Intergenerational transfer systems and cohort-crowding

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Still very incomplete and preliminary, please do not quote!

Abstract

Previous studies indicate that cohort-crowding effects found in the United States are absent in some European countries, among these Sweden. It is likely that this may be due to differences in the institutions that mediate intergenerational resource flows, but comparative data on these resource flows have been scarce and difficult to analyse from an institutional perspective.

In the global National Transfer Accounts project resource flows across generations are tracked within the standard System of National Accounts using a common methodology. Introducing age into the National Accounts maps changing transfer flows; through the asset markets as well as public and private transfers. It thus provides new tools for analysing the sustainability of these systems as well as the average effects for different cohorts. National Transfer Accounts for a given year yields a cross-section age profile of the resource flows from one cohort to another. In an ideal steady-state model this would be equivalent to the life cycle age profiles of each cohort adjusted for growth. Tracking the cohort profiles in a time series of NTA shows, however, that the cohort life cycle profiles tend to change systematically over time. In the real world some cohorts will fare better than others due to cohort-crowding, differential effects from crises or policy reforms depending on the life stage at which they occur and so on.

This paper makes a comparative analysis of cohort-crowding effects in Sweden, and the US. Institutional differences in the financing of life cycle deficits are important for the outcomes of large and small cohorts. The US transfer system differs considerably from the Swedish with important differences. NTA time series are, however, still comparatively short, less than 30 years, i.e. considerably shorter than the whole life course of a cohort. The current version of the paper is still mainly descriptive.

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Introduction

Birth cohorts differ not only by their size but also regarding in which stage of life they experience policy changes and macroeconomic ups and downs. The intergenerational transfer system of institutions mediating such transfers may sometimes smooth the life time opportunities of a cohort sometimes increasing the volatility. Our understanding of this is not very good, in part because comprehensive data on this has been very scarce. According to previous research in the United States baby boomers born in the 1950s has had a rather tough time while in Sweden boomers born in the 1940s has done rather well in terms of income and wealth accumulation.

This paper attempts to develop new tools to analyse the issue of cohort-crowding by using a new source of comparative data on intergenerational transfers within the National Accounts framework. How different cohorts fare is an issue of generational equity as well as of the efficient use of human capital. Growth economics has more and more come to focus on population and human capital as central factors (Jones and Romer 2010) in the growth process. From another angle cross-country growth regressions have shown a strong correlation between per capita growth and the dependency rate.[1] Demographically based regressions, both on time series and cross-country panel data, has turned out to have predictive content out-of-sample (Lindh and Malmberg 2007, Lindh 2011). Still the causal mechanisms behind this are very much a subject of speculation, where several more or less plausible mechanisms may be considered.

The purpose here is to start out to investigate to what extent data from National Transfer Accounts (NTA) mapping the intergenerational transfers of resources within the National Accounts can provide any answers. In brief NTA measures the flow of resources across generations, through public and private channels both in terms of cash transfers and consumption. The private channels include consumption transfers within and between households as well as reallocations of assets. The theoretical basis for this approach is taken from the work of Willis (1988) and Lee (1994) that connects these intergenerational resource flows to the overall budget restriction of an economy and its demographic structure.

The next section will briefly review some previous literature on cohort-crowding and expand on how an NTA analysis is structured. Then follows some descriptive data and some tentative directions for further analysis.

Previous literature

The main argument in the cohort crowding literature, e.g. Welch (1979) and Easterlin (1987)[2], is based on the assumption of imperfect substitution or even complementarity between young and old workers. Young and old workers then do not compete for the same jobs, and a large young cohort mostly compete about the same entry jobs. Easterlin (1987) suggests that the cohort effect persists throughout the labour market career. Easterlin's relative income hypothesis implies that the wages of young workers relative to the wages of old workers decline when a large cohort enters the labour market. Thus we expect to see a steeper cross-

[1] See for example Bloom et al. (2003), Kelley and Schmidt (2005), Lindh and Malmberg (1999), and many more.

[2] Easterlin (1962, 1968) presented these hypotheses as far back as in the 1960s.

section age profile when a large cohort enters the labour market and if the cohort-crowding persists a flatter profile as they are on their way to exit.

Based on US data, Welch (1979) finds evidence that large cohorts experience a negative effect on earnings. Welch looks at education levels separately, assuming that individuals compete mainly with others in the same level of education.
Berger (1989) interacts cohort size with both experience and its square to allow the cohort effects to vary with experience. He includes the size of surrounding cohorts, also interacted with experience, to control for position in the demographic cycle. Macunovich (1999) conducts an empirical study on an updated version of the data used by Welch (1979) and Berger (1989). She controls for position in the boom with the first and second differences of her cohort size variables, and finds that those born in the lagging edge fare worse than those born in the leading edge.
Berger uses a human capital approach to interpret his results based on the theories by Stapeltone and Young (1988) and Nothaft (1985) stating that members of a large cohort would be inclined to invest less in education because of the expected flatter earnings profile since highly educated are more affected due to their lower substitutability.
An opposite hypothesis could be that the increased competition among members of large cohorts makes them invest more in their human capital. According to Ohlsson (1986), this is what has happened in Sweden. He finds strong positive correlations between cohort size and enrolment rates for cohorts born 1904-1954.
Most empirical evidence on cohort-crowding is based on the US experience. One exception on Swedish data is Klevmarken (1993), who did not find any significant cohort effects. The Swedish context certainly is different from the American but econometric difficulties may also have a role here. Two other Swedish studies have looked at specific occupational groups. Tasiran and Gustafsson (1992) find negative earnings effects and steeper earnings profiles for large cohorts among salesmen and shop assistants. Jonsson and Klevmarken (1978) find flatter age profiles for large cohorts among engineers.

Previous studies indicate that cohort-crowding effects found in the United States are absent in some European countries, among these Sweden. One possible reason for this could be systematic differences in the organisation of intergenerational transfers and labor markets. Comparisons of labor earnings below suggest that boom cohorts at least in the latter part of worklife earn relatively better in both countries.

While private education expenditure is a substantial percentage of total education expenditure in the US, it is negligible in Sweden. However, since NTA series decomposed by education in the cohort are unavailable we lack for the moment any direct means to test whether investment in education compensate or worsens cohort-crowding. However, recent boom cohorts in Sweden (but not in the US) seem disadvantaged.

National Transfer Accounts

The NTA theoretical framework is based on overlapping generations modeling, in particular it builds on a theoretical and accounting framework from Willis (1988), Lee (1994a, b), and Bommier and Lee (2003). The NTA measures and interprets economic aspects of intergenerational relations in—for the moment—35 countries of the world comprising more than 80 percent of the world's population on all continents, see www.ntaccounts.org for more detailed information.
Public sector programs transfer income from the working ages to the old and young through pensions, public education, publicly provided health care, long term care, and many smaller

programs. In families parents pay their children's consumption costs and invest in their health and education. Working-age people may provide economic support to their elderly parents or receive support from them, either when the elderly co-reside with them or when they live apart. Bequests at death mostly go to younger family members.
These flows are all intergenerational transfers (transfers from one age group to another) and exist side by side with market mechanisms for shifting income from one age to another through financial markets and provide both substitutes and complements to saving as a means of accumulating wealth. Existing systems of national accounts (SNA) do not include the dimension of age, nor do they include familial transfers. NTA adds these two dimensions to SNA in a way that is consistent with existing measures. By providing an internationally agreed methodology the global NTA project facilitates country comparisons and institutional analyses.

The NT Flow Account is governed by a simple identity: economic inflows and outflows for any age group must balance in a given year. In words, the flow constraint can be stated for any age group as the life cycle deficit LCD:

Consumption – labor income = net public and private transfers + asset income – saving.

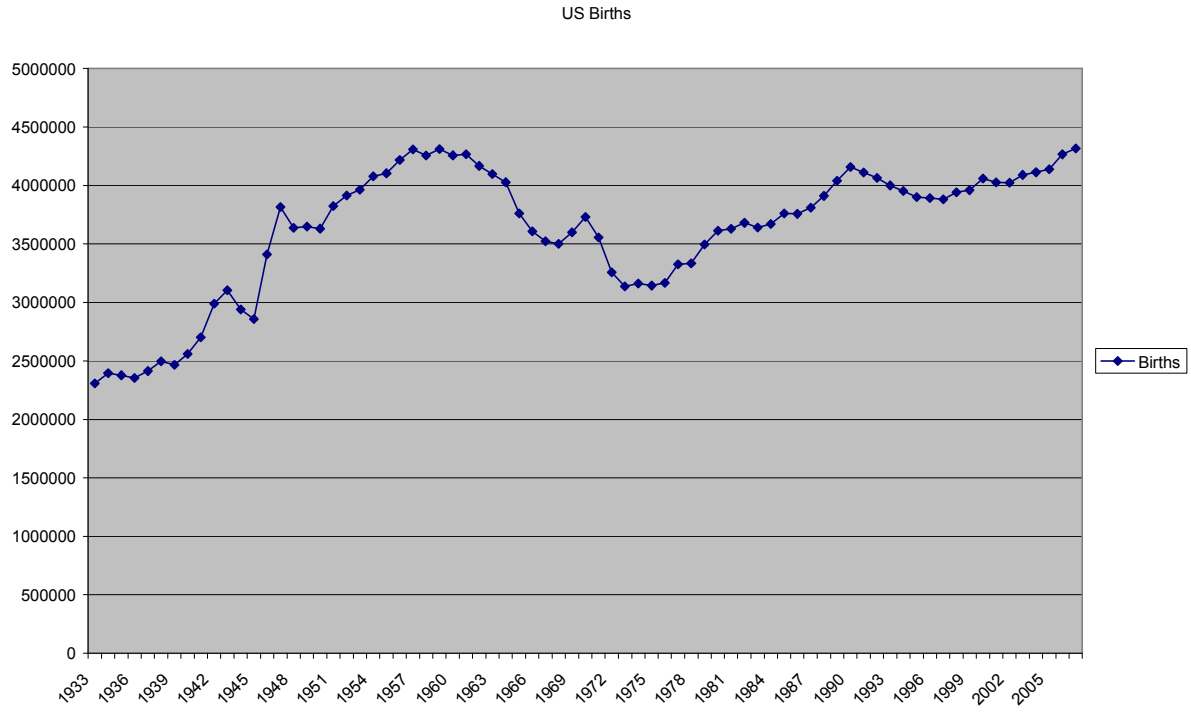
The economic lifecycle is characterized by the age profiles of consumption and labor income. The gap between the two, called the lifecycle deficit, is large and positive for children and the elderly in every country. Lifecycle deficits arise because economic systems facilitate two kinds of inter-age flows of income: transfers and "asset-based reallocations" (which include purchases and sales of assets, borrowing and lending, asset income, and saving). These flows are mediated by either private or public institutions, e.g., families, governments, financial institutions, and charitable organizations, often fundamentally different across countries though still providing similar services.

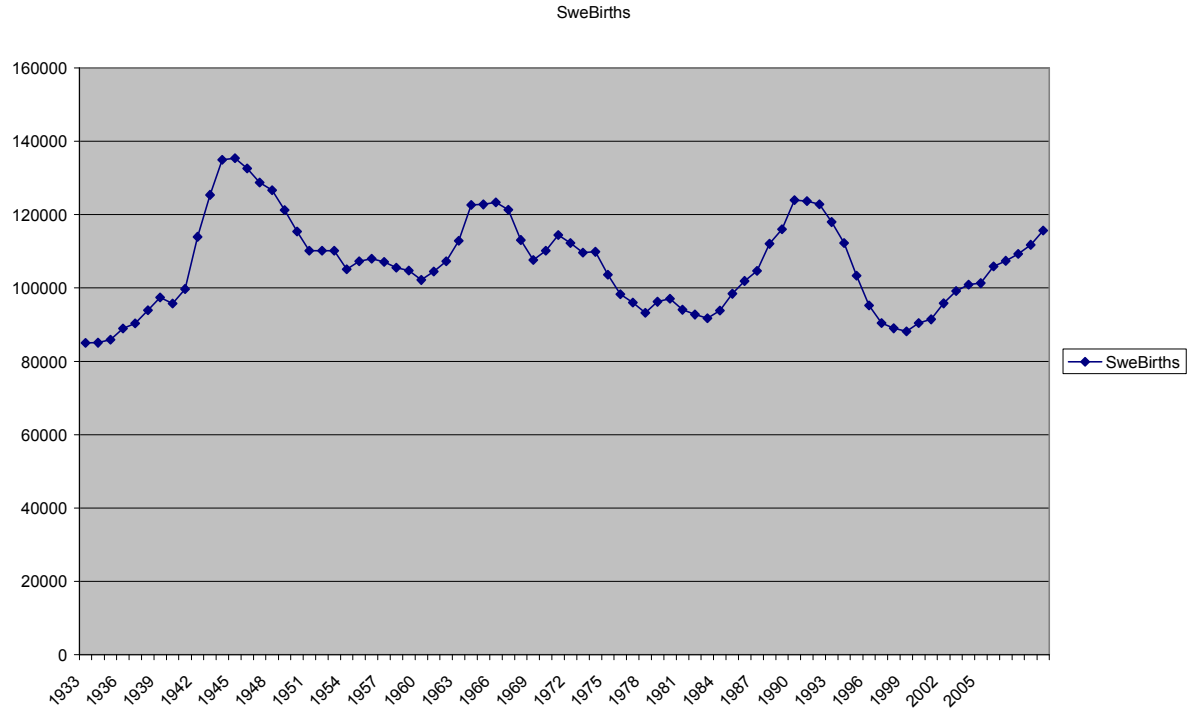
The transfer estimates provide a comprehensive accounting of inter-age flows both within and across households including bequests and transfers that accompany household fusions and fissions. (Lee and Mason 2011). In a world with radically changing age structures and a proliferation of new family models integrating an ever larger number of immigrants across national borders the intergenerational flow institutions will be under hard pressures to change. Transition cohorts may face both windfall gains and future burdens depending on the details of the transition.

The fundamental age dimension in these accounts also provides a cohort dimension as time series are constructed to allow study of the change in age profiles over time. So far only a few countries have time series over any substantial length of time. Sweden and the US are two such countries (and so is Finland, which will be incorporated in the analysis later on).

Data

In the Figures below the raw birth numbers in the US and Sweden show rather different patterns over time. In the US there is a dramatic increase in the number of births after World War II lasting up to the early 1960s and thereafter a bust lasting till the late 1980s and then stabilising at similar levels as in the 1950s. In Sweden, on the other hand, a boom sets off during WW II, peaking in 1945 and then subsiding in the 1950s and booming again in the 1960s with a bust in the late 1970s and early 1980s, rising again to a peak in 1990 but just nine years later hitting the bottom again. Looking at birth rates or total fertility rates instead the curves would look differently, particularly displaying a downward trend.

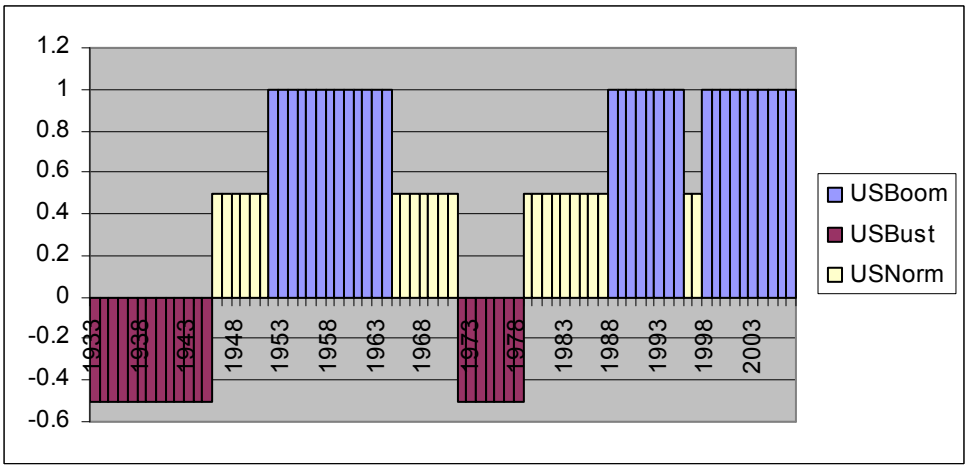


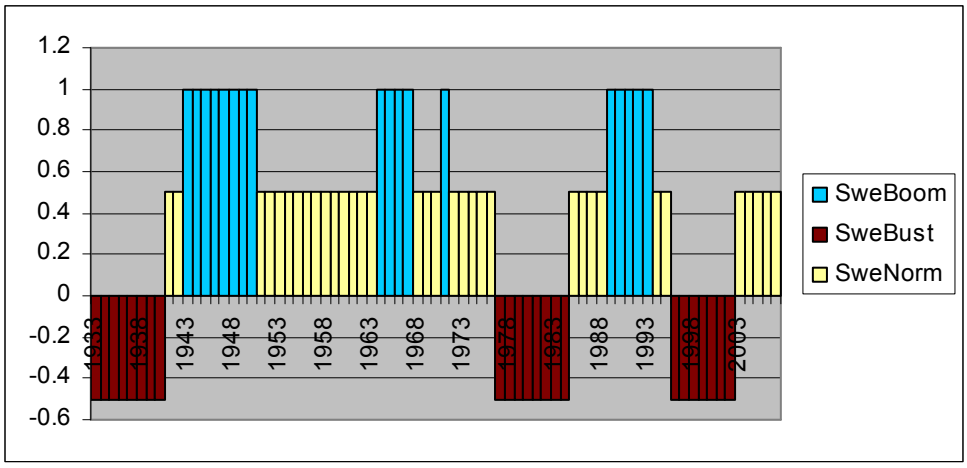


It is very clear that baby boomers in Sweden and the US have met the world business cycles at rather different periods of their life cycle.

One of the strategic decisions to make in analyzing cohort-crowding is to define what is meant by a small cohort, what a large cohort is and what a normal cohort is. I have no definite answer to this. From the Figures it seems, however, that at least in the post-war period the number of births seem rather constant, reflecting decreasing fertility trends in birth rates and TFR. The NTA data available cover 1981-2003 and for Sweden 1985-2006. Hence we can

follow a cohort only for a little more than 20 years. The Swedish boomers from the 1940s will be observed in their last years before retirement and the US post-war boomers in their middle age.
A simple ad hoc rule is therefore to take the average number ± 7.5 percent to define "normal cohorts" and booms and busts as above or below the "normal" level. The result in the Figure below will be used as a provisional definition that may be refined later on.





Ronald Lee and Gretchen Donehower have graciously provided the US NTA data 1981-2003 (1995 is missing due to data problems). The Swedish time series 1985-2006 is the result of a collective effort at the Institute for Futures Studies[3].

In order to make data comparable over time and countries the standard NTA convention is to divide the per capita data with the average labor income in the age segment 30-49. Although that may be less than ideal for comparisons of cohort-crowding, this normalisation adjusts for both inflation and the general increasing trend in labor income with little influence from changes in labor force participation that mainly takes place above and below these ages. In the Figure below the US Life cycle deficit for some chosen years been depicted. The main tendency is that contingent on the normalisation the cross-section age profile has shifted

[3] At different time periods the following people have been involved, Mats Johansson, Gustav Öberg, Charlotte Thulstrup, Daniel Hallberg, Daniel Avdic, Jovan Zamac and Christer Rosén. We are also very grateful to Petterson et al. at the Swedish Ministry of Finance who shared the data they had collected for their Generational Analysis.

upwards between 1981 and 2003 and slightly to the left. The upward shift is most prominent for the elderly age groups and reflect mainly increased health and care consumption.

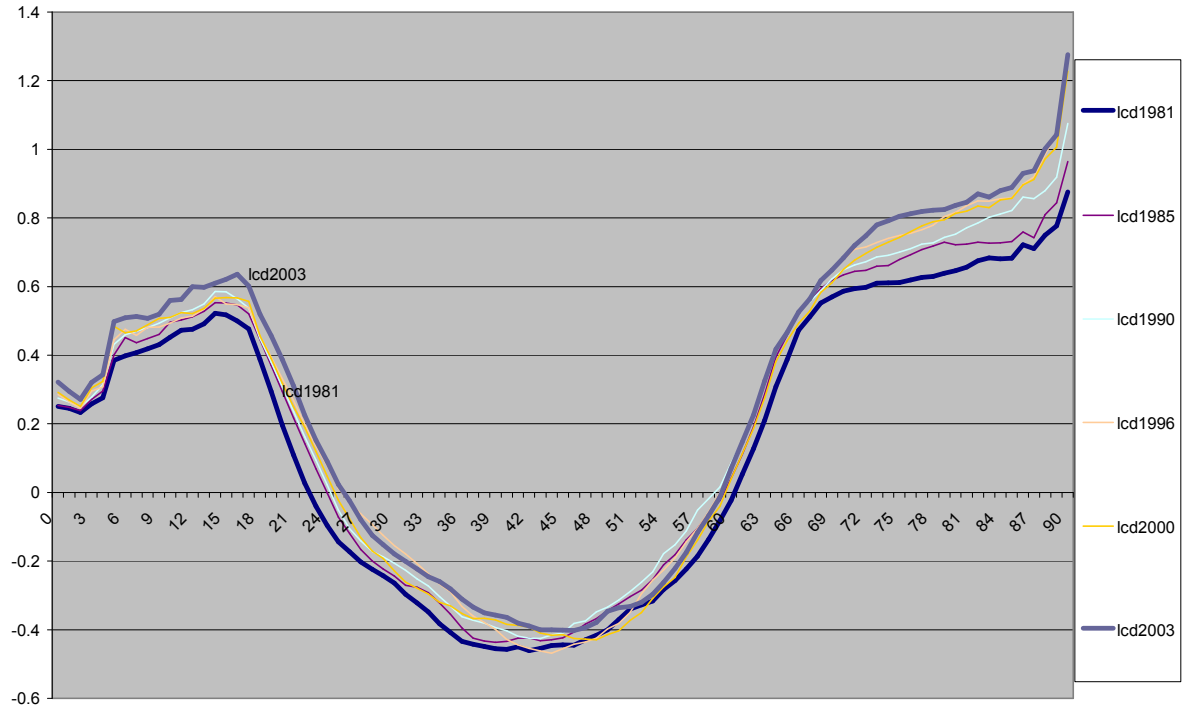


Figure 1 Selection of US per capita life cycle deficits normalised by the average labor earnings 30-49

The corresponding Swedish Figure shows a strong shift to the right, no upward shift but rather a shift downward of elderly consumption per capita (although still higher in terms of average labor income than in the US).

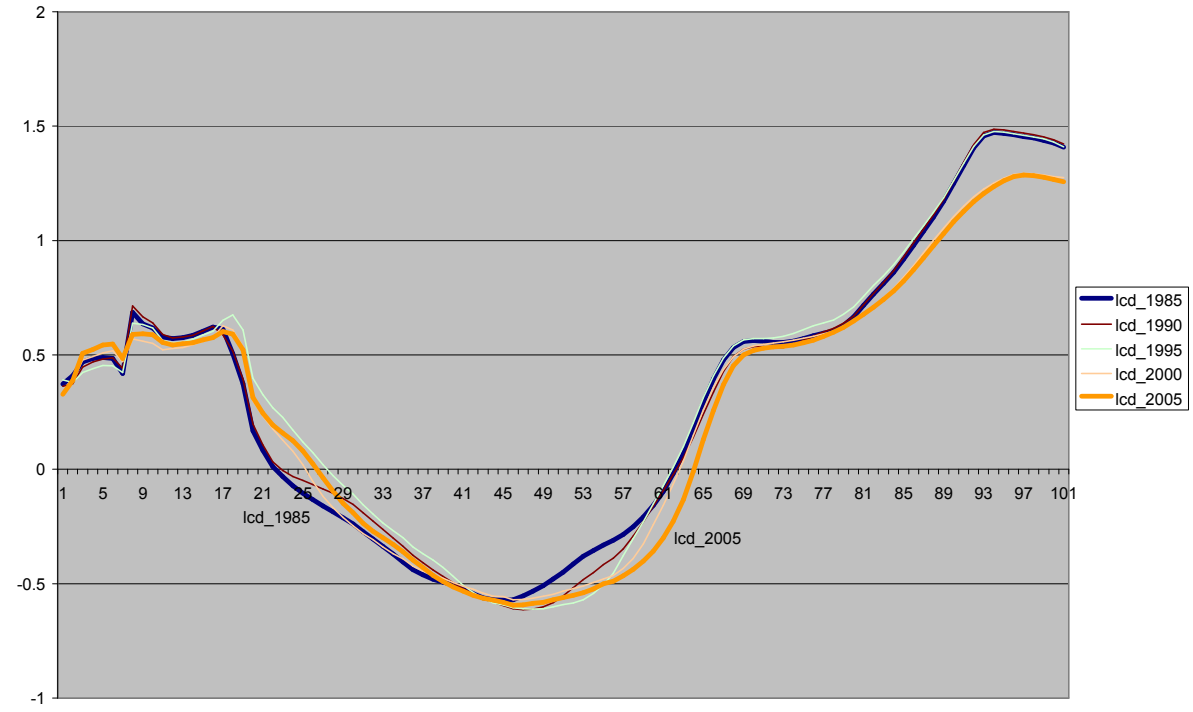


Figure 2 Selection of per capita life deficits for Sweden normalised by the average labor earnings 30-49.

Cohort comparisons

In Figure 3 and Figure 4 the complete cohort plots of labor income for Sweden and the US are shown. The most obvious difference is that the Swedish hump is somewhat less wide than the US hump, mainly because of substantial amounts of labor income persisting to higher ages in the US.

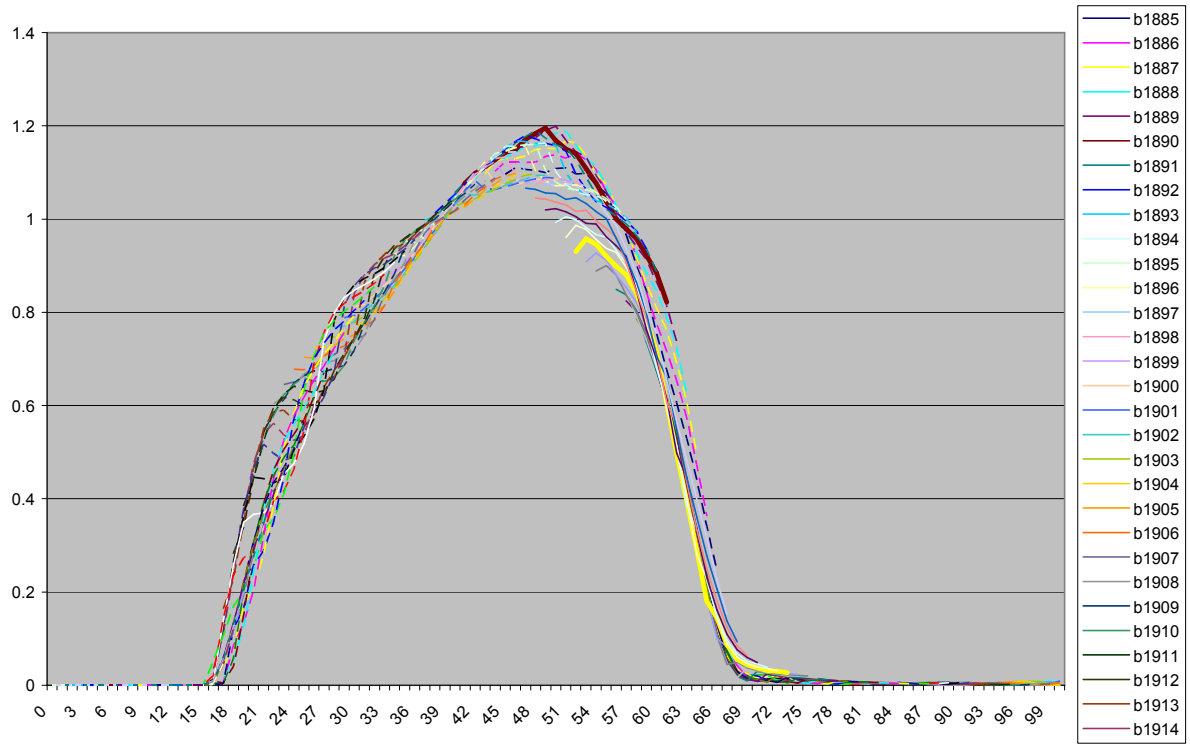


Figure 3 Swedish cohort age profiles of labor income

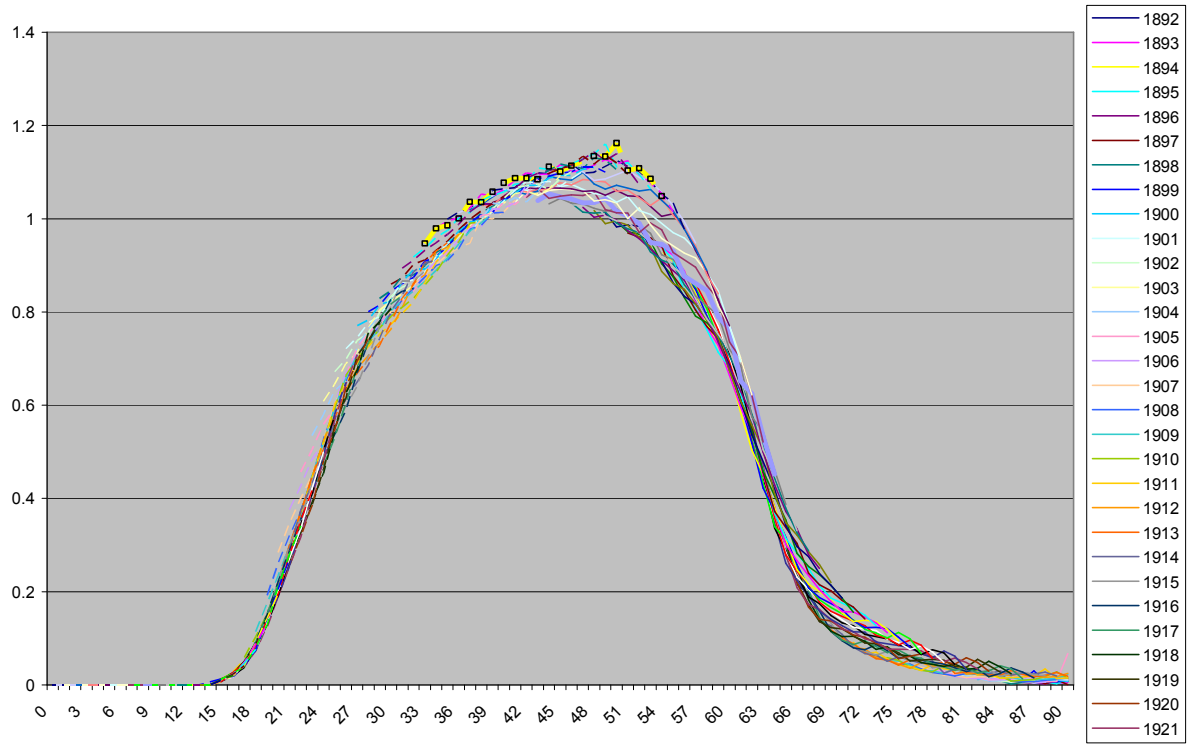


Figure 4 US cohort age profiles of labor income

To contrast boomers with the preceding baby bust Figure 5 and Figure 6 shows an age interval where these cohorts overlap in the data. Boom cohorts are marked by fat curves. In the US data the boomers are born 1952-1964 and the bust cohorts are born 1933-1945. Their age overlap in the data is 36-50 years. Since the year of observation is birth year plus age this corresponds to the time period 1981-1994 for the bust cohorts and 1987-2003 for the boomers.

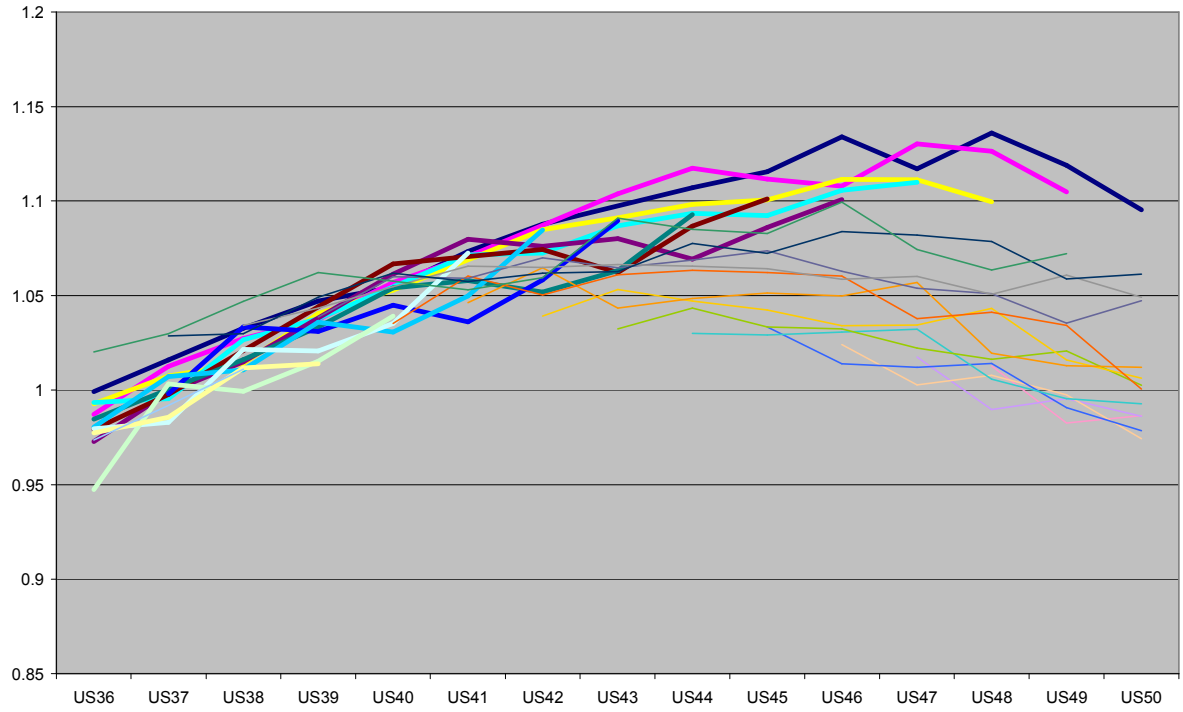


Figure 5 1950s boomers in the US (fat lines) contrasted to the preceding baby bust.

In Sweden the bust cohorts are born 1933-1940 observed 1985-2003 and the boomers are born 1943-1950 and observed 1988-2006 with the overlapping age interval 45-63. In both cases we see that the boomers earn more relative to the average between 30-49 in the observation year when they are a little above 40 but in the US case they do worse or equal to the bust cohorts before that age.

It is important to note that we are comparing cohorts at the same age but in different years thus catching also some variation in business cycles. Average labor earnings are not wage measures and may vary for many other reasons than wages do. Most importantly it is the average labour earnings in the population cohort and thus is sensitive to labor force participation. Thus what we see in these measures does not provide any direct evidence regarding cohort crowding. Still it is surprising to see a clear difference to the advantage of the boom cohorts in the later parts of work life relative to earlier small cohorts. This is the case for both countries with a temporary exception in Sweden during the crisis 1992-1995. The most likely explanation for this is the relatively higher level of education in later cohorts. There may, however, also be a part of this that is related to better health in later cohorts.

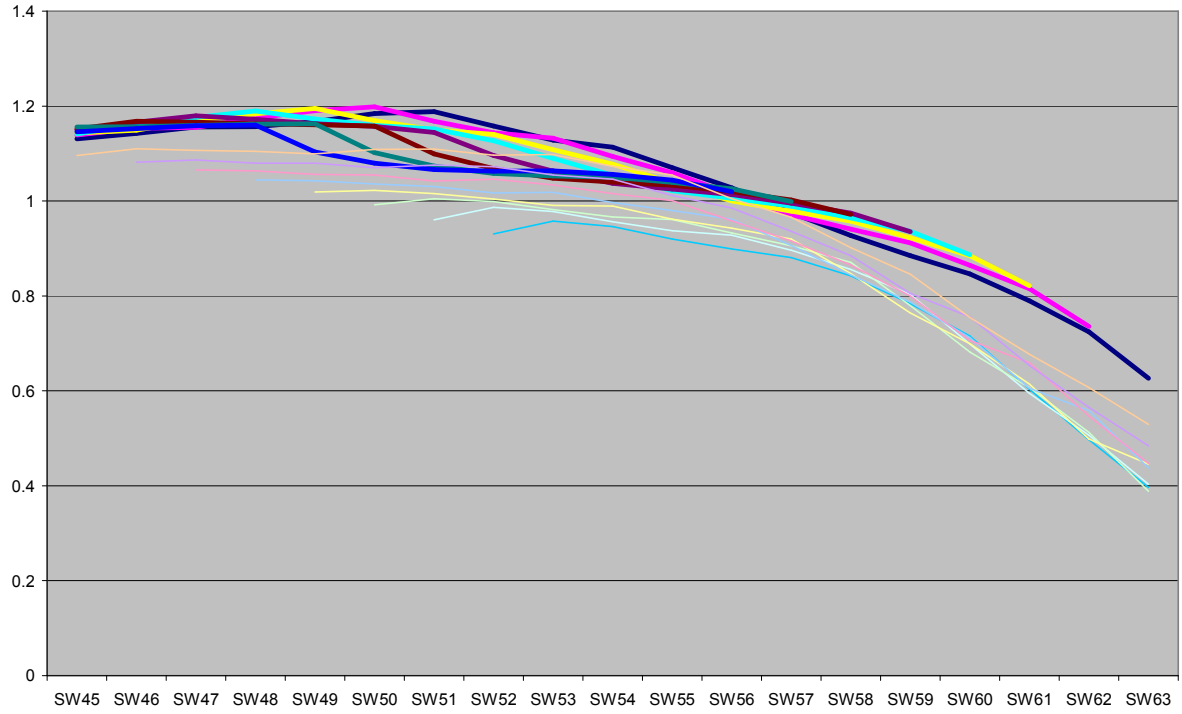


Figure 6 1940s boomers in Sweden (fat lines) contrasted to the preceding baby bust.

Comparing to a succeeding bust in 1972-1978 in the US in Figure 7 shows another age interval, 17-30, where boomers tend to start out better but converges to the earnings of the bust cohorts. Again the explanation is likely to be education but this time because the later cohorts enter the labor market later than the earlier cohorts because of increasing enrolment in higher education.

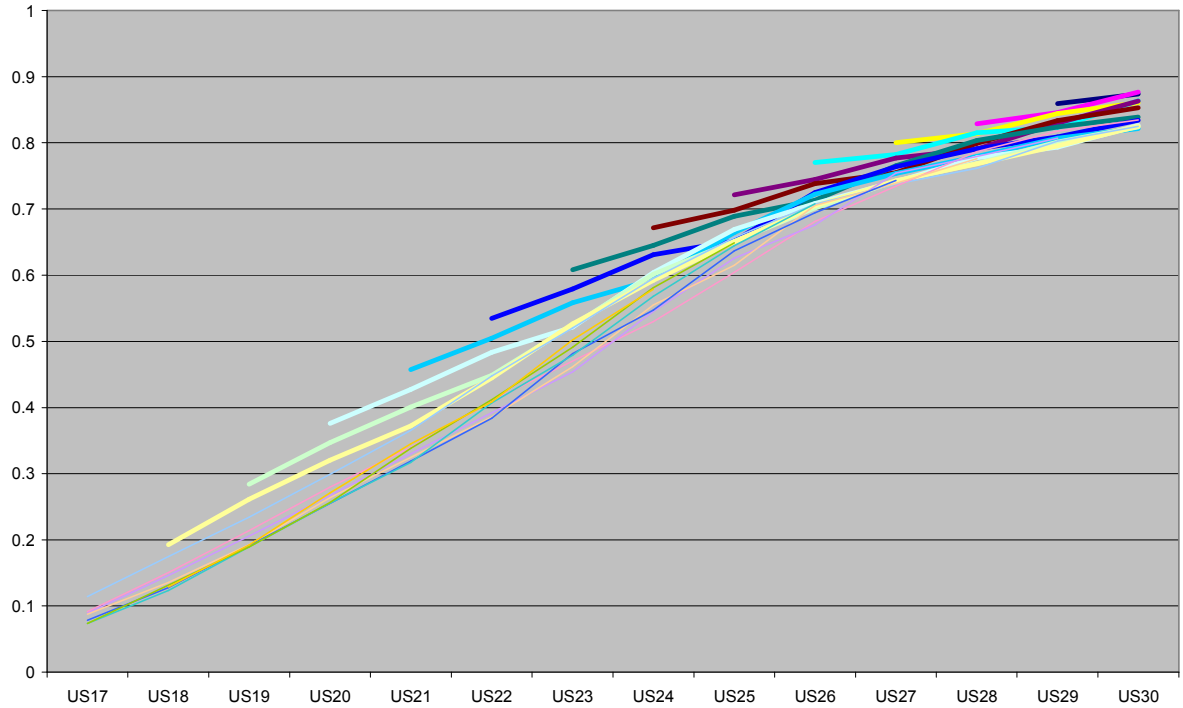


Figure 7 comparing US boomers to a succeeding bust

In Sweden the next bust is too far into the future to provide any substantial overlap so the boomers from the 1940s are compared to the normal cohorts born 1951-1963 giving a view of the age interval 35-55. Again we can note that the boom cohorts in general does better relative to average period wages for people 30-49 years old with the exception for some crisis years.

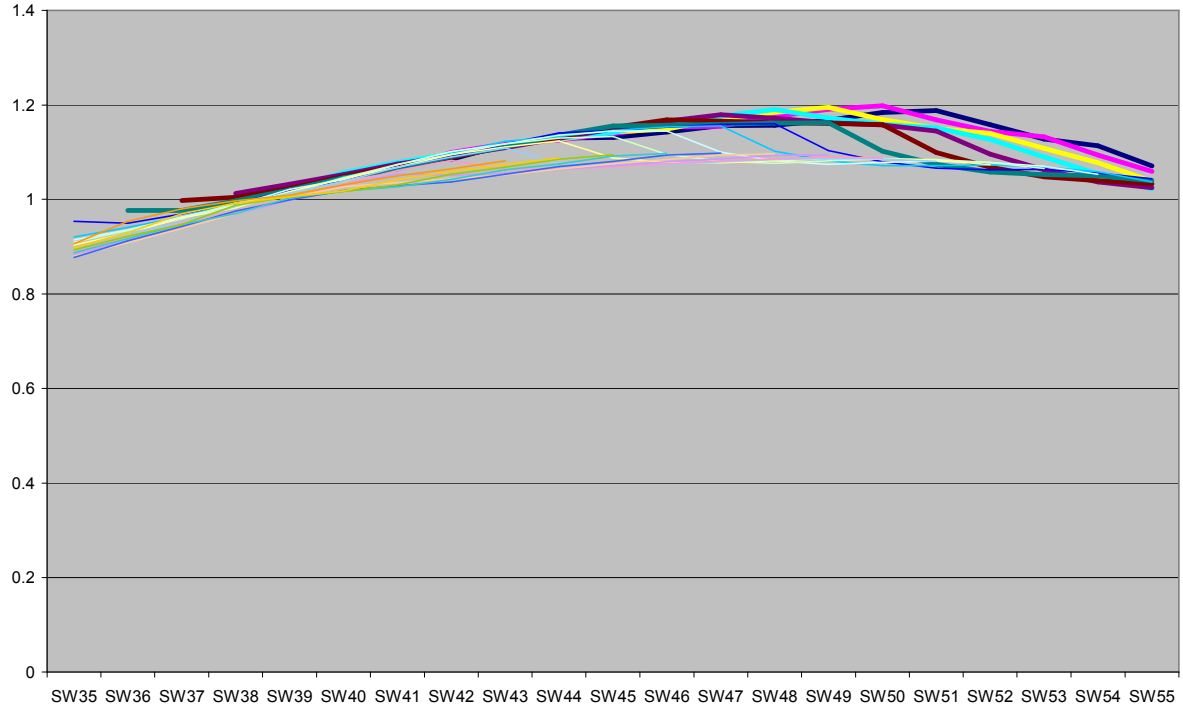


Figure 8 Labor earnings forSwedish boomers born in the 1940s compared so succeding cohorts in the 1950s

In Figure 8 Labor earnings forSwedish boomers born in the 1940s compared so succeding cohorts in the 1950swe note that the boomers still do better than the succeeding cohorts in the later part of work life. This cannot be due to any generally higher education and hardly to better health either and therefore merit a more thorough analysis, that I do not have the time to provide now. A working hypothesis could be that this is due to the macroeconomic effect emphasized in several papers by Malmberg and Lindh pointing out that large cohorts in the age 50-64 tend to be associated with higher economic growth rates and thus boosting the boomers labor incomes in the late part of their work life.

Another set of observations compare the life cycle deficit at early stages of life of boomers and bust cohorts.

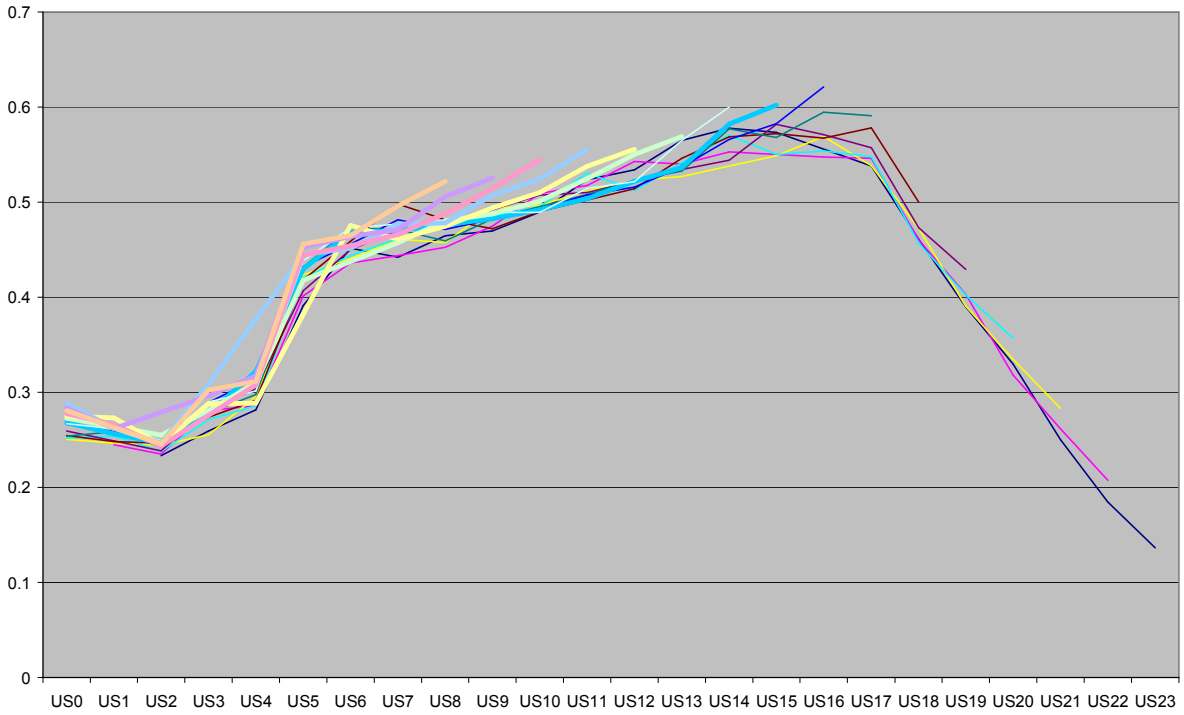


Figure 9 Life cycle deficits for US boomers and previous bust cohorts during childhood and adolescence.

In the US data it is hard to make out any clear differences other than the seemingly business cycle related upturn for all cohorts in the last period of observation in 2003. Sweden is different though. In Figure 10 Life cycle deficit for young boomers compared to previous bust cohorts. Above school age (7 years in Sweden) the boomers seem to have a substantially lower consumption relative to the previous bust cohorts.

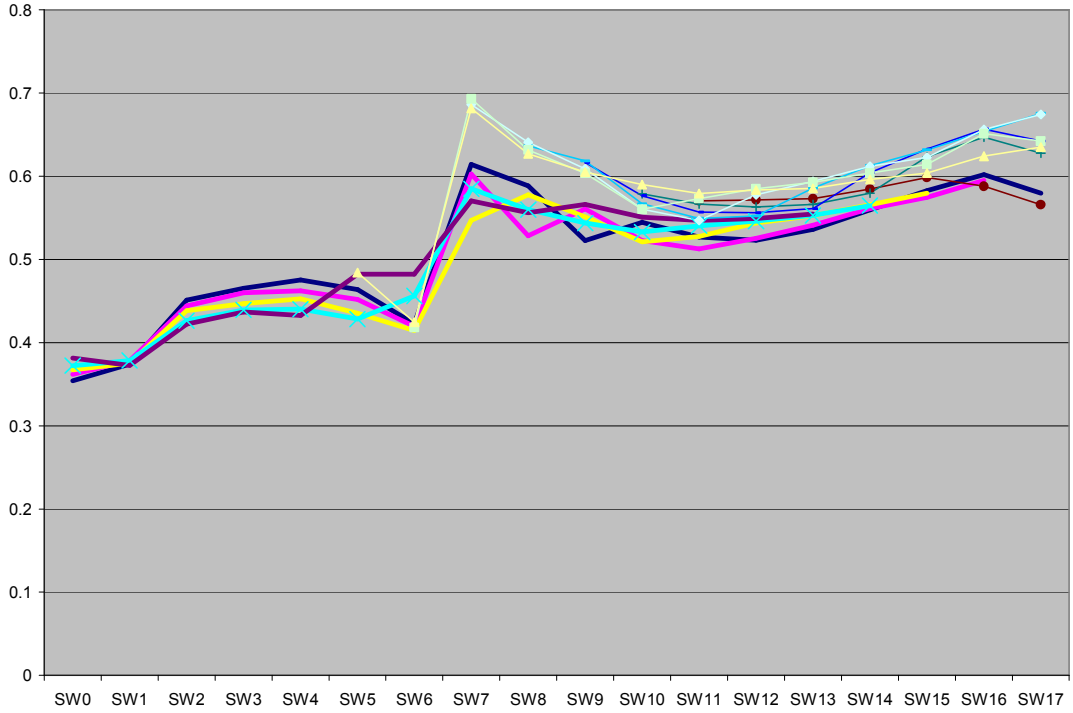


Figure 10 Life cycle deficit for young boomers compared to previous bust cohorts.

In the US there is no later bust cohort to compare with but in Sweden there is a bust 1996-2002, that can be compared with the young boomers for at least some years. In this case it is rather in pre-school and day care that the boomers are disadvantaged. Again this would merit a closer investigation that will be undertaken later.

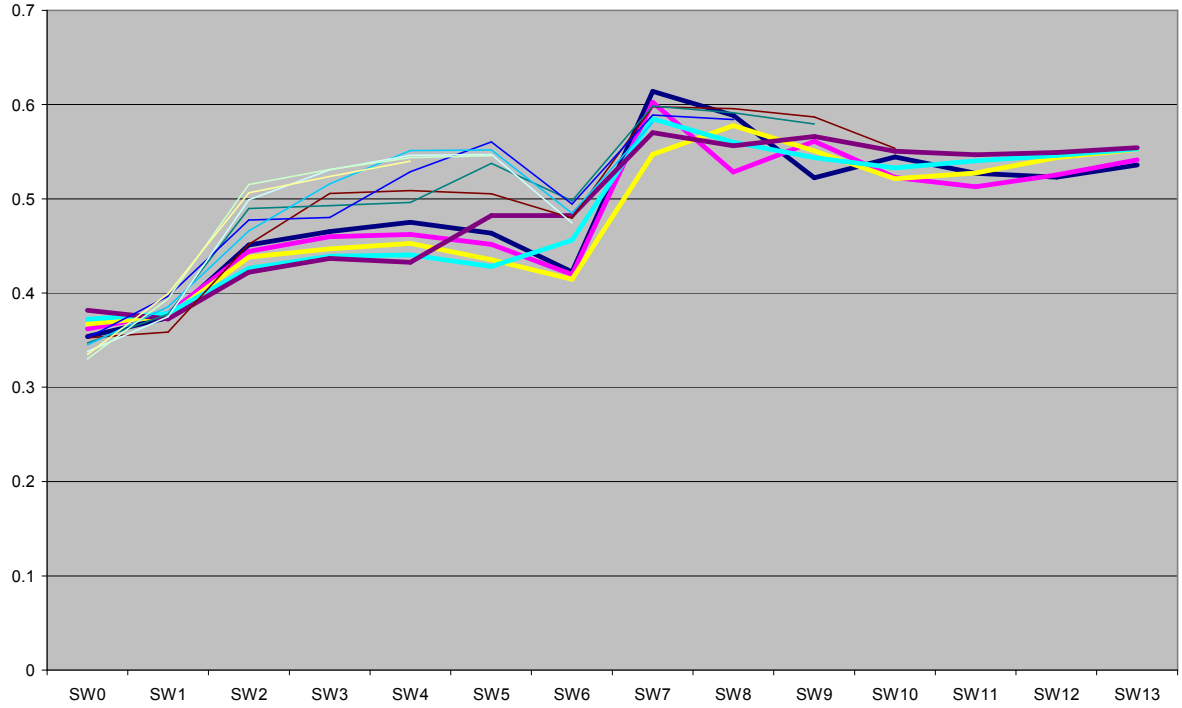


Figure 11 Swedish life cycle deficits, boomers 1989-1993 compared to bust cohorts 1996-2002.

Conclusion

To be written.

References

To be added.