Introduction to Economic Data

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Welcome

This book is written for Economics students at the University of Bristol to bridge the gap between technical documents about economic concepts and textbook treatments of economic concepts. Each chapter concludes with some suggestions for further readings.

Please let me know if you find mistakes, find a section unclear, or if you have suggestions for improvements. You can contact me on h.h.sievertsen@bristol.ac.uk.[1]

Thanks, Hans Last updated on Tuesday, November 08, 2022

[1] I owe a big thanks to all students who have contributed to this book, especially to Viktoria Leins who updated several figures and identified numerous mistakes.

Chapter 1

Introduction

A first look at data

Figure **??** shows a line chart of annual levels of economic activity per person in the United Kingdom based on data from the Maddison Project Database (MPD) 2018.

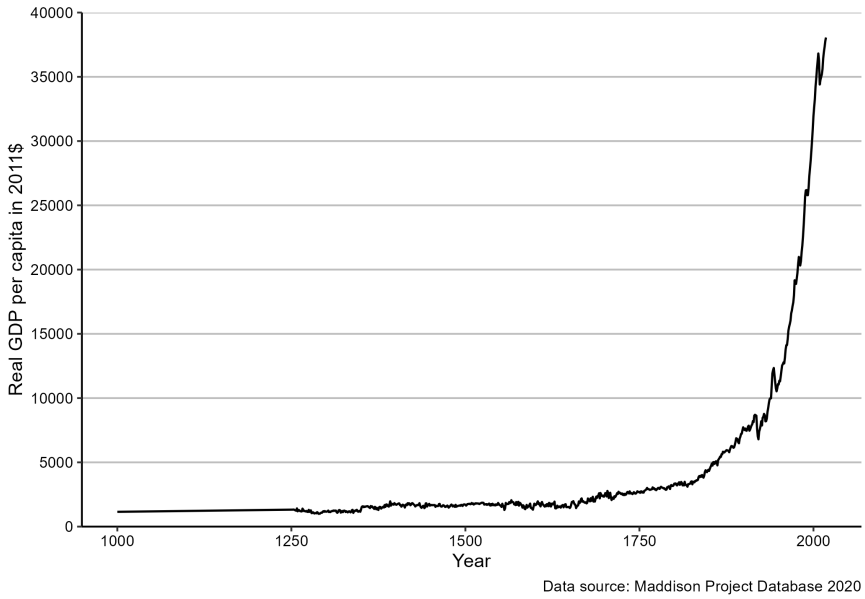

Figure 1.1: GDP per capita in the United Kingdom. Source: Maddison Project Database (MPD) 2018.

The chart is a good illustration of the core topics of this book:

1. **What is the chart showing?** The chart shows economic activity per person measured as the Gross Domestic Product (also known as GDP) per person. But what is the GDP? Is the number of persons in the United Kingdom measured at the beginning or the end of the year? We cover definitions of economic data concepts such as GDP, unemployment, and prices in part I.

2. **Where does the data come from?** We know that the data source for Figure **??** is the Maddison Project Database (MPD) 2018, but where do they get the data from? How can we download the data to create our own chart? We will cover data basics in part II.

3. **Why did we use a chart?** The chart is known as the "History's hockey stick," because the line chart has the shape of a hockey stick. The hockey stick shape is all that we want the reader to remember, because it represents the overall long term trend. If we wanted to reader to remember a precise value, we would have used a table like the one shown in Figure **??**.

Year	GDP per capita	Year	GDP per capita	Year	GDP per capita	Year	GDP per capita	Year	GDP per capita	Year	GDP per capita	Year	GDP per capita	Year	GDP per capita	Year	GDP per capita	Year	GDP per capita	Year	GDP per capita	Year	GDP per capita	Year	GDP per capita	Year	GDP per capita
1000	1128	1714	2317	1739	2534	1764	2842	1789	2831	1814	3142	1839	3806	1864	5153	1889	6743	1914	7973	1939	9788	1964	14954	1989	25654	2014	36436
1280		1715	2250	1740	2478	1765	2798	1790	3012	1815	3421	1840	3940	1865	5229	1890	6711	1915	8471	1940	10716	1965	15241	1990	25679	2015	36941
1300		1716	2321	1741	2544	1766	2822	1791	2987	1816	3188	1841	3818	1866	5345	1891	6648	1916	8532	1941	11694	1966	15450	1991	25314	2016	37334
1348		1717	2435	1742	2630	1767	2835	1792	3072	1817	3190	1842	3734	1867	5319	1892	6426	1917	8496	1942	11939	1967	15706	1992	25336		
1400		1718	2555	1743	2569	1768	2854	1793	2991	1818	3139	1843	3873	1868	5526	1893	6360	1918	8462	1943	12103	1968	16270	1993	25909		
1450		1719	2493	1744	2516	1769	2996	1794	2869	1819	3043	1844	4163	1869	5525	1894	6718	1919	7456	1944	11574	1969	16492	1994	26847		
1500		1720	2661	1745	2527	1770	2894	1795	3145	1820	3241	1845	4301	1870	5716	1895	6859	1920	6881	1945	11028	1970	16829	1995	27447		
1550		1721	2560	1746	2590	1771	2930	1796	3169	1821	3243	1846	4250	1871	5684	1896	7070	1921	6660	1946	10543	1971	17101	1996	28075		
1570		1722	2585	1747	2696	1772	2834	1797	3106	1822	3251	1847	4152	1872	5657	1897	7088	1922	7247	1947	10322	1972	17652	1997	28879		
1600		1723	2513	1748	2661	1773	2863	1798	3100	1823	3294	1848	4276	1873	5729	1898	7354	1923	7439	1948	10543	1973	18795	1998	29714		
1650		1724	2480	1749	2628	1774	2779	1799	3144	1824	3424	1849	4336	1874	5760	1899	7578	1924	7691	1949	10871	1974	18535	1999	30587		
1700	2365	1725	2535	1750	2649	1775	2839	1800	3277	1825	3453	1850	4248	1875	5834	1900	7446	1925	8041	1950	10846	1975	18517	2000	31619		
1701	2561	1726	2436	1751	2575	1776	2903	1801	3285	1826	3226	1851	4390	1876	5823	1901	7370	1926	7715	1951	11134	1976	18935	2001	32356		
1702	2477	1727	2407	1752	2686	1777	2959	1802	3295	1827	3430	1852	4535	1877	5808	1902	7486	1927	8307	1952	11083	1977	19355	2002	32992		
1703	2299	1728	2504	1753	2690	1778	2908	1803	3188	1828	3393	1853	4642	1878	5764	1903	7337	1928	8373	1953	11481	1978	20049	2003	33977		
1704	2723	1729	2404	1754	2596	1779	2874	1804	3142	1829	3375	1854	4814	1879	5674	1904	7311	1929	8601	1954	11909	1979	20580	2004	34638		
1705	2579	1730	2489	1755	2657	1780	2989	1805	3283	1830	3481	1855	4656	1880	5879	1905	7456	1930	8504	1955	12298	1980	20211	2005	35424		
1706	2177	1731	2451	1756	2592	1781	3041	1806	3223	1831	3476	1856	4915	1881	6027	1906	7631	1931	8031	1956	12392	1981	19924	2006	36045		
1707	2437	1732	2603	1757	2730	1782	2988	1807	3387	1832	3542	1857	4921	1882	6147	1907	7702	1932	8047	1957	12530	1982	20248	2007	36679		
1708	2585	1733	2646	1758	2761	1783	2967	1808	3187	1833	3529	1858	4784	1883	6142	1908	7316	1933	8248	1958	12450	1983	20951	2008	36163		
1709	2234	1734	2610	1759	2795	1784	2951	1809	3244	1834	3569	1859	4933	1884	6099	1909	7410	1934	8764	1959	12878	1984	21444	2009	34338		
1710	2025	1735	2525	1760	2859	1785	2904	1810	3410	1835	3786	1860	4988	1885	6012	1910	7567	1935	9064	1960	13512	1985	22139	2010	34722		
1711	2211	1736	2691	1761	2953	1786	2923	1811	3331	1836	3861	1861	4926	1886	6050	1911	7721	1936	9433	1961	13843	1986	23041	2011	34971		
1712	2213	1737	2532	1762	2860	1787	2841	1812	3145	1837	3782	1862	4672	1887	6235	1912	7800	1937	9718	1962	13856	1987	24059	2012	35185		
1713	2114	1738	2567	1763	2857	1788	2806	1813	3264	1838	3885	1863	5064	1888	6457	1913	8052	1938	9794	1963	14300	1988	25179	2013	35618		

Figure 1.2: GDP per capita in the United Kingdom. Source: Maddison Project Database (MPD) 2018.

However, this table does a poor job in communicating the overall trend. How do we know whether to use a table or a chart? How do we design a table or chart? We will cover basic data visualisation techniques in part II.

Part I: Working with Economic Data

Chapter 2

People

2.1 What this chapter is about

Economics is about people. As the Bristol economist Alfred Marshall wrote in the first chapter of the book "Principles of Economics" in 1890, *"[...] economics is a study of mankind in the ordinary business of life"*. In other words, economics is about the interactions and behaviours of normal people in their day to day life. A good starting point for working with economic data is therefore data about people. This chapter is about how to describe changes in the number of people in a region, about quantifying fertility and about measuring life expectancy.

After reading this chapter you should be able to apply the following concepts.

- Distinguishing between stock and flow variables
- Quantifying fertility trends
- Estimating period life expectancy

2.2 Population stocks and flows

2.2.1 What are flow and stock variables?

Economic variables can be classified as either flow or stock variables. We can illustrate the difference between these two types using a bathtub as in Figure **??**. The water level in the bathtub at a given point in time is a stock variable. The amount of water that has flown into the tub over a period of time is a flow variable.

An easy way to distinguish between flow and stock variables is that a flow variable is measured over a *period* of time while a stock variable is measured at a specific *point* in time.