

PIN - Productivity Projects Fund

Small Project Report

## **The Divergence of Pay and Productivity? Institutional, Structural and Cyclical Factors**

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## About PIN

The Productivity Insights Network was established in January 2018 and is funded by the Economic and Social Research Council. As a multi-disciplinary network of social science researchers engaged with public, private, and third sector partners, our aim is to change the tone of the productivity debate in theory and practice. It is led by the University of Sheffield, with co-investigators at Cambridge Econometrics, Cardiff University, Durham University, Glasgow Caledonian University, SQW, University of Cambridge, University of Essex, University of Glasgow and the University of Leeds. The support of the funder is acknowledged. The views expressed in this report are those of the authors and do not necessarily represent those of the funders.

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## Introduction

The slowdown in productivity and slow wage growth (especially low and median wages) relative to productivity growth have become central policy issues in many OECD countries over the last decade. The role of rising economic inequality as a driver of wage-productivity decoupling is also beginning to get more attention. This project investigates the assumption on the positive relationship between pay and productivity that is increasingly called into question in light of wage stagnation. Specifically, it explores the assumption that increased productivity results in higher compensation for workers by conducting a review of the empirical analysis of the links between pay, pay inequality, economic growth and productivity in the UK. The project links directly to key gaps in theory and data evidence identified by PIN by addressing key evidence on the relationship between productivity growth and compensation and the possible ameliorating factors of globalisation, weakening trade unions, income inequality and technology. This short report takes stock of recent research in the UK on the drivers of wage productivity divergence and discusses implications for public policies. In summary, it identifies key discrepancies across the methodological, empirical and theoretical approaches employed. We focus on the complex interaction of institutional, structural and cyclical factors and in so doing question the presumed direction of causality from productivity to pay. It is our view that the direction of this causality needs much further investigation. In terms of pay inequality we review how mean and median wages skew the distribution as well as the role the deflator plays in such calculations. We conclude with a call for more pluralistic approaches.

## Context

The “great decoupling” in the long history of a positive relationship between labour productivity and compensation in the US began in the early 1970s and accelerated since 2000 with first median and then average compensation diverging from labour productivity. In the US, annual real median wage growth over the past two decades has been around ½ per cent whereas it has been between 1½ and 2 per cent in countries with similar productivity growth but less or no decoupling, such as France and Finland. The reasons for this divergence are hotly debated. In short the positions encompass - the link is not broken; there never was a link; the link is entirely broken and there is no systematic translation of productivity gains into wage increases; the observable divergence is caused by other factors one of which may, or may not, be technological progress. It might be worth noting here that whatever the standpoint in terms of the existence of a causality to explain the co-movement (from 1945-75) and then divergence (1975 - ...) of productivity and pay in the US, there is very little argument in mainstream economics in terms of the direction of the causality.

Stanbury and Summers (2017) argue that the linkage between productivity and compensation growth remains fairly intact in the US with both having grown over the 70 years albeit with productivity growing slightly faster than compensation. They conclude that the observed divergence is caused by other factors which have been acting to suppress “typical compensation even as productivity growth has been acting to raise it”. Technological progress, the most frequently proposed theory for the productivity-compensation divergence, is given short shrift as they do not find substantial evidence of co-movement between productivity growth and either the labour share or the mean/median compensation ratio. Mishel and Bivens (2015), on the other hand, question whether there ever was a linkage arguing that the time series data does not necessarily imply causality. But they also argue that even if there had been a link it is not necessarily broken with other factors complicating the relationship. These “other factors” are what unites the conclusions of several studies. Having ruled out, or marginalized, technological progress as the explanation Stanbury and Summers (2018) suggest structural and institutional explanations for the divergence including, for example labour market deregulation. Mishel and Bivens highlight growing inequality as the key explanation arguing that over the entire 1973–2014 period rising inequality explains over two-thirds of the productivity–pay divergence.

## The US vs the UK

In terms of comparing the US and the UK since the 1970s a number of differences can be identified in the relationship between productivity and pay and the causes of divergence as well as in their respective labour markets. Both productivity and compensation have grown in the US, albeit with productivity having a faster rate of growth, whereas in the UK both productivity and compensation have decreased with real wages falling more dramatically. In terms of labour markets key differences include firing-hiring costs being much lower in the USA and the unprecedented increase in self-employment in the UK especially in Scotland. Key institutional differences are also apparent in relation to for example health care and pension contributions – items that are key components of non-wage labour costs.

Much of the empirical work in the UK in relation to the so called ‘productivity puzzle’ have been short term pro cyclical explanations. Labour productivity in the UK has been stagnant since the start of 2008 recession with GDP falling by around 6% over the same period. Falls in employment and hours worked have remained relatively smaller – 2% and 4% respectively. A key finding of Blundell et al (2014) is the significant difference in terms of how labour have reacted to the latest general crisis, compared with the previous crises that occurred in 70s, 80s and 90s. The economy has as yet been unable to recover in terms of “real output per hour”, which is still 3% lower than pre-recession levels. Low productivity accompanied by low wages seems a post-crisis fact of the UK economy and the opposite of the US experience. The fact that firing-hiring costs are significantly lower in the US may be a key factor. Other potential explanations include the significant increase in labour supply (especially low skilled workers) by around 14.4% from 1981 to 2011 of which net migration is the main contributor. This in turn led to a deterioration in capital-labour ratio. They also argue that the fall in trade union membership damaged bargaining power of workers and made it easier to freeze real wages. For the purposes of our investigation however, it is very difficult, from the empirical data available for the UK, to ascertain whether lower productivity is being driven by lower wages or lower wages are being driven by lower productivity.

## Institutional and Structural Changes in the UK

There is agreement over potential culprits of the UK productivity puzzle when it is described as a post-recession phenomenon. So-called cyclical culprits include declining real wages and increase in the cost of capital, increased uncertainty giving rise to worsening of private investments and business confidence, mismeasurement, labour hoarding and deregulation (Pessoa and Veenen, 2013; Bryson and Forth, 2016; McSorley, 2018). Although each of these variables offer insights into different aspects of the puzzle, several empirical studies find that they do not individually explain the characteristics of the puzzle. Productivity growth has continued to show a weak performance while employment rates have been breaking new records. Following McCann (2018) we argue that the institutional and structural changes that have been taking place over the past three decades have not been sufficiently taken into account by standard theoretical frameworks. Defining the key question as whether productivity drives, or is being driven by, real wages requires an elaboration on the direction of the causality and its theoretical underpinnings.

As is the case for many other countries, the UK economy has undergone substantial structural and institutional changes since the 1970s. The primary ones at an institutional level include the dramatic decline of trade union coverage and collective bargaining power; the introduction of minimum wage in 1999, and substantial changes in welfare system including the recent introduction of Universal Credit. Reforms in welfare system that apply stricter eligibility rules for out-of-work claimants and changes to retirement age are likely to have increased competition for jobs, leading to lower reservation wages and increased in-work poverty (Barnet et al., 2014).

This type of short-to-medium term implications of institutional changes are likely to shape slower-moving structural changes (Haldane, 2018).

Structural shifts in the UK labour market include the unprecedented increase in self-employment; the shift from permanent jobs to more precarious forms of employment (part-time and zero-hours contracts) and the subsequent increase in in-work poverty. In terms of institutional factors, trade union coverage in the UK has seen a dramatic decline from its peak of half the available work force, 52.2%, in 1981 to its historically lowest point, 23.2%, in 2017 (OECD, 2018). Collective bargaining coverage, representing the percentage of employees with the right to bargain has decreased from 72.1% in 1960 to 26.3% in 2017. This trend can largely be attributed to the fundamental reform of labour markets by Thatcher government in the period 1979-1990. In relation to structural factors Tables 1 to 3 below illustrate how both the composition of those at work and forms of employment have changed significantly.

**Table 1: Employment of people in work in the UK (in thousands)**

Year	Total	Employees	Self-employed	Other*	% of self-employed
1975	22,386	20,449	1,937	---	8.7%
2019	32,714	27,703	4,839	172	14.8%

\* Other includes unpaid family workers and people on government supported training and employment programmes  
Source: ONS, Dataset: EMP01 SA: Full-time, part-time and temporary workers (seasonally adjusted)

Over the period 1975-2018, there is a clear divergence between growth rates of employees and self-employed, the latter currently representing 14.8% of total labour force. According to the latest estimates, 30% of the self-employed people are working on a part-time basis (ONS, 2019)

**Table 2- Part-time, part-time and temporary employment (in thousands)**

Year	Total	Full-time	Part-time	Temporary	% of FT	% of PT	% of Temporary
1992	25,636	19,632	6,004	1,288	76.5%	23.5%	5%
2018	32,395	23,841	8,554	1,557	73.5%	26.5%	4.8%

Source: ONS, Dataset: EMP01 SA: Full-time, part-time and temporary workers (seasonally adjusted)

**Table 3: Level and rate of people aged 16 and over on zero-hours contracts**

Year	Level (thousands)	% of people on a zero-hours contract
2000	225	0.8%
2018	844	2.6%

Source: ONS, Dataset: EMP17: People in employment on zero-hours contract

In parallel with the deregulation in the labour market, the share of part-time workers increased from 23.5% in 1992 to 26.5% in 2018. Also, from 2000 to 2018, the number of people on zero-hours contract nearly quadrupled and they now constitute 2.6% of the total employment. As of 2018, around 140 thousand people work zero hour on a weekly basis.

The impacts of these trends on productivity has remained an understudied topic. An early attempt to measure effects of deregulation policies by Brown and Wadhvani (1990) finds that policies failed to deliver intended outcomes, with no improvement in productivity or wages. Moreover, in their more recent study, Onaran et al. (2015) report that in the UK, wage share has declined from its 1975 peak of 76% to an historic low of 67% 2015. They also find that every 1% reduction in the share of national income going to wages caused a 0.13% decrease in the UK GDP while an increase in wages is a stronger driver of GDP than profits.

## Cyclical Explanations

While there is consensus on the impact of the 2008 recession on output and labour markets the data tends to indicate that the tendency of real wages to fall in developed countries started well before 2008 crisis. We argue that UK productivity puzzle can be better explained by widening the focus from pro cyclical changes to structural characteristics and changes to underlying infrastructural and institutional environment. Indeed, even the Chief Economist of the Bank of England agrees arguing that “the puzzling pattern of rich jobs but poor pay growth” requires a framework that goes beyond cyclical approaches and incorporates structural changes in the labour market (Haldane, 2018).

The underlying infrastructural and institutional environment clearly play a greater role than the standard determinants of productivity - investment in physical capital and investment in human capital. In relation to the former the data suggests the lack of business confidence dates back to 1990s and in relation to investment in human capital the data suggests the UK is doing better vis-à-vis its EU counterparts in educational attainment and in-work training. Likewise, it is not only falling real wages but also the UK’s relatively poor productivity performance that has been longstanding. The long-term outcome has been the UK leadership in productivity was taken over by the USA during 1950s, and then by Germany and France in the early 1970. For the past three decades, UK productivity performance has invariably stood the worst or second-worst in G7 countries (ONS, 2018)

A key issue therefore in relation to the productivity puzzle is that the phenomenon itself is defined as a cyclical one. Regardless of the size and severity of particular crisis a similar recovery path is taken for granted. Thus the latest recession is regarded as a completed process rather than an ongoing one embedded in historical and structural characteristics. Long-term empirical studies on divergence itself (co-integration tests and structural break test) might be more helpful rather than short-term pro-cyclical explanations.

## Pay Inequality and Productivity

At a broader level, much of the research on the links between pay, pay inequality, growth and productivity in the UK context has produced conflicting results, including the direction of causality, in relation to pay and productivity. For example, Forth and Aznar (2018) revealed that 10 low-wage sectors within the UK account for 38% of total hours worked, with a corresponding value-added share of only 23%. However once the shift in labour markets from medium-skill sectors towards high- and low-skill sectors, which is a striking characteristic of the UK and US economies in recent years, is incorporated then income distribution continues to be a “challenge”. Even if we accept the positive relationship it can be argued that there is a cumulative causation (Myrdal) in the sense that lower wages continue to drive low productivity. Kumar et al. (2012) conducted a time-series analysis with structural break tests along with a Granger causality test on Australian data over the 1965-2007 period. And they found that in the short-run the relationship between productivity and wages is a bi-directional one – which implies that adjustment mechanisms have yet to take place in the short term, so the picture is blurred. Their main finding is that in the long-run real wages cause productivity – more precisely, a 1 percent increase in real wages leads to an increase in productivity between 0.5 and 0.8 percent. Onaran et al. (2015) in their comparative empirical analysis found that economic growth in the UK – just like nearly all EU countries – is driven by wages (“wage-led” economy). The boost to demand from rising wages thus outweighs other impacts on profits and international competitiveness; growth in national income is driven by growing wages more than by growing company profits.

## Data and Measurement Issues

Other issues around in relation to pay and productivity include the availability of data and analysis of data. Three important points stand out: First, measurement issues around labour markets and the rate of employment have traditionally been neglected. A recent study (Ward et al., 2018) highlights how differing methodologies to measure “number of hours worked” may be a reason for mismeasurement of productivity across countries up to 10 percentage points.

Second, employing average or median compensation measures remains a point of disagreement. Stanbury and Summers (2017) argue that average compensation does not serve the purpose given the increased polarisation in terms of wage inequality. In effect mean compensation is skewed by higher incomes so that its growth does not reflect the experience of most middle-class Americans. The same is true for UK and Scotland.

Third, the selection of deflator to convert nominal data matters, with significant differences arising from different choices. Pessoa and Van Reenen (2012) argue that both productivity growth and average wage growth must be deflated by a common deflator - GDP deflator while Stanbury and Summers (2017) say that wages must be deflated by consumption price deflators such as CPI to reflect real value to the workers of their pay. The following figures demonstrate the importance of the deflator: They show that between 1973-2015, net labour productivity grew by 73% with average compensation deflated by the net domestic product price index growing by 66%; and deflated by the CPI growing by 47% while median compensation deflated by the CPI grew by only 12%.

## Conclusions and Implications for Future Research

A preliminary analysis of historical trends on the UK labour market imply that there is a structural shift in terms of the productive capabilities of labour since mid-1970s. These changes have had a considerable impact on long-term sustainability of economic growth and hence productivity. All these changes have consistently decreased the share of labour in national income, putting a huge downward pressure over real wages creating incentives for businesses to substitute labour for capital. As this situation persisted, earnings have become less certain as work itself becomes more precarious. This has in turn put constraints on demand, with a record rise in household debt. As a longer-term trend, debt as a proportion of household income has increased from 74.7% in 1987 to 133% as of Q3 2018 (ONS, 2019). The share of individuals with financial debts who find financial debts to be a heavy burden has reached an alarming plateau of 18-20% over the past 10 years (ONS, 2018) Finally, stagnated real wages accompanied by instability around earnings have tended to exacerbate the smooth functioning of overall economy, which manifest itself in the form of “muted” or “discouraged” consumer spending. This can be portrayed as higher profit rates at the expense of lower wage share, leading to low productivity and a breakup of the linkage from aggregate savings to aggregate investments.

We have primarily focused on the role of institutional and structural factors (including pay inequality) and cyclical explanations (including the direction of causality) as key aspects in the productivity-pay divergence in the UK and Scotland. Institutional and structural changes in the UK such as austerity policies, structural transformations in labour markets around flexibility, deregulation and the rise in self-employment continue to shape the contemporary landscape of political economy. Current models of growth and distribution do not sufficiently capture the interrelations of variables, institutional dynamics (cumulative causation) and structural changes. Nor do they place structural and intuitional changes in a historical perspective. For instance, geographical or spatial redistribution of economic activity, as a key structural change of the past forty years has started to produce insightful explanations – excluding Greater London and Southeast England from the UK shows a very different economy. A key issue in relation to the productivity puzzle is the understanding of the phenomenon as having characteristics around

which repercussions take place. Thus the latest recession is regarded as a completed process rather than an ongoing one. Long-term empirical studies on divergence itself (co-integration tests and structural break test might be more helpful) rather than short-term pro-cyclical explanations. Most empirical analysis is based on the assumption that causality lies from productivity to compensation, but the relationship is complex rather than a bidirectional one. We would argue that the direction of causality is yet to be clarified and establishing the direction could be investigated empirically by several alternative tests. If there is a mutual interaction (rather than wages being simply an automatic output of production process), then new policy suggestions might be developed.

In summary we suggest the need to incorporate a broader range of theoretical models. In line with the PIN projects stated aim of changing the tone of the productivity debate we tentatively suggest that is yet to happen. As we have tried to argue the majority of studies on the productivity puzzle in the UK have been based on neoclassical growth model of constant returns to scale and diminishing returns to inputs (Yeldan, 2009). This standard growth model is characterised by commonly available technology, a smooth and derivable production function, and the assumption that capital and labour get their 'fair share' as a direct result of their respective marginal productivity. To change the tone of the debate we would argue for the incorporation of alternative approaches and different starting hypotheses. For example, what if wages have been playing a greater part in long-run productivity performance? What are the structural and institutional changes that have been transforming the economic domain for the past four decades? What changes have characterized the underlying basis on which both individual agents (workers, firms and government) and macroeconomic behaviours were caught in 2008? Why should one compare the 2008 Recession to last three decades' small-scale crises? Is not there some mismatch between the questions asked and methodologies adopted?

The discussion on economic growth and distribution of income dates back to classical economists. Smith, Ricardo and Marx – despite their different ideological stances – all considered these two processes in their totality i.e. representing two sides of the same coin. Thus rather than being viewed as the inevitable outcome of the production process the distribution of income could be described as a primary mechanism in achieving balanced growth in the long run. Even august and certainly not heterodox institutions such as the IMF and the World Bank seem to be moving towards incorporating economic inequality as a key variable in their macroeconomic models.

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