COMMERCE AND COLONISATION

Commerce and Colonisation

Studies of Early Modern Merchant Capitalism in the Atlantic Economy

Klas Rönnbäck

GOTHENBURG STUDIES IN ECONOMIC HISTORY 3

GOTHENBURG STUDIES IN ECONOMIC HISTORY replaces the former series under the title *Meddelanden från Ekonomisk-historiska institutionen, Handelshögskolan vid Göteborgs universitet.*

Proofreading: Seven G Translations, Newcastle upon Tyne (except for chapter 3, by Sven Borei, Transförlag, Lerum)
Cover design: Siri Reuterstrand

ISBN 978-91-86217-02-0
Published by Department of Economic History, School of Business, Economics and Law, University of Gothenburg
Printed by GESON Hylte Tryck, Göteborg 2009

Distribution
Depart of Economic History
School of Business, Economics and Law
University of Gothenburg
P.O. Box 720, SE 405 30 Göteborg, Sweden
www.econhist.gu.se

Full text electronic issue
www.econhist.gu.se

To my family

ABSTRACT

Commerce and Colonisation: Studies of Early Modern Merchant Capitalism in the Atlantic Economy.
Gothenburg Studies in Economic History 3 (2009)
ISBN 978-91-86217-02-0

Author: Klas Rönnbäck

Doctoral dissertation at the Department of Economic History, School of Business, Economics and Law, University of Gothenburg, Box 720, SE 405 30 Göteborg, Sweden. (Written in English.)

Distribution: Department of Economic History (address as above).

This dissertation consists of four chapters which study early modern merchant capitalism, with a special focus upon the developing Atlantic economy. The introductory chapter is followed by chapter 2, studying the issue of market integration and price convergence in intercontinental trade during the early modern period. Previously, scholars have claimed that there is no evidence of price convergence prior to the 1820s. This chapter on the contrary finds that there is ample evidence of this for most of the commodities studied. The issue of an early modern globalisation can thus not be dismissed as easily as it often has been in the past.

Chapter 3 studies the profits to be made from colonialism for various agents in Europe. Previous research on Britain has shown that while individual merchants and planters might have gained from colonialism, the British state and consumers had to pay much of the bill. The chapter contrasts previous studies by looking at the Danish colonies in the West Indies. The conclusion is that, in contrast to the British case, all Danish agents were able to profit from colonialism in the West Indies. The Danish case may thus put the British experience into perspective.

Chapter 4 focuses upon the balance of payments for trade on the Baltic. Common knowledge has it that key Baltic exports were largely paid for in bullion during the early modern period. The importance of colonial goods has however been underestimated in previous research. By the late 18th century, the chapter finds, just the sugar re-exported from Western Europe to the Baltic was worth approximately half the value of the grain exported in the opposite direction. The chapter concludes that re-exports of colonial goods increasingly made a positive contribution to the balance of payments for Baltic trade by Western European nations.

Chapter 5, finally, studies the trade in colonial goods on the Baltic from the perspective of environmental economic history. The Baltic was for a long period of time a net exporter of acreage, in the form of bulk commodities such as grain and forestry products. This chapter shows that increasing imports of colonial commodities required a growing amount of overseas ghost acreage. The trade, this chapter concludes, may however be explained less by an American abundance of land, than by the low price of enslaved labour in the Americas.

KEYWORDS: globalisation, market integration, price convergence, colonial goods, international trade, imperialism, colonialism, Williams thesis, slavery, sugar, balance of payments, Atlantic economy, the Baltic, ghost acreage.

Acknowledgements

Writing this dissertation has required the help and assistance of a wide range of people. The author would like to thank the staff of several archives and libraries collectively: in particular the staffs at the library of the University of Gothenburg, the National Archive in Sweden, the Royal Court Archive in Sweden, the National Archive in Denmark, the archive of the Danish Maritime Museum at Kronborg and the library at the London School of Economics. Without your work, none of this research would have been possible at all.

A very special thank you goes to Leos Müller for your enthusiasm, encouragement and constructive ideas for my project, right from the start. Ulla Söderberg believed in me and encouraged me to write a dissertation many years before I ever thought of doing so myself. Thank you for that encouragement, during all those long and interesting discussions.

A sincere thank you to my two supervisors: to Staffan Granér, always very supportive and extremely generous both with time and highly insightful ideas, and to Carl-Johan Gadd, for keeping a close eye on many of the details of my work. During the later phase of my work, Christer Lundh also contributed with constructive ideas for improving the dissertation – thank you for that.

Göran Rydén contributed many valuable ideas and different viewpoints on drafts of the whole dissertation during the final seminar prior to finalising the dissertation. Many others have read separate articles or drafts of articles, and contributed with many a constructive comment: Svante Prado, Jan Bohlin, Astrid Kander, Oskar Broberg, Stefan Öberg, Holger Weiss, Hans Christian Johansen, Ricardo Grinspun, and a couple of anonymous referees for the articles previously published in academic journals. Thank you all for your important contributions. Several of the papers have also been presented in draft form at different conferences: a collective thank you to all the people who on such occasions have contributed ideas and criticisms that have improved and propelled the work forward.

The research undertaken in distant archives would not have been possible without the economic support provided by a grant from *Helge Ax:son Johnsons stiftelse*. *Jan Wallanders och Tom Hedelius stiftelse* provided a grant enabling the author to stay as a visiting research student at the London School of Economics for a period of time. Sverker Jonsson also provided departmental funding to make it possible for me to participate in a number of international conferences and workshops, presenting draft versions of the articles in this thesis. *Stiftelsen Konung Gustav VI Adolfs fond för svensk kultur* finally provided a grant enabling the inclusion of several pictures in the printed dissertation. Thank you for those generous grants. I also want to thank Oliver Volckart for his work as a mentor during my stay as a visiting research student at the LSE.

Two of the chapters in the thesis have previously been published, or are due to be published, as articles in academic journals – "Integration of global commodity markets in the early-modern era" in *European Review of Economic History* (2009:1) and "Who stood to gain from colonialism?" in *Itinerario* (forthcoming). The author would like to thank these journals for their kind permission to republish these articles in the thesis.

The most important contribution throughout the work on this dissertation has however come from Irene Elmerot: mere words are not enough to express the value of your contribution. Always a pillar to lean on in times of need. *Nyry b ġlmt.*

London, November 2009

Table of contents

Tables

Graphs

Sugar cane being processed into muscovado sugar in a Brazilian sugar works. Illustration from Simon de Vries' book *Curieuse aenmerckingen der bysonderste Oost en West-Indische verwonderens-waerdige dingen* (1682). Reproduction: Esbjörn Eriksson, Royal Library, Sweden.

Chapter 1

Introduction

1.1. No sugar, no slaves

To paraphrase the historian Eric Williams: No sugar, no slaves; but, equally true, no slaves, no sugar.[1] Without the demand for sugar (and a couple of other commodities, one might add) there would have been no – or at least significantly less – transatlantic slave trade, and slavery in the Americas. Had there been no demand for these goods, there would have been little real need for a large labour force, requiring the forced migration of millions of people from Africa, to work on plantations in the Americas. At the same time, the opposite was true; hardly any sugar was produced by free labour. At least not in most parts of the world, one might add: smaller amounts of sugar have been produced without slave labour in some parts of the world for long periods of time.[2] Eric Williams is however correct in so far that a dominating share of all the sugar produced in the world during the early modern period was grown on large slave plantations in the Americas, using African slaves. Slavery and the production of plantation goods were intertwined in an intimate nexus for a very long period of time, and became crucial for the development of the Atlantic economy.

This thesis deals with some of these commodities: coffee, cotton, tobacco, spices, and most importantly sugar. Taken together, they will henceforth be called colonial commodities or colonial goods, since they came to be produced almost exclusively in the European overseas colonies during the early modern period. For the most part, they were also crops grown on large plantations. The term 'colonial goods' must however not be interpreted too literally, since production of the same goods continued well after

1 The original quote reads "No sugar, no Negroes; but, equally true, no Negroes, no sugar." Williams is in this sentence using the word 'negroes' as shorthand for African slaves, see Williams 1994, p 12.

2 See for example Curtin 1998 and Beckford 1972 on the plantation complex of the Americas. Mazumdar (1998) writes about Chinese sugar production during the early modern period. Eltis (2000) argues that even though sugar and slavery were intimately intertwined historically, this wouldn't necessarily have had to be the case, but free labour always was a theoretical possibility.

political independence of the colonies (and in some cases continues to this day), and they were produced in parallel in independent countries all the time. The term does however seem a simple and useful way of denominating these goods jointly, lacking any better term.[3]

The thesis deals with the spheres of production and, in particular, circulation of such commodities, as well as the institutions of colonialism that initially made up the framework for the production of such goods. Commerce and colonisation, and the interconnections between the two, are thus focus of this thesis. One of the most important institutions of colonialism was slavery, especially so in the European colonies in the Americas. This was also an in stitution that in itself survived colonialism on this continent, remaining in place for several decades in the post-colonial American nations.

Even though – or perhaps just because – these goods were regarded as luxuries for a long period of time in human history, they constituted a very valuable part of total world trade, perhaps especially so during the early modern era. The period in focus in this thesis – the 18th century – was also a period when sugar and other commodities started to experience a shift from being luxuries, to being mass-consumed commodities in many parts of the world. Many scholars have however continued to view these goods simply as luxuries. That might explain why these goods have seldom received as much interest from economic historians as they deserve, especially the global trade in these goods.

The particular studies in this thesis are motivated by some shortcomings in the previous literature. Firstly, the trade in colonial goods has often received less attention than the study of trade in what have been considered more important goods, such as grain or iron. The study of the production of and trade in colonial goods may however give us insights into important issues in economic history – such as globalisation, the first wave of European colonialism and economic development in the long term – and are therefore the focus of this thesis. Secondly, when looking at colonialism and the trade in colonial goods, most attention has quite naturally been focused on the major colonial powers in Europe. These major powers were however not the only ones participating in the developing Atlantic economy. The trade in the goods of colonialism had for example repercussions far beyond the borders of the core powers, including effects on trade on the Baltic. Closer study of a minor colonial power, as well as the important re-export trade in colonial goods from the core powers, might therefore diversify the picture of colonialism and colonial trade.

3 In many Germanic languages ‘colonial goods’ exists as a concept – for example in German (‘kolonialwaren’), Dutch (‘koloniale waren’), Danish (‘kolonialvarer’) or Swedish (‘kolonialvaror’). Nowadays, the term covers many different sorts of groceries, including coffee, sugar, tea, spices and other goods. The original meaning of the term comes from the colonial connection of many of these goods, but this meaning has over time been lost.

1.2. General research questions

The aim of this thesis is to diversify the picture of globalisation, colonialism and colonial trade, by studying the early modern Atlantic economy's role in the process of globalisation, and studying the Baltic connections to the Atlantic in particular. The articles in this thesis thus deal with certain aspects of two over-arching issues:

- What is globalisation and when did it begin?
- What role did colonialism play in the Great Divergence?

These are highly complex issues, to which the articles in this thesis can only hope to make some minor contributions. The individual papers therefore each try to deal with more specific research questions, and the reader is referred to each paper in order to learn about these more specific questions.

The results of the thesis show firstly that economic globalisation is a process with a longer history than has generally been recognised by many scholars of economic history previously. Markets for many overseas traded commodities, most importantly a range of colonial goods, started to integrate during the early modern period. The process was inconsistent, and was often reversed by different factors and events, but must nonetheless have contributed to rapidly increasing trade in and consumption of a range of new goods around the world. Secondly, the trade in colonial goods contributed indirectly to economic development in Europe in many ways. The semiperipheral European agents studied in this thesis were able to make high profits from the production of and trade in colonial goods – perhaps higher profits than many agents in the core colonial powers. The re-exports of colonial goods from the core powers in Western Europe did on the other hand contribute to settling the balance of payments for the important trade in strategic goods from the Baltic.

1.3. Global history

The impetus behind these articles is an interest in, and an ambition to try to write, global history. The thesis is an attempt to contribute to this growing field of research. Global history is understood here as undertaking global comparisons and analysing connections between different regions and/or nations around the globe. The aim of writing global history is furthermore to move beyond the focus upon the history of the western world, which has dominated so much historiography.

Global history is however not to be understood as synonymous with the total history of the world, or the totality of the processes studied, but as an approach that attempts to analyse the interconnectedness of many countries or regions. One might easily miss vital aspects of history if the historiography

is only focused upon writing the history of a single country or region. Making comparisons and studying connections between regions and countries can therefore enrich the quite national focus that so far has dominated much historiography. One example of how a global perspective might enrich the historiography is to be found in the third article in this thesis, which studies the connections between the Baltic and the Atlantic. Previous historical research has to a large extent focused upon the production and exports of goods in individual countries, rather than on imports. This is quite natural, since it is often within export sectors that many of the employment opportunities lie, and where much economic development takes place. In historical writing delimited by national borders, less attention has therefore been paid to the individual countries' imports. One country's export is however necessarily another country's import. Studying the import side of the trade in goods can give us a new perspective on, and thus new insights into, the trade in goods as a whole.

This thesis could also be seen as belonging to or contributing to the field of so-called Atlantic history. There is no doubt that the countries around the Atlantic rim were at the centre of much of the global development during the period of this study. This extremely wide-ranging geographic area has for that reason received increasing attention from many scholars, perhaps especially during later years, spawning a long range of publications on the topic.[4] Few scholars would probably doubt the importance in the shift of economic gravity in Europe from the Mediterranean to the Atlantic rim during the early modern period. Looking at the Atlantic from a global perspective, Joseph Inikori even argues that it was the integration of the Atlantic economy that sparked off the process of globalisation.[5] The connection studied in the articles in this thesis, between the Baltic and the emerging Atlantic economy, is one area that has received all too little attention in previous writing of Atlantic history.

1.4. Globalisation

The writing of global history is intimately connected to the issue of globalisation. Even though globalisation started to receive explicit attention only a few decades ago, the phenomenon as such is not new. The question of when globalisation began depends to a very large extent on how one defines globalisation. One question is then what part of the process one is talking about (economic, cultural, political, environmental and so on), another is the question of how interconnected the world has to become in order to qualify for

4 For a couple of introductions or overviews of the field of Atlantic history, see for example Bailyn 2005; Egerton et al 2007; Elliott 2006; Games and Rothman 2008; McCusker and Morgan 2000; Pietschmann 2002

5 Inikori 2007

the word globalisation. Does the process have to literally entail the whole world? How does the process of globalisation relate to processes of regionalisation, internationalisation or other concepts involving the transformation of spatial connections?[6]

The question can be made even more complex, by tracing long-term trends towards a process of globalisation, where such spatial connections increase over time and over space, in time meeting the requirement one might have for using the label globalisation. C.A. Bayly has for example argued that there is evidence of what he calls "archaic globalisation" long before the birth of the modern world.[7] Others have proposed using the term proto-globalisation for "early processes of universalism that failed to embrace all of humanity".[8] We will return to this issue when we discuss the first article in the thesis in closer detail.

The issue of globalisation is thus dealt with explicitly in the first article in this thesis, "Integration of global commodity markets in the early-modern era". The three other articles also relate to this issue, however, in that they in different ways analyse processes whereby the world became increasingly integrated economically over time – one important part of the process of globalisation. From the perspective of this author, colonialism can namely be seen as a globalising force, creating an increasing interconnectedness (economical, as well as cultural and political) across the globe, even though the process was far from voluntary for all parties involved (not for colonised regions and nations, nor for slaves bought and exploited on the plantations and so on). Globalisation is thus not only seen as a benevolent and peaceful process, but as a multi-faceted process encompassing aspects of both conflicts and cooperation, both coercion and contracts.

1.5. The Great Divergence

The articles in this thesis also stem from an interest in one of the major themes in economic history: the issue of global economic development, and the all-too-frequent lack thereof. While a small group of countries – particularly in Western Europe and North America – have been able to develop economically during the last 200 years, most other countries of the world have lagged behind. This is in essence, as Lant Pritchett succinctly put it "divergence, big time".[9]

6 See for example Flynn and Giraldez 2008, Cooper 2001 or Inikori 2007 for a discussion on these issues

7 Bayly 2004, chap. 1

8 Cohen and Kennedy 2000, p 374

9 Pritchett 1997

Explaining this Great Divergence is thus one of the main challenges of economic history. Some of the classic explanations have focused upon the rapid technical development that took place in Western Europe starting in the late 18th century, the so-called industrial revolution, and the know-how and human capital that was necessary for such a development. Without the enormous growth in total factor productivity, following from the technical innovations in diverse sectors of the economy, the industrial revolution (and the Great Divergence) would not have taken place.[10] The transfer of technology from leading industrialised countries, to the global South, has therefore often been seen as one of the important issues of modern day development. International trade and investment has often been seen as the means through which such a transfer of technology could or ought to take place. Lately, some scholars of economic history have also been keen to emphasise the "gifts of Athena", as Joel Mokyr has formulated it. The Great Divergence can according to these scholars to a large extent be explained by the high supply of and demand for knowledge and education in Europe, leading to high human capital accumulation. This "knowledge economy" in turn, it is argued, enabled the innovative breakthroughs associated with the Industrial Revolution.[11]

International trade can by itself also contribute to the creation of wealth. Adam Smith argued that international specialisation and trade as such was crucial for increasing the wealth of nations (thus called Smithian growth). Ever since, there has been lively debate on the role of international trade for developing economies, and in particular on the role of trade policies. In standard works on international economics, it is easy to find the theoretical arguments as to why trade liberalisation is positive for a country. However, the authors in general find reasons – at least theoretically – as to why a protectionist trade policy could have a positive economic impact for an individual country.[12] Most economists would probably argue that examples where protectionist policies are or could be genuinely positive in reality are very rare. Looking at trade policy historically, there is however reason to believe that protectionism was far more important than many economists would want to acknowledge: Ha-Joon Chang has argued that virtually all developed countries around the world have been using protectionist policies of different sorts at crucial points in time, in order to favour domestic development.[13] The issue at hand is then about which parties are favoured by different trade policies – be they liberal or protectionist. The academic and political debate on trade and trade policy is therefore very much alive.

10 See for example Landes 1969; Landes 1999; Mokyr 1992; Mokyr 2002; van Zanden 2008

11 Mokyr 2002; Söderberg 2007, chap. 13; van Zanden 2009

12 See for example Pugel 2007, chap. 10; Salvatore 2007, chap. 9; Appleyard et al 2008, chap. 15; Krugman and Obstfeld 2008, chap. 9–10.

13 Chang 2002

Historical perspectives on the theoretical arguments relating to international trade can certainly enrich our understanding of what role modern trade can play in development. Another highly influential school of thought has, following Douglas North, emphasised the importance of institutions for economic development – including for example property rights and the rule of law.[14] This finds its echo in modern-day debates on good governance as a factor for economic development.

In a quite recent book, Kenneth Pomeranz has argued that many of the previous attempts – including those that emphasise technology and those that emphasise institutions in general to explain the Great Divergence, fail to give satisfactory answers to the issue. Comparing the dynamic parts of Britain with the dynamic parts of China, Pomeranz argues that there were hardly any differences in technology, know-how or institutions between these regions. The explanation for the Great Divergence must therefore be sought elsewhere, he argues, namely in the British access to domestic coal and to colonies in the New World. Coal, on the one hand, laid the foundation for a new energy regime in Britain, something that enabled a range of new prime movers, and Britain had a very favourable access to coal. Colonies, on the other hand, according to Pomeranz, contributed vast tracts of land ready for exploitation, something which Britain was in a most favourable position to do.[15]

1.6. Colonialism

The role of colonies in historical economic development was debated long before Pomeranz' contribution. From the 16th to the 20th centuries, European powers successively colonised virtually all other regions of the world. Only a handful of countries outside of Europe managed to remain completely free from European rule.[16] It is well recognised that there were several driving forces behind colonialism, and that it had impacts upon a range of areas: political, cultural, religious, ideological as well as economic.[17] The economic impact of colonialism has time and again received attention from scholars of development. The debate has generally centred on whether colonialism contributed to the economic development of western Europe (one part of the so-called Williams-thesis), and whether colonialism hindered such a development in the colonies, or on the contrary actually contributed

14 See for example North 1990. See also Acemoglu et al 2005, and Sokoloff and Engerman 2000, for examples of how institutional theory is applied in particular to colonialism and slavery, respectively.

15 Pomeranz 2000. On the importance of energy, see also Smil 1994, chap. 5.

16 Etemad 2007

17 See for example Osterhammel 2005

Traders from many European nations participated in the triangular trade across the Atlantic. The picture shows an English slave trader at the Danish fort Christiansborg on the Gold Coast. Painting by G. Webster, ca 1800. Reproduction: H&S Kronborg, Denmark (H&S 272:49).

to faster economic development in these regions of the world. Recently, this topic has received renewed interest among scholars of contemporary economic development, many of them studying if and how the impact of colonialism contributes to explaining the great gap in wealth and living standards that we see in the modern world.[18]

In a recent study, Branko Milanovic, Peter Lindert and Jeffrey Williamson have also tried to estimate inequality in a set of pre-industrial societies. The American colony of Nueva España in the 1780s and 1790s was, together with Moghul India, the society with the highest inequality extraction ratio of all in their study. Indeed, the inequality in Nueva España was close to the inequality possibility frontier – the maximum feasible inequality (given economic

18 For a discussion on the European gains of colonialism, one part of the so–called Williams–thesis, see for example Williams 1964; Sheridan 1969; Engerman 1972; O'Brien 1982; Solow 1985; Solow 1987, Inikori 1987; Bairoch 1993, ch 8; Pomeranz 2000; Inikori 2002; Allen 2003; Acemoglu et al 2005; O'Brien 2006. For a discussion on how colonialism affected the colonized regions, and perhaps Africa in particular, see for example Rodney 1982; Grier 1997; Englebert 2000; Acemoglu et al 2001; Acemoglu et al 2002; Bertocchi and Canova 2002; Price 2003; Lange 2004; Frankema 2006; Huillery 2006; Roy 2006; Nunn 2007, Nunn 2008; Whatley and Gillezeau 2009.

development and the fact that all humans need a certain amount of resources for their sheer survival). A small elite in the Spanish colony was thus able to appropriate almost all economic surplus above what was necessary for the sheer survival of the common population. The authors also found that colonial status was positively correlated with a higher inequality.[19]

The time period of this thesis primarily covers the early modern period – the era of the first wave of European expansion and colonialism. For a large part of this period, European economic ideas and policy were dominated by mercantilist thinking. The economy was to a large extent seen as a zero-sum game, where one nation's gain implied another nation's loss. The state was considered to have an important role to play in the economic sphere. Mercantilist theory therefore logically led to the basic recommendation that economic policy ought to be aiming at protecting and supporting domestic industry and trade from foreign competitors, in order to enrich the nation and its citizens. Power and plenty were seen as two interconnected goals. Colonies were often considered to be a crucial element for the European nation states, since they could provide resources that the mother country lacked or only had in scarce supply.[20] At the same time, mercantilism was not a static and rigid system of thinking, but developed over time. Christopher Ebert has argued that the early Atlantic economy (during the 16th and early 17th centuries) was essentially made up of relatively free, inter-imperial trade, and that mercantilism during this period was more normative than descriptive.[21] David Ormrod has furthermore shown how British and Dutch mercantilist thinking and policy changed from the middle of the 17th century to the late 18th century. One important change, from the perspective of the articles in this thesis, was what Ormrod calls the 'deregulation' of British mercantilist policy. Initially, it was often common mercantilist practice to support domestic production and/or trade by granting monopoly rights to certain agents. In the late 17th century Britain, however, a process of 'deregulation' began, Ormrod argues. Monopoly rights were revoked or dismantled, and a range of national agents were allowed to compete in the production or trade in question. This allowed for increased competition, and thus a somewhat better working market for the goods in question, while at the same time protecting all domestic agents from foreign competition. As we will see in the first article in this thesis, this occurred in the case of several of the trades studied. The same process did not occur in the Netherlands to the same extent, Ormrod argues, which he finds might help to explain the much more dynamic development in Britain during the 18th century.[22]

19 Milanovic et al 2007
20 See for example Magnusson 1994 and Magnusson 2009.
21 Ebert 2008
22 Ormrod 2003

Some of the papers also cover a time period during the early part of the 19th century, in order to trace changes over time, not the least during and after the period of the French Revolutionary and Napoleonic Wars. It is quite widely recognised that this period of conflicts constitutes a breaking point for many aspects of global history. This is evident not least in the field of economic history. During this period many international economic connections experienced severe ruptures. This had far-reaching implications for many markets around the world, as previous research has shown.[23] One of the important consequences was that Great Britain came out of the wars as a leading power both politically and economically. This was to change the fate of much of the world during the 19th century. Another important aspect, from the perspective of the articles in this thesis, was that many of the European colonies in the Americas achieved political independence from the colonial powers of Europe. This was to change economic relations between the regions in question in many respects.

What remained relatively unchanged, however, despite decolonisation in the Americas, was the institution of slavery. Indeed, David Abernethy has argued that political decolonisation actually had the effect, intended or not, of reinforcing social inequalities and of protecting American slavery from a metropolitan abolitionist critique.[24] Only by the second half of the 19th century did slavery become completely abolished in all of the Americas. Covering a time-period both prior to, during and after the conflicts might show us to what extent these conflicts and their consequences had any effects on the topics under study. Writing about this period, the terms 'colonial goods' or 'colonial commodities' will occasionally still be used, as was mentioned earlier, since they provide an easy way of denominating this group of goods collectively, regardless of whether their production actually took place in a colony or not.

All these factor – globalisation, colonialism and slavery – played important parts in the production of and trade in goods such as sugar, coffee and tobacco. Colonialism provided the institutional framework under which production and trade took place. Slavery was the main regime under which the plantation labourers had to toil. Globalisation had important impacts upon the trade in such goods, through increasing integration of the markets. These goods thereby also came to have a significant impact upon the countries of consumption. In a recent paper, Jonathan Hersh and Hans-Joachim Voth have estimated that British consumers made significant welfare gains when new luxuries such as sugar, coffee and tea were introduced into the British diet. The colonial goods thus helped to increase living standards in Britain.[25]

23 O'Rourke 2006
24 Abernethy 2000, p. 74–75.
25 Hersh and Voth 2009

1.7. Research design

As was mentioned earlier, the articles in this thesis cover the time period of the early modern era. Focusing upon this period of time follows quite naturally from the over-arching questions of the thesis: in the discussion on when globalisation began, the main controversy among economic historians is whether there is any evidence of globalisation during this period in particular, or whether globalisation began first in the 19th century. The aim is furthermore to set the contemporary discussion of modern-day globalisation and development against a long-term historical perspective. Contrasting experiences from the early modern period, with previous research from more recent history, might therefore be of great interest. It is also during the early modern era that the first wave of European colonialism took place, and trade in colonial commodities started to expand. The early modern period is therefore a period of much academic controversy regarding the issues under scrutiny in this thesis.

The articles all employ quantitative methods for the study of economic history and historical change, but differ in the choice of exactly what measure to use. The first article analyses price dispersion between different markets around the Atlantic and elsewhere. The article uses historical price data for a number of commodities from different parts of the world. The second article studies the profits realised from the Danish colonies and colonial trade, using primary sources for data on profits, government revenue and commodity prices. The third and fourth articles look at the volume and value of colonial goods traded on the Baltic. The articles therefore primarily use data on the volume of goods passing through the Sound, as well as the price of these goods. The data and sources are discussed in closer detail in each article. This variety of methods is employed not least in order to illustrate the complexity of the issues studied, and in order to illustrate how different methods might enrich our understanding of global economic history.

The geographical coverage varies between the articles in the thesis. In the first article, dealing with market integration in intercontinental trade, the coverage is perhaps the most global, including intercontinental trade between both the Americas, Europe, Africa and Asia. Almost all of the commodity chains studied begin or end in European markets. This is explained by the currently available historical price data, as well as the fact that the European agents came to dominate much of the intercontinental trade during this period.

The three other articles focus upon one region of Europe in particular, namely the Baltic. This region has previously received quite a lot of attention from scholars of European economic history, most importantly regarding exports of strategic goods such as grain and iron to Western Europe. All the articles in this thesis try to study this region from a global perspective, however, i.e. studying the global rather than European connections of the

Baltic markets. In particular the articles study Baltic-Atlantic connections ranging from colonialism and the trade in colonial goods.

1.8. When did globalisation begin?

The first article is thus perhaps the most obvious attempt at writing global history. The article connects directly to an academic debate on when "globalisation" is supposed to have begun, as mentioned earlier. The paper looks specifically at one aspect of globalisation, the globalisation of commodity markets, one of the key connections between continents during the early modern period. The issue has received significant attention, not least due to an often-cited book, along with a couple of influential articles, by Kevin O'Rourke and Jeffrey Williamson.[26] Dennis Flynn and Arturo Giraldez' criticism of O'Rourke and Williamson is sympathetic in its claim that globalisation has to be considered from a whole range of aspects, and therefore from a whole range of academic disciplines.[27] At the same time, there is great value in a clear and succinct definition of globalisation.

One very clear and succinct definition is provided precisely by O'Rourke and Williamson: globalisation is in their works defined as being equal to market integration, which in turn is measured by price convergence. This is undoubtedly an important measurement of economic integration: in an efficient market, the law of one price ought to be valid. Price convergence might be due to many factors: decreasing transport costs, falling monopoly rents (i.e. a turn towards a more competitive markets in between the regions), reductions in tariffs and/or a fall in other transaction costs between the markets studied. All these factors might lead to increasing integration of markets. Evidence of price convergence on commodity markets would thus show that markets became more integrated with each other over time.

Oliver Volckart and Nikolas Wolf have for their part argued in favour of studying the integration of financial markets, rather than commodity markets, since they find the financial markets a suitable benchmark for other markets which integrated more easily than other markets so that when the financial markets "were badly integrated, markets for other commodities fared even worse".[28]

This article follows the more common approach of studying commodity market integration. Regardless of whether one agrees with O'Rourke and Williamson, in defining globalisation as synonymous with market integration, or

26 See for example O'Rourke and Williamson 1999, O'Rourke and Williamson 2002a, O'Rourke and Williamson 2002b, O'Rourke and Williamson 2002c, O'Rourke and Williamson 2004 and Findlay and O'Rourke 2007.

27 Flynn and Giraldez 2004; Flynn and Giraldez 2008

28 Volckart & Wolf 2006

one prefers some more all-encompassing definition, the issue of market integration is of interest to study empirically. Market integration is considered in this thesis to be one aspect of globalisation, and an important aspect at that, and thus of the utmost importance to study in order to gain an understanding of the whole process of globalisation. O'Rourke and Williamson have repeatedly claimed that there is no evidence of market integration (i.e. what they call globalisation) prior to the 19th century. Given the definition and operationalisation provided by these two authors, the article in this thesis attempts to test this claim empirically.

For that purpose, this author has gathered price data on eleven commodities that were traded internationally during the early modern period.[29] The article finds that there actually is evidence of price convergence for almost all the commodity markets studied. On those markets where several different actors were able to compete, be they of the same or different nationality, prices seem to converge and markets in general thus became more integrated over time. Doubtless, the process of market integration was highly vulnerable to changes and shocks: wars could for example have a significant effect upon the commodity markets. Several attempts to monopolise individual commodity markets also thwarted previous periods of market integration. Despite this, an important trend for almost all the commodities studied was one of integration, up until the outbreak of the French Revolutionary and Napoleonic Wars, at least during quite long periods of the time for which we have data. In this regard, the early modern period is very similar to later periods of market integration (and/or globalisation). For example, the period of globalisation documented extensively by O'Rourke and Williamson, that began by the middle or late 19th century, lasted for a couple of decades until it was thwarted by the outbreak of the First World War (1914–1918).

Previous research has not found evidence of any significant increase in the productivity of shipping, or falling freight rates in international shipping during the period. The chapter in this thesis therefore argues that much of

29 Since this article originally was published, this author has been able to find further data assembled by other scholars on the price of slaves from several regions around the Atlantic (Galenson 1986; Manning 1990; Richardson 1991; Eltis 2000; Eltis et al 2005). The results from the published article are however not significantly changed by including this data: this data also points towards a statistically significant convergence in prices between slave-exporting and slave-importing regions, if measured by the coefficient of variation. This is true for the whole period for which these authors report data (1674-1807), as well as a more pronounced sub-period of convergence also to be found in this data. This sub-period is somewhat shorter than the data used in the article: from around 1740 to 1807 (when these datasets end), but still long enough to meet the criteria established in the article. As in the paper, there is as yet no data on the general price level in the West Indies, thus it is not possible to compute the deflated standard deviation as is done for other commodities in the article.

the price convergence might be explained by increasing competition in the markets for the respective commodities, driving down monopoly rents. In a new article, published after the chapter in this thesis originally was published, Jan Luiten van Zanden and Milja van Tielhof have however found that there actually was a quite strong growth in productivity in Dutch shipping during the late 16th and early 17th centuries. The authors tentatively argue that a combination of technological and institutional changes – such as increased efficiency of the shipping route network – are the main explanations for the growth in productivity.[30] A growth in shipping productivity, as shown by these authors, might certainly have contributed to the early modern integration of some of the markets studied in the article in this thesis.

The main conclusion of the article in this thesis is therefore that if one uses similar yardsticks both prior to, during and after the 19th century, the empirical evidence seems to show that there was significant price convergence – and thus market integration – even prior to the 19th century. The issue of early modern globalisation can therefore not be dismissed as easily as has been done in previous studies.

1.9. Who stood to gain from colonialism?

The second article in the thesis takes a look at European colonialism – a slightly different case of early modern globalisation. The research question at the heart of the paper is who stood to gain from colonialism? Adam Smith argued that while British colonialism might be profitable for individual merchants and planters from Britain, it was so costly to the British state that, taken as a whole, colonialism was a burden for the British society. This proposition came under heavy fire following the publication of Eric Williams' controversial book *Capitalism and slavery*, which argued that the colonies actually were crucial for, or at least contributed positively to, British economic development.[31] Richard Sheridan followed the same path as Williams, in an article that received severe criticism from Robert Paul Thomas, and later also Philip Coelho.[32] In contrast to Sheridan's results, both Coelho and Thomas reached the same conclusions as did Adam Smith when studying the issue empirically, i.e. that the colonies constituted a net burden for Britain as a whole.

Much research on colonialism has focused upon the history of the British empire. There is no denying the historical importance of Britain, not least in economic history, but there are also many other histories to be studied and compared to the British case. This paper does look at another case than the

30 van Zanden and van Tielhof 2009
31 Williams 1964
32 Sheridan 1965; Thomas 1968, Sheridan 1968; Coelho 1973

Slaves digging the cane-holes and planting sugar cane. Picture from *Ten Views in the Island of Antigua*, by William Clark (1823). Reproduction: British Library, Great Britain (no. 063523)

British, namely Danish colonialism in the West Indies. This may seem an odd choice to some readers, since Denmark was a very marginal colonial power at the time, but it is chosen since the case study may give us important insights into the history of colonialism during the first wave of colonialism, especially if compared to and contrasted with the British case previously studied by Coelho and Thomas. It is shown in the paper that all the Danish parties studied – merchants and planters, Danish consumers and the Danish crown – seem to have benefited from Denmark being a colonial power. This stands in sharp contrast to the results reached by Coelho and Thomas. The gains were furthermore not negligible if put into relevant perspective.

One reason why the Danish case differs so significantly from the British, it is argued in the paper, is because the Danish case for one thing shows the state's costs of colonialism per se more properly than the British case: it is argued that the British costs for defending the West Indian colonies are inflated since the country so often is involved in intra-European conflicts that "spilled over" into the Caribbean. These costs were however associated with the intra-European conflicts, rather than colonialism per se – the rich and profitable colonies happened to become tempting prizes in the power struggles of Europe. Denmark on the other hand, being neutral in most of the intra-European wars of the 18th century, did not have to keep as large

a military force in the West Indies (relative to the size of the colonies) as did the British, since there was less of a risk of intra-European conflicts "spilling over" into the Caribbean colonies in a similar manner. While this author agrees with Coelho that colonialism to a large extent was about the distribution and re-distribution of social profits within the colonial power, the results of this paper also show that colonialism could be highly profit able for all parties involved in the colonial power. The bill mainly had to be footed by other parties – most importantly all the slaves forced to work in the plantation complex.

1.10. Atlantic sugar in the Baltic economy

The third article in the thesis tries to look at connections between the Atlantic and the Baltic economies, which developed significantly during the early modern period. That the Baltic had been deeply integrated in the Western European economy since medieval times has been well-established by scholars for a long time. In the historiography of the Baltic, the region is however solely portrayed as an area of exports of strategic commodities – such as grain, iron, wood, hemp, flax, pitch and tar. To the Dutch merchants, the grain trade on the Baltic was called the "mother trade". For the British, the Baltic was the main supplier of several of these key commodities, perhaps most importantly the imports of Baltic iron and naval stores. No one seems to doubt the important role that the Baltic played in European development in this regard.

Almost no attention at all has however been paid to the question of how the western European nations were able to pay for Baltic exports. Only small quantities of goods were imported to the Baltic, and a large proportion of ships went in ballast to the Baltic. The common knowledge, or assumption, therefore seems to be that the Baltic exports were paid for in bullion. This is most certainly true in medieval times and much of the early modern era. In this paper, however, it is argued that – especially during the 18th century – this was to undergo a rather important change. With the development of overseas colonies, and the increasing supply of colonial goods, the means of balancing the trade on the Baltic began to change as well: colonial commodities became all the more important in to trade on the Baltic.

As is shown in the paper, this issue has been seriously underestimated in previous historical research – both for theoretical reasons (where most interest has been on the production and exports of goods from an individual country, rather than on its imports), but also because the quantities of colonial goods transported to the Baltic has been severely underestimated empirically due to incomplete data in previous sources used by other scholars.

The growth in Baltic imports of colonial goods was significant during the 18th century. Since no country in the Baltic (with the exception of Denmark) possessed overseas colonies of its own, these imports mainly had to be bought in the ports of the major colonial powers in Europe. Re-exports also became ever more important for the balance of trade of the western European nations. When calculating the value of just one colonial commodity, sugar, it is shown that the re-exports of this commodity alone were worth almost as much as all the Baltic exports of iron or grain at the same time during the late 18th century. Re-exports of colonial goods could thus increasingly be substituted for large amounts of bullion in the trade on the Baltic. Control over colonies, and the trade in colonial goods, thereby also became an important means of leverage in Baltic trade.

Increasing imports and thus consumption of colonial goods might also lead to an increasing standard of living, at least among parts of the population in and around the Baltic. While it is beyond the scope of this article to study this issue, it would be an interesting topic for future research.

1.11. Ghost acreage of Baltic imports

The fourth article in the thesis continues on the path begun in the third article, i.e. the trade in colonial goods from the Atlantic to the Baltic. While the third article analysed this trade from a purely economic perspective, i.e. the value of the goods traded, this fourth article explores the issue from the perspective of economic environmental history. Whereas the third article focused upon the economic value of the goods in question, this paper will focus upon the use of one factor of production (the natural resource land) necessary for their production. In particular, the article therefore studies the so-called ghost acreage necessary for the production of the goods imported to the Baltic.

The ghost acreage is a concept originating in environmental studies, and simply put refers to the acreage necessary for the production of imported commodities. The same concept has been used previously in historical studies by Kenneth Pomeranz, in his highly influential book *The Great Divergence*. Pomeranz' results show that the ghost acreage necessary for the production of just a couple of the most important colonial commodities – timber, sugar and cotton – was significantly larger than the total arable acreage of the British isles.[33] In this paper it is shown that the choice of method for the calculations, and the possible domestic substitutes imagined available, have a very large impact upon the results arrived at.

33 Pomeranz 2000, ch.6.

The ghost acreage may from one perspective be considered as a way of measuring exploitation and unequal exchange between nations. This also seems to be how Pomeranz implicitly understands the concept, since he puts such an emphasis on the ghost acreage in the New World, rather than anywhere else. A ghost acreage does not however necessarily imply any such exploitation, but can also show the comparative advantages different nations might have in production and trade, in the form of different factor endowments. Some nations may thus have an abundance of land, relative to labour and/or capital, and may thus have been in a favourable position to export goods requiring large amounts of land for their production. This is also the logical extension of the classic Heckscher-Ohlin-theorem: "A nation will export the commodity whose production requires the intensive use of the nation's relatively abundant and cheap factor [of production] and import the commodity whose production requires the intensive use of the nation's relatively scarce and expensive factor."[34]

Both the Baltic and the New World basically appear at first to be land-abundant regions. If we consider the issue from the basic Heckscher-Ohlin-theorem (H-O theorem) of international trade, it may therefore seem irrational that there was trade between the regions at all. As is shown in the paper, the acreage that would have been necessary to produce what Pomeranz considers as domestic substitutes to the imported colonial commodities would have been quite negligible. The ghost acreage necessary to produce domestic substitutes for cotton would for example have been very small compared to the arable land available in the Baltic region. The amounts of flax exported from the Baltic exceeded by far the amounts of cotton imported throughout the period in question. Had the Baltic textile producers demanded domestic substitutes to a higher degree, larger amounts of flax could without a doubt have been retained.

The basic H-O theorem of trade does not at first seem to give us a satisfactory explanation of the trade in question. At the same time, it does not seem proper to assume that there was any unequal exchange, given the fact that the Baltic countries (with the exception of Denmark) possessed no colonies in the Americas. To understand the logic of this trade, we therefore have to use a model somewhat more complex than the basic H-O theorem. The exploitation of slaves was an option that was available for many colonial and post-colonial planters in the Americas well into the 19th century. One comparative advantage of American producers might therefore have been the low cost of labour, as a production factor, rather than an abundance of land. A second factor to take into the equation was climate – many of the goods in question were tropical goods. This might be considered to be a

34 As formulated in Salvatore 2007, p 131–132.

qualitative aspect of a heterogenous production factor abstracted under the heading land. We must also take into consideration that domestic products weren't always considered to be perfect substitutes for the colonial commodities in question. Consumer tastes – the acquiring of a sweet-tooth – were for example an important factor in the importing of colonial sugar, and both consumer tastes and technical factors were important in the choice of textile fibres. Though these conclusions in no way refute the general insights from the H-O model of trade (or from theories of unequal exchange, for that matter), they at least show the limits of such general theories.

The paper at the same time shows the asymmetrical relationship in the trade between the Americas and Europe. An alternative way of calculating the ghost acreage is by calculating the acreage necessary overseas, for the actual production of the goods imported to a country in question. In the paper, this is called the foreign ghost acreage, in contrast to the theoretically necessary domestic ghost acreage (in case the country in question would have been totally autarkic). This foreign historical ghost acreage for colonial goods imported to the Baltic was equivalent to quite large areas of the American plantation complex – the cotton imported to the Baltic by the middle of the 19th century required, for example, an acreage equal to five per cent of all the acreage under cotton in the whole of the United States, or half the land under cotton in any one of the cotton-producing states of the United States of America, and the sugar consumed required an acreage equivalent to the arable land available on any one of the islands in the Lesser Antilles in the Caribbean.

1.12. General conclusions

What are we then able to learn more generally from these studies in global economic history? This author would like to stress two general conclusions.

Firstly, economic globalisation has a very long history. Globalisation is not a phenomenon of recent decades, it is not even a phenomenon that started following the industrial revolutions in Europe of the 19th century as has been argued previously. This thesis has looked only at economic globalisation, recognising that globalisation has many different aspects. Economic aspects were however crucial to much of the process of globalisation. The structural forces at work behind the process of economic globalisation seem to have had a clearly measurable impact on some of the most important inter-continental commodity markets even during the early modern period, as is shown in the first article. This is perhaps not a new insight, but is strengthened by the quantitative empirical analysis undertaken in this thesis. For most of the commodities studied in the article, there is evidence of market integration for quite

long periods of time. At least during this early modern phase of globalisation, institutions as well as external shocks to the markets in the form of wars were also very important for allowing or hindering the process. As is furthermore shown in the third article of the thesis, the trade in colonial goods spread throughout Europe, through re-exports. Increasingly, semi-peripheral countries in Europe thus became more closely tied to a developing Atlantic – and later global – economy through trade in for example colonial goods. The trade in these goods did thus not only have economic consequences in the areas of production, and the main powers in Western Europe, but did also become an ever more important part of complex international economic networks.

Secondly, colonisation contributed in many indirect ways to the dynamics of economic development in Europe. Kenneth Morgan has argued that the Williams thesis might be overstated in its most rigid interpretation, when arguing for a direct connection between the profits of slavery and the industrial development in England. At the same time, Morgan argues, slavery and the Atlantic trade made an important, though perhaps not always decisive, impact on Britain's long-term economic development. This impact came through a range of indirect, dynamic factors, contributing to the development of business institutions (credit markets, insurance), shipping, growth of demand for export products etc.[35] The articles in this thesis do seem to point in the same direction. Colonialism could be very profitable economically for all parties in the colonial power, as is shown in the second paper. Whether certain parties in Europe gained or lost from colonialism was thus primarily a question of the distribution of the gains from colonialism, as well as a question of the colonial power's status within the European context. It was not necessarily the case that the colonial states of Europe had to pay large sums for the possession of colonies *per se*. The costs of colonialism mainly had to be borne by others than Europeans – most importantly the colonised indigenous peoples and/or the enslaved Africans. Trade in colonial goods was also highly important economically, and gave merchants in the colonial powers leverage over other (and from a development perspective strategically more important) trade, as is argued in the third paper. The re-export trade in colonial goods contributed significantly to the Western European nations' balance of payments for trade with other regions of the world. Through re-exporting goods such as sugar to the Baltic, agents in Britain and other Western European nations were able to finance the purchases of raw materials such as iron or foodstuffs such as grains. On the other hand, as was argued in the fourth paper, colonialism was perhaps not as important for relieving Britain from any ecological constraints, as has been argued previously by other scholars, but had an impact only through more complex means. This trade in colonial goods can neither hardly

35 Morgan 2000. See also for example Inikori 2002.

be understood using basic models of international trade, such as the factor endowments theory. To understand this trade, we must use a more complex model including factors such as climate, the existence and exploitation of slave labour, and the impact of consumer tastes upon the demand for different commodities.

Literature

Abernethy, David (2000): *The dynamics of global dominance. European overseas empires 1415–1980.* Yale university press, New Haven.

Acemoglu, Daron and Simon Johnson and James Robinson (2001): "The colonial origins of comparative development: an empirical investigation", *American Economic Review*, vol 91, no 5, pp 1369–1401.

Acemoglu, Daron and Simon Johnson and James Robinson (2002): "Reversal of fortune: geography and institutions in the making of the modern world income distribution", *Quarterly Journal of Economics*, vol 117, pp 1231–1294.

Acemoglu, Daron and Simon Johnson and James Robinson (2005): "The rise of Europe: Atlantic trade, institutional change, and economic growth", *American Economic Review*, vol 95, no 3, pp 546–579.

Allen, Robert (2003): "Progress and poverty in early modern Europe", *Economic History Review*, vol LVI, no 3, pp 403–443.

Appleyard, Dennis and Alfred Field and Steven Cobb (2008): *International economics*. 6th ed. McGraw-Hill, Boston.

Bailyn, Bernard (2005): *Atlantic history. Concept and contours*. Harvard university press, Cambridge.

Bairoch, Paul (1993): *Economics & world history: myths and paradoxes.* University of Chicago press, Chicago.

Bayly, C.A. (2004): *The birth of the modern world 1780–1914.* Blackwell, Oxford.

Beckford, George (1972): *Persistent poverty. Underdevelopment in plantation economies of the Third World*. Oxford university press, Oxford.

Bertocchi, Graziella and Fabio Canova (2002): "Did colonization matter for growth? An empirical exploration into the historical causes of Africa's underdevelopment", *European Economic Review*, vol 46, pp 1851–1871.

Chang, Ha-Joon (2002): *Kicking away the ladder. Development strategy in historical perspective.* Anthem press, London.

Coelho, Philip (1973): "The profitability of imperialism: the British experience in the West Indies, 1768–1772", *Explorations in Economic History*, vol 10, no 3, pp 253–280.

Cohen, Robin and Paul Kennedy (2000): *Global Sociology*. MacMillan, London

Cooper, Frederick (2001): "What is the concept of globalization good for? An African historian's perspective", *African Affairs*, vol 100, pp 189-213.

Curtin, Philip (1998): *The rise and fall of the plantation complex. Essays in Atlantic history.* Cambridge university press, Cambridge.

Ebert, Christopher (2008): *Between empires: Brazilian sugar in the early Atlantic economy, 1550–1630*. Brill, Leiden.

Egerton, Douglas et al (2007): *The Atlantic world. A history, 1400–1888.* Harlan Davidson, Wheeling.

Elliott, J.H. (2006): *Empires of the Atlantic world. Britain and Spain in America 1492–1830*. Yale University press, New Haven.

Eltis, David (2000): *The rise of African slavery in the Americas*. Cambridge university press, Cambridge.

Eltis, David, Frank Lewis and David Richardson (2005): "Slave prices, the African slave trade, and productivity in the Caribbean, 1674–1807", *Economic History Review*, vol 58, no 4, pp 673–700.

Engerman, Stanley (1972): "The slave trade and British capital formation in the Eighteenth century: a comment on the Williams Thesis", *Business History Review*, vol XLVI, no 4, pp 430–443.

Englebert, Pierre (2000): "Pre-colonial institutions, post-colonial states, and economic development in tropical Africa", *Political Research Quarterly*, vol 53, no 1, pp 7–36.

Etemad, Bouda (2007): *Possessing the world. Taking the measurements of colonisation from the 18th to the 20th century.* Berghahn books, New York.

Findlay, Ronald and Kevin O'Rourke (2007): *Power and plenty. Trade, war, and the world economy in the second millennium*. Princeton university press, Princeton.

Flynn, Dennis and Arturo Giraldez (2004): "Path dependence, time lags and the birth of globalisation: a critique of O'Rourke and Williamson", *European review of economic history*, vol 8, pp 81–108.

Flynn, Dennis and Arturo Giraldez (2008): "Born again: globalization's sixteenth century origins (Asian/global verus [sic!] European dynamics)", *Pacific Economic Review*, vol 13, no 3, pp 359–387.

Frankema, Ewout (2006): *The colonial origins of inequality: exploring the causes and consequences of land distribution*. Research memorandum GD-81, Groningen Growth and Development Centre, University of Groningen, Groningen.

Galenson, David (1986): *Traders, planters, and slaves. Market behavior in early English America.* Cambrige university press, Cambridge.

Games, Alison and Adam Rothman (eds, 2008): *Major problems in Atlantic history. Documents and essays*. Houghton Mifflin, Boston.

Grier, Robin (1997): "Colonial legacies and economic growth", *Public Choice*, vol 98, pp 317–335.

Hersh, Jonathan and Hans-Joachim Voth (2009): *Sweet diversity: Colonial goods and the rise of European living standards after 1492*. Working paper, Econpapers, july 2009.

Huillery, Elise (2006): *Colonisation and development in the former French West Africa: the long-term impact of the colonial public policy*. Working paper DT/2006-12. DIAL, Paris.
Inikori, Joseph (1987): "Slavery and the development of industrial capitalism in England" in *Solow and Engerman 1987*.
Inikori, Joseph (2002): *Africans and the industrial revolution in England. A study in international trade and economic development*. Cambridge university press, Cambridge.
Inikori, Joseph (2007): "Africa and the globalization process: western Africa, 1450–1850", *Journal of Global History*, vol 2, pp 63–86.
Krugman, Paul and Maurice Obstfeld (2008): *International economics: theory and policy*. 8th ed. Addison-Wesley, Boston.
Landes, David (1969): *The unbound Prometheus: technological change and industrial development in Western Europe from 1750 to the present.* Cambridge university press, Cambridge.
Landes, David (1999): *The wealth and poverty of nations: why some are so rich and some so poor.* Abacus, London.
Lange, Matthew (2004): "British colonial legacies and political development", *World Development*, vol 32, no 6, pp 905–922.
Magnusson, Lars (1994): *Mercantilism: the shaping of an economic language*. Routledge, London.
Magnusson, Lars (2009): *Nation, state and the Industrial revolution: The visible hand*. Routledge, London.
Manning, Patrick (1990): *Slavery and African life*. Cambridge university press, Cambridge.
Mazumdar, Sucheta (1998): *Sugar and society in China: peasants, technology and the world market*. Harvard university press, Cambridge.
McCusker, John and Kenneth Morgan (red, 2000): *The early modern Atlantic economy*. Cambridge University Press, Cambridge.
Milanovic, Branko and Peter Lindert and Jeffrey Williamson (2007): *Measuring ancient inequality.* NBER working paper 13550. NBER, Cambridge.
Mokyr, Joel (1992): *The lever of riches. Technological creativity and economic progress*. Oxford university press, Oxford.
Mokyr, Joel (2002): *The gifts of Athena: historical origins of the knowledge economy*. Princeton university press, Princeton.
Morgan, Kenneth (2000): *Slavery, Atlantic trade and the British economy, 1660–1800.* Cambridge university press, Cambridge.
North, Douglas (1990): *Institutions, institutional change and economic performance*. Cambridge university press, Cambridge.

Nunn, Nathan (2007): "Historical legacies: a model linking Africa's past to its current underdevelopment", *Journal of Development Economics*, vol 83, no 1, pp 157–175.

Nunn, Nathan (2008): "The long-term effects of Africa's slave trades", *Quarterly Journal of Economics*, vol 123, no 1, pp 139–176.

O'Brien, Patrick (1982): "European economic development: the contribution of the periphery", *Economic History Review*, vol XXXV, no 1, pp 1–18.

O'Brien, Patrick (2006): "A critical review of a tradition of meta-narratives from Adam Smith to Karl Pomeranz" in P.C. Emmer et al (eds, 2006): *A* Deus ex Machina *revisited: Atlantic colonial trade and European economic development.* Brill, Leiden.

Ormrod, David (2003): *The rise of commercial empires. England and the Netherlands in the age of mercantilism, 1650–1770*. Cambridge university press, Cambridge.

O'Rourke, Kevin (2006): "The worldwide economic impact of the French Revolutionary and Napoleonic Wars, 1793–1815", *Journal of Global History*, vol 1, pp 123–149.

O'Rourke, Kevin and Jeffrey Williamson (1999): *Globalization and history. The evolution of a nineteenth-century Atlantic economy.* MIT press, Cambridge.

O'Rourke, Kevin and Jeffrey Williamson (2002a): "After Columbus: explaining Europe's overseas trade boom, 1500–1800". *Journal of Economic History*, vol 62, no 2, pp 417–456.

O'Rourke, Kevin and Jeffrey Williamson (2002b): "When did globalisation begin?" *European review of economic history*, vol 6, pp 23–50.

O'Rourke, Kevin and Jeffrey Williamson (2002c): *From Malthus to Ohlin: Trade, growth and distribution since 1500*, CEPR discussion paper 3394, CEPR, London.

O'Rourke, Kevin and Jeffrey Williamson (2004): "Once more: when did globalisation begin?" *European review of economic history*, vol 8, pp 109–117.

Osterhammel, Jürgen (2005): *Colonialism. A theoretical overview*. Markus Wiener publishers, Princeton.

Pietschmann, Horst (ed, 2002): *Atlantic history. History of the Atlantic system 1580–1830.* Vandenhoeck and Ruprecht, Göttingen.

Pomeranz, Kenneth (2000): *The great divergence. China, Europe and the making of the modern world economy*. Princeton university press, Princeton.

Price, Gregory (2003): "Economic growth in a cross-section of nonindustrial countries: does colonial heritage matter for Africa?", *Review of Development Economics*, vol 7, no 3, pp 478–495.

Pritchett, Lant (1997): "Divergence, big time", *Journal of Economic Perspectives*, vol 11, no 3, pp 3-17.

Pugel, Thomas (2007): *International economics*. 13th ed. McGraw-Hill Irwin, Boston.
Richardson, David (1991): "Prices of slaves in West and West-Central Africa: Toward an annual series, 1698–1807", *Bulletin of economic research*, vol 43, no 1, pp 21–56
Rodney, Walter (1982): *How Europe underdeveloped Africa*. Howard University press, Washington.
Roy, Tirthankar (2006): *The economic history of India 1857–1947*. Oxford university press, Oxford.
Salvatore, Dominick (2007): *International economics*. 9th ed. John Wiley, Hoboken.
Sheridan, Richard (1965): "The wealth of Jamaica in the eighteenth century", *Economic History Review*, vol 18, no 2, pp 292–311.
Sheridan, Richard (1968): "The wealth of Jamaica in the eighteenth century: a rejoinder", *Economic History Review*, vol 21, no 1, pp 46–61.
Sheridan, Richard (1969): "The plantation revolution and the industrial revolution, 1625–1775", *Caribbean Studies*, vol 9, no 3, pp 5–25.
Smil, Vaclav (1994): *Energy in world history*. Westview press, Boulder.
Sokoloff, Kenneth and Stanley Engerman (2000): "History lessons: Institutions, factor endowments, and paths of developments in the New World", *Journal of economic perspectives*, vol 14, no 3, pp 217–232.
Solow, Barbara (1985): "Caribbean slavery and British growth – The Eric Williams hypothesis", *Journal of Development Economics*, vol 17, pp 99–115.
Solow, Barbara (1987): "Capitalism and slavery in the exceedingly long run" in *Solow and Engerman 1987*.
Solow, Barbara and Stanley Engerman (eds, 1987): *British capitalism & Caribbean slavery. The legacy of Eric Williams.* Cambridge university press, Cambridge.
Söderberg, Johan (2007): *Vår världs ekonomiska historia. Den förindustriella tiden.* SNS förlag, Stockholm.
Thomas, Robert Paul (1968): "The sugar colonies of the old Empire: profit or loss for Great Britain?", *Economic History Review*, vol 21, no 1, pp 30–45.
Whatley, Warren and Rob Gillezeau (2009): "The impact of the slave trade on African economies", paper presented at the *World Economic History Congress, Utrecht, 2009*.
Williams, Eric (1964 [1943]): *Capitalism and slavery.* Andre Deutsch, London.
Williams, Eric (1994 [1942]): *The Negro in the Caribbean*. A&B books, New York.

Volckart, Oliver and Nikolas Wolf (2006): "Estimating financial integration in the Middle Ages: What can we learn from a TAR model?", J*ournal of Economic History*, vol 66, no 1, pp 122-139.

van Zanden, Jan Luiten (2008): "The road to the Industrial Revolution: hypotheses and conjectures about the medieval origins of the 'European miracle'", *Journal of Global History*, vol 3, pp 337–359.

van Zanden, Jan Luiten (2009): *The long road to the Industrial Revolution. The European economy in a global perspective*. Brill, Leiden.

van Zanden, Jan Luiten and van Tielhof, Milja (2009): "Roots of growth and productivity change in Dutch shipping industry, 1500-1800", *Explorations in Economic History*, vol 46, pp 389-403.

Asian merchants were selling a number of commodities, including textiles, tea and spices, to foreign companies trading on Asian ports. The picture shows European and American factories in the port of Canton, viewed from Pearl river, probably late 18th century. Gouache on rice paper by unknown Chinese artist. Reproduction: H&S Kronborg, Denmark (H&S 1937:0052).

Chapter 2

Integration of global commodity markets in the early modern era*

Abstract
In this paper, I test whether there is any evidence of price convergence on intercontinental commodity markets prior to the 19th century. I gather price data on eleven commodity markets important to early modern intercontinental trade. The main conclusion is that many of the commodity markets do show signs of price convergence even prior to the 19th century. The question of an early globalisation can thus not be dismissed as easily as often has been done so far.

2.1. Introduction

When did globalisation begin? There have been many different answers to this question – ranging from a couple of decades, to several thousand years ago. Many have thought of the conquest of the Americas as a starting point, thus dating the start of globalisation at the beginning of the 16th century (or even more precisely to the year 1492).[1] Two renowned scholars, Kevin O'Rourke and Jeffrey Williamson, have succinctly argued that we ought to consider the 1820s as the starting-point of a first wave of globalisation. The authors claim this, since they find no evidence of price convergence in long-distance trade prior to this time.[2]

In this paper, I am going to test this argument empirically. The question of this paper is therefore: *Is there any evidence of price convergence prior to the 1820s in the intercontinental commodity trade?*

I use empirical data on prices for eleven commodities important in the

* This article has previously been published in *European Review of Economic History* (2009:1), and is here republished with kind permission.

1 See for example Blaut 1992 or Acemoglu et al 2005.

2 See for example O'Rourke and Williamson 1999, O'Rourke and Williamson 2002a, O'Rourke and Williamson 2002b, O'Rourke and Williamson 2002c, O'Rourke and Williamson 2004 and Findlay and O'Rourke 2002. Lately, at least O'Rourke seems to have revised his opinion as to when globalisation began. In the book Power and plenty (co-authored with Ronald Findlay), the authors argue that globalisation might be said to have begun with the unification of the Eurasian landmass by the Mongol conquests in the 13th century (Findlay and O'Rourke 2007, p 108). The authors do however repeat the same argument on price convergence and market integration as in the earlier papers (ibid., p 306).

early modern world trade, to test the hypothesis. The commodities included are *sugar, slaves, cacao, tobacco, rum, tea, Asian textiles, European broadcloth, cloves, coffee* and *pepper*. These commodities represent a very large share of total long-distance trade during the early modern period. Patrick O'Brien has in a recent article computed the commodity composition of 'third world' exports between 1830 and 1937. By 1830, sugar alone was the single most important commodity traded, and responsible for approximately 25 per cent of the total value of 'third world' exports. The two second largest categories of products – textile fibres on the one hand, and coffee, tea, cacao and spices on the other – at the same time each accounted for approximately 15 per cent of the value of the exports, respectively.[3]

The price data suggest that there are secular trends of price convergence taking place already by the late 17th or early 18th century. Despite many external factors thwarting market integration time and again, prices converge for many of the commodities included in this study, and they do so for quite long periods of time. The main conclusion of the paper is therefore that the issue of an 'early globalisation' cannot be dismissed as easily as often has been done so far.

2.2. Previous studies

2.2.1. Definition of globalisation

To quite a large extent, the debate on when globalisation began is a debate over the definition of globalisation. Many authors do not however use very clear definitions of what they mean by the concept. In their book *Globalization and history*, along with a range of articles, authors Kevin O'Rourke and Jeffrey Williamson have put forward a very clear definition of what they mean by globalisation. Globalisation of world trade, they argue, should be defined as synonymous with integration of international commodity markets. Furthermore they claim that 'the only irrefutable evidence that globalisation is taking place is a decline in the international dispersion of commodity prices or what might be called commodity price convergence'.[4]

This definition has received some criticism by other scholars, such as Flynn and Giraldez or Joseph Inikori.[5] Karl Gunnar Persson, among others, has also argued that price convergence isn't a sufficient criterion of market integration, since convergence is a transitory event. Persson, as well as David

3 O'Brien 2006, p 263.
4 O'Rourke and Williamson, 2002b, pp 25–26
5 Flynn and Giraldez 2004, pp 82–83; Inikori 2007, p 68

Jacks and Victoria Bateman, have therefore used both price convergence and price adjustment as measures of market integration.[6]

Even if we accept the definition of globalisation as synonymous with price convergence, the opposite does not follow automatically – i.e. just any evidence of price convergence taking place does not necessarily give us proof of globalisation. We might for example want to require that such convergence have an effect upon a significant share of world trade, that the effects are quite simultaneous in time, and/or that any convergence taking place is large enough to have a significant effect upon the economies of the countries participating in the trade.

Focusing upon the definition of globalisation would be beyond the scope of this paper. *This paper will focus upon the issue of global price convergence – an issue that is important in and of itself, regardless of whether we believe it to be synonymous with globalisation, or just one possible aspect of globalisation.*

2.2.2. Previous evidence of early modern price dispersion

The book and articles by O'Rourke and Williamson have become highly influential in the discussion on historical globalisation. The two authors support their argument against an early globalisation by referring to the trade in several non-competing commodities, such as sugar, spices and textiles. The evidence they cite is of quite diverse nature depending on what trade route they study. In the transatlantic commodity trade, the only kind of evidence cited is calculations of the seaborne freight rates. They thus do not present any evidence at all regarding price convergence *per se* in the transatlantic trade, but only this one part of the price wedge.[7] In the trade between Europe and Asia, on the other hand, O'Rourke and Williamson use price data to support their argument for a set of different commodities – mainly different spices and textiles. In most cases, the data cover the trade between Great Britain and Asia during the period 1660–1710. Two figures also include prices over a longer period of time. From this data, they conclude that there seems to be no evidence in favour of price convergence.[8]

Dennis Flynn and Arturo Giraldez have for their part argued that there is strong evidence of price convergence on the international silver market twice

6 Persson 1999, chapter 5; Ejrnaes and Persson 2006; Jacks 2005, p 383; Bateman 2007. Jacks has in another article, Jacks 2004, also used a third measure of market integration, geographical integration or 'price synchronisation across many markets', see pp 292–294.

7 O'Rourke and Williamson, 2002b, pp 28–34

8 O'Rourke and Williamson 2002b, figures 4 and 6. Exactly the same data as in these two figures are also used in O'Rourke and Williamson 2002a, O'Rourke and Williamson 2002c and Findlay and O'Rourke 2002.

prior to the 19th century. This issue is avoided by O'Rourke and Williamson, since they are only interested in non-monetary commodity trade. This is a mistake, Flynn and Giraldez argue, since monetary commodity and non-monetary commodity exchange were intimately intertwined at the global level.[9]

Many other studies have focused upon integration on the intra-European market. David Jacks has for example studied market integration in the Baltic and North Sea region, during the period 1500–1800. He finds that the markets did become more integrated during this period in this region.[10] Christiaan van Bochove comes to a similar conclusion in his study on market integration in the North Sea trade during the period 1600–1800.[11] Özmucur and Pamuk have investigated whether commodity prices in long-distance intra-European trade converged during the same period as David Jacks did. They use price data from a set of different countries/cities in Europe, and for a few commodities such as wheat, olive oil and soap. In some of the cases, they find evidence of price convergence during the period, but in most of the cases the statistical tests they use show no significant evidence of convergence of prices for the whole of the period.[12] Victoria Bateman has studied grain prices in continental Europe, and finds no evidence of price convergence during the period of her study, 1350–1800.[13] Giovanni Federico has recently studied the European grain markets during the period 1760–1860, finding that prices of grain diverged significantly in Europe during the late 18th and early 19th centuries.[14]

Previous studies have thus found evidence of market integration regionally at least in some parts of Europe during the early modern era. On a global level, however, previous studies have found no evidence of market integration.

2.3. Methods

The earlier studies referred to above raise three important methodological issues: how long is a long-term trend, how do we deal with external shocks to the market, and how do we properly measure price convergence? This section will try to deal with these three issues.

9 Flynn and Giraldez 2004, pp 87–88
10 Jacks 2004
11 Van Bochove 2007
12 Özmucur and Pamuk 2007
13 Bateman 2007
14 Federico 2007

2.3.1. How long is a long-term trend?

The first issue to be discussed is: how long time must a trend last, in order to qualify as price convergence (and not only a temporary fluctuation)? Few authors discuss the issue explicitly. Let us therefore take a look at how some scholars in practice deal with the issue. Özmucur and Pamuk look for a trend of price convergence during the whole of a period of 300 years, apparently without testing if there are different trends during different parts of this very long period of time.[15] Bateman in a similar manner looks for a single trend of convergence during the whole of her period of study, 1350–1800.[16] In the articles on early modern trade, O'Rourke and Williamson disqualify tendencies of price convergence seemingly just because the trends don't last the whole period for which they have data, which in some cases cover as long a period as 320 years.[17] In their book *Globalization and history*, on the other hand, the same authors base their conclusions on trends of price convergence that are quite short: sometimes as short as 20 years (the figures reported normally cover 40–50 years of data in total).[18] Van Bochove looks at convergence during different periods, each covering 100 years.[19]

We ought not to expect secular trends to be more long-lasting during the early modern era than during modern times. *In this paper, a secular trend is taken to mean that a converging price trend must be sustained for a period of 50 years or more in order to qualify.* And as Karl Gunnar Persson has pointed out, convergence might be a transitory event. What is important is therefore that the convergence is sustained (i.e. not cancelled out by a new trend of divergence) for a period of time, even if the transition as such in some cases is swifter.

2.3.2. How do we deal with external shocks to the markets?

A second issue is how we deal with the impact of major external shocks to the markets, such as the French Revolutionary and Napoleonic Wars or the First World War. Many scholars do not discuss the issue explicitly, but in practice begin their period of study after and/or end it before such major international conflicts. O'Rourke and Williamson acknowledge that the market for coffee showed signs of price convergence between the 1730s and the 1780s, but they

15 Özmucur and Pamuk 2007
16 Bateman 2007
17 See for example O'Rourke and Williamson 2002b
18 O'Rourke and Williamson 1999, figures 3.4–3.8. The authors draw the same conclusion from similarly short periods of time elsewhere, see for example O'Rourke and Williamson 2002b, pp 37–39.
19 Van Bochove 2007

go on to say that 'everything gained was lost during the French Wars.'[20] In their book, the same authors let their period of data end abruptly at 1913, just before the outbreak of the First World War, without discussing the issue explicitly. In their article on market integration between 1500 and 2000, Findlay and O'Rourke also make a break at the start of the First World War, arguing: '1914 clearly marked a dramatic and discontinuous break with the past.'[21]

In a recent article Kevin O'Rourke discusses the possibility that there actually was a potential for global market integration already prior to the 19th century, but that this potential constantly was frustrated by mercantilist policies and wars. In the article, O'Rourke has documented the most significant effects the French Revolutionary and Napoleonic Wars had, not only upon the European nations but also worldwide.[22] In the words of O'Rourke: 'The years between 1793 and 1815 saw an unusually bloody, lengthy and widespread conflict between Great Britain and France, which widened to include many of the other leading powers of the day.'[23]

In this paper, the French Revolutionary and Napoleonic Wars will be treated in a similar manner as how other scholars have treated the First World War, i.e. it is considered as a discontinuous break with the past. This means that divergence of prices during this period will not automatically disqualify evidence of price convergence prior to it.

2.3.3. Measuring price convergence

Thirdly, it is not self-evident how we are to measure price convergence statistically, i.e. what measure of dispersion we are to use. The choice of statistical measure depends on what we want to analyse with the data. The point of measuring globalisation using data on price dispersion ought to be that this is a quite easy way to measure the size of the price wedge between different markets (instead of having to collect data for and add together all the significant components of the price wedge).

The measure of mark-up ratio between the purchasing and selling market, i.e. the selling price divided by the purchasing price is one possible measure, and is used for example by O'Rourke and Williamson.[24] The mark-up ratio is an easy and quite powerful illustration of how large a percentage is added to the price in the selling market, compared to the purchasing market – that is, how large the price wedge is relative to the

20 O'Rourke and Williamson 2002c, p 10
21 Findlay and O'Rourke 2002, p 41
22 O'Rourke 2006. See also Findlay and O'Rourke 2002, pp 25–30.
23 O'Rourke 2006, p 123
24 See for example O'Rourke and Williamson 2002b

price in the selling market. A possible drawback with this measure is that it limits us to measuring the price wedge between two different markets only. Furthermore, the mark-up ratio will also give a large weight to changes in the price in the purchasing market (the denominator in the equation), so that a quite small absolute change in the price in the selling market can translate into a rather big change in the mark-up ratio.

Another common measure is the coefficient of variation, i.e. the standard deviation of prices divided by the mean price. This is for example used by David Jacks, Giovanni Federico and Özmucur and Pamuk to test for price convergence.[25] This measure will show us the size of the price wedge, relative to the mean price between the markets. The coefficient of variation can, in contrast to the mark-up ratio, measure convergence taking place across many different markets at the same time, allowing the measurement of convergence among various markets. If we only have data from two markets, one exporting and one importing, the coefficient of variation and the mark-up ratio will yield essentially the same results if we are interested in their change over time.

A third measure of dispersion – the standard deviation – could also tell us something important. According to Feinstein and Thomas, this is a most useful and widely used measure of dispersion in historical statistics.[26] The standard deviation of the prices will tell us if there is an absolute convergence of prices (i.e. an absolute decrease in the size of the price wedge), in contrast to the mark-up ratio or the coefficient of variation showing convergence relative to the purchasing or mean price. In the literature on economic convergence, the standard deviation has been used to some degree. Dalgaard and Vastrup have however shown (in the context of convergence of global income per capita) that using the standard deviation or using the coefficient of variation will yield markedly different results. In their case, convergence is confirmed or refuted solely depending on the measure used.[27]

In the case of price convergence, there are two reasons as to why the measure of standard deviation ought to be taken into consideration, one theoretical/statistical and one historical. The first reason concerns a shortcoming with the coefficient of variation. Changes in supply or demand in either the exporting or the importing region will, assuming ceteris paribus, lead to changes in the equilibrium price. This will in turn have an effect upon the coefficient of variation between the markets. A positive demand shock – driving the equilibrium price upwards – could thus for example be interpreted as 'globalisation', if we use the coefficient of variation as the only measure, even if the costs of trade remain unchanged. *If we want to use price convergence as a measure of 'globalisation', the coefficient of variation can therefore be misleading under certain, not uncommon, conditions.*

25 Jacks 2004; Federico 2007; Özmucur and Pamuk 2007.

26 Feinstein and Thomas 2002, p 50.

27 Dalgaard and Vastrup 2001

There is also a second, historical, reason why the choice of statistical measure is important. If the price wedge is calculated as percentage mark-ups added on to the price in the purchasing market, the most important measure ought to be the mark-up ratio or the coefficient of variation. The profit of the merchants might for example have been calculated this way, and *ad valorem* tariffs obviously were as well. If, on the other hand, the price wedge is calculated as the price in the purchasing market, with different absolute costs added on to the purchasing price, the standard deviation of prices might be more adequate. During the early modern era, the absolute size of the price wedge seems to be quite important for some of the more important components of the mark-up in prices. Freight rates were for example determined not by the price or value of the commodities traded, but mainly by the volume of the goods. Furthermore, tariffs during this period were often specific (per weight or volume), rather than as ad valorem-tariffs. Such transaction costs will thus not necessarily change due to a changing price in the selling market of a commodity.

Using the standard deviation as a measurement does also have drawbacks. The example of a demand shock noted above assumes *ceteris paribus.* In actual fact, however, the *ceteris paribus* condition hardly ever holds. A potentially serious problem is that an absolute convergence of prices in a time series simply reflects a generally falling price level, including the price of transport. In order to control for this, we are going to deflate the standard deviation. We can furthermore only compare the convergence between different commodities' markets if the data on standard deviations are put relative to some benchmark year, since the standard deviation otherwise will be measured in the same units as the prices on the individual markets.

In essence, are we interested in finding out about the absolute size of price wedge, or the size of the price wedge relative to the mean or purchasing price? This paper argues that we ought to care about both aspects. *Both the standard deviation and the coefficient of variation are interesting to analyse, if we are interested in using price dispersion to talk about globalisation, since they show us slightly different aspects of the issue of market integration*.[28]

28 If we only have data from a few markets, the mean price used in those calculations will not be statistically representative of any 'world market price', if any such can be imagined for this period. It is thus important to note that the mean price calculated herein does not claim to be representative of any world market price, but is only a mathematically computed mean in order to be able to use these measures of dispersion.

2.4. Data on price dispersion in the intercontinental commodity trade

2.4.1. Available price data

So far, price data for identical commodities from different regions across the globe are pretty scarce prior to the 19th century. This author has been able to find comparable, long-term data assembled by other scholars for eleven commodities. Five of these commodities were traded across the Atlantic: *sugar, tobacco, cacao, rum* and *slaves*. Of these, sugar is by far the most important eastbound commodity in the Atlantic economy – accounting for approximately 50 per cent of the value of the European imports from the Americas.[29] Tobacco was also one of the most important commodities in the transatlantic trade. Slaves were on the other hand probably the most important westbound export across the Atlantic during the early modern era. The two other commodities, cacao and rum, are less important in the transatlantic trade, but are included to diversify the picture. In the trade between Europe and Asia, this author returns to the data used by O'Rourke and Williamson for the trade in *textiles, cloves, coffee* and *pepper*.[30] This is supplemented by other data on the price of *broadcloth* and *tea* in Europe and Asia.[31]

The prices are in general converted into a comparable currency by the scholars collecting the data – either into silver price (in the case of sugar and tea) or converted into pounds sterling or Spanish dollars using exchange rate data (in the case of slaves, textiles, rum, cloves, pepper and coffee). In two cases (tobacco and cacao) the author of this paper has converted the local prices into silver prices. Descriptions of the source and quality of the data for all eleven commodities are included in the appendix to this paper.

As was mentioned in chapter 2.3 of this paper, we want to deflate the data on standard deviation. Unfortunately, aggregate price indices are so far only available from a few countries in Europe. Instead, this author has opted for using the price of cereals as a proxy for the general price level, to deflate the standard deviation by. This seems to be an acceptable proxy, since important staples such as cereals to a large extent will determine the general price level over the long run.[32]

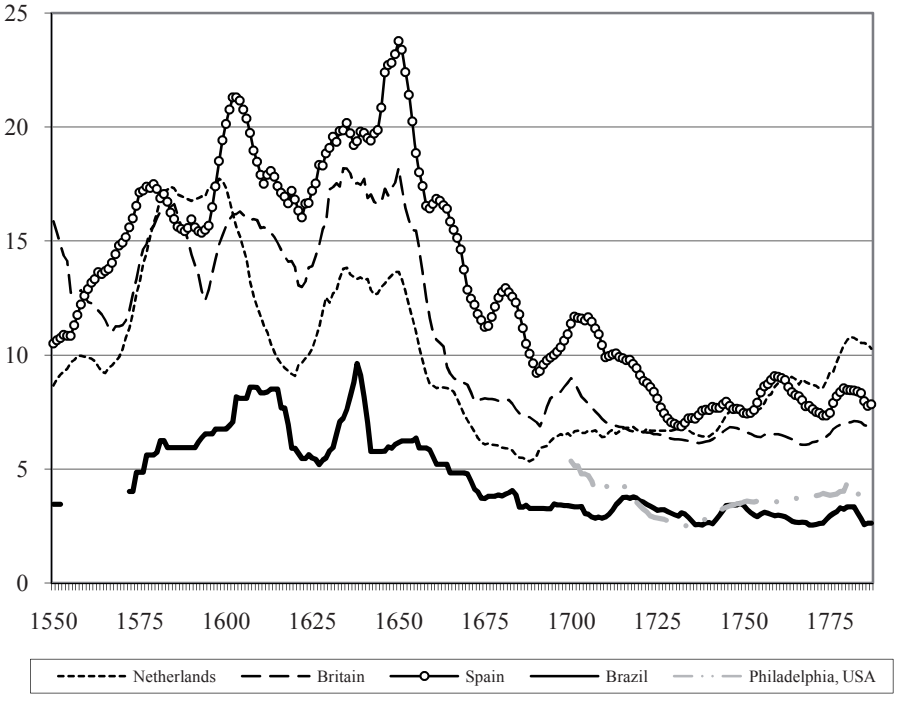
29 Findlay and O'Rourke 2002, table 1

30 Gathered from Bulbeck et al 1998 and Chaudhuri 1978

31 Clark 2007, Lindert 2006, Lindert 2007, GPIH 2007

32 The standard deviation has been deflated by the price level of cereals in the importing country for each respective commodity trade studied. It has been necessary to use the price of different cereals to find data series long enough to cover the period in question in the different regions. In Europe, the price of rye has been used as a deflator (Clark 2007; Luiten van Zanden 2007; Hoffman 2005). In Asia, the price of coarse rice has been used (Bassino 2006; Jacks 2006; Lindert

Graph 2.1. The price of sugar in the Atlantic, 1550-1787 (g silver/kg sugar, 9-year moving average nominal price)



Source: appendix A.2.1.1

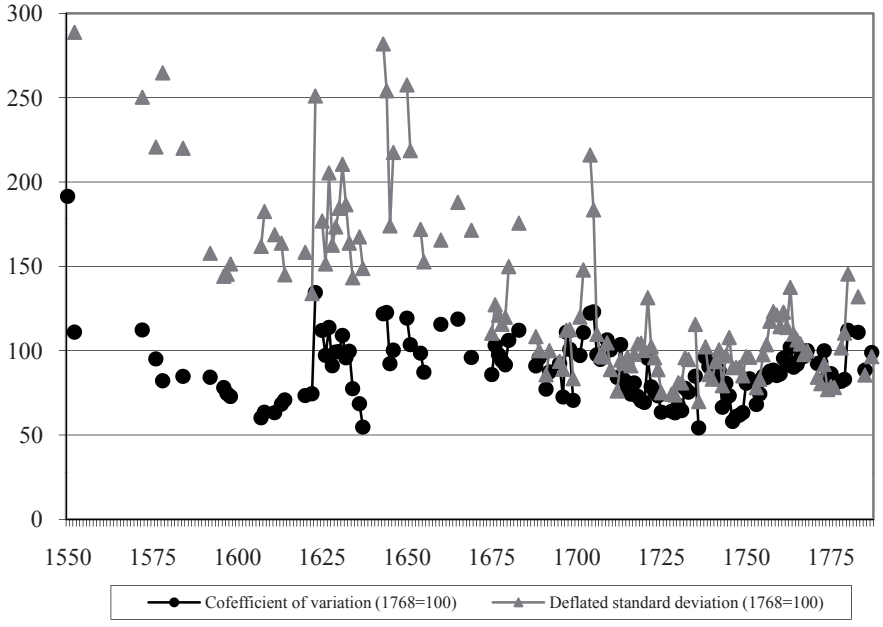
2.4.2. The example of sugar

One commodity – sugar – is chosen to illustrate the data (graph 2.1), and how this price data is reflected in the two different measurements of dispersion (graph 2.2).

Graph 2.1 shows the (undeflated) price of sugar in a couple of regions around the Atlantic, in the form of 9-year moving average prices. During the late 16th century, prices of sugar are in general rising on both sides of the Atlantic. This seems to be a part of a general price increase – the price of sugar is falling relative to the price of cereals. The sugar-price in Europe seem to be a driving force behind price changes in Brazil – some time after the price increased in Europe, the price of sugar in Brazil also increased. During the middle of the 17th century, however, the absolute size of the price gap decreases as the absolute prices in Europe fall quite significantly – an effect that is sustained throughout a long period of the 18th century.

2006; Lindert 2007). In the Continental Colonies, the price of wheat has been used (Lindert et al 2006–2008). In the case of the trade in slaves, no suitable price series has been found to deflate the data by, so this trade is left out of the analysis of the change in standard deviation.

Graph 2.2. Dispersion of the price of sugar in the Atlantic (Brazil - Europe), 1550-1787 (annual price data)



Source: appendix A.2.1.1

Graph 2.2 shows the dispersion of prices of sugar in Brazil and three countries in Europe (Great Britain, the Netherlands and Spain), both in the form of coefficient of variation and the (deflated) standard deviation. The evidence points towards that there is a slow convergence of prices (if measured by the coefficient of variation) taking place during the period 1550s to 1610s, when prices of sugar are increasing in Brazil as well as in Europe. A regression of this subperiod shows the trend to be negative and statistically significant. There is also a second period of statistically significant convergence, starting around the 1660s, continuing until the 1730s (see table 2.1). A regression furthermore shows a negative (and statistically significant) trend for the whole period for which we have data, but the coefficient is so small that this trend in practice is negligible. A single year also has a major effect upon the results in this case; removing this outlier, the regression in this case shows no statistically significant results.

The price wedge is furthermore decreasing significantly if measured by the deflated standard deviation of prices (see table 2.2). The regression analysis shows that the trend is negative (and significant) for the whole period for which we have data. Specific sub-periods experience even more pronounced convergence of prices: the deflated standard deviation of the prices thus decreases rapidly from the 1550s until the early 17th century. After a brief period

of increasing price dispersion, the prices in Brazil and Europe again converge rapidly from the 1640s, a process that continues at least until the 1720s.

Robustness checks have been undertaken both in the form of computing a European continental average price for sugar (so as to make sure that the evidence of convergence is not due just to a convergence of prices on the same continent, but primarily in the intercontinental trade), and in the form of computing the dispersion solely between Brazil and Great Britain. The results show that neither of these checks affects the results significantly.[33]

2.4.3. Summary of results

Tables 2.1 and 2.2 summarise the results of regression analyses for all eleven commodities studied in this paper. The trend for the price data is analysed both for the whole period for which we have data (columns C in both tables), and for shorter sub-periods of time during which convergence might be taking place in each respective case (columns D in both tables). Sub-periods are only analysed and included in the tables if they differ significantly from the overall trend for the whole period for which we have data – otherwise no data is entered in the table.

As can be seen in table 2.1, the data suggests that convergence of prices is taking place, if measured by the coefficient of variation, for many of the most important commodities traded internationally at the time, such as American sugar and tobacco, Asian tea, British broadcloth exported to Asia, slaves exported from Africa to the Americas as well as rum traded between the West Indies and the Continental colonies. The trends in price dispersion are in all these cases both negative and statistically significant both for the whole period for which we have data, and especially pronounced during certain periods prior to the 19th century. In one further case, cacao, there is a negative trend at least for a sub-period of time, but the regression is not statistically significant, while in the cases of Asian textiles and pepper there is a statistically significant trend of convergence at least during a sub-period of approximately 60 years in both cases. In total, eight out of eleven commodities studied do show signs of price convergence, if measured by the coefficient of variation, on some intercontinental trade routes. For the remaining commodities, the results are either not statistically significant, or the trends are slightly positive (in the trade in tea between China and Great Britain, the positive result is solely driven by a single outlier).

As can be seen in table 2.2, the data also suggests convergence of prices, if measured by the deflated standard deviation prices of the commodities, for a clear majority of the commodities analysed. The results from

33 See appendix tables A.2.2.1–A.2.2.3

Table 2.1. Relative (coefficient of variation) dispersion of prices

A. Commodity	B. Trade route(s)	C. Regression – whole period of data (years and regression results)		D. Regression – sub-period (years and regression results)	
Sugar	Brazil to Europe	1550–1787	**−0.071 (−2.600)**	1550–1620	**−1.222 (−5.384)**
				1660–1740	**−0.458 (−5.053)**
Cacao	Venezuela to Netherlands	1686–1778	0.289 (1.927)	1728–1778	−0.375 (−1.736)
Rum	West Indies to Great Britain	1700–1775	−0.001 (−0.007)	..	..
	West Indies to Continental colonies	1700–1775	**−10.833 (−7.018)**	..	..
Tobacco	Continental colonies to the Netherlands	1722–1800	**−2.196 (−9.137)**	1722–1772	**−2.263 (−7.687)**
Tea	Japan to Great Britain	1711–1800	**−0.159 (−6.268)**	..	..
	China to Great Britain	1673–1760	**0.667 (2.891)**	1690–1760	0.223 (0.987)
Asian textiles	Asia to Great Britain	1664–1759	0.066 (0.554)	1690–1759	**−0.839 (−5.604)**
Broadcloth	Great Britain to Asia	1710–1760	**−3.022 (−4.854)**	..	..
Cloves	Asia to Netherlands	1580s–1790s	**0.182 (3.184)**	1750s–1790s	−0.192 (−1.732)
Coffee	Asia to Netherlands	1720s–1790s	−0.035 (−0.078)	1720s–1780s	−0.568 (−1.297)
Pepper	Asia to Netherlands	1620s–1790s	**0.132 (3.568)**	1660s–1720s	**−0.286 (−2.519)**
Slaves	Africa to Americas	1640s–1820s	**−0.435 (−3.729)**	1680s–1780s	**−0.933 (−5.085)**

Sources: see appendix A.2.1.1-A.2.1.8
Note: t-statistics in parenthesis. Statistically significant results are in bold. The regressions for slaves, cloves, coffee and pepper are all based on average price data per decade, since this is the only price data that the sources used in this paper report. In all other cases, the regressions are based on annual price data.

Table 2.2. Absolute (deflated standard deviation) dispersion of prices

A. Commodity	B. Trade route(s)	C. Regression – whole period of data (years and regression results)		D. Regression – sub-period (years and regression results)	
Sugar	Brazil to Europe	1550–1787	**−0.784 (−10.332)**	1550–1620	**−4.592 (−4.115)**
				1640–1725	**−1.550 (−8.169)**
Cacao	Venezuela to Netherlands	1686–1778	0.308 (1.003)	1728–1778	**−1.645 (−3.595)**
Rum	West Indies to Great Britain	1700–1775	**0.650 (4.103)**	..	..
	West Indies to Continental colonies	1720–1775	**−22.403 (−7.906)**	..	..
Tobacco	Continental colonies to the Netherlands	1722–1800	−1.207 (−1.319)	1722–1772	**−4.470 (−10.988)**
Tea	Japan to Great Britain	1711–1800	**−6.790 (−9.495)**	..	..
	China to Great Britain	1673–1760	**−5.764 (−2.718)**	1690–1760	**−10.027 (−4.932)**
Asian textiles	Asia to Great Britain	1664–1759	**0.632 (3.172)**	1704–1759	−0.767 (−1.331)
Broadcloth	Great Britain to Asia	1710–1760	**−12.846 (−6.959)**	..	..
Cloves	Asia to Netherlands	1580s–1770s	0.123 (0.712)	1600s–1650s	**−2.346 (−2.158)**
Coffee	Asia to Netherlands	1720s–1790s	**−2.134 (−2.435)**	1720s–1770s	**−4.080 (−4.448)**
Pepper	Asia to Netherlands	1620s–1790s	**0.242 (2.836)**	1620s–1720s	**−0.228 (−2.334)**

Sources: see appendix A.2.1.1-A.2.1.8
Note: t-statistics in parenthesis. Statistically significant results are in bold. The regressions for cloves, coffee and pepper are all based on average price data per decade, since this is the only price data that the sources used in this paper report. In all other cases, the regressions are based on annual price data.

the regressions in table 2.1 are confirmed in the case of sugar, tobacco, tea, broadcloth, pepper and rum traded between the West Indies and the Continental colonies. In a couple of cases, the results in table 2.2 differ from table 2.1: on the one hand Asian textiles (which in this analysis show a slight positive trend, i.e. of divergence in prices, for the whole period, and no sub-period with a statistically significant negative trend), and on the other hand cacao, coffee and cloves (where the trends in this analysis are negative and significant, i.e. showing convergence, at least during a sub-period of 50 years or more). In total, nine out of ten commodities studied do show signs of price convergence, if measured by the deflated standard deviation, on some intercontinental trade route.

Note should also be taken that in some trades, such as coffee, the trends might be on the margin of qualifying for this paper's 50-year criterion of a secular trend, simply because the period for which we have data prior to the 19th century is quite short. Some of the results might therefore be strengthened if longer series of data are made available.

2.5. Discussion

As we have seen, most of the commodities studied in this paper do show signs of price convergence at least during some period of time prior to the 19th century, regardless of whether we measure convergence by the coefficient of variation or the deflated standard deviation. If we use the latter measurement, however, the results become somewhat more clear-cut than if we use the former. As tables 2.1 and 2.2 make clear, there is not one uniform, simultaneous and uninterrupted trend towards price convergence for all the commodities investigated in this paper. On the contrary, trends of price convergence occur at slightly different points in time, but quite a number of the markets that show signs of price convergence do so during the late 17th or early 18th century. Furthermore, much if not all market integration is thwarted time and again by external shocks – such as monopolisation, externally imposed regulations to the market, and most importantly wars and other conflicts.

The largest shock of them all during the period of this paper, having effects upon virtually all of the trade routes included, was the French Revolutionary and Napoleonic wars. Many of the commodities traded did however experience divergence even a short time prior to the French revolution. The empirical evidence in this paper points towards that it was around the time of the American Revolutionary wars (during the late 1770s and 1780s) that a long period of divergence in prices started. This fits well with the results

of Giovanni Federico, showing a period of divergence of prices in the European grain trade during the late 18th and early 19th centuries.[34]

Despite the many conflicts between the colonialist powers of Europe, despite a rather low degree of technological improvements in the transport sector, and in some cases even despite mercantilist regulations and monopolist trading companies, prices thus seem to converge in many trades during the early modern era. Since such disturbances were quite frequent during the early modern era, the findings of this paper are however not as clear-cut as the evidence is of price convergence taking place during later centuries might be.

Since there is very little simultaneous price convergence taking place, any explanation of the trends of price convergence during the period of this paper should probably be sought on the individual commodity markets, rather than through general explanations such as improved shipping and decreasing freight rates. This paper cannot deal with explanations of this development in such detail as this would require, but will just propose some possible interpretations.

The trade in *sugar* is a case in point. Prices in Brazil and Europe seem to converge, particularly during the second half of the 16th century. This trend is sustained until the first half of the 18th century. The convergence is perhaps not surprising: the rapid development of the Portuguese-Brazilian sugar plantations meant increasing competition with an industry previously centred around the Mediterranean. From the 17th century onwards, both the French and the British were also quickly developing sugar colonies of their own in the West Indies, the British West Indies at least going through a so-called 'sugar revolution'.[35] Richard Sheridan has argued that the falling price in Europe primarily was due to an increase in supply, relative to the size of the European demand.[36] In the case of price convergence, the important factor might have been the fact that the supply of sugar increased in many different areas of the Americas, with the effect that Dutch merchants – that formerly had been in control of much of the trade with Portuguese Brazil – lost their dominant market position. The falling price gap might therefore be an effect of increasing competition in the transatlantic trade in sugar, i.e. decreasing monopoly rents.

The convergence in the market for *slaves* can perhaps be explained in a similar manner. In an article on the topic, Joseph Miller argues that the slave trade route he's focusing on – Brazil-Luanda – showed signs of market integration at least by the 1760s. This is the first time, he argues, that an economic boom in Brazil, driving up the price of slaves there, also lead to an increasing

34 Federico 2007

35 See for example Dunn 1972 or Deerr 1949. Russell Menard have questioned the concept of a 'sugar revolution', arguing that the development was far more continuous and secular than the term 'revolution' implies, see Menard 2006.

36 Sheridan 1998, p 396

price in Luanda.[37] The results of this paper suggest that the markets for slaves started to integrate even prior to that. The late 17th and early 18th century was a period of increasing demand for slaves, but also intensified competition in the international slave trade. Competition increased between merchants of different nationalities (such as the increasing competition between slave traders from Spain, Portugal, the Netherlands, France, Great Britain and even Denmark), but in some cases also between merchants of the same nationality, for example when the former monopoly companies lost their monopoly rights to the British and French trade in slaves by the end of the 17th century, opening up the trade for any and all British or French merchants.[38]

Bulbeck et al argue that the market for *coffee* converged during the 18th century due to the fact that the global market for this commodity became more efficient and open, and transport, handling and wastage costs were reduced.[39] The period of data available is unfortunately too short to strongly confirm any trend of integration. It does not however seem far-fetched to assume that the market for *tea* might have converged due to similar reasons, since a number of companies from different countries in Europe competed in trying to supply Europe with this commodity. Furthermore, the price on the British market in particular was to a large extent influenced by contraband trade in tea imported into Great Britain from other countries in Europe.[40] Caribbean rum did, according to Frederick Smith, on the one hand find local and regional markets in the Caribbean and on the American continent. The rum trade did on the other hand fail to penetrate the alcohol markets of Europe, so only a small fraction of the production ever reached Europe, which in part might explain the lack of integration on that trade route.[41]

The transatlantic market for *cacao* did not experience any clear-cut price convergence during the period for which we have data. Prices of cacao from Caracas reach a peak in the Netherlands by the late 17th century, and then start to fall, for a short time converging with the prices in Caracas. This comes to an abrupt halt by 1728, when the Caracas Company comes into operation, monopolising the market for cacao from Caracas. Prices rose rapidly in Europe as an effect of the monopoly price setting.[42] Starting in 1728, the regressions show falling dispersion of prices – the coefficients are negative in both analyses (but the regressions are only statistically significant in the analysis of standard deviation). Furthermore, the market in the Netherlands is to a large degree dependent upon trade in contraband cacao, so the prices

37 Miller 1986, pp 59–61.
38 See for example Rawley 2005, pp 78–95 and Davies 1957, chapter 3.
39 Bulbeck et al 1998, p 169
40 Hoh-Cheung and Mui 1968
41 Smith 2005, p 6
42 Hussey 1934, chapter III

are most certainly to a large degree determined by how effective the Spanish authorities and the Caracas Company were in enforcing the monopoly. Market integration was thus thwarted by this monopolisation of the market for cacao from Caracas.

In a similar manner as in the case of cacao, the trades in *cloves* and *pepper* between Europe and Asia were at times monopolised, having a significant effect upon the prices both in Europe and Asia. This can be seen very clearly in the data, where the monopolisation shows up quite immediately in the form of a sudden and very drastic divergence in prices. As soon as the monopolies collapsed, by the late 18th century or early 19th century, respectively, prices for these commodities too started to converge. [43]

There is a common theme to many of the explanations proposed above, namely that mercantilist institutions and policies – and the deregulation of such institutions – during the 17th and 18th centuries had a highly significant effect upon the prices of the commodities traded. Monopolisation ought to have increased, and deregulation on the contrary decreased, monopoly rents. Deregulation might at the same time have led to a lower deadweight loss in the international markets of the time. To some extent, decreasing monopoly rents might be an effect of the changes that mercantilism, particularly in Great Britain, underwent around this time. According to David Ormrod, several new trade policies in late 17th century Great Britain were nationalist in a double sense – on one hand, the policies were highly protectionist in order to reduce competition from rival nations. On the other hand, and most importantly from the perspective of this paper, the policies implied a degree of de-regulation so that 'the advantages could be exploited by the [British] merchant community as a whole, rather than specific groups, companies or sectional interests claiming special privileges.' [44]

The results of this paper reach different results than O'Rourke and Williamson for several reasons. One important reason is that more data was included, for other (and potentially more important) commodities than O'Rourke and Williamson look at in their studies of global market integration. Another reason is the issue of how long a secular trend is: if O'Rourke and Williamson had used the same yardstick during the period prior to the 19th century as they do for later periods, even their own data may have been interpreted in a different light than the authors claim. A third (but perhaps minor) reason is the issue of how to deal with external shocks to the market: O'Rourke and Williamson include price trends during the Revolutionary and Napoleonic Wars, which in practice stops trends prior to the conflict from qualifying as evidence in favour of market integration. They do not on the other hand treat

43 Bulbeck et al 1998, pp 9–10

44 Ormrod 2003, p 46.

the period from the First World War onwards in the same way, thus disqualifying evidence of convergence. A fourth reason is the choice of measurement of convergence: the choice between absolute or relative convergence matters somewhat for the results, but as we have seen there is evidence in favour of convergence for many of the trades regardless of which measurement we use.

The results of this paper also differ from the results of both Bateman and Özmucur and Pamuk. One reason to this is the different geographical coverage: while these authors focus upon the trade (mainly in staples) within Europe, this paper focuses upon intercontinental trade, mainly in colonial goods. The intra-European trades were possibly not subject to as many institutional changes as the intercontinental trade was during this time, which might contribute to explain the different results. Another potential reason is, again, the issue of how long a secular trend of convergence must be in order to qualify as evidence of market integration. These scholars all require the trends of convergence to last for the whole of their period of study – i.e. some 300–350 years. In Bateman's study, at least, there seem to be quite long periods of time where the markets do seem to integrate, even if the trends don't last for the whole period of her study.[45]

Since most of the commodities studied in this paper were so-called colonial commodities, another question might be posed: did convergence in the price of colonial commodities really matter? Colonial commodities were, for sure, non-competing goods and decencies – if not outright luxuries – rather than necessities, in the countries importing them. As non-competing goods, the price of imports probably had little or no effect upon the domestic price levels of goods in the importing countries. During the 19th century, international trade took on a different character than during the 18th century, so that the trade in competing staples became ever more important, having a significantly more important effect upon domestic prices as well. Colonial commodities did however have an historical significance in other ways. In the case of the Americas, the export production of colonial commodities was decisive for the development of the American plantation complex, and thus for much of the social structure in large parts of the Americas.[46] There has also been quite a large scholarly focus upon how such 'new luxuries' changed European society as well during the early modern period, for example through contributing to a new consumer society, and an 'industrious revolution' in Europe.[47] It is unfortunately beyond the scope of this paper to study in depth whether the price convergence observed was big enough to have any impact on the trade in these goods, but it does not seem farfetched to assume that it at least played a role in that respect.

45 Bateman 2007; Özmucur and Pamuk 2007

46 See for example Curtin 2002

47 See for example Brewer and Porter 1993; de Vries 1993; Berg and Clifford 1999; Berg 2005; Shammas 1990.

2.6. Conclusions

The common view seems to have become that there is no evidence of an early globalisation, at least not prior to the 1820s. This is so, argue O'Rourke and Williamson, since there is no evidence of price convergence prior to the 19th century. In this paper, I have tried to test this argument on price convergence. There is however no self-evident way to measure price convergence statistically. In this paper, I have estimated price convergence in two different ways – convergence of the deflated standard deviation and convergence of the coefficient of variation of the prices. In order to qualify as evidence of a secular trend of market integration, the paper used a criterion of convergence spanning and is sustained for approximately 50 years or more. The period prior to the French Revolution and the Napoleonic wars has been the focus of attention, since it was argued that around this time a long period of deglobalisation was sparked off.

In total, eleven commodities important to long-distance trade are included in the study. If and when further price data become available from other regions, these results may have to be re-evaluated. In the meanwhile, *the price data available do point towards the occurrence of price convergence in early modern world trade, even prior to the 19th century.*

If convergence is measured by the coefficient of variation, several of the most important commodities – such as tea, textiles, tobacco, sugar and slaves – do experience trends of price convergence prior to the 19th century. If convergence is measured in the form of the deflated standard deviation, most of the commodities studied in this paper experience trends of convergence.

When we use a couple of different ways of measuring price convergence, we get a more complicated picture than what is commonly thought. Whether we should call this price convergence globalisation is to a large extent a question of definition – something that is beyond the scope of this article. It is also beyond the scope of this article to establish any explanations for this price convergence, but increasing competition (and thus falling monopoly rents) might be among them, an effect of what can be called the 'nationalisation' of mercantilism, following David Ormrod.[48]

Kevin O'Rourke has in a recently published article argued that there was a potential for global market integration already prior to the 19th century, but that this potential constantly was frustrated by mercantilist policies and wars.[49] The results of this paper show that O'Rourke is correct in so far that such policies and wars often thwarted commodity market integration. The results of this paper also show that despite this, the potential for market integration actually was realised in many intercontinental trades, and then for quite long periods of time.

48 Ormrod 2003, p 46 and 343
49 O'Rourke 2006

There is a striking difference in the commodities that are traded during different periods in time – i.e. in the scale and scope of globalisation. The price wedge between markets internationally had by the 19th century become small enough to enable a trade in ever-cheaper goods, instead of the primarily luxury-based early modern world trade. Globalisation has intensified over time. *The findings of this paper do however show quite conclusively that we cannot dismiss the issue of pre-industrial price convergence and market integration – and thus pre-modern globalisation, if we accept this definition – as easily as often has been done so far.*

Appendix A.2.1. Description of the price data

A.2.1.1. Sugar

As for sugar, price data for the period prior to the 1820s are available from Brazil, Colombia and Peru in Latin America, from a couple of cities in the USA and from the Netherlands, Spain, France and Great Britain in Europe.[50] In all cases, the prices refer to white, i.e. refined, sugar.[51] Ideally, one would have wanted data on raw sugar since that is the form in which most of the sugar was traded internationally, but alas too little such data are available to enable a comparison. In all cases, the data used are converted into the price of sugar expressed in grams of silver per kilogram of sugar.[52]

A.2.1.2. Cacao

The price of cacao is so far available from two areas – Caracas in Venezuela, and the Netherlands – assembled by Roland Hussey and N.W. Posthumus, respectively. The Dutch data refer specifically to cacao from Caracas, sold on the Dutch market.[53]

A.2.1.3. Slaves

Joseph Miller has published calculations on the price of slaves in the southern Atlantic – between Africa and Brazil – and compared those prices to the price reported by other scholars from other regions around the Atlantic. In order to make the prices comparable, Miller has tried to find data for peças (a sort of 'standardised slave' – i.e. a strong, healthy, male slave – used by the merchants at the time to compare the prices of slaves on different markets) and has converted the local currencies into pounds sterling.[54] The data is only reported as average price per decade.

50 The data is taken from Clark 2007; Cuesta and Arroyo Abad 2006; Hoffman 2005; Levin et al 2007; Levin and Arroyo Abad 2005; Lindert and Deitch 2006; Luiten van Zanden 2007; Hamilton 1934; Hamilton 1947; Johnson 1973.

51 The Spanish, Dutch and the Brazilian price data explicitly refer to white sugar. In the case of Peru and Colombia, the original papers used for the databases only talk about sugar, not specifying any quality, but since the data originates from churches it seems reasonable to assume that it is a refined sugar it refers to, since most of the sugar actually consumed in general was of a refined quality. In the case of Britain and France, the prices are assembled from a range of different sources, so it is a bit unclear as to what exact quality they refer to. Since the price correlates quite well with the Dutch price, which is referring to the price of white sugar, it seems reasonable to assume that the British and French price refers to the same.

52 Hamilton's data on the price of sugar in Spain (1934, 1947) has been converted into silver prices using the silver conversion data in Arroyo Abad 2005. Johnson's prices from Brazil (1973) have been added to the Brazilian price series by Levin et al 2007.

53 Hussey 1934 appendix 3; Posthumus 1943 table 83. Hussey's data on the price of cacao in Venezuela has been converted into silver prices using the conversion data in Cuesta and Arroyo Abad 2006. Data on the price of cacao in the Netherlands, from Posthumus 1943, has been converted into silver prices with the conversion data in Luiten van Zanden 2007.

54 Miller 1986, tables 3.3–3.4

A.2.1.4. Tobacco

Tobacco was often the first crop to be planted in the plantation complex of the Americas, and production increased rapidly during the 17th century. Data on the American price of tobacco are however not available until the 1720s. In Europe, the price of tobacco is available from the Netherlands (Virginian tobacco) from 1674 onwards.[55]

A.2.1.5. Rum

In his dissertation, John McCusker assembled price data for molasses and rum, on both sides of the Atlantic. McCusker has converted the local currencies into pounds sterling, so as to make the prices comparable.[56] Prices are available from a couple of cities in three regions: the rum/molasses-exporting regions of the West Indies, and the importing regions in the USA and Great Britain.

A.2.1.6. Broadcloth

Broadcloth was one of few commodities exported from Europe to Asia, aside from precious metals. K.N. Chaudhuri provides data on the price of British broadcloth, and the sale price in Bengal, in rupees per piece of broadcloth.[57] The price data only cover a period of 50 years, so any results will automatically be on the margin of the criterion for length of secular trends established in this paper.

A.2.1.7. Tea

Price data for tea are so far very patchy, but can be found in available datasets from Great Britain and Japan, as well as from China.[58] The prices from Japan seem to refer to local prices, while the prices from China are prices taken from the accounts of the British East India Company. The early data from China is somewhat unreliable, since they refer to extremely small amounts of tea, compared to later purchases. The Japanese price series for tea contains quite long gaps in the series.

A.2.1.8. Textiles, cloves, coffee and pepper

This paper will also undertake a brief revisiting of the trade in textiles, cloves, coffee and pepper – four commodities reported by O'Rourke and Williamson as evidence in favour of their hypothesis. The data are in all cases taken from the same sources as O'Rourke and Williamson. The data therefore refer to the prices of cloves, coffee and

55 Lindert et al 2006–2008; Posthumus 1943 table 86. The data from Posthumus has been converted into silver prices with the conversion data in Luiten van Zanden 2007. Prices from Britain are available in Clark 2007, but only for a short period of the time prior to the 19th century. The data does also seem to refer to tobacco ready for consumption, while the Dutch and American prices seem to refer to tobacco leaves at wholesale prices.

56 McCusker 1970, appendix E

57 Chaudhuri 1978, table A.9

58 Clark 2007, Bassino 2006, Jacks 2006, Chaudhuri 1978. Posthumus (1943) does also include prices of tea in the Netherlands, but only for a shorter period of time prior to the 19th century.

pepper in southeast Asia and Amsterdam, respectively, and the price of textiles in Asia and Great Britain.[59] The data is in the case of cloves, coffee and pepper only reported as average price per decade.

59 Bulbeck et al 1998; Chaudhuri 1978, tables A.13 and C.24

Appendix A.2.2. Robustness checks

Table A.2.1: Robustness check in the case of sugar (coefficient of variation)

	Regression – whole period of data (years and results)		Regression – sub-period of data (years and results)	
Regression 1: four regions treated separately	1550–1787	**−0.071 (−2.600)**	1550–1620	**−1.222 (−5.384)**
Regression 2: European average price and Brazil	1550–1787	0,034 (1.378)	1550–1620	**−1.026 (−8.242)**
Regression 3: Great Britain and Brazil only	1550–1787	−0.069 (−1.979)	1550–1620	**−1.525 (−10.605)**

Sources: see appendix A.2.1

Table A.2.2. Robustness check in the case of sugar (deflated standard deviation)

	Regression – whole period of data (years and results)		Regression – sub-period of data (years and results)	
Regression 1: four regions treated separately	1550–1787	**−0.784 (−10.332)**	1640–1725	**−1.550 (−8.169)**
Regression 2: European average price and Brazil	1550–1787	**−1.093 (−12.315)**	1640–1725	**−1.400 (−8.254)**
Regression 3: Great Britain and Brazil only	1550–1787	**−2.143 (−10.668)**	1640–1725	**−1.979 (−5.695)**

Sources: see appendix A.2.1

Table A.2.3. Robustness check in the case of slaves (coefficient of variation)

	Regression – whole period of data (years and results)		Regression – sub-period of data (years and results)	
Regression 1: six regions treated separately	1640s–1820s	**−0.435 (−3.729)**	1680s–1780s	**−0.933 (−5.085)**
Regression 2: Continental average prices	1640s–1820s	**−0.670 (−4.092)**	1680s–1780s	**−1.525 (−10.003)**

Sources: see appendix A.2.3

Sources and literature

Unpublished sources

Data files from the GPIH website (http://gpih.ucdavis.edu/):
Arroyo Abad, Leticia (2005): *Spain 1351–1800*.
Bassino, Jean-Pascal (2006): *Japan 1710–1871* (Mitsui Bunko).
Cuesta, Martin and Leticia Arroyo Abad (2006): *Colombia, 1635–1809*.
GPIH (2007?): *Japan rice prices 1620–1867*.
Hoffman, Philip (2005): *Paris 1450–1789*.
Jacks, David (2006): *Osaka 1600–1650*.
Levin, Patricia, Leticia Arroyo Abad, Martin Cuesta, Peter Lindert and Klas Rönnbäck (2007): *Brazil, 1550–1769*.
Levin, Patricia and Leticia Arroyo Abad (2005): *Prices in Peru, 1627–1818*.
Lindert, Peter (2006): *China rice prices 961–1910*.
Lindert, Peter (2007): *Mughal empire c 1595 & later*.
Lindert, Peter, Salvador Puente, Will Ambrosini and Leticia Arroyo Abad (2006–2008): *Pennsylvania spliced series, 1720–1896.*
Lindert, Peter and Julianne Deitch (2006): *Massachusetts, 1630–1883*.

Other datafiles
Clark, Gregory (2007): *English prices and wages, 1209–1914*. Datafile available on the IISG website, http://www.iisg.nl.
van Zanden, Jan Luiten (2007): *The prices of the most important consumer goods, and indices of wages and the cost of living in the western part of the Netherlands, 1450–1800*. Datafile available on the IISG website, http://www.iisg.nl.

Published literature

Acemoglu, Daron, Simon Johnson and James Robinson (2005): "The Rise of Europe: Atlantic Trade, Institutional Change and Economic Growth", *American Economic Review*, vol 95, pp 546–579.
Bateman, Victoria (2007): *The evolution of markets in early modern Europe, 1350–1800: a study of grain prices*. Discussion paper no. 350, department of economics, Oxford University.
Berg, Maxine and Helen Clifford (eds, 1999): *Consumers and luxury: consumer culture in Europe 1650–1850.* Manchester university press, Manchester.

Berg, Maxine (2005): *Luxury and pleasure in eighteenth-century Britain.* Oxford University press, Oxford.

Blaut, J.M. (1992): *1492. The debate on colonialism, eurocentrism and history.* Africa World press, Trenton.

van Bochove, Christiaan (2007): "Market integration and the North Sea system (1600–1800)", in Hanno Brand and Leos Müller (eds, 2007): *The dynamics of economic culture in the North Sea- and Baltic region in the late Middle Ages and Early Modern period.* Uitgeverij Verloren, Hilversum.

Brewer, John and Roy Porter (eds, 1993): *Consumption and the world of goods.* Routledge, London.

Bulbeck, David, Anthony Reid, Lay Cheng Tan and Yiqi Wu (eds, 1998): *Southeast Asian exports since the 14th century. Cloves, pepper, coffee, and sugar.* KITLV press, Leiden.

Chaudhuri, K.N. (1978): *The trading world of Asia and the English East India Company 1660–1760.* Cambridge university press, Cambridge.

Curtin, Philip (2002): *The rise and fall of the plantation complex. Essays in Atlantic history.* Cambridge university press, Cambridge.

Dalgaard, Carl-Johan and Jacob Vastrup (2001): "On the measurement of σ-convergence", *Economics Letters*, vol 70, pp 283–287.

Davies, K.G. (1957): *The Royal African Company.* Longmans, Green and Co, London.

Deerr, Noel (1949): *The history of sugar.* 2 vol. Chapman and Hall, London.

Dunn, Richard (1972): *Sugar and slaves. The rise of the planter class in the English West Indies, 1624–1713.* W.W. Norton, New York.

Ejrnaes, Mette and Karl Gunnar Persson (2006): *The gains from improved market efficiency: trade before and after the Transatlantic telegraph.* Discussion paper 06-19, Department of Economics, University of Copenhagen.

Federico, Giovanni (2007): *The first grain invasion. A study in the integration of the European market 1750–1870.* Preliminary working paper, September 2007.

Feinstein, Charles and Mark Thomas (2002): *Making history count. A primer in quantitative methods for historians.* Cambridge university press, Cambridge.

Findlay, Ronald and Kevin O'Rourke (2002): "Commodity market integration, 1500–2000", in Michael Bordo, Alan Taylor and Jeffrey Williamson (eds, 2003): *Globalization in historical perspective.* University of Chicago press, Chicago.

Findlay, Ronald and Kevin O'Rourke (2007): *Power and plenty. Trade, war, and the world economy in the second millennium.* Princeton university press, Princeton.

Flynn, Dennis and Arturo Giraldez (2004): "Path dependence, time lags and the birth of globalisation: a critique of O'Rourke and Williamson", *European Review of Economic History*, vol 8, pp 81–108.

Hamilton, Earl (1934): *American treasure and the price revolution in Spain, 1501–1650.* Harvard university press, Cambridge.

Hamilton, Earl (1947): *War and prices in Spain 1651–1800.* Harvard university press, Cambridge.

Hoh-Cheung and Lorna H. Mui (1968): "Smuggling and the British tea trade before 1784", *American Historical Review*, vol 74, pp 44–73.

Hussey, Roland (1934): *The Caracas company 1728–1784. A study in the history of Spanish monopolistic trade.* Harvard university press, Cambridge.

Inikori, Joseph (2007): "Africa and the globalization process: western Africa, 1450–1850", *Journal of Global History*, vol 2, pp 63–86.

Jacks, David (2004): "Market integration in the North and Baltic Seas, 1500–1800", *Journal of European Economic History*, vol 33, no 3, pp 285–329.

Jacks, David (2005): "Intra- and international market integration in the Atlantic economy, 1800–1913", *Explorations in Economic History*, vol 42, pp 381–413.

Johnson, Harold (1973): "A preliminary inquiry into money, prices, and wages in Rio de Janeiro, 1763–1823", in Dauril Alden (ed, 1973): *Colonial roots of modern Brazil.* University of California press, Berkeley.

McCusker, John (1970): *The rum trade and the balance of payments of the thirteen continental colonies, 1650–1775.* Dissertation, University of Pittsburgh.

Menard, Russell (2006): *Sweet negotiations. Sugar, slavery and plantation agriculture in early Barbados.* University of Virginia Press, Charlottesville.

Miller, Joseph C. (1986): "Slave prices in the Portuguese southern Atlantic, 1600–1830", in Paul Lovejoy (ed., 1986): *Africans in bondage. Studies in slavery and the slave trade.* University of Wisconsin press, Madison.

O'Brien, Patrick (2006): "Colonies in a globalizing economy, 1815–1948", in Barry Gills and William Thompson (eds, 2006), *Globalization and global history.* Routledge, London.

O'Rourke, Kevin (2006): "The worldwide economic impact of the French Revolutionary and Napoleonic Wars, 1793–1815", *Journal of Global History*, vol 1, pp 123–149.

O'Rourke, Kevin and Jeffrey Williamson (1999): *Globalization and history. The evolution of a nineteenth-century Atlantic economy.* MIT press, Cambridge.

O'Rourke, Kevin and Jeffrey Williamson (2002a): "After Columbus: explaining Europe's overseas trade boom, 1500–1800", *Journal of Economic History*, vol 62, no 2, pp 417–456

O'Rourke, Kevin and Jeffrey Williamson (2002b): "When did globalisation begin?", *European Review of Economic History*, vol 6, pp 23–50.

O'Rourke, Kevin and Jeffrey Williamson (2002c): *From Malthus to Ohlin: Trade, growth and distribution since 1500*, CEPR discussion paper 3394, CEPR, London.

O'Rourke, Kevin and Jeffrey Williamson (2004): "Once more: when did globalisation begin?", *European Review of Economic History*, vol 8, pp 109–117.

Ormrod, David (2003): *The rise of commercial empires. England and the Netherlands in the age of mercantilism, 1650–1770*. Cambridge university press, Cambridge.

Persson, Karl Gunnar (1999): *Grain markets in Europe. Integration and deregulation.* Cambridge University Press, Cambridge.

Posthumus, N. W. (1943): *Nederlandsche prijsgeschiedenis.* Brill, Leiden.

Rawley, James (2005): *The transatlantic slave trade. A history.* Revised edition. University of Nebraska press, Lincoln.

Shammas, Carole (1990): *The pre-industrial consumer in England and America.* Clarendon press, Oxford.

Sheridan, Richard (1998): "The formation of Caribbean plantation society, 1689–1748", in P.J. Marshall (ed, 1998): *The Oxford history of the British empire. Volume II. The eighteenth century.* Oxford university press, Oxford.

Smith, Frederick (2005): *Caribbean rum – A social and economic history.* University press of Florida, Gainesville.

de Vries, Jan (1993): "Between purchasing power and the world of goods: understanding the household economy in early modern Europe", in John Brewer and Roy Porter (eds, 1993): *Consumption and the world of goods.* Routledge, London.

Özmucur, Süleyman and Sevket Pamuk (2007): "Did European commodity prices converge during 1500–1800?", in Timothy Hatton, Kevin O'Rourke and Alan Taylor (eds, 2007): *The new comparative economic history.* MIT Press, Cambridge.

Landscape near Westend, on the island of St. Croix, Danish West Indies. Painting by Fr. Visby (1866). Reproduction: H&S Kronborg, Denmark (H&S 153:36)

Chapter 3

Who stood to gain from colonialism?

A case study of early modern European colonialism in the Caribbean*

Abstract
Did Europe gain from overseas colonies, and if so what parties in Europe? This paper looks at the case of Denmark and its colonies in the West Indies during the early modern era. All the major parties in Denmark – producers, consumers and the Danish Crown – benefited from the country's possession of colonies in the West Indies. The results stand in sharp contrast to previous research that has studied British gains from colonialism during the same period of time. The Danish case might thereby diversify the picture of who stood to gain from colonialism and potentially give a more accurate picture of the costs and gains of the first wave of colonialism.

3.1. Introduction

3.1.1. Background

Both Adam Smith and Karl Marx considered British colonies to be a net burden on British society.[1] Ever since the issue has been a controversial one and has received a great deal of attention from scholars, not least thanks to the publication of Eric Williams' book *Capitalism and slavery*.[2] To a large extent the debate has been concerned with the issue of whether the profits from colonialism were large enough to have a decisive effect upon, or at least contribute to, the industrialisation of Britain and/or other countries in Europe.[3]

* This article has been accepted for publication in *Itinerario: International Journal on the History of European Expansion and Global Interaction*, and is here republished with kind permission.

1 Smith 1937; Marx and Engels 2001.

2 Williams, Capitalism and Slavery.

3 See for example Sheridan 1969; Engerman 1972; Sheridan 1974; O'Brien 1982; Solow 1985; Solow 1987; Inikori 1987; O'Brien and Engerman 1991; Bairoch 1993; Eltis and Engerman 2000; Inikori 2002; Patnaik 2002; Acemoglu, Johnson and Robinson 2005;

Regardless of whether Britain (or Europe) as a whole gained from colonialism, individual parties within these countries might have done so. Robert Ekelund and Robert Tollison have argued that much of mercantilist thought was actually a by-product of "numerous self-interested parties who were seeking rents from monopolization" of both international and domestic trade and industry.[4] Colonies were one of the important elements in mercantilist thinking. Following Ekelund and Tollison, this paper will try to disaggregate the analysis of colonialism in order to explain and understand what parties might have gained from European colonialism.

There is virtually no doubt among scholars that the slave trade and trade in colonial goods in general was profitable for the merchants and companies involved. Rather the academic discussion focused whether there were any 'supernormal' profits to be had. Summarising empirical research on the British slave trade, Kenneth Morgan finds that the profits in general were quite 'normal', i.e. between 5 to 10 per cent.[5] Guillaume Daudin has summarised similar research from France, finding that the French long-distance and slave trade in general was equivalent to or more profitable than comparable domestic investment opportunities.[6] However, Inikori does argue that the surviving empirical data actually might understate the real profits of the slave trade, claiming that there is a bias towards lower levels of profit in the records that have survived.[7]

Still merchants were not the only parties with interests in the colonial trade. Echoing Adam Smith, other scholars have repeated his argument that military defence of colonies often was very costly to the colonial state.[8] Even so, few scholars have tried to show empirically that this actually was the case for the first wave of colonialism during the early modern period. As far as this author has determined, the only ones who have tried to prepare any such estimates for this period are Robert Paul Thomas and Philip Coelho.[9] Thomas' article argues that a previous article by Richard Sheridan overestimates the private profits from the British colony of Jamaica, especially the profits from the trade in colonial goods. According to Thomas, Sheridan also fails to include all the costs for other parties than the merchants and planters, i.e. consumers and the British state.[10] The latter issue is what Philip Coelho focuses on in an article published just a couple of years after the debate between Sheridan and Thomas was published. Using a set of counter-factual assumptions, Coelho reaches the conclusion that

Pétré-Grenouilleau 2006; Emmer 2006; Andersen 2006; Daudin 2006.

4 Ekelund and Tollison 1997, p 5.

5 Morgan 2000, p 44.

6 Daudin 2004; Daudin 2005, p 350.

7 Inikori 1981.

8 O'Brien and de la Escosura 1998.

9 Thomas 1968; Coelho 1973.

10 Thomas 1968; see also Sheridan 1965 for a contrary point of view.

the colonies were a net burden on the British society as a whole; for starters the British taxpayers had to pay for the upkeep of the colonial administration and defence. In his calculations on the costs and benefits for the British government, Coelho finds that the costs for the maintenance of the civil administration and the military defence far outweighed the revenue raised on the West Indian islands. The most important net cost to British society according to Coelho was the high price of colonial goods. British consumers were worse off than they would have been had Britain only allowed free trade in colonial consumer goods. Coelho's calculation is mainly based upon the wholesale price of sugar in Amsterdam and Britain during a few years, gathered from research originally conducted in the early 20th century. He also assumes that the Amsterdam wholesale price was the same as a free-trade price. Through a set of assumptions he then reaches the conclusion that the price of sugar was significantly higher in Britain than in the Netherlands. Thus the argument becomes that the West Indian colonies were kept, not because they were a net profit to Britain as a whole, but because certain parties – mainly plantation owners in the colonies – could profit from them, while other parties – consumers and taxpayers – footed the bill.[11]

3.1.2. Research in this paper

This paper will try to analyse the gains of colonialism in a manner similar to the one undertaken by Coelho, but choosing instead to look at Denmark, a small European colonial power, and more specifically the Danish colonies in the West Indies. There are two reasons for this choice. First, even though Denmark was a small colonial power in a European context, the Danish experiences can shed further light upon, and diversify the picture of, an issue that has been the object of extremely little empirical research. Most importantly, also, there is a quite unique empirical source material to be found in Denmark that addresses this issue directly. Secondly, the Danish case is suitable for a comparative historical analysis. On the one hand, the Danish case of colonialism contrasts to the British on many important aspects. For example, as Paul Kennedy has remarked, in the case of Britain it is difficult to "disentangle the 'British' from the 'imperial' element in overall defence expenditure".[12] This disentangling might be easier in a smaller nation-state in Europe, which didn't have the same ambition or possibility for controlling international trade routes as did Britain and which remained neutral in many of the major power-struggles in Europe during the 18th century (struggles that might in themselves have spilled over, so to speak, into the colonies). On the other hand, Denmark

11 Coelho 1973.
12 Kennedy 1989, p 191.

is an eminently suitable candidate for a comparison with the neighbouring country Sweden, a country that is quite closely comparable to Denmark in many respects (geographically, economically and demographically), but for the purposes of this paper owning the important difference that it possessed no overseas colonies.

The paper is limited to calculating the Danish profits from its colonies in the West Indies. Profits (or losses) from other Danish colonies in Africa, Asia and in the North Atlantic are thus not calculated in this paper. The paper will look at the accumulation of profits only, and not where any eventual profits were invested or what else they were used for. The rent seeking parties to be analysed will be the Danish counterparts to the ones analysed by Coelho – i.e. the Danish crown, and the Danish consumers – as well as the commercial parties, in this case the privileged company and the plantation owners on the Danish West Indies. It is well-worth noting that in reality there was not always a clear line of demarcation between these parties. For example, the Danish Crown was the owner of several plantations in the West Indies. Vice versa, some planters were deeply involved in Danish Crown administration, most notably Ernst Schimmelmann, minister of finance in Denmark in the late 18th century, as well as a large absentee owner of plantations on the Danish West Indies and the owner of one of the largest sugar refineries in Denmark. It is, however, beyond the scope of this paper to look more closely at how such interconnections might have influenced Danish policy-making. The hypotheses of the paper are derived from the conclusions reached by earlier research:

- In the case of the privileged company and the plantation owners, we expect to find that the colony on average gave rise to quite 'normal' profits.
- In the case of government revenue, we expect to find that the Danish crown received no net income from the colonies, but rather that they constituted a net burden.
- In the case of consumers, we expect to find that the price of colonial commodities was higher in Denmark, than it was in a comparable country without access to colonies of its own, because of the protectionist policies of the colonial power.

The paper is primarily based on original research in primary source material from the Danish National Archive. One main source reports profits from the Danish West Indies to the Danish Crown. This source is discussed further in the appendix to the paper. Further original research by this author accounts for the trade in and price of colonial goods, also discussed in the appendix to the paper. This is supplemented by an original analysis of raw data assembled by other scholars.

The plantation *Mary's fancy*, St Croix, Danish West Indies. Painting from the 1840s by unknown painter. Reproduction: H&S Kronborg, Denmark (H&S 303:49).

3.2. Danish West Indian profits and costs

3.2.1. Background

Prior to the 19th century, the Kingdom of Denmark was in control of a comparatively large empire in the North Atlantic, including Norway, Iceland, the Faeroe Islands, the duchies of Schleswig-Holstein in modern-day Germany and Greenland.[13] Geographically, the Danish empire was quite large by 18th century European standards: even if Greenland is excluded, the total area formally under the Danish Crown approached half a million square kilometres, more than twice the size of the isles of Great Britain, or more than ten times as large as the Netherlands. However, the Danish empire was very sparsely populated – there were probably no more than two million people living in the regions under the Danish crown by the early 19th century or approximately the same as in contemporary Netherlands and a tenth of the population of Britain at the same time.[14] Denmark also possessed a military fleet that, at least during the 17th and 18th centuries, was larger than, for example, the Spanish one.[15]

Starting in the 17th century, Denmark also succeeded in acquiring overseas colonies in Asia, Africa and the Americas, making Denmark one of only a handful of European colonial powers during the first wave of colonialism.

13 Bregnsbo and Villads Jensen 2005.
14 Maddison 2005.
15 Modelski and Thompson 1988.

The first attempts to colonise what would become the Danish West Indian islands were undertaken during the second half of the 17th century. As in many other countries, the task of undertaking Danish colonisation in America was initially bestowed upon a privileged company, the Danish West Indian-Guinean Company (Dansk Vestindisk-Guinesisk Kompagni). In 1754, the Danish Crown took over the formal administration of the Danish West Indian islands. In previous literature it has been claimed that this happened since the company had experienced problems making an economic profit from the administration of the colony. At the same time as the Danish Crown took over the administration, the trade on the islands was opened up to all Danish citizens. The Danish Crown would be in charge of the administration of the islands until they were sold to the United States in 1917.[16]

3.2.2. Profits for planters and merchants

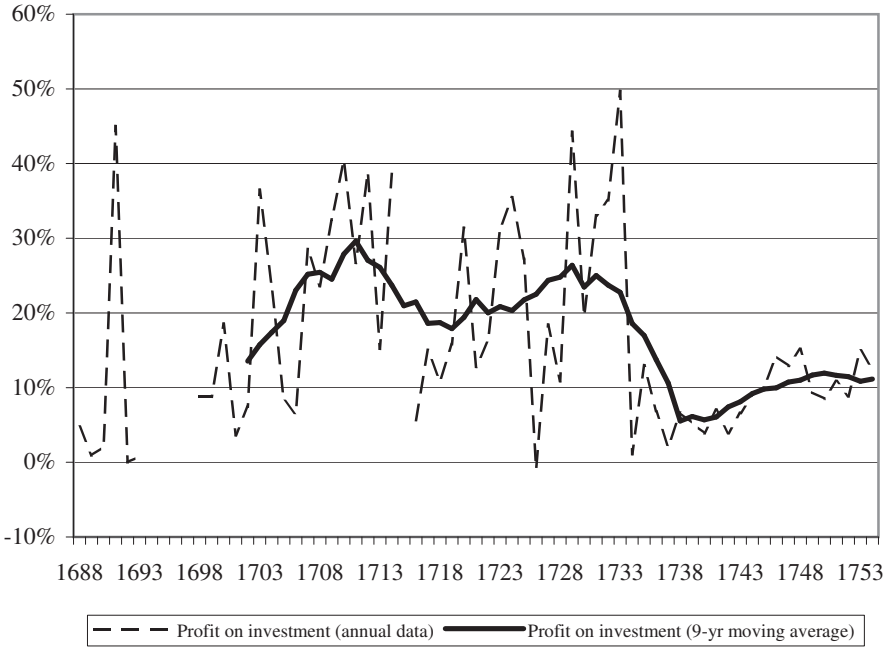
This part of the article will deal with the profits to planters and merchants involved in the colonial trade. It is divided into two subsections, the first dealing with the privileged trading company in control of the colonies until 1754, and the second dealing with the trading parties' profits after the privileged company was dissolved.

3.2.2.1. The Danish West Indies under company rule

When the Danish West Indies still were under company rule, the plantations and the trade in colonial goods seem to have been highly profitable. Valdemar Westergaard studying the issue in the early 20th century reported that the actually realised profits on the West Indian-Guinean company's investments in plantations amounted to some 10–25 per cent annually during the early 18th century.[17] The company was also profitable as a whole. He reports that the company made an absolute net loss during only one single year during the period 1688–1754 and then only of a very small amount. Unfortunately, Westergaard does not report continuous data on the amount of total capital invested in the company. He does, however, state that by the time that the company bought the island of St Croix, the amount of capital invested had increased to a total of 227,750 Danish rigsdaler, a trebling compared to before the purchase of St Croix.[18] Assuming that the invested capital remained relatively fixed over time, except for the drastic increase at the time of the purchase of St Croix, these figures can be compared to the data on absolute returns on capital provided by Westergaard, thus giving us a rough estimate of the annual returns on investment. The results are shown

16 Sveistrup 1942.
17 Westergaard 1917, p 132.
18 Westergaard 1917, p 207.

Graph 3.1. Profits on investments for the Danish West Indian-Guinean company 1688–1754 (annual profits and 9-year moving average profit, %)



Source: Westergaard 1917, appendix R and p. 207

in graph 3.1. The figures must be interpreted with caution, since we have no complete series of data on the capital of the merchant company, but have to rely upon an extrapolation from two points in time.

As can be seen in the graph, the profits on investment rose from quite low levels in the late 17th century, to very high levels approximating a twenty-five per cent annual profit on investments on average and some specific years even higher than that during the two decades prior to the purchase of St Croix. However, the volatility was quite high and the realised profits could thus change much between the years. Purchasing the island of St Croix in 1733 had the effect of drastically lowering the company's profits on investment. The amount of capital had to be increased in order to pay for the purchase and the realised profits did not increase as much as did the capital raised for the purchase. At the same time, however, the volatility in profits was reduced, leading to a lower but steadier profit rate. After the purchase of St Croix, the profits therefore went down to quite "normal" levels or some five to ten per cent profit on investment annually the decade following the purchase and eleven to twelve per cent profit on investment annually from the middle of the 1740s, until the company was dissolved in 1754.

From the empirical evidence, we can thus conclude that it is not the case that the West Indian-Guinean company ever really became unprofitable to its shareholders. Compared to the 'super-normal' profits that the company had earned for its shareholders prior to the purchase of St Croix, however, the 'normal' profits received following the purchase might not have reached up to the returns shareholders expected, and thus have been perceived as a loss relative to expectations.

3.2.2.2. Producers' and merchants' profits after the end of company rule

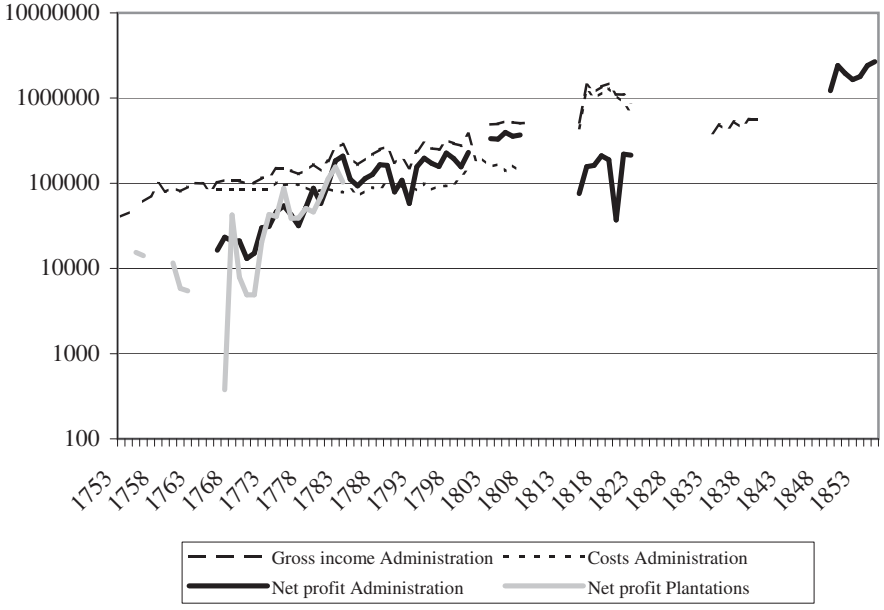
In his book on the economic history of the Danish West Indies, P.P. Sveistrup reports that the profits for the plantation owners on average were quite normal later in the 18th century, yielding earnings of some seven to ten per cent on invested capital annually.[19] However, some calculations point to even higher earnings at times, at times reaching as high as thirty per cent, but Sveistrup argues that some of these calculations leave particular costs out of the calculation, giving them a bias in favour of too high profits.

By the late 18th and early 19th centuries, however, the tide started to turn for the merchants involved in the trade on the islands. A newly established trading company, the Royal Danish Privileged West Indian Trading Society (Det kongelige Danske octroyerede Vestindiske Handelsselskab), was started in 1778 with new privileges to the trade on the islands. In the trades where the company was given monopoly rights, the trade also became rather profitable. In other areas, where the company had to compete with private merchants, the company seems to have been unable to make any profits at all. Thus the company was dissolved but a few years after its formation.[20] According to Sveistrup, the profits did also start to diminish for many plantation owners, starting with the Danish prohibition against slave trade and reaching even lower levels by the middle of the 19th century when slavery is abolished generally. However, he does not provide us with any figures on these lower profit levels.[21]

So far there has not been any research conducted into the profitability of the Danish slave trade. Still, the general picture held by scholars does seem to be that the profitability was quite low.[22]

19 Sveistrup 1942, p 82–89.
20 Sveistrup 1942-44.
21 Sveistrup 1942, p 68–69.
22 Andersen 2006.

Graph 3.2. Gross income, costs and net profits for the Danish crown from the Danish West Indies, 1753-1855 (rigsdaler dansk courant, logarithmic scale)



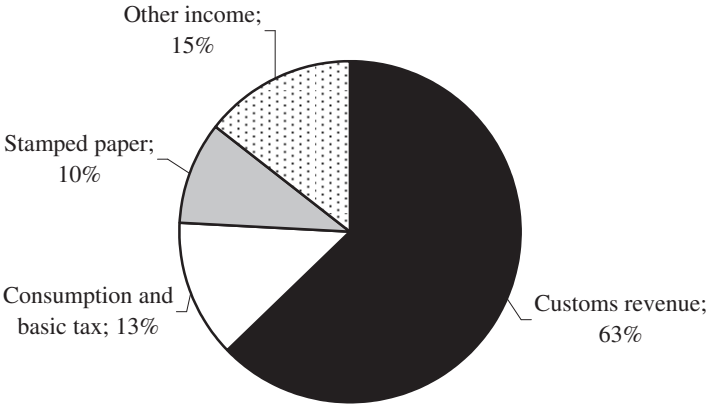
Source: WIGRO, see appendix A.3.

3.2.3. Revenue for the Danish crown after the end of company rule

In 1754, the Danish crown took over the formal administration of the Danish West Indies. Trade on the islands was opened to all Danish citizens. From this time onwards, the Danish crown raised the revenue on the islands, but was also responsible for paying the costs of administration and defence. On different occasions the office that was put in charge of running the administration of the islands, the Chamber of Customs (Generaltoldkammeret), reported to the King of Denmark on incomes received and costs incurred from the West Indian possessions. Many of these reports have been preserved, covering a period of approximately a hundred years. The data has been assembled in graph 3.2.

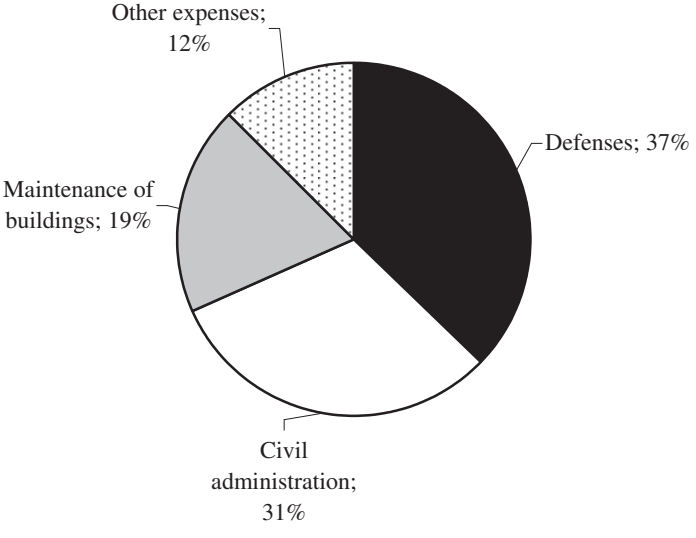
The Danish West Indies was in general a lucrative possession for the Danish crown, as can be seen in graph 3.2, showing the gross incomes from and costs of maintaining the colonies, as well as the net profits. During all the years for which we have data on both gross income and costs, the islands returned net profits to the Danish crown in the form of local taxes and customs. The West Indian islands were thus never a net economic burden for the Danish colonial power during this period. On the contrary, the state of Denmark could count on positive revenue. The amounts actually repatriated varied over time, probably due to the need to keep a certain amount of liquidity in the purse of the local administration.

Graph 3.3. Public incomes from the Danish West Indies, 1774–1777



Source: WIGRO, see appendix A.1

Graph 3.4. Public costs for the Danish West Indies, 1774–1777



Source: WIGRO, see appendix A.1

Table 3.1. Estimate of deflated net revenue from the Danish West Indies, selected years 1766-1855

Year	Nominal net revenue from DWI (rigsdaler)	Wage/price indices (1803/05 = 100)		Deflated net revenue (1803/05 value rigsdaler)	
		Wages	Cereal prices	Defl by wages	Defl by prices
1766/70	18,980	67	49	28,470	38,667
1786/90	129,420	75	83	173,330	155,494
1803/05	356,860	100	100	356,860	356,860
1849/55	2,013,410	133	..	1,510,057	..

Source: Data on net profits from the DWI, see graph 3.2. Data on 18th century wages and prices from Andersen and Pedersen 2004, and wages for 1849/55 from Pedersen 1930. The data on wages is in Andersen's case calculated from the wages of workers of category 3, service work by day-labourers, assuming that they received payment during 300 days/year. The data on cereal prices is an average price for rye and barley (sale prices). The index values used for the 1803/05 DWI-figures actually refer to the prices during the three last years of Andersen's study, 1798–1800.

A few of the reports are more detailed than other, enabling us to study the sources of the costs and incomes. The main source of income was duties on the archipelago's external trade. As can be seen in graph 3.3, duties accounted for over sixty per cent of the total revenue raised on the islands. Other sources of income were fees for 'stamped paper' (stemplet papir) and local basic taxes.

Obviously the wages for civil servants and military personnel constituted the two main costs associated with the colonies, and the maintenance of public buildings constitute a third important cost, as can be seen in graph 3.4. Other costs included the upkeep of the Royal slaves, travel reimbursements for civil servants and financial support for missionary activity.

The nominal net income rose steadily during the second half of the 18th century to some extent due to inflation but most importantly due to a rapidly expanding production of colonial commodities.[23] In table 3.1 we have done a rough calculation in order to see how large a share of the growth of nominal revenue might be attributed to inflation and how much is real growth. This is done by deflating the data, using both wage and price indices as deflators.

There was over time a very significant growth in real profits from the Danish West Indies, regardless of whether we deflate the prices by labour wages or cereal prices, as can be seen in table 3.1. By the middle of the 19th century the profit just from the administration of the West Indian islands was equivalent to the annual wages of some 20,000 Danish workers.

In table 3.2 we summarise the data shown above on the nominal net public revenue that the Danish crown received from the islands during the 18th century. However, the public revenue raised on the islands was not the only factor

23 Sveistrup 1942, p 72.

Table 3.2. Public profits and costs of Danish colonies in the West Indies, selected years 1766-1855 (rigsdaler, nominal values)

Years	Net public revenue from DWI	Net revenue from Royal plantations	Profit from Royal loans to planters	Cost of Sound toll exemptions	Cost of re-export bounty	Total annual profit from Danish West Indies
1766/70	18,980	13,890	0	-21,150	-2,600	9,120
1776/80	54,350	48,760	0	-34,510	-14,800	53,800
1786/90	129,420	124,000	18,200	-22,010	-9,500	240,110
1796/99	183,720	124,000	18,200	-21,970	0	303,950

Sources: see appendix A.3.

in the equation of the costs and benefits to the Danish Crown from the Danish West Indies. To begin with, the Royal plantations on the islands were rather profitable. Unfortunately, in this case we only have data on the profits they earned until 1783, after which sources are missing. If, however, we assume that the royal plantations were as profitable by the end of the 1780s and 1790s as they had been just a couple of years earlier, we can add an estimate of these profits to the calculations.

Furthermore, the Danish crown provided loans to the DWI-planters. What to the planters were favourable interest rates, compared to the rates previously charged by Dutch lenders, were also favourable for the Danish Crown. The interest charged to the planters was significantly higher than what the Crown charged other borrowers.[24] The loans to DWI-planters therefore seem to have been somewhat profitable to the Crown, as compared to what would have been the case if the Crown had lent the same amount of money to other borrowers. An estimate of this profit is included in table 3.2.

Imports of colonial goods on Danish ships directly from the Danish West Indies were, on the other hand, exempt from paying the Sound toll, as well as some other duties. This privilege was granted to Danish ships, in order to favour production of tropical goods in the colonies and did thus lead to an alternative cost for the Danish crown compared to what would have been the case had Denmark instead charged Sound tolls on this trade as well. An attempt to calculate this cost is included in table 3.2. Finally, sugar refineries were granted an export bounty for colonial sugar re-exported from Denmark, in order to support an infant domestic industry. This bounty was in place from the 1760s until the middle of the 1790s. Calculations of the cost of the re-export bounty are also included in table 3.2.

Admittedly all possible incomes from and costs of maintaining the West Indian colonies are not necessarily included in this calculation. One

24 Westergaard 1917, appendices M and N.

example might be if there were costs for the Danish military over and above the upkeep of the local garrison and navy, costs which in practice would not have accrued had Denmark had no colonies in the West Indies. Costs for convoying merchant ships to and from the islands could for example give rise to such a cost, as would the costs associated with peace agreements with the Barbary States in Northern Africa. On the other hand, such costs had to be born by other shipping nations as well, including Sweden, regardless of whether or not the country actually possessed colonies. Such costs were thus in most instances not related to the possession of colonies per se, but to international trade in general. It does therefore seem reasonable to not include convoying in these calculations. It therefore seems as if all of the most important revenues and costs directly related to the Danish colonies are indeed included in the calculations above.

As can be seen in the table, the privileges and subsidies granted to merchants and planters almost outweighed the revenue that the Crown received from the islands during the early period of Crown rule over the Danish West Indies. The Royal plantations did furthermore not contribute any larger profits to the exchequer, yet. However, the profits actually realised from the islands would grow quite significantly during the following decades. Furthermore, loans granted by the Crown to planters on the islands were a source of income, higher than what the Crown probably would have earned by lending money elsewhere. By the end of the century the profits realised from the islands far outweighed the alternative costs from the privileges granted to the merchants.

How important were these incomes for Denmark proper? One way to illustrate how large the incomes were is to calculate how large a share they constituted of the total revenue of the Danish crown. M.L. Nathanson has reported data on the annual revenue of the Danish crown during large parts of the 18th century.[25] Johansen has also published such figures for a set of years during the latter part of the century.[26] Johansen's figures are consistently somewhat lower than the figures reported in Nathanson. Nathanson's figures are reported in table 3.3, together with the data on net profits from the colonial control of the Danish West Indies.

The early net revenue from the Danish West Indian islands was thus quite negligible if seen in a larger context. However, the growth in net profits was significant. By the end of the 18th century, the three small islands of the Danish West Indies contributed a net profit equal to some five to six percent of total public revenue of Denmark proper (or three per cent of the public revenue of the whole of the Danish empire, including Norway, the Duchies and other overseas possessions), even when discounting the alternative costs of the many privileges granted. Since the revenue was repatriated straight into

25 Nathanson 1836.

26 Johansen 1968, bilaga III; Johansen 1980, bd 2, bilaga III.

Table 3.3. Public revenue in Denmark and net profit from the Danish West Indies, selected years 1766-1799 (rigsdaler)

Years	Total annual profit from Danish West Indies (rdr)	Average annual public revenue (rdr)		Net DWI share of total public revenue	
		Kingdom of Denmark	Whole Danish empire	Kingdom of Denmark	Whole Danish empire
1766/70	9,120	3,099,000	5,348,000	0.3 %	0.2 %
1776/80	53,800	4,370,000	7,147,000	1.2 %	0.8 %
1786/90	240,110	4,695,000	7,859,000	5.1 %	3.1 %
1796/99	303,950	5,426,000	9,058,000	5.6 %	3.4 %

Sources: Nathanson 1836, and table 3.2 above.

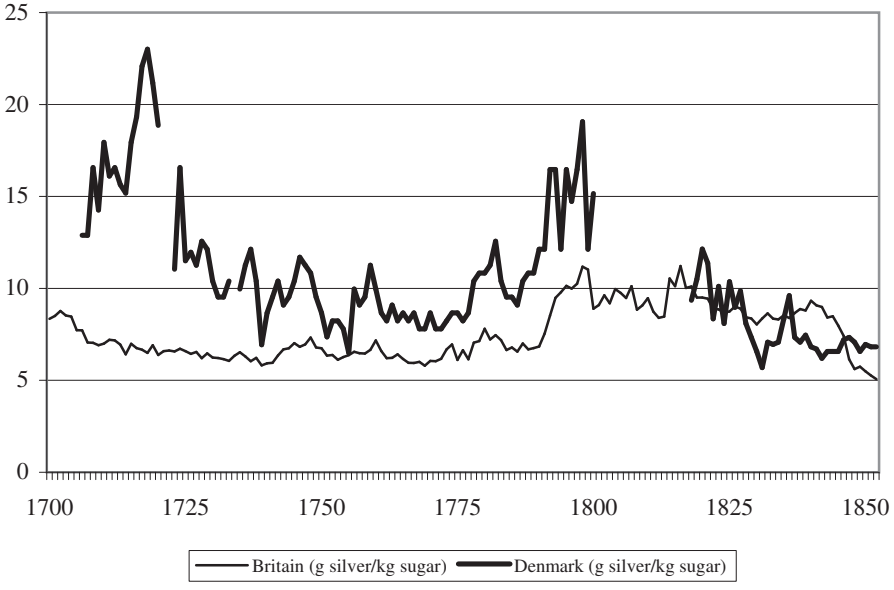
the coffers of the Danish Kingdom, it constituted a quite significant contribution to the Danish treasury. Considering that the total population of these small islands including slaves, constituted approximately three per cent of the population of the Danish kingdom or somewhat more than one per cent of the population of the whole Danish empire, the Danish West Indies were certainly small jewels in the Danish crown.

The colonial profits thus provided the Danish crown with sums of money that were far from negligible. This money could be used for various purposes, including to support the finances of the royal court, for productive investment in diverse forms or perhaps to finance the Danish army domestically. Even though we can safely assume that only a share of the proceeds from the colonies were used for productive investments, one alternative way of thinking of a counter-factual could be that had the Danish crown not had the colonies in the West Indies, it would have found ways to tax the domestic population or trade in order to collect the same amount of net revenue. Such taxation would thus have decreased presumably productive private investments in the domestic economy. An alternative would of course have been to raise the import taxes of the goods to receive the same amount of revenue. This would then raise the consumer prices of the goods in question, an issue this paper now turns to.

3.2.4. Goods for the Danish consumers

Graph 3.5 shows the estimated silver-price of sugar in Denmark, in relation to the silver-price in Great Britain. As can be seen in the graph, prices in Britain and Denmark seem to converge during much of the 18th century. Thus the Danish possession and development of the Danish West Indian colonies gave the Danish consumers access to increasingly cheaper sugar during much of

Graph 3.5. Silver-price of sugar in Denmark and Britain, 1700–1850 (g silver/kg sugar)



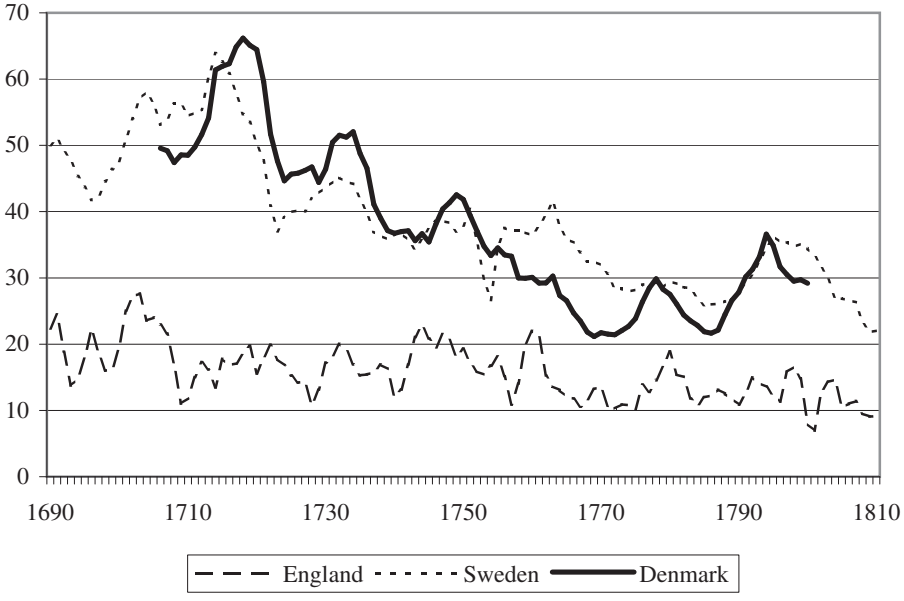
Sources: Danish prices from Andersen and Pedersen 2004, British prices from Clark 2007.

the 18th century. From this data, it seems as if the consumers of Denmark also shared in the gains of colonialism.

It is unfortunately complicated to compare the prices in Sweden with the prices in Denmark using silver-prices, since Sweden, in contrast to many other countries in Europe at the time, did not use silver as a monetary base. Estimating a silver-price of sugar would therefore lead to highly unreliable results in the case of Sweden.[27] Graph 3.6 gives an alternate perspective, relating the price of sugar to the price of cereals in Sweden, Denmark and Britain. In the graphs, the price of sugar is divided by the price for cereals, giving an indication of the alternative cost of sugar in the three countries. The graph thus shows how much cereals one would have to abstain from in order to buy a certain amount of sugar. As can be seen in graph 3.6, in Sweden sugar is approximately fifty to seventy times as expensive as the same weight of cereals around the middle of the 17th century. The ratio falls significantly over time, so that sugar is only around ten times as expensive by the middle of 19th century. In the case of Denmark the price differential between sugar on the one hand, and cereals on the other, falls significantly during the first part of the 18th century. During the second half, however, this trend changes in Denmark. The relative price of sugar thus starts to rise somewhat, at least by the late 18th century.

27 Rönnbäck 2007

Graph 3.6. Price ratio between sugar and cereals in Sweden, Denmark and Britain, 1690–1810 (litre grains per kg sugar, 9-year average prices)



Sources: for Sweden and Denmark see Rönnbäck 2008; British data from Clark 2007.

The price level of sugar relative to other commodities is quite similar in Sweden and Denmark over the long term; by the early 18th century, one kilogram of sugar was worth between forty and fifty liters of cereals in both countries. A century later, this ratio has fallen in both countries, so that a consumer would have to abstain from approximately thirty liters of cereals to buy one kg of sugar. The price ratio is in both countries also consistently higher than the corresponding price ratio in Britain, as can be seen in the graph. The relative price of sugar was thus higher in both Sweden and Denmark than it was in Britain, as would be expected. The Danish price of sugar if put relative to the price of cereals, might initially seem slightly higher than the price in Sweden during the time when the trade was monopolised by the West Indian-Guinean Company. However, the difference is quite small even at this time. Most importantly, the price became significantly lower in Denmark than in Sweden as soon as the Danish monopoly was revoked.

There is one very striking difference in the amounts of sugar consumed in the two countries: while the Swedish population averaged around half a kilogram of sugar per capita annually during the second half of the 18th century, the Danish population consumed perhaps ten times as much in the same

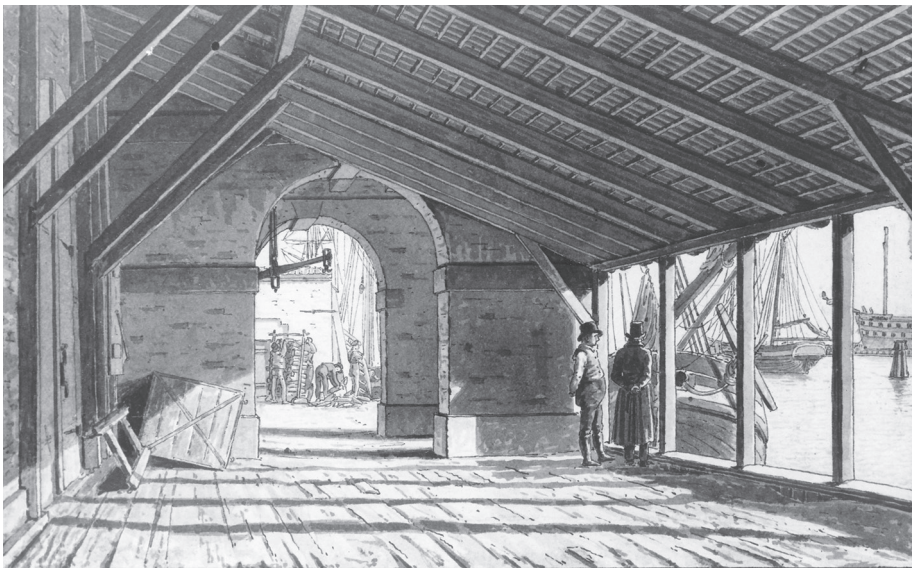
period.[28] The Danish market thus seems to have reached a stage where prices might have been quite similar to those in Sweden, but the volumes purchased were significantly higher.

Can any differences be explained by different trade policies in the two countries? The tariffs on sugar were actually quite low in both Sweden and Denmark. Sveistrup and Willerslev report that by 1731, the Danish tariff on sugar was changed from a very low specific duty into an ad-valorem tariff of two and a half per cent of the value of the imported sugar.[29] This tariff level then seems to have remained in place for most of the remainder of the 18th century. By the last years of the century, the tariff was changed back into a specific tariff of a half-shilling per Danish pound, which essentially ended up being the same protection as the previous ad valorem-tariff.[30] In Sweden, the tariff was set at somewhat lower levels: raw sugar could from 1718 onwards be imported at an ad valorem-tariff of a half per cent of the value and for semi-refined sugar the importer had to pay a tariff of two per cent. The refined sugar tariff stood at eight per cent of the value, but in 1728 (taking effect in 1740), the imports of refined sugar were completely prohibited to protect domestic refineries.[31] In comparison to the total consumer price of sugar, the tariff levels were very low and the minor differences in tariff levels between the two countries can hardly explain the quite large differences in consumption between the two markets.

3.3. Discussion

There has been a long-standing controversy between academics as to whether Britain or Europe as a whole, owned a net gain from the possession of overseas colonies. This paper has tried to look at a related issue: which parties in Europe gained, and which ones lost from colonialism during the early modern era. In an often-cited paper on this topic, Philip Coelho has argued that colonies probably were acquired not primarily because the colonial powers calculated that the colonies would actually lead to net profits for the whole of the country, but because certain parties, such as planters, merchants or manufacturers, could gain considerably from the colonies, while letting other parties foot the bill. Colonialism can thereby be seen as a way of distributing and redistributing profits within in a society, for example from the consumers and the government to the West Indian planters, as in Coelho's suggests.

28 Rönnbäck 2008.
29 Sveistrup and Willerslev 1945, p 27.
30 Sveistrup and Willerslev 1945., 56 and 61.
31 Klason 1892, 15 and 24.



The colonial commodities from the Danish West Indies were exported to Copenhagen, from where they later were distributed to both Danish and foreign consumers. Westindian warehouse in Copenhagen. Drawing by Martinus Rörbye. Reproduction: H&S Kronborg, Denmark, (H&S251:54).

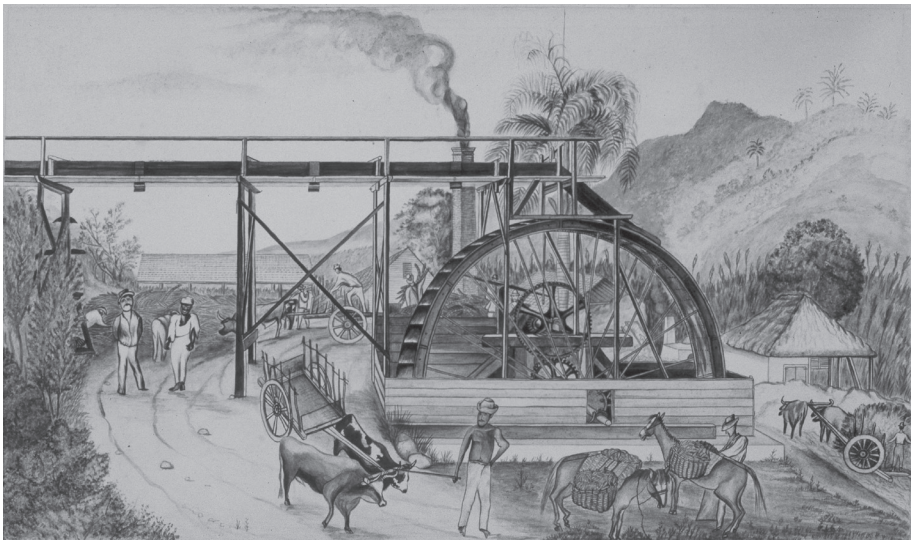
While this author generally agrees with this viewpoint, this paper has also shown that the reality could be very different under conditions other than those Britain faced. In the case Denmark, all three major parties under study – producers and traders, consumers of colonial commodities and the Danish Crown – actually seem to have gained from the country's position as a colonial power in the Caribbean, compared to what might have been the case had Denmark had no colonies of its own in the region. During the early years, when the Danish West Indies were still under company rule, the privileged company's profits were as a minimum quite 'normal', on average some five to ten per cent annual profit on invested capital. However, during a couple of decades, the profits seem to have been significantly higher than what would be called 'normal' profits, at times reaching as high as twenty-five per cent average annual profit on invested capital. With the purchase of St Croix, however, the company seems to have experienced falling profit rate because of the large amount of capital needed for the purchase. After company rule of the Danish West Indies was dissolved, and the Danish crown took over the administration of the islands, the colonies returned to providing a quite normal and possibly somewhat 'supernormal' profits for the private planters and merchants involved in the trade. Contrary to what was expected from previous research, the three West Indian islands also contributed with non-negligible net revenue to

the Royal exchequer when the Danish Crown took over the administration of the islands from the West Indian-Guinean company in 1754. Initially, there were many costs associated with subsidies and privileges granted to the trade on the islands. But even if we discount the costs of the privileges and subsidies granted by the Crown, the net profit for the Crown grew significantly in real terms over the second half of the 18th century and into the early part of the 19th century. These three small islands in the West Indies contributed a net profit equal to some five to six per cent of the total governmental revenue from Denmark proper by the late 18th century, even when the cost of privileges and subsidies are discounted. For the Danish consumers, finally, the price of colonial commodities was certainly not significantly higher than in alternative markets, such as Sweden, again contrary to what was expected from previous research and at least from the time when the privileged company's monopoly was dissolved onwards. What is quite certain, furthermore, is that the Danish possession of the islands provided a significantly higher supply of colonial goods. This contributed to the dubious benefit of significantly higher levels of sugar consumption in Denmark than in Sweden, certainly sweetening the diet, but also potentially increasing tooth decay.

It remains to be shown whether these profits from the West Indies were reinforced from profits or cancelled out by losses elsewhere in the Danish colonial empire. This paper has only focused upon the issue of actual accumulation of profits. Where these profits later were invested or what else they were used for is beyond the scope of this paper.

As O'Brien and de la Escosura have pointed out, it must be stressed that the experiences of colonialism differed quite significantly among the different European colonial powers.[32] It is simply not possible to generalise about the European experience from the study of just one country. The Danish case can diversify the picture of who in the colonial powers gained from colonialism during the early modern era. This paper has not tried to conduct a total cost-benefit analysis of the Danish gains from colonialism, but it stands clear that the results differ significantly from the results reached by Philip Coelho in his study of British colonialism in the West Indies. While Coelho argues that Britain made a net loss on its West Indian colonies, since the state and the consumers were worse off than what could have been the case, the results in this paper show that all parties in Denmark seemed to have gained on Danish colonialism in the West Indies. It is beyond the scope of this paper to conduct a systematic comparison between the two cases, but one possible interpretation might be noted: Denmark remained neutral in many of the core power struggles in Europe

32 O'Brien and de la Escosura 1998



Water mill on the plantation *Little La Grange*, on St Croix. Drawing by unknown artist, possibly 18th century. Reproduction: H&S Kronborg, Denmark (H&S 304:49).

during much of the period in question. Intra-European wars might for that reason not have spilled over unto the West Indian colonies of Denmark to the same extent as they did unto the British West Indian colonies. It is therefore theoretically possible that the cost of military defence of the Danish West Indies might reflect the cost of colonialism per se more truly than the case of the British West Indies does. A more systematic comparison between the two countries might delve deeper into these issues.

If all the Danish parties did gain from the West Indian colonies, were there any losers? Naturally, the slaves producing the colonial commodities were major losers in the process. Sven Green-Pedersen has estimated that Danish merchants traded in at least some 30 000 slaves during only a few years by the late 18th century.[33] The exploitation of slaves was a basic feature in the entire plantation complex of the Americas. Without the slaves, production of sugar and other colonial commodities in the West Indies would most certainly not have lead to the very high profit levels that we have found evidence of in this paper, and consumers would not have been able to purchase colonial goods at steadily falling prices. It does not seem unreasonable to assume that the falling profit-levels in the Danish West Indies during the 19th century can to a large extent be attributed to the fact that the slave trade and later slavery itself were abolished, and replaced by different forms of semi-free labour. Colonialism can in this regard be seen as a way of externalising a lot of the costs of labour through means of force. A more complete

33 Green-Pedersen 1971.

cost-benefit analysis of colonialism would naturally have to include these "costs" as well. This would not only have to take into consideration the economic aspects of slavery, but also the immense human sufferings it brought down upon the victims of slavery, and the relatives of slaves, an aspect that hardly seems possible or suitable to reduce to economic calculations. For that reason, such an analysis would have to go beyond the confines of purely economic history and is far beyond the scope of this paper.

Since the exploitation of the slaves was a common feature for all colonial powers in the Americas, the slaves probably would have been little better off had the Danish not been a colonial power. Some other European colonial power would most certainly just have taken the place that Denmark was able to hold in the West Indies. The Danish possession of colonies, though small in an international context, can therefore also be seen as a potential loss for other colonial powers, compared to what could have been the case had Denmark not participated in the scramble for the Americas.

Finally, we cannot separate the economic aspect of colonialism from its political aspect. In Jacob Viner's words, both Power and Plenty were important ends for the mercantilist policies of the time. Power and Plenty were, according to Viner, also perceived of as mutually reinforcing.[34] From this perspective the Plenty of the West Indies can also be seen as contributing to upholding and reinforcing the Power of the colonial states in Europe, rather than just potentially enriching individual parties.

34 Viner 1948. See also Findlay and O'Rourke 2007, p 228–229.

Appendix A.3: Sources on Danish crown's income from the Danish West Indies

A.3.1. Public revenue from the DWI and profit from plantations

In the Danish National Archives (*Rigsarkivet*), archival material from the Danish West Indian colonies are to be found in a couple of different places, depending on which institution was formally in charge of the administration. In the archive for the West India and Guinea Revenue Office (WIGRO, *Vestindisk-guinesisk renteskriverkontor*), there is a box containing many different documents with calculations of the crown's income, costs and net profits of the Danish West Indian colonies (vol. 509, *Dokumenter og beregninger vedk. de vestindiske øers indtægter og udgifter*). Some of the reports also cover the profits from the Royal plantations on the West Indian islands.

Some documents contain calculations for only one or a couple of years, while others contain data for some twenty to thirty years in a row. On the other hand, the documents reporting shorter time periods are often more detailed, reporting where the incomes come from and where the expenditures go. Often incomes, costs and net proceeds are all reported in the same document, but in some instances only one or the other of those are reported. However, there is rather much overlapping between the documents, enabling us to piece together a long time-series of data for all three variables. The data is in general very coherent. Only a few years present differences between the documents and then only rather marginally. In those cases where the data differs between documents, this paper has opted for using the figures from the documents with the longest data series.

The West India and Guinea Revenue Office was formally a department within the Chamber of Revenue (*Rentekammeret*) and later the Chamber of Customs (*Generaltoldkammeret*). The staff of the office was thus not immediately economically dependent upon the colonies actually giving rise to a profit for the Crown, but could most probably have received other appointments within these respective Chambers. There does therefore seem to be no strong reason to believe that the staff had any incentives to report biased data.

A.3.2. Profits from loans to DWI planters

Johansen writes that the Crown bought obligations on the Dutch market in 1784–85. The total nominal value of the obligations was approximately 16 million guilders, i.e. approximately 7.3 million rigsdaler, but the amounts actually paid were reduced depending on the priority of the loans. In total, the Crown ended up with claims of 11.7 million guilders on the DWI-planters. The negotiated deal implied that the planters had to pay approximately four to four and a half percent interest annually on most the loans. However, some of the loans were charged an interest of up to six and a half

per cent. Further loans given to DWI-planters directly by the Crown were charged an interest of six per cent. The loans were supposed to be paid back, but at least during the period of Johansen's study, new loans were taken up by debtors on the Danish West Indies (at the higher interest of six per cent annually), thus increasing the debt.[35] In order not to exaggerate the income from the loans, this paper assumes that the loan levels remained quite unchanged from the 1780s to the 1790s.

A.3.3. Cost of exemptions from the Sound tolls

The most important commodity grown on the Danish West Indian islands was sugar, for which ships of other nationalities than Danish had to pay a Sound toll of nine Danish shilling per one hundred pounds during this period. Assuming that the same amounts of sugar would have been imported to the Baltic even if Denmark had possessed no colonies in the West Indies, we can calculate a rough estimate of the losses incurred on the Danish crown from the Sound toll exemptions in the case of sugar.[36] As sugar constituted approximately fifty per cent of the volumes of colonial goods imported, an assumption that other colonial goods exempted from the Sound tolls were worth approximately as much to the Crown as all the sugar imported would allow us to arrive at a rough approximation of the alternative cost to the Danish crown of the exemptions from the Sound tolls.

A.3.4. Cost of export bounty

The formula for calculating the export bounty of sugar was somewhat complex, and furthermore changed somewhat over time. Sveistrup reports the value of the bounty from a couple of years during the 1770s. Using these data as a benchmark, along with data on the volumes re-exported, we can calculate approximations of the export bounty for other years as well.[37] The benchmark years seem to have been the years when the export bounty was at its highest. During later years the bounty was changed somewhat so that only exported volumes exceeding one and a half metric tons received the bounty. The calculated cost of the bounty for other years than the 1770s is thus probably somewhat higher than what might have been the case in reality.

35 Johansen 1968, pp 226–230 and bilag I.
36 STCR. See also the article "Atlantic Sugar in the Baltic economy" in this thesis.
37 Sveistrup and Willerslev 1945, pp 100–103.

Sources and literature

Primary source materials

STCCR: Sound Toll Chamber Commodity Records (*Øresunds toldkammer*), Commodity Records from the North- and Baltic Sea, 1773–1856 (*Vareregistre fra Nord- og Østersøen 1773–1856*). Danish National Archive (*Rigsarkivet*).

WIGRO: West India and Guinea Revenue Office (*Vestindisk-guinesisk renteskriverkontor*), vol. 509 (*Dokumenter og beregninger vedk. de vestindiske øers indtægter og udgifter*). Danish National Archive (*Rigsarkivet*).

Other unpublished sources

Clark, Gregory (2007): *English Prices and Wages, 1209–1914.* Datafile available on the IISG website, http://www.iisg.nl.

Maddison, Angus (2005): *Historical statistics for the world economy: 1-2003 AD.* http://www.ggdc.net.

Published literature

Acemoglu, Daron, Simon Johnson and James Robinson (2005): "The Rise of Europe: Atlantic trade, institutional change, and economic growth", *American Economic Review*, vol. 95, pp 546–579.

Andersen, Dan and Erik Helmer Pedersen (2004): *A History of prices and wages in Denmark 1660–1800. Vol. II. Prices and wages in Danish estate accounts.* Department of History, Copenhagen University, Copenhagen.

Andersen, Dan (2006): "Denmark-Norway, Africa, and the Caribbean, 1660–1917: Modernisation financed by slaves and sugar?" in P.C. Emmer et al (eds, 2006): *A* Deus ex Machina *revisited: Atlantic colonial trade and European economic development.* Brill, Leiden.

Bairoch, Paul (1993): *Economics & World History: Myths and paradoxes*. University of Chicago press, Chicago.

Bregnsbo, Michael and Kurt Villads Jensen (2005). *Det Danske Imperium. Storhed og fald*. Aschehoug, København.

Coelho, Philip (1973): "The Profitability of Imperialism: The British experience in the West Indies, 1768–1772." *Explorations in Economic History*, vol 10, pp 253–280.

Daudin, Guillaume (2005): *Commerce et Prosperité – La France au XVIIIe siècle.* PUPS, Paris.

Daudin, Guillaume (2006): "Do Frontiers give or do Frontiers Take? The case of intercontinental trade in France at the end of the eighteenth century" in P.C. Emmer et al (eds, 2006): *A* Deus ex Machina *revisited: Atlantic colonial trade and European economic development.* Brill, Leiden.

Daudin, Guillaume (2004): "Profitability of slave and long-distance trading in context: The case of eighteenth-century France", *Journal of Economic History*, vol. 64, pp 144–171.

Ekelund, Robert and Robert Tollison (1997): *Politicized Economies: Monarchy, monopoly and mercantilism.* Texas A&M University press, College Station.

Eltis, David and Stanley Engerman (2000): "The Importance of slavery and the slave trade to industrializing Britain", *Journal of Economic History*, vol. 60, pp 123–144.

Emmer, P.C. (2006): "The Dutch and the Atlantic Challenge, 1600–1800" in P.C. Emmer et al (eds, 2006): *A* Deus ex Machina *revisited: Atlantic colonial trade and European economic development.* Brill, Leiden.

Engerman, Stanley (1972): "The Slave trade and British capital formation in the Eighteenth Century: a Comment on the Williams Thesis", *Business History Review*, vol. 46, pp 430–443.

Findlay, Ronald and Kevin O'Rourke (2007): *Power and Plenty. Trade, war, and the world economy in the Second Millenium.* Princeton university press, Princeton.

Green-Pedersen, Sven (1971): "The Scope and structure of the Danish negro slave Trade", *Scandinavian Journal of Economic History*, pp 149–197.

Inikori, Joseph (2002): *Africans and the industrial revolution in England. A study in international trade and economic development.* Cambridge university press, Cambridge.

Inikori, Joseph (1981): "Market structure and profits of the British African trade in the late eighteenth Century", *Journal of Economic History*, vol. 41, pp 745–776.

Inikori, Joseph (1987): "Slavery and the development of industrial capitalism in England" in Barbara Solow and Stanley Engerman (eds, 1987): *British capitalism & Caribbean slavery. The legacy of Eric Williams.* Cambridge university press, Cambridge.

Johansen, Hans Christian (1968): *Dansk økonomisk politik i årene efter 1784. Bd. 1: reformår 1784–88.* Universitetsforlaget i Aarhus, Aarhus.

Johansen, Hans Christian (1980): *Dansk økonomisk politik i årene efter 1784. Bd. 2: krigsfinansieringsproblemer 1789–93.* Universitetsforlaget i Aarhus, Aarhus.

Kennedy, Paul (1989): "The Costs and Benefits of British Imperialism 1846–1914", *Past and Present*, vol. 125, pp 186–192.

Klason, Peter (1892): *Sveriges sockerhandel och sockerindustri. Dess utveckling och nuvarande ståndpunkt.* P.A. Norstedt & söner, Stockholm.

Marx, Karl and Frederick Engels. Edited by Aijaz Ahmad (2001): *On the National and Colonial Questions. Selected writings.* Leftword, New Delhi.

Modelski, George and William Thompson (1988): *Sea power in global Politics, 1494–1993.* Macmillan, Basingstoke.

Morgan, Kenneth (2000): *Slavery, Atlantic trade and the British Economy, 1660–1800.* Cambridge university press, Cambridge.

Nathanson, M.L (1836): *Historisk statistisk fremstilling af Danmarks national og stats huusholdning fra Frederik den Fjerdes tid indtil nutiden.* C.A. Reisel, København.

O'Brien, Patrick (1982): "European Economic Development: the contribution of the periphery", *Economic History Review*, vol. 35, pp 1–18.

O'Brien, Patrick and Stanley Engerman (1991): "Exports and the growth of the British economy from the Glorious Revolution to the Peace of Amiens" in Barbara Solow (ed, 1991): *Slavery and the rise of the Atlantic system.* Cambridge university press, Cambridge.

O'Brien, Patrick and Leandro Prados de la Escosura (1998): "The Cost and Benefits of European Imperialism from the Conquest of Ceuta, 1415, to the Treaty of Lusaka, 1974" in Clara-Eugenia Núñez (ed, 1998): *Debates and controversies in economic history. Proceedings 12th international economic history congress.* Fundación Ramon Areces, Madrid.

Patnaik, Utsa (2002): "New estimates of eighteenth-century British trade and their relation to transfers from tropical Colonies." in K.N. Panikkar et al (eds, 2002): *The making of history. Essays presented to Irfan Habib.* Anthem press, London.

Pedersen, Jørgen (1930): *Arbejdslønnen i Danmark under skiftende konjunkturer i perioden ca. 1850–1913.* Gyldendal, København.

Pétré-Grenouilleau, O (2006). "Colonial trade and economic development in France, seventeenth to twentieth centuries" in P.C. Emmer et al (eds, 2006): *A* Deus ex Machina *revisited: Atlantic colonial trade and European economic development.* Brill, Leiden.

Rönnbäck, Klas (2007): *The price of sugar in Sweden. Data, source & methods.* Göteborg papers in economic history no. 10, Göteborg.

Rönnbäck, Klas (2008). *Transforming consumption in the European periphery: Colonial commodities in Scandinavia during the early modern era.* Paper presented at the European Business History Association Conference in Bergen, August 2008.

Sheridan, Richard (1974): *Sugar and Slavery. An Economic History of the British West Indies, 1623–1775.* Canoe Press, Kingston.

Sheridan, Richard (1969): "The Plantation revolution and the industrial revolution, 1625–1775", *Caribbean Studies*, vol. 9, pp 5–25.

Sheridan, Richard (1965): "The Wealth of Jamaica in the eighteenth Century", *Economic History Review*, vol. 18, pp 292–311.

Smith, Adam (1937): *An Inquiry into the nature and causes of the wealth of nations.* Edited by Edwin Cannan. Modern library, New York.

Solow, Barbara (1985). "Caribbean Slavery and British Growth: The Eric Williams Hypothesis", *Journal of Development Economics*, vol. 17, pp 99–115.

Solow, Barbara (1987): "Capitalism and slavery in the exceedingly long run" in Barbara Solow and Stanley Engerman (eds, 1987): *British capitalism & Caribbean slavery. The legacy of Eric Williams.* Cambridge university press, Cambridge.

Sveistrup, P.P. (1942): *Bidrag til de tidligere dansk-vestindiske øers økonomiske historie.* Institutet for historie og samfundsøkonomi, København.

Sveistrup, P.P. (1942-44): "Det kongelige Danske octroyerede Vestindiske Handelsselskab 1778–85: en driftsøkonomisk undersøgelse", *Historisk tidsskrift*, vol. 10, pp 385–427.

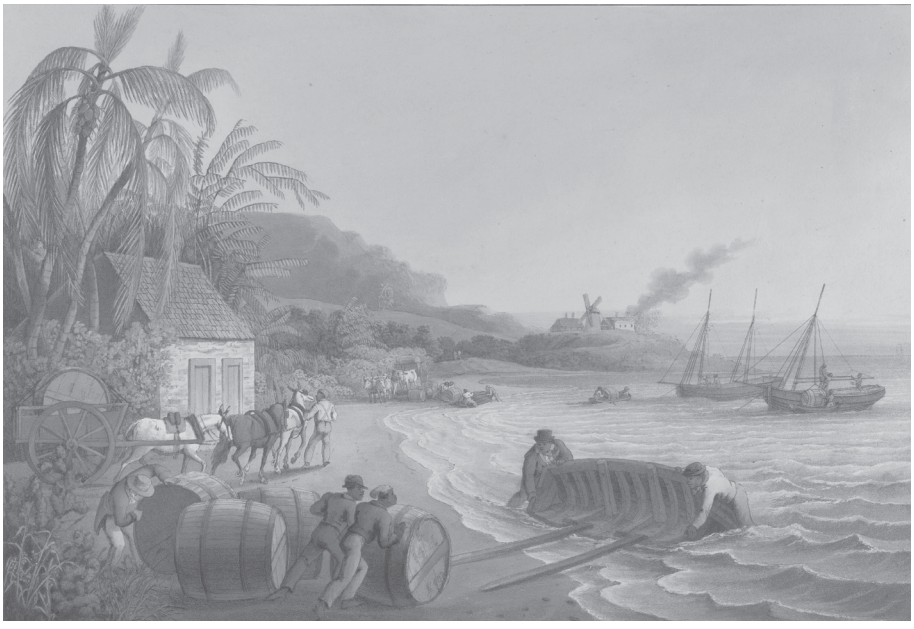
Sveistrup, P.P. and Richard Willerslev (1945): *Den danske sukkerhandels og sukkerproduktions historie.* Institutet for historie og samfundsøkonomi, København.

Thomas, Robert Paul (1968): "The Sugar Colonies of the old Empire: Profit or Loss for Great Britain?" *Economic History Review*, vol. 21, pp 30–45.

Westergaard, Waldemar (1917): *The Danish West Indies under company rule (1671–1754).* Macmillan, New York.

Williams, Eric (1964): *Capitalism and Slavery*. Andre Deutsch, London.

Viner, Jacob (1948): "Power versus plenty as objectives of foreign policy in the seventeenth and eighteenth Centuries", *World Politics*, vol. 1, pp 1–29.



Slaves loading sugar-hogsheads into a boat. Image from *Ten Views in the Island of Antigua*, by William Clark (1823). Reproduction: British Library, Great Britain (No. 063525)

Chapter 4

Atlantic sugar in the Baltic economy during the Early Modern period

Abstract
This paper attempts to look at the connection between the Atlantic and the Baltic economies during the early modern era, focusing upon the commodity chain for the colonial commodity sugar. Previous research has seriously underestimated the value of colonial commodities traded on the Baltic. New archival research shows that the amounts of Atlantic sugar traded by the late 18th century were approximately twice as high as previously thought. Colonial sugar from the American plantation complex grew over time, and by the late 18th century already consituted a significant share of the balance of payments for trade on the Baltic.

4.1. Introduction

One of the major historical shifts during the early modern era was the changing gravity in economic power from the Mediterranean to the Atlantic coast. Many scholars have attempted to explain this shift, reaching different conclusions. Very little attention has however been paid to how this shift influenced, and was influenced by, trade on another important route – trade on the Baltic. Only the occasional study has looked at how the trade in strategic Baltic exports was connected to the rapidly growing Atlantic economy.

This paper will try to contribute to this field of research, by focusing on imports into the Baltic. In much of the historical literature, the countries around the Baltic Sea have been portrayed simply as areas of production of commodities of strategic interest to the Western European nations, such as grain, iron and timber. Less attention has been paid to the issue of how the Western European nations were able to pay for these Baltic exports.

Re-exports of colonial commodities – both from the American colonies as well as from Asia – became increasingly important for the Western European balance of the trade on the Baltic particularly during the 18th century. Previous research has however seriously underestimated the amounts of colonial commodities that actually entered the Baltic. New research in archive materials presented in this paper provides more complete data on the quantities of the most important colonial commodity, sugar, imported to the Baltic. The paper also tries to calculate the economic importance of this commodity, relative to some

of the most important Baltic exports, and how this changed over time, in order to illustrate the economic significance of colonial commodities quantitatively. The results show that, as the Atlantic economy developed, colonial commodities became ever more important in the balance of payments on the Baltic, and thus indirectly for the leverage over the trade.

4.2. Method and previous research

Much of the previous literature on the international context of the Baltic trade has put the emphasis on the exports of goods from the Baltic. The focus has largely been on the supply of Baltic grain, iron, timber and many other goods to markets in Western Europe, and beyond. In his magnum opus "The modern world-system", Immanuel Wallerstein, for example, almost exclusively portrays the Baltic as a region of production and export of bulk goods, primarily grain but also iron and timber, to the core powers in the European "world-system".[1] The same goes for standard works such as Kristof Glamann's contributions both to the Fontana and the Cambridge Economic Histories of Europe, as well as for the work of many other scholars.[2] A more recent work such as Ronald Finlay and Kevin O'Rourke's book "Power and plenty" also focuses upon Baltic exports of such strategic goods, when it pays attention to the Baltic trade at all, but does at least briefly mention some of the goods that these countries in their turn imported.[3] The same focus upon Baltic exports is also present in many country-specific studies, or in studies that focus upon a single commodity chain, such as studies of the Baltic grain or iron trades.[4]

There are however two sides to the equation of balance of payments in international trade – consisting of exports and imports, as well as capital flows. Only a handful of studies have concerned themselves with imports into the Baltic, and the question of how the Western European merchants were able to pay for the Baltic products. Jonathan Israel has noted that by the 16th century, a clear majority of the Dutch ships actually went in ballast to the Baltic, arguing that the Dutch entrepôt trade was deficient at the time.[5] Baltic exports for a long time therefore had to be paid for in bullion, an issue that has received attention from scholars such as Artur Attman.[6]

1 Wallerstein 1974; Wallerstein 1980
2 Glamann 1971; Glamann 1977; see also many essays in Heeres et al 1988 or Lemmink and van Koningsbrugge 1990
3 Findlay and O'Rourke 2007, pp 191–194
4 See for example Israel 1989; Johansen 1983, ch 4; Högberg 1969; Heckscher 1944; Faber 1988; van Tielhof 2002; Evans and Rydén 2007.
5 Israel 1989, p 49
6 See for example Attman 1979, Attman 1983, Attman 1986a, Attman 1986b. See also Price 1961.

Ships of many nationalities passed through the Sound, paying the Sound toll at Kronborg castle. The picture shows the roadstead of Helsingør, with Kronborg castle in the background. Gouache by J.J. Bruun (1739). Reproduction: H&S Kronborg, Denmark (H&S 1951:0084)

For many contemporary observers of the 18th century, a positive balance of trade was an important means to increase the wealth of a nation, even though the exact reason for this varied between authors and over time.[7] The issue of international balance of payments, and international terms of trade, has since received a lot of attention from economists. A simple way of illustrating the balance of payments identity is through a standard equation (1):

$$X + K_i = M + K_o \qquad (1)$$

where X = exports
M = imports
K_i = capital inflows
K_o = capital outflows.

What the identity of equation 1 says is simply that exports and capital inflow must be equal to imports and capital outflow to establish a balance of payments equilibrium. A trade surplus must thus be balanced by the capital account, in the form of a net capital outflow, and vice versa for a trade deficit. Previous research on early modern Baltic trade has mainly focused upon one of the factors in the equation: Baltic exports (X) from the Baltic, which were of high economic value. Common knowledge has it that this trade largely was balanced through the capital account (K_o-K_i). The issue of imports (M) has

7 See for example Magnusson 1994, ch. 6.

however not received vey much attention in previous research. This issue will be the focus of the current paper.

Of the few studies that do look at the commodities imported to the Baltic, most of them focus upon individual countries' trade: Sven-Erik Åström, Henryk Zins and J.K. Fedorowicz have for example studied British trade on the Baltic during the 16th and 17th centuries, while Aksel Christensen and Jonathan Israel have studied Dutch trade in the Baltic around the same time.[8] Eli Heckscher, Thomas Lindblad and John Rice have all looked at Swedish international trade during the 18th century.[9] Kalevi Ahonen has studied the trade between America and Baltic Russia in the late 18th and early 19th centuries.[10] What many of these previous studies have in common is that they note that colonial goods played an increasingly important role in the balance of trade on the Baltic, particularly during the 18th century, even though few of them give this issue any more than passing attention. W.S. Unger is one of a few who have tried to look at the balance of trade for the whole Baltic during the 17th and 18th centuries, but does so in a rather qualitative manner.[11] Hans Christian Johansen has for his part tried to study quantitatively how the Western Europeans were able to pay for Baltic products. Johansen finds that salt and wine were important goods in this trade for a very long time. During the 18th century, however, Johansen argues that colonial goods became ever more important, and experienced the largest expansion of all commodities traded on the Baltic. Johansen furthermore estimates the balance of trade between the three major Western Europe nations and the Baltic over a period of one year (1787), and finds that in this year, colonial goods such as coffee and sugar indeed were important exports, most particularly to the French balance of trade.[12] Relying on some of this previous research, David Ormrod has recently argued that colonial commodities such as sugar, tobacco and Asian textiles (along with British manufactured goods) provided the British merchants with the purchasing power to pay for essential products from the Baltic.[13]

4.3. Definitions and delimitations

It is not entirely evident where to draw the limits of the Baltic region. In this paper, I will for simplicity let the issue primarily be decided by the main source material used, the Sound Toll accounts (see chapter 4.4 below). In

8 Åström 1963; Åström 1965; Zins 1972, Fedorowicz 1980; Christensen 1941; Israel 1989
9 Heckscher 1949, chap. 10; Lindblad 1982; Rice 1965
10 Ahonen 2005
11 Unger 1959
12 Johansen 1986
13 Ormrod forthcoming. This seems to be a development of the argument put forward in Ormrod 2003, ch. 3. The same argument has also been put forward in passing by Jacob Price (Price 1989).

Copenhagen was an important port in the Baltic during the period. Copenhagen's harbour, end of the 18th century. Gouache by T.E. Lønning. Reproduction: H&S Kronborg, Denmark (H&S 49:43).

these accounts, ships and goods are classified according to whether the ships carrying the goods pass through the Sound (*Öresund/Øresund*) to the Baltic Sea. Any port that is classified in this source as eastwards of the Sound is considered in this paper to belong to the Baltic region, and vice versa. Ports in Norway are therefore not counted in this paper as belonging to the Baltic. Since no Norwegian port is situated on the Baltic Sea, this does not seem to be any major problem for the paper. In the case of Denmark, Copenhagen was without a doubt the dominating port of the country. Not including ports on the western coast of Denmark might therefore not pose any major problem for the argument in the paper. In the case of Sweden, however, Gothenburg (some 200 kilometres to the north of the Sound) was a most important port – most especially for the export of iron, as well as imports of colonial goods. Leaving this port out might therefore give rise to some biased results in the case of Sweden. Data on imports to and exports from the port of Gothenburg have for this reason been included in the paper in order to give a more complete picture of the trade on the Baltic, despite the fact that the port of Gothenburg is not situated on the Baltic sea, strictly speaking.

This paper will focus upon the trade in one colonial commodity: sugar. Sugar is chosen since it was the single most valuable colonial commodity traded internationally, at least prior to the industrialisation of Europe. Patrick O'Brien has in a recent article estimated the commodity composition of "third world" exports

between 1830 and 1937. By 1830, sugar was still the single most important commodity traded, responsible for approximately 25 per cent of the total value of "third world" exports. The two second largest categories of products – textile fibres on the one hand, and coffee, tea, cacao and spices on the other – at the same time each accounted for approximately 15 per cent of the value of the exports, respectively.[14] In the case of sugar, however, this may also be considered to illustrate the trade in colonial commodities more broadly.

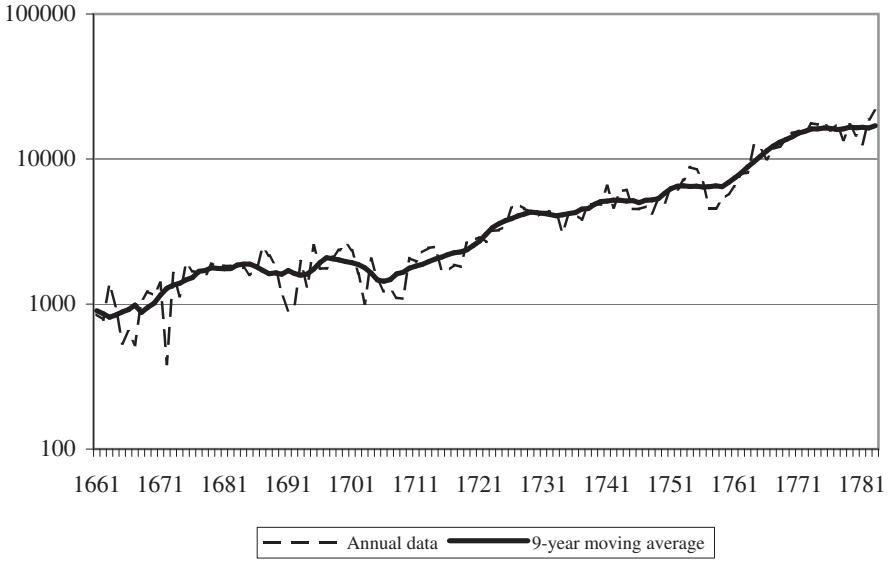
4.4. Sources for imports of sugar to the Baltic Sea

The data on goods transported through the Sound has been compiled by many scholars from the accounts of the Sound Toll, kept in the Danish National Archive. This toll was exacted on ships passing through the Sound, continuously from the 15th century until the middle of the 19th century. For much of the period of the Sound Toll, the accounts are only kept in raw format, i.e. accounts reporting the passing of every individual ship that had to pay the Sound tolls. No annual or monthly summaries of the goods carried are given in these raw accounts. By the early 20th century, Nina Bang and Knud Korst therefore tried to summarise these accounts in an impressive set of volumes.[15] Hans Christian Johansen has continued the work of Bang and Korst, assembling the raw data for the years 1784–1795.[16] From the accounts, it is obvious that the quantities of colonial commodities imported through the Sound increased significantly over time, particularly during the 18th century (see graph 4.1).

The Sound Toll accounts do not however give us a complete picture of the amounts of commodities imported into the Baltic, even though many scholars have recognised their value as primary source material. During certain periods of time, ships from specific nations were exempted from paying the toll. Some amounts of goods might also have been imported across land, through the Stecknitz canal (dating from medieval times) or the Eider canal completed in 1784, or through the Belt (*Store Baelt*).[17] Marianne Nilsson has also argued that the Sound Toll accounts probably is a less perfect source for products transported to the Baltic ports, than for products from them, since the goods transported to Baltic ports to a large extent were highly valuable luxuries – and thus more highly taxed, resulting both in greater incentives to smuggle goods and better opportunities to do so (because of the high value-to-quantity ratio), making them less visible in the accounts.[18]

14 O'Brien 2006, p 263.
15 Bang and Korst 1936–1953
16 Johansen 1983
17 Friis 1925-26; Christensen 1934-36
18 Nilsson 1962, p 39

Graph 4.1. Quantity of colonial commodities imported through the Sound, 1661–1783 (metric tons, logarithmic scale)



Source: Bang and Korst 1936–1953.

The quantity of goods officially passing the Sound is thus a minimum. What is striking, however, is that the source used both by Bang and Korst, and later by Johansen, seems to underestimate the total quantities passing through the Sound quite seriously, at least in the case of a colonial commodity such as sugar. This can be seen clearly if the data in the raw accounts is compared to another source: the Sound Toll Chamber Commodity Records (STCCR for short). During the period 1773–1856 the chamber in charge of collecting the Sound Toll did produce annual summaries of the goods passing through the Sound (Øresunds toldkammer – Vareregistre fra Nord- og Østersøen). This source material has been used recently in previous research by Kalevi Ahonen, but apart from this it largely seems to have remained unnoticed and unutilised by other scholars.[19] For the years the commodity records were assembled by the chamber, however, the material gives a quite detailed yet lucid view of the quantities of all goods passing the Sound.

The figures in the raw toll accounts (as reported in Bang and Korst and Johansen), and the Sound Toll Chamber Commodity Records of goods passing the Sound do not match at all, at least not in the case of a commodity such as sugar (see table 4.1a).

The Sound Toll Chamber Commodity Records thus report total quantities of sugar passing through the Sound almost twice as large as those reported in

19 Ahonen 2005

Table 4.1a. Quantity of sugar imported through the Sound, according to different sources

Years	1. Johansen's quantity of sugar (1000 pounds)	2. STCCR's quantity of sugar (1000 pounds)		3. Percentages (col 2 as a share of col 1)	
		Total	Excl DWI	Total	Excl DWI
1784–1789	118,172	209,693	118,279	177%	100%
1790–1795	71,030	146,908	73,562	207%	103%

Sources: Johansen 1986; STCCR (Sound Toll Chamber Commodity Records) 1784–1795.

Table 4.1b. Quantity of colonial goods imported through the Sound, according to different sources

Years	1. Bang and Korst's total quantity of all colonial goods (1000 pounds)	2. STCCR's quantity of sugar (1000 pounds)		3. Percentages (col 2 as a share of col 1)	
		Total	Excl DWI	Total	Excl DWI
1774–1778	163,178	164,176	80,952	100%	50%
1779–1783	169,599	227,753	83,254	134%	49%

Sources: Bang and Korst 1936–1953; STCCR (Sound Toll Chamber Commodity Records) 1774–1783

the source used by Johansen – in some individual years up to eight times as large. It is not possible to make a similar direct comparison with the data in Bang and Korst, since they lump together a range of colonial commodities under one heading instead of reporting data for individual commodities, but since the quantities of sugar reported in the Sound Toll Chamber Commodity Records alone surpass the total amounts reported by Bang and Korst for all colonial commodities (see table 4.1b), it seems reasonable to assume that the same problem applies to their data as to Johansen's.

How can we then explain the large difference between these sources? The reason is that goods shipped from the Danish West Indies, on Danish ships, were not included in the regular accounts of the Sound Toll, from 1783 onwards according to Johansen.[20] Johansen is thus very aware of the problem that colonial commodities are underestimated, but does not try to estimate how large the amounts missing are in the sources he uses. The goods these ships carry are however, for some reason, included in the Sound Toll Chamber Commodity Records, perhaps since the latter are compiled in order to show the amounts of goods passing through the Sound rather than keeping track of the amounts of revenue raised. This explains why the data reported by Johansen matches the data reported in the Sound Toll Chamber Commodity Records very well, if the quantities

20 Johansen 1986, p 128

imported from the Danish West Indies are subtracted from the latter (see table 4.1a). Since the quantities of sugar stated in the Sound Toll Chamber Commodity Records are significantly larger than the total quantities for all colonial goods stated in Bang and Korst's tables (see table 4.1b), it seems reasonable to assume that the problem of an under-estimation of colonial goods pre-dates the year of 1783 as well. It is thus not known when this problem of underestimation actually begins.[21]

Can we trust the data in the Sound Toll Chamber Commodity Records? It is not totally clear how the data in the records was assembled, but one possibility suggested by Hans Christian Johansen is that the Sound Toll Chamber assembled it partly from the data from the normal Sound Toll Accounts (the quantities transported on foreign ships), and partly from the local tolls in Copenhagen (the quantities transported on Danish ships).[22] Unfortunately, the preserved records from the local toll accounts in Copenhagen only seem to show imports from foreign countries (which the Danish West Indies weren't considered to be), and this author has therefore been unable to find any source from Copenhagen to directly verify the STCCR with.

There is however an alternate source that the STCCR might be compared to: the local toll accounts from the Danish West Indies (here shortened TADWI). The data reported on quantities exported to Denmark from the Danish West Indian colonies do correspond reasonably well with the data reported in the local colonial toll accounts from the Danish West Indies during the years for which we have overlapping data, as can be seen in table 4.2.

For sure, there are discrepancies between these two sources for individual years in table 4.2. Some of this might be due to the time lag between the two datasets – i.e. the time needed for transportation between the West Indies and Baltic. Some of it might also be explained by ships in reality heading for North American, or other European ports, while claiming officially to the local toll authorities in the Danish West Indies that they would be heading for the Danish capital of Copenhagen. The figures are in aggregate however not totally incompatible for the quantities of sugar officially exported from the Danish West Indies, to Copenhagen.

To summarise the discussion so far: the Sound Toll accounts have been used by many previous scholars to estimate the amounts of goods passing through the Sound. At least in the case of a colonial commodity such as sugar, the raw accounts used by previous scholars underestimate the total quantities imported through the Sound quite seriously. An alternative source

21 Westergaard (1917, pp 213-214) states that the Danish West Indian-Guinean company, which had a monopoly on the trade on the West Indies until 1754, received exemption from the Sound tolls in their revised charter of 1734. It is thus not impossible that the exemption from paying the Sound Toll had remained in place since then.

22 Suggested in personal correspondence 2008-10-07

Table 4.2. Quantities of sugar shipped from the DWI to Copenhagen, according to different sources

Years	1. Export of sugar from St Croix, heading for Copenhagen, according to TADWI (1000 pounds)	2. Sugar from the DWI passing the Sound, heading for Copenhagen, according to STCCR (1000 pounds)	C. Col 1 as a share of col 2
1774	18,500	13,300	139%
1775	16,800	18,200	92%
1776	17,600	16,800	105%
1777	16,600	16,000	104%
1774–1777	*69,500*	*64,300*	*108%*

Sources: TADWI (Toll Accounts Danish West Indies) and STCCR (Sound Toll Chamber Commodity Records) 1774–1777.

– annual reports produced by the Sound Toll Chamber from the late 18th century onwards – shows that the amounts of sugar passing through the Sound may have been almost twice as high as the data in the raw accounts show. The discrepancies are most certainly due to the fact that Danish imports direct from the Danish West Indian colonies were excluded from the raw Sound Toll accounts, but for some reason were included in the annual records of goods passing the Sound. It seems reasonable to assume that other colonial commodities also have been underestimated for similar reasons. The exact quantities of those goods actually imported do however remain to be shown, an issue that is beyond the scope of this paper. If the amounts of sugar in the Sound Toll Chamber reports, claimed to be arriving from the Danish West Indies, are compared to the quantities reported in the local toll material from the Danish West Indies, reported as heading for Copenhagen, the figures correspond reasonably well for the few years for which we have overlapping data. We can thus be quite certain that the data reported in the Sound Toll Chamber Commodity Records (STCCR) are reliable.

4.5. Baltic share of total world production

Seen from the perspective of the total Atlantic sugar trade, the share of sugar going to the Baltic was probably not overwhelming during the early expansion of the sugar trade. Noel Deerr has published rough estimates of the size of the total world production of sugar from the 16th to the 19th centuries. There are many large gaps in Deerr's estimates with important areas of production missing many years, but for a few years most of the important areas of production are included. This data allows us to conduct a rough estimate of the share of sugar going to the Baltic. Data is shown in table 4.3.

Table 4.3. Baltic share of world consumption of sugar

Year	1. World production (tons)	2. Baltic imports (tons)	3. Baltic share of world production
1630	20,400	189	1%
1670	27,990	574	2%
1710	59,509	1,555	3%
1760	110,044	4,390	4%
1776	202,675	16,383	8%
1840	676,508	43,892	6%

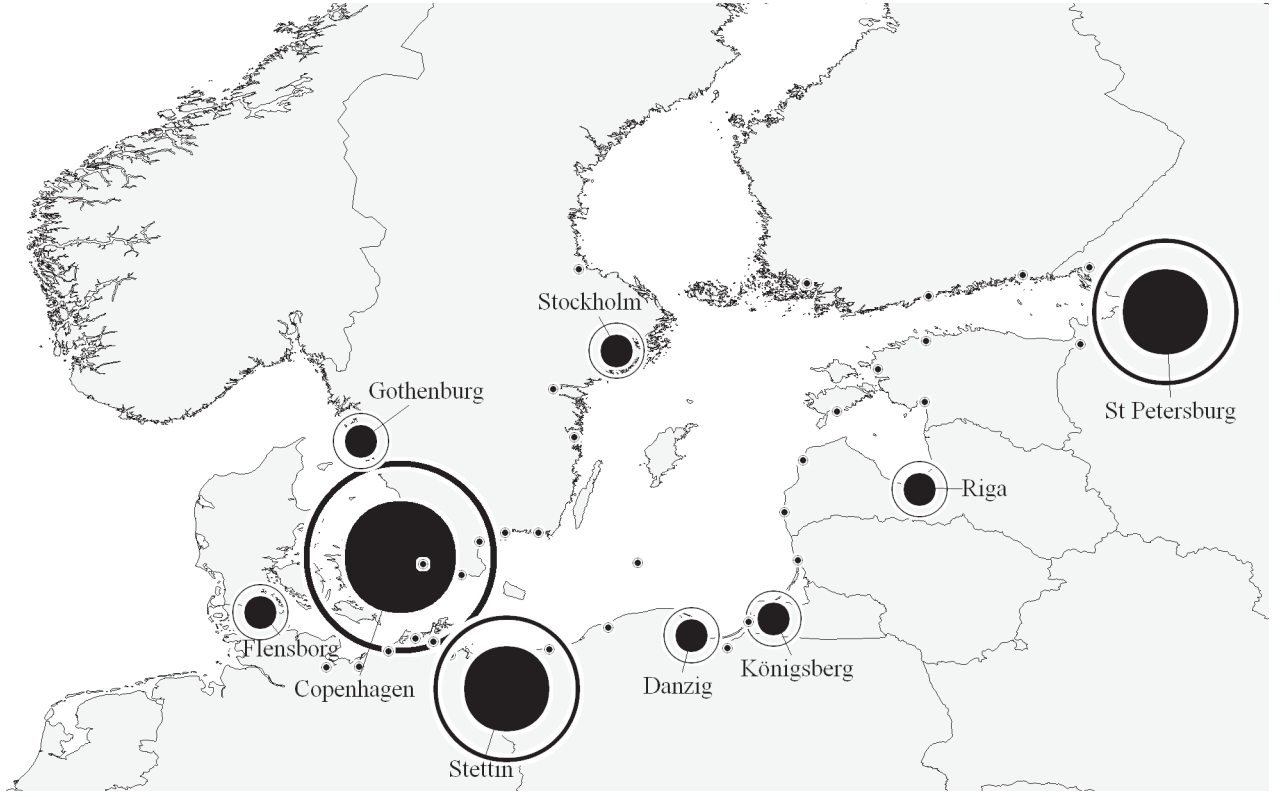
Source: World production of sugar compiled from tables in Deerr 1949. Baltic imports: the year 1630 from Bang and Korst 1906–1933; the years 1670–1760 from Bang and Korst 1936–1953; the years 1776–1840 from STCCR 1776–1840. Data for Gothenburg from Lind 1923, table 1.
Note: Following what has been argued previously in this paper, it is assumed that the figures in Bang and Korst 1936–1953 underestimate the quantities of colonial commodities in the two years of 1710 and 1760, when the DWI had started to produce colonial sugar. It is furthermore assumed that sugar constituted approximately half the quantity of all the imported colonial commodities reported in Bang and Korst. No data is available from Gothenburg for the years 1630–1710, but the amounts ought to have been fairly negligible.

Even though the estimates of world production reported by Deerr must be treated with a great deal of caution, they can at least give us a rough hint at the size of the Baltic market share of the international sugar trade. As can be seen in table 4.3, the share of sugar going to the Baltic was quite negligible during the 17th century: only 1–2 per cent of estimated total world market production. During the 18th century, the Baltic market would however become quite important to the international sugar trade – the Baltic market share grew significantly, peaking by the late 18th century when the area imported approximately 8 per cent of estimated total world market production.

4.6. Baltic ports in the sugar trade

From the Sound Toll Chamber Commodity Records we can also get a rough picture of what the patterns of the trade in colonial commodities looked like in the Baltic. A few ports around the Baltic Sea imported quite substantial amounts of colonial commodities, and a range of other ports imported at least some small amounts. If we look at the single commodity of sugar, three ports around the Baltic Sea were responsible for a dominant share of the total gross quantities imported: Copenhagen, Stettin and St Petersburg (see graph 4.2). During the period 1785–1789, for example, these three ports together accounted for 90% of all the imports through the Sound. Copenhagen alone accounted for almost half of all imports through the Sound. A couple of other ports – Stockholm, Riga, Dantzig, Gothenburg, Königsberg and Flensburg – also imported smaller amounts (together some 8% of total

Graph 4.2. Imports of sugar to the Baltic (tons), 1785–1789.



Source: STCCR 1785–89; CoC (Swedish Chamber of Commerce) 1785–89.
Note: the underlying data is presented in the form of a table in appendix A.4.2. The map shows modern-day borders between countries.

Table 4.4. Quantities of sugar imported to and re-exported from Copenhagen, 1774–1794

	1. Imports (1,000 pounds)	2. Re-exports (1,000 pounds)	3. Percentage re-exported
1774–1779	102,187	17,753	17%
1780–1784	155,706	69,236	44%
1785–1789	78,620	22 ,928	29%
1790–1794	67,000	18,466	28%
Total	*403,514*	*128,385*	*32%*

Sources: STCCR 1774–1794 and CTBCR 1774–1794.

imports through the Sound), while the imports into some thirty other ports around the Baltic Sea are negligible even if taken together.

The quantities imported to Copenhagen came almost exclusively from the Danish colonies in the West Indies. The Danish presence on the islands was first established in the late 17th century, but development of plantations intensified from the 1730s onwards when Denmark acquired the comparatively large Caribbean island of St Croix. All the other ports around the Baltic Sea bought their imports from the major European colonial powers in Western Europe. Prior to the 1790s, most of these imports came from French ports. After the outbreak of the French Revolutionary Wars, and the revolution in Haiti, French merchants did not manage to continue re-exporting colonial commodities. The position was therefore, for a time, filled by British – and later on also American – ports.

While both Stettin and St Petersburg had large hinterlands and most probably imported sugar primarily to serve the domestic market, Copenhagen's imports of sugar also enabled the re-exporting of quite significant quantities. During the late 18th century, Danish merchants (with the support of the Danish state) had the ambition of making Copenhagen a staple port for colonial commodities for the Baltic Sea region, much as Amsterdam had been for large parts of northern Europe earlier.

Since previous research has underestimated the total amounts of sugar imported, and the imports from the Danish West Indies in particular, Copenhagen's role as an entrepôt for trade in colonial goods during the late 18th century has also been underestimated to a large extent. Looking at the available statistics, the Danish strategy was successful at least for a period during the late 18th century. Prior to the American Revolution, the amounts of sugar re-exported from Copenhagen seem negligible. From the time of the

American Revolution to the end of the 19th century, however, Copenhagen re-exported approximately a third of the gross quantities imported, as can be seen in table 4.4.[23] Most of this was re-exported to other ports in the Baltic.

Copenhagen's role as a staple port was however very dependent on the historical context in which it tried to operate. The share of sugar re-exported peaked during times of conflict in Europe, such as during the last years of the American Revolutionary Wars. During periods of peace among the core powers in Europe, the amounts re-exported from Copenhagen decreased significantly. When Denmark became involved in the Napoleonic Wars, the West Indian colonies became occupied by British forces – a fact that seems to have spelled the end for Copenhagen as a staple port for the Baltic market in these goods.

4.7. How to pay for Baltic exports

How important were then the colonial goods for the Western European balance of payments on the Baltic? In this paper, I look at the development over a period of time, in contrast to Johansen, who only studies the balance of payments in the trade on the Baltic in one single year (the year of 1787).[24]

In graph 4.3, the total value of the sugar imported to the Baltic is reported, in the form of calculations of how much the sugar would have been worth on the Amsterdam Bourse. To put the imports of sugar into perspective, the potential value (on the Amsterdam Bourse) of grain (rye, wheat, barley and oats) and bar iron exported from the Baltic is also reported in the graph. The graph thus shows what the sugar would have been worth, if all of the Baltic imports had been bought at prices similar to the ones on the Amsterdam Bourse, and vice versa for grain and bar iron.

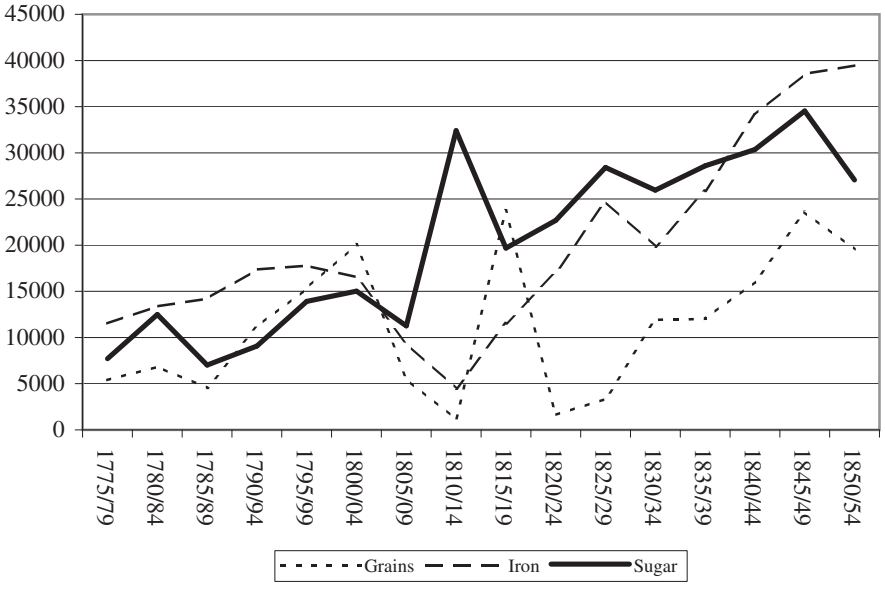
Even though the quantities of a colonial commodity such as sugar are quite small, the total loads are very valuable because of the high relative price of sugar. In this respect, colonial sugar was quite similar to imports of goods such as tea from Asia (a large proportion of imports of tea was however re-exported in the opposite direction to sugar, for example from Sweden to Western Europe).[25] Throughout the 18th century, imports of colonial commodities to the Baltic economy had increased significantly. As can be seen in graph 4.3, the value of

23 Retained imports decrease quite significantly following the end of the American Revolutionary Wars. It might be possible that the data from the early years in the table overestimates the imports somewhat, or underestimates the re-exports. It is however not immediately evident why this would be so, if that is the case: imports would if anything be underestimated (in order to avoid paying local tariffs), and re-exporters were given a subsidy from the Danish government, and ought therefore to have reported officially any volumes re-exported (thus at least not underestimating the volumes re-exported).

24 Johansen 1986

25 Müller 2003

Graph 4.3. Hypothetical value on the Amsterdam Bourse of net amounts of sugar, grain and bar iron, traded on the Baltic, 1775–1854 (1000 guilders, 5-year average values)



Sources: see appendix A.4.1.
Note: the values are calculated based on the net imports of sugar to the Baltic, and net exports of grain and iron from the Baltic. During the period 1818–1830, many years are missing in the STCCR. The data for these specific years ought therefore to be interpreted with certain caution. The sudden peak in sugar imported during the period 1810–1814 is driven by abnormal imports into Gothenburg in the year of 1810 especially, i.e. during the Continental Blockade. Although these amounts are not recorded in the Swedish statistics as re-exported, it is possible that this actually was the case.

sugar imported to the Baltic Sea region was quite considerable by the end of the century – with the exception of some odd years, the value of sugar alone was almost equal to the total value of the four most important grains exported from the Baltic at the same time, or some 50–90 percent of the total value of bar iron exported from the Baltic, even during the period when the export of grain and iron from the Baltic peaked (in the last decades of the 18th century).[26]

Graph 4.3 shows data for all sugar imported (net) to the Baltic. To see how much the sugar re-exported from Western Europe and its colonies was worth, we need to discount the quantities of sugar imported directly from the Danish West Indian colonies (and later, directly from the Americas or Asia) from the calculation. The value of sugar re-exported from Western Europe to the Baltic is shown in table 4.5, relative to the value of the key Baltic exports.

The value of sugar re-exported from Western Europe alone is still considerable: approximately 3.4 million guilders in 1775/79, rising to over 12 million

26 Evans and Rydén 2007, chapter 4; van Tielhof 2002, chapter 2.

Table 4.5. Value of sugar re-exported from Western Europe to the Baltic, relative to the value of key Baltic exports (1775–1854, 5-year averages).

	Sugar/grain	Sugar/iron
1775/79	64%	30%
1780/84	54%	28%
1785/89	80%	26%
1790/94	37%	24%
1795/99	25%	22%
1800/04	33%	41%
1805/09	101%	60%
1810/14	599%	149%
1815/19	48%	98%
1820/24	..	..
1825/29	..	..
1830/34	58%	35%
1835/39	61%	28%
1840/44	54%	25%
1845/49	54%	33%
1850/54	42%	21%

Source: see appendix A.4.1.

by the middle of the 19th century, a value equivalent to approximately half of all the Baltic grain exports or a fourth of all iron exports. As was noted above, Hans Christian Johansen calculates the trade balance of the three major West-European nations' trade with the Baltic for the year 1787. Johansen's figures for the value of sugar (3.8 million guilders) are equal to the average figure for the years 1785/1789 calculated by this author, if we exclude the quantities imported directly from the Danish West Indies to Copenhagen, and the quantities going to Gothenburg (which are not included in Johansen's calculations). The corresponding figure for the value of bar iron exported from the Baltic is however significantly lower in Johansen's estimate: 8.1 million guilders as compared to 11.9 million guilders calculated above.[27] It is unclear exactly what price-data Johansen uses for his calculations, but if his figures are more correct than the data in the table above, the colonial goods were thus even more important, relative to other goods, than suggested by the calculations in this paper. As a comparison, Attman estimates the amounts of bullion needed for the Western European trade on the Baltic around the 1780s at some 7.5 million guilders annually.[28] The imports of sugar alone thus constituted a significant share in the balance of payments of the trade on the Baltic.[29]

27 Johansen 1986, pp 137-138

28 Attman 1983, p 91

29 This is pretty similar to the picture shown by Peter Kriedte for the period at the end of

4.8. Disaggregating the Baltic trade

As we have seen in chapter 4.6 of this article, a large share of the imports of sugar went to Copenhagen in Denmark. Denmark did not however export the bulk commodities discussed in this paper, such as grain or iron. The bulk commodities that were exported from the Baltic mainly came from other ports in the region: iron from Sweden and Russia, and grain from the south-eastern ports of the Baltic. In order to give a more nuanced picture of the trade in question, it is necessary to disaggregate the data geographically. In graphs 4.4a–4.4b we show the value of imported sugar to, and exported iron from, Sweden and Baltic Russia respectively.

In graph 4.4a, we see that in the case of Sweden, exports of iron were significantly more valuable than imports of colonial sugar, throughout the period. Since Sweden imported quite small amounts of sugar in total during this period, this is not surprising. In the case of Baltic Russia (graph 4.4b), however, the picture is somewhat different. Prior to the Napoleonic Wars, exports of iron were worth significantly more than imports of sugar. During the first half of the 19th century, however, sugar imports had grown significantly, at the same time as Russian iron exports had stagnated. The effect was that the value of sugar imported to Baltic Russia far exceeded the value of the iron exported.

This picture is pretty much confirmed if we look at individual merchant houses, where quite a large degree of specialisation seems to have been the general rule by this time. The large exporters in Stockholm were for example quite specialised in exports, not importing very much goods to Sweden. For the main importers in Stockholm, on the other hand, exports also played a crucial role for the firms' business.[30] In the case of Denmark, a merchant such as Niels Ryberg was highly involved in both exports of Danish commodities, and imports (and re-exports) of Baltic, West European and colonial commodities.[31]

Let us now turn briefly to the other end of the commodity-chain, the ports that (re-)exported sugar. The main sugar producer for the Baltic market was for a long period of time the Danish West Indies. Among the Western European ports, the main re-exporters of sugar were the French ports during the 18th century. Only with the outbreak of the French and Haitian revolution does British colonial sugar acquire a market in the Baltic. This is a short-lived trend: following the end of the Napoleonic Wars, direct trade in sugar is established

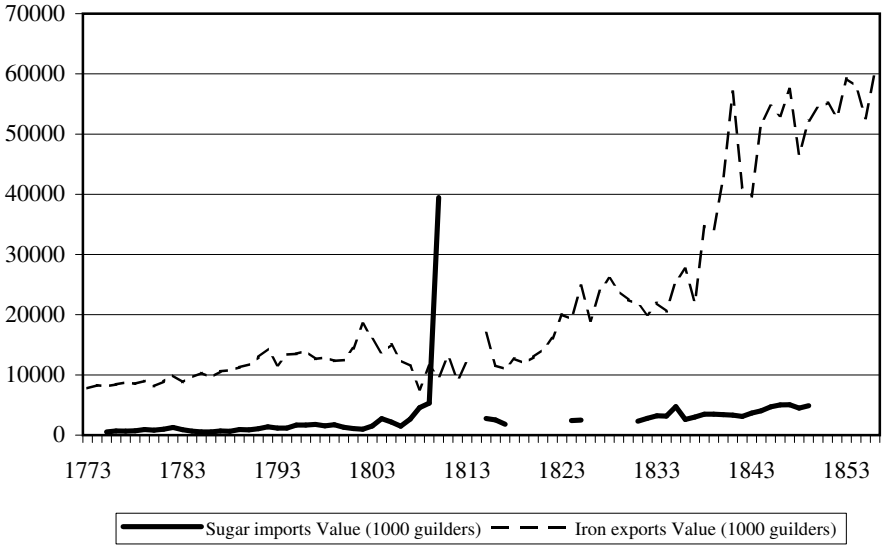
---

the 16th century, when European imports of spices from Asia or precious metals from the Americas were worth significantly more than all the European imports of cereals from the Baltic, even though the quantity of the former was only a small fraction of the latter, see Kriedte 1980, p 41.

30 Samuelsson 1951, chap III.1. See also Müller 1998, chap 4; Nyberg 2006, pp 55-58.

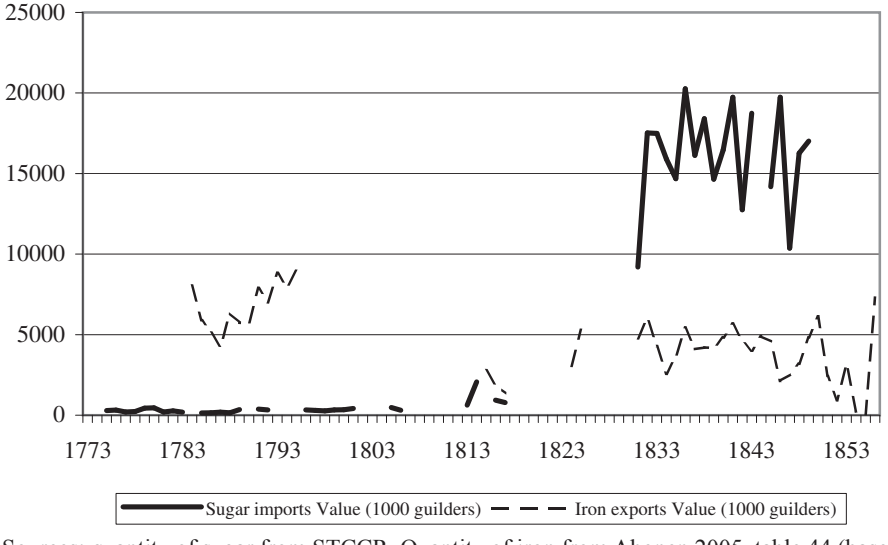
31 Rasch 1964, chap. 7-12.

Graph 4.4a. Value of sugar imported to, and iron exported from, Sweden 1773–1856 (1000 guilders)



Sources: quantity of sugar from Kommerskollegium, Kammarkontoret, Årsberättelser Utrikeshandel, series 2 and 4. Quantity of iron from SCB 1972, tables 1.2 and 2.2.
Note: For calculation of the value, see appendix A.4.1.

Graph 4.4b. Value of sugar imported to, and iron exported from, Baltic Russia 1773–1856 (1000 guilders)



Sources: quantity of sugar from STCCR. Quantity of iron from Ahonen 2005, table 44 (based upon the STCCR).
Note: For calculation of the value, see appendix A.4.1.

between the Baltic and the Americas, while British re-exports to the Baltic stagnate.[32] The picture is pretty much the same if we look at data on trade with particular countries, such as Sweden.[33]

The trade on the Baltic was conducted by a number of different actors, and over a number of different routes. The geographical patterns also change with time. The trade on any one route was certainly not as balanced as may be suggested by the aggregate data. Paying for Baltic products still required monetary transfers in the form of bullion, or monetary instruments such as bills of exchange, for an individual exchange. Indirectly, however, and analysed on a systemic level, colonial commodities from several countries in Western Europe contributed to clearing the balance of payments for trade on the Baltic, in a way that reduced the need for net capital inflows.

The aggregated data on the balance of trade are to be treated with a deal of caution, and are primarily meant to serve as illustrations of the relative values of the imported colonial commodities on an aggregate level. Only to a limited extent do they reflect real combinations of trade. Atlantic sugar, as well as other colonial commodities, did however become an ever more important piece of the puzzle in the balance of payments of a complex network of trade on the Baltic.

4.9. Discussion

This paper has studied the economic importance of colonial commodities in the trade on the Baltic, an issue that has been seriously underestimated in previous research. Previous scholars studying the trade on the Baltic have mainly focused upon exports of strategic goods from the Baltic. To the extent that scholars have been interested in the other side of the balance of payments equation, most attention has been paid to the capital inflow (in the form of bullion) into the Baltic. Imports of goods to the Baltic have received very little attention previously.
This paper has tried to contribute to this discussion, focusing upon the imports of an important "new luxury", namely sugar. New archival research has shown that the quantity of sugar traded on the Baltic by the late 18th century was perhaps double what was previously thought. It seems reasonable to assume that other colonial goods have been underestimated on a similar scale, although the exact degree remains to be shown in the individual trades. This underestimation has also led to underestimates of the role that Copenhagen had as an entrepôt for colonial goods. For the international sugar trade, furthermore, the Baltic market became ever more important during the 18th century – possibly peaking by the 1770s with a market share of approximately 8 per cent of total world market production.

32 STCCR, data not shown.
33 Rönnbäck 2007

The Baltic exports were extremely important as inputs during the early years of the industrial revolution, particularly in Britain: some 60% of all flax, 80% of all hemp and 98% of all the iron imported to Britain during the period 1784–1856 came from the "North" (i.e. the Baltic, and other ports in Scandinavia and Russia). The "Northern" dominance in British trade with many strategic inputs was even more pronounced if one only looks at the period prior to the Continental Blockade of the early 19th century.[34]

Common knowledge, highly influenced by Artur Attman and others, has been that Baltic exports were largely paid for in bullion during the Early Modern period. This paper has however shown that over time the Baltic became less of a net exporting region. The trade with single ports or by individual merchant houses was undoubtedly seldom as neatly balanced as aggregated data might lead us to believe. The balance of payments for the trade on the Baltic was however increasingly cleared through re-exports of colonial commodities from the core colonial powers in Europe, particularly so during the late 18th and early 19th century. Growing imports into the Baltic might therefore have diminished the need for bullion as a form of net payment for exports. Sugar alone, re-exported from Western Europe, was by the late 18th and early 19th centuries able to pay for approximately half of all the grain or iron exported from the Baltic by the same time.

Colonial commodities' contribution to the Western European balance of trade on the Baltic was thus quite considerable. The issue is not limited to one of quantity alone. Jacob Price has noted that re-exports of colonial goods were quite well received imports in many European countries. This stands in sharp contrast to the export of manufactured goods, on which many countries imposed strict protectionist policies and support for domestic production in order to substitute it for imports.[35] There was furthermore another issue at hand: if the trade was only conducted one-way, it had to be more profitable than if trade could be conducted in several directions, all else equal. That is to say, if a merchant could find goods to freight profitably both to and from the Baltic that would most certainly be more profitable than having to carry ballast in one direction. As Louis Sicking and others have noted, the trade on the Baltic was normally conducted with quite low profit margins, so that even small amounts of valuable goods could make a large difference to the trade: "one small profit could help to carry the other small profit".[36] The trade in luxuries could also in this regard be of vital importance for making the trade in staples viable.

A recurring theme in Jonathan Israel's book *Dutch primacy in world trade* is the contrast between bulk and rich trades. Historians have overestimated the importance of the bulk trades, while underestimating the importance of

34 Davis 1979, tables 57-64.
35 Price 1989
36 Sicking 2007, p 128

the rich trades, at least in the case of the Netherlands, Israel argues.[37] To many contemporary observers – one prominent example is the French minister Colbert – it seemed much more important to capture the rich trades in sugar, spices and other more luxurious products, rather than the bulk trades. Israel even goes on to argue that it actually was "precisely the rapid strides that the Dutch were […] making in the southern rich trades [by the late 16th and early 17th centuries] which acted as a lever of commercial penetration in the Baltic, opening up that market to the Dutch entrepôt."[38] If Israel is correct, then the development of the international markets might also help to explain why the Dutch merchants started to lose their primacy in the Baltic trade by the 18th century: by this time, both Britain and France had had time to develop colonies (and thus produce "rich trade" colonial goods) of their own, and British and French merchants were thus able to wield the same leverage that previously had given the Dutch primacy over the Baltic trade. In a sense, the colonial commodities thus came to play a similar role for the Western European trade on the Baltic as opium would play in their trade with Asia later on.[39] As the trans-Atlantic commodity chain in sugar started to reach deeper into the Baltic, the Baltic countries also became ever more integrated in the trade with the colonial system established by core European powers. Slave-produced sugar from the plantation complex of the Americas became one of the more important commodities of Baltic trade during the late 18th century. To the extent that colonial commodities such as sugar enabled the trade in strategic export goods, the colonial trade between the Atlantic and the Baltic also contributed to the European industrial revolution.

37 Israel 1989, p 10.

38 Israel 1989, p 50. See also Ormrod 2003, ch. 3, where he generally seems to agree with Israel.

39 See for example Tan 1978, chap. 4.

Appendix A.4.1: Calculating the value of Baltic trade

In order to give an approximation of the value of the goods traded on the Baltic, this author has opted to calculate the hypothetical value of what the goods would have been worth on the Dutch market (i.e. the Amsterdam Bourse), had all Baltic imports been bought there and all Baltic exports vice versa sold there. Of course, this was not the case in reality – much of the imports of colonial sugar originated in France, as was mentioned in the paper, and a large part of the exports from the Baltic were sold to the British market. We do however have less detailed price data from both Britain and France than we have from the Netherlands. Trying to sum up the values of the goods going to or coming from different countries by converting different currencies into one using exchange rates would add a second factor of uncertainty into the calculation. The assumption in this paper is thus that the price differences between the three major Western European markets were at least not so big as to make a simplified calculation such as the one undertaken totally fruitless.

An alternative would also have been to look at the balance of trade at the point where the goods changed hands, which to a large extent took place in the Baltic ports. Unfortunately, we have even less complete price data from the Baltic than we do from most Western European countries. Calculating the value of the goods in the Netherlands gives rise to a higher calculated value for Baltic exports (since we make calculations based on c.i.f. prices), and lower value for Western European exports (since they are based on what could be approximated to f.o.b. prices), than would have been the case had we instead chosen to study the relative values in the Baltic ports (where the Baltic exports would have been calculated using f.o.b. prices, and the colonial commodities using c.i.f. prices). The calculations thus do not exaggerate the relative value of colonial commodities imported to the Baltic, but they need to be treated as rough approximations rather than established facts.

The quantities of goods traded in all cases relate to goods passing through the Sound taken from the STCCR (Sound Toll Chamber Commodity Records), calculating the net imports to or net exports from the Baltic[40] This is supplemented by Swedish data on imports to and exports from the port of Gothenburg [41] In the case of grain, the data from the STCCR fit rather well with the data reported in Bang and Korst.[42] The quantities are converted into metric measures using data in Carlsson 1997: a Danish pound (*pund*) is thus equal to 0.5 kilogram, and a ship pound (*skibpund*) is equal to 320 Danish

40 STCCR 1773-1856.
41 CoC 1773-1856.
42 Bang and Korst 1936-1953

pounds, i.e. 160 kg. A barrel (*tønde*) of grain is equal to 139 litres of grain. A Swedish pound (*skålpund*) is equal to 0.425 kg, while a ship pound (*skeppund*) is 400 Swedish pounds, i.e. 170 kg. A Swedish barrel (*tunna*) of grain is equal to 146.6 litres of grain.

The values are calculated using the price data from the Amsterdam Bourse provided by N.W. Posthumus, complemented by the price data assembled by Arthur van Riel for the 19th century.[43] In order not to exaggerate the value of colonial sugar, the price of sugar is calculated using the Dutch price for muscovado, i.e. unrefined, sugar.[44] Quite large amounts of the sugar re-exported from France were most certainly of a semi-refined quality (so-called clayed sugar). The value of the sugar imported to the Baltic can in this regard therefore be seen as a minimum value, so as not to exaggerate the value of the commodity. In the case of bar iron, the Dutch price for Swedish bar iron is used, even though all bar iron exported from the Baltic was not of this quality.[45] This might overstate the value of the iron exported somewhat, yet again not to exaggerate the relative value of colonial commodities. The value of grain, finally, is calculated from the exports of rye, wheat, barley and oats. The prices used are the Dutch average prices for both Prussian and Polish rye and wheat, along with prices for Frisian barley and forage oats[46].

43 Posthumus 1943, van Riel 2007
44 Posthumus 1943, table 57
45 Posthumus 1943, table 168
46 Posthumus 1943, tables 1, 2, 7, 8, 11 and 14.

Appendix A.4.2: Sugar imported to the Baltic

Table A.4. Gross imports of sugar through the Sound and to Gothenburg 1785/89 (sorted by quantity imported, in decreasing order)

Port, Region	*Metric tons*
Copenhagen, Denmark	7,862
Stettin, Pommerania	3,892
St Petersburg, Russia	3,656
Stockholm, Sweden	415
Königsberg, Prussia	362
Danzig, Pommerania	295
Gothenburg, Sweden	261
Riga, Latvia	165
Flensburg, Schleswig-Holstein	117
Turku, Finland	61
Wismar, Pommerania	53
Helsingör, Denmark	36
Lübeck, Schleswig-Holstein	29
Baltiysk, Russia	26
Norrköping, Sweden	21
Rostock, Pommerania	20
Gävle, Sweden	18
Stralsund, Pommerania	16
Karlshamn, Sweden	9
Liepaja, Kurland	8
Tallinn, Estonia	4
Klaipeda, Prussia	4
Malmö, Sweden	4
Greifswald, Pommerania	4
Elblag, Prussia	4
Viborg, Finland	2
Hamina, Finland	1
Unknown destination (“Baltic Sea”)	1
Kolobzreg, Pommerania	1
Ventspils, Latvia	1
Karlskrona, Sweden	0.3
Kuressaare, Estonia	0.3
Narva, Estonia	0.3
Pärnu, Estonia	0.2
Slupsk, Pommerania	0.1
Åhus, Sweden	0.1
Västervik, Sweden	0.05
Helsinki, Finland	0.03
Haapsalu, Estonia	0.03
Barth, Pommerania	0.02
Ystad, Sweden	0.002

Source: STCCR 1785–89 and CoC 1785–89

Sources and literature

Primary source materials

CoC: Swedish Chamber of Commerce (*Kommerskollegium*). Annual reports on foreign trade (*Årsberättelser Utrikeshandel*), series 2 and 4, 1773–1856. Swedish National Archive (*Riksarkivet*).

CTBCR: Copenhagen Toll Booth Commodity Records 1763–1794 (Alphabetiske vareregistre over in- og udførte varer ved Københavns toldbod 1763–1794). General customs chamber (*Generaltoldkammeret*), Danish chamber for consumption (Dansk konsumtionskontor). Danish National Archive (*Rigsarkivet*).

STCCR: Sound Toll Chamber Commodity Records (*Øresunds toldkammer*), Commodity Records from the North- and Baltic Sea, 1773–1856 (*Vareregistre fra Nord- og Østersøen 1773–1856*). Danish National Archive (*Rigsarkivet*).

TADWI: Toll Accounts from the Danish West Indies (*Toldregnskaber Dansk Vestindien*), series from St Croix, St Thomas, Christiansted and Frederiksted. Revised accounts (*Reviderede regnskaber*). Danish National Archive (*Rigsarkivet*).

Other unpublished sources

van Riel, Arthur (2007): *Prices of consumer and producer goods, 1800–1913.* Datafile available on the IISG website: http://iisg.nl.

Published literature

Ahonen, Kalevi (2005): *From sugar triangle to cotton triangle. Trade and shipping between America and Baltic Russia, 1783–1860.* University of Jyväskylä, Jyväskylä.

Attman, Artur (1979): *The struggle for Baltic markets. Powers in conflict 1558–1618.* Kungl. Vetenskaps- och vitterhets-samhället, Göteborg.

Attman, Artur (1983): *Dutch enterprise in the world bullion trade 1550–1800.* Kungl. Vetenskaps- och vitterhets-samhället, Göteborg.

Attman, Artur (1986a): "Precious metals and the balance of payments in international trade 1500–1800" in Wolfram Fischer, Marvin McInnis and Jürgen Schneider (eds, 1986): *The emergence of a world*

economy 1500–1914. Part I: 1500–1850. Franz Steiner Verlag, Wiesbaden.

Attman, Artur (1986b): *American bullion in the European world trade 1600–1800.* Kungl. Vetenskaps- och vitterhets-samhället, Göteborg.

Bang, Nina and Knud Korst (1906–1933): *Tabeller over skibsfart og varetransport gennem Øresund 1497–1660.* Gyldendal, København.

Bang, Nina and Knud Korst (1936–1953): *Tabeller over skibsfart og varetransport gennem Øresund 1661–1783.* Gyldendal, København.

Carlsson, Albert (1997): *Med mått mätt. Svenska och utländska mått genom tiderna.* LTs förlag, Stockholm.

Christensen, Aksel (1934–36): "Anmeldelser: Tabeller over Skibsfart og Varetransport gennem Øresund 1497–1660. Ved Nina Ellinger Bang." *Historisk tidsskrift*, vol 10, no 3, pp 112–130.

Christensen, Aksel (1941): *Dutch trade to the Baltic about 1600. Studies in the Sound Toll register and Dutch shipping records.* Einar Munksgaard, Copenhagen.

Davis, Ralph (1979): *The industrial revolution and British overseas trade.* Leicester university press, Leicester.

Deerr, Noel (1949): *The history of sugar.* 2 vols. Chapman and Hall, London.

Evans, Chris and Göran Rydén (2007): *Baltic iron in the Atlantic world in the eighteenth century.* Brill, Leiden.

Faber, J. A. (1988): "The decline of the Baltic grain trade in the second half of the seventeenth century" in W.G. Heeres et al (eds, 1988): *From Dunkirk to Danzig. Shipping and trade in the North Sea and the Baltic, 1350–1850.* Uitgeverij Verloren, Hilversum.

Fedorowicz, J.K. (1980): *England's Baltic trade in the early seventeenth century. A study in Anglo-Polish commercial diplomacy.* Cambridge university press, Cambridge.

Findlay, Ronald and Kevin O'Rourke (2007). *Power and Plenty. Trade, war, and the world economy in the Second Millenium.* Princeton university press, Princeton.

Friis, Astrid (1925–26): "Bemærkninger til vurdering af Øresundstoldregnskaberne og principerne for deres udgivelse", *Historisk tidsskrift*, vol 9, no 4, pp 109–182.

Glamann, Kristof (1971): "European trade 1500–1750" in Carlo Cipolla (ed, 1974): *The Fontana economic history of Europe. The sixteenth and seventeenth centuries.* Fontana.

Glamann, Kristof (1977): "The changing pattern of trade" in E.E. Rich and C.H. Wilson (eds, 1977): *The Cambridge Economic History of Europe. Vol. 5: The economic organization of early modern Europe.* Cambridge university press, Cambridge.

Heckscher, Eli (1944): "Europas kopparmarknad och den svenska kopparen" in Eli Heckscher (1944): *Historieuppfattning: materialistisk och annan.* Bonniers, Stockholm.

Heckscher, Eli (1949): *Sveriges ekonomiska historia från Gustav Vasa. Vol 2:2.* Albert Bonniers förlag, Stockholm.

Heeres, W.G. et al (eds, 1988): *From Dunkirk to Danzig. Shipping and trade in the North Sea and the Baltic, 1350–1850.* Uitgeverij Verloren, Hilversum.

Högberg, Staffan (1969): *Utrikeshandel och sjöfart på 1700-talet. Stapelvaror i svensk export och import 1738–1808.* Bonniers, Stockholm.

Israel, Jonathan (1989): *Dutch primacy in world trade 1585–1740.* Clarendon press, Oxford.

Johansen, Hans Christian (1983): *Shipping and trade between the Baltic area and Western Europe 1784–1795.* Odense University press, Odense.

Johansen, Hans Christian (1986): "How to pay for Baltic products?" in Wolfram Fischer, Marvin McInnis and Jürgen Schneider (eds, 1986): *The emergence of a world economy 1500–1914. Part I: 1500–1850.* Franz Steiner Verlag, Wiesbaden.

Kriedte, Peter (1980): *Peasants, landlords and merchant capitalists. Europe and the world economy 1500–1800.* Berg publishers, Leamington Spa.

Lemmink, J.Ph.S. and J.S.A.M. van Koningsbrugge (eds, 1990): *Baltic affairs. Relations between the Netherlands and North-Eastern Europe 1500–1800.* Institute for northern and eastern European studies, Nijmegen.

Lind, Ivar (1923): *Göteborgs handel och sjöfart 1637–1920 : historisk-statistisk översikt.* Göteborg.

Lindblad, J. Thomas (1982): *Sweden's trade with the Dutch republic 1738–1795.* van Gorcum, Assen.

Magnusson, Lars (1994): *Mercantilism. The shaping of an economic language.* Routledge, London.

Müller, Leos (1998): *The merchant houses of Stockholm, c. 1640–1800. A comparative study of early-modern entrepreneurial behaviour.* Studia historia upsaliensis, Uppsala.

Müller, Leos (2003): "Swedish East India Trade and International Markets: Re-exports of teas, 1731–1813", *Scandinavian Economic History Review*, vol 51, no 3, pp 28–44.

Nilsson, Marianne (1962): *Öresundstullsräkenskaperna som källa för fraktfarten genom Öresund under perioden 1690–1709.* Meddelanden från Ekonomisk-historiska institutionen, Göteborgs universitet, Göteborg.

Nyberg, Klas (ed, 2006): *Kopparkungen. Handelshuset Björkman i Stockholm 1782–1824.* Stockholmia förlag, Stockholm.

O'Brien, Patrick (2006): "Colonies in a globalizing economy, 1815–1948" in Barry Gills and William Thompson (eds, 2006): *Globalization and global history.* Routledge, London.

Ormrod, David (2003): *The rise of commercial empires. England and the Netherlands in the age of mercantilism, 1650-1770.* Cambridge university press, Cambridge.

Ormrod, David (forthcoming): *Britain's role in the shift from the North Sea-Baltic world to the Atlantic, 1650–1800.* Paper presented at the Uppsala pre-session for the Economic History Congress in Utrecht 2009.

Posthumus, N.W. (1943): *Nederlandsche prijsgeschiedenis.* Brill, Leiden.

Price, Jacob (1961): "Multilateralism and/or bilateralism: the settlement of British trade balances with 'the North', c. 1700", *Economic History Review*, vol 14, no 2, pp 254–274.

Price, Jacob (1989): "What did merchants do? Reflections in British overseas trade, 1660–1790", *Journal of Economic History*, vol 49, no 2, pp 267–284.

Rasch, Aage (1964): *Niels Ryberg 1725–1804. Fra bondedreng til handelsfyrste.* Universitetsforlaget i Aarhus, Aarhus.

Rice, John (1965): "Patterns of Swedish foreign trade in the late eighteenth century", *Geografiska annaler*, vol 47, pp 86–99.

Rönnbäck, Klas (2007): "Flexibility and protectionism – Swedish trade in sugar during the early modern era" in Christer Ahlberger and Pia Lundqvist (eds, 2007): *Varans vägar och världar. Handel och konsumtion i Skandinavien ca 1600–1900.* Historiska institutionen, Göteborgs Universitet, Göteborg.

Samuelsson, Kurt (1951): *De stora köpmanshusen i Stockholm 1730–1815.* Ekonomisk-historiska institutet, Stockholm.

SCB (1972): *Historical statistics of Sweden. Part 3. Foreign trade 1732–1970.* SCB, Stockholm.

Sicking, Louis (2007): "A wider spread of risk: a key to understanding Holland's domination of eastward and westward seafaring from the Low Countries in the sixteenth century" in Hanno Brand and Leos Müller (eds, 2007): *The dynamics of economic culture in the North Sea and Baltic region in the late Middle Ages and Early Modern period.* Uitgeverij Verloren, Hilversum.

Tan Chung (1978): *China and the brave new world. A study of the origins of the Opium War (1840–42).* Carolina academic press, Durham.

van Tielhof, Milja (2002): *The "Mother of all Trades". The Baltic grain trade in Amsterdam from the late 16th to the early 19th century.* Brill, Leiden.

Unger, W.S. (1959): "Trade through the Sound in the seventeenth and eighteenth centuries", *Economic History Review,* vol 12, no 2, pp 206–221.

Wallerstein, Immanuel (1974): *The modern world-system. Capitalist agriculture and the origins of the European world-economy in the sixteenth century.* Academic press, New York.

Wallerstein, Immanuel (1980): *The modern world-system II. Mercantilism and the consolidation of the European world-economy 1600–1750.* Academic press, New York.

Westergaard, Waldemar (1917): *The Danish West Indies under company rule (1671–1754).* Macmillan, New York.

Zins, Henryk (1972): *England and the Baltic in the Elizabethan era.* Manchester university press, Manchester.

Åström, Sven-Erik (1963): "From cloth to iron. The Anglo-Baltic trade in the late seventeenth century. Part I", *Commentationes Humanarum Litterarum*, vol XXXIII, no 1, pp 1–260.

Åström, Sven-Erik (1965): "From cloth to iron. The Anglo-Baltic trade in the late seventeenth century. Part II", *Commentationes Humanarum Litterarum*, vol XXXVII, no 3, pp 1–86.

Slaves planting sugar cane. Image from *Ten Views in the Island of Antigua*, by William Clark (1823). Reproduction: British Library, Great Britain (no. 062474).

Chapter 5

A ghost of colonialism

Ghost acreage of Baltic imports of colonial goods during the early modern period

Abstract
Kenneth Pomeranz has argued that access to large ghost acreages overseas was crucial for the industrial revolution in Britain, relieving the colonial power from ecological constraints. This paper tries to analyse the ghost acreage necessary for commodities imported to the Baltic during the late 18th and early 19th centuries in a similar manner. According to the basic Heckscher-Ohlin-theorem, there ought to have been zero or very little trade between the Baltic and the Americas during the early modern period, since their basic factor endowments appear quite similar. Yet, imports of colonial goods grew rapidly during the period in question. To understand this trade we must include more aspects than just factor endowments in the abstract into the model, including qualitative aspects such as climate, and the possibility of using enslaved labour in the Americas. The results of the paper also show that the effects of the colonial trade were highly asymmetrical between Europe and the Americas. Even though the ghost acreage necessary for the production of domestic substitutes for imports was minute compared to the acreages available in the Baltic, the Baltic imports did require quite significant tracts of land in the Americas.

5.1. Introduction

The European conquest of the Americas, settlements in, and development of the American plantation complex, had decisive environmental effects upon large parts of the American continent. In previous research, the focus has solely been on how the core colonial powers of Europe shaped development on the American continent. This paper argues that European colonialism was part of a more complex web of connections. Even though many of the semi-peripheral areas of Europe had no colonies of their own in the Americas, they also contributed to the development of the American plantation complex through the demand for and consumption of colonial goods.

It is a well-known fact that the Baltic exported large amounts of grain, iron and other acreage-demanding resources, during the early modern period. Common knowledge has it that these goods were exchanged either for different sorts of manufactured goods (e.g. textiles) or for bullion. New research

has however shown that the monetary value of colonial goods imported to the region has been severely underestimated in previous research.

This paper takes this research one step further, being an exploratory attempt at estimating quantitatively how one semi-peripheral region in Europe, the Baltic, was connected to European colonialism in the Americas, specifically through demand for colonial produce. The paper explores the possibility of using a concept and method from environmental studies, namely the measurement of so-called ghost acreages, in order to assess the ecological contribution of the Americas from a material/physical perspective. The paper also argues that it is not possible to interpret this trade from a basic Heckscher-Ohlin theorem of trade, using factor endowments to explain the comparative advantages of the trade. Both the Americas and the Baltic were land-abundant regions during the period in question. To understand this trade, we must use a somewhat more complex model, including factors such as climate, slavery, consumer tastes and technical aspects of textile production processes. The paper also shows that the trans-Atlantic connection was highly asymmetrical: what to people around the Baltic were quite unnecessary luxury products, were quite important in determining development in the Americas.

5.2. Background

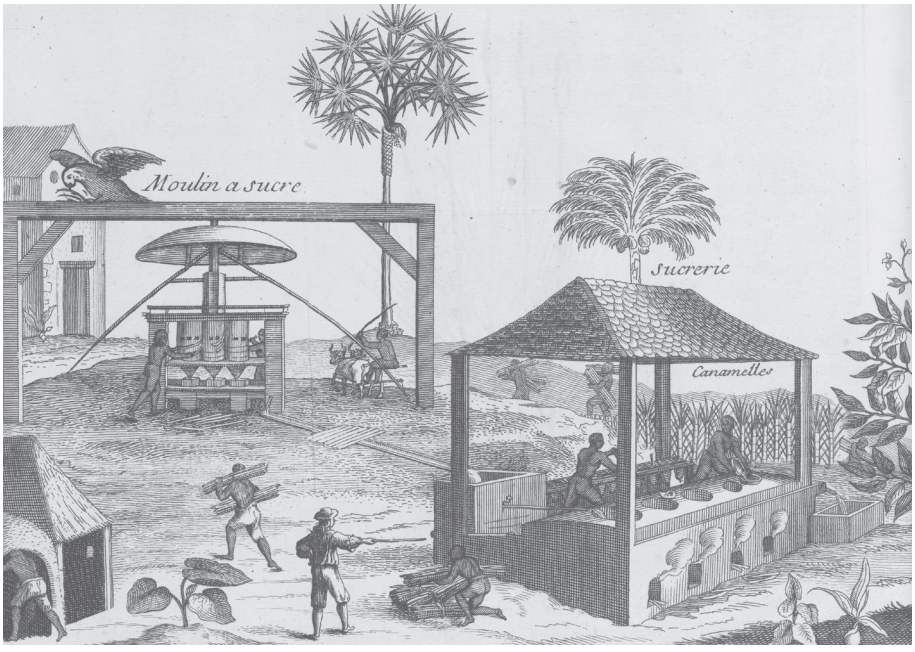
In recent years, some quite influential historians such as Kenneth Pomeranz have argued that the main factors in explaining the birth of the modern world was when societies in Europe became able to break the bounds of the old ecological regime. According to this interpretation of history, colonies and coal became crucial for the European take-off during the late 18th and early 19th century. Overseas colonies could contribute with crucial land acreage necessary for feeding the population of Europe, as well as for supplying the population with other products such as cotton.[1]

The idea that colonialism was important for European industrialisation has been highly controversial in much scholarly literature, both before and after the works of Kenneth Pomeranz and others. Eric Williams' famous book *Capitalism and slavery* was one of the first to argue that the gains from slavery and the slave trade were important to the Industrial Revolution in Britain.[2] Since Williams' book was published, the debate has raged back and forth, without ever reaching any consensus on the issue.[3]

1 See for example Pomeranz 2000 or Marks 2002.

2 Williams 1964

3 See for example Sheridan 1969; Engerman 1972; O'Brien 1982; Solow 1985; Solow 1987, Inikori 1987; Bairoch 1993, ch 8; Inikori 2002; Acemoglu, Johnson and Robinson 2005; O'Brien 2006.



Sugar works in the French West Indian colonies. Picture from Pierre Pomet *Histoire générale des drogues* (1694). Reproduction: Esbjörn Eriksson, Royal Library, Sweden.

For the colonies, on the other hand, most scholars probably would agree that at least the first wave of colonialism had very large repercussions, for the indigenous peoples of America as well as for the natural eco-systems. Ecological imperialism, as Crosby formulated it, had devastating effects upon the indigenous population of the Americas.[4] European demand for different colonial commodities – such as sugar, coffee, cotton and tobacco – to a large extent determined both the economic and ecological development in a great many parts of the Americas.[5] In his global environmental history of the early modern world, John Richards stresses the immense changes to the American environment that followed the early modern colonisation, and in turn also the American continent's central importance to the environmental history of the rest of the world through the so-called Columbian exchange.[6]

Previous research in this area has been almost solely focused upon the core colonial powers in Europe, and how they contributed to shaping the American continent. The colonisation of the Americas however also had repercussions across the borders of the core colonial powers, in the form of colonial goods traded internationally not just within one and the same colonial empire, but also to other parts of the European continent. This

4 Crosby 1986
5 See for example Curtin 1998 or Carey 2009
6 Richards 2003, chap. 9.

semi-peripheral demand in turn contributed to the development of the American plantation complex.

This exploratory study has two main goals. Firstly, it will try to explore the possibility of measuring the ecological contribution of overseas regions such as regions quantitatively, from a physical/material perspective, using a concept and method from environmental studies. Secondly, it will undertake such calculations in order to look at how the European semi-periphery in the North, the Baltic area, was connected to European colonialism in the Americas through the trade in colonial goods. In a previous article, this author has shown that the value of the colonial goods imported to the Baltic was far from negligible, if compared to the value of some of the key strategic exports from the same region. The colonial goods thus made up a significant share of the balance of payments for trade in the Baltic.[7] This paper takes the research one step further, by assessing the ecological basis for this trade from a physical/material perspective.

5.3. Theory and method

5.3.1. Theoretical approach

In environmental studies, recent years have seen several attempts to develop concepts and methods to estimate a country's total environmental impact. The aim of such attempts is to take into account not only the domestic environmental impacts, but also the environmental impact of goods imported from other parts of the world. What unites many such attempts is the view that the consumption of goods and services, rather than their production, ought to be the focus of such environmental impact studies.

One early attempt to try to conceptualise this global environmental impact came from Georg Borgström, during the early 1960s. Borgström coined the term "ghost acreage", by which he meant: "the computed, non-visible acreage which a country would require as a supplement to its present visible agricultural acreage in the form of tilled land in order to be able to feed itself."[8] Borgström then used the concept to calculate the total ghost acreage of net food-importing countries such as Japan, the Netherlands and others.[9]

Over time, Borgström's concept would be developed and debated by other scholars, such as Gareth Hardin and W.R. Catton.[10] Some recent

7 See the article "Atlantic sugar in the Baltic economy" in this thesis.
8 Borgström 1972, p 75
9 Borgström 1972, chap. 5
10 Brolin 2006, chap. 10.

attempts, directly or indirectly inspired by Borgström, to conceptualise global environmental impacts include the concepts of "environmental space" and "ecological footprints". The concept of "environmental space" encompasses a set of indicators for sustainability, for different resources and pollution.[11] The concept of "ecological footprints", on the other hand, tries to summarise the environmental impact using one indicator only: units of space. According to its creators, Mathis Wackernagel and others, ecological footprint "measures how much nature, expressed in the common unit of 'bioproductive space with world average productivity', is used exclusively for producing all the resources a given population consumes"[12] The explicit aim is to develop "ecological footprints" into an accounting method, and Wackernagel have, together with a range of co-authors, also tried to use the method in a historical analysis of the late 20th century.[13]

5.3.2. Factor endowments and ghost acreages

This paper will use the concept of ghost acreage in order to analyse the Baltic connection with European colonialism from a physical/material perspective, as well as the trade connections between the Baltic and the post-colonial American nations. Much of the ecological impact where the concepts discussed above (chap. 5.3.1.) lead to real differences in how and what to measure, only start to occur with the coming of the modern world. In the agricultural sector, for example, revolutionary changes occur when fertilisers and fossil fuels were introduced into the production of agricultural products. Prior to this revolution in agriculture, however, the different concepts discussed above are in effect quite similar to each other: they all focus on the acreage, the physical space, necessary for the production of the commodities in question. Many of the factors that complicate the equations for calculating "ecological footprints", for example, had by this time thus not yet developed. This paper will therefore settle for using the concept of ghost acreage, recognising that the choice of wording in this case is more an issue of rhetoric than of real differences between the concepts.

The concept of ghost acreages has been used previously in historical research by both Eric Jones and Kenneth Pomeranz.[14] The latter used the concept extensively in his often-cited book *The Great Divergence*, in order to assess the importance of the colonies to British industrialisation during

11 Carley and Spapens 1998
12 Chambers et al 2000, p 31. See also Wackernagel and Rees 1996.
13 Wackernagel et al 2002
14 Jones 1987, chap. 4; Pomeranz 2000, chap. 6.

the early modern period. Pomeranz calculates how large an acreage would have been required to substitute the calories that historically were acquired from sugar, for calories acquired from wheat grown domestically in Britain, as well as the acreage necessary for substituting cotton for wool, flax and hemp. His findings show that the ghost acreage necessary just to substitute cotton and sugar for domestic alternatives would have required almost twice the total amount of arable land available in Britain. Since the size of the ghost acreage is so large, Pomeranz argues, it follows that it must have been important for the development of the British economy.[15] A similar hypothesis has recently been argued by Alf Hornborg (who, however, have opted for using the terminology of "ecological footprints").[16]

Does the phenomenon of ghost acreages necessarily entail socio-economic exploitation in any form, as for example theoreticians of unequal exchange (and "ecologically unequal exchange" in particular) might argue?[17] In his book, Pomeranz is not clear as to his view on the matter, but it seems a likely interpretation, since he stresses the importance of the British access to ghost acreages in the (ex-colonies of the) Americas, rather than anywhere else. Naturally, exploitation of colonies might be one way of acquiring a foreign ghost acreage, and a most common one during the early modern era.[18] Since no country in the Baltic, with the exception of Denmark, possessed any colonies in the Americas, it does not however seem as if they could have acquired any ghost acreage in the Americas through colonial exploitation.

The concept of ghost acreages does not however in and of itself necessarily imply any such exploitation. There might also be classical economic reasons for nations to voluntarily choose to be "net exporters" of acreage, so to speak, in the form of land-intensive export goods. As noted already by Ricardo, there are diminishing returns from land. As population increases in a region, competition for the land with limited resources would increase, increasing rents. With diminishing returns from land, profits would then be squeezed. The classic Heckscher-Ohlin theorem stated: "A nation will export the commodity whose production requires the intensive use of the nation's relatively abundant and cheap factor [of production] and import the commodity whose production requires the intensive use

15 Pomeranz 2000, chap. 6 and appendix D.

16 Hornborg 2007

17 See for example Emmanuel 1972, Hornborg 1998, Alier 2007.

18 It might however be noted that during the period for which Pomeranz actually calculates the British ghost acreage in the Americas, the early 19th century, the British Continental Colonies had long since broken free of Britain, and most other colonial powers' colonies in the Americas were in the process of doing the same.

of the nation's relatively scarce and expensive factor."[19] The Heckscher-Ohlin theorem (H-O theorem) was formulated using only two factors of production: labour and capital. The logic does however equally apply to the factor of natural resources (such as land) as well. Land-abundant regions will thus have a comparative advantage in the production of land-intensive goods, and vice versa. In the H-O theorem of trade, it is thus these factor endowments that explain the comparative advantage of each nation. A ghost acreage could thus in such a case be a measure of the comparative advantage one nation has for capital- or labour-intensive production, compared to land-intensive production. Calculating the ghost acreage might in such a case fruitfully be undertaken for both the colonial, and post-colonial, period, as well as for non-colonial powers.

5.3.3. Operationalisations in this paper

This paper thus makes no a priori assumption that a ghost acreage in and of itself necessarily entails exploitation in the form of unequal exchange between countries. The concept is used as a measurement of one physical factor of production (land) involved in the material flows between the regions, regardless of whether these flows as such are considered "equal" or "unequal".

This paper will look both at the foreign acreage necessary to produce the quantities of colonial goods that were imported and consumed, and follow Pomeranz' calcultations in order to assess how large an acreage the production of domestic substitutes would have required. The paper thus tries to calculate what I would argue could be called the foreign ghost acreage, as well as the theoretically necessary domestic substitute ghost acreage.

The paper will also try to analyse not only the direct ghost acreage necessary for consumption in the Baltic, but also the indirect ghost acreage necessary for that primary production. By this, I mean the additional acreage immediately necessary for the production of cash crops – for example acreage to grow crops to feed the workforce on a plantation, or for the production of fodder for animals used in production. The reason why this is also included is because the indirect acreage varied quite significantly between crops, and might therefore have an effect upon the results. Such a calculation must however be undertaken with a great deal of caution. One could as an illustration imagine also including the acreage necessary for the production of clothes and tools for the workforce, as well as the acreage necessary to produce those goods, and the acreage to produce the food for the workforce that is needed to produce those clothes/tools, and so on. The indirect ghost acreage would in such a case grow endlessly.

19 Salvatore 2007, pp 131–132.

The indirect ghost acreage in this paper will therefore only be calculated as the immediate acreage necessary to feed the workforce and the animals used in the production of the crops (but in the case of sugar, also to supply necessary firewood), assuming for simplicity that the plantations and/or farms are self-sufficient in everything else consumed. Both the direct and indirect ghost acreage will also be reported in an appendix to the paper.

The paper will not try to undertake a complete analysis of all "ghost acreages" involved in the trade with the Baltic. Since we know that the Baltic was a region highly devoted to exports of primary products, we can safely assume that the region was a net exporter of "ghost acreage". Since this paper is interested in studying global trade, including colonial trade, , however, it will only focus upon the ghost acreage necessary for such a trade. A more complete material flow analysis, although important, is hence beyond the scope of this paper.

5.3.4. Sources

The most important source for this paper will be data on the imports of goods to the Baltic, taken from the Sound Toll Chamber Commodity Records (STCCR). This source has been discussed quite thoroughly in a previous paper by this author, which is why it will not be discussed in any closer detail here.[20] Suffice to say that the source shows the quantities of goods passing the Sound (Öresund), going to or coming from the Baltic. The data is broken down in the source so that it is possible to discern where the goods are coming from and going to. Other data used in this paper include figures on yield of the American sugar and cotton plantations. Such data has been gathered from previous literature, which is discussed more thoroughly in the appendix of the paper.

5.3.5. Delimitations

Many studies of "ghost acreages" or "ecological footprints" have tried to assess the impact of a whole economy. In contrast, this exploratory study will limit itself to looking at the production of two important agricultural crops – sugar and cotton – largely following what Pomeranz has done. Including cotton in the study probably does not need any detailed justification: cotton was after all the input into the perhaps most rapidly growing industry in many countries in Europe at the time.[21] The choice of sugar might however surprise

20 See the article "Atlantic sugar in the Baltic economy" in this thesis.

21 See for example Farnie and Jeremy 2004; Riello and Parthasarathi 2009; Riello and Roy 2009

some readers. Sugar is studied due to the fact that during most of the period of this paper it was the single most valuable export crop from what would later be termed the "third world" countries. Patrick O'Brien has in a recent article estimated the commodity composition of "third world" exports between 1830 and 1937. By 1830, sugar was still the single most important commodity traded, responsible for approximately 25 per cent of the total value of "third world" exports. The two second largest categories of products – textile fibres such as cotton on the one hand, and coffee, tea, cacao and spices on the other – at the same time each accounted for approximately 15 per cent of the value of exports, respectively.[22] Sugar was also the most important crop influencing the development of the plantation complex in the Americas, a drastic change in the American environment compared to the pre-Columbian state, and thus the most important crop to focus upon in a study from the perspective of environmental history.[23]

5.4. Baltic connections with the Atlantic economy

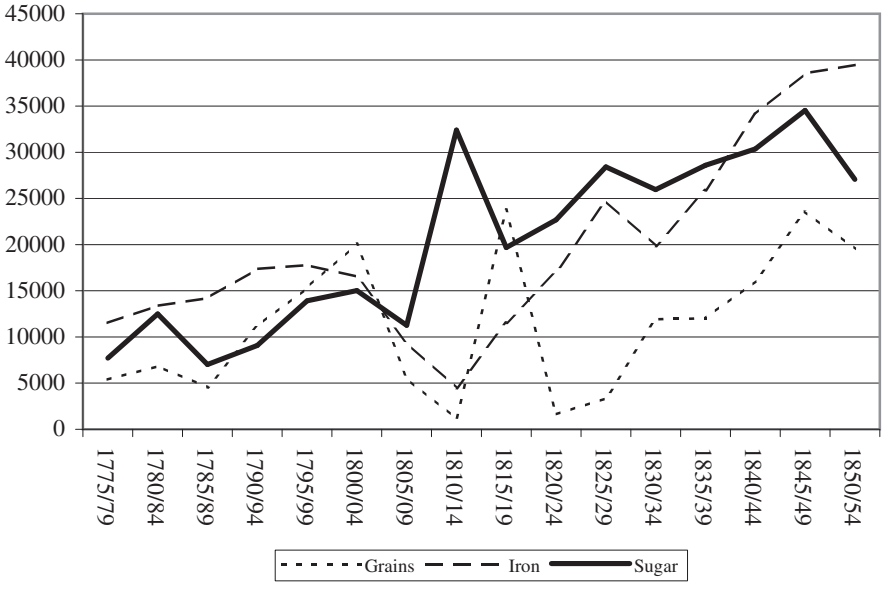
5.4.1. Baltic imports of colonial sugar and cotton

In a previous paper, this author has shown that the value of colonial goods imported to the Baltic was high, when compared to the value of key exports from the region, such as iron or grain. Graph 5.1 shows the value of sugar alone, compared to the two export goods. As can be seen in the graph, sugar must be considered to have played a significant role in the balance of payments in trade with the Baltic. To what extent do these results also reflect any importance if measured from a physical/material perspective? The hypothetical answer might be that the quantities of colonial goods were very small, but of high value, thus yielding the economic weight shown in graph 5.1. The small quantities must however, one might think, necessarily imply a low importance if measured from any physical parameter, such as acreage available/necessary for growing the goods in question. The imports of colonial commodities into the Baltic are increasing over the period of this study. The quantities of sugar imported far surpassed those of raw cotton (cotton textiles unaccounted for) during pretty much the whole of the early period of this paper. The imports of raw cotton were however increasing rapidly during the period following the end of the Napoleonic wars. How large a physical area was then necessary to provide the Baltic market with these quantities of sugar and cotton? This could be measured using the concept of ghost acreages.

22 O'Brien 2006, p 263.

23 See for example Richards 2003, chap 9; Galloway 1989, chap. 4–5; Curtin 1998

Graph 5.1. Hypothetical value on the Amsterdam Bourse of net amounts of sugar, grains and bar iron, traded with the Baltic, 1775–1854 (1000 guilders, 5-year average values)



Sources: see the article "Atlantic sugar in the Baltic economy" in this thesis.

5.4.2. Foreign colonial ghost acreage of Baltic imports

Using historical figures for the yield per area of land (see appendix A.5.1), we can calculate the foreign acreage that was directly necessary for the growing of both cotton and sugar. There was also a need for a very large indirect acreage to support the growing of cane and/or cotton plots: built-up areas for housing of the workforce, and for storage facilities; gardens for raising food crops to feed the workforce; roads; and in the case of sugar also areas of standing timber as a source of firewood for the sugar mill (since the sugar cane could not be exported as such, but had to be processed to extract the raw sugar from the canes) as well as standing timber and/or savannah to be used as climatic buffer.

It seems hard to find historical data on the exact proportions between these different usages of a plantation's total acreage. From the work of the Père Labat (1724), a former plantation manager from Martinique who wrote extensively about sugar production in the West Indies, we can however find out about plans for what he considered to be an "idealised sugar plantation". Even though this idealised plantation was probably never realised in every single detail, we can at least use the model for rough pointers as to the proportions between the different usages of the acreage on a plantation.

In Labat's "idealised plantation" the cane plots constituted only a smaller share of the total acreage. On a plantation of some 360 hectares, only 60 ha would be set in cane. Some further 60 ha would be necessary for the "slave gardens", approx 10 ha for built-up areas and the rest was needed for standing timber and/or protective savannah.[24] Labat furthermore advised strongly against planting more than a third of the total acreage in cane, arguing that the rest was absolutely necessary for standing timber.[25] In reality, many plantations were not self-sustaining in food-crops for the workforce, but quite large amounts of foodstuffs were imported, primarily from the Continental Colonies of North America.[26] There was also a quite serious problem of soil erosion, implying that the intensive cultivation of cane on most plantations was hardly sustainable in the long run.[27]

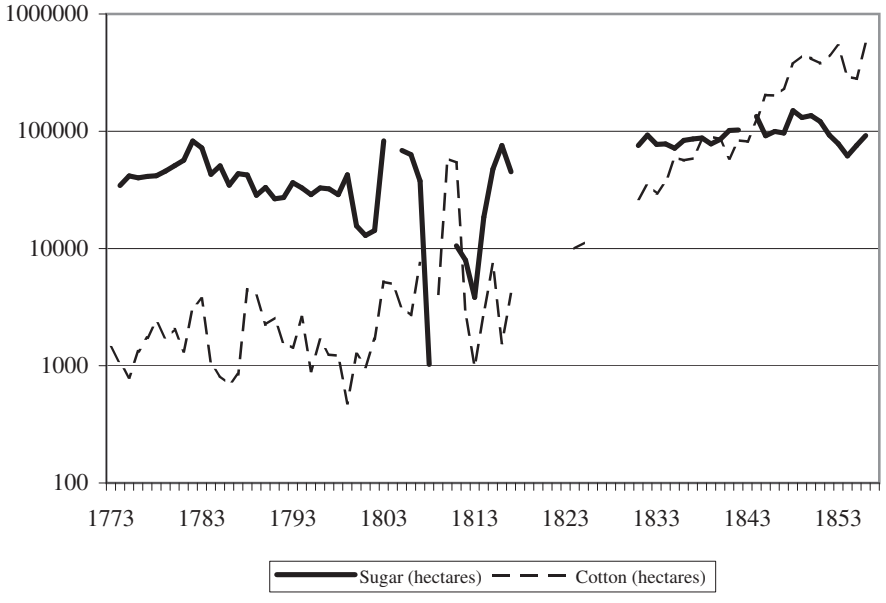
Labat's recommendations, reached after many years of experience of running a plantation, were probably not that far off from reality, if a planter wanted to be self-sustaining regarding the inputs necessary for the production of the cane. This would mean a proportion of 1:6 between the cane acreage and the total acreage of the plantation. So as not to overestimate the total ghost acreage, I henceforth assume the relationship to be 1:4, i.e. closer to Labat's maximum cane acreage recommendation than to his ideal recommendation. With this assumption, we can calculate estimates for the total ghost acreage necessary.

Cotton did not require the same inputs in the form of firewood for its production, and this area constituted a very large part of the non-planted acreage on Labat's "ideal plantations". Let us therefore assume that the ratio between planted acreage and total acreage was roughly 1:2 on an average cotton farm.[28] The results are shown in graph 5.2.

As can be seen in the graph, the foreign ghost acreage necessary for the production of the imported colonial commodities grew over the period. The French Revolutionary and Napoleonic Wars certainly did impede the growth of imports of sugar significantly, but nonetheless total imports increased from approximately 40,000 hectares by the late 18th century, to more than 100,000 hectares by the middle of the 19th century. Compared to that, the growth in acreage necessary for the production of cotton was tremendous: prior to the 19th century, the necessary acreage for the small amounts of cotton imported to the Baltic seldom surpassed 2,000 hectares. By the middle of the 19th century, the acreage necessary for the production of the cotton imported had increased to approximately 500,000 hectares.

24 Watts 1990, pp 384–387
25 Watts 1990, p 348
26 McCusker and Menard 1985, chap. 7.
27 Watts 1990, pp 395–397
28 This is then also equivalent to the case of wheat, see appendix A.5.1.3.

Graph 5.2. Foreign ghost acreage for Baltic imports of sugar and cotton, 1773–1856 (hectares, logarithmic scale)



Source: graph 5.1 and data in appendices A.5.1-A.5.2.
Note: the graph includes both direct and indirect ghost acreage. The underlying data, reporting both direct and indirect acreage separately, is reported in appendix A.5.2.

5.4.3. Theoretically necessary acreage for domestic substitutes

As was mentioned previously, Kenneth Pomeranz chooses to calculate the ghost acreage for the domestic substitutes for the colonial commodities, rather than for the foreign production of these goods per se. In the case of sugar, the difference will not be extremely large when calculating the ghost acreage this way. The calorie ratio between sugar and wheat is approximately 3800/3400 kcal per kg, so substituting wheat for sugar requires a slightly higher amount of wheat in order for the consumer to acquire the same amount of calories. Add to this a lower yield per acreage, if based on the amounts of wheat-flour ready for consumption, and the fact that animals are used in the production of wheat to quite a large extent. Sugar, on the other hand, also requires a quite significant indirect acreage, mainly in the form of firewood for refining the sugar cane into raw sugar. The acreage necessary for producing domestic substitutes will, if all these factors are taken into consideration, in total be much higher than it would be for importing colonial sugar.

In the case of cotton, the choice of method for calculating the ghost acreage necessary also makes a world of difference. One possible substitute for cotton

Table 5.1a. Foreign versus domestic substitute ghost acreage of Baltic imports (direct ghost acreage only, km^2)

	Sugar		Cotton		
	Foreign	Substitute	Foreign	Substitute	
				Flax	Wool
1815	119	553	37	8	350
1831	189	794	133	30	1,290
1850	340	1,373	2,091	500	21,189

Source: see graph 5.1 and appendices

Table 5.1b. Foreign versus domestic substitute ghost acreage of Baltic imports (total ghost acreage, km^2)

	Sugar		Cotton		
	Foreign	Substitute	Foreign	Substitute	
				Flax	Wool
1815	476	4,973	75	99	350
1831	755	7,149	265	365	1,290
1850	1,359	12,361	4,183	5,997	21,189

Source: see graph 5.1 and appendices A.5.1.-A.5.2.
Note to both tables: the column for the "foreign" acreage refers to the actual acreage necessary for the production of the imported crops in the areas of production (i.e. the Americas). The column(s) for "substitute" acreage refers to the acreage that would have been necessary to produce domestic substitutes. Table 5.1a includes direct ghost acreage only, while 5.1b includes both direct and indirect ghost acreage (see chapter 5.3.2).

is flax. Flax, however, could only be grown in Britain to a quite limited extent, Pomeranz argues. For that reason flax could not replace the whole quantity of cotton imported, and he therefore disqualifies it from his calculations. Instead, he computes the acreage necessary for the production of enough wool to replace the cotton imported. Producing wool, however, demands extremely large tracts of land compared to cotton: around ten times as much if one takes into account, as Pomeranz does, the fact that less raw cotton has to be used in order to produce the same amount of cloth. Flax, on the other hand, demands significantly less land than cotton: the yields were at the time approximately five times higher per acre. In effect, Pomeranz' figures become highly inflated compared to the foreign ghost acreage, and even more so if compared to the situation if the domestic substitute had been a high-yielding crop like flax. Even if we take into consideration that the indirect acreage necessary to produce cotton and flax is higher than in the case of wool, the difference is still very large.

Calculations for a couple of selected years are reported in tables 5.1a–b, to illustrate how large the Baltic ghost acreage appears, if computed using the different methods. Table 5.1a only includes the direct acreage necessary for

production, while 5.1b reports total acreage (including acreage necessary for the production of food and feed for the workforce and the animals). The years 1815 and 1831 are selected to match the calculations done by Pomeranz, and 1850 is included to show the development that then occurred during the later years of the period of this study.

As can be seen in the tables, there are major differences between the foreign ghost acreage and the substitute ghost acreage. If we only look at the direct ghost acreage, sugar does require significantly less acreage than the production of a calorie-equivalent amount of wheat. The difference is reinforced significantly if we look at the total ghost acreage. Cotton requires significantly less land than the production of wool, but more land than the production of flax, if we only look at the direct ghost acreage. If, on the other hand, we take into account the indirect ghost acreage necessary as well (i.e. for the production of food and feed), the production of flax in total probably required more acreage than the production of an equivalent amount of cotton. The difference between cotton, flax and wool is also reduced – even though wool still requires significantly larger acreage in total than the two crops.

In the case of the Baltic, domestic substitutes not only existed in the form of wheat and flax, for example: they were also exported from the Baltic. The net exports of wheat were for the most of the period in question approximately of the same size as would have been necessary to substitute for sugar, in order for consumers to acquire the same amount of calories. The amounts of flax exported far surpassed the amounts of cotton imported – even by the end of the period of this paper, when Baltic imports of cotton had grown significantly, the volume imported still only amounted to approximately half the volume of flax exported. There was undoubtedly enough flax to substitute it for cotton, if other factors (technical, economical etc) had allowed for such a substitution. So for the Baltic, the colonial products did not at this time relieve any acute ecological constraints.

5.5. Discussion

European colonialism has often been analysed solely from the perspectives of the colony, the colonial power and/or the relation between the two. Though this most certainly is of key importance, colonialism was often a somewhat more complex phenomenon. This is most certainly the case when it comes to the trade in colonial goods: a significant share of the goods in question was not retained by the colonial power, but re-exported to other parts of the world. Using the concept of ghost acreage may be a way of measuring quantitatively how large such flows of goods were, from a material/physical perspective.

Slaves cutting the sugar cane. Image from *Ten views in the Island of Antigua*, by William Clark (1823). Reproduction: British Library, Great Britain (no. 003047).

The concept could therefore potentially be used as a contrast to other measures, such as the economic value of the goods. It has been argued in the paper that calculating ghost acreages is fraught with a range of problems, not least because of the many a priori assumptions about the calculations that could give rise to such different results.

The Baltic at first appears pretty similar to the Americas during the early modern period in regard to their basic factor endowments: both regions, being sparsely populated, must have had a comparative advantage in producing land-intensive goods in general. If analysed following the basic Heckscher-Ohlin theorem (H-O theorem), it may therefore seem irrational for there to have been trade between these two regions. Large parts of the Americas did however have other, perhaps more subtle, comparative advantages over the Baltic.

Firstly, one comparative advantage of the Americas was most certainly exploitation, but of another kind than theoreticians of unequal exchange normally argue, namely the exploitation of a slave labour force. The American societies – whether colonies or ex-colonies – remained slave societies well into the 19th century. Indeed, David Abernethy has argued that political decolonisation had the effect, intended or not, of reinforcing social inequalities and of protecting slavery from a metropolitan abolitionist critique.[29] The last countries to abolish slavery (Cuba and Brazil) did so only very late in

29 Abernethy 2000, p. 74–75.

the century. It seems pretty safe to assume that slavery pushed down the labour costs of the production of many of the colonial goods. The comparative advantage of the American plantation complex could thus, in an H-O model of trade, be explained by the relatively low cost of the production factor of labour, rather than through an abundance of land.

Secondly, another aspect contributing to explain this trade was a tropical climate in certain parts of the Americas – enabling the production of a range of colonial goods. These goods were (with some possible exceptions) simply not possible to produce in the Baltic region for that reason, but had to be imported from more tropical climes. Differences in climate might certainly be understood as one qualitative aspect of land as a production factor, a factor which in reality is very heterogenous (perhaps much more so than labour as a production factor, including not only the surrounding climate, but also access to water, humus, minerals and a range of other aspects). The assumption of a homogenous production factor is theoretically perhaps more stringent, and a simplification carried out in order to make modelling and quantitative calculations easier, but certainly abstracts from historical reality. In this case, this simplification leads to a situation where one of the assumptions behind the H-O theorem of trade – that both trading nations use the same technology in production – was impossible to meet (given climatic reasons).

Thirdly, consumer tastes – wheat was simply no real substitute for sugar for most consumers, and beet sugar would only become widely available during the second half of the 19th century – and technical aspects of the production of textiles must have played a part in explaining the imports in question. The goods in question were far from perfect substitutes, as Pomeranz seems to assume in his study, but rather to be considered as different goods.

These conclusions alone in no way refute the H-O model of trade (or theories of unequal exchange, for that matter). As Sidney Pollard has noted: "the qualifications and restrictions which they [Heckscher and Ohlin] interpose make it impossible to test the basic theory. It has to be accepted on its plausibility and internal consistency alone."[30] This study shows that in some cases, the historical reality was more complex than general theories are able to explain. Such cases might thereby also give us insights into some of the limits of general theories – something that might be important enough.

It must also be remembered that the trade in colonial goods on the Baltic also was part of a more complex web of international trade. As has been argued in a previous paper by this author, this trade made an important contribution to the balance of payments for the Western European nations' trade on the Baltic.[31] These goods might thus be considered to have supplied some of the

30 Pollard 1981, p 169

31 See the article "Atlantic sugar in the Baltic economy" in this thesis.

Western European nations with a ghost acreage in the Baltic, by directly or indirectly paying for the Baltic exports of grains, iron and other goods.

The calculations in this paper have also been undertaken in order to contrast the economic value of the goods, calculated by this author in previous research, to the role they might have played from a material/physical perspective. Were the figures of the ghost acreage necessary for the Baltic imports of colonial goods calculated above large or small? This, of course, depends upon what the figures are compared to. If the ghost acreage is compared to the total acreage available in the Baltic countries, the figures calculated above pale into insignificance. The acreage necessary to produce the most efficient substitutes (wheat and flax) amounted to no more than a small corner of the Baltic region. Only if the Baltic had been forced to rely upon production of wool, instead of flax, would the acreage necessary for the production of domestic substitutes for the colonial goods have grown to any sizeable proportion. We can thus safely conclude that the Americas had little or no role in relieving the Baltic of any ecological constraints in general. This is no surprise, given that we know the Baltic was a net-exporting region of many staple goods, such as grain and forestry products. The region did not suffer from any ecological constraints in the same way as for example Britain did at the time. What the colonial commodities did contribute, however, were commodities that (with the possible exception of tobacco) could hardly have been produced in the region at all, for climatic reasons, and most certainly could be had at a reduced price due to the exploitation of slaves in the process of production. These goods were economically highly valuable, but did not as yet have any significant impact for the Baltic, from a material/physical perspective.

If on the other hand the acreage necessary for the production of sugar is compared to the areas of production in the Americas, the picture becomes somewhat different. Compared to the total size of the West Indian islands – let alone Brazil or the whole of the Americas – the ghost acreage for the sugar imported to the Baltic would appear tiny (not even one per cent of the total land acreage of the West Indies). Only a fraction of the West Indies was however actually cultivated at the time. Even today, no country in the Caribbean (with the sole exception of Haiti) is able to use more than a third of their total land acreage for permanent crops or as arable land.[32] Furthermore, the largest island in the Caribbean, Cuba, did not come to be a major sugar producer until well into the 19th century. Prior to that period, West Indian sugar was only produced on the smaller islands of the Caribbean. The plantation area of more than 136,000 ha (1,360 km^2) that was necessary to satisfy the mid-19th century Baltic demand for sugar was thus equal to the arable land available for example on a range of the islands of the Lesser Antilles taken together, or

32 Calculated from data on the Caribbean countries in World Factbook 2008.

equal to perhaps half of the currently arable land on Jamaica, at the time one of the most important sugar producers in the world.

The acreage necessary for the production of cotton imported to the Baltic, on the other hand, was totally negligible prior to the 19th century. By the middle of the century, however, it had grown to the extent that the foreign ghost acreage necessary (approximately 2,000 km^2) was equal to some five per cent of the total acreage planted in cotton in the whole of the United States at the time, or equivalent to half of the total cotton acreage in any one of the main cotton-producing states in the lower south of the United States.[33]

What these exploratory calculations suggest, then, is that the Baltic connection with European colonialism, even though not overwhelming in any way, was quite significant when put into the context of the contemporary development in the Americas. A significant share of the American colonial produce ended up in the Baltic countries. In this context, we have to remember that this study from the start has been delimited to an analysis of sugar and cotton alone, in order to illustrate the issue. Had other colonial commodities – coffee, tobacco, rice and so on – been included, the ghost acreage would have been even higher.

The environmental impact from European trade with the Americas was thus highly asymmetrical for the two regions. For the population of the Baltic countries, the planters of the Americas were producers of what to the consumers were quite luxurious products during most of the period of this study, and the ghost acreage necessary for the production was minute if compared to the amounts of arable land available at home. The connection to the Americas can thus not be said to have been very important to the Baltic region, from the perspective of ecological constraints in general. In this respect, the results of this paper contrast the results of previous research showing that the colonial commodities were highly important from a monetary perspective, for the balance of payments of the trade on the Baltic.

At the same time, there are always two sides to trade. For there to be imports, the goods have to be produced and exported from somewhere. The Baltic market for colonial commodities – however luxurious and unnecessary they ever may be considered to have been in terms of consumption – did constitute a significant share of the total world market for colonial goods. The foreign ghost acreage necessary for the production of the goods shipped to the Baltic was also quite significant if compared to the size of the producing regions in question, in the Americas in general and in the West Indies in particular. This demand thereby contributed to shaping the development of the American plantation complex.

33 Smith 1999, table 3.1.1.

5.6. Conclusion

Most studies of colonialism focus either upon the colonial power, or upon the colonies. European colonialism was however a part of more complex networks and processes. Large quanitities of colonial goods were for example re-exported from the colonial powers, to more semi-peripheral regions of Europe. In this way, the importing regions also became involved in, and contributed to the development of, European colonialism overseas. One way to try to measure this involvement is through the economic value of the goods in question, which has been undertaken previously by this author. Another way of measuring the involvement is by a physical/material measure of one factor of production (the natural resource of land) needed in order to produce these colonial goods, so-called ghost acreage. This exploratory paper has to that effect tried to analyse the ghost acreage necessary for the production of colonial commodities imported to the Baltic during the late 18th and early 19th centuries.

In his book *The Great Divergence*, Kenneth Pomeranz made such calculations for the case of Britain. Pomeranz' figures show that the ghost acreage necessary to produce domestic substitutes for colonial sugar and cotton alone were significantly larger than the total arable land available in Britain by the early 19th century. The colonies, the author argues, were therefore crucial to development in Britain, since they abolished ecological constraints. This paper argues that any calculations of ghost acreages, including those of Pomeranz, are highly sensitive to a priori assumptions.

The existence of a ghost acreage does not in itself necessarily imply any form of unequal exchange or exploitation through colonial submission. In the basic Heckscher-Ohlin theorem, factor endowments explain patterns of international trade. Capital-abundant countries will have a comparative advantage in producing capital-intensive goods, etcetera. Land-abundant regions would thus have a comparative advantage in producing land-intensive goods, something which – when exported – will give rise to what will liken a "ghost acreage".

Following the logic of the basic Heckscher-Ohlin theorem, it may however seem irrational for there to have been trade between the Baltic and the Americas during the early modern period in the first place. Even so, the imports of colonial goods from the Americas to the Baltic grew significantly over the period of this study. Even though the colonial commodities might have been economically valuable during the period of this study, as this author has shown in previous research, they as yet served little or no purpose in relieving any ecological constraints in general. To understand this trade, we must therefore go beyond a basic model of factor endowments, including aspects such as the climate (enabling the production of tropical goods), as

well as the possibility of using enslaved labour in the production processes in the Americas (something which survived colonialism per se by several decades). There is also the aspect that the colonial goods in essence had no perfect substitutes in Europe at the time.

The results of the paper also show, however, that the effects of the colonial trade were highly asymmetrical between Europe and the Americas. What to the Baltic were quite luxurious and perhaps unnecessary goods, had large impacts upon development in the Americas. The Baltic demand for colonial commodities constituted a small, but not insignificant, share of the total world market in these goods. The ghost acreage necessary for their production had by the end of the period in question grown so that it was equivalent to the sugar grown on a large part of Jamaica, and the cotton grown in a large part of one of the states in the lower south of the United States. The paper thus shows that there were many aspects of comparative advantage to the American production of colonial goods.

Appendix A.5.1. Data on yields

A.5.1.1. Sugar

Table A.5.1. Average annual yield of sugar in different regions of the Americas, 1720-1860

Decade	Yield (kg/hectare)						
	Brazil	Saint Domingue	Morelos	Jamaica	Lesser Antilles	Barbados	Danish West Indies
1720	..	..	..	..	1,236	..	..
1730	..	..	..	..	..	2,347	..
1750	1,378	..	..	..	..	2,124	..
1770	..	..	..	2,055	..	..	..
1780	2,105	3,052	..	2,174	..	..	1,227
1790	..	..	2,643	2,174	..	..	1,002
1800	..	..	2,643	..	..	..	..
1810	2,105	..	..	..	..	..	..
1820	..	..	3,038	..	..	2,900	1,229
1860	..	..	..	..	..	..	1,032

Sources: Schwartz 1985, table 5–4; Sveistrup 1942, table 22; Sheridan 1973, table 8.3; Gemery and Hogendorn 1978, table 14.1.

As can be seen in the table, the figures for yields vary significantly between the different regions of production. The French colony of Saint Domingue, for example, had unusually high yields, while the Danish West Indies seem to have received yields significantly below many other areas of production. This seems to reflect fairly well the impression one gets from the literature on the topic. There does not, on the other hand, seem to be very much change over time except in the case of Brazil. In the paper, I divide the Baltic imports into three groups: imports from the Danish West Indies, imports from France (i.e. French colonies) and imports from other regions. Different figures for yields are used for the different regions in order to calculate the total ghost acreage. In the case of the category "other regions", a stylised fact in the form of a yield of 2,100 kg of sugar/hectare is assumed, close to the figure in for example Jamaica or Barbados.

As is argued in the paper, the indirect acreage is assumed to be four times as large as the planted acreage, including both acreage for the production of food for the workforce and firewood. Animals were not widely used in the production of sugar, since slaves were forced to do most of the manual work.

A.5.1.2.Cotton

Wayne Smith reports data on the cotton yields from the United States from the 1860s onwards, starting at 121 lb/acre in 1866 and increasing significantly after this.[34] In this paper it is assumed that the yields increased slowly during the early 19th century as well. A stylised yield of 100 lb/acre has been assumed for the 1770s, steadily increasing to the figure reported by Smith in 1866. As was mentioned in the text, it is furthermore assumed that the production of cotton requires an equivalent acreage of food crops in order to feed the workers of the cotton plantations (see also appendix A.3. below on this). It is furthermore assumed that animals were not widely used, similar to the case of sugar (see appendix A.1. above). The total ghost acreage (including the indirect ghost acreage) is therefore assumed to be twice as large as the direct ghost acreage.

A.5.1.3. Wheat

David Hannerberg calculates figures for the yield of grain in Sweden over a period of 1,200 years. He estimates that by the early 18th century, yields were approximately 0.7 tons per hectare. By 1820, the figure had increased to 0.9 tons per hectare, and by 1866 it had increased to 1.3 tons per hectare for wheat.[35] These figures have been used as benchmarks, and data for the years in between these benchmarks have been interpolated. It is thus assumed that the Swedish figures were at least not very atypical in the Baltic context. Similar to the case of cotton, it is furthermore assumed that the indirect acreage necessary to feed the agricultural labourers on a farm is approximately as large as the acreage whose production might be sold on the market, i.e. that half of the production on a farm might be sold on the market.[36] It is furthermore assumed, following Ester Boserup, that the acreage necessary to feed the animals needed for production is approximately twice the size of the total planted acreage. Carl-Johan Gadd finds that Boserup's estimate is an underestimation at least during the early part of this period, and argues that the fodder acreage, in Sweden at least, was more than 3.5 times the size of the planted acreage by the early part of the period.[37] Boserup's lower estimate is however used in this paper in order not to overestimate the substitute ghost acreage.

A.5.1.4. Flax and wool

The yields of flax and wool have been calculated using the data reported by Kenneth Pomeranz, in his calculations on the same topic, i.e. that production could amount to approximately 500 lb/acre under favourable conditions.[38] It is in this case assumed that the indirect acreage necessary to feed the agricultural labourers on a farm growing flax is approximately three times as large as the acreage whose production might be sold on the market, since the production of flax was very labour-intensive.

34 Smith 1999, table 3.1.1.
35 Hannerberg 1971, chap. 10
36 Gadd 1983, p 141
37 Boserup 1965, p 35; Gadd 1983, p 260, footnote 6
38 Pomeranz 2000, appendix D

The acreage necessary for the production of fodder is assumed to be twice as large as the planted acreage, just as in the case of wheat (see appendix A.3. above). In the case of wool, the indirect acreage is assumed to be zero: it is assumed that food is a by-product of the production of wool.

Appendix A.5.2. Ghost acreage of Baltic sugar and cotton imports

Table A.5.2. Direct and indirect foreign ghost acreage of Baltic sugar and cotton imports, 1773-1856

Year	Sugar			Cotton		
	Direct (hectares)	Indirect (hectares)	Total (hectares)	Direct (hectares)	Indirect (hectares)	Total (hectares)
1773	..	..	..	717	717	1,434
1774	8,604	25,813	34,417	530	530	1,060
1775	10,388	31,163	41,551	397	397	795
1776	10,022	30,065	40,087	664	664	1,328
1777	10,306	30,918	41,223	868	868	1,735
1778	10,439	31,316	41,755	1,199	1,199	2,398
1779	11,433	34,298	45,730	863	863	1,725
1780	12,711	38,134	50,845	1,025	1,025	2,050
1781	14,138	42,414	56,552	663	663	1,327
1782	20,623	61,868	82,491	1,549	1,549	3,099
1783	18,041	54,123	72,165	1,863	1,863	3,726
1784	10,725	32,175	42,900	518	518	1,036
1785	12,680	38,041	50,722	409	409	819
1786	8,658	25,973	34,631	347	347	693
1787	10,848	32,545	43,394	422	422	843
1788	10,580	31,741	42,322	2,243	2,243	4,486
1789	7,112	21,337	28,449	1,978	1,978	3,955
1790	8,290	24,870	33,160	1,122	1,122	2,245
1791	6,631	19,894	26,525	1,285	1,285	2,571
1792	6,812	20,435	27,246	765	765	1,531
1793	9,101	27,303	36,404	714	714	1,428
1794	8,204	24,612	32,817	1,299	1,299	2,597
1795	7,204	21,613	28,817	451	451	902
1796	8,221	24,664	32,886	831	831	1,662
1797	8,066	24,197	32,263	621	621	1,243
1798	7,195	21,584	28,778	608	608	1,216
1799	10,637	31,912	42,549	240	240	480
1800	3,906	11,718	15,624	628	628	1,256
1801	3,232	9,697	12,930	489	489	979
1802	3,566	10,697	14,263	846	846	1,693
1803	20,678	62,033	82,711	2,599	2,599	5,199
1804	..	..	..	2,482	2,482	4,965

1805	17,111	51,333	68,444	1,540	1,540	3,080
1806	15,792	47,377	63,169	1,355	1,355	2,710
1807	9,392	28,177	37,569	3,745	3,745	7,490
1808	257	770	1,027	..	..	..
1809	..	..	..	2,051	2,051	4,101
1810	..	..	..	29,209	29,209	58,418
1811	2,637	7,911	10,548	26,988	26,988	53,975
1812	1,986	5,958	7,944	1,383	1,383	2,766
1813	957	2,870	3,827	493	493	985
1814	4,624	13,872	18,495	1,405	1,405	2,810
1815	11,912	35,736	47,648	3,734	3,734	7,468
1816	18,911	56,733	75,644	782	782	1,564
1817	11,293	33,879	45,172	2,040	2,040	4,079
1818	..	..	..	..	..	..
1819	..	..	..	..	..	..
1820	..	..	..	..	..	..
1821	..	..	..	..	..	..
1822	..	..	..	..	..	..
1823	..	..	..	..	..	..
1824	..	..	..	4,992	4,992	9,983
1825	..	..	..	5,587	5,587	11,174
1826	..	..	..	..	..	..
1827	..	..	..	..	..	..
1828	..	..	..	..	..	..
1829	..	..	..	..	..	..
1830	..	..	..	..	..	..
1831	18,867	56,601	75,469	13,262	13,262	26,524
1832	23,199	69,598	92,797	17,510	17,510	35,021
1833	19,296	57,889	77,186	14,774	14,774	29,548
1834	19,481	58,444	77,926	18,198	18,198	36,397
1835	17,903	53,708	71,610	29,953	29,953	59,905
1836	20,896	62,689	83,585	28,221	28,221	56,442
1837	21,494	64,481	85,975	29,394	29,394	58,787
1838	21,912	65,737	87,649	41,804	41,804	83,608
1839	19,505	58,515	78,020	45,019	45,019	90,038
1840	21,285	63,855	85,141	42,884	42,884	85,768
1841	25,414	76,242	101,656	29,359	29,359	58,719
1842	25,629	76,886	102,515	41,749	41,749	83,498
1843	..	..	..	40,836	40,836	81,671
1844	33,457	100,370	133,826	61,149	61,149	122,297
1845	22,902	68,706	91,608	101,538	101,538	203,077
1846	24,905	74,715	99,620	101,126	101,126	202,252

1847	24,099	72,297	96,396	116,415	116,415	232,829
1848	37,516	112,547	150,062	187,194	187,194	374,387
1849	32,747	98,241	130,988	220,646	220,646	441,292
1850	33,964	101,892	135,856	209,148	209,148	418,296
1851	30,222	90,665	120,887	188,752	188,752	377,504
1852	23,137	69,410	92,546	223,427	223,427	446,854
1853	19,560	58,679	78,239	267,805	267,805	535,610
1854	15,377	46,132	61,510	145,938	145,938	291,877
1855	18,887	56,662	75,549	140,073	140,073	280,145
1856	22,968	68,903	91,870	277,328	277,328	554,657

Source: STCCR 1773–1856 and appendix A.5.1.
Note: the indirect ghost acreage is calculated from the direct ghost acreage, see text in chapter 5.4.2 on this.

Sources and literature

Primary source materials

STCCR: Sound Toll Chamber Commodity Records (*Øresunds toldkammer*), Commodity Records from the North- and Baltic Sea, 1773–1856 (*Vareregistre fra Nord- og Østersøen 1773–1856*). Danish National Archive (*Rigsarkivet*).

Published literature

Abernethy, David (2000): *The dynamics of global dominance. European overseas empires 1415–1980.* Yale university press, New Haven.

Acemoglu, Daron, Simon Johnson and James Robinson (2005): "The rise of Europe: Atlantic trade, institutional change, and economic growth", *American Economic Review*, vol 95, no 3, pp 546–579.

Bairoch, Paul (1993): *Economics & world history: myths and paradoxes.* University of Chicago press, Chicago.

Borgström, Georg (1972): *The hungry planet. The modern world at the edge of famine.* Macmillan, New York.

Boserup, Ester (1965): *The conditions of agricultural growth. The economics of agrarian change under population pressure.* George Allen & Unwin, London.

Brolin, John (2006): *The bias of the world. Theories of unequal exchange in history.* Lund university, Lund.

Carey, Mark (2009): "Latin American environmental history: Current trends, interdisciplinary insights, and future directions", *Environmental History*, vol 14, no 2, pp 221-252.

Carley, Michael and Philippe Spapens (1998): *Sharing the world. Sustainable living & global equity in the 21st century.* Earthscan, London.

Chambers, Nicky, Craig Simmons and Mathis Wackernagel (2000): *Sharing nature's interest. Ecological footprints as an indicator of sustainability.* Earthscan, London.

Crosby, Alfred (1986): *Ecological imperialism. The biological expansion of Europe, 900–1900.* Cambridge university press, Cambridge.

Curtin, Philip (1998): *The rise and fall of the plantation complex. Essays in Atlantic history.* Cambridge university press, Cambridge.

Emmanuel, Arghiri (1972): *Unequal exchange: A study of the imperialism of trade.* Monthly Review press, New York.

Engerman, Stanley (1972): "The slave trade and British capital formation in the Eighteenth century: a comment on the Williams Thesis", *Business History Review*, vol XLVI, no 4, pp 430–443.

Farnie, Douglas and David Jeremy (eds, 2004): *The fibre that changed the world. The cotton industry in international perspective, 1600-1990s*. Oxford university press, Oxford.

Gadd, Carl-Johan (1983): *Järn och potatis. Jordbruk, teknik och social omvandling i Skaraborgs län 1750–1860.* Ekonomisk-historiska institutionen, Göteborgs universitet, Göteborg.

Galloway, J. H. (1989): *The sugar cane industry. An historical geography from its origins to 1914.* Cambridge university press, Cambridge.

Gemery, H.A. and J.S. Hogendorn (1978): "Technological change, slavery and the slave trade" in Clive Dewey and A.G. Hopkins (eds, 1978): *The imperial impact: Studies in the economic history of Africa and India*. Athlone press, London.

Hannerberg, David (1971): *Svenskt agrarsamhälle under 1200 år.* Läromedelsförlagen, Stockholm.

Hornborg, Alf (1998): "Towards an ecological theory of unequal exchange: articulating world system theory and ecological economics", *Ecological Economics*, vol 25, no 1, pp 127-136.

Hornborg, Alf (2007): "Footprints in the cotton fields: The industrial revolution as time-space appropriation and environmental load displacement" in Alf Hornborg, J.R. McNeill and Joan Martinez-Alier (eds, 2007): *Rethinking environmental history. World-system history and global environmental change.* Altamira press, Lanham.

Inikori, Joseph (1987): "Slavery and the development of industrial capitalism in England" in Barbara Solow and Stanley Engerman (eds, 1987): *British capitalism & Caribbean slavery. The legacy of Eric Williams.* Cambridge university press, Cambridge.

Inikori; Joseph (2002): *Africans and the industrial revolution in England. A study in international trade and economic development.* Cambridge university press, Cambridge.

Jones, Eric (1987): *The European miracle: environments, economies and geopolitics in the history of Europe and Asia.* Cambridge university press, Cambridge.

Marks, Robert B (2002): *The origins of the modern world. A global and ecological narrative.* Rowman & Littlefield, Lanham.

Martinez-Alier, Joan (2007): "Marxism, social metabolism, and international trade" in Alf Hornborg, J.R. McNeill and Joan Martinez-Alier (eds, 2007): *Rethinking environmental history. World-system history and global environmental change.* Altamira press, Lanham.

McCusker, John and Russell Menard (1985): *The economy of British America 1607–1789*. University of North Carolina press, Chapel Hill.

O'Brien, Patrick (1982): "European economic development: the contribution of the periphery", *Economic History Review*, vol 35, no 1, pp 1–18.

O'Brien, Patrick (2006): "A critical review of a tradition of meta-narratives from Adam Smith to Karl Pomeranz" in P.C. Emmer et al (eds, 2006): *A* Deus ex Machina *revisited: Atlantic colonial trade and European economic development.* Brill, Leiden.

Pollard, Sidney (1981): *Peaceful conquest. The industrialization of Europe 1760-1970.* Oxford university press, Oxford.

Pomeranz, Kenneth (2000): *The great divergence. China, Europe and the making of the modern world economy.* Princeton university press, Princeton.

Richards, John (2003): *The unending frontier. An environmental history of the early modern world.* University of California press, Berkeley.

Riello, Giorgio and Prasannan Parthasarathi (eds, 2009): *The spinning world. A global history of cotton textiles, 1200-1850.* Oxford university press, Oxford.

Riello, Giorgio and Tirthankar Roy (eds, 2009): *How India clothed the world. The world of South Asian textiles, 1500-1850*. Brill, Leiden.

Salvatore, Dominick (2007): *International economics. 9th edition.* John Wiley & sons, Hoboken.

Schwartz, Stuart (1985): *Sugar plantations in the formation of Brazilian society. Bahia, 1550–1835.* Cambridge university press, Cambridge.

Sheridan, Richard (1969): "The plantation revolution and the industrial revolution, 1625–1775", *Caribbean Studies*, vol 9, no 3, pp 5–25.

Sheridan, Richard (1973): *Sugar and slavery. An economic history of the British West Indies, 1623–1775.* Canoe press, Barbados.

Smith, Wayne (1999): "Production statistics" in Wayne Smith and Tom Cothren (eds, 1999): *Cotton. Origin, history, technology, and production.* John Wiley & sons, New York.

Solow, Barbara (1985): "Caribbean slavery and British growth – The Eric Williams hypothesis", *Journal of Development Economics*, vol 17, pp 99–115.

Solow, Barbara (1987): "Capitalism and slavery in the exceedingly long run" in Barbara Solow and Stanley Engerman (eds, 1987): *British capitalism & Caribbean slavery. The legacy of Eric Williams*. Cambridge university press, Cambridge.

Sveistrup, P.P. (1942): *Bidrag til de tidligere Dansk-Vestindiske øers økonomiske historie.* Institutet for historie og samfundsøkonomi, København.

Wackernagel, Mathis and William Rees (1996): *Our ecological footprint: Reducing human impact on the earth.* New Society publishers, Gabriola island.

Wackernagel et al (2002): "Tracking the ecological overshoot of the human economy", *Proceedings of the National Association of Science*, vol 99, no 14, pp 9266–9271.

Watts, David (1990): *The West Indies. Patterns of development, culture and environmental change since 1492.* Cambridge university press, Cambridge.

Williams, Eric (1964 [1943]): *Capitalism and slavery.* Andre Deutsch, London.

World Factbook (2008). Bartleby/Central Intelligence Agency, Dulles.

MEDDELANDEN FRÅN EKONOMISK HISTORISKA INSTITUTIONEN VID GÖTEBORGS UNIVERSITET (1-73)
MEDDELANDEN FRÅN EKONOMISK HISTORISKA INSTITUTIONEN, HANDELSHÖGSKOLAN VID GÖTEBORGS UNIVERSITET (74-100)

1. Sture Mårtenson: Agiot under kreditsedelepoken 1789-1802. 1958.
2. Marianne Nilsson: Öresundstullsräkenskaperna som källa för fraktfarten genom Öresund under perioden 1690-1709. 1962.
3. Rolf Adamson: Den svenska järnhanteringens finansieringsförhållanden. Förlagsinteckningar 1800-1884. 1963.
4. Rolf Adamson: De svenska järnbrukens storleksutveckling och avsättningsinriktning 1796-1860. 1963.
5. Martin Fritz: Gustaf Emil Broms och Norrbottens järnmalm. En studie i finansieringsproblematiken under exploateringstiden 1891-1903. 1965 .
6. Gertrud Wessberg: Vänersjöfarten under 1800-talets förra hälft. 1966.
7. Rolf Adamson: Järnavsättning och bruksfinansiering 1800-1860. 1966.
8. Sture Martinius: Befolkningsrörlighet under industrialismens inledningsskede i Sverige. 1967.
9. Ingemar Nygren: Svensk sparbanksutlåning 1820-1913. En analys av de större sparbankernas kreditgivning. 1967.
10. Carin Sällström-Nygren: Vattensågar och ångsågar i Norrland under 1800-talet. 1967.
11. Martin Fritz: Järnmalmsproduktion och järnmalmsmarknad 1883-1913. De svenska exportföretagens produktionsutveckling, avsättningsinriktning och skeppningsförhållanden. 1967.
12. Martin Fritz: Svensk järnmalmsexport 1883-1913. 1967.
13. Gösta Lext: Mantalsskrivningen i Sverige före 1860. 1968.
14. Martin Fritz: Kirunagruvornas arbetskraft 1899-1905. Rekrytering och rörlighet. 1969.
15. Jan Kuuse: Varaktiga konsumtionsvarors spridning 1910-1965. En indikator på välståndsutvecklingen i Sverige. 1969. (Akademiförlaget).
16. Ingela Elison: Arbetarrörelse och samhälle i Göteborg 1910-1922. 1970.
17. Sture Martinius: Agrar kapitalbildning och finansiering 1833-1892. 1970.
18. Ingemar Nygren: Västsvenska sparbankers medelplacering 1820-1913. 1970.
19. Ulf Olsson: Lönepolitik och lönestruktur. Göteborgs verkstadsarbetare 1920-1949. 1970.
20. Jan Kuuse: Från redskap till maskiner. Mekaniseringsspridning och kommersialisering inom svenskt jordbruk 1860-1910. 1970.
21. Sture Martinius: Jordbruk och ekonomisk tillväxt i Sverige 1830-1870. 1970.
22. Ingemar Nygren: Svenska sparbankers medelplacering 1914-1968. En undersökning av de större sparbankerna. 1970.
23. Jan Kuuse: Inkomstutveckling och förmögenhetsbildning. En undersökning av vissa yrkesgrupper 1924-1959. 1970.

24. Ulf Olsson: Regionala löneskillnader inom svensk verkstadsindustri 1913-1963.1971.
25. Kent Olsson: Hushållsinkomst, inkomstfördelning och försörjningsbörda. En undersökning av vissa yrkesgrupper i Göteborg 1919-1960. 1972.
26. Artur Attman: The Russian and Polish markets in international trade 1500-1650. 1973.
27. Artur Attman: Ryssland och Europa. En handelshistorisk översikt. 1973.
28. Ulf Olsson: Upprustning och verkstadsindustri i Sverige under andra världskriget. 1973.
29. Martin Fritz: German steel and Swedish iron ore 1939-1945. 1974.
30. Ingemar Nygren: Svensk kreditmarknad under freds- och beredskapstid 1935-1945. 1974.
31. Lars Herlitz: Jordegendom och ränta. Omfördelningen av jordbrukets merprodukt i Skaraborgs län under frihetstiden. 1974.
32. Hugo Kylebäck: Konsumentkooperation och industrikarteller. Kooperativa förbundets industriföretag före 1939 med särskild hänsyn till margarin-, kvarn-, gummi- och glödlampsbranscherna. 1974. (Rabén & Sjögren).
33. Martin Fritz: Ernst Thiel. Finansman i genombrottstid. 1974.
34. Jan Kuuse: Interaction between agriculture and industry. Case studies of farm mechanisation and industrialisation in Sweden and the United States 1830-1930. 1974.
35. Lars Herlitz: Fysiokratismen i svensk tappning 1767-1770. 1974.
36. Sven-Olof Olsson: German coal and Swedish fuel 1939-1945. 1975.
37. Ulf Olsson: The creation of a modern arms industry. Sweden 1939-1974. 1977.
38. Sverker Jonsson: Annonser och tidningskonkurrens. Annonsernas roll i tidningsekonomin och betydelse för koncentrationsprocessen i Stockholm, Göteborg och Malmö. 1977.
39. Ekonomisk-historiska studier tillägnade Artur Attman. 1977.
40. Bertil Andersson: Handel och hantverk i Göteborg. Två företagargruppers ekonomiska utveckling 1806-1825.1977.
41. Folke Karlsson: Mark och försörjning. Befolkning och markutnyttjande i västra Småland 1800-1850. 1978.
42. Hans Wallentin: Arbetslöshet och levnadsförhållanden i Göteborg under 1920- talet. 1978.
43. Sverker Jonsson: Annonsbojkotten mot Göteborgs Handels- och Sjöfartstidning 1940. Myt eller realitet? 1979.
44. Ingemar Nygren: Riksgäldskontoret 1939-1945. Statlig upplåning för beredskap och räntestabilisering. 1979.
45. Hugo Kylebäck: Konsument- och lantbrukskooperationen i Sverige. Utveckling, samarbets- och konkurrensförhållanden före andra världskriget. 1979. Andra upplagan 1984.
46. Lars-Åke Engblom: Arbetarpressen i Göteborg. En studie av arbetarpressens förutsättningar, arbetarrörelsens presspolitik och tidningskonkurrensen i Göteborg 1890-1965. 1980.

47. Ingemar Nygren: Svensk kreditmarknad 1820-1875. Översikt av det institutionella kreditväsendets utveckling.1981.
48. Jerker Carlsson: The limits to structural change. A comparative study of foreign direct investment in Liberia and Ghana 1950-1971. 1981. (Nordiska Afrikainstitutet)
49. Lasse Cornell: Sundsvallsdistriktets sågverksarbetare 1860-1890. Arbete, levnadsförhållanden, rekrytering. 1982.
50. Martin Fritz, Ingemar Nygren, Sven-Olof Olsson, Ulf Olsson: The adaptable nation. Essays in Swedish economy during the Second World War. 1982. (Almqvist & Wiksell International.)
51. Bengt Berglund: Industriarbetarklassens formering. Arbete och teknisk förändring vid tre svenska fabriker under 1800-talet. 1982.
52. Sverker Jonsson: Pressen, reklamen och konkurrensen 1935-1978. 1982.
53. Carl-Johan Gadd: Järn och potatis. Jordbruk, teknik och social omvandling i Skaraborgs län 1750-1860. 1983.
54. Gösta Lext: Studier i svensk kyrkobokföring 1600-1946. 1984.
55. Lasse Cornell: Arbete och arbetsformernas utveckling. 1986.
56. Bengt Berglund: Kampen om jobben. Stålindustrin, facket och löntagarna under 1970-talskrisen. 1987.
57. Christina Johansson: Glasarbetarna 1860-1910. Arbete, levnadsförhållanden och facklig verksamhet vid Kosta och andra glasbruk under industrialismens genombrottsskede. 1988.
58. Urban Herlitz: Restadtegen i världsekonomin. Lokala studier av befolkningstillväxt, jordbruksproduktion och fördelning i Västsverige 1800-1860. Göteborg 1988.
59. Jan Bohlin: Svensk varvsindustri 1920-1975: lönsamhet, finansiering och arbetsmarknad. 1989.
60. Sven A. Björkenstam: Svenskt skeppsbyggeri under 1800-talet. Marknad och produktion. 1989.
61. Luis Bértola: The manufacturing industry of Uruguay, 1913-1961: a sectoral approach to growth, fluctuations and crisis. (Institute of Latin American Studies, Stockholm University Monograph Nr 20). Göteborg-Stockholm. 1990.
62. Bertil Fridén: På tröskeln till marknaden. Makt, institutionell kontext och ekonomisk effektivitet i Västsverige 1630-1800. 1991.
63. Lars Herlitz: Koppskatten i det äldre tjänstesamhället. Den mantalsskrivna befolkningen i Skaraborgs län 1699-1767. 1991.
64. Carl-Johan Gadd: Självhushåll eller arbetsdelning? Svenskt lant- och stadshantverk ca 1400-1860. 1991.
65. Mats Bladh: Bostadsförsörjningen 1945-1985. Det industriella byggandets uppgång och fall. 1992. (Statens institut för byggnadsforskning, Gävle)
66. Birgit Karlsson: Handelspolitik eller politisk handling. Sveriges handel med öststaterna 1946-1952. 1992.
67. Jan Jörnmark: Coal and Steel in Western Europe 1945-1993: Innovative Change and Institutional Adaptation. 1993.

68. Torbjörn Mårtensson: Bantågens gång. Järnvägens godstrafik och dess anpassning till näringslivets rumslighet, branschstruktur och transportefterfrågan 1890-1985. 1994.
69. Jón Th. Thór: British Trawlers and Iceland 1919-1976. 1995. (Fiskeri- og Sjöfartsmuseeet, Esbjerg)
70. Staffan Sundin: Från bokförlag till mediekoncern. Huset Bonnier 1909-1929. 1996.
71. Ulf Olsson (ed), Business and European Integration since 1800. Regional, National and International perspectives. 1997.
72. Martti Rantanen: Tillväxt i periferin. Befolkning och jordbruk i Södra Österbotten 1750-1890. 1997.
73. Rudolf Tempsch: Från Centraleuropa till folkhemmet. Den sudettyska invandringen till Sverige 1938-1955. 1997.
74. Åke Edén: Hävstången. Agrarkooperativa utvecklingsförsök i Östbengalen/Bangladesh 1860-1984. 1998.
75. Christina Mårtensson: Tjänstebefattning som kan för henne vara passande. Uppkomst och utveckling av könsbundna befattningar vid telegrafverket 1865-1984. 1998.
76. Björn Tropp: Att sätta spaden i jorden. Kommunalpolitiskt handlingsutrymme 1945-1985. 1999.
77. Kerstin Norlander: Människor kring ett företag. Kön, klass och ekonomiska resurser Liljeholmens Stearinfabriks AB 1872 -1939. 2000.
78. Christina Telasuo: Småstater under internationalisering. Valutamarknadens avreglering i Sverige och Finland på 1980-talet. En studie i institutionell omvandling. 2000
79. Bengt-Olof Andersson: Den svenska modellens tredje kompromiss. Efterkrigstidens välfärdspolitik med utgångspunkt från industrins kompetenssäkring och skolans refor-mering. 2000.
80. Berit Larsson: Svenska varor på svenska kölar. Staten, industrialiseringen och linjesjöfartens framväxt i Sverige 1890-1925. 2000.
81-83. Christina Dalhede. Handelsfamiljer på stormaktstidens Europamarknad 1-3. 2001. (Warne förlag)
84. Lage Rosengren: Jord och folk. Om produktiva resurser i västsvensk blandbygd under 1700-talet. 2001.
85. Carina Gråbacke: Möten med marknaden. Tre svenska fackförbunds agerande under perioden 1945-1976. 2002.
86. Staffan Granér: Samhävd och rågång. Egendomsrelationer, ägoskiften och marknadsintegration i en värmländsk skogsbygd 1630-1750. 2002.
87. Ingela Karlsson: Kriget, staten och rederierna. Den svenska handelsflottan 1937-1947. 2003.
88. Torbjörn Mårtensson: med öppen blick för framtiden och utvecklingen. Reglering och konkurrens inom den yrkesmässiga landsvägstrafiken 1921-1939. 2003.
89. Per Hallén: Järnets tid. Den svenska landsbygdsbefolkningens järninnehav och järnkonsumtion 1750-1870. 2003.

90. Linda Lane: Trying To Make A Living. Studies in the economic life of women in interwar Sweden. 2004.
91. Martin Kahn: Measuring Stalin's Strength during Total War. U.S. and British intelligence on the economic and military potential of the Soviet Union during the Second World War, 1939-45. 2004.
92. Markets and Embeddedness. Essays in honour of Ulf Olsson.2004.
93. Erik Örjan Emilsson: Before 'The European Miracles' Four Essays on Swedish Preconditions for Conquest, Growth and Voice. 2005.
94. Hrefna M. Karlsdottir: Fishing on Common Grounds. The Consequences of unregulated Fisheries of North Sea Herring in the Postwar Period, 2005.
95. Oskar Broberg: Konsten att skapa pengar. Aktiebolagens genombrott och finansiell modern-isering kring sekelskiftet 1900, 2006.
96. Christina Dalhede: Viner, Kvinnor, Kapital – En 1600-talshandel med potential? Fjärrhandelsfamiljerna Jeronimus Möller i Lübeck och Sibrant Valck i Göteborg. Handelsfamiljer på Stormaktstidens Europamarknad 4. (Warne förlag), Partille-Göteborg 2006.
97. Christina Dalhede: Varor och Familjer, Lübeck och Göteborg. CD-Rom. Handelsfamiljer på Stormaktstidens Europamarknad 5. (Warne förlag), Partille-Göteborg 2006.
98. Peter Sandberg: Kartellen som sprängdes. Svensk bryggeriindustri under institutionell och strukturell omvandling 1945 – 1975. 2006.
99. Ann Ighe: I faderns ställe, Genus, ekonomisk förändring och den svenska förmyndarinstitutionen ca 1700-1860. 2007.
100. Oscar Broberg (red.): Ernfrid Browaldh. Strödda minnesbilder. 2007.

GOTHENBURG STUDIES IN ECONOMIC HISTORY

1. Svante Prado: Aspiring to a Higher Rank. Swedish Factor Prices and Productivity in International Perspective 1860-1950. 2008.
2. Mirko Ernkvist: Creating player appeal. Management of Technological innovation and Changing Pattern of Industrial Leadership in the U.S. Gaming Machine Manufacturing Industry, 1965-2005. 2009.
3. Klas Rönnbäck: Commerce and Colonisation. Studies of Early Modern Merchant Capitalism in the Atlantic Economy. 2009.