

Ulrich PFISTER  
University of Münster

# Foreign trade and the development of the German cotton industry, c.1730–1790

*Calicoes, indiennes* were  
An infinitely differentiable product



Detail of an *indienne* print, wood block on cotton, Oberkampf works, Jouy (near Paris), 1785

© Musée de l'Impression sur Etoffes, Mulhouse

# Introduction

- ◆ Both the so-called small and great divergences began in the late 17<sup>th</sup> and 18<sup>th</sup> centuries (e. g., Broadberry et al. 2015)
- ◆ If cotton manufacture mattered as a leading sector of early industrialization, then its development previous to mechanization must somehow relate to divergence
- ◆ I establish relatively slow growth of cotton processing in Germany during the eighteenth century and relate it to the relevance of trade in economic growth towards the end of the Malthusian growth regime

# Structure of the presentation

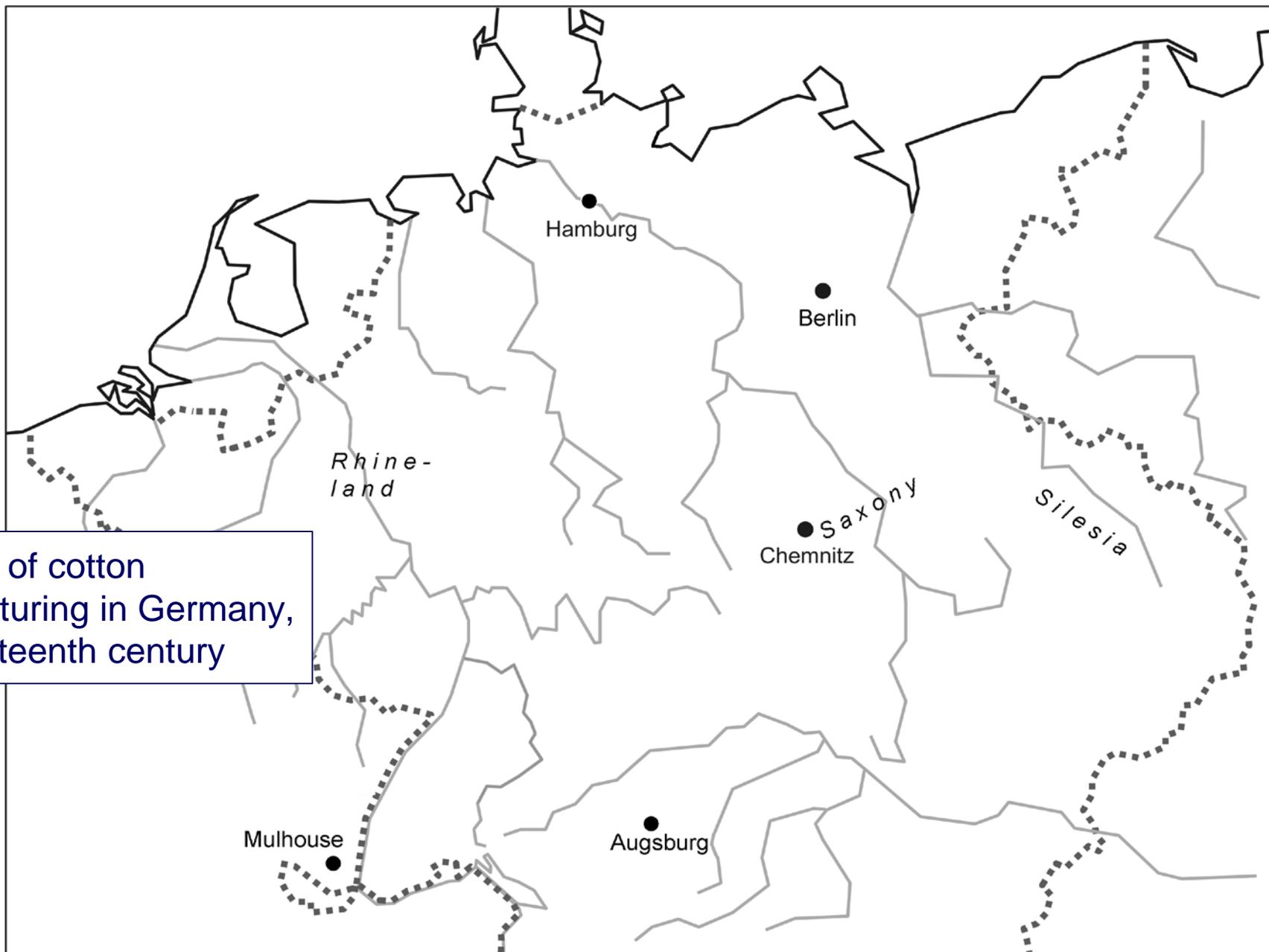
- I. Overview
- II. Imports of cotton goods into Germany
- III. The case for import substitution and relative backwardness
- IV. Interpretation: Trade and economic growth in the 18<sup>th</sup> century

Part I

# Overview

# Location of cotton manufacture in Germany late eighteenth and early nineteenth century

- ◆ Calico printing and cotton processing, c. 1790
  - ◆ Hamburg (cotton printing)
  - ◆ Berlin (cotton printing)
  - ◆ South-western Saxony (cotton printing, cotton processing)
  - ◆ Silesia (cotton processing)
  - ◆ Lower Rhine (cotton printing, cotton processing)
  - ◆ German section of the continental cotton triangle Augsburg-Mulhouse-Lyon (cotton printing, cotton processing)
- ◆ Mechanical cotton spinning c. 1840 (early industrial censuses)
  - ◆ Saxony (about half of total spinning capacity)
  - ◆ Silesia
  - ◆ Rhineland
  - ◆ South (minor shares)



# Trading networks related to cotton manufacture

- ◆ Individual locations of cotton manufacture depended from different trading networks for the provision of inputs
- ◆ North
  - ◆ Netherlands (Amsterdam)
  - ◆ Hanseatic towns (Hamburg)
- ◆ South
  - ◆ France (Bordeaux, Marseille)
  - ◆ Italy (Genoa, Venice)
- ◆ Saxony, Silesia
  - cotton imports from the Levant may have partly taken the overland route via the Balkans and Bohemia
- ◆ This study relies exclusively on information concerning the northern trading network!

## Part II

# Imports of cotton goods into Germany

Exports of calicos from London to Germany

(Ledgers of imports and exports, British National Archives)

Imports of cotton goods through Hamburg

(database of a bit less than 200,000 individual declarations)

# German imports of cotton goods, 1702–1798 (values in kilograms of silver)



Sources: London: British National Archives, CUST 3; Hamburg: Database from Schneider et al. (2001).

# German imports of cotton goods, 1702–1798

## Comments on sources

- ◆ British export values essentially measure quantities (pieces)
  - ◆ Authorities obviously applied a constant value of a bit less than 0.6 £ per piece
  - ◆ This misses out the possible decline of textile prices over time (Shammas 1994)
- ◆ Import toll collection in Hamburg was highly selective
  - ◆ West of the Scheldt estuary; Archangelsk
  - ◆ Transit trade was not subject to tolls
  - ◆ Hamburg did not liberalize sea trade in the 1750s like other southern North Sea ports, which probably led to trade diversion
- ◆ On average, the ratio of recorded import values through Hamburg / exports through London to Germany in 1733–1776 is 0.43 with a declining exponential trend of -1.6 p. a.
- ◆ Nevertheless, both data series show a similar trajectory ca. 1700–1780

# German imports of cotton goods, 1702–1798

## The trajectory

- ◆ The EIC was the main distributor of Indian cotton goods in Central Europe
- ◆ During the first third of the 18<sup>th</sup> c., cotton goods seem to have become “fashion’s favourite” not only in Britain, but in Germany as well
  - ◆ Beginnings of massive imports of cotton goods in the 1700s
  - ◆ Rapid expansion during the decade after the conclusion of the War of the Spanish Succession (1713)
  - ◆ In 1733–1742 cotton goods constituted the most valuable item of Hamburg’s seaborne import trade after sugar
- ◆ Decline between the early 1740s and 1760s
  - Exponential trend of trade values, 1733–1776: X London -3.7%, M Hamburg -5.1%
- ◆ Resumption from the late 1780s

# German imports of cotton goods, 1702–1798

## Two interpretations

### ◆ Demand

- ◆ The end of the Little Ice Age, c. 1700–1730 raised the real land rent and, consequently, demand for traded goods
- ◆ From the mid-1730s, both the real land rent and the real wage fell, which depressed demand

### ◆ Import substitution

- ◆ The decline of imports of cotton goods from the 1740s to the 1760s mirrors successful import substituting industrialization
- ◆ The rise of imports from the late 1780s reflects the increasing competitiveness of the British cotton industry in the wake of early industrialization

## Part III

# The case for import substitution and relative backwardness

Growth of inputs into cotton manufacture and calico  
printing through Hamburg and the Netherlands

# Evidence of import-substituting industrialization I

## Data, 1753–c.1790

Annual import quantities of raw cotton of Germany through separate trade routes, 1753 and 1789–1792 (in metric tons, annual growth rates in per cent)

	Amsterdam → Rhine	op de Maaze → Germany	Amsterdam → Kleine Oost	Imports of Hamburg	Total	Total excl. op the Maaze
1753	150		179	57		386
1789–1792	282	54	220	64	620	567
growth rate p. a.	1.7		0.6	0.3		1.0

Annual growth rates of trade with dyes and other inputs for cotton manufacturing, 1753–c. 1790 (per cent)

	Amsterdam → Rhine	Imports of Hamburg
<i>Drogues</i> (value)	1.4	0.4
Indigo (quantity)	5.0	-2.0
Fernambuc wood (brazilwood; quantity)		1.3
Dyestuffs other (value)	0.5	
Vitriol oil (value)	5.8	-1.3

*Sources:* Pfister (2017b, pp. 14, 48–51, based on Hamburg database and Leounie van Nierop, “Uit de bakermat der amsterdamsche handelsstatistiek,” *Jaarboek van het genootschap Amstelodamum* 13 (1915), 104–172; Johannes de Vries, “De statistiek von in- en uitvoer van de Admiraliteit op de Maaze 1784–1793,” *Economisch-Historisch Jaarboek* 29 (1963), 188–259, 30 (1964), 236–307, p. 246.

# Evidence of import-substituting industrialization II

## Explanations

- ◆ I combine Dutch statistics concerning exports to Germany with information contained in Hamburg's import ledgers to obtain an aggregate picture with respect to imports of inputs for cotton manufacture and printing between 1753 and c. 1790
- ◆ Caveats concerning the import ledgers of Hamburg
  - ◆ See above, plus:
  - ◆ No commodity classification; trade with minor items (dyes, gum, mordant) is sometimes lumped together under summary categories (*drogues*, "various merchandise")
- ◆ Dutch trade statistics for key years 1753 and 1789–1792
  - ◆ Exports of the Admiralty of Amsterdam to the Lower Rhine area
  - ◆ Exports of the Admiralty of Amsterdam to the "Kleine Oost"
    - Trade with Hanseatic towns; not included in Hamburg's import ledgers
  - ◆ "op the Maaze": trade of other Dutch seaports with the German hinterland

## A glimpse at British exports to Germany

- ◆ Great Britain was not a relevant provider of raw cotton for Germany  
Small and highly variable export quantities
- ◆ In contrast, the plantation economy provided a number of relevant inputs for calico printing
- ◆ Growth rate of indigo exports to Germany (quantity in pound, per cent p. a.)  
1733/7–1750/4 1.6 per cent; 1750/4–1773/7 10.2 per cent

# Evidence of import-substituting industrialization III

## Interpretation

- ◆ Imports of raw cotton expanded at an annual rate of 1.0 per cent
  - ◆ Proxy for pace of growth of domestic cotton processing activity
  - ◆ Confirmation: In Bocholt (Westphalia) the number of fustians sealed by market authorities expanded by 1.0 per cent in 1708–90
- ◆ Imports of dyes and possibly of other relevant inputs for calico printing seem to have expanded faster
  - ◆ Calico printing may have developed more rapidly than domestic cotton processing in a narrow sense; growth of the latter may have responded to buoyant demand from the calico printing industry
- ◆ The German cotton branch in comparative perspective
  - ◆ Faster growth compared to other branches of textile manufacture in Germany
    - Growth rates p. a. of the number of linen weaving looms in Silesia 1748–1795 0.8 per cent, of the number of pieces of worsteds purchased in Calw 1680–1778 0.8 per cent
  - ◆ Slow growth relative to the cotton manufacturing branches in Britain and France
    - Growth rates p. a. of imports of raw cotton in Marseilles 1760s to 1780s 2.0 per cent, in Britain 1740–1779 3.0 per cent

## Part IV

### Interpretation:

Trade and economic growth in the 18<sup>th</sup> century

## Statement I

# Cottons, new trade theory and directed technological change

- ◆ Consumers have love-for-variety preferences
  - ◆ With other product characteristics given, consumers prefer differentiated over non-differentiated goods, as the latter help to create status (fashion) and identity
- ◆ International trade with differentiated goods is characterized by monopolistic competition and creates welfare through the expansion of the variety of goods available to consumers
- ◆ Output growth as a result of market growth increases the number of workers that potentially apply a technical innovation, which increases the return on investment in R & D
- ◆ Failure of Germany to develop large markets for cotton goods in the pre-industrial period meant that there were no incentives for technical innovation
  - ◆ Reasons: Tyranny of distance in the interior of the continent? Poor institutions?
  - ◆ Note: Some German cottons seem to have been exported

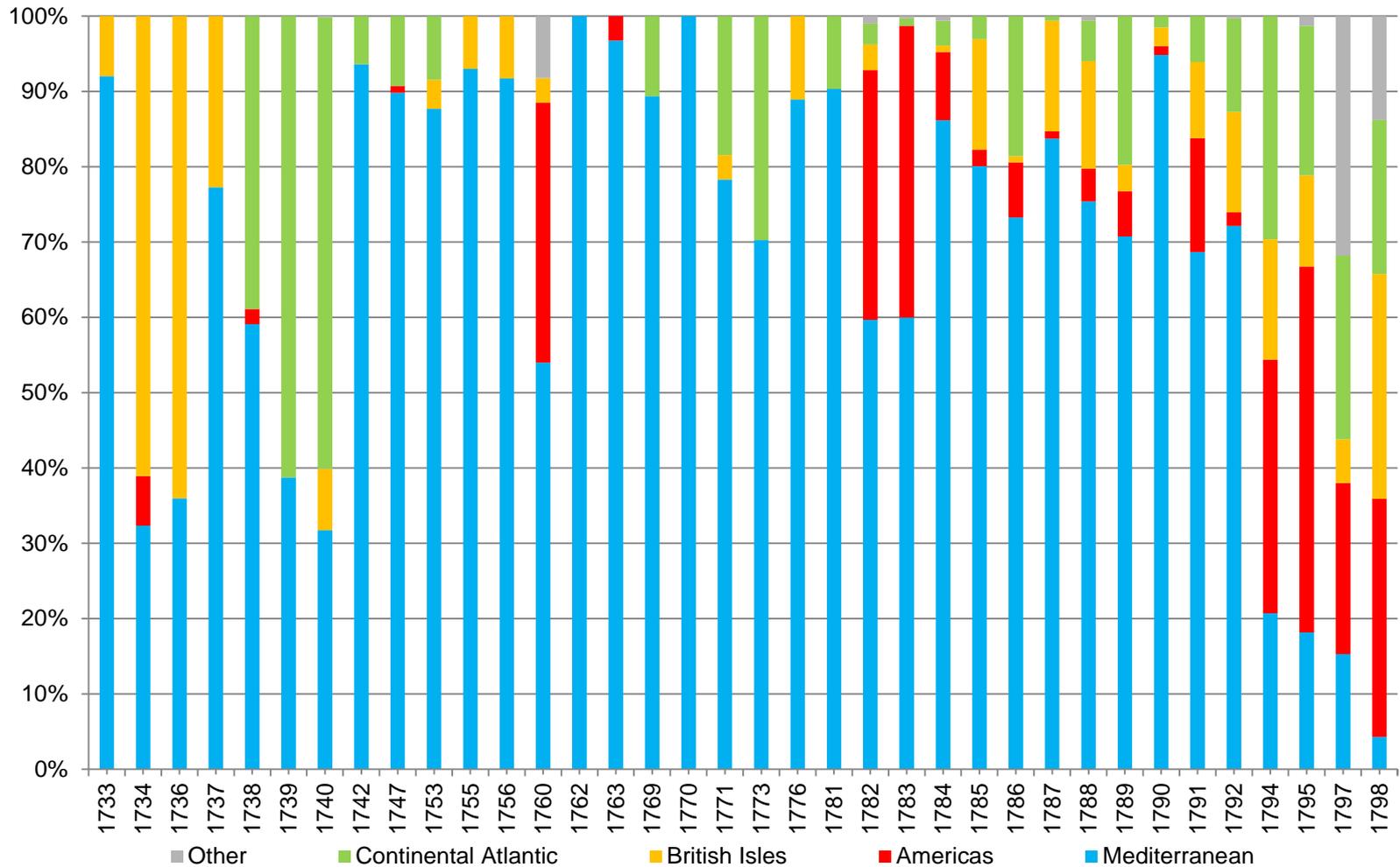
## Statement II

# Industrious revolution, trade and economic growth

- ❖ Growth of cotton manufacture in 18<sup>th</sup> century Germany is remarkable given the development of other aggregates and factor prices
    - ❖ Real land rent per hectare and real day wage declined after early 1730s
    - ❖ Other textile branches grew a bit slower than cotton manufacture
    - ❖ Population grew at about 0.4 per cent p. a.
  - ❖ An increase of the labour effort appears crucial for explaining the growth of cotton manufacture
    - ❖ Given love-for-variety preferences the high level of differentiation of cotton goods may have induced households to shift time from leisure to work.  
This hypothesis is at the heart of the Industrious revolution thesis, but is hard to test
    - ❖ Demand for cotton goods certainly created new employment opportunities in the slack season of the agricultural year
- Growth of trade with inputs for cotton manufacture allowed households to compensate for the fall of marginal product of labour and land in the non-tradable sector and thereby stabilized income

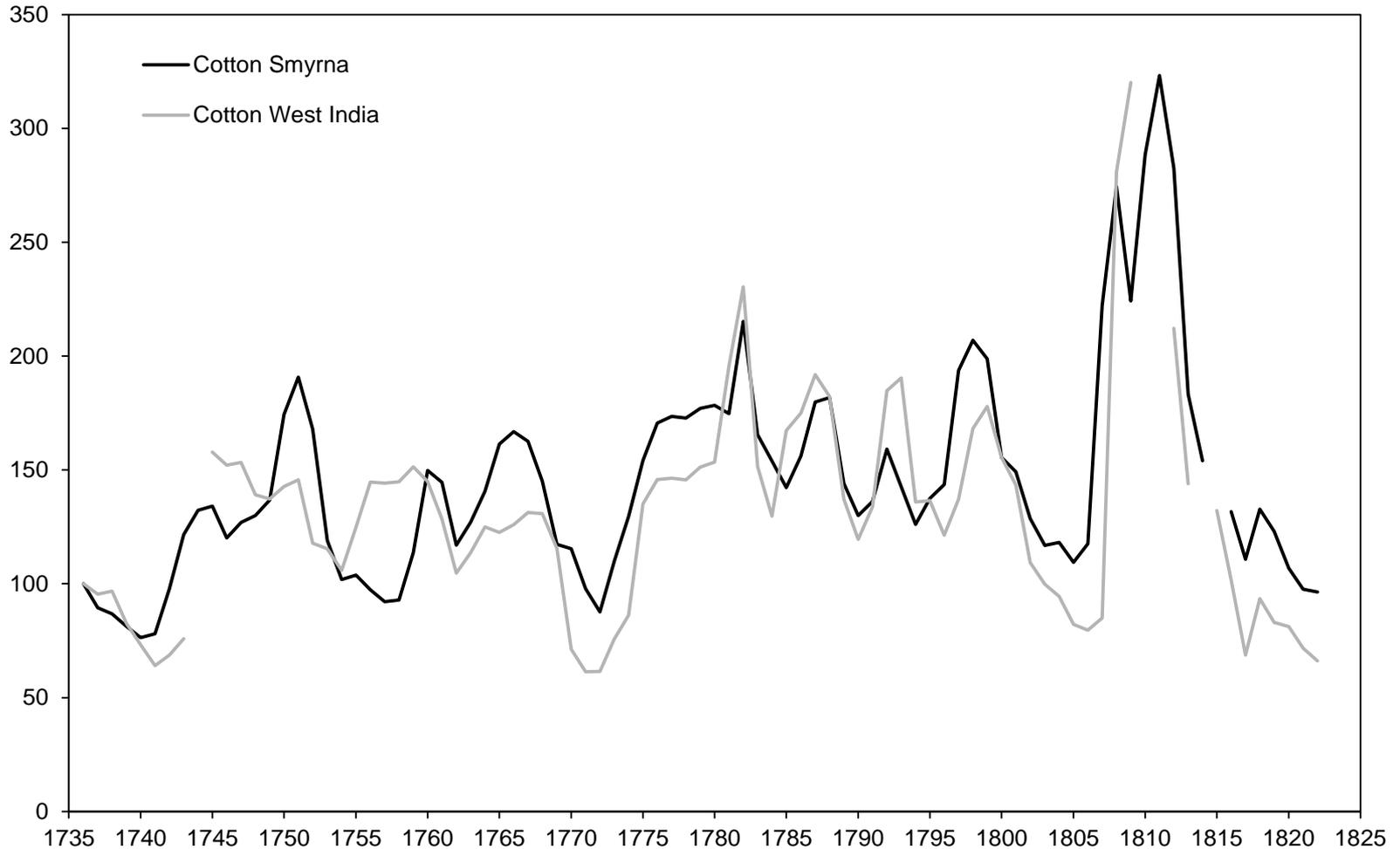
# Appendix

# Regional origin of raw cotton imported through Hamburg by value, 1733–1798



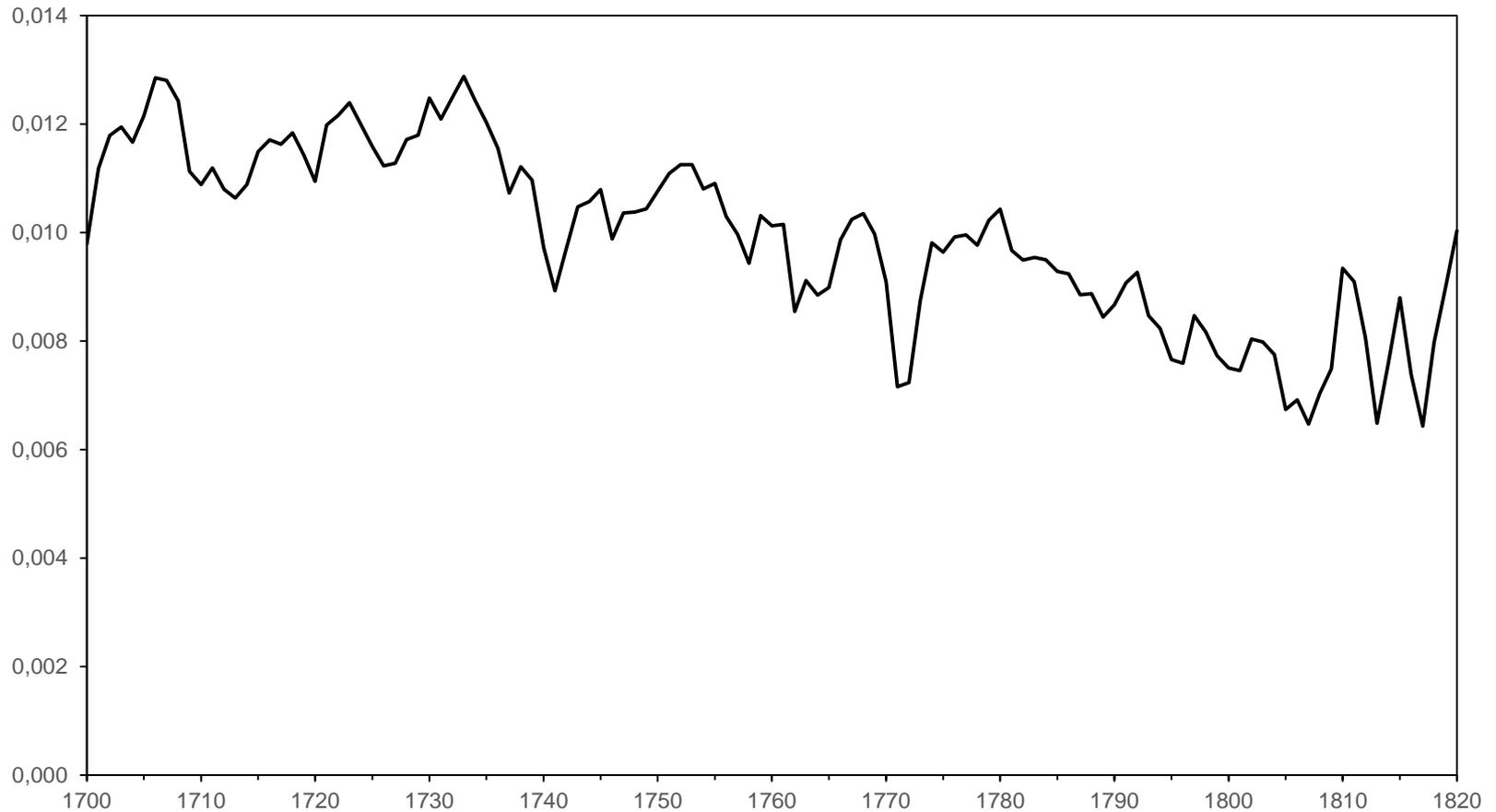
Source: Data from Pfister (2017b).

# Real price of Turkish and American cotton, 1736–1821 (Hamburg prices, deflator: German CPI, 1736=100)



Sources: Price data from Gerhard and Kaufhold (2001) as worked by Pfister (2017b); German CPI from Pfister (2017a).

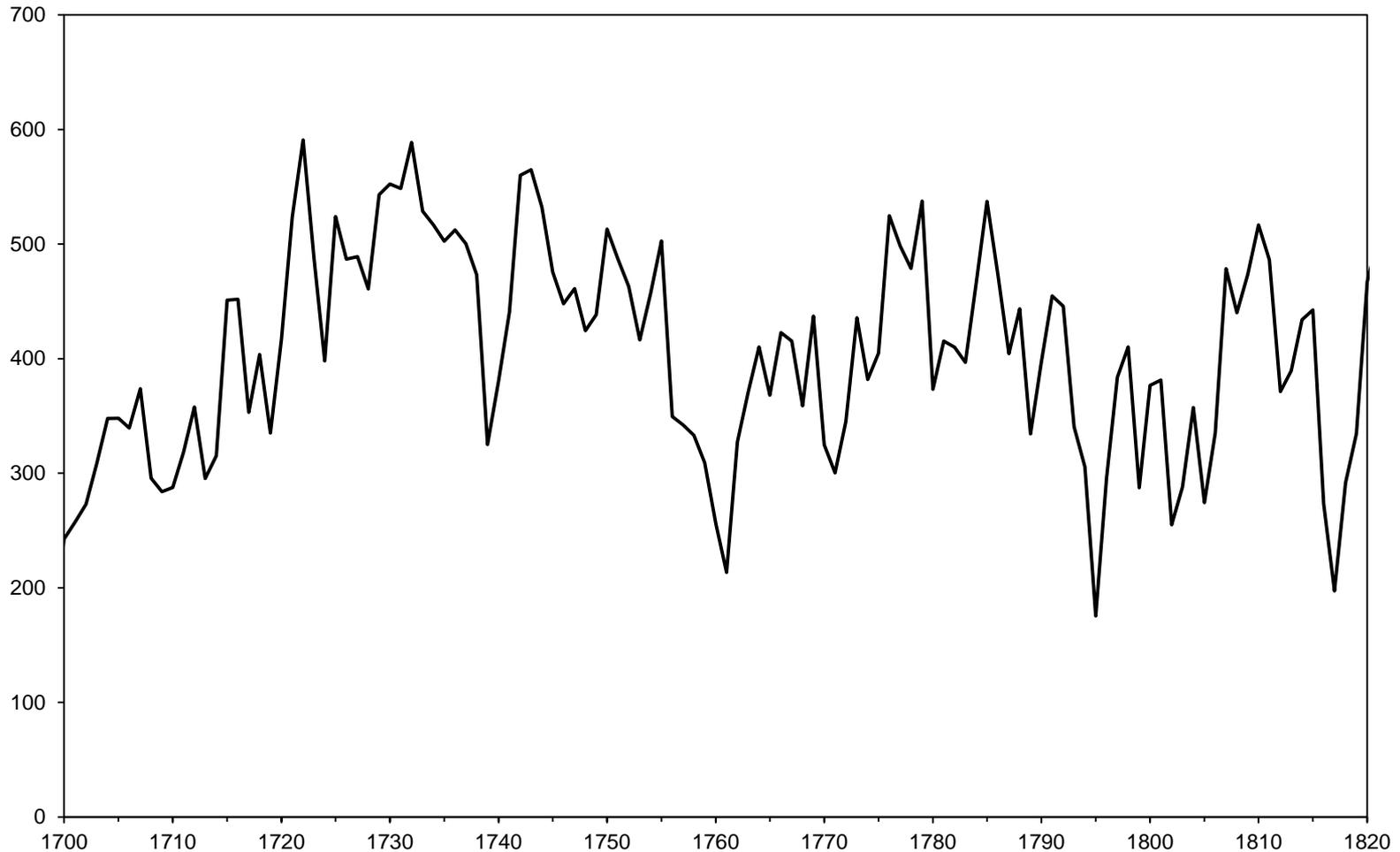
# Real wage of unskilled urban labourers in German towns 1700–1820



Real wage is nominal day wage in summer (grams of silver) divided by the annual cost of a consumption basket of eleven goods with fixed quantities (also in grams of silver).

*Source:* Pfister (2017a).

# Real land rent on five Westphalian estates, 1700–1820



Real land rent is the annual rent paid for the fixed term lease of 1 hectare of land divided by the price of one litre of a weighted grain basket, both expressed in grams of silver.

*Source:* Ongoing work by Johannes Bracht and Ulrich Pfister.