

Household Behaviour Under Rationing

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Appendix 1: Rationing Regimes

Sweden

At the outbreak of World War II, Sweden's policy makers had the precedent of World War I to draw experience from as a neutral country. Indeed, a post-war summary, commissioned in 1952 by the Department of Trade, pointed to World War I as "the point of departure" from which later contemporaries could draw upon to "avoid repeating the same mistakes that were made then."⁴

The erroneous expectation that the War of 1914 would be short-lived had led to minimal preparation for ensuring adequate domestic supplies.⁵ The leading politicians of the 1910s had great confidence in the market and its ability to withstand crises and disturbances. Thus, interventions came late in World War I and were typically provoked by strong public opinion.⁶ Sweden was a small open economy and was not self-sufficient, as would become painfully apparent. Acute food shortages in 1917 and 1918 were accompanied by a threefold increase in the price level as staple foods, such as potatoes, bread and sugar, disappeared from the shelves, leaving broad sections of society to suffer a decline in living standards.⁷

Attitudes had changed by the early 1940s. New economic policy emphasised the role of government in managing crises.⁸ Preparations for a conflict had been underway during the mid-1930s, though the first detailed national inventory count was conducted in December 1939, some months before rationing was first imposed. Thereafter, such reports were produced on a quarterly basis until 1945.⁹ Industries were required to submit detailed applications to acquire import licences.¹⁰ In stark contrast to World War I, a rationing system was initiated within the first year of the War and it remained in force until 18 August 1951 when the last rationed good, coffee, was removed from the list.¹¹ However, the wind down of the regime had begun in earnest at the end of the War.

Table A1: Rationed Items and Applicable Dates

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⁴ SOU 1952 : 49, p. 26

⁵ SOU 1952 : 49, p. 132

⁶ Schön 2010, p. 311

⁷ Qvarnström 2014.

⁸ Schön 2010, p. 311

⁹ SOU 1952 : 49, p. 404

¹⁰ SOU 1952 : 49, p. 404

¹¹ SOU, 1952 :49, p. 403

Item	Period 1		Period 2		Days
	Start	End	Start	End	
Soda Soaking Agent (Washing)	18/07/1943	16/09/1945			791
Washing and Cleaning Detergent	12/05/1940	21/01/1949			3176
Textiles	01/01/1942	25/11/1945			1424
Footwear	22/04/1943	25/11/1945			948
Tobacco	27/05/1942	20/09/1945			1212
Beans	01/01/1942	16/09/1945			1354
Potato Flour	14/12/1941	21/05/1944	17/01/1945	16/09/1945	1131
Cream	20/11/1941	31/01/1944			802
Peas	19/11/1941	21/05/1944			914
Dried Fruit	10/10/1941	28/02/1946			1602
Eggs	24/09/1941	31/12/1945			1559
Pasta	17/07/1941	16/09/1945	07/04/1946	22/08/1948	2390
Spices	01/07/1941	15/11/1945			1598
Almonds	01/07/1941	16/09/1945			1538
Cheese	01/07/1941	19/07/1946			1844
Beef	01/04/1941	19/06/1949			3001
Barley	15/01/1941	14/08/1944	25/02/1945	01/10/1948	2621
Oatmeal	15/01/1941	14/07/1948			2737
Salt	07/01/1945	16/09/1945			252
Cooking Fat	29/12/1940	24/03/1949			3007
Rice	08/12/1940	28/02/1947			2273
Syrup	03/11/1940	31/08/1949			3223
Pork	06/10/1940	19/06/1949			3178
Flour and Bread	08/09/1940	01/10/1948			2945
Cocoa	08/07/1940	31/10/1945	15/03/1947	04/04/1948	2327
Sugar	10/04/1940	31/08/1949			3430
Tea	27/03/1940	31/10/1945	15/03/1947	04/04/1948	2430
Coffee	27/03/1940	31/10/1945	15/03/1947	18/08/1951	3661
Light	07/01/1941	08/09/1946			2070

Source: Derived from SOU 1952: 49; Note: authors' calculations.

According to a Report Commissioned by the Swedish Department of Trade, the policy controls imposed during World War II resulted in "an efficient, convenient and relatively inexpensive rationing regime".¹² Table A1 reports the list of rationed items as well as documenting the duration of their official control.

Sweden could choose between two alternative methods of rationing. The first alternative was to ration a good within fixed periods (e.g., monthly) allowing for the quantity of the good to vary, based upon the circumstances. The second option was to ration a good within variable periods, holding the

¹² SOU 1952 : 49, p. 405

quantity constant. By choosing the latter, Sweden gained the advantage of adapting to the mode of supply as a monopoly. Furthermore, it avoided the logistical difficulties associated with constantly repackaging goods to suit new ration quantities under alternative one.¹³ Through the operation of variable rationing periods with fixed coupon values, the system could adjust to the underlying supply situation, on which it was receiving quarterly reports.¹⁴

In most cases, the same ration allowance on any good pertained to a variety of goods within that same category according to the rationing list. In that case, the coupon could be used for any good within the same broad heading. So, for example, a coupon for sugar (1kg) could be used instead to purchase syrup (1.4kg), or the coffee ration (300g) might be exchanged for tea (100g) or, depending upon supply, cocoa (300g). Other goods were subject to a point-based system, such as meat, textiles, washing detergents, shoes and tobacco. For example, bone free beef (1kg) could be exchanged for bone free pork (1kg) as both were valued at one point. However, where bones were included, fractional points applied.¹⁵

With respect to fuel, lessons from the previous war had ostensibly been learned. "Spectacular successes" were achieved in the campaign to increase the supply of wood fuels. The attempt had failed during World War I. During World War II, the use of wood fuels was double what had been used during World War I.

The consumption of food and clothing was restricted, in the former case to avoid the extensive racketeering that occurred in the latter phases of the previous.¹⁶ While ration books had existed since 1914 for alcohol, "the pronounced rises in prices in November 1939 (3 kronor for spirits) resulted in an immediate decline in sales."¹⁷ Alcohol "ration books" might be considered as an individual's upper limit in a society that was, at that time, comparatively abolitionist in nature.¹⁸

Ireland

Details of rationing in Ireland are given in Bryan (2014).

In Ireland rationing of petrol began in 1939 and private motoring ended in 1941. The main fuel used for heating was coal and it was rationed from early in 1941. Rationing of fuel only ended late in 1947.

From 1940 to 1942 rationing regimes were gradually introduced covering a range of goods, including food. The rationing regime became very restrictive from 1942 onwards.

Sugar and tea were rationed from 1941 onwards and butter in 1942. The introduction of sugar rationing in 1941 was hastened by illegal exports of sugar to the UK. Clothing and footwear were rationed from 1942.

At the end of the War the European food shortage impacted on Ireland. In particular in 1945 and 1946 supplies of wheat were affected by poor domestic production and world shortages. Thus rationing of food and fuel was gradually phased out with a significant freeing up in 1947 and 1948.

¹³ SOU 1952 : 49, p. 407

¹⁴ SOU 1952 : 49, p. 408

¹⁵ SOU 1952 : 49, p. 409-10

¹⁶ Qvarnström 2014.

¹⁷ SOU 1952: 52, p. 170

¹⁸ Tomasson 1998

United Kingdom

Zweiniger-Bargielowska (2002) describes the rationing regime in the UK during and after the War. Food rationing began in January 1940 with a limited number of items. Food shortages became more acute winter 1940-41. Points rationing was extended in December 1941 covering more food items. In summer 1942 it was further extended to cover items such as chocolate.

Clothing and footwear were rationed from 1941 onwards. Restrictions were further tightened in 1942 on a wide range of consumer goods.

Rationing continued throughout the 1940s and was only finally ended in 1955.

The European food shortage of 1945-46 affected the UK resulting in continuing supply shortages. However, the Labour government maintained rationing throughout the 1940s, not just to deal with shortages but because it believed it to be a instrument of redistribution and also because of the severe balance of payments constraint arising from interest payments on its massive War debt.

The Conservative government, which came to power in 1951, had vowed to end rationing, which it did finally in 1955.

United States of America

Fishback and Cullen (201) give a brief description of war-time controls on consumption in the US. By 1942 consumers faced price controls and rationing of consumer goods “The production of consumer durables, like washing machines and electric appliances, was restricted or prohibited altogether.” Production of cars for civilian use ended at the beginning of 1942 (Brunet, 2017).

On the 16th of August 1945, the day after Japan’s surrender, fuel rationing ended. The remaining rationing, except for sugar, had ended by the end of 1945.

Appendix 2: Data Sources

The data are available from the authors in a separate spreadsheet

Ireland

For Ireland are taken from successive issues of the National Accounts, published first by the Department of Finance, and later by the CSO. The national accounts for the period 1938-44 were done on an experimental basis, with somewhat different definitions than used in later publications. This means that the linking of the data to produce continuous series between 1938 and 1945 is more complex than for the later years.

Consistent series for the components of consumption are available for 1938 and from 1947 to 2019 from successive issues of CSO: *National Income and Expenditure*. The data for 1944 to 1947 came from the CSO *Tables of National Income and Expenditure 1938 and 1944-50* and were linked to the data for 1947 onwards. The data for 1939 to 1944 came from the Department of Finance publication *National Income and Expenditure 1938-1944*. The observation for 1938 came from later versions of *National Income and Expenditure*. Because the series did not match perfectly, for each series the same constant was added to the growth rate in each year to ensure that the series matched the observations for 1938 and 1944 derived from later publications.

While continuous linked annual series have been produced from 1938 to 2019, the definitions used in the data on the composition of personal consumption underwent significant changes around 1970. Hence it was considered best to estimate the models used in this paper from 1938 to 1970.

Data are available on consumption broken down into Food, Drink & Tobacco, Clothing, Fuel and light, other goods, and services at current and constant prices (and deflators). A series is also derived on personal disposable income from 1938 to 2019. However, as with the data on the components of consumption, there appears to be a discontinuity around 1970. In addition, the linked series for personal disposable income grows slightly more rapidly than that for consumption over the extended period. When the series are based on the latest data for 1995-2019 the result is that personal savings, the difference between personal disposable income and consumption, is negative for the earliest years. For this reason the personal savings rate used here is a linked series of the savings rates in successive issues of the national accounts, rather than a series derived residually. This reflects the approach normally used in the National accounts where each series is linked separately rather than being derived by adding (or subtracting) linked series for the components.

Sweden

For data relevant to national income, investment, balance of payments, public and private savings, this paper drew extensively upon the Swedish National Wealth Database (SNWD) for the relevant figures. Waldenström (2016, 2017) first pioneered the database, which is subject to regular updates, and the version adopted for this project was version 2.4 covering the period 1810-2019.

For consumption data, the first key official source was the annually compiled volumes of national statistics, *Statistisk Årsbok* (1955-71), or *Statistical Yearbooks*. For these years, total consumption was disaggregated across a number of items with broad headings, available in current values. These could be readily deflated when official price indices were available from the same source (SÅ 1960, 1961, 1971) for a selection of appropriate consumption headings, e.g., food, alcohol and tobacco, housing, fuel and light, clothing. However, for other categories of significance to our study, deflators needed to be constructed. For example, public transport consumption was deflated using a constructed price index of bus fares (under 15km), health service consumption was deflated by a price index based upon the number of admissions and motor vehicle consumption was deflated using a price index derived from total vehicles registered.

Prior to 1956, the principal source was *Den privata konsumtionen i Sverige 1931-65*, published in 1957. This was a collaboration of Swedish scholars investigating Swedish consumption patterns over the previous two decades initiated by the Industrial Research centre, (*Industriens Utredningsinstitut*). It contained the main consumption headings for our purposes, though some were subsumed within broader headings. For instance, under the heading of "Food", alcohol and tobacco were also listed. These were removed from the Food volume series, which in turn was reweighted according to the remaining categories in current prices. Alcohol and Tobacco were subsequently combined into a newly constructed volume index, weighted by their respective shares of output in current prices.

The same process was carried out with fuel, gas and electricity which had been submerged under the "Housing" category. These were combined with their respective weights in current prices into a new volume index of "Light and Heat." Total Services included Household services, transport services, entertainment and healthcare. These were readily available and combined into a volume index according to weights in current prices into "Total Services" for our comparative purposes. It was necessary to remove motor vehicle purchases from the transport category and reclassify them under "other goods" for comparability purposes. "Other Goods" comprised various durable household goods listed as "Household equipment". While in older versions of national accounts, these included motor vehicles, these later appeared in their own category.

United Kingdom

The data for the UK are taken from the Bank of England spreadsheet "A millenium of macroeconomic data" <https://www.bankofengland.co.uk/statistics/research-datasets>

United States

The series from 1929 onwards for personal disposable income and consumption and its components were taken from the Bureau of Economic Analysis National Accounts Table 2.1. The series for financial assets from 1945 are taken from

<https://www.federalreserve.gov/datadownload/Download.aspx?rel=Z1&series=985b736902f88e363534f1c78bf28227&filetype=sheetml&label=include&layout=seriescolumn&from=01/01/1945&to=12/31/2020>

Appendix 3: Detailed Model Identities

Sweden

$ypd = ypdv / pc$ where ypd is real personal disposable income, $ypdv$, is nominal personal disposable income and pc is the deflator for consumption

$ctv = ct * pc$ where ctv is consumption at current prices, ct is consumption at constant prices

$cfv = scf * ctv$ where cfv is consumption of food at current prices and scf is the share of food in consumption

$cdv = scd * ctv$ where cdv is consumption of drink at current prices and scd is the share of drink in consumption

$ccv = scc * ctv$ where ccv is consumption of clothing at current prices and scc is the share of clothing in consumption

$cov = sco * ctv$ where cov is consumption of other goods at current prices and sco is the share of other goods in consumption

$cpv = scp * ctv$ where cpv is consumption of fuel and power at current prices and scp is the share of fuel and power in consumption

$csv = ctv - cfv - cdv - ccv - cpv - cov$ where csv is consumption of services at current prices

$cf = cfv / pcf$ where cf is consumption of food at constant prices and pcf is the deflator for food

$cd = cdv / pcd$ where cd is consumption of drink at constant prices and pcd is the deflator for drink

$cc = ccv / pcc$ where cc is consumption of clothing at constant prices and pcc is the deflator for clothing

$cp = cpv / pcp$ where cp is consumption of fuel and power at constant prices and pcp is the deflator for fuel and power

$co = cov / pco$ where co is consumption of other goods at constant prices and pco is the deflator for other goods

$cs = csv / pcs$ where cs is consumption of services at constant prices and pcs is the deflator for services

$scs = 1 - scf - scd - scc - scp - sco$ where scs is the share of services in consumption

$savrat = (1 - ctv) / ypdv * 100$ where $savrat$ is the personal savings ratio

Ireland

US

$ypd = ypdv / pc$ where ypd is real personal disposable income, $ypdv$, is nominal personal disposable income and pc is the deflator for consumption

$ctv = ct * pc$ where ctv is consumption at current prices, ct is consumption at constant prices

$cnv = scn * ctv$ where cnv is consumption of non-durables at current prices and scn is the share of non-durables in consumption

$cuv = scu * ctv$ where cuv is consumption of durables at current prices and scu is the share of durables in consumption

$csv = ctv - cnv - cuv$ where csv is consumption of services at current prices

$cn = cnv / pcn$ where cn is consumption of non-durables at constant prices and pcn is the deflator for non-durables

$cu = cuv / pcu$ where cu is consumption of durables at constant prices and pcu is the deflator for durables

$cs = csv / pcs$ where cs is consumption of services at constant prices and pcs is the deflator for services

$scs = 1 - scn - scu$ where scs is the share of services in consumption

$savrat = (1 - ctv)/ypdv * 100$ where $savrat$ is the personal savings ratio

UK

$ypd = ypdv / pc$ where ypd is real personal disposable income, $ypdv$, is nominal personal disposable income and pc is the deflator for consumption

$consv = cons * pc$ where $consv$ is consumption at current prices, $cons$ is consumption at constant prices

$savrat = (1 - ctv)/ypdv * 100$ where $savrat$ is the personal savings ratio

$ctv = consv / ctv_fix$ Where ctv is consumption at current prices from Sefton and Weale, 1995. ctv_fix is the ratio of ctv to $consv$

$ct = cf + cd + cc + cp + co + cs$ where ct is consumption at constant prices, cf , cd , cc , cp , co and cs are consumption at constant prices of food, drink, clothing, power, other goods and services respectively

$pct = ctv / ct$ is the consumption deflator

$cfv = scf * ctv$ defines the value of consumption of food cfv as the share of food consumption scf multiplied by total consumption at current prices

$ccv = scc * ctv$ defines the value of consumption of clothing ccv as the share of clothing consumption scc multiplied by total consumption at current prices

$cdv = scd * ctv$ defines the value of consumption of drink cdv as the share of drink consumption scd multiplied by total consumption at current prices

$cov = sco * ctv$ defines the value of consumption of other goods cov as the share of other goods consumption sco multiplied by total consumption at current prices

$cpv = scp * ctv$ defines the value of consumption of power cpv as the share of power consumption scp multiplied by total consumption at current prices

$csv = scs * ctv$ defines the value of consumption of services csv as the share of services consumption scs multiplied by total consumption at current prices

$cf = cfv / pcf$ Consumption of food at constant prices cf is derived by deflating the constant price series by the relevant price deflator pcf

$cd = cdv / pcd$ Consumption of drink at constant prices cd is derived by deflating the constant price series by the relevant price deflator pcd

$cc = ccv / pcc$ Consumption of clothing at constant prices cc is derived by deflating the constant price series by the relevant price deflator pcc

$cp = cpv / pcp$ Consumption of power at constant prices cp is derived by deflating the constant price series by the relevant price deflator pcp

$co = cov / pco$ Consumption of other goods at constant prices co is derived by deflating the constant price series by the relevant price deflator pco

$cs = csv / pcs$ Consumption of services at constant prices cs is derived by deflating the constant price series by the relevant price deflator pcs

$scs = 1 - scf - scd - scc - scp - sco$ The share of services in total consumption is determined residually