SUPPLEMENTARY ONLINE MATERIAL: APPENDIX 1

DATA ON PARLIAMENTARIAN ACTIVITY AND WARFARE

Data on warfare casualties is based on Brecke (2012). Brecke’s database reports the beginning, the ending, the number of participating adversaries, and the number of casualties in military conflicts. I divided the total number of casualties by the duration of a conflict to measure the average annual death tool. I divided the number of casualties by the number of conflicting adversaries minus one to account for the scale of each conflict. There are gaps in the information on the number of casualties. They underrepresent only the minor conflicts and therefore do not distort the main trends.

Data on the duration of Seym’s sessions is based on Konopczyński (1948). The author reported the date of the opening and closing of each individual parliamentary session. There were three kinds of sessions: (a) regular sessions that concluded, (b) regular sessions that did not conclude, mostly due to the use of the liberum veto, and (c) sessions that were a part of the royal election procedure.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Duration of Parliamentary sessions in days | | | War casualties (Poland) | Year | Duration of Parliamentary sessions in days | | | War casualties  (Poland) |
| Conclusive | Electoral | Inconclusive/ Aborted | Conclusive | Electoral | Inconclusive  / Aborted |
| 1493 | 31 |  |  |  | 1633 | 0 | 39 |  | 5440 |
| 1494 | 0 |  |  |  | 1634 | 12 |  |  | 5440 |
| 1495 | 0 |  |  |  | 1635 | 124 |  |  | 2250 |
| 1496 | 61 |  |  |  | 1636 | 0 |  |  | 0 |
| 1497 | 0 |  |  |  | 1637 | 0 |  | 44 | 2250 |
| 1498 | 29 |  |  |  | 1638 | 65 |  |  | 2250 |
| 1499 | 61 |  |  |  | 1639 | 0 |  | 41 | 0 |
| 1500 | 0 |  |  |  | 1640 | 42 |  |  | 0 |
| 1501 | 0 | 19 |  | 1200 | 1641 | 44 |  |  | 0 |
| 1502 | 31 |  |  | 1200 | 1642 | 15 |  |  | 0 |
| 1503 | 20 |  |  | 1200 | 1643 | 58 |  |  | 0 |
| 1504 | 51 |  |  | 1200 | 1644 | 0 |  |  | 0 |
| 1505 | 62 |  |  | 1200 | 1645 | 0 |  | 44 | 0 |
| 1506 | 5 |  |  | 1800 | 1646 | 42 |  |  | 0 |
| 1507 | 43 |  |  | 2400 | 1647 | 25 |  |  | 0 |
| 1508 | 29 |  |  | 2400 | 1648 | 0 | 58 |  | 66666 |
| 1509 | 36 |  |  | 0 | 1649 | 0 | 39 |  | 66666 |
| 1510 | 25 |  |  | 0 | 1650 | 45 |  |  | 0 |
| 1511 | 41 |  |  | 0 | 1651 | 0 |  |  | 13333 |
| 1512 | 39 |  |  | 0 | 1652 | 24 |  | 45 | 13333 |
| 1513 | 25 |  |  | 2933 | 1653 | 13 |  |  | 13333 |
| 1514 | 20 |  |  | 2933 | 1654 | 41 |  | 47 | 15110 |
| 1515 | 21 |  |  | 2933 | 1655 | 31 |  |  | 3271 |
| 1516 | 0 |  |  | 0 | 1656 | 0 |  |  | 3271 |
| 1517 | 41 |  |  | 0 | 1657 | 0 |  |  | 7624 |
| 1518 | 74 |  |  | 0 | 1658 | 50 |  |  | 3124 |
| 1519 | 60 |  |  | 1200 | 1659 | 40 |  |  | 3124 |
| 1520 | 35 |  |  | 1200 | 1660 | 0 |  |  | 3124 |
| 1521 | 0 |  |  | 0 | 1661 | 76 |  |  | 3124 |
| 1522 | 65 |  |  | 0 | 1662 | 71 |  |  | 1900 |
| 1523 | 108 |  |  | 0 | 1663 | 0 |  |  | 1900 |
| 1524 | 0 |  |  | 0 | 1664 | 0 |  | 35 | 11100 |
| 1525 | 59 |  |  | 0 | 1665 | 0 |  | 22 | 11100 |
| 1526 | 49 |  |  | 600 | 1666 | 0 |  | 91 | 11100 |
| 1527 | 68 |  |  | 1080 | 1667 | 41 |  |  | 1900 |
| 1528 | 84 |  |  | 1080 | 1668 | 0 | 50 | 43 | 400 |
| 1529 | 29 |  |  | 480 | 1669 | 0 | 88 |  | 0 |
| 1530 | 44 | 30 |  | 480 | 1670 | 52 |  | 21 | 0 |
| 1531 | 31 |  |  | 480 | 1671 | 0 |  | 48 | 0 |
| 1532 | 42 |  |  | 0 | 1672 | 0 |  | 42 | 7500 |
| 1533 | 25 |  |  | 0 | 1673 | 94 |  |  | 7500 |
| 1534 | 43 |  |  | 2400 | 1674 | 0 | 97 |  | 0 |
| 1535 | 30 |  |  | 2400 | 1675 | 0 |  |  | 0 |
| 1536 | 0 |  |  | 2400 | 1676 | 42 |  |  | 0 |
| 1537 | 84 |  |  | 2400 | 1677 | 102 |  |  | 0 |
| 1538 | 49 |  |  | 0 | 1678 | 16 |  |  | 0 |
| 1539 | 64 |  |  | 0 | 1679 | 93 |  |  | 0 |
| 1540 | 62 |  |  | 0 | 1680 | 0 |  |  | 0 |
| 1541 | 0 |  |  | 0 | 1681 | 0 |  | 131 | 0 |
| 1542 | 21 |  |  | 0 | 1682 | 0 |  |  | 0 |
| 1543 | 73 |  |  | 0 | 1683 | 43 |  |  | 0 |
| 1544 | 62 |  |  | 0 | 1684 | 0 |  |  | 0 |
| 1545 | 54 |  |  | 0 | 1685 | 105 |  |  | 0 |
| 1546 | 107 |  |  | 0 | 1686 | 0 |  |  | 0 |
| 1547 | 37 |  |  | 0 | 1687 | 0 |  |  | 0 |
| 1548 | 96 |  |  | 0 | 1688 | 0 |  | 82 | 0 |
| 1549 | 0 |  |  | 0 | 1689 | 0 |  | 90 | 0 |
| 1550 | 73 |  |  | 0 | 1690 | 110 |  |  | 0 |
| 1551 | 0 |  |  | 0 | 1691 | 0 |  |  | 0 |
| 1552 | 69 |  |  | 300 | 1692 | 0 |  |  | 0 |
| 1553 | 57 |  |  | 0 | 1693 | 0 |  | 32 | 0 |
| 1554 | 9 |  |  | 0 | 1694 | 0 |  |  | 0 |
| 1555 | 55 |  |  | 0 | 1695 | 0 |  | 72 | 0 |
| 1556 | 0 |  |  | 300 | 1696 | 0 | 29 |  | 0 |
| 1557 | 40 |  |  | 300 | 1697 | 0 | 57 |  | 0 |
| 1558 | 25 |  |  | 0 | 1698 | 0 |  | 12 | 0 |
| 1559 | 41 |  |  | 0 | 1699 | 44 |  |  | 0 |
| 1560 | 0 |  |  | 0 | 1700 | 0 |  |  | 8080 |
| 1561 | 0 |  |  | 4254 | 1701 | 0 |  | 27 | 8080 |
| 1562 | 31 |  |  | 4254 | 1702 | 0 |  | 35 | 8080 |
| 1563 | 124 |  |  | 4254 | 1703 | 38 |  |  | 8080 |
| 1564 | 148 |  |  | 4254 | 1704 | 0 |  |  | 8080 |
| 1565 | 87 |  |  | 4254 | 1705 | 0 |  |  | 8080 |
| 1566 | 106 |  |  | 4254 | 1706 | 0 |  |  | 8080 |
| 1567 | 75 |  |  | 4254 | 1707 | 0 |  |  | 8080 |
| 1568 | 0 |  |  | 4254 | 1708 | 0 |  |  | 8080 |
| 1569 | 214 |  |  | 4854 | 1709 | 0 |  |  | 8080 |
| 1570 | 74 |  |  | 4254 | 1710 | 0 |  |  | 8080 |
| 1571 | 0 |  |  | 4254 | 1711 | 0 |  |  | 8080 |
| 1572 | 76 |  |  | 4254 | 1712 | 71 |  |  | 8080 |
| 1573 | 0 | 67 |  | 0 | 1713 | 0 |  | 50 | 8080 |
| 1574 | 0 | 58 |  | 0 | 1714 | 0 |  |  | 8080 |
| 1575 | 0 | 38 |  | 600 | 1715 | 0 |  |  | 9913 |
| 1576 | 40 |  |  | 600 | 1716 | 0 |  |  | 9913 |
| 1577 | 0 |  |  | 2187 | 1717 | 1 |  |  | 9913 |
| 1578 | 54 |  |  | 2187 | 1718 | 41 |  |  | 8080 |
| 1579 | 38 |  |  | 2187 | 1719 | 0 |  | 1 | 8080 |
| 1580 | 3 |  |  | 2187 | 1720 | 0 |  | 51 | 8080 |
| 1581 | 46 |  |  | 2187 | 1721 | 0 |  |  | 8080 |
| 1582 | 0 |  | 51 | 2187 | 1722 | 0 |  | 41 | 0 |
| 1583 | 0 |  |  | 300 | 1723 | 0 |  |  | 0 |
| 1584 | 0 |  |  | 300 | 1724 | 41 |  |  | 0 |
| 1585 | 0 |  | 43 | 300 | 1725 | 0 |  |  | 0 |
| 1586 | 0 |  |  | 300 | 1726 | 41 |  |  | 0 |
| 1587 | 0 | 107 |  | 4300 | 1727 | 0 |  |  | 0 |
| 1588 | 0 | 19 |  | 4300 | 1728 | 0 |  |  | 0 |
| 1589 | 47 |  |  | 300 | 1729 | 0 |  | 5 | 0 |
| 1590 | 72 |  |  | 2800 | 1730 | 0 |  | 12 | 0 |
| 1591 | 14 |  |  | 0 | 1731 | 0 |  |  | 0 |
| 1592 | 0 |  | 42 | 0 | 1732 | 0 |  | 14 | 0 |
| 1593 | 41 |  |  | 0 | 1733 | 0 | 59 | 6 | 8095 |
| 1594 | 0 |  |  | 0 | 1734 | 0 | 14 |  | 8095 |
| 1595 | 45 |  |  | 0 | 1735 | 0 |  | 41 | 8095 |
| 1596 | 47 |  |  | 2000 | 1736 | 14 |  |  | 0 |
| 1597 | 0 |  | 45 | 2000 | 1737 | 0 |  |  | 0 |
| 1598 | 35 |  |  | 2000 | 1738 | 0 |  | 41 | 0 |
| 1599 | 0 |  |  | 2000 | 1739 | 0 |  |  | 0 |
| 1600 | 0 |  | 42 | 1875 | 1740 | 0 |  | 40 | 0 |
| 1601 | 36 |  |  | 1875 | 1741 | 0 |  |  | 0 |
| 1602 | 0 |  |  | 1875 | 1742 | 0 |  |  | 0 |
| 1603 | 31 |  |  | 1875 | 1743 | 0 |  |  | 0 |
| 1604 | 0 |  |  | 2955 | 1744 | 0 |  | 44 | 0 |
| 1605 | 0 |  | 33 | 5955 | 1745 | 0 |  |  | 0 |
| 1606 | 0 |  | 41 | 6017 | 1746 | 0 |  | 41 | 0 |
| 1607 | 39 |  |  | 6017 | 1747 | 0 |  |  | 0 |
| 1608 | 0 |  |  | 8017 | 1748 | 0 |  | 39 | 0 |
| 1609 | 41 |  |  | 8017 | 1749 | 0 |  |  | 0 |
| 1610 | 0 |  |  | 4955 | 1750 | 0 |  | 14 | 0 |
| 1611 | 43 |  |  | 4955 | 1751 | 0 |  |  | 0 |
| 1612 | 0 |  |  | 3080 | 1752 | 0 |  | 24 | 0 |
| 1613 | 54 |  |  | 1080 | 1753 | 0 |  |  | 0 |
| 1614 | 0 |  |  | 0 | 1754 | 0 |  | 31 | 0 |
| 1615 | 0 |  | 45 | 0 | 1755 | 0 |  |  | 0 |
| 1616 | 41 |  |  | 3000 | 1756 | 0 |  |  | 0 |
| 1617 | 0 |  |  | 7000 | 1757 | 0 |  |  | 0 |
| 1618 | 32 |  |  | 4000 | 1758 | 0 |  | 9 | 0 |
| 1619 | 53 |  |  | 0 | 1759 | 0 |  |  | 0 |
| 1620 | 38 |  |  | 1500 | 1760 | 0 |  | 7 | 0 |
| 1621 | 22 |  |  | 1500 | 1761 | 0 |  | 5 | 0 |
| 1622 | 0 |  |  | 0 | 1762 | 0 |  | 3 | 0 |
| 1623 | 44 |  |  | 0 | 1763 | 0 |  |  | 0 |
| 1624 | 34 |  |  | 0 | 1764 | 0 | 74 |  | 0 |
| 1625 | 68 |  |  | 1290 | 1765 | 0 |  |  | 0 |
| 1626 | 43 |  |  | 1290 | 1766 | 53 |  |  | 0 |
| 1627 | 42 |  |  | 1290 | 1767 | 86 |  |  | 0 |
| 1628 | 21 |  |  | 3540 | 1768 | 64 |  |  | 18896 |
| 1629 | 56 |  |  | 1290 | 1769 | 0 |  |  | 0 |
| 1630 | 0 |  |  | 90 | 1770 | 0 |  |  | 0 |
| 1631 | 46 |  |  | 90 | 1771 | 0 |  |  | 0 |
| 1632 | 22 | 76 |  | 5440 | 1772 | 0 |  |  | 0 |

REFERENCES

BRECKE, P. (2012). Conflict Catalogue. Peace Science Society conference paper available at: http://www.inta.gatech.edu/peter/PSS99\_paper.html.

KONOPCZYŃSKI, W. (1948). *Chronologia Sejmów polskich*. Cracow: Polska Akademia Umiejętności.

SUPPLEMENTARY ONLINE MATERIAL: APPENDIX 2

RYE PRICE DATA

The basic unit of observation is a series of annual retail rye prices in a specific market. Rye was chosen for this study as it was the most commonly traded grain on the domestic market and the main export commodity. Furthermore, next to beer, it was the most basic source of calories for the population (Wyczański 1969). The study uses price series for Gdańsk, Konigsberg, Warsaw, Cracow, Lublin, and Lviv. Koenigsberg was located in the Ducal Prussia, which was a fief of the Polish king after 1525. Furthermore, Warsaw was incorporated into the Polish Kingdom in 1526. All the other cities were continuously located in Poland between 1500 and 1772.

I also analyse prices from Augsburg, Munster, Leipzig, and Breslau. Rye prices from Augsburg, Munster, Leipzig are taken from Allen (2001). Annual grain price data for Gdańsk, Cracow, Lviv, Warsaw, Cracow, Lublin and Breslau – the latter only until 1618 – have been collected from paperback editions (Hoszowski 1928; 1934; Furtak 1935; Adamczyk 1935; 1938; Siegel 1936; Pelc 1935; 1937) and standardized to a uniform measure of a price in grams of silver for one litre by the Global Price and Income History Group. Prices for Breslau for the 18th century were taken from David Jacks’ webpage (http://www.sfu.ca/~djacks/data/prices/Poland/index.html). This data required standardization. It was presented in silbergroschen per Berliner Scheffel. 1 Speziestaler was 30 silbergroschen. In the late 17th century the taler contained 25.9839g fine silver. From 1740 onward, 1 taler was 19.4879g fine silver. In 1750 Prussia debased the taler further to 16.7039g and kept the level till the end of the studied period. The silver content in the period 1756-1763 is unclear and was left out from the data. One Berliner Scheffel was 62.3 litres (Praun 1784; Ebeling & Brodhagen 1789, p. 490; Engel 1855).

Descriptive statistics of the Polish rye price data

|  |  |  |
| --- | --- | --- |
|  | Years | Coverage (%) |
| Gdańsk | 1501-1772 | 83 |
| Cracow | 1504-1772 | 55 |
| Koenigsberg | 1700-1772 | 93 |
| Lublin | 1570-1772 | 20 |
| Lviv | 1519-1759 | 28 |
| Warsaw | 1526-1772 | 27 |

Note: Prices in grams of silver for one litre of rye.

Price data is used to construct 15 pairs of Polish cities and 6 pairs of German cities (data from Allen 2001). The table below depicts summery statistics of all the pairs. Due to the gaps in the individual data series (see table above) there are numerous gaps in the price gap series. The gaps widened in the case of the first difference specifications.



Graphs below show the distribution of the price gap information.

 

REFERENCES

ADAMCZYK, W. (1935). *Ceny w Lublinie*. Lviv: Instytut Popierania Polskiej Twórczości Naukowej.

ADAMCZYK, W. (1938). *Ceny w Warszawie w XVI i XVII wieku*. Lviv: Instytut Popierania Polskiej Twórczości Naukowej.

ALLEN, R.C. (2001). The Great Divergence in European wages and prices from the Middle Ages to the First World War. *Explorations in Economic History* 38, 411–447.

EBELING, C. D. and BRODHAGEN, P. H. C. (1789). *Gottfried Christian Bohns wohlerfahrener Kaufmann.* Hamburg: Carl Ernst Bohn.

ENGEL, E. (1855). Die Geldprägungen nach dem Leipziger Münzfuße, dem Conventionsfuße und dem 14-Thalerfuße in dem Churfürstenthume und dem Königreiche Sachsen. *Zeitschrift des Statistischen Büreaus des Königl. Sächs. Ministeriums des Innern* **4**, 49-64.

HOSZOWSKI, S. (1928). *Ceny we Lwowie w XVI i XVII wieku*. Lviv: Instytut Popierania Polskiej Twórczości Naukowej.

HOSZOWSKI, S. (1934). *Ceny we Lwowie w latach 1700-1914*. Lviv: Instytut Popierania Polskiej Twórczości Naukowej.

PELC, K. (1937). *Ceny w Gdańsku w XVI i XVII Wieku*. Lviv: Instytut Popierania Polskiej Twórczości Naukowej.

PRAUN, G. A. S. V. (1784). *Grundliche Nachricht von dem Münzwesen insgemein, insbesondere aber von dem Deutschen Münzwesen älterer und neuerer Zeiten: und dann auch von dem Französischen, Spanischen, Niederländschen, Englischen und Dänischen Münzwesen.* Leipzig: Weygandsche Buchhandlung.

TOMASZEWSKI, E. (1934). *Ceny w Krakowie w latach 1601-1795.* Lviv: Instytut Popierania Polskiej Twórczości Naukowej.

WOLAŃSKI, M. (1961). *Związki Handlowe Śląska z Rzeczypospolita w XVII wieku*. Wrocław 1961.

WYCZAŃSKI, A. (1969). *Studia nad konsumpcją żywności w Polsce w XVI i pierwszej połowie XVII wieku.* Warsaw: PWN.

SUPPLEMENTARY ONLINE MATERIAL: APPENDIX 3

FISCAL CAPACITY

Karaman and Pamuk (2010) have reconstructed central state revenue per capita in Poland (no Lithuania). Their figures do not account for many sources of royal income. This necessitates revision of the values constructed by Karaman and Pamuk.

Data on the king’s traditional income from domain and taxes has been taken from: Rutkowski (1935) p. 320. Data on parliamentary income from tolls and various one-off taxes has been taken from: Filipczak-Kocur (1988) and Rybarski (1939), pp. 352-353. Data on both the incomes together has been taken from: Drozdowski (1975), pp. 108-15. Data on population has been taken from: Gieysztorowa (1981). I used linear interpolations to fill gaps in the income series. I used this procedure only if the gap between the known observations was no wider than three years.

Central revenue of the Polish state in grams of silver per capita, 1588-1788.

Values for the revenue of the Polish state in the main article were calculated as follows: the number for the 1600 is the average value for the 1590s; the observation for the 1665 is the average value for the 1660s; the spike in the revenue of the state in the early 1650 is caused by exceptional military effort and the value for the 1700 is proxied by the average value for the 1680s. This selection is motivated by data scarcity.

REFERENCES

DROZDOWSKI, M. (1975). *Podstawy finansowe działalności państwowej w Polsce 1764-1793*. Warszawa-Poznań: PWN.

FILIPCZAK-KOCUR, A. (1988). Finanse Rzeczypospolitej w latach 1587-1632. *Zeszyty naukowe wyższej Szkoły Pedagogicznej w Opolu* **XXVI**, 27-48.

GIEYSZTOROWA, I. (1981). Lundność. In: Encyklopedia historii gospodarczej Polski do 1945, Vol I. Warsaw: Wiedza Powszechna.

KARAMAN, K., & PAMUK, Ş. (2010). *Ottoman State Finances in European Perspective, 1500–1914*. *J. Econ. Hist.* 70 (03), 593–629.

PELC, K. (1937). *Ceny w Gdańsku w XVI i XVII Wieku*. Lviv: Instytut Popierania Polskiej Twórczości Naukowej.

RUTKOWSKI, J. (1935). Les questions economiques et financieres sous la regne d’Etienne Bathory. In: *Etienne Bathory roi de Pologne, prince de Transylvanie*. Cracow: Jagielonian University.

RYBARSKI, R. (1939). *Skarb i pieniądz za Jana Kazimierza, Michała Korybuta i Jana III*. Warsaw: Towarszystwo Naukowe Warszawskie.

SUPPLEMENTARY ONLINE MATERIAL: APPENDIX 4

THE INDEX OF REGULATORY ACTIVITY

The acts of the Seym for the periods of interest 1505-1772 were originally compiled and published between 1732 and 1782 by the Piarists order in the form of the so-called *Volumina* *Legum*. This was re-published by Ohryzko between 1859 and 1889 and recently digitalized (available [here](http://www.wbc.poznan.pl/dlibra/publication?id=47642&from=&dirids=1&tab=1&lp=1&QI=CAEC4FF056EB80C431CD441BB4CC9CDB-33)). The original 18th century edition was created, after the period of parliamentary inaction discussed in the main article, to compile the laws that had been published by the Seym since the 15th century. The original edition of the laws included an index of all the phenomena discussed in all the acts of the Seym since its creation (volumes 10 and 11) – this included economic issues. For example, for each phenomenon, for example ‘credit’ or ‘roads’, the index indicated when each law pertaining to that phenomenon was made and what exactly it stipulated.

By studying individual acts of the parliament and the index of its acts, I constructed a database, in Polish, of economic laws and regulations. The database notes only the acts that were impersonal and general, except for infrastructural projects, such as bridges, that were commissioned by the Seym. The database was used to construct an index of regulatory activity. The main goal of the index is to visualise that the Seym, when active, regulated many different aspects of economic life throughout the country. To transform a qualitative database into a quantitative index, I grouped the economic phenomena regulated in the acts into 8 different areas of economic activity. The index increases by one score for each additional area of activity regulated by at least one act. If at least one phenomenon pertaining to each of the areas of activity was regulated, the index scores 8. If no economic regulation was passed, the index scores 0 (as in the years when the veto was used). The index weights all the areas of economic activity equally. Additionally, it does not distinguish how many acts were issued within each area of activity. The index is intended as a first exploratory measure of long-term changes in regulatory activity of a pre-industrial economy. It is used as a complementary measure of Seym’s activity.

The 8 areas of economic activity are:

**1) General tax**

This category consists of the ‘*universał podobory’*, a general tax that regulated the size of taxation throughout the country. Each concluding Seym published such a document.

**2) Tolls**

This category captures country-wise regulation pertaining to the size, collection, and supervision of tolls.

**3) Trade infrastructure**

This area consists of the acts that instructed construction of new infrastructure projects, setting up new trade-lines and cattle routs, instructing maintenance of roads and rivers, combating bandits, etc.

**4) Measures**

This area groups consists of regulations pressuring standardization of measures used in Poland-Lithuania.

**5) Trade access**

This category groups the regulation of the grain trade and who has the right to trade.

**6) Monetary policy**

This area groups all the monetary reforms in the country and changes to the nominal value of the currency.

**7) Contract enforcement (and debtors and creditors rights)**

For example, regulation of how the obligations ought to be divided after the death of a debtor; regulation of what is considered a contract, etc.

**8) Court’s operations**

Regulation of specifics of the justice system such as appointment of the judges etc.

The index of regulatory activity of the Seym, by category, 1505-1772

SUPPLEMENTARY ONLINE MATERIAL: APPENDIX 5

ROBUSTNESS TESTS

Figure below shows the results of estimations of the impact of parliamentary activity (days in session that concluded) based on Equation 4. The sample consists of all 15 Polish city pairs. Each regression excludes one city pair. The analysis indicates that the results are not driven by any one city pair.



Figure below shows the results of estimations of the impact of parliamentary activity (days in session that concluded) based on Equation 4. The sample consists of different combinations of three independent Polish city pairs, i.e. pairs that do no share a city. Each regression analyses a different combination. The analysis indicates that the results hold for different combinations of independent city pairs.



Table below presents a set of different robustness tests.

* **Specification XVIII** uses alternative controls for warfare. It introduces a set of 4 dummy variables, i.e. ‘At war’ equal one if Poland was involved in an international military conflict and zero otherwise; and ‘At war with Sweden/Russia/The Ottomans’ that capture the effects of different directions of military conflicts. Specification XVIII analyses all 15 Polish city pairs and levels of data. It identifies the effect of interest.
* **Specification XIX** performs the same analysis as specification XVIII but based only on the 3 independent Polish city pairs. It identifies the effect of interest.
* **Specification XX** excludes Koenigsberg from the analysis. This is because the city was located in a fiefdom of Poland and its price data was limited to the 18th century. The sample analyses 10 remaining city pairs. Specification XX analyses levels of data. It identifies the effect of interest.
* **Specification XXI** performs the same analysis as specification XX but based on first differences. It identifies the effect of interest.
* **Specification XXII** analyses alternatively specified time-period fixed-effects. Instead of analyzing the effect of the six time periods, i.e. 1505-1550, 1551-1600…, it captures the effect of the rule of 14 individual kings that were in the office in the period of study. The specification incorporates 14 dummy variables each equal one if the corresponding king was in office at the time, and zero otherwise. Specification XXII analyses all 15 Polish city pairs and levels of data. It identifies the effect of interest.
* **Specification XXIII** performs the same analysis as specification XXII but based only on the 3 independent Polish city pairs. It identifies the effect of interest.
* **Specification XXIV** analysis if the Seym’s activity was dependent on price gaps. It regresses the Seyms’s activity at time ‘t+1’ on price gaps at time ‘t’, plus all the control variables. Specification XXIV is based on the 3 independent Polish city pairs and levels of data. It identifies that Seym’s activity was not dependent on the past size of the price gaps.
* **Specification XXV** performs the same analysis as specification XXIV only with Seym’s activity at time ‘t’ as the dependent variable. It identifies that Seym’s activity was not dependent on the contemporaneous size of the price gaps.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | XVIII | XIX | XX | XXI | XXII | XXIII | XXIV | XXV |
| Dependent |  |  |  |  |  |  | Parliamentary activity (t+1) | Parliamentary activity (t) |
|  |  |  |  |  |  |  | -1.01  (0.49) | 0.87  (0.4) |
| Parliamentary activity (lag) | -0.005\*\*\*  (0.00) | -0.005\*  (0.06) | -0.003\*\*\*  (0.00) | -0.007\*\*\*  (0.00) | -0.003\*\*  (0.03) | -0.004\*\*\*  (0.00) |  |  |
| CPI |  |  |  | 1.74  (0.2) |  |  |  |  |
| War casualties |  |  |  | 0  (0.63) |  |  |  |  |
| Temperature |  |  |  | 0.03  (0.4) |  |  |  |  |
| Interest rates |  |  |  | 0.07  (0.45) |  |  |  |  |
| Wages |  |  |  | -0.17  (0.38) |  |  |  |  |
| CPI | 2.68\*\*\*  (0.00) | 2.68\*\*\*  (0.00) | 2.75\*\*\*  (0.00) |  | 3.01\*\*\*  (0.00) | 1.83\*  (0.09) | 33  (0.31) | 46.9\*\*  (0.03) |
| War casualties | - | - | -0.002\*\*  (0.02) |  | -0.001  (0.13) | -0.002  (0.19) | 0.04  (0.67) | 0.1  (0.13) |
| Temperature | 0.07\*  (0.1) | 0.042  (0.22) | 0.04  (0.45) |  | 0.06  (0.17) | 0.04  (0.43) | -3.99\*\*  (0.03) | 1.13  (0.55) |
| Interest rates | -0.09  (0.3) | -0.102  (0.64) | -0.033  (0.73) |  | 0.09  (0.28) | 0.03  (0.71) | -19\*\*\*  (0.00) | -7.63\*\*\*  (0.01) |
| Wages | -0.31\*\*  (0.04) | -0.33\*\*\*  (0.00) | -0.22  (0.22) |  | -0.21  0.24) | -0.34\*  (0.07) | -13.55  (0.32) | -8.06  (0.53) |
| At war (dummy) | -0.16\*  (0.07) | -0.06  (0.56) |  |  |  |  |  |  |
| At war with Russia  (dummy) | -0.35\*\*  (0.02) | -0.14  (0.18) |  |  |  |  |  |  |
| At war with Sweden  (dummy) | 0.39\*\*  (0.01) | -0.09  (0.31) |  |  |  |  |  |  |
| At war with the Ottomans  (dummy) | -0.67  (0.66) | 0.009  (0.93) |  |  |  |  |  |  |
| Time trend | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| City-pair fixed effects | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Time-period fixed effects | Yes | Yes | Yes | No | King fixed effects | King fixed effects | Yes | Yes |
| City-pair clusters | Yes | No | Yes | Yes | Yes | No | No | No |
| Year clusters | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Sample | 15 Polish pairs | 3 indep.  Polish pairs | 10 Polish pairs (no Koenigsberg) | 10 Polish pairs (no Koenigsberg) | 15 Polish pairs | 3 indep.  Polish pairs | 3 indep.  Polish pairs | 3 indep.  Polish pairs |
| N | 776 | 186 | 528 | 351 | 776 | 186 | 186 | 186 |
| R2 | 0.36 | 0.29 | 0.30 | 0.1 | 0.36 | 0.3 | 0.3 | 0.3 |

Note: OLS regressions. P-values based on heteroscedasticity robust standard errors in brackets. \*, \*\*, \*\*\* denote significance at the 10, 5, and 1 percent level respectively. For the selected independent pairs see the article.

SUPPLEMENTARY ONLINE MATERIAL: APPENDIX 6

ROYAL TENURE INDEX AS INSTRUMENTAL VARIABLE - 2SLS

I constructed the royal tenure index ranging from zero in the year the king was elected to 100 in the year he died. For each year, the index equals the ratio of the number of years the king had already been in the office to the total duration of his entire reign (times 100). For example, for the 3rd year of a ten-year-reign (from election till death) the index is 30. I use the royal tenure index to instrument legal capacity, i.e. the number of days the Seym was in session that concluded, and regulatory output, which both dependent on the use of the veto. The veto was more likely to be used when king’s reign was near its conclusion and the pressure to introduce a change to the electoral procedure was greater. The table below shows the values of the royal tenure index from 1669, i.e. when the veto was written into the Cardinal Law, to 1772 - the first partition of Poland. Because the index depended on the age of the monarch it was exogenous to market conditions.

Royal Tenure Index

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Royal Tenure Index | Year | Royal Tenure Index | Year | Royal Tenure Index | Year | Royal Tenure Index |
| 1669 | Election of Michał Korybut Wiśniowiecki | 1697 | Election of August II Mocny | 1725 | 80 | 1753 | 67 |
| 1670 | 20 | 1698 | 3 | 1726 | 83 | 1754 | 70 |
| 1671 | 40 | 1699 | 6 | 1727 | 86 | 1755 | 73 |
| 1672 | 60 | 1700 | 9 | 1728 | 89 | 1756 | 77 |
| 1673 | 80 | 1701 | 11 | 1729 | 91 | 1757 | 80 |
| 1674 | Election of Jan III Sobieski | 1702 | 14 | 1730 | 94 | 1758 | 83 |
| 1675 | 5 | 1703 | 17 | 1731 | 97 | 1759 | 87 |
| 1676 | 9 | 1704 | 20 | 1732 | 99 | 1760 | 90 |
| 1677 | 14 | 1705 | 23 | 1733 | Election of August III Sas | 1761 | 93 |
| 1678 | 18 | 1706 | 26 | 1734 | 3 | 1762 | 97 |
| 1679 | 23 | 1707 | 29 | 1735 | 7 | 1763 | 99 |
| 1680 | 27 | 1708 | 31 | 1736 | 10 | 1764 | Election of Stanisław August Poniatowski |
| 1681 | 32 | 1709 | 34 | 1737 | 13 | 1765 | 3 |
| 1682 | 36 | 1710 | 37 | 1738 | 17 | 1766 | 7 |
| 1683 | 41 | 1711 | 40 | 1739 | 20 | 1767 | 10 |
| 1684 | 45 | 1712 | 43 | 1740 | 23 | 1768 | 13 |
| 1685 | 50 | 1713 | 46 | 1741 | 27 | 1769 | 17 |
| 1686 | 55 | 1714 | 49 | 1742 | 30 | 1770 | 20 |
| 1687 | 59 | 1715 | 51 | 1743 | 33 | 1771 | 23 |
| 1688 | 64 | 1716 | 54 | 1744 | 37 | 1772 | 27 |
| 1689 | 68 | 1717 | 57 | 1745 | 40 |  |  |
| 1690 | 73 | 1718 | 60 | 1746 | 43 |  |  |
| 1691 | 77 | 1719 | 63 | 1747 | 47 |  |  |
| 1692 | 82 | 1720 | 66 | 1748 | 50 |  |  |
| 1693 | 86 | 1721 | 69 | 1749 | 53 |  |  |
| 1694 | 91 | 1722 | 71 | 1750 | 57 |  |  |
| 1695 | 95 | 1723 | 74 | 1751 | 60 |  |  |
| 1696 | 99 | 1724 | 77 | 1752 | 63 |  |  |

Due to the constitutional conflict over the mode of the royal election, the vetoes were more likely to occur when the index of royal tenure was high. To demonstrate this, I run a logit regression of the (A) dummy variable equalled one if the Seym met and was aborted and 0 when the Seym met and concluded on (B) the royal tenure index. I find that an increase of the index by 1 point was associated with an increase in the chance of the veto being used.



I estimate a variation of Equations 3 where I instrument the Seym’s activity or its regulatory output with the royal tenure index. I limit the sample only to the years directly after the Seym met, i.e. if the Seym met at ‘t-1’. I look at the years after 1669, i.e. the introduction of the liberum veto. Because this operation limits the number of observations, to maximise the sample size, I study all 15 Polish city pairs and I look at the levels of values. Table below shows the results of the two-stage-least-squares procedure (2SLS). I find that the royal tenure index was a valid instrument for both Seym’s activity and its regulatory output. The Cragg-Donald F statistics of two first stage regressions analysing the impact of all the exogenous variables either on (1) Seym’s activity or on (2) its regulatory output was sufficiently high, i.e. 32 and 100 respectively. Moreover, I identify a statistically significant and negative impact of the lag of the royal tenure index on the lag of both Seym’s activity or the lag of its regulatory output.

Regarding the second stage, I find that each additional day the Seym was in session in the previous year lowered the next year’s price gap by around 0.9 % while regulation of each additional area of economic activity lowered the exchange costs by 7%. These values are comparable with these identified in Table 4.

|  |  |  |
| --- | --- | --- |
|  | XXVI | XXVII |
| Regression | 2SLS | 2SLS |
| Dependent |  |  |
| Parliamentary activity  (lag) (instrumented) | -0.009\*\*  (0.02) |  |
| Regulatory output  (lag) (instrumented) |  | -0.068\*\*\*  (0.00) |
| CPI | 2.66\*\*  (0.03) | 2.06\*  (0.09) |
| War casualties | 0  (0.77) | -0.002\*\*  (0.02) |
| Temperature | 0.04  (0.55) | 0.05  (0.4) |
| Interest rates | -0.34\*\*\*  (0.00) | -0.043  (0.8) |
| Wages | -0.39  (0.16) | -0.104  (0.64) |
| Time trend | 0.013\*\*\*  (0.00) | 0.013\*\*\*  (0.00) |
| City-pair fixed effects | No | Yes |
| Time-period fixed effects | No | Yes |
| City-pair clusters | No | Yes |
| Year clusters | No | Yes |
| Index of royal tenure  (lag) (instrument) | -0.309\*\*  (0.03) | -0.047\*\*\*  (0.00) |
| Control variables and city-pair and time-period fixed effects | Yes | Yes |
| First Stage Cragg-Donald F statistic | 32 | 100 |
| Sample | 15 Polish pairs | 15 Polish pairs |
| N | 274 | 274 |
| R2 | 0.50 | 0.50 |

Note: P-values based on heteroscedasticity robust standard errors in brackets. \*, \*\*, \*\*\* denote significance at the 10, 5, and 1 percent level respectively.

SUPPLEMENTARY ONLINE MATERIAL: APPENDIX 7

ADDITIONAL TESTS

1)



2)



SUPPLEMENTARY ONLINE MATERIAL: APPENDIX 8

THE PARALLEL TRENDS ASSUMPTION

The difference in difference method requires that the trends in price data in Holy Roman Empire and Poland followed similar trends before the break point of the 1660. I run two pooled OLS regressions; one investigating only the Polish cities and one focused only on the Imperial cities. I regress the logarithms of the price gap on a set of time dummies and a set of city-pair dummies. The figure below shows the values of the coefficients associated with the period dummies (indexed values). It shows that before the 1660 price gaps were rising in both Poland and the Empire. However, after the 1660s the price gaps in the Empire declined while in Poland they established a new higher level.

Note: White line: Price gaps in the Empire. Black line: Price gaps in Poland.