Generational Wealth Accounts

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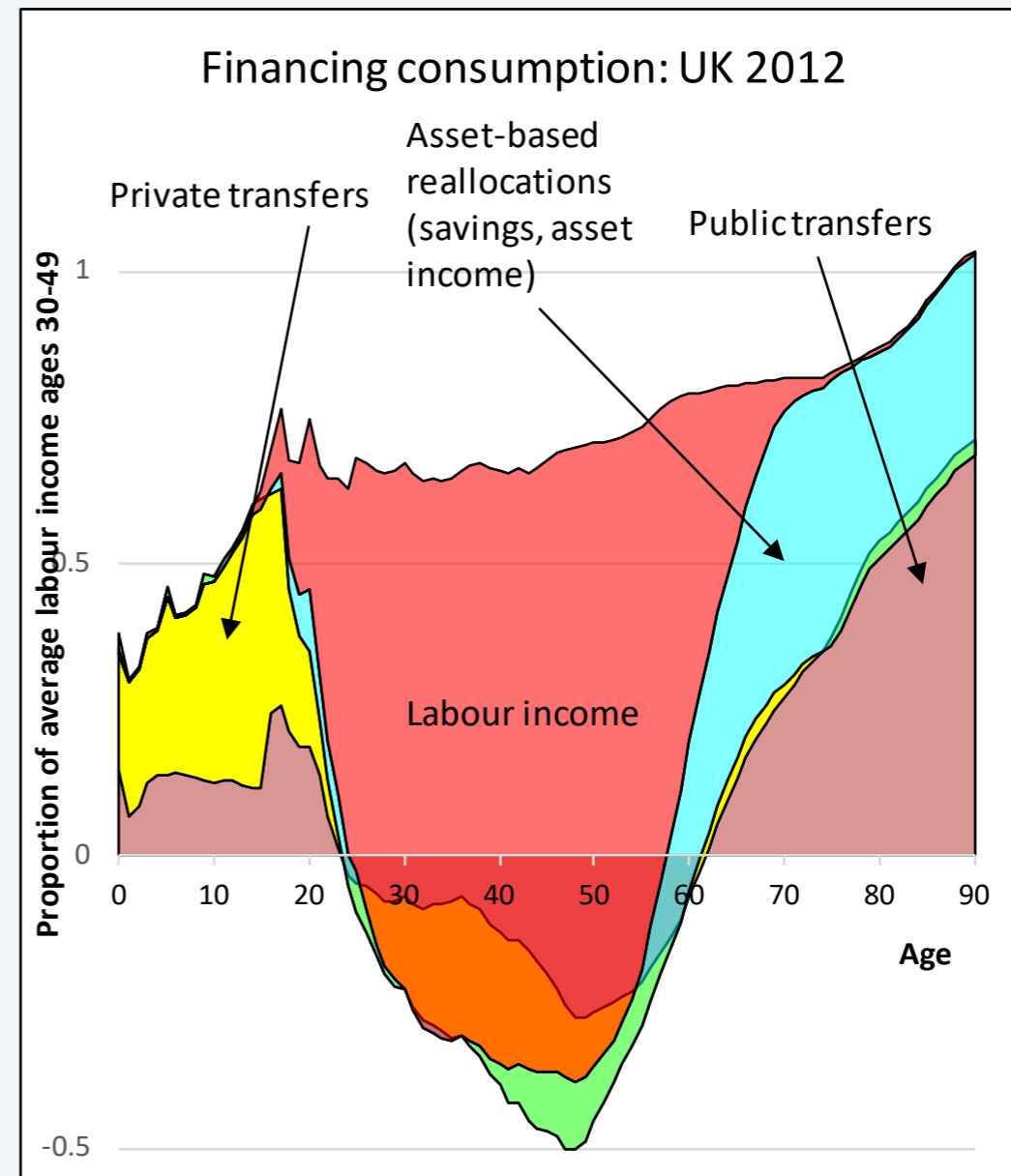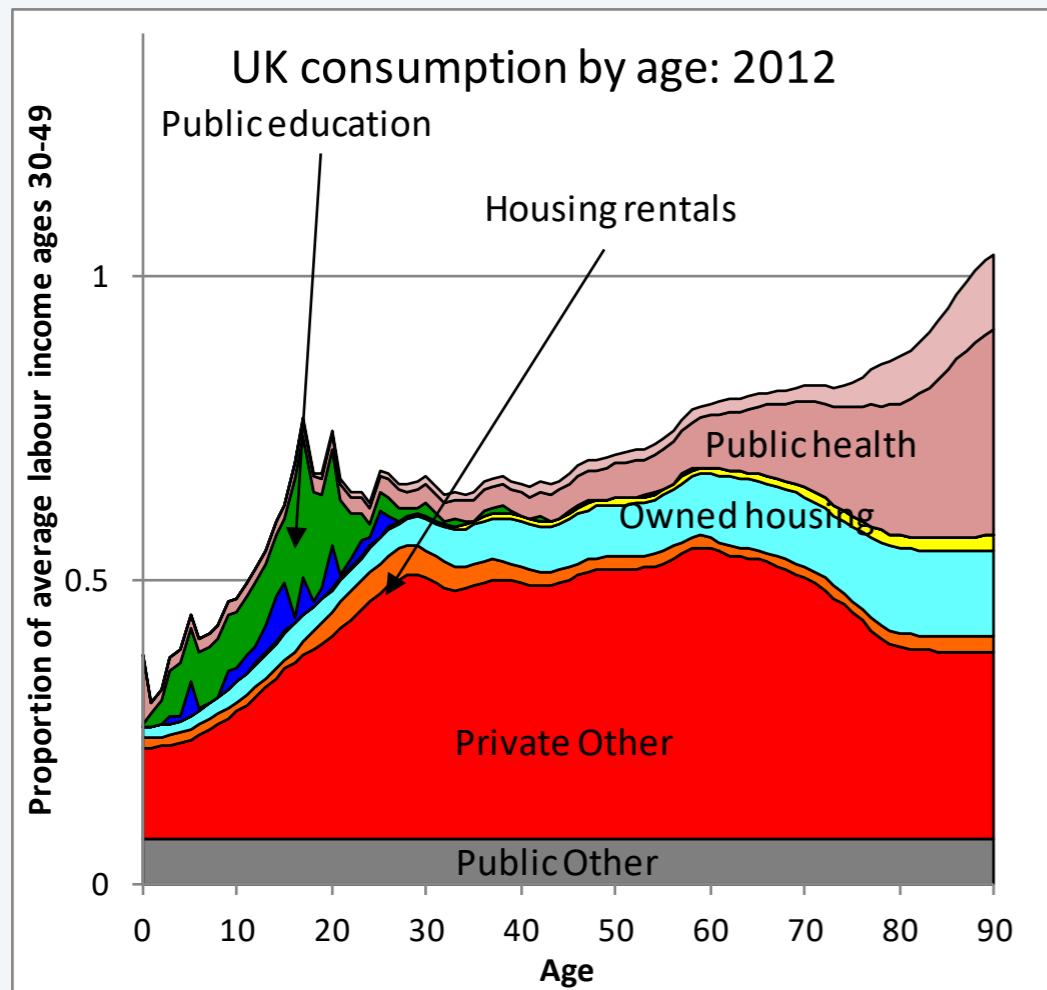University of Ljubljana

NTA12
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What are GWA?

- A logical extension of National Transfer Accounts (NTA) (Lee & Miller, 2011)
  - NTA provide a snapshot of the inter-generational transfers that occur in a given population over a given period, whether mediated by families, the public sector or capital markets
  - If we project these forward, and capitalize them, we can compare implied wealth estimates with national balance sheets, to:
    - Analyze transfers longitudinally, rather than just cross-sectionally
    - Integrate wealth fully into the NTA framework
    - Learn something about sustainability and equity of transfer systems in the face of demographic change
- A broadening of Generational Accounting (GA) (Auerbach, Kotlikoff and Gokhale,1991)
  - GA only focuses on the public sector, but the private sector is also important (Ricardian equivalence, Samuleson, 1958)
- Provides a comprehensive measure of individual portfolios (Merton, 1971)

GWA capitalize NTA profiles…

- Start with NTA per-capita profiles in a given year (2012)

UK consumption by age: 2012

Public education

Housing rentals

Public health

Owned housing

Private Other

Public Other

Proportion of average labour income ages 30-49

Age

Financing consumption: UK 2012

Private transfers

Asset-based reallocations (savings, asset income)

Public transfers

Labour income

Proportion of average labour income ages 30-49

Age

- Project these forward, using demographic projections and assumptions about productivity and consumption growth and fiscal changes (if incorporated), adjust to balance, discount and sum for each cohort

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… and incorporates inter-temporal budget constraints

- Public-sector aggregate inter-temporal budget constraint (GA):

$$\underbrace{D_0}_{\substack{\text{Public Sector} \\ \text{Net Liability}}} + \sum_{k=-\omega}^{\infty} \underbrace{\sum_{t=0}^{k+\omega} (1+r)^{-t} N_{k,t} \left(\tau_{k,t}^{g,+} - \tau_{k,t}^{g,-} \right)}_{\substack{\text{P.V. of Net Public Transfers} \\ \text{(Deficit)}}} = FS_0^g$$

- Private sector inter-temporal budget balance for each generation:
  - Present value of resources = Present value of uses

$$\underbrace{\sum_{t=0}^{\omega+k} N_{k,t} y_{k,t}^l (1+r)^{-t}}_{\text{Human Capital}} + \underbrace{N_{k,0} w_{k,0}}_{\text{Net Wealth}} + \underbrace{\sum_{t=0}^{\omega+k} N_{k,t} \tau_{k,t}^+ (1+r)^{-t}}_{\text{P.V. of Transfers Received}} + \underbrace{\sum_{t=0}^{\omega+k} N_{k,t} b_{k,t}^+ (1+r)^{-t}}_{\text{P.V. of Bequests Received}} + \underbrace{FS_{k,0}^p}_{\substack{\text{Private Funding} \\ \text{Shortfall}}}$$

$$= \underbrace{\sum_{t=0}^{\omega+k} N_{k,t} c_{k,t} (1+r)^{-t}}_{\text{P.V. of Total Consumption}} + \underbrace{\sum_{t=0}^{\omega+k} N_{k,t} \tau_{k,t}^- (1+r)^{-t}}_{\text{P.V. of Transfers Paid}} + \underbrace{\sum_{t=0}^{\omega+k} N_{k,t} b_{k,t}^- (1+r)^{-t}}_{\text{P.V. of Bequests Paid}}$$

  - In our theoretical framework, bequests are a balancing item for each generation, but must sum to zero across all generations for sustainability

  - Both public and private sectors must be in balance for whole economy to be in balance

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Aggregate GWA: UK 2012

Year of birth / Age (Year of Birth)	Pop (mn)	RESOURCES								USES					
		Private resources		Transfers received		Net beq. rec.	Private Funding Gap	Public Funding Gap	TOTAL	Consumption		Transfer made		Net beq. made	TOTAL
		Human capital	Assets	Public	Prvte					Public	Prvte	Public	Prvte		
90+ (Pre-1922)	0.51	0	116	45	3	0	0		165	27	25	10	5	99	165
80-89 (1923-1932)	2.46	3	642	372	30	0	0		1 047	210	216	87	42	492	1 047
70-79 (1933-1942)	4.52	14	1 492	959	108	0	0		2 572	497	663	279	136	996	2 572
60-69 (1943-1952)	6.97	256	2 788	1 755	348	0	0		5 146	859	1 559	737	344	1 648	5 146
50-59 (1953-1962)	7.92	1 460	2 831	2 002	483	0	0		6 777	1 008	2 313	1 370	538	1 547	6 777
40-49 (1963-1972)	9.25	3 444	1 884	2 365	595	0	0		8 288	1 186	3 156	2 298	1 079	569	8 288
30-39 (1973-1982)	8.28	4 197	680	2 215	558	258	0		7 908	1 044	3 105	2 386	1 372	0	7 908
20-29 (1983-1992)	8.65	4 996	156	2 385	600	645	0		8 782	1 121	3 540	2 616	1 504	0	8 782
10-19 (1993-2002)	7.5	3 915	2	2 171	883	638	0		7 609	1 194	3 217	2 084	1 114	0	7 609
0-9 (2003-2012)	7.64	2 889	0	1 968	1 278	463	0		6 598	1 244	2 882	1 652	820	0	6 598
Unborn		8 035	0	5 994	4 333	3 346	-2 061		19 648	3 980	8 664	4 738	2 265	0	19 648
Public sector net liability			-1 628					1 628	0						0
Net Public Transfers Deficit								3 973	3 973	3 973		3 973			3 973
Of which: transfers between living and unborn					2 068	3 346	-5 414	2 717	2 717			2 717			2 717
All		29 209	8 962	22 231	9 219	5 350	-2 061	5 601	78 513	12 370	29 341	22 231	9 219	5 350	78 513

How uses and resources change over the generations

90+

50-59

20-29
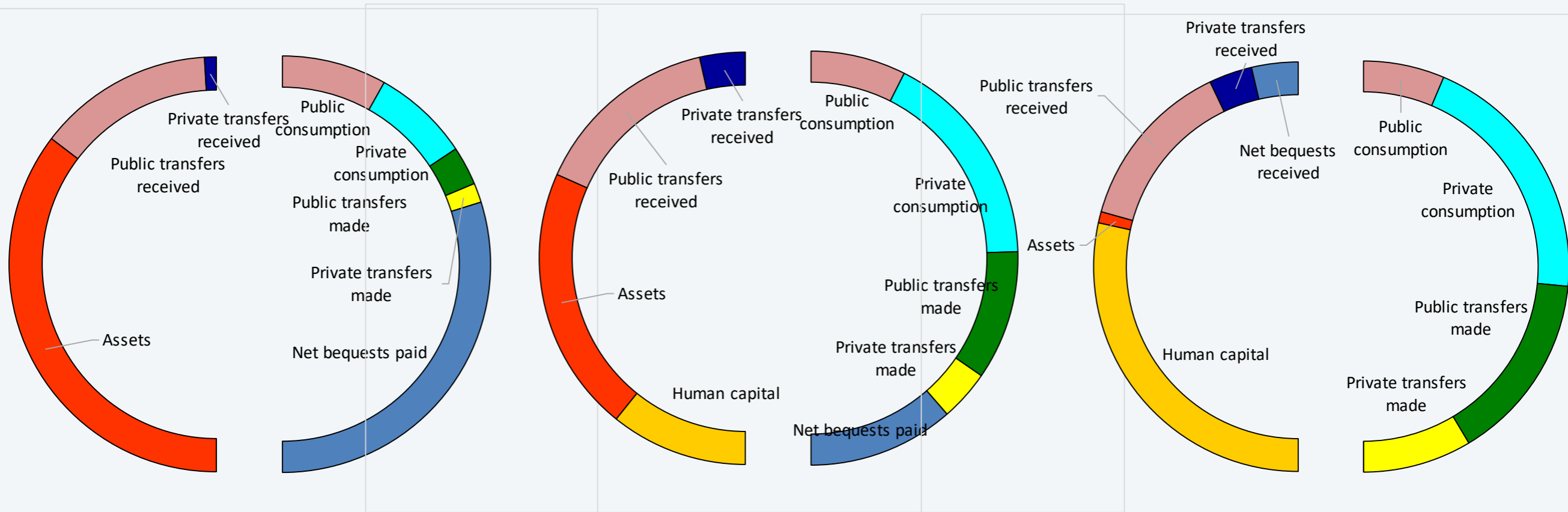
The old have more resources – assets + pensions – than they need to support consumption

They are net bequestors

The middle-aged rely to a greater extent on human capital, but resources still exceed uses
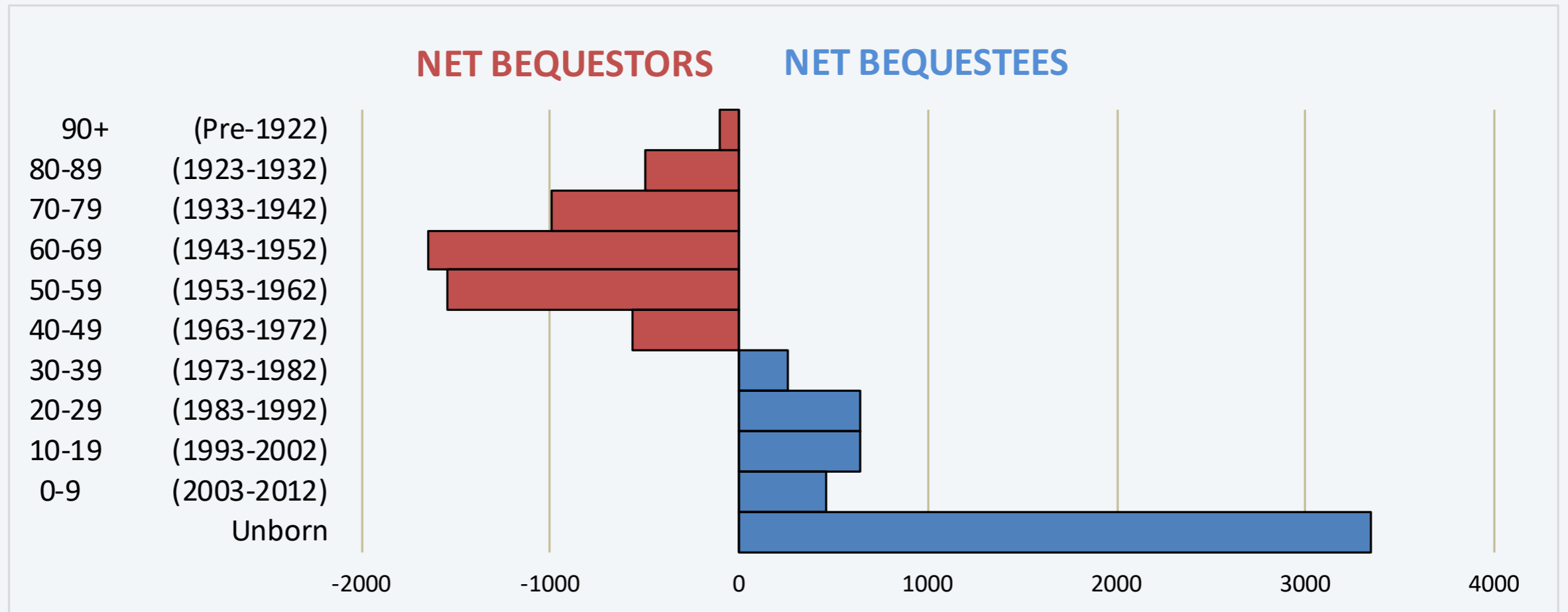
They are net bequestors

The young have almost no assets, large human capital and uses exceed resources
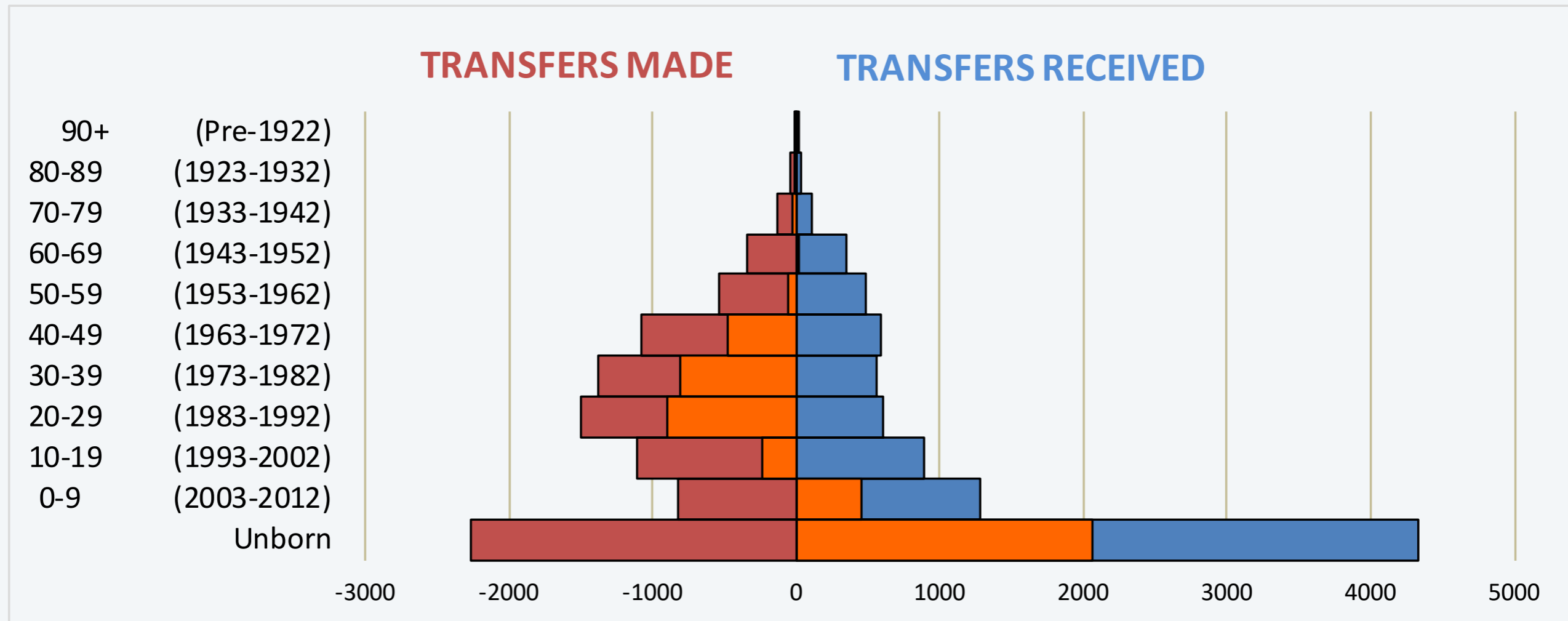
They are net bequestees

Flows down the generations
Bequests

NET BEQUESTORS   NET BEQUESTEES

Age	Cohort
90+	(Pre-1922)
80-89	(1923-1932)
70-79	(1933-1942)
60-69	(1943-1952)
50-59	(1953-1962)
40-49	(1963-1972)
30-39	(1973-1982)
20-29	(1983-1992)
10-19	(1993-2002)
0-9	(2003-2012)
Unborn	

-2000   -1000   0   1000   2000   3000   4000

- Estimate that of the £10.5tn held in assets, £5tn (~45%) to be bequeathed
- £2tn of this will be needed to support current living generations, £3tn to be bequeathed to the unborn

Flows down the generations
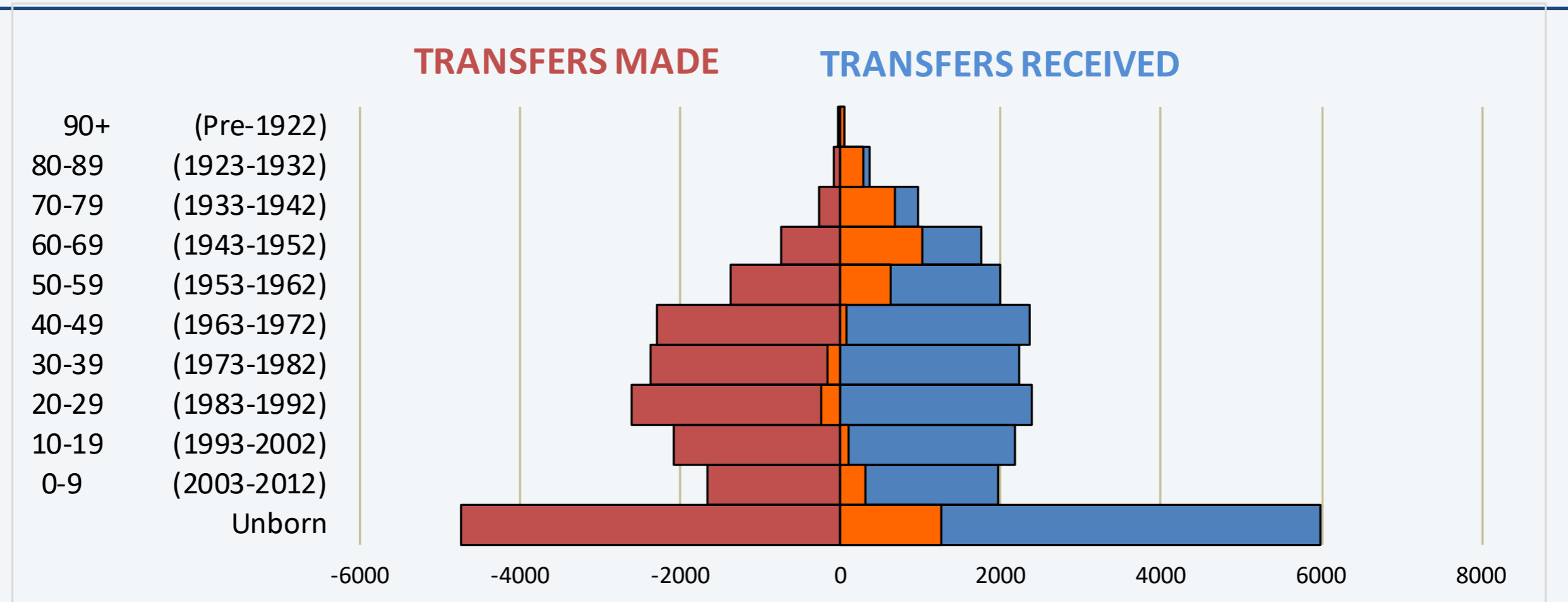## Inter- and intra-household private transfers

TRANSFERS MADE   TRANSFERS RECEIVED

Age	Birth years
90+	(Pre-1922)
80-89	(1923-1932)
70-79	(1933-1942)
60-69	(1943-1952)
50-59	(1953-1962)
40-49	(1963-1972)
30-39	(1973-1982)
20-29	(1983-1992)
10-19	(1993-2002)
0-9	(2003-2012)
Unborn	

x-axis: -3000, -2000, -1000, 0, 1000, 2000, 3000, 4000, 5000

- Private transfers are also predominantly down the generations
- The young are significant beneficiaries of these transfers (roughly £80k net per child)
- Living are transferring £2tn to the unborn through *inter vivos* transfers
- Private sector is sustainable and total private transfers to the unborn are £5.4tn (including bequests and private *inter vivos* transfers), of which the unborn will need only £3.4tn to sustain their consumption paths

Flows up the generations
Public transfers

TRANSFERS MADE   TRANSFERS RECEIVED

90+	(Pre-1922)
80-89	(1923-1932)
70-79	(1933-1942)
60-69	(1943-1952)
50-59	(1953-1962)
40-49	(1963-1972)
30-39	(1973-1982)
20-29	(1983-1992)
10-19	(1993-2002)
0-9	(2003-2012)
	Unborn

-6000 -4000 -2000 0 2000 4000 6000 8000

- Public transfers predominantly flow up the generations (pensions, health)

- Currently *deficit* of present value of net transfers to living from living is £2.7tn; this is left to unborn

- Government debt (in 2012) including unfunded governmen occupational pensions was £1.6tn

- Projected *deficit* of present value of net transfers to unborn from unborn is £1.3tn. Public sector is not sustainable, with a total deficit of £5.6tn

Aggregate (un)sustainability

- Private sector £2tn in surplus, public sector £5.6tn in deficit
- Together there is a shortfall in £3.6tn => current consumption plans are not sustainable
- All generations must reduce total consumption by 8.5%
- Or if the unborn bear it all then they must reduce total consumption by 28%

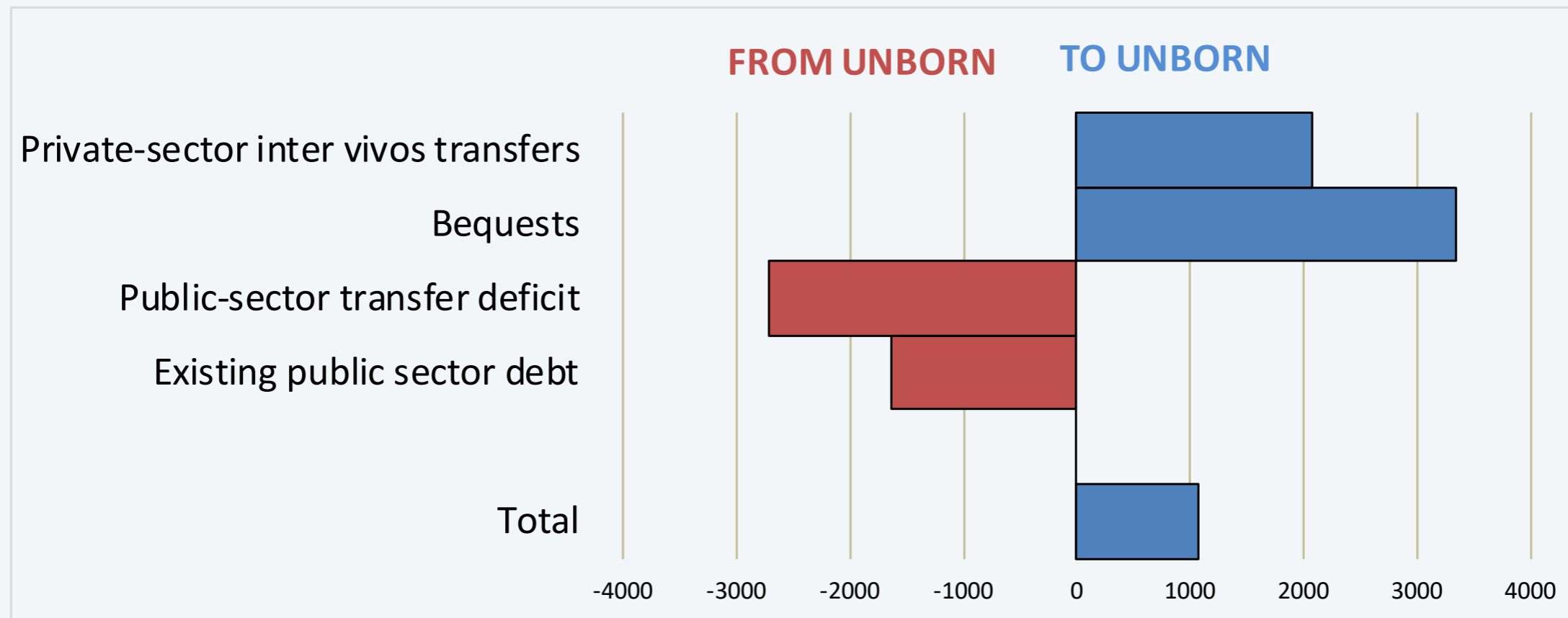| Public sector explicit and implicit debt and private inter vivos transfers and bequests passed to unborn						
	Sustainability measure S1 (shortfall measured across living and unborn)			Sustainability measure S2 (shortfall measured across only unborn generations)		
	Public shortfall	Private shortfall	Overall shortfall	Public shortfall	Private shortfall	Overall shortfall
Base case	45.3%	(7.0%)	8.5%	140.7%	(23.8%)	28.0%
OBR 'Austerity'	14.8%	(7.4%)	(0.6%)	46.6%	(23.7%)	(1.9%)

Intergenerational equity

- Our measure of **sustainability** is *also* a measure of intergenerational equity (if you assume that the unborn pick up any imbalance – this is the basis of the **AGK** measure used in GA)
  - An unsustainable path cannot be equitable if unborn are assumed to make all the adjustments to ensure inter-temporal balance
- An alternative measure of intergenerational equity is based on the concept of **Generational Solidarity (GS)**, viewed from the perspective of the unborn
  - A thought experiment: would the young be better off if ALL transfers between the living and the unborn were turned off, or would they be better accepting the transfers (positive and negative) from the living and picking up the tab?
  - To do this, need to examine aggregate transfers between the living and the unborn
- Yet another measure is the **Generational Golden Rule (GGR)** measure; we leave that to further work

GS equity measure: Transfers between the living and the unborn

FROM UNBORN **TO UNBORN**

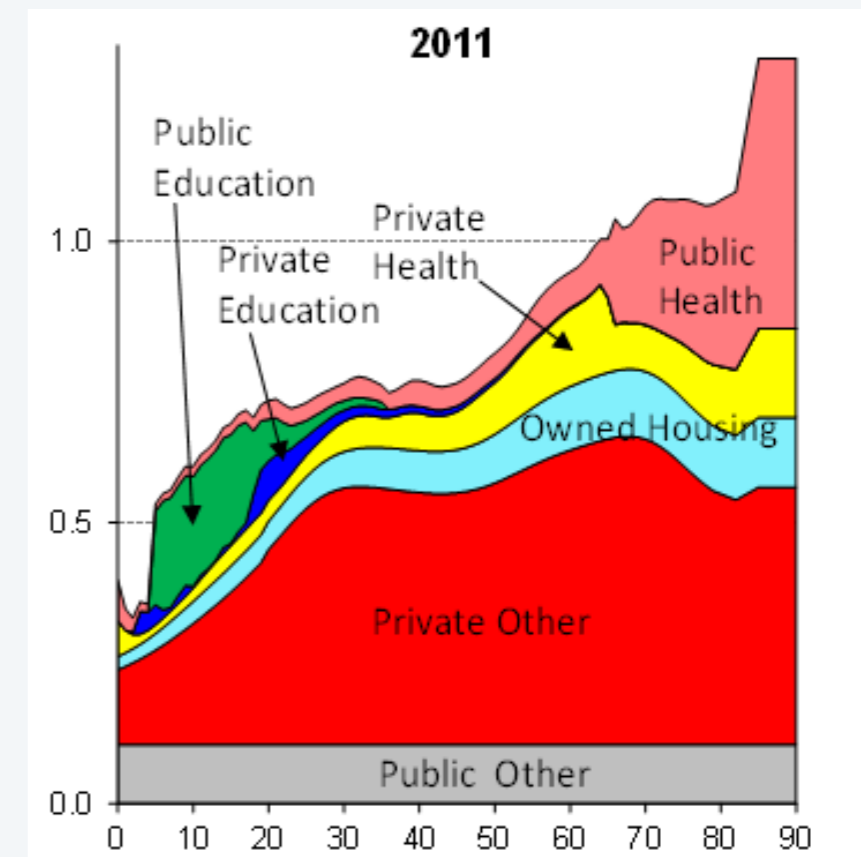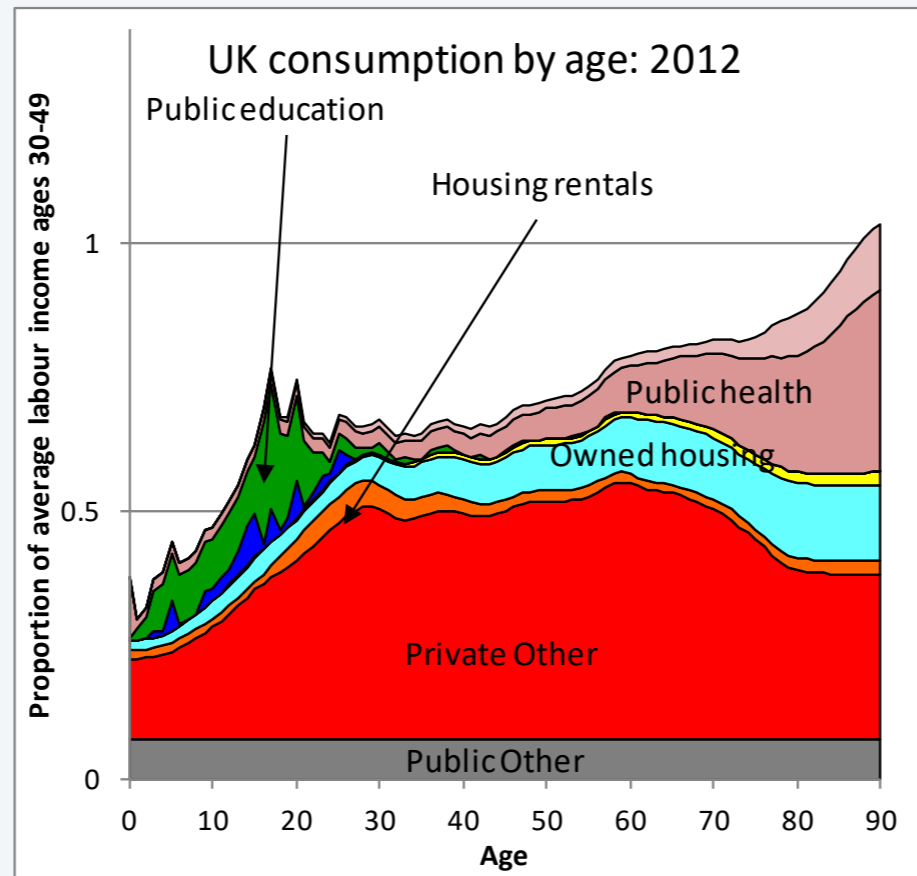|	
Private-sector inter vivos transfers	
Bequests	
Public-sector transfer deficit	
Existing public sector debt	
Total	

-4000 -3000 -2000 -1000 0 1000 2000 3000 4000

- Private sector *inter vivos* transfers and bequests to unborn are greater than the public sector transfer deficit and existing public sector debt transferred *from* the unborn

- On this measure, the unborn are (just) **better off sticking with us**

- (This analysis excludes transfers of natural resources, language, culture, and, importantly, time)

Comparison with the US* (2011)

US consumption at older ages higher relative to labour income than in the UK, but assets per individual around the same

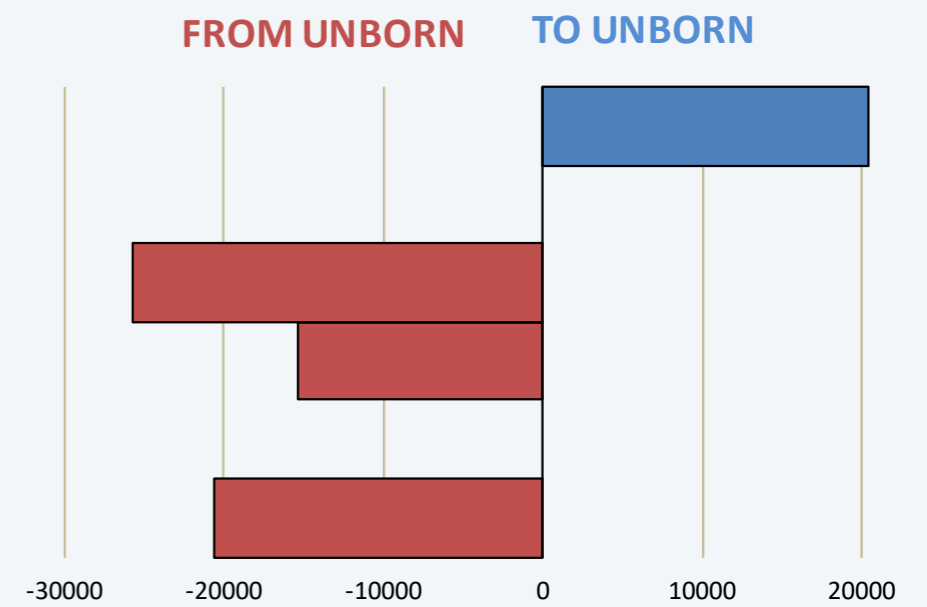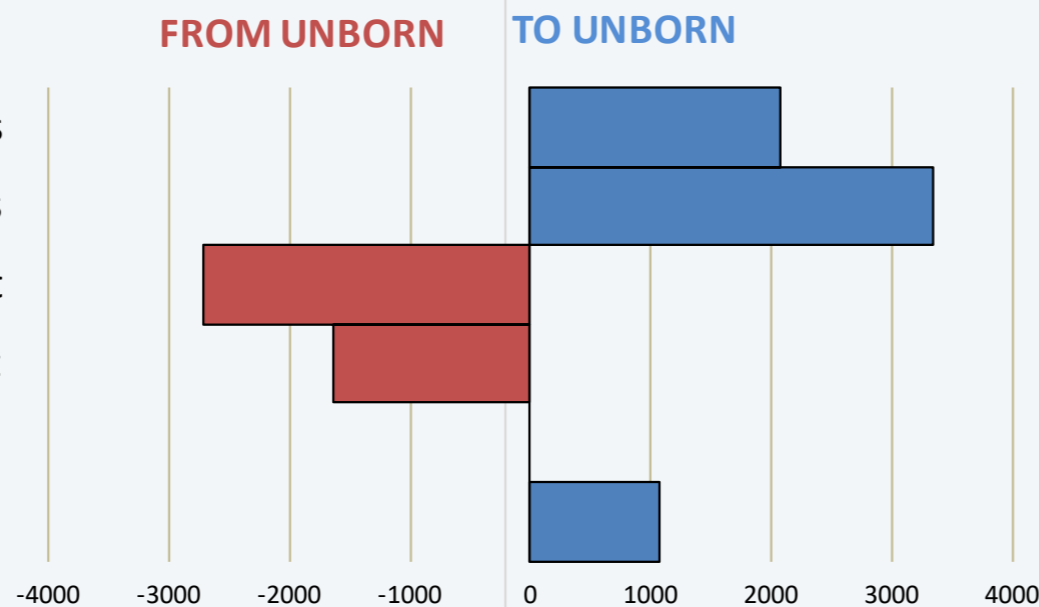GA : as per IMF (2011)

Private sector: not sustainable

Conclusion

- UK private sector is in surplus, public sector in deficit, aggregate UK consumption plans are unsustainable
- 'Austerity' would have reduced the public sector deficit (and the private sector surplus), bringing aggregate consumption plans into (rough) balance
  - But imbalance between private and public sector remains (as shown by public and private sector GA's)
- Under AGK measure, unborn are being treated inequitably, BUT
- Under GS measure, unborn are still better off accepting transfers from living than they would be if they rejected these and needed to bring their own consumption paths into long-run balance
  - (But if the living pass all adjustment costs onto the unborn, it's a close call!)
- GGR measure to be determined
- US situation seems to be clearer: Aggregate assets appear insufficient to sustain projected aggregate consumption paths