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Demand and growth regimes of the BRICs countries – the national income and financial accounting decomposition approach and an autonomous demand-led growth perspective

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Abstract

We contribute to the recent debate in post-Keynesian economics (PKE), comparative political economy (CPE) and international political economy (IPE) on growth regimes. The paper presents an analysis of changes in demand-led growth regimes in the BRICs countries, Brazil, Russia, India, and China, after the Global Financial Crisis and the Great Recession 2007-09. It discusses and applies two approaches, a first one based on national income and financial accounting decomposition and a second one, based on the Sraffian Supermultiplier (SSM) growth model, distinguishing the dynamics of autonomous expenditure growth from those of the induced components of aggregate demand. It is argued that the SSM approach provides the bridge between the traditional approach based on national income and financial accounting decomposition and the analysis of growth drivers, both in PKE as well as in CPE and IPE. This is illustrated by pointing out some changes in the underlying political economy and economic policy growth drivers in each of the countries.

Keywords: Demand and growth regimes, growth decomposition, autonomous demand-led growth
JEL codes: E02, E11, E12, P16, P51

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1. Introduction

This paper is a contribution to the recent debate in post-Keynesian economics (PKE), comparative political economy (CPE) and international political economy (IPE) on growth regimes. The paper presents an analysis of changes in demand-led growth regimes in the BRICs countries, Brazil, Russia, India, and China, after the Global Financial Crisis and the Great Recession of 2007-09. It discusses and applies two approaches, a first one based on national income and financial accounting decomposition and a second one, based on the Sraffian Supermultiplier (SSM) growth model, distinguishing the dynamics of autonomous expenditure growth from those of the induced components of aggregate demand.

The concept of demand and growth regimes in finance-dominated capitalism is derived from the analysis of the macroeconomic channels of financialisation (via distribution, consumption, investment, and the capital account), which distinguishes between four regimes based on national income and financial accounting decomposition (Hein 2011, 2012). These four regimes are the 'debt-led private demand boom' (DLPD), 'domestic demand-led' (DDL), 'weakly export-led' (WEL) and 'export-led mercantilist' (ELM) regimes. Looking at growth contributions of the main demand aggregates and financial balances of the macroeconomic sectors allows one to cluster countries according to the sources and the financing of demand. As recently reviewed in Akcay et al. (2022), several authors have identified changes in regimes towards ELM and DDL stabilised by government deficits for advanced capitalist economies after the 2007-09 crises. No clear pattern could be observed for emerging capitalist economies. Rather, several countries seem to show a tendency toward DLPD and DDL regimes after the crises and contribute to the global complement to the ELM regime tendency of several advanced capitalist economies – and hence to persistent global current account imbalances. The recent analyses, by Akcay et al. (2022), Hein (2019) and Hein et al. (2021), have related this shift of regimes, from DLPD towards DDL stabilised by government deficits or ELM, to the pre-crises private indebtedness dynamics, and the need for deleveraging, and to the fiscal policy responses. Hein et al. (2021) have included changes in the welfare models, and Hein/Martschin (2021) have analysed the role of the macroeconomic policy regime. Kohler/Stockhammer (2022), discarding the regime distinction for the post-crises period, have provided a systematic analysis of growth drivers for OECD countries, to explain the shift from the pre-crises to the post-crises patterns. They find a major role in the need for deleveraging generated by high private debt and the (lack of) expansionary deficit-financed fiscal policies. Jungmann (2021), however, could not support these findings for a set of emerging capitalist economies.

Whereas the previous analyses of sources and financing of demand, on the one hand, and the (political) growth drivers, on the other hand, provide some important insight into different growth regimes and their dynamics, a clear and systematic link between these two levels of analysis is missing so far. Inspired by the approach of Freitas/Dweck (2013), Girardi/Pariboni (2016), Morlin et al. (2022), and Passos/Morlin (2022), we try to establish such a link by means of applying an autonomous demand-led growth perspective for the four BRICs countries and comparing it with the results for the more traditional national income

and financial accounting based decomposition. Therefore, in our approach, we look at the changes in growth contributions of the autonomous demand components, government consumption and investment expenditures, households' credit-financed consumption and residential investment, and exports, for these four countries for the period 2001-10, thus including the 2007-09 crisis and the recovery year 2010, and the period 2011-2019, thus excluding the COVID-19 crisis. We also look at the changes in the components of the supermultiplier in order to analyse the influence of structural features and economic policies on the growth regimes of the respective countries. Since such an approach allows us to link systematic and theory-guided macroeconomic regime analysis with political economy and institutional features affecting autonomous demand growth and the supermultiplier components, we also provide some first elements of such an analysis for our four countries.

The paper is organized as follows. In Section 2 we provide a review of growth regime analysis in PKE and CPE in order to clarify some issues and to point out the role of the SSM in this kind of analysis. In Section 3 we first apply the standard national income and financial accounting decomposition approach of demand and growth regime analysis to the BRICs countries for the two periods indicated above, then we do the same for the SSM autonomous demand-led growth decomposition and we discuss the results. Section 4 then broadens the debate and provides some economic policy and political economy arguments driving the changes in autonomous growth dynamics and the supermultiplier, and thus the changes in demand and growth regimes. Section 5 briefly summarises and concludes.

2. Demand and growth regimes in PKE, CPE and the SSM autonomous demand-led growth approach

The coexistence of different demand and growth regimes in modern capitalism has been a main topic in PKE, in particular since the derivation of wage- and profit-led demand and growth regimes in closed economy post-Kaleckian distribution and growth models by Bhaduri/Marglin (1990) and Kurz (1990), as well as in neo-Kaleckian open economy models by Blecker (1989) (Hein 2014: Chapter 7). These theoretical models have inspired dozens of empirical papers estimating the type of regime that is dominant in certain countries in certain periods, with partly contradicting results, depending on the method applied.[1] As is clear from the theoretical and empirical literature, finding demand and growth to be wage-led (profit-led) does not mean that in the respective countries pro-labour (pro-capital) policies have been applied and the distribution-led nature of demand and growth has been indeed exploited, as Lavoie/Stockhammer (2013) have clearly pointed out.[2]

With the rise of finance-dominated capitalism and the domestic and international imbalances, which then led to the Global Financial Crisis and the Great Recession 2007-09,

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[1] For recent multi-country results, see Hartwig (2014), Onaran/Galanis (2014) and Onaran/Obst (2016). For reviews of empirical studies see Akcay et al. (2022), Hein (2014: Chapter 7), Stockhammer/Onaran (2013). For discussions of different empirical approaches, the structural or single equations approach, on the one hand, and the aggregative or systems approach, on the other hand, see, for example, Blecker (2016), Stockhammer (2017).
[2] The same assessment holds true for other regime distinctions found in PK distribution and growth models, as reviewed in Hein (2022).

several post-Keynesians (PKs) turned towards another type of regime distinction in order to assess these dynamics and imbalances (Hein 2011, 2012, Stockhammer 2015). Since most of the advanced capitalist economies had been estimated to be wage-led, the redistribution at the expense of labour, rising inequality of personal income distribution, as well as depressing effects of financialisation on investment in the capital stock, each important features of finance-dominated capitalism (Hein 2012), should have led to stagnating economies. However, in a demand-led growth perspective, some countries more than compensated for the lack of investment and income-financed consumption demand by credit-financed consumption, whereas as others relied on net exports as a dynamic source of demand. This gave rise to two complementary demand and growth regimes before the 2007-09 crises, the DLPD and the ELM regime, to use the terminology which has emerged over the years, with the former running high current account deficits and the latter the respective current account surpluses.[3] In later work, also two intermediate regimes were distinguished, a DDL and a WEL regime, as explained in more detail in Section 3 below.

Following a method initially introduced by Hein (2011), and then used in several following studies,[4] and also explained in Section 3 in more detail, countries were clustered in these different regimes, looking at the growth contributions of the macroeconomic demand components, private consumption, public consumption, investment and net exports, i.e. the difference between exports and imports, which sum up to GDP growth. Furthermore, the financial balances of the macroeconomic sectors, the private sector, composed of the private household sector and the corporate sectors, the public sector and the external sector, the sum of which should be zero, were examined. This national income and financial accounting based method provides information regarding the sources of demand and growth, or the lack of these, and the financing of demand, with respective effects on indebtedness and financial instability.

The PKE demand-led growth regime approaches have then received some prominence in the CPE and IPE literature. In an attempt at overcoming the implications of the New Consensus Macroeconomics (NCM) as the supply side dominated macroeconomic backbone of much of the CPE research, in particular of the Varieties of Capitalism (VoC) approach (Carlin/Soskice 2009, 2015, Hall/Soskice 2001, Hope/Soskice 2016), Baccaro/Pontusson (2016, 2018) have made use of the PK categories of demand-led macroeconomic growth regimes, which we have explained above. However, they do not pay sufficient attention to the different analytical levels of the distinction between wage-led/profit-led regimes, pro-labour/pro-capital polices, and DLPD/ELM regimes in PK research, as already pointed out in Hein et al. (2021). Baccaro/Pontusson (2016, 2018) argue that wage-led growth during the Golden Age period (1950s–1970s) of modern capitalism has been succeeded by different regimes, in particular in the period from the mid-1990s until 2008: export-led growth in Germany, debt-financed consumption-led growth in the UK, and a combination of export-led

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[3] See Hein (2012, 2014: Chapter 10, 2023: Chapter 8) for derivations of these regimes making use of small scale analytical Kaleckian distribution and growth models. For stock-flow consistent numerical simulation models see, for example, Belabed et al. (2018), Detzer (2018) and Prante et al. (2022).
[4] See Hein (2023: Chapter 8) for an overview.

and debt-financed consumption-led growth in Sweden. Theoretically, the two authors have not clearly followed the distinction between wage- or profit-led demand and growth regimes, on the one hand, from pro-labour or pro-capital distributional policies and the resulting economic developments, on the other hand, which Lavoie/Stockhammer (2013) have pointed out. Furthermore, they do not consider that the distinction between DLPD and ELM regimes, which they apply, with slightly different labelling, to the period from the mid-1990s until 2008, is not the counterpart of a wage-led growth regime, as discussed in the Kaleckian distribution and growth literature. In other words, a country can be structurally wage-led, follow a pro-capital distributional policy strategy, such as the ones that have been dominant since the late 1970s/early 1980s period of finance-dominated capitalism, and then generate either a DLPD regime or an ELM regime. However, Baccaro/Pontusson (2016) have opened the floor for PKs to interact with CPE and IPE researchers and to provide solid macrofoundations for CPE and IPE research, on the one hand, and to enrich the PK regime analysis by a political economy dimension focusing on institutions and social coalitions supporting a specific regime, on the other hand.[5]

While the research reviewed so far has mainly focused on the pre-2007-09 crises period, PKs have recently increasingly focused on regime shifts in the course of and after the 2007-09 crises. Dodig et al. (2016) provided such an analysis for 15 OECD countries, Dünhaupt/Hein (2019) for three Baltic Sea countries, Hein (2019) for six OECD countries and the initial Eurozone (EA-12), Hein/Martschin (2020) for 11 initial Eurozone countries and the EA-12 as a whole, and Hein et al. (2021) for 30 OECD countries. The main pattern found was that advanced ELM countries before the 2007-09 crises have mainly maintained this regime or have become WEL in the course of and after the crises, while DLPD countries before the crisis either shifted to WEL or even ELM regimes after the crisis, or they turned towards DDL regimes stabilised by high government deficits. This polarisation of post-crises regimes in the developed OECD countries, with ELM or WEL regimes, on the one hand, and DDL regimes stabilised by government deficits, on the other hand, has been accompanied by a tendency of major emerging capitalist economies to remain DDL or even move towards DLPD regimes, as has recently been analysed by Akcay et al. (2022).

Hein (2019), Hein/Martschin (2020) and Hein et al. (2021) have argued that the type of shift of the previously DLPD economies in the course of and after the 2007-9 crises has depended, on the one hand, on the requirements of private sector deleveraging after the financial crisis, and, on the other hand, on the ability and willingness to run deficit-financed and stabilising fiscal policies. According to these contributions, the institutional constraints imposed on national fiscal policies in the Eurozone, the absence of relevant fiscal policies at the Eurozone level, and the turn towards austerity policies when the Eurozone crisis started in 2010, including substantial downsizing of welfare provision in some crisis countries, explain to a large extent, why in particular European DLPD countries turned WEL or ELM after the Global Financial Crisis and the Great Recession. Those DLPD countries before the crisis, which were able to make use of expansionary deficit-financed fiscal policies, in particular the UK and

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[5] For recent examples in this respect, see Behringer/van Treeck (2018, 2019), Stockhammer/Ali (2018), Stockhammer et al. (2016), and the contributions in the recent special issue of the *Review of Keynesian Economics*, 2022, 10 (2).

the USA, however, compensated private deleveraging by rising public deficits. This stabilised aggregate demand in their countries, and through the import channel also in the global economy.

Kohler/Stockhammer (2022) have provided a more systematic cross-country analysis of the underlying growth drivers before and after the 2007-09 crises in 30 OECD countries. To explain the emergence of different post-crises regimes, they consider the requirements of deleveraging in the context of a financial boom-bust cycle, the role of fiscal policies and the relevance of price and non-price competitiveness for exports. Generalising the claims being made in Hein (2019), Hein/Martschin (2020), and Hein et al. (2021), they find that the former two drivers have had a major role to play, i.e. the need for deleveraging generated by high private debt and the (lack of) expansionary deficit-financed fiscal policies. They also find that differences and changes in international price competitiveness are not systematically related to growth performance and thus have been overstated in some of the previous CPE literature on macroeconomic regimes. Furthermore, they abandon the regime distinction, which had been developed for the pre-crisis period, and rather focus on the distinction of the different growth drivers for the clustering of countries in the post-crises period. Jungmann (2021) has extended and applied the growth driver approach by Kohler/Stockhammer (2022) to a set of 19 emerging capitalist economies and has found mixed results. This seems to be in line with the findings of Akcay et al. (2022) regarding the different pattern of regime changes of emerging capitalist economies as compared to advanced capitalist economies referred to above.

Hein/Martschin (2021) have kept the typology for demand and growth regimes in finance-dominated capitalism, based on the examination of growth contributions of demand aggregates and of sectoral financial balances. In an attempt at understanding the role of macroeconomic policies for regime shifts and extending the research by Kohler/Stockhammer (2022), they have linked this approach with the PK notion of macroeconomic policy regimes developed and applied in the early 2000s (Hein/Truger 2005, 2009, Herr/Kazandziska 2011). The concept of a 'macroeconomic policy regime' has been used to assess international and intertemporal comparative differences in macroeconomic performances of countries or regions. It describes the set of monetary, fiscal, and wage or income policies, as well as their coordination and interaction, against the institutional background of a specific economy, including the degree of openness and the exchange rate regime. This concept supposes that macroeconomic policies have not only short-run effects on economic performance, as in the NCM, but also have a long-run impact on output, income, employment, inflation, distribution and growth, as in the PK macroeconomic and distribution and growth models (Hein 2023, Chapters 4-7). The post-Keynesian macroeconomic policy mix, with central banks targeting low long-term interest rates, wage policies focusing on stabilizing distribution and inflation, and fiscal policies managing aggregate demand at non-inflationary full employment levels, is assumed to support a stable DDL regime, while deviations from this benchmark should contribute to moving to the long-run unstable DLPD or WEL regimes. Applying indicators for the stances of monetary and fiscal policies, for wage policies and income distribution, and for price and non-price competitiveness, Hein/Martschin (2021) have shown for the four largest Eurozone countries, France, Germany, Italy, and Spain, how the country-specific

macroeconomic policy regimes have supported the shift (or non-shift) of macroeconomic regimes from the pre- to the post-crises period.

Whereas the national income and financial accounting approach towards demand and growth regimes, on the one hand, and the economic policy (and political economy) analysis of growth drivers, on the other hand, provide some important insight into different demand and growth regimes and their dynamics and international complementarities, a clear and systematic link between these two levels of analysis that also facilitates the integration of the political economy dimension has been missing so far. Inspired by the approach of Freitas/Dweck (2013), Girardi/Pariboni (2016), Morlin et al. (2022), and Passos/Morlin (2022), we try to establish such a link by means of applying an autonomous demand-led growth perspective to the issue, with the BRICs countries as an empirical example.

According to this approach, in the long run, growth is driven by autonomous demand growth, which is neither caused nor funded by current income and which does not add to productive capacity of the economy.[6] The components of autonomous demand thus are exports, government expenditures, credit-financed consumption, and residential investment, whereas imports, income financed consumption and private investment are considered to be induced by current income.[7] The respective propensities thus constitute the multiplier of autonomous demand, as will be explained in more detail in Section 3 of this paper. Such a systematic analysis of autonomous and induced components of aggregate demand and growth then provides the ground for an economic policy and political economy analysis of growth drivers by focusing on the components of autonomous demand and of the supermultiplier. We thus view the autonomous demand-led growth decomposition to be complementary to the national income and financial accounting approach.

3. Growth decompositions for the BRICs countries before and after the 2007-09 crises: a national income and financial accounting-based approach and an autonomous demand-led growth perspective

We analyse the BRICs countries from 2001 until 2019, the last year before the Covid-19 crisis. To address how the Global Financial Crisis might have affected growth, we divide our time series into two periods, the first one going from 2001 to 2010 and the second one going from 2011 to 2019. The crisis years and 2010 are included in the first period with the latter being considered a "rebound year" for most countries.

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[6] For the SSM approach based on the initial work of Serrano (1995), see the introduction and overviews by Freitas/Serrano (2015, 2017). For a comparative analysis of the SSM approach and other heterodox and orthodox growth models, see Hein (2023: Chapter 7).

[7] A differentiation of consumption out of public transfers as autonomous component could also be applied, which increases the weight of the public sector in autonomous expenditures, as shown by Haluska (2021) for Brazil and Labat/Summa (2022) for Spain.

3.1. Demand and growth regimes in finance-dominated capitalism: the national income and financial accounting decomposition perspective

The analysis of demand and growth regimes in the BRICs countries applies the national income and financial accounting decomposition method first presented by Hein (2011) and further developed in other works on this PK strand. The empirical exercise aims to identify the main sources of demand and their financing. The BRICs countries have been included in the multi-country analyses by Hein/Mundt (2012) and Akcay et al (2022), with different periods from ours. First, we implement a decomposition of real GDP growth (g) of each country by the growth contributions of their main demand aggregates: private consumption (C), government consumption (G), investment (I), exports (X) and imports (M), which make up net exports (NX).

$$(1) \qquad g_t = \frac{dY_t}{Y_{t-1}} = \frac{dC_t}{Y_{t-1}} + \frac{dG_t}{Y_{t-1}} + \frac{dI_t}{Y_{t-1}} + \frac{dX_t}{Y_{t-1}} - \frac{dM_t}{Y_{t-1}} = \frac{dC_t}{Y_{t-1}} + \frac{dG_t}{Y_{t-1}} + \frac{dI_t}{Y_{t-1}} + \frac{dNX_t}{Y_{t-1}}.$$

The growth contributions should sum up to GDP growth. Then we analyze the financial balances of the main macroeconomic sectors. These are:

- the private sector financial balance ($FB_P = S - I$), as the difference between private saving (S) and private investment (I), and with the private household sector, the financial and non-financial corporate sectors as sub-sectors;

- the government sector financial balance ($FB_G = T - G$), as the difference between tax revenues and social security contributions (T) and government expenditures (G), and

- the external sector financial balance ($FB_E = M - X + FI^{net}$), as the difference of domestic imports (M) generating foreign sector revenues and domestic exports (X) which are equivalent to foreign sector expenditures. The external sector balance also includes the net revenues from the cross-border payments for factors of production, i.e. wages and capital incomes, as well as cross border transfers (FI^{net}), which may be positive or negative for the external sector, of course.

The sectoral financial balances of a country should sum up to zero, apart from statistical discrepancies, because a positive financial balance of one sector needs a respective negative financial balance of another sector – a creditor needs a debtor and vice versa:

$$(2) \qquad FB_P + FB_G + FB_E = 0$$

Considering jointly the growth contribution decomposition and the sectoral financial balances, we are able to characterize each economy during the two periods and cluster them in the corresponding demand and growth regime under financialization. Four regimes have been distinguished, which are characterized in Table 1.

Table 1. Demand and growth regimes	
Export-led mercantilist (ELM)	-Positive financial balances of the private sector -Negative financial balances of the external sector -Positive balance of goods and services -Positive growth contribution of net exports
Weakly export-led (WEL)	Either -Positive financial balances of the private sector -Negative financial balances of the external sector -Positive balance of goods and services -Negative growth contribution of net exports or -Negative but improving financial balances of domestic sectors -Positive but declining financial balances of the external sector -Negative but improving net exports -Positive growth contribution of net exports
Domestic demand-led (DDL)	-Positive or balanced financial balances of the private sector as a whole -Balanced or positive financial balances of the external sector -Growth is almost exclusively driven by domestic demand -Around zero growth contribution of net exports
Debt-led private demand boom (DLPD)	-Negative or close to balance financial balances of the private sector -Positive financial balances of the external sector -Significant growth contributions of domestic demand and private consumption in particular -Negative growth contributions of net exports

Source: based on Dünhaupt/Hein (2019: 458).

Table 2 summarizes the main results of the methodology described above for our four countries and the two time periods. In general terms, we can see that there is no change of the DDL regime between periods in India, while Russia changes from WEL to ELM whereas China changes from ELM to WEL. Brazil is the country which presents a more difficult characterization with a change from DDL to WEL. We then turn to the autonomous demand-led growth decomposition, to better understand the demand drivers behind these changes.

Table 2. Demand and growth regimes in Brazil, Russia, India and China. Annual averages for the periods 2001-2010 and 2011-2019.

	Brazil		Russia		India		China	
	2001-2010	2011-2019	2001-2010	2011-2019	2001-2010	2011-2019	2001-2010	2011-2019
Real GDP growth, percent	3.71	0.79	4.93	1.74	6.75	6.46	10.56	7.34
Growth contributions by main demand aggregates, percentage points (1)								
Domestic demand, including changes in inventories	3.84	0.76	5.81	1.57	7.36	6.31	10.13	7.40
Private consumption	2.24	0.92	3.72	1.20	3.28	3.86	3.37	3.05
Public consumption	0.61	0.11	0.33	0.11	0.64	0.62	1.55	1.34
Investment	0.93	-0.25	1.66	0.31	2.87	2.09	4.87	3.10
Inventories	0.06	-0.02	0.10	-0.05	0.56	-0.25	0.34	-0.09
Net exports of goods and services	-0.08	0.19	-0.85	0.27	-0.49	-0.03	0.48	-0.01
Exports	0.65	0.25	1.47	0.69	2.31	1.10	2.76	1.23
Imports	-0.73	-0.06	-2.31	-0.42	-2.81	-1.13	-2.28	-1.24
Balance of goods and services as share of nominal GDP, percent	1.01	-0.78	10.69	6.97	-2.95	-3.63	0.00	0.00
Sectoral financial balances as share of nominal GDP, percent								
Private sector	2.63	3.19	4.56	4.02	7.98	5.07	6.59	4.26
Public sector	-3.40	-6.01	2.60	-0.45	-8.74	-7.14	-1.40	-2.61
External sector	0.78	2.82	-7.16	-3.57	0.75	2.07	-5.19	-1.65
Demand and growth regime (2)	DDL	WEL	WEL	ELM	DDL	DDL	ELM	WEL

(1) Contributions may not sum to the growth rate of real GDP because of rounding, aproximmation and not included statistical discrepancies in expenditure estimates of GDP.

Note: a statistical discrepancy usually arises in GDP measurement due to independent estimations by industrial origin and by expenditure categories. The inclusion of this discrepancy ensures GDP from the expenditure side equals GDP measured by the income or output approach (World Bank, 2021)

(2) Demand and growth regimes: Export-led mercantilist (ELM), Weakly export-led (WEL), Domestic demand-led (DDL), Debt-led private demand boom (DLPD).

Source: IMF (2021a), IMF (2021b), World Bank (2021), author's calculations and presentation.

3.2. Autonomous demand-led growth decomposition

To further investigate the dynamics of the sources of growth in the identified regimes, we apply a growth decomposition exercise based on the autonomous demand-led growth or SSM framework. We follow the methodology developed by Freitas/Dweck (2013) and recently applied by Morlin et al. (2022) to a set of developed countries. We distinguish between autonomous and induced components of demand in the following way:

$$(3) \qquad Y_t = C_t + I_t + G_t + X_t - M_t$$

$$(4) \qquad C_t = C_{H,t} + CC_t = cY_t + CC_t$$

$$(5) \qquad I_t = I_{C,t} + I_{G,t} + I_{H,t} = hY_t + I_{G,t} + I_{H,t}$$

$$(6) \qquad M_t = mY_t$$

$$(7) \qquad Z_t = G_t + I_{G,t} + X_t + CC_t + I_{H,t}$$

$$(8) \qquad Y_t = \frac{Z_t}{1-c-h+m} = \alpha_t Z_t$$

$$(9) \qquad \alpha = \frac{1}{1-c+m-h}$$

Equation (3) presents the accounting decomposition of income by main demand aggregates. In equations (4) and (5) we distinguish between autonomous and induced components of demand regarding consumption (C) and investment (I). Household consumption out of disposable income (C_H) and corporate investment (I_C) are induced components, depending on the respective propensity to consume (c) and propensity to invest of private firms (h), whereas consumer credit-financed consumption (CC), general government investment (I_G) and households' residential investment (I_H) are considered to be autonomous. Imports (M), also an induced component of demand, is described in equation (6) by income and the propensity to import (m). Equation (7) presents the demand components (Z) considered autonomous from current income: apart from credit-financed consumption, residential and general government investment expenditures already mentioned, we have government consumption (G) and exports (X). Equation (8) indicates the long-term equilibrium output, and equation (9) presents the supermultiplier (α) in terms of the parameters of the induced components of demand.

We base our empirical analysis on data from four international institutions: IMF (2021a, 2021b), World Bank (2021), BIS (2021), and OECD (2022), and on India's official national accounts data (MSPI 2021). For private consumption we distinguish between consumption out of disposable income and credit consumption. To do so, we used the BIS (2021) database on credit to households and applied the methodology used by

Girardi/Pariboni (2016) to calculate real net flows of consumption credit by first-differencing end of period stocks of credit and deflating them by the GDP implicit price deflator (IMF 2021a; World Bank 2021). We assume that credit to households is a good approximation for consumer credit. For investment we distinguish between general government, corporate, and household (residential) investment (IMF, 2021a; MSPI, 2021; OECD, 2022; World Bank, 2021).[8] Given data limitations for the analyzed countries, household investment is assumed as the approximation for household residential investment as an autonomous component of demand, because a substantial part of household investment is on dwellings. However, we are aware that part of household investment is induced investment in the capital stock of non-corporate business. State-owned enterprises' investment is not distinguished from corporate investment, as in Freitas' and Dweck's (2013) original work. This results from both a lack of available data and a theoretical understanding that state-owned enterprises also are exposed to market competition pressures that induce investment decision, even if not in the same manner as with private corporations. Lastly, we employ $[(C - CC)/GDP]$ as a proxy for the propensity to consume out of income (c), $[(I - I_G - I_H)/GDP)]$, the share of non-government and non-household investment to GDP, as a proxy for the corporate propensity to invest (h) and the share of imports in GDP $[M/GDP]$ as a proxy for the propensity to import (m).[9]

As in Freitas/Dweck (2013), the decomposition formula is derived from national income accounting, but distinguishing between autonomous and induced components of aggregate demand, as shown in equations (3) - (9):

(10) $\quad g = \alpha(1)\frac{G(0)}{Y(0)}g_G + \alpha(1)\frac{I_G(0)}{Y(0)}g_{I_G} + \alpha(1)\frac{X(0)}{Y(0)}g_X + \alpha(1)\frac{CC(0)}{Y(0)}g_{CC} + \alpha(1)\frac{I_H(0)}{Y(0)}g_{I_H}$

$\qquad + \alpha(1)\frac{C(0)}{Y(0)}g_c + \alpha(1)\frac{M(0)}{Y(0)}g_m + \alpha(1)\frac{I_C(0)}{Y(0)}g_h + \alpha(1)\frac{E(0)}{Y(0)}g_E$

The five first terms on the right-hand side of equation (10) represent the contributions of the autonomous expenditures and the next three terms represent the contributions of the induced components. For this last group the contributions do not depend on the growth rates, but on the growth rates of their inducing parameters: the propensity to consume out of disposable income, the propensity to import, and the corporate propensity to invest, respectively. The last term represents the contribution of inventory changes on growth rates, which were included for the sum of the contributions to be equal to real GDP growth.[10] The

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[8] For China, Brazil and Russia we used data from OECD. This did not have the investment breakdown for India, and for Russia the time series was incomplete. We then complemented the series with national accounts data as further described in the Appendix.

[9] As done by Girardi/Pariboni (2016). Following their contribution, we use the supermultiplier formula with the propensity to import instead of a domestic content parameter as in Freitas/Dweck (2013). Also, we use the marginal propensity to consume instead of the marginal propensity to save. As both approaches are just two forms of expression of the same mechanism, we chose this one for reasons of clarity.

[10] For the real growth rates to match contributions, the statistical discrepancy presented in the World Bank data was added to aggregate inventories changes. Different from Freitas/Dweck (2013), the time-series taken from the World Bank have the expenditures deflated by their own price deflator instead of GDP deflator. By doing so

index (0) represents the data corresponding to the beginning of the period while (1) represents the end of the period. The supermultiplier is represented by $\alpha(1)$. We have calculated annual contributions to growth (with 0 representing the previous year and 1 representing the current year) and have taken averages of yearly contributions to represent the average contributions of each period. As should be clear, the growth contribution decomposition in equation (10) differs from the one in equation (1). Although both are derived from national income accounts, the contributions of the autonomous components in equation (10) also include the proportional induced demand contributions via the supermultiplier (α).[11] As long as the inducements to consume, to invest and to import, and thus the supermultiplier, do not change, the growth contributions of the autonomous demand components will thus sum up to real GDP growth.

Figure 1 shows a general common variation of total real GDP growth and autonomous demand growth for the four countries, which is indicated by the high correlation coefficients between the two variables for at least three countries, 0.69 for Brazil, 0.9 for Russia, and 0.6 for China, while India shows a somewhat lower correlation coefficient (0.36).

The composition of autonomous demand in the four countries is quite heterogeneous, as shown in Figure 2. Consumer credit and residential investment play a bigger role in India and China, with its volatility contributing to the higher volatility in total autonomous demand in these two countries. Brazil has a smaller share of exports in GDP and is thus less open than the other economies. It also displays the lowest share of autonomous demand in GDP. China has the highest share exceeding 60% of GDP in most of the years.

Figure 3 shows the evolution of the calculated supermultipliers (α), and we see that is has declined in Brazil, India and China during the first period until 2007 and then recovered somewhat towards the end of this period until 2010, in the course of the 2007-09 crises and the following recovery. In Russia, the supermultiplier has remained rather stable in this period, only rising during the 2007-09 crisis. In our second period, 2011-19, all the countries have witnessed a tendency of the supermultiplier to rise, again except for Russia where it has remained rather stable.

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we avoid the growth rates incorporating relative price changes (to the GDP deflator) and focus on volume changes. This is especially relevant for imports and exports, as relative price changes might express exchange rate dynamics.

[11] This implies, for example, that the growth contributions of exports in Table 2 and Table 3 will generally not be the same, since the one in Table 3 also includes the proportional impact via the induced components of demand.

Figure 1. Correlation between autonomous demand and GDP growth rates in the BRICs countries, 2001-2019.
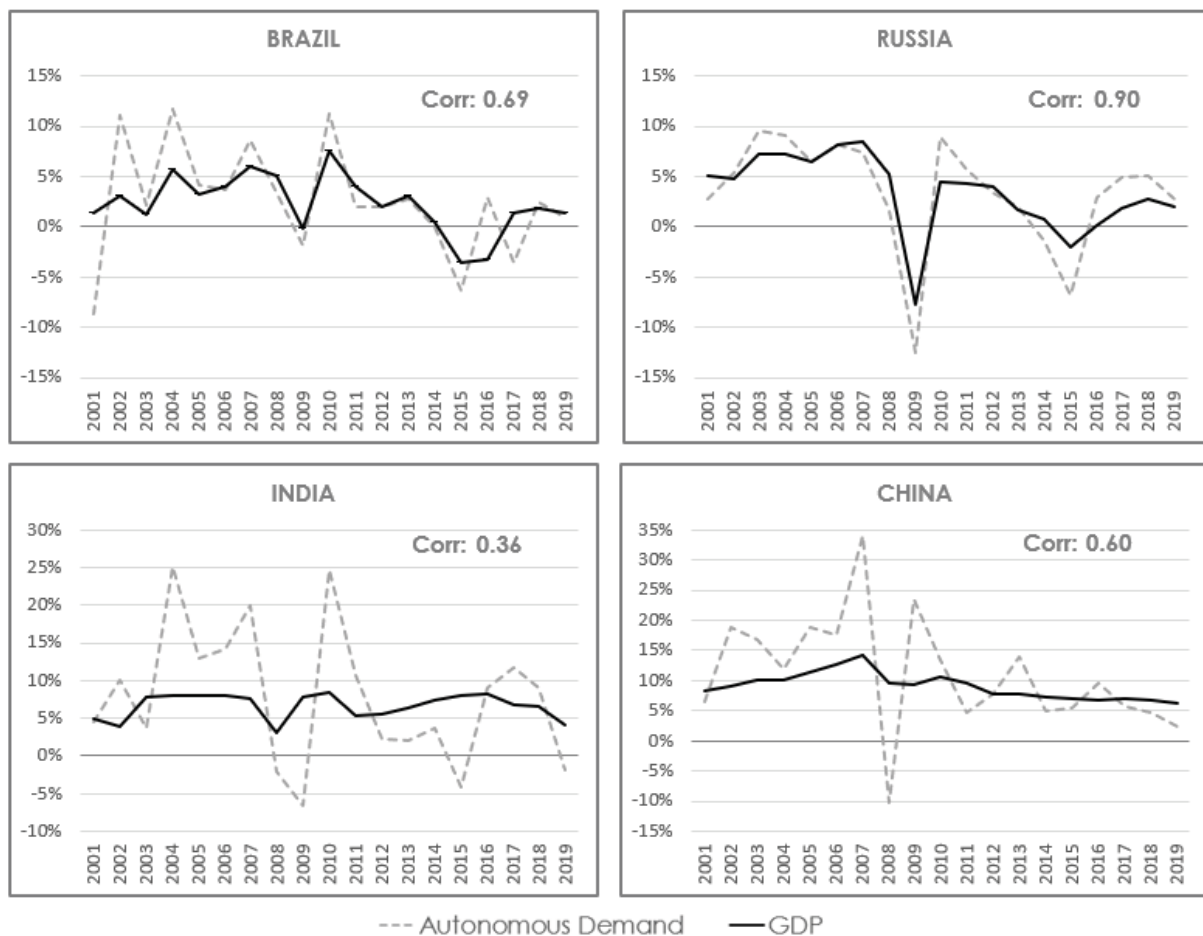
Source: BIS (2021), IMF (2021a), MSPI (2021), OECD (2022), World Bank (2021), author's calculations and presentation.
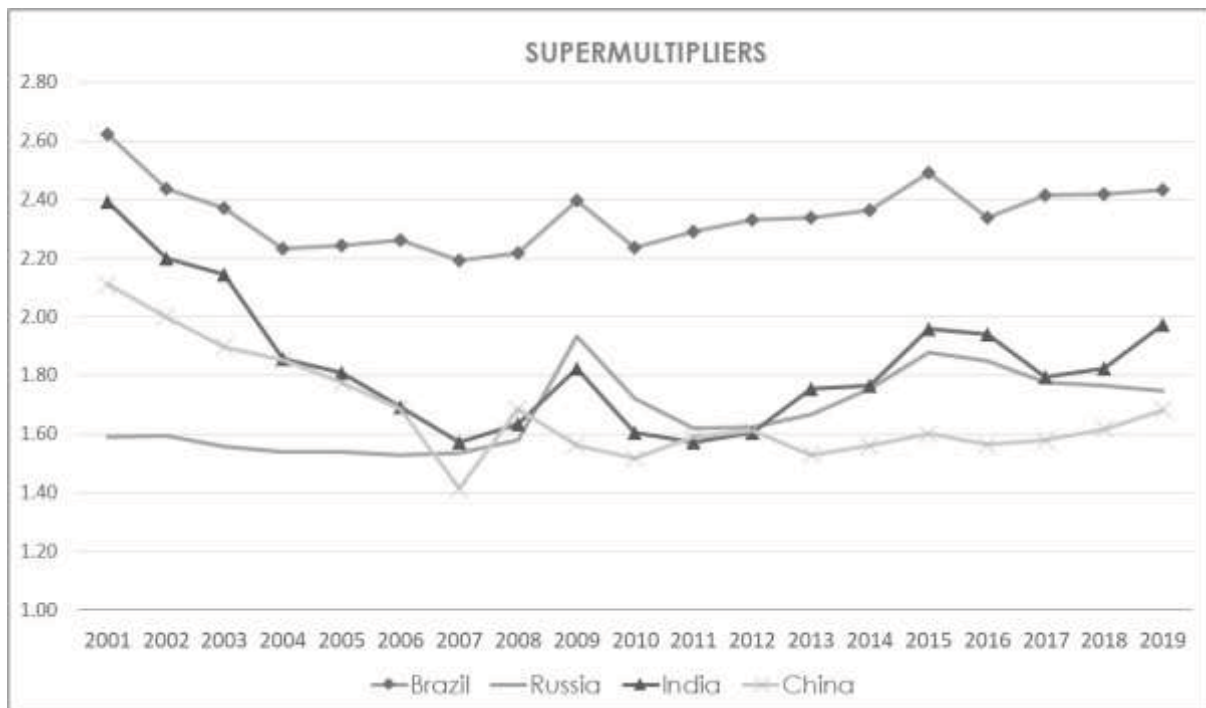
Figure 2. Autonomous demand components, as percentage of real GDP, in the BRICs countries, 2001-2019.
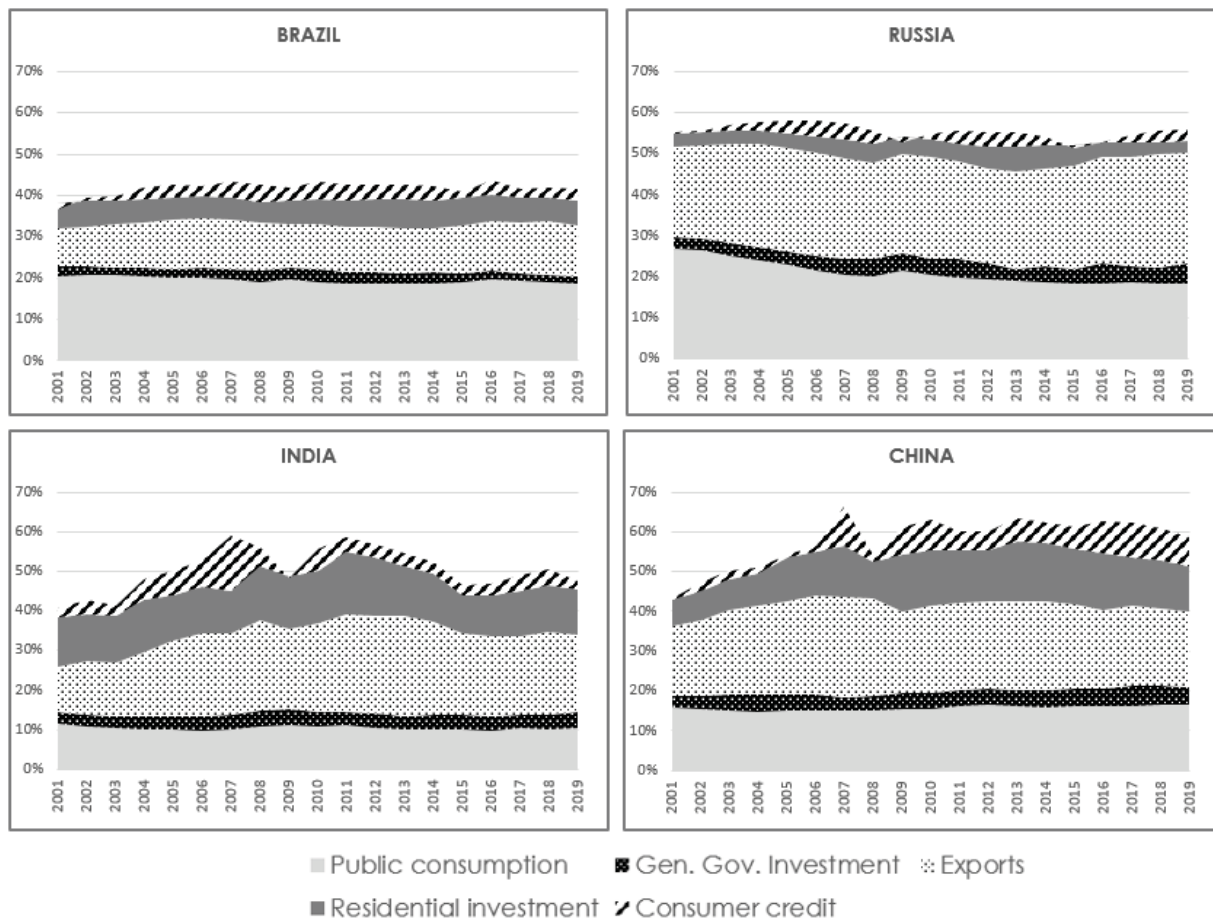
Source: BIS (2021), IMF (2021a), MSPI (2021), OECD (2022), World Bank (2021), author's calculations and presentation.

Figure 3. Evolution of the supermultipliers in the BRICs countries, 2001-2019

Source: BIS (2021), IMF (2021a), MSPI (2021), OECD (2022), World Bank (2021), author's calculations and presentation.

As is also obvious from Table 3, which summarizes the decomposition of the autonomous demand and the supermultiplier components growth averages, we have an inverse relationship between the development of the supermultiplier and real GDP growth rates for all the countries in the second period. While the supermultiplier showed a tendency to rise in this period, real GDP growth rates have been much lower than in the first period. This fall thus cannot be attributed to the induced components of demand, but rather to the fall in the growth contributions of autonomous demand and its components. In Brazil, the autonomous demand growth contribution has fallen to almost zero in the second period, and in the other three countries it has more than halved. Except for Russia, the growth contributions of the induced components have risen significantly, turning from negative values in the first period to positive values in the second. In Russia, however, they have fallen as well.

Table 3. Autonomous demand-led growth decomposition for the BRICs countries: Average annual growth of real GDP, autonomous and induced components of demand, in percent, 2001-2010 and 2011-2019

A. Contributions to growth of autonomous and induced demand components

		Brazil		Russia		India		China	
		2001-2010	2011-2019	2001-2010	2011-2019	2001-2010	2011-2019	2001-2010	2011-2019
	GDP	3.71	0.79	4.93	1.74	6.75	6.46	10.56	7.34
	Total Z	4.07	0.24	3.94	1.82	8.63	4.13	13.00	6.36
Autonomous components growth contribution	G	1.42	0.25	0.51	0.18	1.13	1.13	2.66	2.13
	I_G	0.45	-0.34	0.43	0.29	0.52	0.47	0.98	0.53
	X	1.50	0.60	2.27	1.22	4.17	1.83	4.84	1.94
	I_H	0.30	0.02	0.46	-0.20	1.88	0.97	3.10	1.05
	CC	0.41	-0.29	0.27	0.33	0.94	-0.27	1.42	0.71
	Total Induced	-0.33	0.98	1.14	0.23	-2.58	2.47	-2.90	1.21
Induced components growth contribution	C_H	0.05	1.38	2.41	0.02	-1.48	1.05	-2.21	0.49
	M	-0.85	0.13	-1.91	0.29	-2.43	1.05	-1.08	0.16
	I_C	0.46	-0.53	0.64	-0.08	1.32	0.38	0.40	0.55
	Inventories	-0.03	-0.43	-0.16	-0.31	0.71	-0.14	0.46	-0.23
	Total	3.71	0.79	4.93	1.74	6.75	6.46	10.56	7.34

B. Sectoral contributions to growth

	Brazil		Russia		India		China	
	2001-2010	2011-2019	2001-2010	2011-2019	2001-2010	2011-2019	2001-2010	2011-2019
GDP	3.71	0.79	4.93	1.74	6.75	6.46	10.56	7.34
Domestic Sector	3.06	0.06	4.57	0.23	5.01	3.58	6.80	5.23
Private Sector	1.19	0.15	3.63	-0.23	3.37	1.99	3.17	2.57
C_H	0.05	1.38	2.41	0.02	-1.48	1.05	-2.21	0.49
I_C	0.46	-0.53	0.64	-0.08	1.32	0.38	0.40	0.55
CC	0.41	-0.29	0.27	0.33	0.94	-0.27	1.42	0.71
I_H	0.30	0.02	0.46	-0.20	1.88	0.97	3.10	1.05
Inventories	-0.03	-0.43	-0.16	-0.31	0.71	-0.14	0.46	-0.23
Public Sector	1.87	-0.09	0.94	0.47	1.64	1.59	3.64	2.66
G	1.42	0.25	0.51	0.18	1.13	1.13	2.66	2.13
I_G	0.45	-0.34	0.43	0.29	0.52	0.47	0.98	0.53
External Sector	0.65	0.73	0.36	1.51	1.74	2.87	3.76	2.11
X	1.50	0.60	2.27	1.22	4.17	1.83	4.84	1.94
M	-0.85	0.13	-1.91	0.29	-2.43	1.05	-1.08	0.16
Total	3.71	0.79	4.93	1.74	6.75	6.46	10.56	7.34

Note: Statistical discrepancy added as part of inventory changes in World Bank data. See Appendix for the methodology on consumer credit and residential investment calculations.
Source: BIS (2021), IMF (2021a), MSPI (2021), OECD (2022), World Bank (2021), authors' calculations and presentation.

3.3 The national income and financial accounting perspective in light of the autonomous demand-led growth decomposition

The results regarding autonomous growth contributions presented in Table 3 can now be used to illuminate the demand and growth regimes changes in Table 2, derived from the national income and financial accounting decomposition approach.

As analysed in Section 2, Brazil experienced a regime change from a DDL to a WEL regime. From Table 3, and also from Table 2, we can see that this shift does not come from an increase in the growth contributions of exports. The shift in regimes is rather driven by an even larger decline in the growth contribution of autonomous government expenditures, in comparison to the deceleration in export growth contributions. According to Table 3, in the first period, government consumption and investment contributed together 1.9 percentage points to real GDP growth on average, while in the second period the contraction of these expenditures 'contributed' minus 0.1 percentage points to real GDP growth. Exports contributed 1.5 percentage points in the first period and 0.6 percentage points in the second period, while the induced growth contribution of imports increased, based on a reversal of the increase in the propensity to import in the first period towards a slight decline in the second period. Given a growth rate of only 0.8 percentage points in the second period, weakened export growth played the major role in sustaining growth in Brazil while the domestic autonomous growth drivers saw an even more significant decline. The WEL regime is thus a result of the dramatic decline in domestic autonomous demand growth.

As shown in Table 2, Russia changed from a WEL to an ELM regime. Both from Tables 2 and 3 it can be seen that export growth remains the biggest contributor to growth in the country in both periods, however with growth contributions roughly halved. The biggest impact towards ELM comes from the reversal of the rise of the propensity to import from the first period towards a decline in the second period, which meant a significant rise of the growth contributions of imports in the second period. As can be seen in Table 3, while imports contributed negatively to growth in the first period, this changed to slightly positive contributions in the second period. Simultaneously, the rise in the propensity to consume out of income which had been a major driver of growth towards the end of the first period came to a halt and did not contribute to growth anymore in the second period.

India was the only country that did not show any demand and growth regime change from the first to the second period, remaining DDL according to Table 2. Whereas Table 2 does not display any shifts in the structure of growth contributions, Table 3 reveals some major changes, which, however, balance each other and thus do not change the nature of the demand and growth regime. Autonomous growth contributions have more than halved from the first to the second period, driven by a significant fall in the growth contributions of exports and private households' credit finance consumption and residential investment, while the growth contributions of government consumption and investment remained constant. But this was compensated by a reversal of the falling household propensity to consume out of income from the first period towards a rise in the second period, as well as by a reversal of

the rising inducement to import from the first period to a falling tendency in the second, leading to significant positive growth contributions of both induced components of demand.

China changed from an ELM regime in the first period towards a WEL regime in the second with falling net exports and current account surpluses (Table 2). From Table 3 it can be seen that this shift was mainly driven by a significant decline in the autonomous growth contribution of exports. However, this was accompanied by a reversal of the rising propensity to import from the first period towards a falling propensity in the second period, which meant positive growth contributions of induced imports. But the growth contribution of the external sector declined considerably and almost halved, whereas the contributions of the domestic sector only fell slightly. The public sector almost sustained its autonomous growth contributions, and the fall in the growth contributions of private households' autonomous credit financed consumption and residential investment was compensated for by a reversal of the falling trend of the propensity to consume out of income in the first period, which rose in the second period and led to positive growth contributions of induced consumption. China's change of regime is thus driven both by lower autonomous export growth and by a relative improvement of domestic demand overall, both autonomous and induced.

4. Political economy of autonomous demand components and the supermultiplier in the BRICs countries

Explaining the development of autonomous and induced demand components requires the analysis of political economy and structural features. Hence, as stressed by Morlin et al. (2022), the SSM approach lends itself to be complemented by CPE and IPE concepts. It is beyond the scope of this paper to provide a detailed political economy analysis of each country's demand components, rather we aim at outlining some developments to explain the dynamics presented in Table 3.

A general trend in the BRICs countries is the deceleration of autonomous export growth in the second period. Exports are driven by factors of price and non-price competitiveness, as well as commodity prices, but also foreign demand. The general deceleration of exports can be linked to the loss in dynamism of foreign demand after the Global Financial Crisis. In terms of growth regimes, this loss in demand dynamics can be linked to formerly DLPD economies in Europe becoming ELM or WEL at lower growth rates (Hein et al. 2021; Kohler/Stockhammer 2022). Otherwise put, the external demand provided by DLPD core capitalist economies prior to the Global Financial Crisis was only insufficiently substituted thereafter. This development occurred due to "stagnation policies" in European countries in the form of austerity and contractionary fiscal policies (Hein 2016, 2018). Hence core capitalist economies and their policy choices drive global demand and thus export growth in emerging capitalist economies to a considerable extent (Matthijs 2022).

While this fall in foreign demand growth was felt across the BRICs countries, country-specific factors explain the divergence in the post-crisis period. In Brazil export growth also suffered from reduced non-price competitiveness, measured by the economic complexity index (ECI), and a fall in commodity prices, reflected in the commodity export price index

(CEPI) (Figure 4). The commodity export boom and the concomitant real appreciation may have exacerbated the loss in technological sophistication as described by the phenomenon of "Dutch Disease" (Bresser-Pereira 2008). Figure 5 illustrates this structural change: The weight of raw materials in Brazil's export basket increased at the expense of manufactured goods. Looking at the Brazilian price competitiveness, proxied by the real effective exchange rate (REER),[12] we see that the REER exhibits a high degree of volatility (Figure 4). The Brazilian REER movements can be attributed to the development of its commodity prices as Figure 4 indicates. Moreover capital entering and leaving Brazil have added to the sudden currency swings (Kaltenbrunner/Painceira 2015).

The deceleration of Brazil's export growth was by no means compensated by increased public autonomous demand (Table 3). In fact, as argued by Serrano/Summa (2015) and indicated in Table 3, the fall of Brazil's domestic demand growth contributions, public demand in particular, was more crucial for its faltering growth than the deterioration of its exports. Serrano/Summa (2015: 803) argue that "[the] sharp fall in domestic demand [was] a result of deliberate policy decisions made by the government and was not necessary, i.e., it was not made in response to some external constraint such as a balance-of-payments problem." Nölke et al. (2021) add that the corruption scandals which unfolded in Brazil after 2013 led to disruptions of the informal networks between state and business elites that underpin public and private investment decisions. What to some extent stabilised growth in the second period for Brazil was the increase of consumption out of disposable income. We would expect such development to stem from a redistribution of income towards wages and lower income households. As Table 4 indicates however income inequality in Brazil increased in the second period, reflected by the rise in the Gini coefficient (see also Carvalho 2018: Chapter 5). Thus the increase in the propensity to consume out of disposable income can be attributed to the fall of credit-financed consumption (Table 3). This is in line with the sharp fall in consumer credit after 2012 and public credit after 2015 (Carvalho 2018: Chapter 3).

[12] An increase (decrease) in the REER indicates a loss (increase) in price competitiveness.
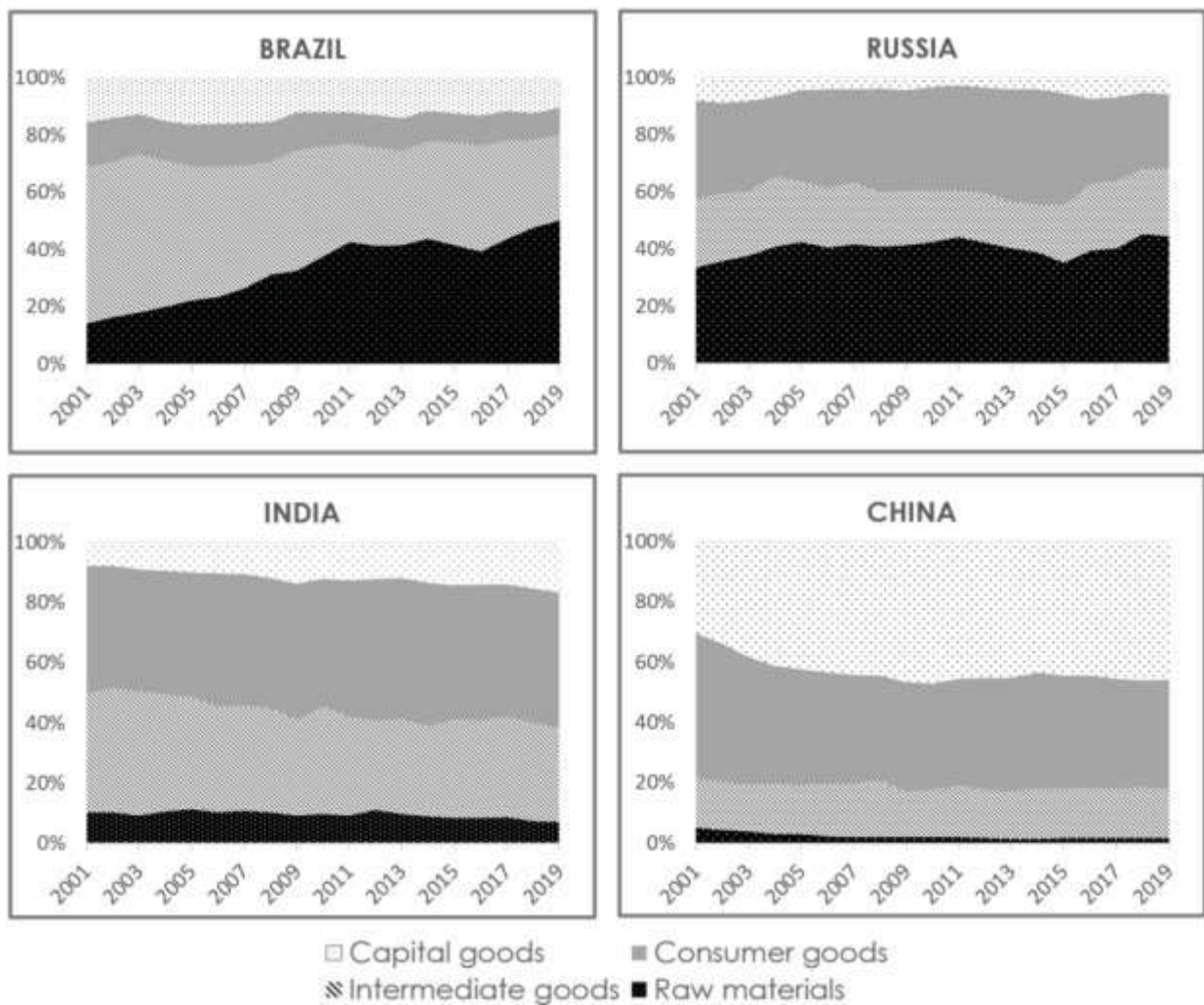
Figure 4. Growth Rates of REER and CEPI and ECI level in the BRICs countries, 2001-2019.
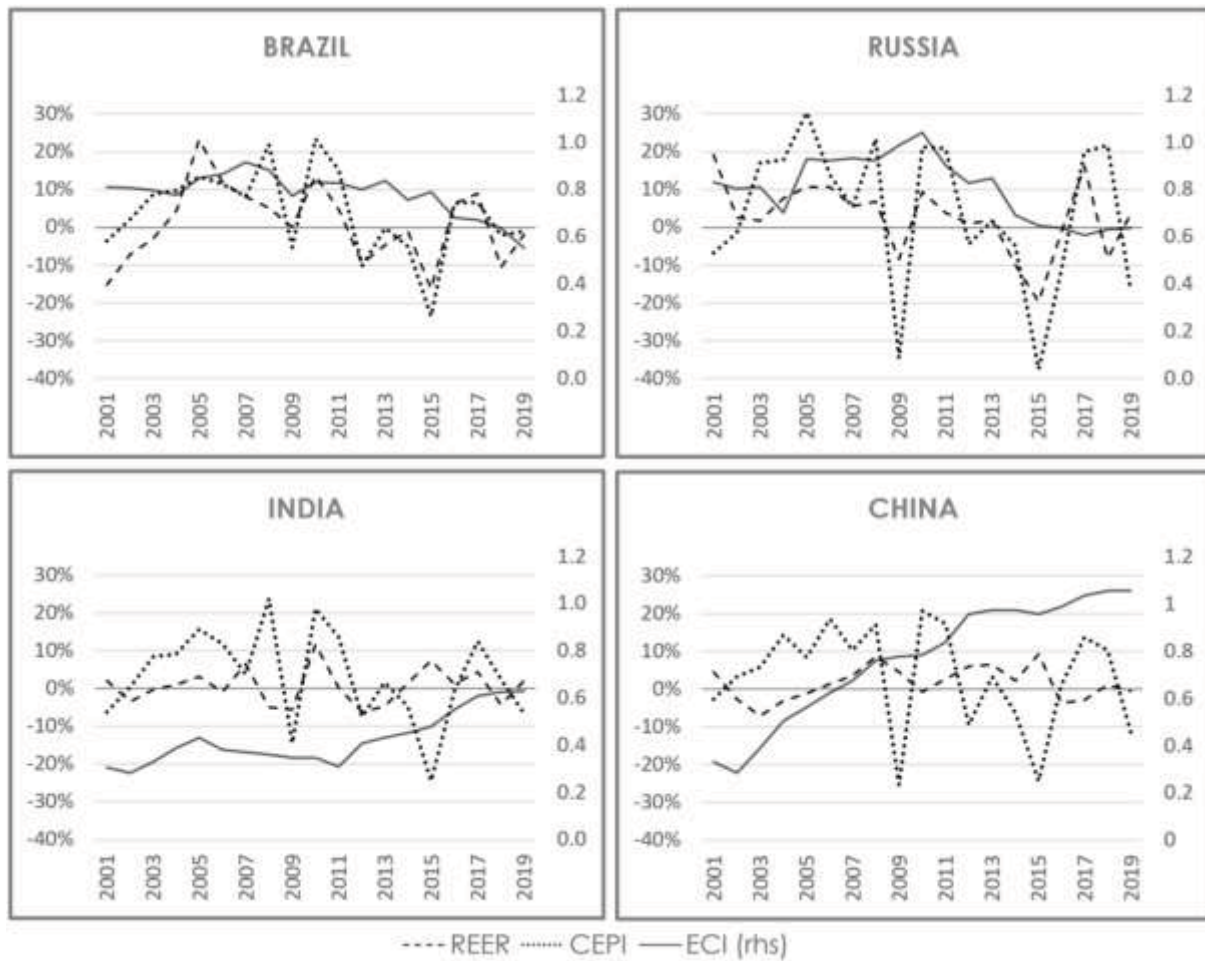
Note: REER: real effective exchange rate, CEPI: commodity export price index, ECI: economic complexity index

Sources: BIS (2022), Gruss & Kebhaj (2019) and OEC (2022), author's calculations and presentation.

Figure 5. Exports by product group in the BRICs countries, 2001-2019.

Sources: World Bank (2021, 2022) and IMF (2021b), author's calculations and presentation.

Table 4. Distribution trends.

Country	Period	Wage share*	Gini coefficient of disposable income
Brazil	2001-2010	+	-
	2011-2019	+	+
Russia	2001-2010	+	-
	2011-2019	-	-
India	2001-2010	-	+
	2011-2019	-	+
China	2001-2010	-	+
	2011-2019	+	-

Notes: Distribution indicators refer to the changes within the period, "+" indicates an increase, "-"a decrease, "0" no change. An increase (decrease) in the Gini coefficient indicates a rise (fall) in personal income inequality. Wage shares are adjusted and provided in nominal terms. *Due to data availability, the first period for the wage share only covers the years 2004-2010.
Sources: ILO (2022), Solt (2020), author's calculations and presentation.

Russia recorded an even more dynamic increase in its commodity export prices than Brazil during the first period. In the second period its commodity export prices also fell more sharply (Figure 4). Similar to Brazil, during the post-crisis period, Russia saw its non-price competitiveness declining. Both developments are reflected in the structure of Russia's export basket. While Russia's exports already mainly relied on raw materials in the early 2000s, this reliance persisted and even increased slightly (Figure 5). This makes the Russian exports heavily reliant on commodity exports and less sensitive to general improvements in its price competitiveness. Furthermore the overall increased price competitiveness of Russia in the post-crisis period (Jungmann 2021), were by no means associated with a stable REER (Figure 4). Moreover, in 2014, Russia experienced sharp depreciations that led to a severe financial and economic crisis. The falling commodity prices were the main contributing factor to this crisis and their effect was aggravated by the economic sanctions on Russia in the course of its annexation of Crimea (Dreger et al. 2016). What attenuated the depressing growth effects from an autonomous demand-led growth perspective was the fall in the propensity to import. This may simply reflect the loss in purchasing power due to lower growth and a weaker currency. Moreover this could also be a consequence of Russian counter-sanctions on agricultural imports, which have led to an increase in Russia's agricultural production (Liefert et al. 2019).

The weak Russian export growth in the second period was not countered by public demand. While the autonomous public demand components were little dynamic during the first period, they continued to decline slightly in the second one. As a reaction to the 2014 events, the Russian government incurred public deficits in three consecutive years. In 2016, however, despite dismal growth rates, a policy turn towards austerity was taken. Consequently the public deficit fell in 2017 and turned into a surplus in 2018 and 2019 (Tooze

2022). This fiscal austerity has been framed as part of Russia's "fortress" strategy, which aims at protecting the current account surplus in spite of falling commodity prices. This could be interpreted as an economic strategy that aims at avoiding balance of payment-problems through internal balancing in the event of external pressure. However, in the Russian case, geopolitical considerations, i.e. the shielding from expected sanctions, drove this policy significantly (Smid 2021). Finally, in the second period, the propensity to consume no longer contributed to growth. This can be attributed to the declining wage share that had risen in the previous period (Table 4).

The stability of India's growth and its regime stems from the constancy of the growth contributions of public consumption and investment demand. This constancy was achieved although India, similar to Brazil, experienced corruption scandals in the 2010s and subsequent shifts in its electoral landscape. Nonetheless, the informal networks of business and political elites governing economic growth remained largely intact and no ideological ruptures occurred in the area of development policy (Nölke et al. 2021). In addition to this political factor, Nassif et al. (2016) argue that India was able to pursue more expansionary macroeconomic policies compared to Brazil and Russia (and South Africa) because it is less financially integrated internationally due to remaining capital flows regulations, which reduced the external vulnerability and allowed for a more discretionary use of policies. The reduced degree of India's external vulnerability becomes apparent in its REER, which is significantly less volatile than that of Brazil and Russia (Figure 4). Equally important in explaining India's stable growth, apart from the autonomous components, is the rise in its induced components - consumption from disposable income and the propensity to import. As reflected in Table 4, India saw a decrease in its wage share and an increase in personal income inequality. Hence the rise in the propensity to consume out of disposable income may be due to the decrease in consumer credit-financed consumption and residential investment (Table 3). The fall in the propensity to import during the second period could stem from a lower import content of India's exports due to a form of import substitution and technological levelling-up, as the significant increase in India's ECI during the second period indicates (Figure 4). Correspondingly the share of consumer and capital goods in the Indian export basket rose (Figure 5).

As argued in section 3.3, the shift in China to a less export-led demand and growth regime, at lower but still comparatively high growth rates can be attributed to lower export growth and a relative improvement of autonomous and induced domestic demand. Within the induced components, the growth contributions of consumption out of disposable income rose, what can be attributed to the higher wage share and decreased personal income inequality (Table 4). The consistency of public demand in spite of falling export growth can be ascribed to the lower levels of external vulnerability in China stemming from its persistent current account surpluses, ample foreign exchange reserves and regulation of capital flows (Nassif et al. 2016). The stability of public demand and the increasing importance of consumption, both of which promote domestic demand, are consistent with China's new "dual circulation" development paradigm (Yifu/Wang 2022). This new paradigm aims "to shift

the focus from foreign to domestic circulation as the major driving force for China's sustainable development, and to emphasize the importance of a positive reciprocal relationship between domestic and international economic circulations" (Yifu/Wang 2022: 303). Nonetheless the pivot towards "dual circulation" does not mean the abandonment of export growth. Securing export growth while fostering consumption demand may prove tricky, however, if exports are driven by price competitiveness and consumption demand is not debt-financed. What is hence required are exports driven by non-price competitiveness. In line with this, China's ECI consistently increased (Figure 4) and in its export basket raw materials play a negligible role (Figure 5). China's improved technological sophistication may also explain the positive contribution to growth of the falling import propensity in the second period, because such a rise in sophistication decreases the import content of exports.

In sum, all countries suffered from the loss in dynamism in foreign demand after the Global Financial Crisis, due to the stagnation policies in the capitalist core. The lower levels of export growth in Brazil and Russia during the second period reflect their pronounced dependency on commodity exports, losses in non-price competitiveness and volatile exchange rates. India and China exhibit export baskets dominated by manufactured goods, improvements in non-price competitiveness and less volatile exchange rates. Furthermore China and India show considerably more stable growth rates in their public autonomous demand components than Brazil and Russia. We have argued that these differences rather stem from country-specific political economy factors than from economic necessities such as balance of payment-constraints.

5. Conclusions

In this paper we have presented an analysis of changes in demand-led growth regimes in the BRICs countries, Brazil, Russia, India, and China, after the Global Financial Crisis and the Great Recession of 2007-09. We have applied two approaches, a first one based on national income and financial accounting decomposition and a second one, based on the SSM growth model, distinguishing the dynamics of autonomous expenditure growth from those of the induced components of aggregate demand. We have argued that the SSM approach provides a bridge between the previous analyses of growth regimes according to the sources and the financing of demand based on national income and financial accounting, on the one side, and of the examination of (political) growth drivers, on the other side. Inspired by the approach of Freitas/Dweck (2013), Girardi/Pariboni (2016), Morlin et al. (2022), and Passos/Morlin (2022), we have established such a link by means of applying an autonomous demand-led growth perspective to the four BRICs countries and comparing it with the results for the more traditional national income and financial accounting based decomposition. We have examined the changes in growth contributions of the autonomous demand components, government consumption and investment expenditures, exports, credit-financed consumption, and households' residential investment, as well as the changes in the components of the supermultiplier, the inducements to consume, to invest and to import, for the four BRICs countries for the period 2001-10 and the period 2011-2019. This has provided

an understanding of the forces which have moved Brazil from a DDL to an ELM regime, Russia from a WEL to an ELM regime and China from an ELM to a WEL regime, and why India has kept a DDL regime. Finally, we have provided some political economy and economic policy drivers of the key changes in the autonomous growth components of each of the country, without claiming to be comprehensive in this respect.

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Appendix

Consumer Credit (CC) time-series are taken from the BIS database of Credit to the non-financial sector (BIS 2021) as "Credit to Households and NPISHs from all sectors at Market value, adjusted for breaks". We followed the methodology from Girardi/Pariboni (2016) to calculate real net flows: we took end-of-period stocks in each year (monthly series) and transformed the series in first differences to obtain net flows. Finally, we deflated these net flows using the GDP implicit price deflators (IMF 2021a, World Bank 2021)

Not all countries had complete data for the period. For China, we assumed the share of household credit to private non-financial sector credit remained stable from 2001 until 2006 (first available year), given afterward a sharp increase is evidenced and remains unclear the prior credit structure. For India, the available data starts in 2007, likely affected by the global financial bubble. We assume for the prior years a stable share of household credit to private non-financial sector credit equal to the average of 2007-2019. The credit to households series for India during the years before 2012 in the BIS data includes housing loans, which might produce an upward bias given that this might be already included in the series of household investment. Nevertheless, we believe it was the best available proxy for consumer credit and this distortion should not substantially change our main results for a descriptive analysis.

General Government Investment (I_G) series were constructed using different sources.
For Brazil, Russia and China we applied the coefficients of Investment by sector as percentage of Gross Fixed Capital Formation (GFCF) from the OECD Data bank (OECD 2022) to data of Total Gross Fixed Capital Formation at constant prices from the World Bank and the IMF (IMF 2021a, World Bank 2021). For Russia, the OECD source did not have the complete period. We calculated the coefficients for the period 2001-2010 assuming the average proportion of government investment to total investment for the period 2011-2019 remained constant.

For India, we used the series General Government Gross Fixed Capital Formation (GG GFCF) for the period 2011-2019 from National Accounts data (MSPI 2021) and for the previous years between 2001-2010 we assumed the ratio between GG GFCF and Gross Capital Formation of the public sector remained stable to the level of 2011.

Household Investment (I_H) time-series were constructed using different sources.
For Brazil, Russia and China we followed the same procedure as in Government Investment. We applied the coefficients of Investment by sector as percentage of Gross Fixed Capital Formation (GFCF) from the OECD Data bank (OECD 2021) to data of Total Gross Fixed Capital Formation at constant prices from the World Bank and the IMF (IMF 2021a, World Bank 2021).

Again, for Russia the source did not have the complete period, so we calculated the coefficients for the period 2001-2010 assuming that the average of the period 2011-2019 remained constant.

For India, we used the series Household Gross Fixed Capital Formation (HH GFCF) for the period 2011-2019 from National Accounts data (MSPI 2021) and for the previous years between 2001-2010 we assumed the ratio between HH GFCF and Household Gross Capital Formation remained stable to the level of 2011.

Household consumption out of disposable income (C_H) was calculated subtracting Consumer Credit (CC) out of Total consumption (C).

Corporate investment (I_C) was calculated subtracting Government Investment (I_G) and Household Investment (I_H) out of Total investment (I).