

## *Online Appendix*

### *From Convergence to Divergence: Portuguese Economic Growth, 1527–1850*

The data for this paper is available online at: <https://sites.google.com/site/npgpalma/publications>

#### I - PERCENTAGE OF THE YEARLY VARIATION OF THE PRINCIPAL DATA COVERED BY OUR SOURCES

TABLE A1 DATA COVERAGE FOR THE MAIN VARIABLES UNDERLYING THE CONSTRUCTION OF OUR SERIES (PERCENTAGE COVERED BY AT LEAST ONE OF OUR FOUR REGIONS)											
	Unskilled Wages	Skilled Wages	Wheat	Maize	Meat	Eggs	Chickens	Wine	Olive Oil	Coal	Linen
1527–1600	80	85	92	n.a.	62	50	68	85	74	72	76
Seventeenth century	87	91	100	99	100	100	100	100	100	100	99
Eighteenth century	94	98	100	100	100	100	100	100	100	100	96
1801–1850	100	100	100	100	100	100	100	100	100	100	83

*Sources:* PWR project.

## II – PRIMARY DATA SOURCES EMPLOYED IN THIS ARTICLE

All the primary sources consulted in gathering the data for this article are given, by region, in the references section below. Figure A1 is an example of how a typical page of the many account books we consulted for primary data looks like:



Item	Value
quinto de la casa de la casa de la casa	0 2 0 0
quinto de la casa de la casa de la casa	0 1 7 0
quinto de la casa de la casa de la casa	0 9 5 0
quinto de la casa de la casa de la casa	2 1 0 0
quinto de la casa de la casa de la casa	0 1 0 0
quinto de la casa de la casa de la casa	2 3 7 0
quinto de la casa de la casa de la casa	0 0 5 0 0
quinto de la casa de la casa de la casa	0 0 7 7 0
quinto de la casa de la casa de la casa	0 0 1 6 0
quinto de la casa de la casa de la casa	0 0 3 3 0
quinto de la casa de la casa de la casa	0 0 3 9 0
quinto de la casa de la casa de la casa	0 0 1 0 0
quinto de la casa de la casa de la casa	0 0 1 0 0
quinto de la casa de la casa de la casa	2 0 4 0
quinto de la casa de la casa de la casa	0 1 4 0 0
quinto de la casa de la casa de la casa	1 1 2 6 0

FIGURE A1

A TYPICAL EXAMPLE FROM AN EXPENSES BOOK PAGE CONTAINING WAGES AND PRICES

Sources: See text.

### III – ADDITIONAL FIGURES

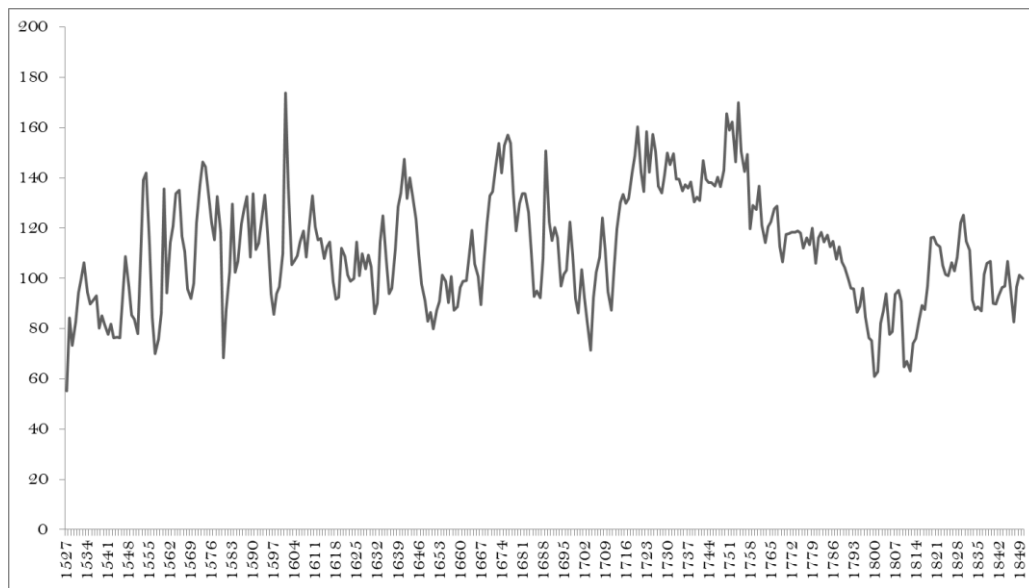


FIGURE A2

LISBON REAL DAY WAGES FOR UNSKILLED WORKERS (INDEX, 1850 = 100).

*Sources:* See text.

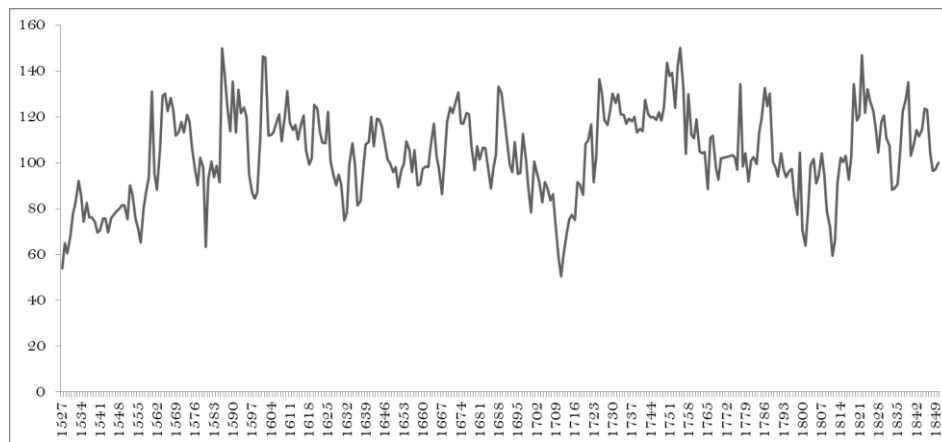


FIGURE A3

LISBON REAL DAY WAGES FOR SKILLED WORKERS (INDEX, 1850=100)

*Sources:* See text.

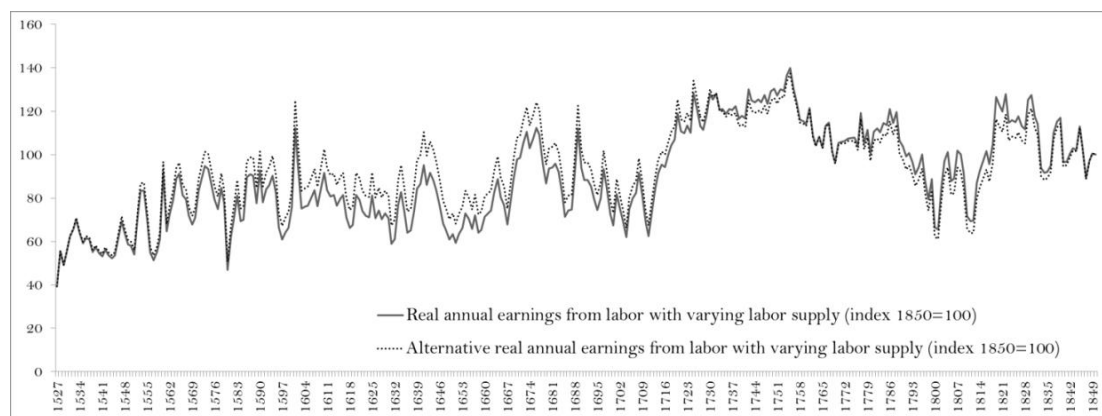


FIGURE A4  
LISBON'S ANNUAL EARNINGS PER WORKER  
UNDER ALTERNATIVE ASSUMPTIONS FOR DAYS WORKED

*Notes:* The solid line shows our baseline real annual earnings compared with those with interpolated working days since the beginning of the sample.

*Sources:* See text.

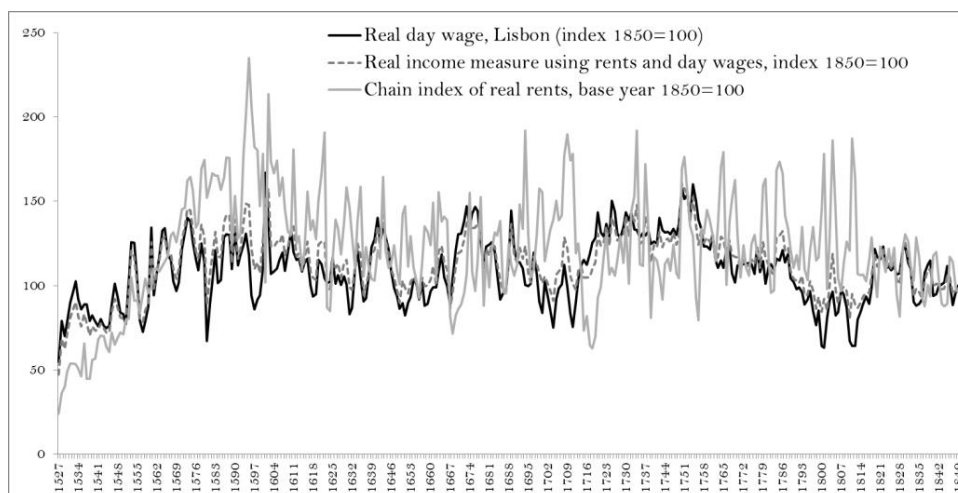


FIGURE A5  
LAND RENTS AND REAL INCOME (LISBON'S HINTERLAND ONLY)  
INCLUDING AND EXCLUDING LAND RENTS

*Sources:* See text.

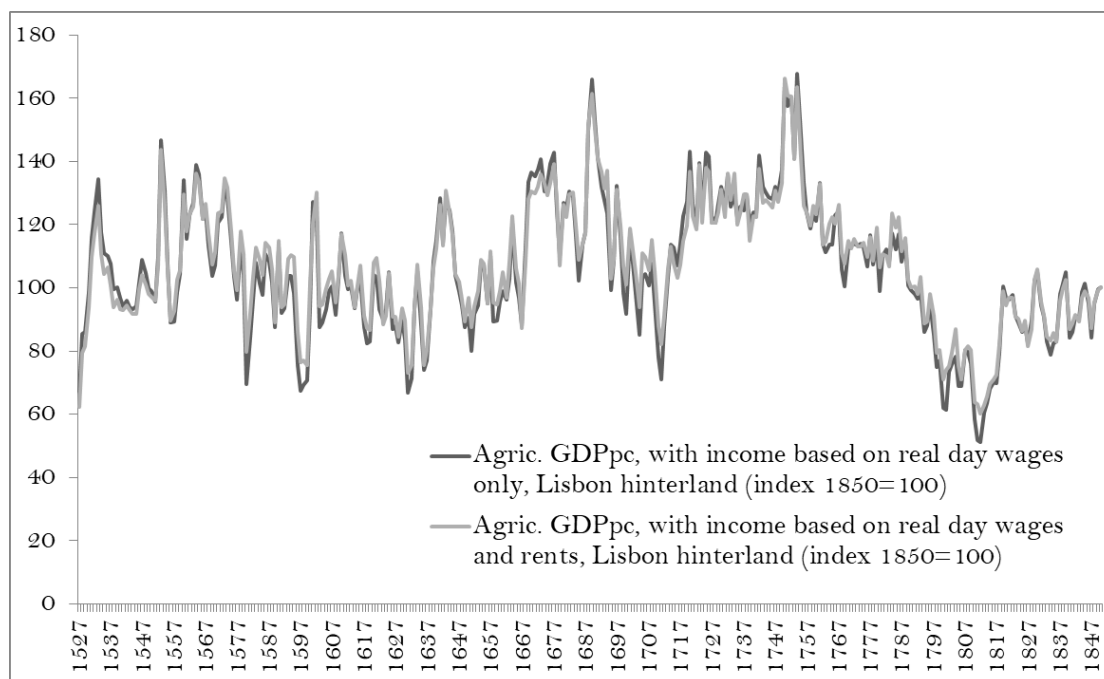


FIGURE A6  
 AGRICULTURAL GDP PER CAPITA BASED ON LISBON'S DAY WAGES,  
 WITH AND WITHOUT LAND RENTS

*Sources:* See text.

#### IV – PORTUGAL'S EXTERNAL FOOD BALANCE

Table A2 shows the results of quantifying the external food balance. The Appendix to Costa and Reis (2017) gives the information on sources and how these figures were arrived at. For each benchmark, the export or import of the three main items of the food trade, in their respective current values in grams of silver (Cols. 1, 2, and 3), are expressed and then summed up to obtain the overall food deficit or surplus in silver too (Col. 4).

Since we do not possess any quantification of national agricultural consumption at current prices, a short cut estimation method proposed by Malanima (2011, p. 179) is used instead. This procedure starts by multiplying the total wage bill in grams of silver by 1.4 which gives us the estimated income of all production factors (land, labor, and capital). This is multiplied by a coefficient of 0.6, to arrive at a figure, also in silver, representing the total expenditure on food by the recipients of national income, that is, the population (Col. 5). We can then determine the magnitude of the food surplus/deficit relative to food consumption (Col. 6 of Table A2) and the value of the ratio  $r$  (Col. 7 of Table A2) which can be used to correctly adjust food consumption when trying to estimate agricultural output.

TABLE A2  
PORTUGAL'S EXTERNAL FOOD BALANCE.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Wine Exports	Olive Oil Exports	Grain Imports	Food Surplus/Deficit	Agricultural Consumption	Surplus/Deficit /Agricultural Consumption (Percent)	Food Production/ Consumption Ratio <i>r</i>
1550	—	0.7	17.4	−16.7	916.1	−1.82	0.982
1600	0.02	14.2	24.5	−10.3	1965	−0.005	0.995
1650	0.9	18.5	14.3	5.1	1961	0.003	1.003
1700	11.9	27.2	14.4	24.7	1858	1.3	1.013
1750	14.9	15.6*	23.0	7.5	2311	0.3	1.003
1800	128.5	8.3	151.6	−14.8	3360	−0.4	0.996
1850	117.2	4.3	6.95	114.6	3742	3.1	1.031

*Notes:* Cols. 1–5 in millions of grams of silver. \* interpolated value based on average of quantities for 1700 and 1800 valued at 1750 prices.

*Source:* Costa and Reis (2017).

#### V – Portugal's GDP per capita, 1990 “international” GK dollars

1527	616	1549	855	1571	973	1593	830	1615	894
1528	749	1550	836	1572	988	1594	895	1616	918
1529	740	1551	823	1573	1070	1595	892	1617	860
1530	804	1552	888	1574	1025	1596	757	1618	806
1531	868	1553	1024	1575	844	1597	679	1619	806
1532	890	1554	953	1576	777	1598	654	1620	908
1533	918	1555	846	1577	768	1599	659	1621	908
1534	855	1556	767	1578	833	1600	790	1622	883
1535	810	1557	776	1579	838	1601	875	1623	842
1536	851	1558	829	1580	725	1602	908	1624	887
1537	801	1559	850	1581	756	1603	816	1625	961
1538	760	1560	983	1582	767	1604	805	1626	897
1539	783	1561	873	1583	789	1605	857	1627	834
1540	765	1562	870	1584	821	1606	870	1628	788
1541	792	1563	872	1585	780	1607	848	1629	823
1542	805	1564	913	1586	870	1608	805	1630	785
1543	817	1565	926	1587	858	1609	824	1631	720
1544	800	1566	893	1588	808	1610	924	1632	701
1545	796	1567	915	1589	759	1611	898	1633	772
1546	849	1568	895	1590	824	1612	847	1634	882
1547	869	1569	864	1591	731	1613	820	1635	821
1548	877	1570	900	1592	794	1614	849	1636	709

1637	744	1675	1063	1713	955	1751	1356	1789	1144
1638	837	1676	1095	1714	999	1752	1387	1790	1097
1639	901	1677	1094	1715	1013	1753	1375	1791	1123
1640	895	1678	1068	1716	1020	1754	1360	1792	1134
1641	1012	1679	981	1717	1104	1755	1364	1793	1138
1642	944	1680	1011	1718	1140	1756	1262	1794	1042
1643	1003	1681	962	1719	1115	1757	1248	1795	1040
1644	966	1682	1056	1720	1162	1758	1241	1796	1095
1645	990	1683	1051	1721	1114	1759	1281	1797	1074
1646	949	1684	1044	1722	1051	1760	1351	1798	979
1647	942	1685	922	1723	1156	1761	1373	1799	974
1648	929	1686	970	1724	1141	1762	1273	1800	916
1649	909	1687	1050	1725	1242	1763	1246	1801	874
1650	830	1688	1301	1726	1219	1764	1277	1802	888
1651	791	1689	1328	1727	1094	1765	1279	1803	896
1652	847	1690	1227	1728	1181	1766	1269	1804	923
1653	872	1691	1236	1729	1224	1767	1306	1805	907
1654	933	1692	1262	1730	1246	1768	1170	1806	887
1655	902	1693	1175	1731	1227	1769	1145	1807	893
1656	902	1694	1172	1732	1305	1770	1219	1808	908
1657	936	1695	989	1733	1253	1771	1199	1809	892
1658	918	1696	979	1734	1342	1772	1203	1810	739
1659	899	1697	1094	1735	1264	1773	1210	1811	673
1660	917	1698	1096	1736	1221	1774	1201	1812	700
1661	936	1699	939	1737	1336	1775	1241	1813	770
1662	846	1700	987	1738	1286	1776	1211	1814	795
1663	956	1701	1124	1739	1159	1777	1284	1815	833
1664	1013	1702	1072	1740	1186	1778	1216	1816	862
1665	956	1703	988	1741	1256	1779	1263	1817	865
1666	931	1704	967	1742	1393	1780	1185	1818	920
1667	882	1705	1039	1743	1262	1781	1236	1819	1012
1668	990	1706	1066	1744	1238	1782	1228	1820	1046
1669	1097	1707	1014	1745	1277	1783	1221	1821	1035
1670	1079	1708	996	1746	1274	1784	1324	1822	1028
1671	1030	1709	932	1747	1308	1785	1295	1823	1008
1672	1063	1710	849	1748	1267	1786	1293	1824	966
1673	1063	1711	796	1749	1274	1787	1231	1825	944
1674	1058	1712	864	1750	1372	1788	1255	1826	978

1827	927	1832	958	1837	988	1842	954	1847	885
1828	936	1833	892	1838	998	1843	966	1848	940
1829	1034	1834	921	1839	1023	1844	1027	1849	955
1830	1081	1835	907	1840	944	1845	1026	1850	923
1831	1007	1836	899	1841	926	1846	957		

## ONLINE APPENDIX REFERENCES

### Primary Sources

We have collected both prices and wages from account (receipts and expenditures) books of the institutions listed below. Almost all were purchasers both of commodities and labor services. Some of them were also sellers of certain commodities produced by them. The account books of these institutions always display: the date of the transaction, the gross and unit value of the commodity, the unit of measurement employed, the quality of the product (e.g., coarse or fine paper, mutton, pork, or beef), and particular features of the transaction.

In order to proxy missing values we sometimes used a similar product or labor type (e.g., tallow candles for wax candles or carpenters for masons, both being skilled workers) by adjusting its price using a price ratio with the original product at a nearby year. Furthermore, to complete our Linen series for Lisbon during 1766–1829, we relied on Madureira (1997), listed in the secondary sources section.

#### Lisbon and Its Hinterland

Casa da Congregação do Oratório, Casa da Saúde, L<sup>o</sup> 1<sup>o</sup> Receita e Despesa (Arquivo Municipal de Lisboa)

Casa dos Contos: Archive of the Court of Auditors

Convent of Nossa Senhora da Luz: National Archive

Convent of Santa Marta de Jesus: National Archive

Convent of Santo Alberto: National Archive

Convent of São Domingos de Lisboa: National Archive

Convent of Carmo, Expenses of the Sacristy: National Archive

Hospital of S. José: National Archive

Hospital of All Saints: National Archive

Holy House of Mercy of Almada: Archive of the Holy House of Mercy of Almada

Holy House of Mercy of Lisbon: Archive of the Holy House of Mercy of Lisbon

Holy House of Mercy of Lisbon, Shelter: Archive of the Holy House of Mercy of Lisbon

Holy House of Mercy of Lisbon, Foundlings: Archive of the Holy House of Mercy of Lisbon

Monastery of Chelas: National Archive

Monastery of S. Dinis de Odivelas: National Archive

Convent of Santo António da Convalescença: National Archive

Fabric of the See of Lisboa: National Archive

Seminary of Santa Catarina: National Archive

Administration of the Royal Household, Kitchens: National Archive

#### Porto and Its Hinterland

For Porto, we rely on Godinho (1955) as a secondary source plus the following primary sources:



Casa Pia Orphanage (administration): Porto District Archive  
 The See of Porto (revenues and expenditure): Porto District Archive  
 Colégio dos Órfãos, Daily Expenditure: Porto Municipal Archive  
 Porto Holy House of Mercy, Jailhouse Expenditure: Archive of the Santa Casa da Misericórdia do Porto  
 Porto Holy House of Mercy, General Hospital: Archive of the Santa Casa da Misericórdia do Porto  
 Porto Holy House of Mercy, Interments: Archive of the Santa Casa da Misericórdia do Porto  
 Porto Holy House of Mercy, Hospice for the Homeless: Archive of the Santa Casa da Misericórdia do Porto  
 Porto Holy House of Mercy, D. Lopo Hospital: Archive of the Santa Casa da Misericórdia do Porto  
 Porto Holy House of Mercy, Foundling Home: Archive of the Santa Casa da Misericórdia do Porto  
 Municipality of Porto, Palace of the Municipality: Porto Municipal Archive  
 Municipality: Porto Municipal Archive

### Coimbra and Its Hinterland

University of Coimbra, Refectory: Archive of the University of Coimbra  
 Hospital of the University, Accounts and Administration: Archive of the University of Coimbra  
 Hospital of Nossa Senhora da Conceição, Accounts: Archive of the University of Coimbra  
 College of São Pedro, Kitchen: Archive of the University of Coimbra  
 Colégio de São Pedro, Book of purchases: Archive of the University of Coimbra  
 Expenditure on the Churches of the Reverend Chapter of the See of Coimbra: Archive of the University of Coimbra  
 Chapel of S. João da Sé, Revenue and Expenditure: Archive of the University of Coimbra  
 Chapter of the See, register of expenditures: Archive of the University of Coimbra  
 Fabric of the College of São Pedro, Register of Expenses: Archive of the University of Coimbra  
 Municipal Council of Coimbra, Revenue and Expenditure: Archive of Coimbra  
 Municipality Works of the Church of the See of Coimbra, Expenses: Archive of the University of Coimbra  
 University of Coimbra, Receipts and Expenditure: Archive of the University of Coimbra  
 Hospital of São Lázaro, Receipts and Expenditure: Archive of the University of Coimbra  
 Holy House of Mercy of Coimbra, Income and Expenditure: Archive of the Holy House of Mercy of Coimbra  
 Episcopal Mitre of Coimbra, Expenses: Archive of the University of Coimbra  
 Register of the Granary of the Chapter of Coimbra: Archive of the University of Coimbra  
 Royal Hospital of Coimbra, Registers of Expenditure: Archive of the University of Coimbra

### Évora and Its Hinterland

For Évora, we rely on Santos (2003) and Godinho (nd) secondary sources plus the following primary sources:

Royal Public Granary of Évora, Accounts: Archive of the District of Évora  
 Évora Aqueduct, Accounts of the Repairs and Maintenance: Archive of the District of Évora  
 Streets, Wages and other Expenditure: Archive of the District of Évora  
 Casa Pia Orphanage, Revenues and Expenditures: Archive of the District of Évora  
 Casa Pia, Hospice of Nossa Senhora da Piedade, Accounts: Archive of the District of Évora  
 Holy House of Mercy, Books and Accounts: Archive of the District of Évora

Convent of Paraiso, Accounts: Archive of the District of Évora

Convent of the Saviour, Accounts: Archive of the District of Évora

College of Nossa Senhora da Purificação: Archive of the District of Évora

## Secondary Sources

Costa, Leonor, and Jaime Reis. “The Chronic Food Deficit of Early Modern Portugal: Curse or Myth?” *Análise Social* LII (2017): 416–29.

Godinho, Vitorino Magalhães. *Introdução à história económica*. Lisboa: Livros Horizonte, n.d.

———. *Prix et monnaies au Portugal 1750–1850*. Paris: Librairie Armand Colin, 1955.

Madureira, Nuno. *Mercados e Privilégios. A Indústria Portuguesa entre 1750 e 1834*. Lisboa: Estampa, 1997.

Santos, Rui. *Sociogénese do Latifundismo Moderno: Mercados, Crises e Mudança Social na Região de Évora, Séculos XVII a XIX*. Lisboa: Banco de Portugal, 2003.