Matti Viren

Consumption-led expansions are toxic for future output growth

Aboa Centre for Economics
Discussion paper No. 154
Turku
October 2022

The Aboa Centre for Economics is a joint initiative of the economics departments of the University of Turku and Åbo Akademi University.

ISSN 1796-3133

Printed in Uniprint
Turku
October 2022

Matti Viren

Consumption-led expansions are toxic for future output growth

Aboa Centre for Economics
Discussion paper No. 154
October 2022

ABSTRACT

When assessing future growth prospects, does it matter how the economy grows now? In other words, does the current structure of demand affect future growth? This question is analyzed in our paper by using global and EU panel data. The result is quite striking: consumption-led growth – either in terms of private or public or total consumption – leads to slower growth compared with investment-led or exports-led growth. The same qualitative result emerges irrespectively of the length of the past growth period (lag window). It is only that the more often the past is characterized by consumption-led growth the slower the growth rate in the future. This is surely important news from the point of view of both structural and cyclical policies.

JEL Classification: E21, E32, E50, F43, O40

Keywords: Economic growth, demand management, consumption-led growth

Contact information

Matti Viren
Monetary Policy and Research Department of Bank of Finland; and Department of Economics, University of Turku.
Email: matvir (at) utu.fi

Disclaimer

The opinions expressed here do not necessarily reflect those of Bank of Finland or the Eurosystem.

1. Background

In a crisis situation, it is almost always argued that some demand stimulus is needed. More precise policy proposals are less often put forward and if they are, they are motivated by practical or public policy reasons. But we have good reasons to think that "just more demand" is not a sufficient policy recipe. One piece of evidence which shows this is Kharroubi an Kohlscheen (2017). They demonstrated that consumption-led expansions tend often to be significantly weaker than when growth is driven by other components of aggregate demand. Their analysis was based on predictions from a model where the time path of output growth was predicted by eventual consumption-led expansions and various controls like house prices and household credit. It turned out that the slowdown of growth was particularly significant when important imbalances co-existed with the consumption expansion. The fact that the structure of demand has also important long -run consequences was pointed out in Bughin et al (2018). Also the relatively large differences in fiscal multipliers (see e.g. Kilponen et al. (2015)) with respect to different policy variables suggest that changes inside aggregate demand are all but trivial in terms of economic importance.

In this paper we concentrate on the comparative effects and not only focus on consumption but on all demand components and compare their effects on future output growth. For that purpose, we carry out some sort of horse-race test for the different demand components and use data from all World countries and the EU. In both data sets we find that consumption led expansions – both private and public - show up as slower output growth in the future compared with investment and exports-led expansions.

Why then should different demand components' expansion today affect future growth differently? To some extent, the answer is simple. Most of consumption has no effect on productive capacity and thus on future output. An increase in consumption might even take place at the cost of savings which lowers resources for future consumption. Often consumption booms are "financed" by debt and eventually the debt service costs will also depress consumption.[2]

Opposite to consumption, investment increases productive capacity and output in future periods. As for exports, income from exports makes it possible to expand capacity and output in the future. Higher exports may also signal higher exports market shares which may show up in continuing growth of exports in future periods not to speak of other side effects, particularly in productivity (see e.g. Haddad and Shepherd 2011). The question of the pros and cons of exports-led growth has long time been under scrutiny but there seems to be no consensus. Most analysis of exports-led growth focus on structural and long-term effects, which are somewhat different from the current analysis.

[2] The story is necessarily not so simple because a part of private and public consumption could be characterized as investment (e.g. education, health care). On the other hand, residential investment does not necessarily have much impact on productive capacity and growth.

2. Empirical analysis

We apply the Kharroubi & Kohlscheen (2017) definition of consumption-led growth (or other demand components-led growth) by selecting the observations where the growth rate of a specific demand component exceeds the growth rate of GDP in year t-1, or t-2 (in fact, Kharroubi & Kohlscheen use a three-year window for the expansion period). Altogether we scrutinize four demand components : private consumption, public consumption, (total) investment and (total) exports. Given this condition we get four indicator variables cq, gq, iq and ex, which in the case of e.g. private consumption CQ is computed as cq = 1 if $100*\Delta\log(CQ) > 100*\Delta\log(GDP)$. We also use total consumption denoted by ca, which is used instead of private and public consumption in some specifications.

Average values of these indicator values are displayed in Figures 1 and 2 (in these figures we have a three-period lag window. In Figure 1 we have the sum of periods in which the growth rate of demand component x exceeds the growth rate of GDP. In figure 2, we show the share of cases where this is true for 3 consecutive periods (years). The correlation matrix of indicator variables is shown in Table 1.

In table 2 we show some descriptive statistics of the demand components' growth patterns. In short, this table shows that in bad times growth is characterized by consumption (private & public) led growth while the opposite holds with times when GDP grows. It is interesting (but not very surprising) to notice that the periods when public consumption is the leading demand growth component are characterized by a very low growth rate of GDP while high growth takes place along with growth of investment and exports.

Then we just run a regression equation for the growth rate of GDP so that the set of RHS variables consist of lagged values of these indicator variables (dummies) and the lagged value of the growth rate of GDP, the per capital GDP level in USD denoted by ytc plus fixed country and time effects. Thus, the estimating equation takes the form:

$$gdp_{it} = \alpha_{0it} + \alpha_1 gdp_{it-1} + \alpha_2 cq_{it-1} + \alpha_3 gq_{it-1} + \alpha_4 ig_{it-1} + \alpha_5 ex_{it-1} + \alpha_6 \log(ytc_{it}) + u_{it} \quad (1)$$

where u is the error term. As for lags, we computed lags up to five years but only the values of the first two lags turned out to be significant. The (annual) data cover 1960-2020.

Some idea of the results can be obtained by scrutinizing the conditional mean values of GDP growth values with respect to different lagged values demand components (Table 3). Quite clearly, GDP growth is lower following periods when consumption – private or public – growth has exceeded GDP growth. If we reverse the inequality condition in the sample selection, the results turn around (even though not exactly) indicating for instance, that low-consumption growth periods are followed by high GDP growth periods. By contrast, low investment or exports growth periods are followed by low GDP growth periods (see Table 4 for details),

The pattern does not really depend on the length of the lag window (see Figure 4 for values from a 3-year window). Thus we conclude that if consumption-led growth periods are more frequent in the past, the lower is the subsequent output growth rate. The figure illustrates the situation for total

consumption but the outcome is very similar for private and public consumption. Not surprisingly, that the opposite outcome turns out when we focus on investment-led growth or exports-led growth. The more often they take place, the higher the growth rate is in the future (see Figure 5) .

Basically, the same result comes out when we estimate the model so that all the indicator variables of demand components are on the right-hand-side at the same time using equation (1) When estimating the equation we included several additional control variables but only the current value (not the lagged value) of the terms of trade turned out to be significant in the basic equation even though it did make any difference in terms of other coefficients[3]. The results are reported in Table 5, which includes five sets of equations: one for one period lag effects (e.g. World1), one for aggregate consumption lagged effects (World2), one for one and two period lag effects (World3) and one with the number of years for demand-component x-led growth with a three-year lag window (World4) and in the same way with five-year lag window (World5). In almost all cases we find that consumption-led periods are followed either lower growth rates or the growth effect is simply zero (i.e., the coefficients are not statistically different from zero). This is especially clear when we consider aggregate consumption (ca) in the same way as it in Table 2.[4] The future outcome is quite different for investment and export-led expansion periods. The effects for the first lagged year are all positive and significant but also most of second year effects. Because we have the lagged dependent variable in the model, the effects do in fact go beyond the second period.

If we use a longer window for past values of demand growth following Kharroubi an Kohlscheen (2017), and instead of using individual indicator (dummy) variables count the number of years during which demand component x leads growth, we get more affirmative results as shown in Table 5 (columns World4 and World5 as well as EU4 and EU5). The outcome is illustrated in Figure 3 for the (total) consumption-led growth case. Quite clearly, consumption-led growth is bad for future output growth performance. One "reason" for this is the fact that past consumption-led growth expansions show up in higher consumption/GDP shares in the future, while higher exports-led expansion show up in much lower consumption/shares in the future.

This indirectly shows in the fact that when we estimate the equation for future values of GDP growth (for gdp_{t+1} or gdp_{t+2} instead of gdp_t) the qualitative results remain more or less the same. So, the current "demand policies" have long traces on future growth performance. Similarly, if we use the average GDP growth rates for periods of t, t+1 and t+2, or even t, t+1, t+2, t+3 and t+4, as the dependent variable, the effect of demand structure is more or less the same. It is only the now the

[3] The respective t-value was 2.41. The variable could be motivated by the observation of Montiel (2000) which provides evidence that just the terms of trade is a key determinant consumption booms. We also had the lagged value of the (total)consumption/GDP share as a control variable but its coefficients were not significant in any of the estimating equations and thus it was not included into the final specification. The same outcome was obtained by introducing the lagged value of the standard deviation of different demand components' growth rate or the lagged value the current account/GDP ratio. We also constructed the indicator variables so that the growth rate of the demand component is λ times larger than the growth rate of GDP. That did not make any noticeable difference in results, either. The same is true when the sample was divided into two according to the criterion $gdp>0$ and $gdp\leq 0$, Moreover, we estimated the model by (Huber) Robust estimator and the Quantile estimator but the qualitative results did change in any meaningful way. Finally, we estimated the basic equation Wold1 in Table 5 with GMM. Also that produced results that are very similar to those with panel OLS (see column 5 in Table 6)

[4] This also shows up when use five lagged values of the first difference of the consumption/GDP share as the only determinant of GDP growth in an alternative model specification (Appendix 2). The five lags are clearly negative (although declining in size).

importance of the negative effect of private consumption-led growth is more pronounced and the investment-led growth effect less pronounced (Table 6 and Figure 6).

We also considered the effects of persistent demand growth patterns by constructing the indicator variables in such a way that they indicate whether the same type of demand led growth has continued over consecutive periods (years). The results do not make much difference compared with a one-year-lag case except making a slightly worse outcome for the case of consumption led-growth. It is interesting that according to Figure 2, the frequency of these cases has grown over time in the cross-country panel. Could that be an explanation for the overall dampening output growth rate?

Finally, we analyze how well the past demand pattern can predict a depression (negative GDP growth in period t) using a logit regression with the same RHS variables as in equation (1). The results are reported in Table 6 (column 6). The result is quite clear: if growth in period t-1 is driven by investment or exports the probability of depression is clearly lower. If growth is driven by consumption in the past, we the opposite result holds but the results are so imprecise that strong conclusions can not be drawn. The same result applies if the look at longer time horizons or deeper depressions.

3. Summing up

We have seen that the pattern of aggregate demand growth does indeed affect the future values of GDP growth. Thus, in bad times it cannot be said that just "increase the demand" because the structure of demand makes a lot of difference too. If aggregate demand growth is very much consumption-led, the subsequent output growth rates are much lower than in the case where investment or exports had been leading the expansion. This should be kept in mind when designing public policies which intend to boost output – at least we aim to obtain permanent results. This does not, of course, mean that the level of consumption should be kept low but that excessive consumption booms should be avoided.

References:

Bughin, J., H.-H. Kotz and J. Mischke (2018) Strong aggregate demand: Critical for reaping benefits of digitisation. VOX EU. https://voxeu.org/article/strong-aggregate-demand-critical-reaping-benefits-digitisation

Haddad, M. and B. Shepherd (2011) Export-led growth: Still a viable strategy after the crisis? Vox EU. https://voxeu.org/article/export-led-growth-still-viable-strategy-after-crisis

Kharroubi. E. and E. Kohlscheen (2017) Consumption-led expansions. *BIS Quarterly Review*, March 2017, 25-37. https://www.bis.org/publ/qtrpdf/r_qt1703e.htm

Kilponen, J, et al.(2015) Comparing fiscal multipliers across models and countries in Europe, ECB Working paper 1760. https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1760.en.pdf

Montiel, P (2000) What drives consumption booms? *The World Bank Economic Review* 14(3), 457-480. https://elibrary.worldbank.org/doi/10.1093/wber/14.3.457

Table 1 Correlations between indicator variables

	cq	gq	iq	ex
cq	1			
gq	.056	1		
iq	-.177	-.110	1	
ex	-.091	-.134	-.052	1

Table 2 Type of demand growth pattern in current period

	gdp	gdp>0	gdp≤0	gdp
cq	.470	.448	.594	3.04
gq	.484	.438	.745	1.53
ca	.456	.421	.690	
iq	.541	.586	.298	4.88
ex	.589	.607	.495	3.49

Values in columns 2-4 indicate how often (the share of all values of) different demand components' growth rate exceeds the growth rate of GDP for all values of GDP, and for increasing and declining values of GDP. The last column shows the values of GDP in such cases where the growth rate of demand component x is higher than all other demand components.

Table 3 Sample mean values of GDP growth conditional to previous year's growth pattern:

demand component growth higher than GDP growth	World	EU	demand component growth lower than GDP growth	World	EU
private consumption	3.27	2.74	private consumption	3.80	2.62
public consumption	3.34	1.98	public consumption	3.74	3.16
total consumption	3.09	2.34	total consumption	3.78	2.86
investment	4.03	3.13	investment	2.08	2.09
exports	3.70	2.71	exports	2.50	2.51

Here, the private consumption row indicates the average GDP growth rate conditional to $cq_{t-1} > gdp_{t-1}$ (first two columns) or $cq_{t-1} \leq gdp_{t-1}$ (last two columns). Similar notation applies to other variables.
The data cover 1960-2021 and the number of data points in the World panel data is 5754 and in 1069 the EU panel data. Notice that this condition does not exclude the possibility that at the same time some other demand component grows faster (slower) than GDP. If this possibility is excluded, the results change somewhat (especially, the values for consumption led expansion decrease), see Appendix 1.

Table 4 Effect of past demand structure on current and future demand growth

	GDP	CQ	GQ	CA	IQ	EX
Indicator variables lagged by one period, effect on the current period variable						
full sample	3.72	3.41	3.11	3.31	4.38	5.00
$cq_{t-1}>0$	3.13	5.12	2.82	4.54	2.72	3.08
$gq_{t-1}>0$	2.76	2.75	6.12	3.34	1.93	3.20
$ca_{t-1}>0$	2.70	4.55	3.74	4.42	1.50	2.33
$iq_{t-1}>0$	4.35	3.82	3.34	3.71	11.24	5.35
$ex_{t-1}>0$	3.76	3.08	2.75	2.93	3.99	9.02
Indicator variables lagged by 3 periods, effect on the current period variable						
$cq_{t-1}>0$	3.15	3.28	2.69	3.13	3.57	4.17
$gq_{t-1}>0$	3.54	3.36	3.90	3.38	4.42	4.80
$ca_{t-1}>0$	2.82	3.00	3.09	3.02	3.34	3.63
$iq_{t-1}>0$	4.25	4.05	3.56	3.99	5.33	4.98
$ex_{t-1}>0$	3.44	3.11	2.50	2.93	4.63	5.89
Indicator variables lagged by 3 periods, effect on the average of current and future (2 periods) variables						
$cq_{t-1}>0$	3.05	3.16	2.90	3.00	3.97	4.34
$gq_{t-1}>0$	3.45	3.51	3.70	3.31	4.73	5.15
$ca_{t-1}>0$	2.95	3.33	3.10	3.08	4.12	4.11
$iq_{t-1}>0$	3.95	3.93	3.84	3.83	4.82	5.21
$ex_{t-1}>0$	3.25	3.21	2.77	3.00	4.53	5.43

Table 5. Effect of different demand patterns on GDP growth

	World1	World2	World3	World4*	World5*	EU1	EU2	EU3	EU4*	EU5*
constant	-.077 (2.53)	-.068 (2.28)	-.084 (2.67)	-.088 (2.56)	-.051 (1.50)	-.228 (2.45)	-.220 (2.38)	-.293 (3.17)	-.301 (3.00)	-.289 (2.69)
$cq_{t-1>0}$	.071 (0.60)		.004 (0.03)	-.013 (0.20)	-.080 (1.59)	.239 (1.47)		.234 (1.42)	-.095 (0.93)	-.071 (0.86)
$cq_{t-2>0}$			.026 (0.22)					-.154 (0.93)		
$cg_{t-1>0}$	.247 (1.78)		.267 (1.91)	-.006 (0.87)	-.027 (0.51)	-.089 (0.51)		-.037 (0.21)	-.010 (0.10)	-.058 (0.79)
$cg_{t-2>0}$			-.243 (2.01)					-.064 (0.34)		
$ca_{t-1>0}$		.108 (0.89)					.157 (0.91)			
$ca_{t-2>0}$										
$iq_{t-1>0}$	.675 (5.49)	.646 (5.30)	.644 (5.23)	.301 (4.16)	.181 (3.21)	.353 (2.03)	.325 (1.97)	.330 (1.95)	.139 (1.29)	.036 (0.41)
$iq_{t-2>0}$			.258 (2.00)					-.028 (0.17)		
$ex_{t-1>0}$	.503 (3.80)	.527 (4.10)	.470 (3.59)	.353 (4.49)	.239 (4.05)	.463 (2.18)	.431 (2.05)	.384 (1.85)	.343 (2.81)	.194 (2.03)
$ex_{t-2>0}$			.360 (2.67)					.346 (1.60)		
gdp_{-1}	.266 (6.80)	.247 (6.41)	.250 (5.91)	.239 (5.87)	.249 (5.69)	.315 (5.34)	.330 (2.92)	.291 (4.73)	.298 (4.58)	.306 (4.67)
$\log(ypc_t)$	1.124 (3.11)	1.022 (2.91)	1.189 (3.19)	1.157 (2.98)	.820 (1.80)	2.399 (2.57)	.001 (2.92)	3.037 (2.26)	3.087 (3.05)	2.985 (2.78)
R^2	0.302	0.300	0.305	0.307	0.325	0.596	0.594	0.597	0.593	0.600
SEE	4.134	4.099	4.100	4.045	3.913	2.362	2.362	2.328	2.327	2.303
DW	1.959	1.984	1.920	1.908	1.924	1.970	2.001	1.913	1.926	1.891

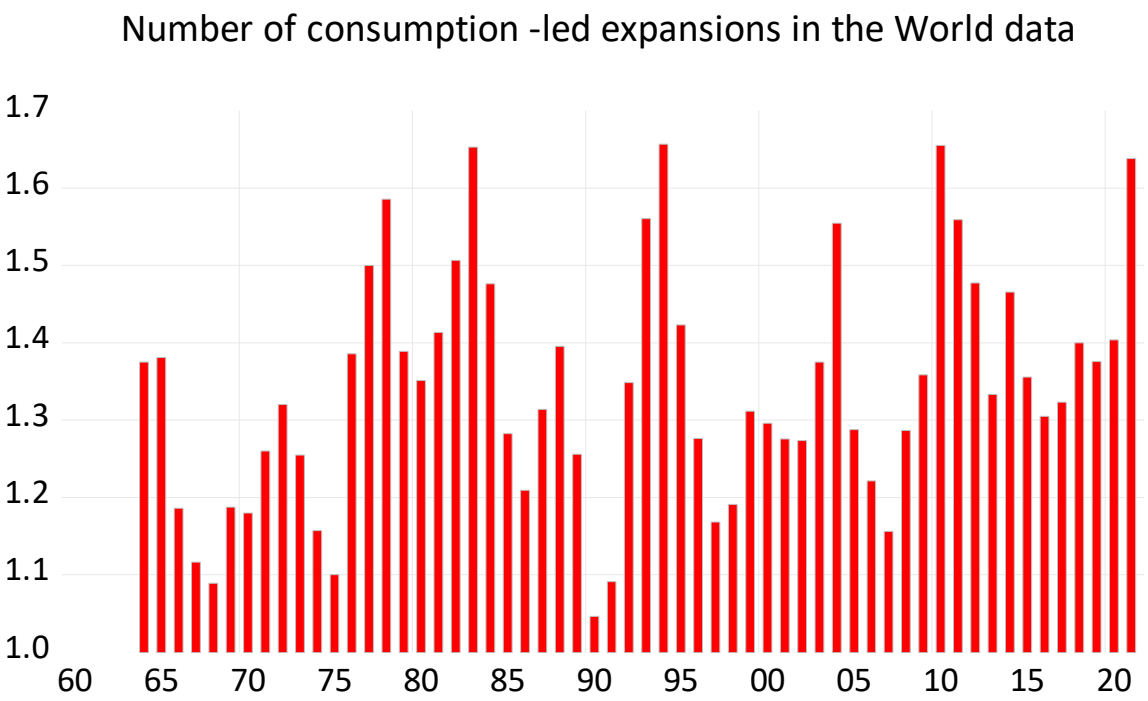
The dependent variable is GDP growth. All equations include country and time fixed effects. Numbers inside parentheses are robust t-values. Variables in columns 1-3 and 6-8, except for gdp and ypc, are indicator variables of the type $(x_{t-1} - gdp_{t-1})>0$. cq refers to (the indicator for) private consumption (expansion), gq public consumption, ca aggregate consumption, iq investment and ex exports. * In columns World4 & World5 and EU4 & EU5 the RHS variables are the number of years during which particular demand component x leads past expansions during a 3-year or a 5-year period. The number of data points in the World panel data is 5754 and in the EU panel data 1069.

Table 6 Some additional estimates

	1	2	3	4	5	6
constant	7.680 (2.46)	7.213 (2.24)	21.117 (3.66)	29.516 (1.82)		-1.158 (4.64)
$cq_{t-1}>0$	-.057 (0.48)	-.112 (0.63)	-.142 (3.89)	-.157 (5.26)	.985 (1.41)	.016 (0.20)
$gq_{t-1}>0$	-.018 (0.12)	-.083 (0.46)	-.068 (1.82)	-.043 (1.39)	-.143 (0.24)	.097 (1.19)
$iq_{t-1}>0$	.500 (3.90)	.396 (2.65)	.082 (1.84)	.030 (0.88)	4.452 (9.86)	-.291 (3.57)
$ex_{t-1}>0$	.539 (4.34)	.385 (2.91)	.237 (5.75)	.210 (5.98)	3.767 (6.25)	-.3.08 (3.82)
gdp_{t-1}	.251 (6.19)	.254 (6.44)	.112 (4.67)	.068 (4.21)	.207 (7.01)	.127 (9.78)
log(ytc)	1.180 (3.19)	1.144 (2.99)	-2.181 (8.38)	-3.140 (14.52)	1.354 (4.51)	.003 (0.11)
R^2	0.301	.306	0.368	0.460	..	0.061**)
SEE	4.109	4.056	2.639	2.014	4.761	0.342
DW	1.925	1.943	0.688	0.419	0.872*)	..
Dependent variable	gdp GR	gdp GR	average of 3 gdp GRs	average of 5 gdp GRs	gdp GR	Pr(gdp<0)
Indicator variables .	for 2 past consecutive yrs.	for 3 past consecutive yrs.	sum of 3 past x-led years	sum of 5 past x-led years	past year	past year
Estimator	OLS	OLS	OLS	OLS	GMM	LOGIT

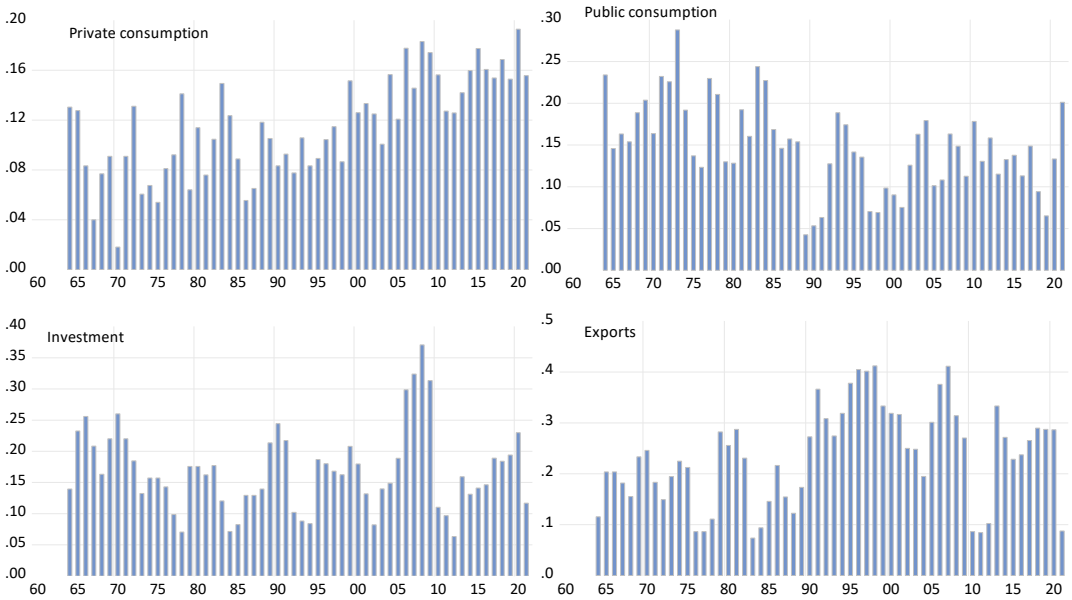
In columns 1 and 2, the indicator variables equal to 1 if the respective growth rate exceeds the growth rates of GDP for all 2 (or 3) consecutive years. In columns 3 and 4, the dependent variables is the average growth rate of GDP for years t to t+2, or alternatively t to t+4. The indicator variables are the number or years the growth rate of demand component x exceeds the growth rate of GDP for the last five years. GMM estimates (with orthogonal deviations) are reported in column 5. Then *) is the marginal probability of the J-statistic. The set or (additional) instruments include lagged consumption and investment ratios. Finally, Logit estimates for the probability of depression (negative GDP growth) are reported in column 6. Then **) is the MacFadden pseudo R^2 value. All results are from the (whole) World panel data.

Figure 1 Data on consumption led expansions in the World data



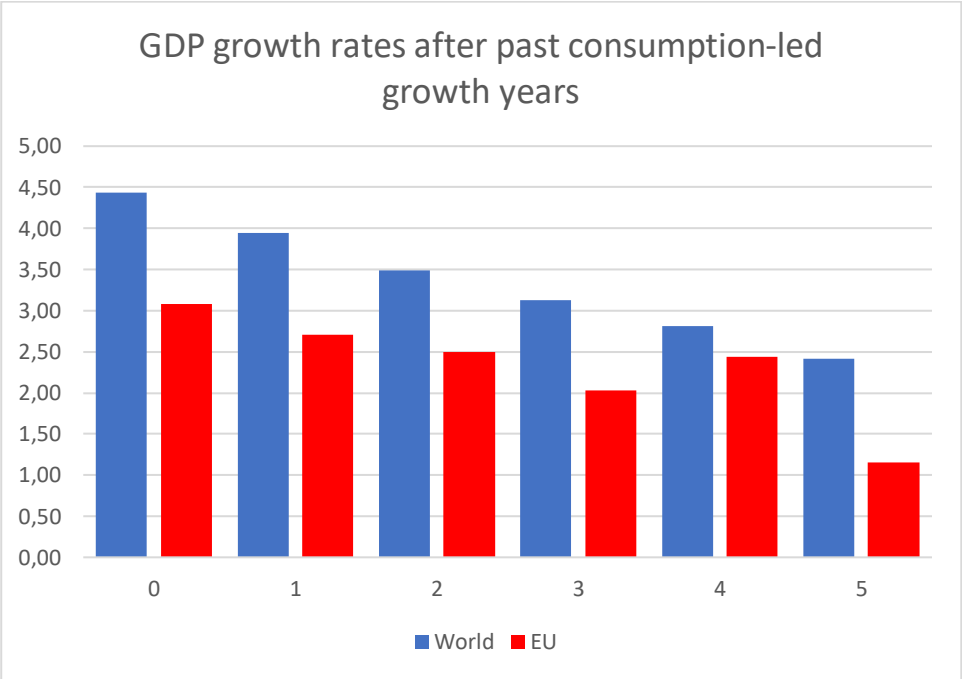
The numbers are for a three-year period.

Figure 2 Mean values of indicator variables for 3 consecutive years



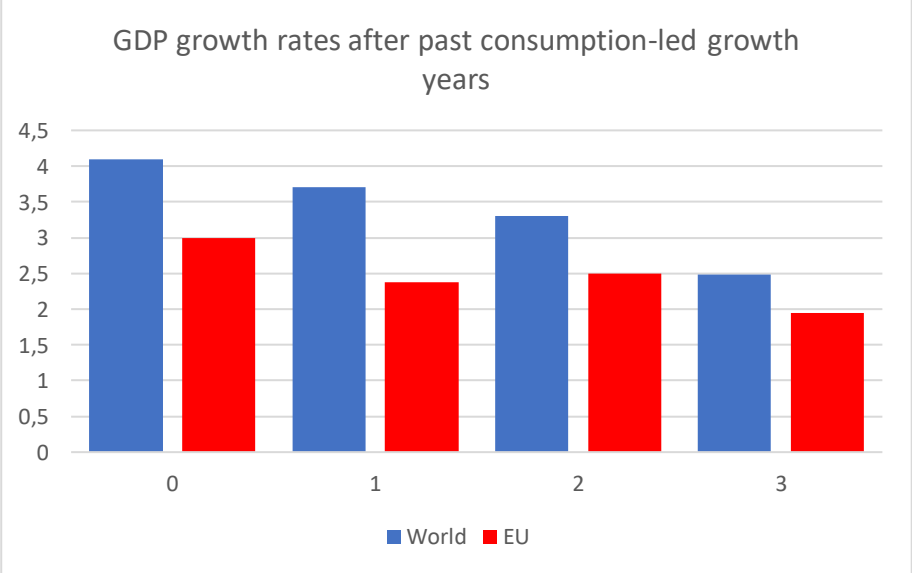
The values indicate the average share (in the cross-country panel) of cases where the growth rate of demand component x has exceeded GDP growth rate in all three consecutive years prior period t.

Figure 3 GDP growth and number of past years of consumption-led growth



The x-axis indicates the number of years with consumption-led growth during past five years.

Figure 4 GDP growth and number (3) of past years of consumption-led growth



This is the same as Figure 1 but computed with a three-year window.

Figure 5 GDP growth after all past demand-led growth years

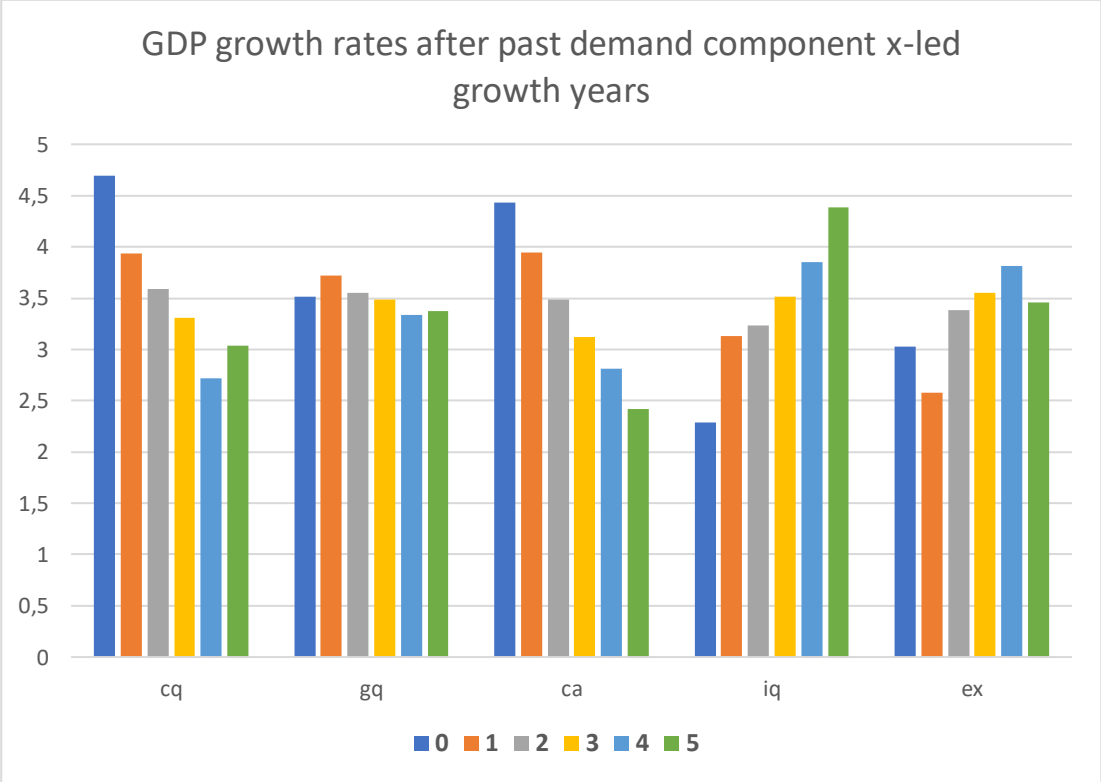
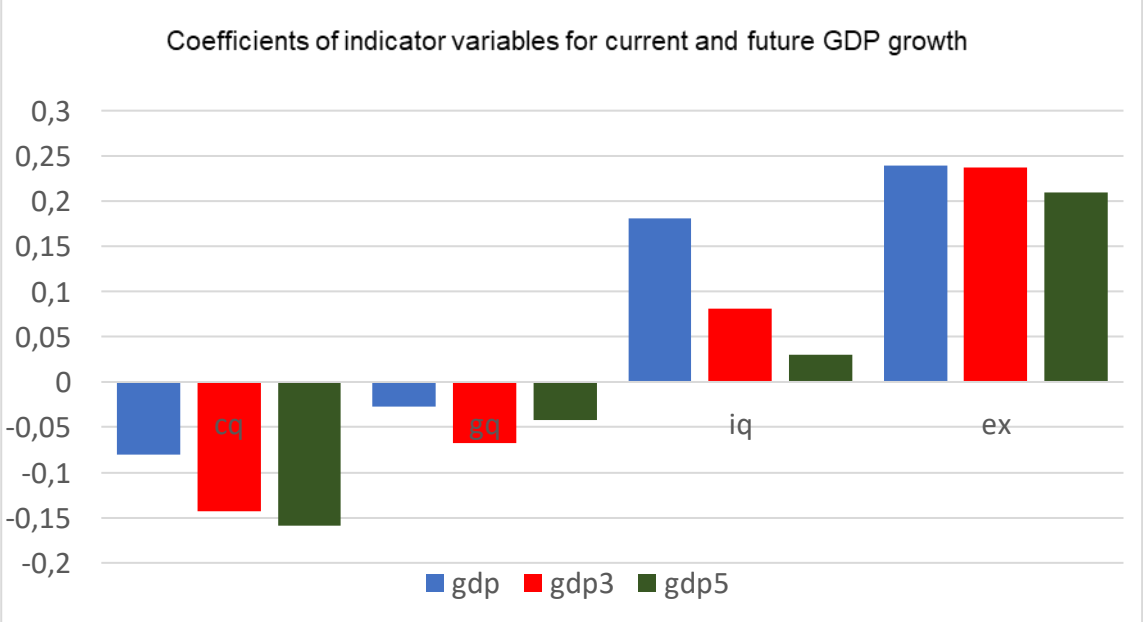


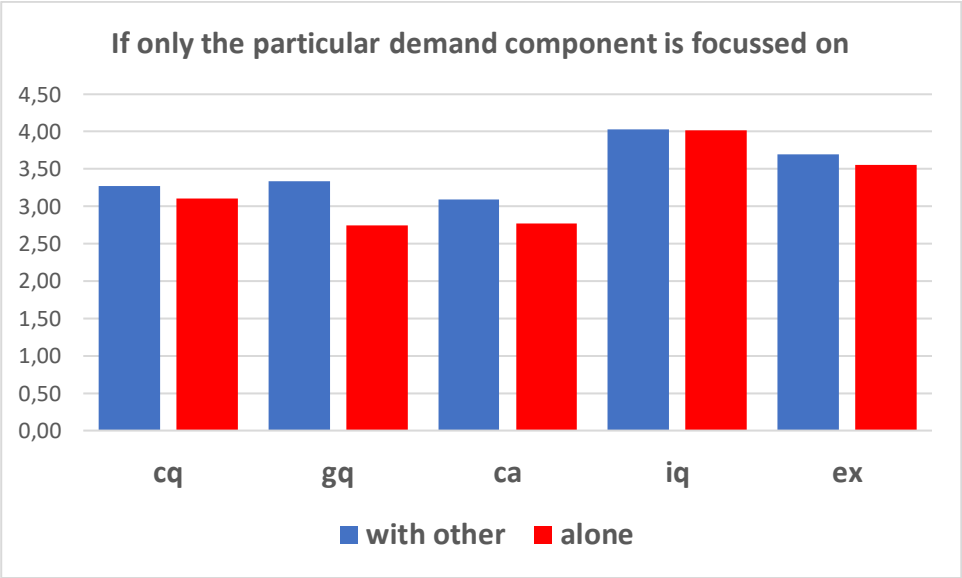
Figure 5 is the same as Figure 3 but include all demand components (not only effects of total consumption)

Figure 6 Effect of demand structure on current and future GDP growth rates

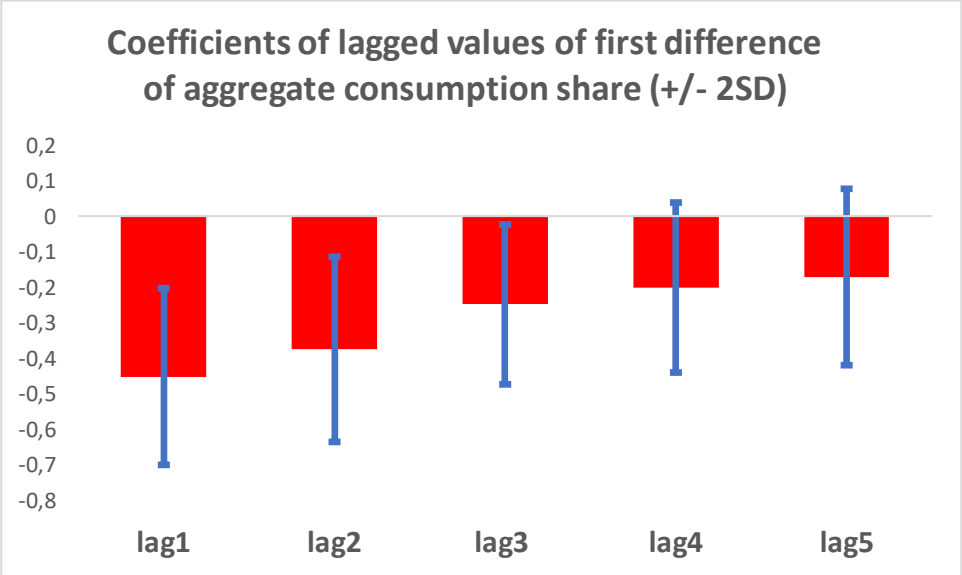


The values are coefficient estimates of the indicator variables. gdp denotes here one year growth while gdp3 (gdp5) denotes the average growth rate for periods t, t+1 and t+2 (t, t+1, t+2, t+3, and t+4) in the estimating equation where the RHS variables are five-year sums of the indicator variable of the respective demand component (i.e. number of years the growth rate of demand component x has exceeded the GDP growth rate). The values of the first bar gdp correspond to column World5 in Table 3. The values of gdp3 and gdp5 have been computed in the similar way (see columns 3 & 4 in Table 4).

Appendix 1 Difference between demand component-led growth "along" or with some other demand component



Appendix 2 A simple test for consumption-led growth using the lagged values of consumption/GDP share



Red bars denote the coefficient estimates and the blue lines the corresponding confidence intervals.

The **Aboa Centre for Economics (ACE)** is a joint initiative of the economics departments of the Turku School of Economics at the University of Turku and the School of Business and Economics at Åbo Akademi University. ACE was founded in 1998. The aim of the Centre is to coordinate research and education related to economics.

Contact information: Aboa Centre for Economics, Department of Economics, Rehtorinpellonkatu 3, FI-20500 Turku, Finland.

www.ace-economics.fi

ISSN 1796-3133