Medieval Population Dynamics to 1500

Part C: the major population changes and demographic trends from 1250 to ca. 1520
3. 25 September 2013

**Population Changes: a Survey**

(1) A Malthusian Crisis, 1290-1340? The Great Famine of 1315-22;
(2) the Black Death (from 1348). Bubonic Plagues, and Late-Medieval Demographic Crises
(3) Demographic and Economic Recovery, to 1520

| Epstein, ch. 6, 8 | Brady, ch. 1 (De Vries) | Cipolla, chs.1-3; 5; Davis, ch. 6; Musgrave, ch. 2 | ET 1 | 2 |
European Population, 1000 - 1300

• (1) From the ‘Birth of Europe’ in the 10th century, Europe’s population more than doubled: from about 40 million to at least 80 million – and perhaps to as much as 100 million, by 1300

• (2) Since Europe was then very much underpopulated, such demographic growth was entirely positive: Law of Eventually Diminishing Returns

• (3) Era of the ‘Commercial Revolution’, in which all sectors of the economy, led by commerce, expanded -- with significant urbanization and rising real incomes.
Demographic Crises, 1300 – 1500

- From some time in the early 14th century, Europe’s population not only ceased to grow, but may have begun its long two-century downswing.

- Evidence of early 14th century decline
  - (i) Tuscany (Italy): best documented – 30% -40% population decline before the Black Death
  - (ii) Normandy (NW France)
  - (iii) Provence (SE France)
  - (iv) Essex, in East Anglia (eastern England)
The Estimated Populations of Later Medieval and Early Modern Europe

Estimates by J. C. Russell (red) and Jan de Vries (blue)
Fig. 3.1. Population Movements at Prato (ca. 1290-1427)
## Population of Florence (Tuscany)

<table>
<thead>
<tr>
<th>Date</th>
<th>Estimated Urban Population</th>
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<tbody>
<tr>
<td>1300</td>
<td>120,000</td>
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<td>1349</td>
<td>36,000?</td>
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<td>1352</td>
<td>41,600</td>
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<tr>
<td>1390</td>
<td>60,000</td>
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<tr>
<td>1427</td>
<td>37,144</td>
</tr>
<tr>
<td>1459</td>
<td>37,369</td>
</tr>
<tr>
<td>1469</td>
<td>40,332</td>
</tr>
<tr>
<td>1488</td>
<td>42,000</td>
</tr>
<tr>
<td>1526 (plague year)</td>
<td>70,000</td>
</tr>
</tbody>
</table>
GRAPH 1: THE POPULATION OF THE PISTOIESE COUNTRYSIDE, ca. 1244-1427

LOST TO FLORENCE, 1329
Evidence of pre-Plague population decline in 14th century ESSEX
Population Trends on Essex Manors

POPULATION TRENDS ON MANORS, 1250-1550

Great Waltham

High Easter
ENGLISH POPULATION ESTIMATES
1088 - 1523: in Millions

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1149</td>
<td>2,000,000</td>
</tr>
<tr>
<td>1262</td>
<td>4,000,000</td>
</tr>
<tr>
<td>1317</td>
<td>8,000,000</td>
</tr>
<tr>
<td>1450</td>
<td>2,000,000</td>
</tr>
</tbody>
</table>
The Great Famine: Malthusian Crisis?

• (1) The ‘Great Famine’ of 1315-22
  • (if we include the sheep murrain and cattle plagues) was the first a very major demographic catastrophe

• (2) Michael Postan: implied that the roots of this catastrophe was a Malthusian crisis of extensive overpopulation:

• (3) But no real evidence supports this thesis – certainly not in the data for real wages
Postan’s Malthusian Thesis

• **Implied Malthusian explanation for the Great Famine (1355-22)**

  But after a time the marginal character of marginal lands was bound to assert itself, and the honeymoon of high yields was succeeded by long periods of reckoning, when the poorer lands, no longer new, punished the men who tilled them with failing crops and with murrain [disease] of sheep and cattle.

  In these conditions a fortuitous combination of adverse events, such as the succession of bad seasons in the second decade of the fourteenth century, was sufficient to reverse the entire trend of agricultural production and to send the population figures tumbling down.
The Great Famine & Climate

- The Great Famine was instead the product of exogenous forces, with very adverse changes in the climate, and weather conditions: according to most historians
- too dry in the Mediterranean and too wet in northern Europe: ruining grain harvests in both
- Lack of good fodder crops may have contributed to livestock diseases (cattle rinderpest, sheep murrains)
- But were the human mortalities – up to 15% -- aggravated by Malthusian conditions??
- Warfare from the 1290s: a major factor aggravating demographic decline in In southern France and Italy:
Figure 1. Mean of temperature data for 18 series.
The Black Death: to 1500

• The Black Death, beginning in 1347-48 (already examined) was certainly a far greater demographic catastrophe.

• This, and successor plagues, into the 15th century, may have wiped out over 40% of western Europe’s population.

• Indeed, the death toll from even the first visitation may have been up to 60%.

• Plague returned in the 1360s, 1390s, 1420s-30s, each time with lower death tolls,

• affecting more the very young and very old.
England’s Population, 1300 – 1520

• By the late 1370s, England’s population had fallen to about 2.25 million, from a minimum estimate of 4.50 million in 1300

• Its population would not rise above that level, on a sustained basis, until the 1520s: when it was 2.25 – 2.50 million (England & Wales)

• See the following graph and table: on both mortality and fertility, in terms of male replacement rates (the latter from Philip Slavin):
Fig. IV.3. Life-Expectancy at Age 20

Key

+ Canterbury: the estimates for Christ Church, Canterbury (Hatcher, 'Mortality in the fifteenth century', table 2).

• Westminster: the estimates for Westminster Abbey, assuming 21 as the age at profession 1395–1469 and 18 as the age 1470–1529.

□ Westminster 18: the estimates for Westminster Abbey, assuming 18 as the age at profession 1395–1529.

Mortality and Fertility Problems

- the adverse consequences of all mortality factors (including other diseases: typhus, dysentery, pneumonia, leprosy)
- also affected fertility:
  - either through sterility, amenorrhea, or other modes of curbing birth rates (or live births)
Replacement Rates: England, 1270-1400 (as sampled from Halesowen, Worcestershire)

<table>
<thead>
<tr>
<th>Decade</th>
<th>Male Replacement Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1270-82</td>
<td>1.281</td>
</tr>
<tr>
<td>1293-99</td>
<td>1.352</td>
</tr>
<tr>
<td>1300-9</td>
<td>1.269</td>
</tr>
<tr>
<td>1310-9</td>
<td>0.971</td>
</tr>
<tr>
<td>1320-9</td>
<td>1.072</td>
</tr>
<tr>
<td>1330-9</td>
<td>1.209</td>
</tr>
<tr>
<td>1340-8</td>
<td>1.010</td>
</tr>
<tr>
<td>1350-9</td>
<td>0.611</td>
</tr>
<tr>
<td>1360-9</td>
<td>0.828</td>
</tr>
<tr>
<td>1370-9</td>
<td>0.620</td>
</tr>
<tr>
<td>1380-9</td>
<td>0.480</td>
</tr>
<tr>
<td>1390-9</td>
<td>0.909</td>
</tr>
</tbody>
</table>
Warfare and Demographic Decline I

• Europe experienced warfare, from the 1290s
• and not just from the era of the Hundred Years War (1337-1453): more widespread, more destructive, more economically disruptive, throughout the entire continent and Mediterranean
• than any since wars of 9th-10th centuries
• The warfare of the 14th & 15th centuries also bred anarchy, piracy, and local civil wars
Warfare and Demographic Decline

II

• The mortalities, chiefly from:
• battle wounds and disease: the spread of contagious diseases
• Especially when diseased bodies (humans and animals) were thrown into rivers and streams, thus polluting the water supplies
• From the destruction of farmlands and trade routes that so disrupted food supplies
• → produce chronic malnutrition, which in turn reduced resistance to many diseases.
Warfare & Demographic Decline III

• Warfare (from the 1290s) also led to:
  • exhorbitant increases in taxes and tolls and drastic coinage debasements
  • → major factor in reducing real incomes
  • - see graphs at end of lecture
Why was demographic decline so prolonged: to early 16\textsuperscript{th} century?

• (1) Had Malthusian pressures been the basic causes, we would expect that the 14\textsuperscript{th} century losses, in changing land:labour ratios, would have permitted demographic recovery: i.e., rising real incomes should have led to earlier and more productive marriages.

• (2) We also cannot fully rely on continued plagues to explain this mystery, since all evidence indicates that each successive wave of plague was more localized and less virulent.
Why was demographic decline so prolonged: to early 16th century?

- (3) The combination of plagues (+ other diseases), warfare, anarchy, taxation, malnutrition, etc., and the economic consequences of population decline
- may in turn have led to periodic depressions, which in turn prevented earlier marriages and higher birth rates, for demographic recovery
- (4) War-torn Burgundian Low Countries in the 15th century, also plagued with civil wars in the 1480s and early 1490s
- (5) But possibly demographic recovery had begun earlier, in southern Europe, and in Italy in particular, from the mid-15th century – see example of Florence
The Low Countries in the Late 15th Cent.
### Population Decline and Poverty in the Duchy of Brabant, 1437 - 1496

**Number of Family Hearths (Households) and Percentage of Total Hearths without Taxable Income (‘Poor Hearths’): 1437, 1480, and 1496**

<table>
<thead>
<tr>
<th>Area of Census</th>
<th>1437: no. of hearths in census</th>
<th>1437: percent poor hearths</th>
<th>1480: no. of hearths in census</th>
<th>1480: percent poor hearths</th>
<th>1496: no. of hearths in census</th>
<th>1496: no. of poor hearths</th>
<th>Percent Change from 1437 to 1496</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brussels</td>
<td>6,376</td>
<td>10.5</td>
<td>7,414</td>
<td>7.9</td>
<td>5,750</td>
<td>17.1</td>
<td>-9.82%</td>
</tr>
<tr>
<td>Antwerp</td>
<td>3,440</td>
<td>13.5</td>
<td>5,450</td>
<td>10.5</td>
<td>6,586</td>
<td>12.5</td>
<td>91.45%</td>
</tr>
<tr>
<td>Leuven</td>
<td>3,579</td>
<td>7.6</td>
<td>3,933</td>
<td>18.3</td>
<td>3,069</td>
<td>n.a.</td>
<td>-14.25%</td>
</tr>
<tr>
<td>s’Hertogenbosch</td>
<td>2,883</td>
<td>10.4</td>
<td>2,930</td>
<td>7.9</td>
<td>3,456</td>
<td>n.a.</td>
<td>19.88%</td>
</tr>
<tr>
<td>Sub-total Large Towns</td>
<td>16,278</td>
<td>10.5</td>
<td>19,727</td>
<td>14.8</td>
<td>18,861</td>
<td>n.a.</td>
<td>15.87%</td>
</tr>
<tr>
<td>Small Towns</td>
<td>14,159</td>
<td>9.2</td>
<td>12,216</td>
<td>28.1</td>
<td>10,600</td>
<td>n.a.</td>
<td>-25.14%</td>
</tr>
<tr>
<td>Villages</td>
<td>62,301</td>
<td>29.7</td>
<td>54,540</td>
<td>31.6</td>
<td>45,882</td>
<td>n.a.</td>
<td>-26.35%</td>
</tr>
<tr>
<td>Total Duchy</td>
<td>92,738</td>
<td>23.4</td>
<td>86,483</td>
<td>27.3</td>
<td>75,343</td>
<td>n.a.</td>
<td>-18.76%</td>
</tr>
</tbody>
</table>

| Percentage Change from 1437 | -6.74% | -18.76% |
English Mortalities to 1540
### Population Distribution in Europe, 1000-1450 (in Millions)

<table>
<thead>
<tr>
<th>Area</th>
<th>1000 A.D.</th>
<th>1310 A.D.</th>
<th>1450 A.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mediterranean: Greece, Balkans, Italy, Iberia (Spain and Portugal)</td>
<td>17.0 (44%)</td>
<td>25.0 (34%)</td>
<td>19.0 (38%)</td>
</tr>
<tr>
<td>West-Central: Low Countries, France, Germany, Scandinavia, British Isles</td>
<td>12 (31%)</td>
<td>35.5 (48%)</td>
<td>22.5 (45%)</td>
</tr>
<tr>
<td>Eastern Europe: Russia, Poland-Lithuania, Hungary, Bohemia</td>
<td>9.5 (25%)</td>
<td>13.0 (18%)</td>
<td>9.5 (19%)</td>
</tr>
<tr>
<td><strong>TOTALS:</strong></td>
<td>38.5</td>
<td>73.5</td>
<td>51.0</td>
</tr>
</tbody>
</table>
The late-medieval Standard of Living Debate

• **Demography & the Standard of Living Debate:**
• Did the Black Death and subsequent forces for demographic decline, altering the land:labour ratios, thus lead to rising real incomes –
• for at least the lower classes of European society (peasants and urban craftsmen?)
• **Consequences of warfare, coinage debasements, and taxation** in drastically reducing real incomes of the lower social strata: countervailing forces
Consequences of Population Decline in the Ricardian Model: I

• (1) **GRAIN PRICES WILL FALL** –
  • as higher-cost marginal lands fall out of production and grain is produced on better quality, lower cost lands, with less labour

• (2) **LAND RENTS WILL ALSO FALL:**
  • as declining prices reduce the difference between the market price and production costs
Consequences of Population Decline in the Ricardian Model: II

• (3) **REAL WAGES WILL RISE:**

• - as the cost of living falls: with lower priced grains supplied to the market

• as the **marginal productivity of labour rises**

• i.e., since fewer persons (units of labour) are needed to produce a given quantity of grain for the market:

• See **LAW OF DIMINISHING RETURNS**
English Price Indices, 1266-1520

Farinaceous, Meat/Dairy, Industrial

Composite Price Index, 1451-75=100

Quinquennial Means: 1451-75=100

- Farinaceous Index
- Meat/Dairy Index
- Industrial Goods Index
- Composite Price Index 1451-75=100
English Builders' Wages, 1266 - 1540
nominal & real wage indexes: 5 yr mean

180
160
140
120
100
80
60
40

1266-70 1296-00 1326-30 1356-60 1386-90 1416-20 1446-50 1476-80 1506-10 1536-40

quinquennial means: 1451-75=100

Composite Price Index (PBH)
nominal wage index (1451-75=6d)
real wage index (1451-75-100)
English Price and Wage Indices

Urban Masons: 1401-05 to 1516-20

Composite Price Index 1451-75=100
Nominal Wage Index 1451-75=100
Real Wage Index 1451-75=100
Flemish Builders' Wages, 1351 - 1500
Nominal & Real Wage Indexes: 5 yr mean

Composite Price Index: 1451-75=100
Nominal Wage Index (Bruges)
Real Wage Index (Bruges)
Aalst Masons' Wages, 1396-1550
Wages in baskets, index nos., & taxes

- Value of Taxes in Years' Wages
- Masons' Annual Wage in Baskets
- Real Wage Index 1451-75=100
- Nominal Wage Index 1451-75=100
Demographic Recovery from 1520s

1) In northern Europe, the demographic slump came to an end in the 1520s: followed by a fairly rapid recovery in population levels.

2) In southern Europe, recovery may have begun somewhat earlier: by mid 15th century – see Florence’s population figures.

3) Causes of the demographic recoveries: will be considered when we come back to Demography, in January.
# Population of Florence (Tuscany)

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