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Growth Models, Varieties of Capitalism and Macroeconomics *

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Abstract
Lucio Baccaro and Jonas Pontusson make a significant contribution to comparative political economy with their approach to analyzing growth in advanced economies that focuses on the demand side of the economy and distributive conflict. In contrast to Baccaro and Pontusson, however, we view their approach as reinforcing recent developments in varieties of capitalism rather than undermining them. We also believe that the type of modern macroeconomics used by (for instance) Carlin and Soskice is better placed than their Post-Keynesian framework to analyze growth models; and that their approach is not inconsistent with it. Modern macroeconomic models incorporate a role for the state, as they do not, —including monetary and fiscal policy—and provide a coherent framework within which to analyze both the supply and demand sides of the economy; they also enable us to understand the interactions between economies and hence the role of growth models in global imbalances.

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Baccaro and Pontusson's ambitious and important article sets out their new analytical approach to comparative political economy (CPE). The article seeks to explain the commonalities and divergences in the trajectories of advanced economies since the collapse of the Fordism in the 1970s by identifying national *growth models*. Growth models are pinned down by the relative contribution of the different components of aggregate demand — consumption, investment, government spending and net exports — to overall economic growth.

The key theoretical innovation of the article is to use a Post-Keynesian macroeconomic framework in which output is determined by effective demand rather than the supply side. In the tradition of Polish economist Michał Kalecki, Baccaro and Pontusson (hereby referred to as B&P) also put the distribution of income, both between labour and capital and among wage earners, at the centre of their analysis. They see growth models as being closely associated, as both cause and effect, with distributive conflict.

As B&P note, there is considerable agreement that advanced capitalist economies collectively pursued a *wage-led* growth model during the Fordist era that ran from the end of WWII through to the mid-1970s. In that period, rising real wages and strong productivity gains jointly fed the expansion of household consumption and investment. [1] The wage-led growth model was underpinned by unemployment insurance and collective bargaining based on strong unions, but faltered from the 1970s onwards as a result of both short-term factors (e.g. industrial strife and stagflation) and longer-term structural trends (e.g. deindustrialization, financialization and union decline). The end of Fordism was associated with a decline in the share of gross domestic product (GDP) going to labour and rising inequality among households.

The growth models that replaced wage-led (or productivity-led) growth differed markedly across advanced economies. B&P's analysis concentrates on the two post-Fordist growth models most commonly analyzed in the recent CPE literature: *consumption-led* and *export-led*. [2] The empirical analysis in the article focuses on Germany, Italy, Sweden and the UK. B&P present persuasive evidence that economic growth during the 1994-2007 sample period was consumption-led in the UK, export-led in Germany, balanced in Sweden, and largely absent in Italy.

B&P's analysis finds that household consumption can be financed by either wages or credit, and that these forms of financing are often complementary supports of the consumption-led growth model. The analysis also finds that the ability of economies to combine household consumption growth with export success depends crucially on the price sensitivity of their exports. In countries where export volumes are sensitive to changes in prices (or real exchange rates) an export-led growth model is likely to require the repression of wages and household consumption, which has knock-on effects for inequality, particularly at the low-end of the income distribution.

The article makes several important contributions to the CPE literature. First, it focuses on the demand side, which has been underexplored in the existing CPE

literature on advanced post-industrial economies. Second, it attempts to bring the valuable economic ideas of Kalecki into the CPE debate. An important Kaleckian insight that underpins B&P's analysis is that redistribution of income from rich to poor will boost consumption and aggregate demand because the poor have a higher marginal propensity to consume out of current income than the rich. This fits closely with the key CPE themes of inequality and redistribution. Lastly, the article seeks to explain both cross-country differences and trajectories of change in advanced capitalist economies. This stands it apart from the existing CPE literature, which is often criticized for not paying enough attention to how economies and institutions evolve over time.[3]

Our overarching view is that B&P's article opens up a new and exciting field in CPE scholarship—one that we hope to contribute to more fully in the future. However, in contrast to B&P, we see the growth models approach as supporting recent developments in varieties of capitalism rather than undermining them, as we discuss at length in the next section. We also think that modern macroeconomics has a lot to offer the study of growth models and that it is not necessarily at odds with the Post-Keynesian macroeconomics used in the article. In Section 3, we therefore set out a simple modern macroeconomic model and discuss why it is so important to incorporate a role for the state—including monetary and fiscal policy—into any macroeconomic framework hoping to shed light on growth trajectories during the post-Fordist period.

Varieties of capitalism and growth models

B&P show that there was a significant difference in the contribution that consumption growth made to economic growth in Sweden and Germany over the sample period (1994-2007). While both countries had good export performance, only Sweden was able to combine that with robust household consumption growth. As Germany and Sweden are both defined as coordinated market economies (CMEs) by the varieties of capitalism approach, B&P use the divergence in their growth trajectories to dismiss varieties of capitalism as a useful framework for understanding post-industrial growth models.

In contesting this position, we are not arguing that Germany and Sweden are similar postindustrial political economies: notably, Germany has developed a dualist labour market while Sweden has not. And Sweden has managed in part in consequence to limit the increase in the post-tax and transfer Gini, as well as the rise in poverty to a noticeably greater extent than has Germany. B&P's article is of great importance in bringing income distribution into our understanding of post-industrial growth — it does indeed influence the role of consumption across CMEs. But we will argue that B&P's position is wholly consistent with and ultimately dependent upon varieties of capitalism.

Consumption- and export-led growth in LMEs and CMEs

B&P's empirical results show that net exports were a major driver of GDP growth in Germany and Sweden, the two CMEs in the analysis, whereas net exports made a negative contribution to growth in the UK, the single liberal market economy (LME) in the analysis. Consumption growth in the UK also vastly outpaced that in Germany and Sweden. An initial and salient point to make is that this is precisely the analytic prediction of the varieties of capitalism approach.[4]

Moreover, empirically, when we broaden the B&P analysis to a wider set of advanced economies, the difference in the relative importance of *export* demand drivers and *consumption* demand drivers in LMEs and CMEs over the post-industrial period is very clear. Figure 1 plots the average annual contributions of consumption and net exports to gross domestic product (GDP) growth over 1994-2007 for a sample of 20 OECD economies.[5]

We can see from the linear trend line in Figure 1 that there was a negative correlation between the contributions of consumption and net exports to growth during the sample period. The red dotted rectangle in the top-left hand corner of the figure contains countries with rapid consumption growth and a negative contribution of net exports to growth—consumption-led economies. In contrast, the dotted blue rectangle in the bottom right hand corner shows the countries with relatively low consumption growth and a positive contribution of net exports to growth—export-led economies.

The markers in the figure correspond to varieties of capitalism. The dark blue diamonds are CMEs and the red points are LMEs. The light blue squares are the mixed market economies (MMEs) that sit somewhere in between. Contrary to B&P's argument, what is clear from the figure is the significance of varieties of capitalism (or some related classification) for growth models in the post-Fordist era; the export-led economies are CMEs and the consumption-led economies are LMEs (and MMEs).

The significance of the distribution of income in explaining the importance of consumption to growth (one of B&P's key points) can be very clearly seen for the CME group of economies. The contribution of household consumption to growth is significantly greater in the more egalitarian Nordic countries than in the less egalitarian Germany, Japan and Switzerland. Note, of course, that consumption is still much less important in the Nordics than in the LMEs, and its greater importance in the LMEs is hardly to be explained by a more egalitarian income distribution!

Figure 1 provides *prima facie* evidence countering B&P's claim that varieties of capitalism and growth models are not closely related. But it shows correlation and not causation. What then explains the striking correlation between varieties of capitalism and the relative importance of net exports and consumption to growth?

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Figure 1. The average annual contribution of consumption and net exports to GDP growth (1994-2007)

Average annual contribution of net exports to GDP growth (1994-07)
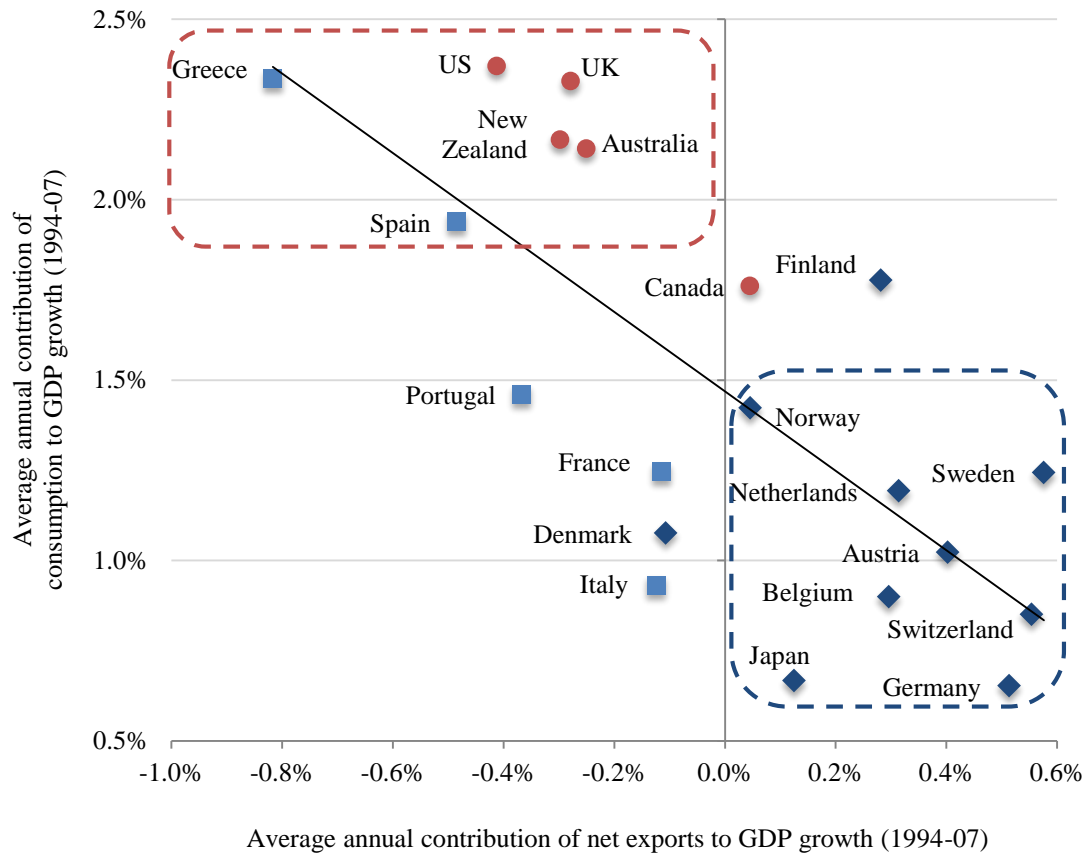
Source: OECD Annual National Accounts; authors' calculations.

Note: The black line is a simple linear trend line. The markers correspond to varieties of capitalism. The dark blue diamonds are CMEs and the red points are LMEs. (The light blue squares are MMEs.)

It is certainly true that the institutions underpinning CMEs and LMEs, as well as the organization of companies and career structures, have changed very substantially in the last quarter century. The radical technologies of the 1980s and early 1990s[6] have now become widely diffused as incremental innovations through the advanced sectors of CMEs, so that the technological landscape looks quite different today. While manufacturing still plays a more important role in CMEs than in LMEs, the share of manufacturing has fallen significantly everywhere; and manufacturing activity still located in CMEs involves little 'traditional' physical activity. While collective agreements still cover a large percentage of regular employees in most CMEs, unionization rates have generally fallen. In addition, employment protection for temporary workers has fallen sharply in all CMEs.[7]

Moreover, just as there are significant differences between the LMEs as there always have been, the CMEs also operate very differently from one another. And to reiterate a political point that Pontusson has made powerfully in the past, the Nordic economies are different to the continental CMEs; shown recently at length by Iversen and Soskice.[8] While all CMEs still operate strong 'insurance' systems for regular

employees, the Nordics are more redistributive and the northern European continental CMEs are more purely insurance based. In addition, as Thelen clearly documents, strong labour unions are not confined to the core manufacturing sectors in the Nordic countries, which helps to protect the wages of low-skilled services sector workers.[9] These are indeed the Kaleckian reasons for the Nordics having a generally higher contribution of consumption to growth—that B&P identify in Sweden and that Figure 1 shows applies more broadly across the Nordic countries.

So why should CMEs, despite the differences between them and large changes over time, have adopted export-led growth models? Independently of monetary policy and exchange-rate systems, these economies are driven strategically by export orientation: a large proportion of high value-added employment comes directly and indirectly from the export sector. The success of the export and related high value-added sectors depends on research and development in knowledge-based companies, on close two-way links with the technical university and research systems, and on the system of vocational training at all levels, including increasingly the tertiary. Equally, the success of these systems depends on the capacity of the export sector to meet long-term profitability goals, especially as the cost of product and process innovation increases. This is a powerful and central positive feedback system in which the successful and growing knowledge base and accumulated skill formation are core drivers of exports, and where success in export growth is critical—via the resources it provides for advanced companies to make the necessary investments in the relevant systems—for high levels of research and skill formation.[10]

Germany and Sweden and relative export-price sensitivity

B&P suggest that the price sensitivity of exports must be taken into account in order to explain the difference between the German and Swedish growth models. They claim that German exports were more price sensitive than Swedish exports over the sample period, and that this was driven by the move of Swedish exporters into less price-sensitive, "knowledge-intensive, high value-added, goods and services". Hence, German, but not Swedish, export success required the repression of domestic wages and consumption. In support of their argument, B&P present a large amount of descriptive data and a regression analysis into the relative price sensitivity of exports in the two countries. Our view is that B&P's argument misses several important factors that affected the evolution of the German and Swedish economies over the sample period, and that the empirical support for their argument is relatively weak. More formally, we dispute their export-price sensitivity hypothesis on four counts.

### *i)   Major structural shocks to the German and Swedish economies in the early 1990s*

The sample period of the empirical analysis in the article is 1994-2007. In order to fully explain the evolution of the German and Swedish economies over this period, however, we believe it is necessary to go back slightly further. Both Germany and Sweden experienced major structural shocks in the first half of the 1990s that strongly

influenced their trajectories over the sample period. Germany reunified in 1990 after 45 years as a divided nation. The Bundesbank responded to the inflationary risks posed by reunification by aggressively tightening monetary policy.[11] The early 1990s also saw the bursting of a financial bubble in Sweden that led to their most severe recession since the 1930s; unemployment jumped from under 2% in 1990 to over 11% in 1993.[12]

Figure 2 charts the path of price and cost competitiveness in Germany and Sweden between 1991 and 2007. We can see that German competiveness deteriorated markedly in the first half of the 1990s due to the burden of reunification and the appreciation of the nominal exchange rate that occurred when the Bundesbank raised interest rates. In contrast, Sweden's competitiveness improved by around 20% in the same period because of the substantial nominal depreciation that accompanied the sharp downturn in the economy.

Figure 2. Price and cost competitiveness in Germany and Sweden (1991-2007)
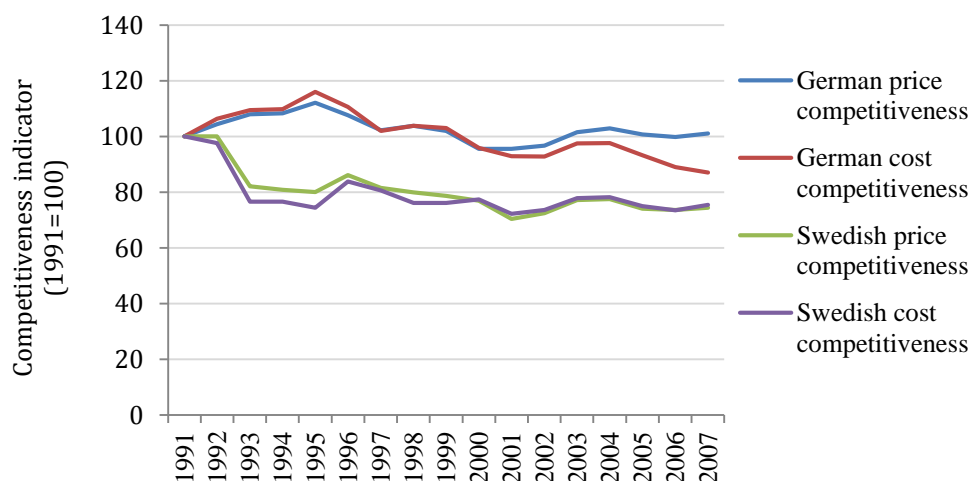
Source: OECD Economic Outlook No 97, June 2015

Note: Price competitiveness is based on consumer prices (CPI) and cost competitiveness is based on real unit labour costs (relative to a sample of 49 trading countries). An increase in the indices signifies an appreciation of the real effective exchange rate and a deterioration of the competitive position.

B&P present German wage moderation and slow household consumption growth in the sample period as evidence supporting their argument that German exports have become more reliant on price competition over time. However, the picture is incomplete without taking reunification into account. The improvement in price competitiveness in Germany during the sample period was required to counteract the loss of competitiveness associated with reunification;[13] in fact, as Figure 2 shows, the German economy was no more price competitive at the end of the sample period than it was in 1991. Likewise, the large improvement in competitiveness in Sweden directly before the sample period began meant there was much less pressure on Swedish firms to hold down wages for competitiveness reasons during the sample period.

The patterns in wage growth and competitiveness are mirrored in household consumption. If the years 1991-1993 are included in the sample period then the average annual contribution of consumption to GDP growth is virtually identical in Sweden (0.90%) and Germany (0.82%).[14] This is particularly important as the difference in the importance of consumption to growth in the two countries in the cornerstone of B&P's dismissal of varieties of capitalism.

ii) The relative sophistication of German and Swedish manufactured exports

B&P suggest that one reason for the difference in price sensitivity between German and Swedish exports is their relative sophistication. They argue that the German high value-added CME model became "exhausted in the course of the 1990s" but that Swedish exporters successfully moved into high-tech goods and services. When concentrating on manufactured goods, this story holds little water. German manufactured exports were some of the most high tech in the world in the latter part of the sample period. High-technology manufactures made up 20% of total German exports of manufactured goods and primary products from agriculture and mining in 2005. While the equivalent share for Sweden was slightly higher at 23%, the combined share of high-technology and medium-high-technology exports was considerably higher in Germany (71%) than in Sweden (60%). In addition, the average annual growth rate of high-technology exports in Germany between 1996 and 2005 was over twice as high as that in Sweden.[15]

The evolution of German competitiveness in Figure 2 also provides evidence against German exporters moving away from competition based on innovative, high-quality products and toward competition based on price. The fact that cost competitiveness improved during the 2000s but price competitiveness remained relatively flat suggests that German firms used their cost savings during the latter part of the sample period to support investment and innovation rather than to cut prices.[16] This shows the importance German firms still place on the non-price competitiveness (i.e. quality) of their products (in line with a high value-added CME export model).

iii) Movement of German production facilities to Central and Eastern Europe

Another important development that helps explain the trajectory of the German economy during the sample period is that German companies shifted large parts of the production processes to Central and Eastern European countries following the fall of the Iron Curtain. Poland, the Czech Republic, Hungary and Slovakia are located close to Germany and have similar education systems and institutions, but labour costs are just a fraction of those in Germany and working regulations are more flexible.[17] This combination makes these countries particularly attractive for German foreign direct investment (FDI). Germany was responsible for 21.5% of all FDI into the eight Central and Eastern European economies in the early 2000s compared to just 4.2% for Sweden.[18] While German domestic investment languished over the sample period, German investment in production facilities in Central and Eastern Europe grew rapidly, creating approximately 700,000 new jobs in the area.[19]

The outsourcing of the labour-intensive upstream production activities to Central and Eastern Europe had dramatic implications for the German labour market. It reduced the bargaining power of low-skilled German workers and put downward pressure on their wages.[20] This is therefore an important missing ingredient in B&P's analysis, which helps to explain developments in German wages and household consumption over the sample period, as well as the increase in low-end earnings inequality.

iv) The empirical evidence on relative export-price sensitivity

To test their proposition that German exports were more price sensitive that Swedish exports during the sample period, B&P carry out an OLS regression for both countries (as well as Italy and the UK). The dependent variable in the analysis is the change in exports (at constant prices) and the independent variable is the change in the real effective exchange rate (a measure of price competitiveness). Each regression contains a constant but no control variables. The results show a negative and statistically significant effect (at the 10% level) for Germany and a smaller negative and statistically insignificant effect for Sweden. B&P take these results as empirical support for their hypothesis. However, Gelman and Stern caution against comparing the results of two regressions by looking at the significance levels of the coefficients and instead propose focusing on the statistical significance of the difference between the coefficients.[21] B&P's results do not pass this test; the difference between the German and Swedish coefficients is not even close to statistical significance.[22] In addition, B&P's empirical strategy does not deal with potential endogeneity problems. Carlin, Glyn and Van Reenen suggest that reverse causality and omitted variable bias are likely to undermine the credibility of regression analyses, such as B&P's, that use national level data to look at the relationship between contemporaneous changes in export market shares (or volumes) and real unit labour costs (or real effective exchange rates).[23]

The existing empirical literature also casts serious doubt on B&P's two central propositions: i) that exports became more price sensitive in Germany over the sample period; and ii) that Sweden did not suffer this problem because it shifted into exporting high-end, knowledge-intensive goods and services. Stahn estimates error correction models for German exports and finds that German exports to countries both inside and outside the Eurozone have become *less* price sensitive since the 1990s.[24] Ahmed et al. use a panel framework across 46 countries and find that the sensitivity of manufacturing exports to the real exchange rate has *fallen* over time, especially in countries (such as Germany) that have shifted large parts of their value chain overseas.[25] This is because exchange rate depreciation increases the cost of importing intermediate goods as well as improving the competitiveness of final exports. Imbs and Méjean compute structural estimates of export elasticities for a wide range of countries and commodities in the 1990s and 2000s and estimate that the price sensitivity of aggregate exports is slightly *higher* for Sweden than Germany.[26] Lastly, while we agree with B&P that Sweden had more success in exporting high-value added services than Germany during the sample period, the empirical evidence

does not support their claim that these exports are less price sensitive. In fact, in a panel data study across 66 countries, Eichengreen and Gupta find that modern services of the type Sweden specializes in, such as information, telecommunications and computer services, are more *sensitive* to changes in the real exchange rate than traditional goods and services exports, and that this holds across both advanced and developing economies.[27]

Macroeconomics and growth models

Let us again say that we are hugely sympathetic to B&P's article. Their Post-Keynesian macroeconomic framework focuses on the demand side of the economy, which is often overlooked in CPE models. It also puts inequality— correctly—at the centre of demand analyses of growth.

Mainstream modern macroeconomics is a complex and divided field, which can often seem impenetrable to those outside the discipline. However, we believe that simple macroeconomic models, of the type used (informally) by Blanchard, Krugman, Nickell, Stiglitz, Bernanke and many others, have a lot to offer the study of growth models.[28] This approach to macroeconomics is set out more formally in Carlin and Soskice's *Macroeconomics: Institutions, Instability and the Financial System*.[29] These models have two major advantages over the Post-Keynesian model used in the article. First, they allow for the study of the supply as well as the demand side of the economy within a single coherent framework. We view the interaction of supply and demand as crucial to determining growth trajectories. Second, they incorporate, as Baccaro and Pontusson do not, the government and macroeconomic demand management—including monetary and fiscal policy. We believe that international monetary arrangements were particularly important in shaping the macroeconomic developments of recent decades, including the analysis of how growth patterns in different countries interact to produce global imbalances.

In the following section, we briefly discuss the evolution of the field and then set out a simple mainstream macroeconomic model. We then discuss how the model relates to B&P's model and show how it can be used to analyze growth models and the role played by macroeconomic policies.

Understanding modern macroeconomics

The demise of traditional Keynesian economics in the 1970s largely reflected its absence of a coherent theory of inflation at a time when inflation and unemployment combined (stagflation) was seen as the primary problem of economic policy. A period of intellectual chaos ensued. Macroeconomics has developed in different ways in the last four or so decades. And it is fair to say that the internal debates within the discipline have come to be dominated by two schools in particular, Real Business Cycle theory (RBC) and New Keynesian economics. Despite its several associated Nobel prize-winners, and the fact that it is still staple teaching in many graduate

schools, RBC—with its roots in Chicago and the mid-West—is regarded by many macroeconomists (including many of those in universities on the 'two coasts' such as Harvard, Princeton, MIT, NYU, Berkeley and Stanford) as aesthetically beautiful but mad. (It assumes perfect competition in all markets and that markets clear continuously; it also assumes perfect foresight based on rational expectations. Movements of economic aggregates are generated by random 'technology' shocks, and persistent movements are generated by the assumption that the shocks are auto-correlated. We could go on.)

The alternative New Keynesian approach started from two simple but sensible assumptions: that companies everywhere operate under conditions of imperfect competition, setting prices and meeting demand; and that prices can only be set at discrete intervals of time (e.g. annually) and not continuously. But the contemporary *déformation professionelle* [30] of economists is to apply forward-looking rational expectations under all feasible circumstances. As a consequence markets are assumed to clear in improbable ways. The result has increasingly been macro-models of great complexity that bear little relation to reality. The dysfunctional driver of evolutionary progress in New Keynesian economics has been the internal theoretical standards of the academic profession, rather than a concern to understand how the macro-economy works.

We believe Baccaro and Pontusson are perfectly right to be critical of New Keynesian models, but not of what might be called *realistic* modern macroeconomics, which has been gradually informally developed by many leading macroeconomists (see endnote 28), and is in practice used by central bank policymakers and macroeconomic forecasters around the world. It combines many of the theoretical advances of New Keynesian macroeconomics but steps away from the (unrealistic) assumption that all actors are fully forward-looking and rational. It is this realistic and pragmatic approach to modern macroeconomics that Carlin and Soskice develop in their simplified version of the *3-equation model*. [31]

We believe the 3-equation model is well-placed to shed light on the growth models of advanced economies during the post-Fordist period. The model has three major elements:

(1) *Output (including growth) is driven by effective demand in the short run*. Effective demand is the sum of consumer expenditure, investment, government expenditure and net exports. (The equation requires the assumption of some degree of imperfect competition: in fact, in the 1930s discussions, Keynes wrongly assumed perfect competition unlike both Joan Robinson and Kalecki who understood the need for imperfect competition if companies were to respond to increased demand by increased output.) This is the basis for focusing on demand drivers in models of growth (at least in the short run).

The first major element of the 3-equation model is perfectly consistent with the distribution of income being a determinant of consumer expenditure (as Kalecki and

B&P attest), even if most discussion is in terms of the influence of the interest rate on household consumption.

(2) *Phillips curve*. Increasing inflation is generated by effective demand pushing unemployment below the 'equilibrium' unemployment rate consistent with stable inflation. Rowthorn originally defined the equilibrium rate in terms of class conflict (as Joseph Stiglitz later did) as the unemployment rate which kept the bargaining demands of workers for real wages down to the real wages required to generate the profitability permitted by markets.[32] It is the supply side of the economy that pins down the equilibrium levels of output and unemployment in the medium run in the model, but the equilibrium can shift in response to changes in the bargaining power of labour and the power of business to increase profit markups. Also, as the whole theory of wage coordination shows, when increased bargaining power permits wage coordination across sectors, the result is likely to be a *lower* not a higher equilibrium unemployment rate.

(3) *Monetary (or interest rate) rule (MR)*. Central banks use the interest rate to reduce or increase effective demand to keep unemployment over time close enough to the equilibrium rate to stabilize inflation at its target rate (inflation targeting). If we assume the interest rate is above the *Zero Lower Bound* (where the real interest rate is constrained because the nominal interest rate cannot fall below zero), as it is throughout the period that B&P are analyzing, this closes the system.

The first point that we want to emphasize therefore is that there is nothing inconsistent between this 3-equation system and B&P's Post-Keynesian approach to macroeconomics. Their macroeconomics is simply the effective demand equation (1) with the distribution of income as an important determinant of consumer expenditure.

As to Kalecki: B&P use Kalecki's macroeconomics to point to the importance of the distribution to effective demand. But Kalecki was also deeply preoccupied by inflation, and had a more acute sense than Keynes of the idea that it represented conflict in society—as the title of Rowthorn's seminal 1977 article, *Conflict, Inflation and Money,* indicates.[33] B&P are not interested in inflation and unemployment as Kalecki was. Thus in our view their Post-Keynesian affiliation, which seems to hinge on Post-Keynesians having adopted Kalecki (many years after his death), is at best misleading.

Unlike B&P's model, the 3-equation model can be used to analyze the response of the economy to demand and supply side shocks. When the economy is hit by a shock, such as a change in world demand or a change in labour market regulation, the central bank steps in to stabilize the economy and return it to equilibrium output and target inflation. It uses the interest rate as its policy lever and must take account of the reaction of the foreign exchange market when conducting monetary policy. Interest rate rises will reduce interest-sensitive spending but will also increase demand for domestic currency and appreciate the real exchange rate, which in turn harms net exports (the opposite holds for interest rate cuts). The growth model of an economy is determined by the contribution of the different components of aggregate demand to

growth. Demand and supply shocks have the power to influence growth models in the 3-equation model. For example, a positive demand shock, such as a rise in consumer confidence, will require the central bank to temporarily raise interest rates. Once back at equilibrium output and target inflation, the appreciated exchange rate will have dampened down net exports—hence, the economy has become more consumption-led.

The role of government and macro demand management

Another major advantage of the 3-equation model for studying growth models is that it mirrors the set of macroeconomic institutions that characterized advanced economies during the post-Fordist era. As we have seen the economy is stabilized by an inflation-targeting central bank and the government can influence effective demand through fiscal policy. For a comparative political economic analysis, B&P's article says little about macroeconomic policy, and monetary and fiscal policies are not incorporated into their macroeconomic framework. Monetary, fiscal and other government policies played an important role in supporting growth models during the sample period. Unlike B&P's model, the 3-equation model provides a coherent framework within which to explore the interaction of macroeconomic policy and growth models further.

Why, for example, were central banks aggressively inflation averse in both Sweden and (pre-Eurozone) Germany during the sample period, but not in the UK? In countries with a small number of powerful unions, it pays for the central bank to be conservative.[34] A conservative central bank will respond to any increase in inflation above target by aggressively raising interest rates, resulting in an appreciation of the exchange rate and worsening export sector competitiveness. Each union is large enough to know that a high wage settlement will push up inflation. Hence unions are more likely to choose wage moderation when the central bank is conservative, because the deterioration in export competitiveness that accompanies the high wage route would put at least some core jobs at risk. Conversely, the central bank's stance cannot affect the incentives for wage moderation in countries where wage bargaining is decentralized, because each wage setter is too small to factor in the effect of their wage settlement on the economy-wide price level.

The conservativeness of the central bank is reflected in the slope of the monetary rule in the 3-equation model. The flatter the monetary rule, the more the central bank raises interest rates for any given deviation of inflation from target. A central bank with a flat monetary rule is said to be 'inflation averse'. The conservativeness of the central bank is often measured by their independence from government. On this metric, the German and Swedish central banks were more conservative than the UK central bank during the sample period. The mandates of the Swedish Riksbank and the German Bundesbank (and later the European Central Bank) focused solely on price stability and the government had no role in setting the inflation target, whereas the Chancellor of the Exchequer set the inflation target in the UK and the Bank of England had a secondary objective to support the government's growth and

employment policies.[35] The more conservative monetary arrangements in Germany and Sweden tally with their industrial relations systems, which have a small number of powerful unions. Wage setting is much more decentralized in the UK. Monetary regimes were therefore closely tied to growth models during the sample period. The tight regimes in Germany and Sweden (and other coordinated market economies) supported export-led growth by providing the incentives for wage moderation. At the opposite end of the scale, the discretionary regime in place in the UK (and other liberal market economies) gave more scope for supporting demand and the consumption-led growth model.

German wage restraint in the 2000s is central to B&P's claim that German exports became more price sensitive over the sample period. However, German wage restraint cannot be fully understood without considering the change in monetary institutions that took place when Germany adopted the euro. Upon joining the Eurozone in 1999, the Bundesbank had to relinquish control of monetary policy to the European Central Bank (ECB). Contrary to the nationally focused Bundesbank, the ECB mandate was to target inflation in the Eurozone as a whole. This meant that if inflation in the other member states was above the ECB's target of 2% then Germany would have to keep its inflation below 2% in order to avoid an ECB rate tightening that would harm export competitiveness. This is exactly what happened; German inflation was persistently below the ECB's target between 1999 and 2007; average inflation was 1.6% in Germany, whereas average Eurozone inflation was just above target at 2.1%.[36] In effect, Germany became the 'deflator of last resort' as fast-growing economies such as Greece, Ireland and Spain struggled to contain inflation. The introduction of the euro therefore put German exporters under additional pressure to constrain wage growth.

Fiscal policy also influences growth models. A permanent change in government spending in the 3-equation model alters the composition of aggregate demand in the medium run. We can use the model to trace the effect of a lasting reduction in government spending through the economy. A fall in government spending reduces aggregate demand. The central bank responds to the fall in output and inflation by lowering the real interest rate, which in turn triggers the real exchange rate to depreciate. Export competitiveness improves and net exports expand. Once back at medium-run equilibrium, the aggregate demand lost through lower government spending has been replaced by net exports—the economy has become more export-led. A conservative fiscal policy regime also helps to reinforce the incentives for wage moderation generated by a conservative monetary policy regime.[37] In the second half of the sample period (2001-07), when growth models became particularly entrenched, fiscal policy was considerably tighter in Germany and Sweden than the UK. The average cyclically adjusted primary government balance (a greater deficit represents a more expansive fiscal policy stance) was -1.5% of GDP in the UK, compared to -0.1% of GDP in Germany and 1.6% of GDP in Sweden.[38] Fiscal policy thus complemented the German, Swedish and the UK growth models during the pre-crisis period.

Carlin and Soskice use the 3-equation model to explain the growth trajectories of the German and UK economies during the sample period.[39] They show that the sustained weakness in consumption and restrained government spending in Germany helped depreciate the real exchange rate and support the export-led growth model. In contrast, they show that looser fiscal policy in the UK buoyed household consumption at the expense of exports and reinforced the consumption-led growth model.

Global imbalances

The comparative political economy literature has underlined the interdependence of growth models during the sample period, both within the Eurozone and in the wider global economy. [40] The growth models were indeed deeply symbiotic; the consumption-led economies bought goods from the export-led economies and the export-led economies encouraged this spending by lending freely to the consumption-led economies. The current account imbalances that emerged during the sample period reflected the flow of goods and capital between countries. The consumption-led, current account deficit countries received net inflows of goods and capital from the rest of the world, whereas the opposite was true in the export-led, current account surplus countries.

The 3-equation model can help explain how successful inflation targeting can coincide with persistent external imbalances in medium-run equilibrium when countries have different growth models. Carlin and Soskice set out a version of the 3-equation model that looks at the entire global economy rather than just a single country.[41] In this highly stylized model, the global economy is made up of two blocs of countries, each with their own central bank and the same unique equilibrium rate of output. The model assumes both countries begin in trade balance. If autonomous (exogenous) demand rises in one bloc relative to the other then the central bank in the high demand bloc will raise the interest rate to get the economy back on the path to medium-run equilibrium. The appreciation of the exchange rate will dampen net exports in the high demand bloc. It will also necessarily depreciate the exchange rate in the low demand bloc (the exchange rate between the two blocs in the only one in the global economy). The central bank in the low demand bloc must then raise the interest rate to offset the boost to net exports from the exchange rate depreciation. In the new medium-run equilibrium, the high demand bloc has an appreciated real exchange rate and a trade deficit and the low demand bloc has a depreciated exchange rate and a trade surplus. The real interest rate is higher in both blocs in order to squeeze out the higher autonomous demand. We can see that the shock has permanently altered the growth models of the two blocs: the high demand bloc has become more consumption-led and the low demand bloc (even though it was not subject to the shock directly) has become more export-led. The model is very simplified and relies on both central banks and the foreign exchange market being rational and perfectly informed. Nonetheless, it clearly shows how the interaction of countries with different growth models can lead to both significant external

imbalances and low and stable inflation, which mirrors one of the major features of the global economy during the pre-crisis period.

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Notes

1. This model was developed by the Regulation School and associated with Robert Boyer. A sophisticated aspect of the Boyer model, which gave it considerable power, was that it integrated both demand and supply-side considerations through labour productivity growth.
2. See, for example: Torben Iversen and David Soskice, "Modern Capitalism and the Advanced Nation State: Understanding the Causes of the Crisis," in Nancy Bermeo and Jonas Pontusson, eds., *Coping with Crisis: Government Reactions to the Great Recession* (New York: Russell Sage, 2012), 35-64; Peter Hall, "The Economics and Politics of the Euro Crisis," *German Politics* 21, no. 4 (2012): 355-371; Peter Hall, "Varieties of Capitalism and the Euro Crisis," *West European Politics* 37, no. 6 (2014): 1223-1243; and Torben Iversen, David Soskice and David Hope, "The Eurozone and Political Economic Institutions," *Annual Review of Political Science* 19 (2016).
3. See, for example: Wolfgang Streeck and Kathleen Thelen, eds., *Beyond Continuity: Institutional Change in Advanced Political Economies* (Oxford: Oxford University Press, 2005); and Kathleen Thelen, *Varieties of Liberalization and the New Politics of Social Solidarity* (New York: Cambridge University Press, 2014).
4. Iversen and Soskice, "Modern Capitalism and the Advanced Nation State: Understanding the Causes of the Crisis".
5. Ireland is excluded from the sample because it is a major outlier. Its average annual GDP growth over the sample period was 7.4%, nearly twice as high as the

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next fastest-growing economy (Finland), and net exports and consumption both made large positive contributions to growth.

6. Peter Hall and David Soskice, eds. *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage* (Oxford: Oxford University Press, 2001).

7. Thelen, *Varieties of liberalization and the new politics of social solidarity*; Torben Iversen and David Soskice, "Democratic Limits to Redistribution: Inclusionary versus Exclusionary Coalitions in the Knowledge Economy," *World Politics* 67, no. 2 (2015): 185-225.

8. Iversen and Soskice, "Democratic Limits to Redistribution: Inclusionary versus Exclusionary Coalitions in the Knowledge Economy".

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10. Iversen, Soskice, and Hope, "The Eurozone and Political Economic Institutions".

11. Richard Clarida and Mark Gertler, "How the Bundesbank Conducts Monetary Policy," in Christina Romer and David Romer, eds., *Reducing Inflation: Motivation and Strategy* (Chicago: University of Chicago Press, 1997), 363-412.

12. Data source: IMF World Economic Outlook Database, April 2015.

13. Christian Dustmann, Bernd Fitzenberger, Uta Schönberg and Alexandra Spitz-Oener, "From Sick Man of Europe to Economic Superstar: Germany's Resurgent Economy," *The Journal of Economic Perspectives* 28, no. 1 (2014): 167-188.

14. Data source: OECD Annual National Accounts; authors' calculations.

15. OECD, *OECD Science, Technology and Industry Scoreboard 2007: Innovation and Performance in the Global Economy* (Paris: OECD Publishing, 2007).

16. Rafal Kierzenkowski, "The Challenge of Restoring French Competitiveness," *OECD Economics Department Working Papers*, no. 720 (2009); Meriem Bouchoucha, "The Euro Effect on Eurozone Exports," *International Economic Journal* (2015): ahead-of-print, 1-20.

17. Task Force of the Monetary Policy Committee of the European System of Central Banks, "Competitiveness and the Export Performance of the Euro Area," *ECB Occasional Paper Series*, no. 30 (2005); Hans-Werner Sinn, "The Pathological Export Boom and the Bazaar Effect: How to Solve The German Puzzle," *The World Economy* 29, no. 9 (2006): 1157-1175; Dustmann, Fitzenberger, Schönberg and Spitz-Oener, "From Sick Man of Europe to Economic Superstar: Germany's Resurgent Economy".

18. The eight Central and Eastern European economies are the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia. The figures are taken from: Task Force of the Monetary Policy Committee of the European System of Central Banks, "Competitiveness and the Export Performance of the Euro Area".

19. Sinn, "The Pathological Export Boom and the Bazaar Effect: How to Solve the German Puzzle".

20. Ingo Geishecker, "Does Outsourcing to Central and Eastern Europe Really Threaten Manual Workers' Jobs in Germany?" *The World Economy* 29, no. 5

(2006): 559-583; Dustmann, Fitzenberger, Schönberg and Spitz-Oener, "From Sick Man of Europe to Economic Superstar: Germany's Resurgent Economy".

21. Andrew Gelman and Hal Stern, "The Difference Between "Significant" and "Not Significant" is Not Itself Statistically Significant," *The American Statistician* 60 no. 4 (2006): 328-331.

22. The test statistic for testing whether the difference between two regression coefficients is statistically significantly is: $\dfrac{\hat{b}_1 - \hat{b}_2}{\sqrt{s.e.(\hat{b}_1)^2 + s.e.(\hat{b}_2)^2}}$. We can calculate the test statistic for the difference between the Swedish and German coefficients using the results in Table 3: $\dfrac{(-0.478) - (-0.137)}{\sqrt{(0.226)^2 + (0.258)^2}} = -0.994$. The difference between the German and Swedish coefficients is therefore not statistically significant (using a t-distribution with $(N_1 + N_2 - 4) = (13 + 13 - 4) = 22$ degrees of freedom).

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25. Swarnali Ahmed, Maximiliano Andres Appendino and Michele Ruta, "Depreciations Without Exports? Global Value Chains and the Exchange Rate Elasticity of Exports," *World Bank Policy Research Working Paper*, no. 7390 (2015).

26. Jean Imbs and Isabelle Méjean, "Trade Elasticities: A Final Report for the European Commission," *European Commission Directorate-General for Economic and Financial Affairs Economic Papers,* no. 432 (2010).

27. Barry Eichengreen and Poonam Gupta, "The Real Exchange Rate and Export Growth: Are Services Different?" *World Bank Policy Research Working Paper* no. 6629. Mark Smith obtains similar results from a study on New Zealand, finding that services exports are roughly three times more sensitive to the real exchange rate than aggregate export volumes: see Mark Smith, "Impact of the Exchange Rate on Export Volumes," *Reserve Bank of New Zealand Bulletin* 67, no. 1 (2004).

28. See, for example: Olivier Blanchard and Lawrence Katz, "What We Know and What We Don't Know about the Natural Rate of Unemployment," *Journal of Economic Perspectives* 11, no. 1 (1997): 50-72; Robert Gordon, "The Time-Varying NAIRU and Its Implications for Economic Policy," *Journal of Economic Perspectives* 11, no. 1 (1997): 11-32; Joseph Stiglitz, "Reflections on the Natural Rate Hypothesis," *Journal of Economic Perspectives* 11, no. 1 (1997): 3-10; Christopher Allsopp and David Vines, "The Assessment: Macroeconomic Policy," *Oxford Review of Economic Policy* 16, no. 4 (2000): 1-32; Paul Krugman, "How Complicated does the Model Have to Be?" *Oxford Review of*

Economic Policy 16, no. 4 (2000): 33-42; and Robert Frank and Ben Bernanke, *Principles of Macroeconomics* (New York: McGraw-Hill/Irwin, 2001). These leading academic macroeconomists have all held major policy positions in government or central banks apart from Frank, Krugman and Vines, themselves leading commentators.

29. Wendy Carlin and David Soskice, *Macroeconomics: Institutions, Instability, and the Financial System*. (Oxford: Oxford University Press, 2015).
30. We owe this term to Peter A. Hall.
31. Carlin and Soskice, *Macroeconomics: Institutions, Instability, and the Financial System*.
32. Robert Rowthorn, "Conflict, Inflation and Money," *Cambridge Journal of Economics* 1, no. 3 (1977): 215-239.
33. Ibid.
34. David Soskice and Torben Iversen, "The Nonneutrality of Monetary Policy with Large Price or Wage Setters," *Quarterly Journal of Economics* 115, no. 1 (2000): 265-284; David Soskice, "Macroeconomics and Varieties of Capitalism," in Bob Hancké, Martin Rhodes and Mark Thatcher, eds., *Beyond Varieties of Capitalism: Conflict, Contradictions, and Complementarities in the European Economy* (Oxford: Oxford University Press, 2007), 89-121; Iversen and Soskice, "Modern Capitalism and the Advanced Nation State: Understanding the Causes of the Crisis".
35. Soskice, "Macroeconomics and Varieties of Capitalism".
36. Data source: IMF World Economic Outlook Database, April 2015.
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38. Data source: OECD Economic Outlook No. 97, June 2015.
39. Wendy Carlin and David Soskice, "German Economic Performance: Disentangling the Role of Supply-Side Reforms, Macroeconomic Policy and Coordinated Economy Institutions," *Socio-Economic Review* 7, no. 1 (2009): 67-99.
40. On the interdependencies of growth models within the Eurozone, see: Hall, "The Economics and Politics of the Euro Crisis; Hall, "Varieties of Capitalism and the Euro Crisis"; and Alison Johnston and Aidan Regan, "European Monetary Integration and the Incompatibility of National Varieties of Capitalism," *JCMS: Journal of Common Market Studies*, Early View. On the interdependencies of growth models in the wider global economy, see: Iversen and Soskice, "Modern Capitalism and the Advanced Nation State: Understanding the Causes of the Crisis".
41. See Chapter 11 of Carlin and Soskice, *Macroeconomics: Institutions, Instability, and the Financial System*.

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