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Consumption-led expansions lead to lower future output growth

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Abstract. When assessing future growth prospects, does the current structure of demand matter, i.e. does it affect the future growth? This question is analysed in our paper using global and EU panel data. The result is quite striking: consumption-led growth – either in terms of private or public or total consumption – is slower than investment-led or exports-led growth. The same qualitative result is obtained irrespectively of the length of the past growth period (lag window), yet the more often the past is characterised by consumption-led growth, the slower the growth rate is in the future. In this context, our research provides important insights for both structural and cyclical policies.

Keywords: economic growth, demand management, consumption-led growth
JEL: E21, E32, E50, F43, O40

1. Introduction

In a crisis situation, it is almost always argued that some demand stimulus is necessary. More precise policy proposals are less often put forward, and if they are, they are motivated by practical or public policy reasons. But there are good reasons to think that 'just more demand' is not a sufficient recipe for an effective policy, as demonstrated e.g. by Kharroubi and Kohlscheen (2017). They show that consumption-led expansions of output tend to be significantly weaker than when growth is driven by other components of aggregate demand. Their analysis was based on forecasts from a model where the time path of output growth was predicted by consumption-led expansions and various controlling variables like house prices and household loans. It turned out that the slowdown of growth was particularly significant when important imbalances co-existed with the expansion of consumption. The fact that the structure of demand has important long-run consequences was also pointed out in Bughin et al. (2018). Additionally, 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.

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In this paper, we concentrate on the comparative effects and focus not only on consumption, but on all demand components. We compare their impact on the future output growth. For that purpose, we carry out a horse-race test for the different demand components where we use the world and the EU data. Both data sets demonstrate that consumption-led economic expansions – public as well as private – result in a slower future output growth than investment- and exports-led expansions. The EU subsample of the world data is scrutinised separately, because it is likely to be less akin to outlier observations. Even though we use panel data, we focus solely on individual countries and ignore the potential cross-country spill-over effects (even though they are not trivial, see e.g. Ilori et al., 2022).

Why then should today's expansion of different demand components affect the future growth in different ways? To some extent, the answer is simple. Most of the consumption has no effect on productive capacity and thus on future output. An increase in consumption might even take place at the expense of savings, which lowers resources for the future consumption. In addition, consumption booms are often financed by debt, so eventually the debt-service costs are likely to depress consumption.[1]

Unlike consumption, investment increases productive capacity and output in subsequent periods, whereas income from exports makes it possible to expand capacity and output in the future. Higher exports growth might also signal higher export market shares that led to the continuation of growth of exports in future periods as well as to other side effects, particularly in productivity (see e.g. Shepherd and Haddad, 2011). The question of the pros and cons of exports-led growth has been under scrutiny for long, but no consensus among researchers seems to have been reached yet. Most analyses of this kind of growth focus on structural and long-term effects, which is slightly different than our analysis.

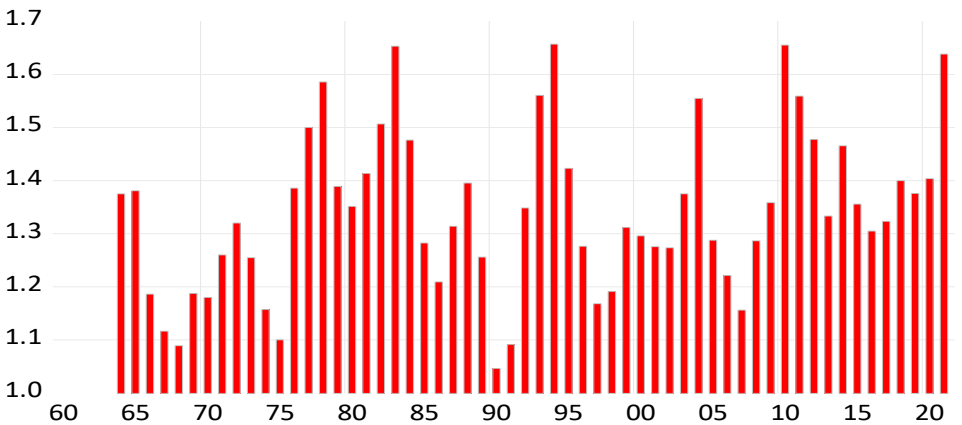
2. Empirical analysis

We apply the Kharroubi and Kohlscheen (2017) definition of consumption-led growth (or growth fuelled by some other component of demand) 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 analyse four demand components: private consumption, public consumption, (total) investment and

[1] This issue might actually be more complex, because some part of private and public consumption can be treated as investment (e.g. education, healthcare). On the other hand, residential investment does not necessarily have much impact on productive capacity or growth.

(total) exports. This gives us four indicator variables: cq, gq, iq and ex. For example, private consumption indicator 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.

Figure 1. Number of consumption-led expansions in the world data



Note. The numbers are for a three-year period.
Source: author's calculation.

Figure 2. Mean values of indicator variables for three consecutive years

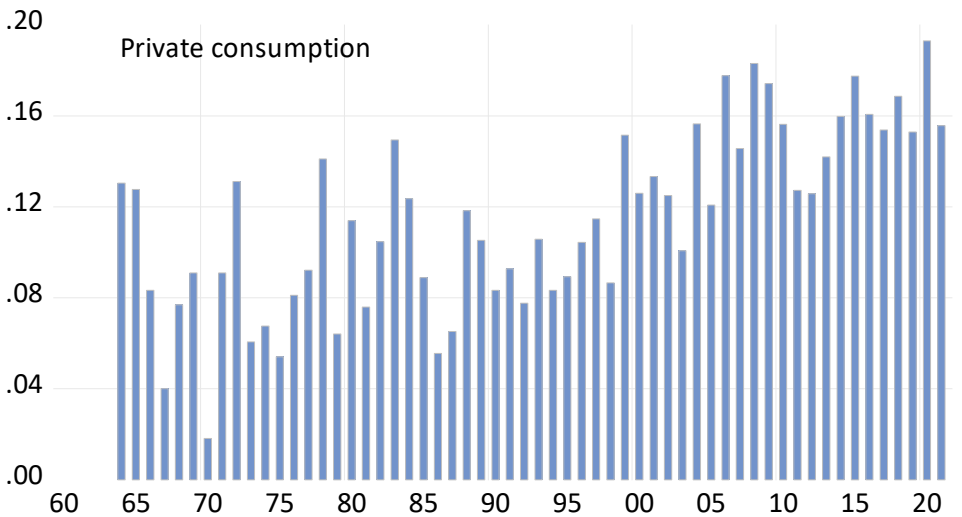


Figure 2. Mean values of indicator variables for three consecutive years (cont.)

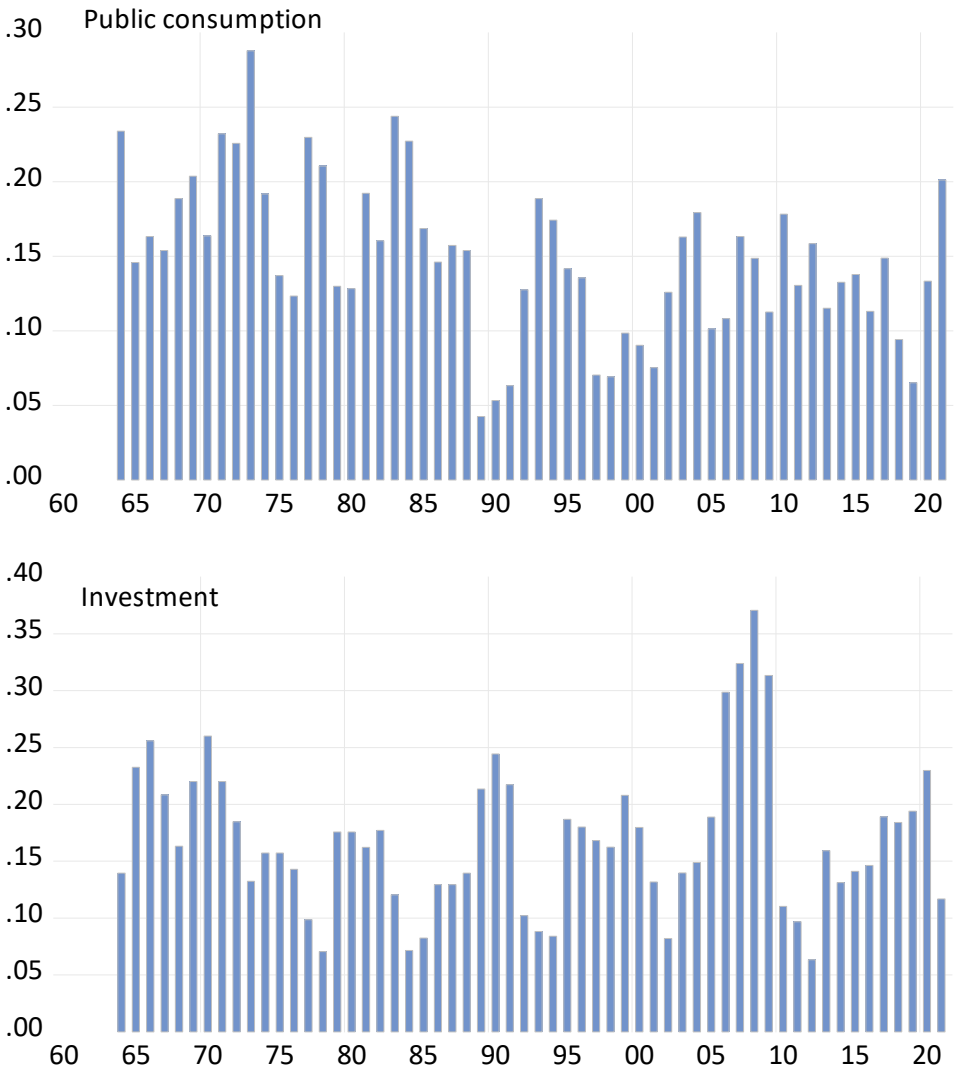
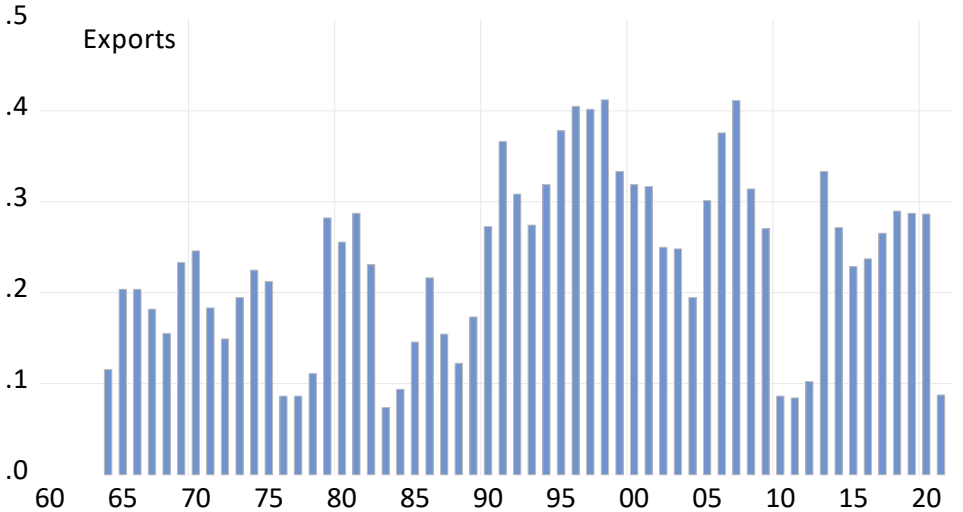


Figure 2. Mean values of indicator variables for three consecutive years (cont.)



Note. The values indicate the average share (in the cross-country panel) of cases where the growth rate of demand component x exceeded the GDP growth rate in all the three consecutive years prior to period t.
Source: author's calculation.

The average values of this indicator are presented in Figures 1 and 2, (there is a three-period lag window in each of them). Figure 1 presents the sum of periods in which the growth rate of demand component x exceeded the growth rate of GDP. In Figure 2, we show the share of cases where the above condition was met for three consecutive periods (years). The correlation matrix of indicator variables is shown in Table 1.

Table 1. Correlations between indicator variables

	cq	gq	iq	ex
cq	1.000			
gq	0.056	1.000		
iq	−0.177	−0.110	1.000	
ex	−0.091	−0.134	−0.052	1.000

Source: author's calculation.

Table 2. Type of demand growth pattern in current period

	gdp	$gdp > 0$	$gdp \leq 0$	gdp
cq	0.470	0.448	0.594	3.04
gq	0.484	0.438	0.745	1.53
ca	0.456	0.421	0.690	
iq	0.541	0.586	0.298	4.88
ex	0.589	0.607	0.495	3.49

Note. Values in columns 2–4 indicate how often (the share of all values of) growth rates of different demand components exceed the growth rate of GDP for all the values of GDP as well as for increasing and declining values of GDP. The last column shows the values of GDP in those cases where the growth rate of demand component x is higher than all the other demand components. Please note that GDP is not exactly the sum of demand components, because it is measured from the production accounts and there is always a statistical error between the production and the use accounts.

Source: author's calculation.

In Table 2, we show some descriptive statistics of the growth patterns of demand components. In short, this table shows that during economic depressions, growth is fuelled by consumption (private and public), while when GDP rises, growth is powered by investment and exports.

Subsequently we run a regression equation for the growth rate of GDP, such that the set of RHS variables consists of lagged values of the variables of this indicator (dummies) and the lagged value of the GDP growth rate, and the level of GDP *per capita* in USD is denoted by ytc plus fixed country and time effects. Thus, the estimating equation takes the following form:

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

where u_{it} is the error term. As regards lags, we computed them up to five years, but only the values of the first two lags turned out to be significant. The (annual) data cover the period of 1960–2020.

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

Note. Here, the private consumption row indicates the average GDP growth rate conditional to $cq_{t-1} > gdp_{t-1}$ (the first two columns) or $cq_{t-1} \leq gdp_{t-1}$ (the last two columns). Similar notation applies to other variables. The data cover the period of 1960–2021. The number of data points in the world panel data is 5,754, and 1,069 in the EU panel data. Please note 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 slightly change (in most part, the values for the consumption-led expansion decrease), see Figure A1, Appendix.

Source: author's calculation.

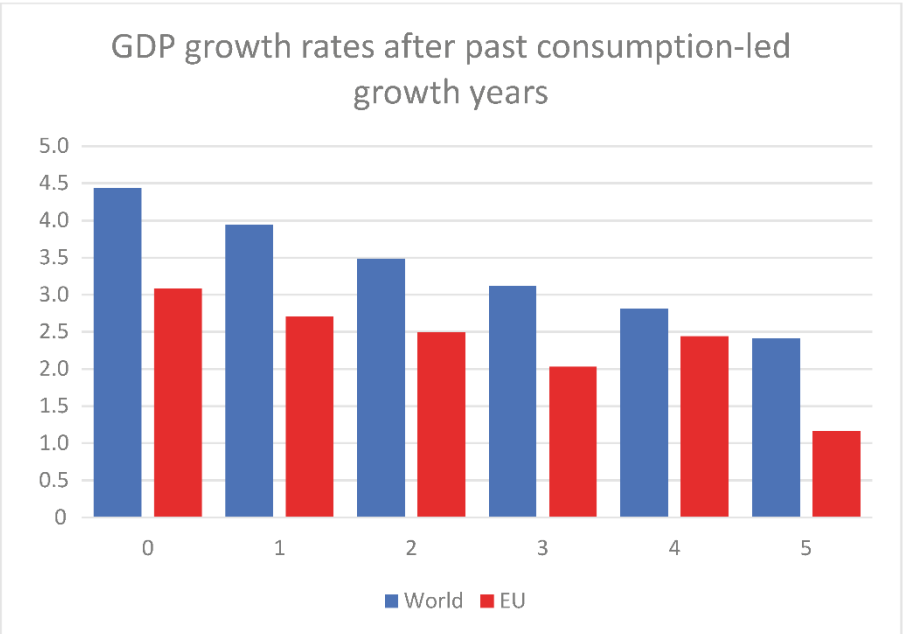
Some idea of the results might be obtained by scrutinising the conditional mean values of GDP growth with respect to different lagged values of demand components (Table 3). It can clearly be seen that GDP growth is lower following periods when the consumption growth (private or public) exceeded GDP growth. If we reverse the inequality condition in the sample selection, the results become almost opposite, indicating, for instance, that low-consumption growth periods are followed by high GDP growth periods. By the same token, periods of low-investment or low-exports growth are followed by those of low GDP growth (see Table 4 for details).

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

	GDP	CQ	GQ	CA	IQ	EX
Indicator variables lagged by 1 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

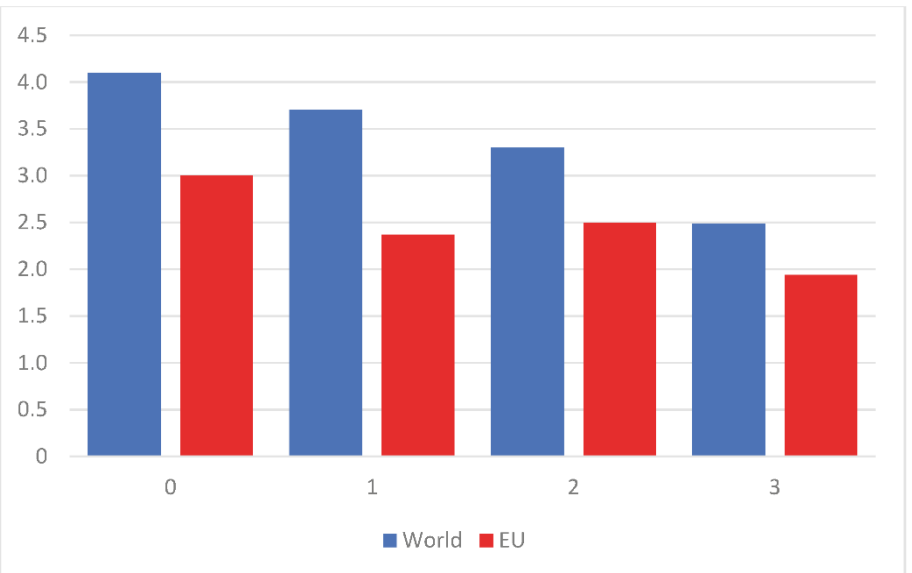
Source: author's calculation.

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



Note. The x-axis indicates the number of years with consumption-led growth during the past five years.
Source: author's calculation.

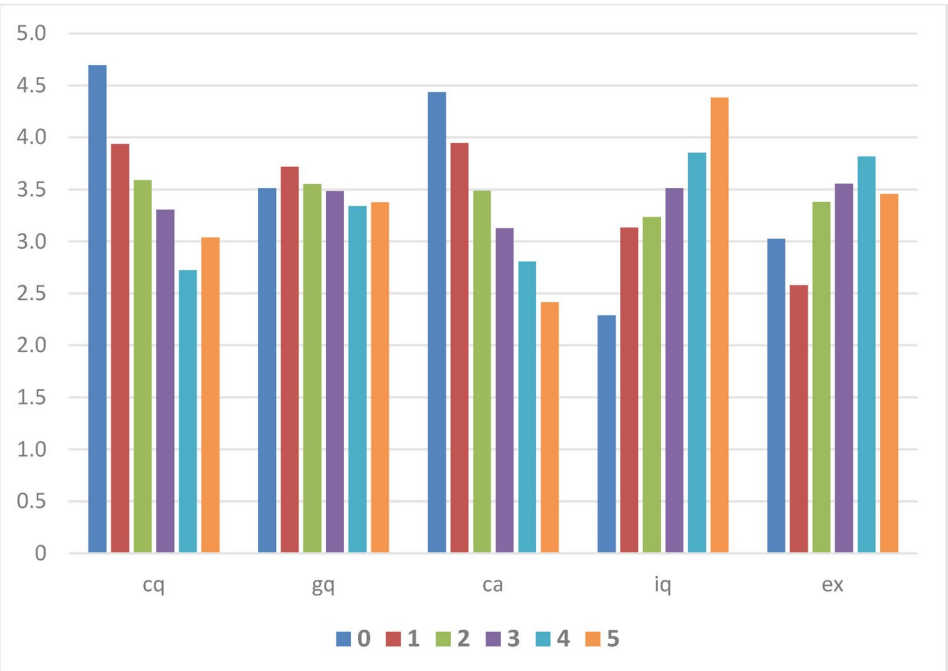
Figure 4. GDP growth and number (3) of past years of consumption-led growth



Note. This is the same as Figure 1, but computed with a three-year window.
Source: author's calculation.

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 the more frequent consumption-led growth periods were in the past, the lower the subsequent output growth rate is. The figure illustrates the situation for total consumption, but the outcome is very similar for both the private and public consumption. Not surprisingly, the opposite outcome is the case when we focus on investment-led or exports-led growth. The more often they take place, the higher the growth rate in the future (see Figure 5).

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



Note. Figure 5 is the same as Figure 3 but includes all demand components (not only the effects of total consumption). Numbers 1–5 under the Figure denote consecutive future periods; 0 is the current period.
Source: author's calculation.

The same result is obtained when we estimate the model so that all the indicator variables of demand components are on the right-hand-side when using Equation (1). The model fits the data comparatively well (see the R^2s), given the fact that the explanatory variables are basically dummies. When estimating the equation, we included several additional control variables, but only the current value (not the

lagged one) of the terms of trade turned out to be significant in the basic equation. However, it did not make any difference in terms of other coefficients.[2]

Table 5. Effect of different demand patterns on GDP growth

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

Note. 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 $(x_{t-1} - gdp_{t-1}) > 0$ type. cq refers to (the indicator for) private consumption (expansion), gq to (the indicator for) public consumption, ca to (the indicator for) aggregate consumption, iq to (the indicator for) investment, and ex to (the indicator for) exports. * In columns World4 and World5 as well as EU4 and EU5, the RHS variables are the number of years during which particular demand component x led past expansions during a 3-year or a 5-year period. The number of data points in the World panel data is 5,754, and in the EU panel data 1,069.

Source: author's computations.

[2] The respective t-value was 2.41. The variable could be motivated by the observation of Montiel (2000), which proves that it is the terms of trade alone that is the key determinant of 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 in the final specification. The same outcome was obtained by introducing the lagged value of the standard deviation of the growth rate of different demand components or the lagged value of the current account/GDP ratio. We also constructed 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 to the results, either. The same was true when the sample was divided into two according to the $gdp > 0$ and $gdp \leq 0$ criterion. Moreover, we estimated the model by the (Huber) Robust estimator and the Quantile estimator, but the qualitative results did not change in any meaningful way. Finally, we estimated the basic equation World1 in Table 5 with GMM. The produced results were very similar to those with panel OLS (see column 5 in Table 6).

The results are reported in Table 5, which consists of five sets of equations (both for the world and the EU), i.e. a pair for one period lag effects (World1, EU1), a pair for aggregate consumption lagged effects (World2, EU2), a pair for one and two period lag effects (World3, EU3), a pair with the number of years for demand-component x-led growth with a three-year lag window (World4, EU4), and a similar pair, but with a five-year lag window (was World5, EU5). In almost all cases, we found that consumption-led periods were followed by either lower growth rates or the growth effect was simply zero (i.e. the coefficients were not statistically different from zero). This is especially clear when we consider aggregate consumption (ca) in the same way as in Table 2.[3] The future outcome is different for investment- and exports-led expansion periods. The effects for the first lagged year were all positive and significant, as were most of the second-year effects. Moreover, because we have the lagged dependent variable in the model, the long-run future effects do in fact go beyond two periods.

If we use a longer window for past values of demand growth following Kharroubi and Kohlscheen (2017), and instead of using individual indicator (dummy) variables, we count the number of years during which component x of the demand led growth, we receive 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 (whole) consumption-led growth case. Quite clearly, consumption-led growth is disadvantageous for the future performance of the output growth. One reason for this is the fact that past consumption-led growth expansions result in higher consumption/GDP shares in the future, while higher exports-led expansions translate into much lower consumption/GDP shares in the future.

This is also indirectly demonstrated by the fact that when we estimate the equation for the future values of GDP growth (for gdp_{t+1} or gdp_{t+2} instead of gdp_t), the qualitative results remain approximately the same. So, the current 'demand policies' have long traces on the future growth performance. Similarly, if we use the average GDP growth rates for the 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 that in such a case, the importance of the negative effect of private consumption-led growth is more pronounced, and the investment-led growth effect less so (Table 6 and Figure 6).

[3] This is also true when we 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 (see Figure A2, Appendix). The five lags are clearly negative (although declining in size).

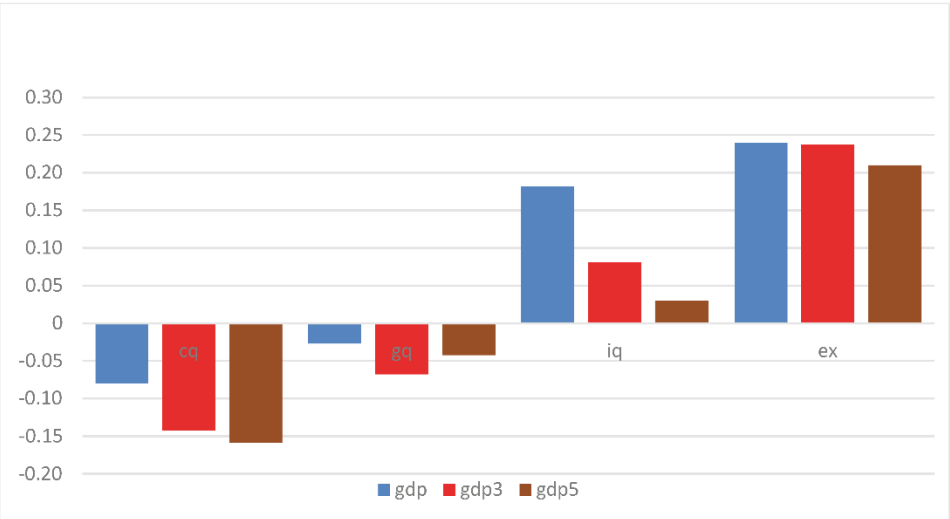
Table 6. Some additional estimates

	1	2	3	4	5	6
constant	7.680	7.213	21.117	29.516		−1.158
	(2.46)	(2.24)	(3.66)	(1.82)		(4.64)
$cq_{t-1}>0$	−.057	−.112	−.142	−.157	.985	.016
	(0.48)	(0.63)	(3.89)	(5.26)	(1.41)	(0.20)
$gq_{t-1}>0$	−.018	−.083	−.068	−.043	−.143	.097
	(0.12)	(0.46)	(1.82)	(1.39)	(0.24)	(1.19)
$iq_{t-1}>0$	.500	.396	.082	.030	4.452	−.291
	(3.90)	(2.65)	(1.84)	(0.88)	(9.86)	(3.57)
$ex_{t-1}>0$	.539	.385	.237	.210	3.767	−.3.08
	(4.34)	(2.91)	(5.75)	(5.98)	(6.25)	(3.82)
gdp_{t-1}	.251	.254	.112	.068	.207	.127
	(6.19)	(6.44)	(4.67)	(4.21)	(7.01)	(9.78)
log(ytc)	1.180	1.144	−2.181	−3.140	1.354	.003
	(3.19)	(2.99)	(8.38)	(14.52)	(4.51)	(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 the past 2 consecutive yrs.	for the past 3 consecutive yrs.	sum of the past 3 x-led years	sum of the past 5 x-led years	past year	past year
Estimator	OLS	OLS	OLS	OLS	GMM	LOGIT

Notes: In columns 1 and 2, indicator variables equal 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 average growth rate of GDP for years t to $t+2$, or alternatively t to $t+4$, are the dependent variables. Indicator variables are the numbers or years the growth rate of demand component x exceeded the growth rate of GDP for the last five years. GMM estimates (with orthogonal deviations) are reported in column 5. * 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 a depression (negative GDP growth) is reported in column 6. ** is the MacFadden pseudo R^2 value. All results are from the world panel data.

Source: author's computations.

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



Note. The values are coefficient estimates of the indicator variables. gdp denotes one-year growth, while $gdp3$ ($gdp5$) stands for 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. In this equation, the RHS variables are the five-year sums of the indicator variable of the respective demand component (i.e. the number of years in which the growth rate of demand component x exceeded the GDP growth rate). The values of gdp correspond to column World5 in Table 3. The values of $gdp3$ and $gdp5$ have been computed in a similar way (see columns 3 & 4 in Table 4).
Source: author's calculations.

We also considered the effects of the persistent patterns of demand growth by constructing the indicator variables in such a way that they show whether the same type of demand-led growth continued over consecutive periods (years). The results are not significantly different from a one-year-lag case, except yielding a slightly weaker outcome for the consumption led-growth. It is interesting that according to Figure 2, the frequency of these cases grew over time in the cross-country panel. Could that be the explanation for the output growth rate deteriorating overall?

For the purposes of robustness, we used the Barro and Ursua (2010) historical data for 41 countries covering the period of 1790–2009 (with the average sample period of 112 years). The data are obviously very volatile, but the results were relatively similar to those presented above. This was particularly true when a robust (Huber) estimator was applied. The results are available upon request from the author.

Finally, we analysed how accurately it is possible to predict a depression (negative GDP growth in period t) on the basis of the past demand pattern while using a logit regression with the same RHS variables as in Equation (1). The results are reported in Table 6 (column 6), and they demonstrate that when growth in period $t-1$ is

driven by investment or exports, the probability of a depression is much lower. If growth is fuelled by consumption in the past, the opposite holds true, but the results are relatively imprecise, so strong conclusions cannot be drawn. The same result applies if we look at longer time horizons or deeper depressions.

3. Conclusions

We have seen that the pattern of aggregate demand growth indeed affects the future values of GDP growth. Therefore, in difficult economic times, increasing demand cannot be proposed as the only remedy, because the structure of demand makes a significant difference, too. If aggregate demand growth is mainly consumption-led, the subsequent output growth rates are much lower than in the case where aggregate demand growth is fuelled by investment or exports. This should be kept in mind when public policies intended to boost output are drafted, as the ultimate goal is to obtain permanent results. Even though boosting consumption seems easier and quicker than doing the same with investment or exports, the latter should be preferred.[4] Our analysis does not mean that the level of consumption should permanently be kept low; it rather implies that excessive consumption booms should be avoided.

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[4] It is interesting to compare the results with the observed evidence on policy rules (e.g., Gootjes & de Haan, 2022; Reuter, 2019) and their dependence on various background variables. Also political economy factors deserve a closer scrutiny (cf. e.g. Albanese et al., 2022).

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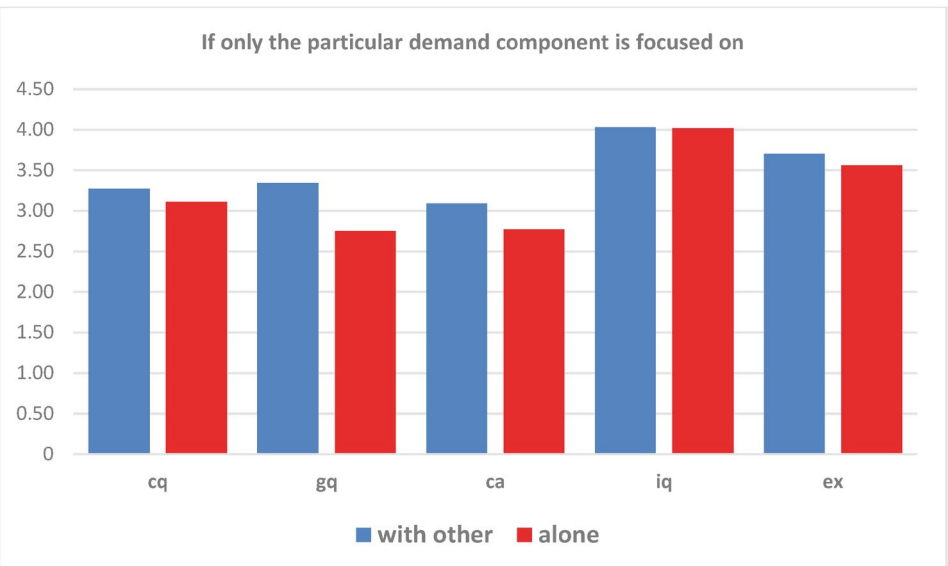
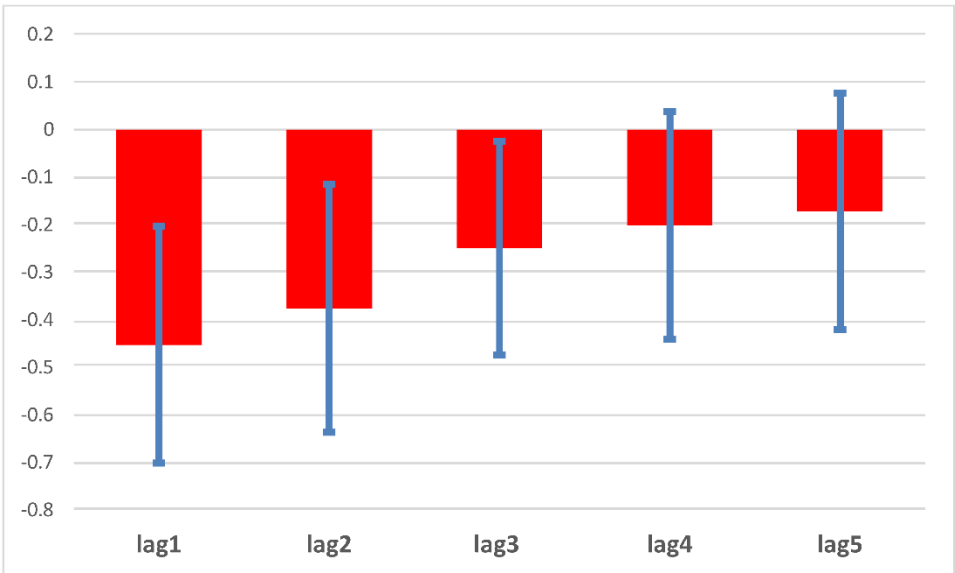
Appendix

Figure A1. Difference between demand component-led growth 'alone', and demand component-led growth with some other demand component



Source: author's calculation.

Figure A2. Coefficients of lagged values of first difference of aggregate consumption share (+/–2SD)



Note. Red bars denote the coefficient estimates and the blue lines the corresponding confidence intervals.
Source: author's calculation.