–1619	53.3	33	59	10.7	111	20.1
1620–1624	63.8	40	61	11.2	96	17.6
1625–1629	76.0	47	71	20.1	94	26.5
1630–1634	44.9	33	54	21.6	119	48.0
1635–1639	74.2	52	91	35.3	123	47.5
1640–1644	100	70	129	55.2	129	55.3
1645–1649	103	73	134	59.2	130	57.4
1650–1654	114	125	178	80.9	157	71.2
1655–1659	145	160	190	91.9	131	63.4
1660–1664	121	133	174	94.1	143	77.5
1665–1669	102	109	130	77.4	127	75.5
1670–1674	161	169	196	120	122	74
1675–1679	168	170	208	155	123	92
1680–1684	194	206	199	141	103	72
1685–1689	137	145	137	97	100	71
1690–1694	97	96	115	81	118	83
1695–1699	96	100	131	97	136	101
1700–1704	117	115	136	99	117	85
1705–1709	89	90	119	88	134	99
1710–1714	89	89	113	83	127	93
1715–1719	44	46	62	70** (91***)	140	158** (208***)
1720–1724	86	87	105	107** (214***)	122	124** (248***)
1725–1729	112	112	126	124	112	111
1730	100	100	100	100	100	100

Note: The silver price and nominal indices are estimated by reflating the hedonic real house price index using the nominal and silver price Consumer Price Index, and calculating a geometric average for the various periods (Edvinsson and Söderberg, 2010). The nominal index follows the currency unit of the mark up to 1624, and mark koppermynt 1624–1776 (Edvinsson, 2010). At some occasions, when debased coins were exchanged for newer coins of higher silver content, this may spuriously seem to look like a deflation.

* Median, the period includes debasement cycles.

** In better coins.

*** In debased coins.