1 Spectacles

This project exists since early 2020, a lot of data was collected, but no clear direction was found yet. There used to be another co-author, now it is only Ruben Durante and Sascha Becker. We picked up the meetings with Sascha on 2022/04/27 and will from now on have weekly meetings.

The premise is that the invention and later widespread adoption of spectacles/glasses had a variety of economic impacts. The mechanisms include

1. **extending the work life:** By ameliorating presbyopia (age-induced loss of near-sight), existing artisans can follow their profession longer.

   1.1. This alone would have an effect on growth.

   1.2. Older workers also have more experience and are thus more likely to know of the most productive techniques. If they take on apprentices in their higher age, this would speed up the growth of knowledge, since apprentices would already start their career with better knowledge, allowing them to improve them in their career further than had they started with a less advanced technique.

   1.3. Artisans working longer could also speed up technological growth in another way – by creating more patents (since they live longer), and potentially by creating smarter patents as they grow older and wiser.

   1.4. Finally, the higher *work life* expectancy could also lead to a higher *life* expectancy: being able to earn (more) money for longer, workers could afford life-extending medical treatments they otherwise couldn't.

2. **opening up the set of possible occupations:** For some people (how many?) their farsightedness from birth prevents them from choosing a craft that requires close-up vision, such as many artisanships, anything that requires literacy, engineering of machines or instruments. Thus we would expect an increase in the share of these occupations (see index of spectacle-beneficiality), limited only by institutional and social mobility constraints.

3. **speeding up innovation:** In Mokyr's framework, the invention of spectacles (and better understanding of optical theory which developed concurrently) could in itself lead to greater innovation in other areas (if spectacles came about due to a widening of their epistemic base Q). This, however, is probably not a very strong effect.

   Much more impactful (we think) is the fact that spectacles are an **aid** to human creativity and ingenuity itself, meaning in all other disciplines glasses could lead to *more* people working for *longer* in *more efficient/easier* ways to further their own discipline (eg. to create revolutionary machines and tools like lathes, planes, weaving machines, steam engines etc). It is not the knowledge gained from successfully developing spectacles (as Mokyr would have it), but the fact that spectacles allow humans to reach more of their intrinsic creative potential.

Spectacles on Dropbox

Questions that still remain open

- **What kind of paper will this be?**
  Will it be more like a standard economics paper, in which one nails down a single causal chain? Or more a historic paper which looks simply at a certain period and developments within that period and tries to portray it accurately and in its consequences?

- Related to this, **which literature will it integrate itself into?**
  In the case of the former, it would presumably be part of the either the growth literature (what are the requirements for growth, even applicable today) or the literature investigating why the Industrial Revolution took off in Western Europe and not India, East Asia or the Americas. In the latter case, I'm not too sure because I don't know the economic history literatures very well.
- Do we look at **one main effect of spectacles, or do we want to be more holistic and broad**, characterising the general impact it had on the societies at the time? (Also here we see the two parallel tracks of the previous points emerge.)

Status

As shown in Table 1 below, we have a considerable body of data available to us.

For a first concrete look at data, we decided to look at how the new entries change as spectacles were introduced, according to mechanism (2) above. We have data on apprenticeships, but we still need data on the adoption of spectacles in space and time.

We had a meeting on 05/05/2022 with a representative (Neil Handley) from the College of Optometrists to inquire about the availability of data relating to the spread and popularity of glasses in space and time. It seems there exist no comprehensive datasets about the prevalence of spectacles in specific places or times. The situation is made more difficult by the fact that many spectacles were sold by travelling salesmen, making their location hard to pin down. Furthermore, Neil explained that contrary to many secondary sources claiming that spectacles were quite rare and only become commonplace in later times, it seems from the primary (though anecdotal) sources that spectacles were quite affordable and thus commonplace right from the start.

The idea was raised to reconstruct a panel of spectacle usage through time and space as well as the usefulness of spectacles for different occupations by a group of historians, which would give their individual estimates for both variables. These individual estimations would then be agglomerated and averaged to create consistent, comprehensive and reliable datasets about the two issues. The problem with such a procedure might be, however, that reviewers will not trust it.

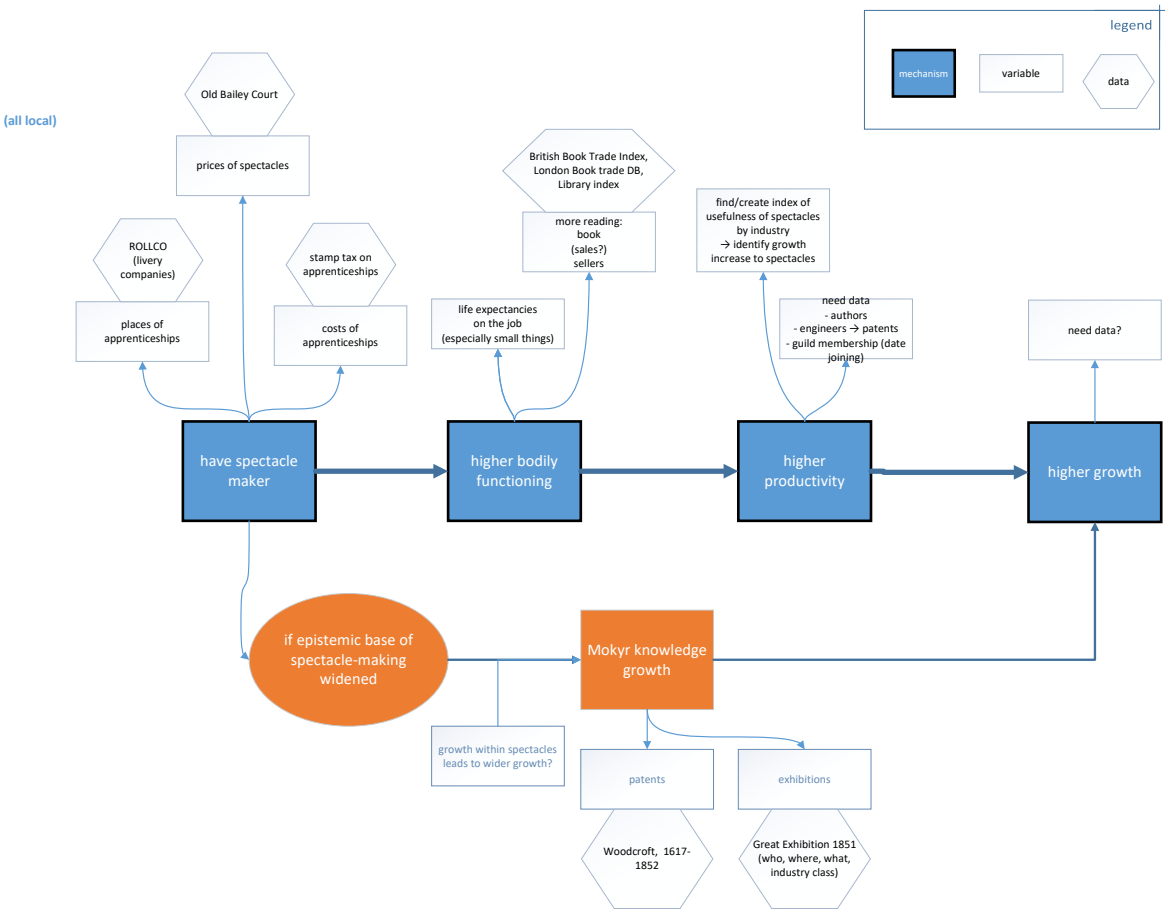
The idea of using guild portraits and counting the number of glasses-wearers as a proxy for the useful of glasses in that profession also seems to have been disparaged, since according to Neil glasses were initially seen as embarrassing and thus not worn for portraits.

There exists the option of using newspaper mentions of spectacles (whether it be adverts of local spectacle makers or announcements of travelling salesmen) as instrument for the prevalence of spectacles at the time and place of the newspaper. Data for this approach exists, but instrument relevance might leave something to be desired.

Data

	Data source	Description	Comments
Spectacles	Old Bailey	- 500 cases of stole spectacles, with values - 1687-1910	usually several pairs ->stolen from spectacle sellers
		- adoption/spread?	
Occupations	ROLLCO	- apprenticeship records of 65 London guilds (Companies) - 1600-1749 - 118k apprentices, 42k masters - of masters, 12k appear as apprentices in the records ->have place record - those 12k place-identified masters trained 35k apprentices ->spatial network - apprentice data: name, place of origin, father's name, father's occupation - master data: name, company, binding date	
	Stamp tax on apprenticeships	- gives us prices of apprenticeships - 2 datasets (subsets?): 300k and 500k observations - data: year of indenture premium paid (£ sterling) apprentice names parent forename sponsor surname (when sponsor present, usually if father deceased) parent citizen (of London) parent burgess (Scottish) parent occupation parent p.s.t. code (using Wrigley et al's coding scheme) parent widow (usually when mother listed because father dead) parent place (town or parish, as reported) parent county (coded when possible) father deceased Master occupation Master p.s.t. code Master burgess (Scotland) Master name Master place Master county	
	Baptism records	- 1700-1820 - parish, time window, occupation, how many per occupation - 1m (male) individuals (fathers of baptised children) - in 3000 parishes - 9000 unique occupations, on average 33 occupations recorded per parish - over 135k parish-timeperiod observations - sparse time resolution: per parish, on average only 1.26 time periods recorded	
	Occupational census	- 1851 - 3.7m individuals - in 42 registration counties (34 counties and 72 towns in raw data?) - 458 occupational categories - county, sex, occupation, age range	- uses occupational coding scheme Primary, Secondary, Tertiary (PST) developed by E.A. Wrigley - refers to it as 'male occupational census', but also contains records of females?
Innovations	Woodcroft	- patents from 1617-1852 - a few thousand PDF pages, various forms of arrangement (by date, by person, by patent number) - sample of patents already matched to person, age, place (ancestry.com)	
	Great Exhibition	- 1851 - 3000 pages of PDF - records all exhibits - name, location, occupation (also the book is organised by categories) - one dataset already exists, 6k records with name, address, city, population, state, country, description, industry class (from a paper?)	
Books	British Book trade index	- dont have data - 120k records - biographical and trading information on booksellers, stationers, printers, bookbinders, makers of parchment and paper, and a wide range of associated trades - of in England and Wales - from the Middle Ages up to the Census of 1851	
	London Book trades DB	- downloadable - from invention of printing to 1830 - 30k london individuals - records specific events in each individual's life, inter-relationships, both familial and professional, within the trade.	
	Library index	- list of all libraries in England, Scotland, Ireland - 500 pages PDF downloaded in 2011 (website does not exist anymore?)	

Table 1: Data sources


legend
mechanism
variable
data
(all local)
Old Bailey Court
prices of spectacles
ROLLCO (livery companies)
places of apprenticeships
stamp tax on apprenticeships
costs of apprenticeships
British Book Trade Index, London Book trade DB, Library index
more reading: book (sales?) sellers
life expectancies on the job (especially small things)
find/create index of usefulness of spectacles by industry → identify growth increase to spectacles
need data - authors - engineers → patents - guild membership (date joining)
need data?
have spectacle maker
higher bodily functioning
higher productivity
higher growth
if epistemic base of spectacle-making widened
Mokyr knowledge growth
growth within spectacles leads to wider growth?
patents
exhibitions
Woodcroft, 1617-1852
Great Exhibition 1851 (who, where, what, industry class)