



Department
for Business
Innovation & Skills

NATIONAL MINIMUM WAGE

Government Evidence for the
Low Pay Commission on the
Additional Assessment

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Introduction

The government fully supports the National Minimum Wage (NMW) and considers it to be one of the most important workplace rights. We welcome the opportunity to present evidence to support the Low Pay Commission (LPC).

This report outlines the government evidence to the LPC on their Additional Assessment in 2014. The evidence on the 2014 remit is set out in the government's Interim and Final Evidence reports¹. This shows that the UK economy is gaining momentum after one of the most damaging financial crises in generations and there has recently been strong growth in employment and stronger growth in median wages. The economic data and conditions set out in this report should be considered alongside the evidence framework set out in the government evidence.

Background

On 26th September 2013 the Secretary of State for Business Innovation and Skills, on behalf of the Government, asked the LPC to consider, alongside their existing remit, the conditions that would need to be in place in order to allow a faster increase in the minimum wage, taking into account the implications on employment.

The government believes it is important to draw on the LPC's expertise on the interaction with the NMW and the wider economic and policy context. In particular, we are keen to understand how the various government policies that affect the labour costs and take-home pay of NMW workers affect the LPC's recommendations.

This additional assessment reflects a growing desire across government to better understand all the factors that are affecting low wages in the economy and should be seen alongside signs of an emerging recovery and employment already at its highest ever level. The aim is to ensure that the benefits of growth are shared with lower paid workers. It also reflects a wish to ensure that the minimum wage provides a sufficient incentive to work.

The Monetary Policy Committee (MPC)² has provided some explicit guidance regarding the future conduct of monetary policy. In particular, the MPC intends not to raise Bank Rate from its current level of 0.5% until the ILO unemployment rate has fallen to a threshold of 7% [subject to certain conditions].

The government would like the LPC to consider what effect the MPC's forward guidance will have on its own assessment and recommendation for future NMW rates.

In addition, we are also interested to hear the LPC's views on the merits of phasing planned increases in the minimum wage over two or more years to ease adjustment.

¹ Both reports can be found on www.gov.uk

² <http://www.bankofengland.co.uk/monetarypolicy/Pages/forwardguidance.aspx>

This report starts by outlining what we mean by faster increases in the NMW and providing an overview of recent growth in the NMW. It then sets out the economic conditions where the LPC might wish to consider faster increases in the NMW. This includes rising employment, the link between hourly and weekly wages of NMW workers and the relationship between the consumer wage and the product wage.

Faster increases in the National Minimum Wage

Growth in the minimum wage can be compared with historical growth or growth relative to average earnings. Since 2007 the NMW has increased by 14%, broadly in line with, although slightly higher than, average earnings compared to 53% in the previous six years. In 2013 however, the NMW increased by less than average earnings.

This report sets out the economic conditions that would sustain faster increases in the NMW both historically and in relation to median earnings. The LPC should consider the appropriate increase in the NMW based on the evidence framework set out for the 2014 remit.

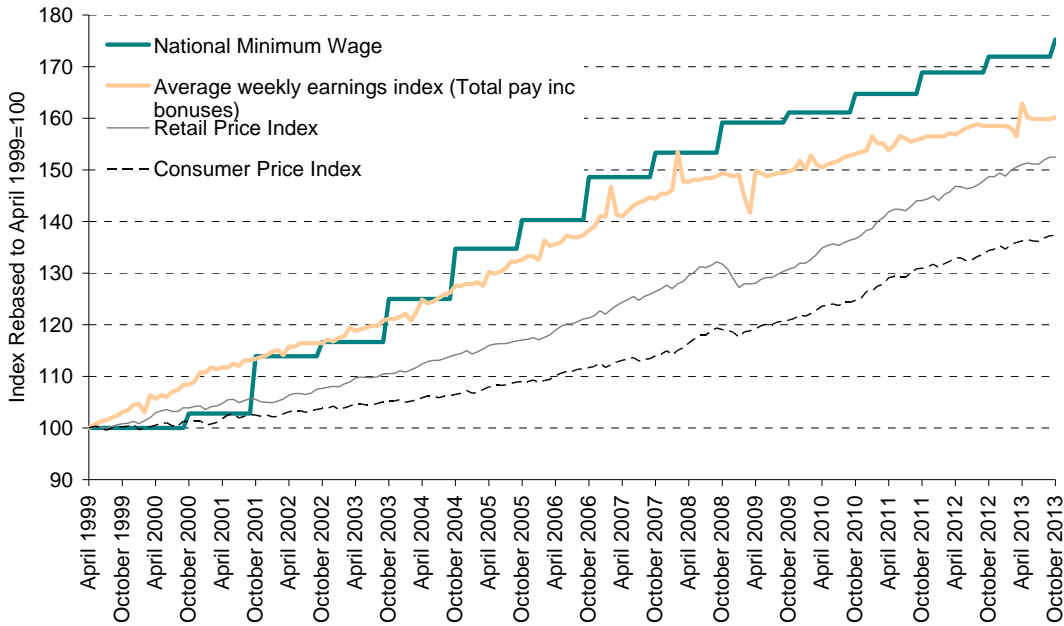
Growth in the Consumer Price Index and the GVA Deflator will impact on the real value of the NMW which is currently around 5% below its real peak.

Change in the NMW over time

Since its introduction in 1999 the NMW has increased faster than average earnings and prices. The LPC has proved that a rising minimum wage can go hand in hand with a flexible, fair and effective labour market – although their assessment and judgement has been made more difficult since the recession. Since the recession they have continued to increase the NMW rates by more than earnings although not as fast as prices (except in 2013 when the NMW increased by less than both prices and average earnings).

Chart 1: Adult NMW changes compared to earnings growth and inflation

Index rebased to April 1999 =100



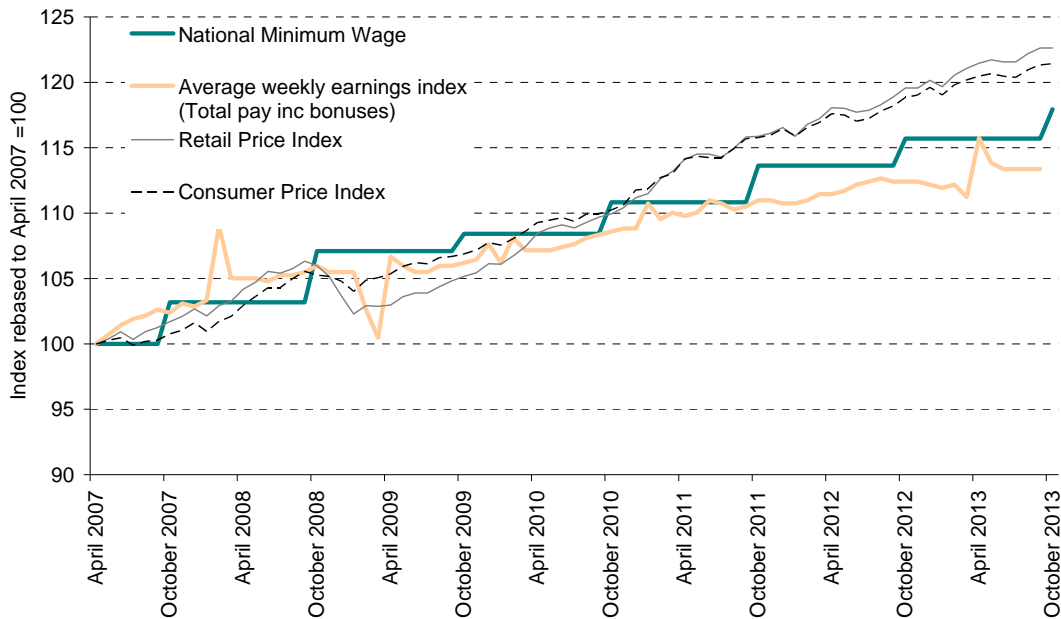
Source: Office for National Statistics; Consumer Price Index, Retail Price Index, and Average Weekly Earnings; Low Pay Commission. Between April 1999 and December 1999 Average Weekly Earnings was extrapolated using the Average Earnings' Index.

For much of this period growth in median wages has been subdued and inflation, as measured by the Consumer Prices Index (CPI), has been above target and higher than the NMW and median earnings, resulting in a real decrease in both.

Since the peak in 2007 the real value of the NMW has fallen by 5 per cent while median real earnings, in the same period, have fallen by 7 per cent. The OBR forecast subdued real earnings growth in 2014 reflecting the slow recovery of productivity growth towards its historical average, before picking up in 2015 and reaching 2 per cent in 2016.

Chart 2: Adult NMW changes compared to earnings and inflation

Index rebased to April 2007 =100



Source: Office for National Statistics; Consumer Price Index, Retail Price Index, and Average Weekly Earnings; Low Pay Commission. Between April 1999 and December 1999 Average Weekly Earnings was extrapolated using the Average Earnings' Index.

Changes in the bite over time

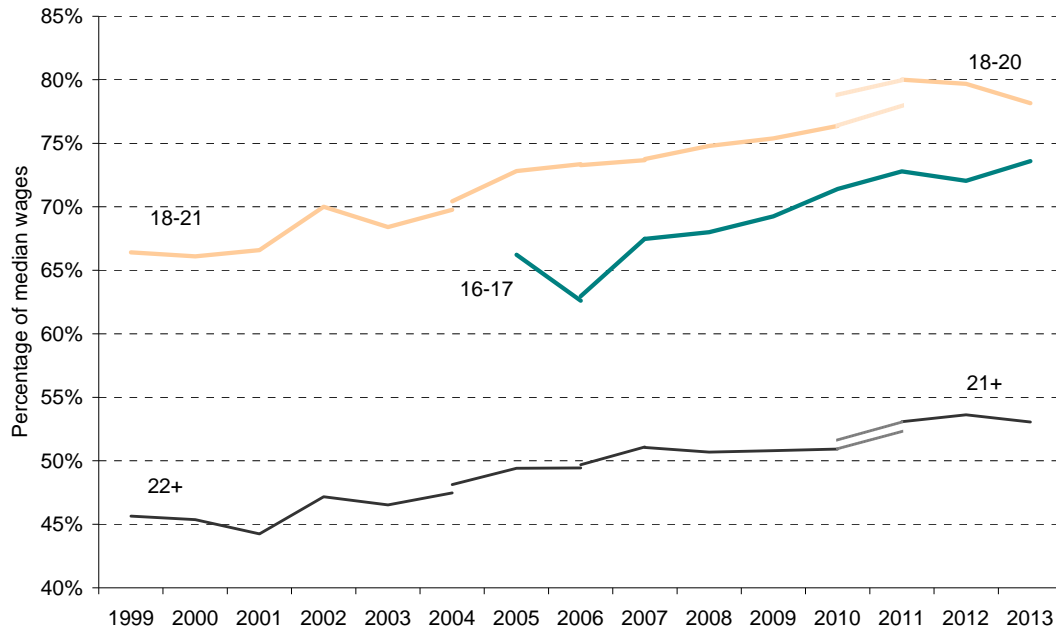
The bite is a fundamental indicator of the impact of the NMW on the labour market.

Since the beginning of the recession the bite has remained above 50 per cent, and shows that it has been successful in protecting the relative wages of the low paid over this time. The bite fell in 2013 from its 2012 peak by 0.6 percentage points to 53.1 per cent; due to higher than expected growth in median hourly earnings, and is now back to its 2011 level.

Other than the bite what alternative measures does the LPC consider when looking at the impact on the NMW?

In 2013 the NMW did not rise as fast as average earnings. Will the LPC be looking to, at least, restore the relative position of NMW workers?

When considering how to share the benefits of growth, what other measures does the LPC think we should consider?

Chart 3: NMW bite time series

Source: Office for National Statistics, Annual Survey of Hours and Earnings. 1999-2004 ASHE data – excluding supplementary information 2004-2006 ASHE data - old methodology. 2006-2013 ASHE data - new methodology.

The 2013 LPC report highlighted their concern that an increase in the bite above 53.7 per cent might jeopardise recent employment gains³. What happens to median wages in the future will affect the level of the bite and the change in the NMW needed to sustain it.

In order to increase the NMW without increasing the bite, average earnings would need to rise.

This report outlines three economic conditions relating to the employment rate, the weekly wages of NMW workers and the product wage that, if hold, may minimise the impact risk of a fall in employment if the bite is increased.

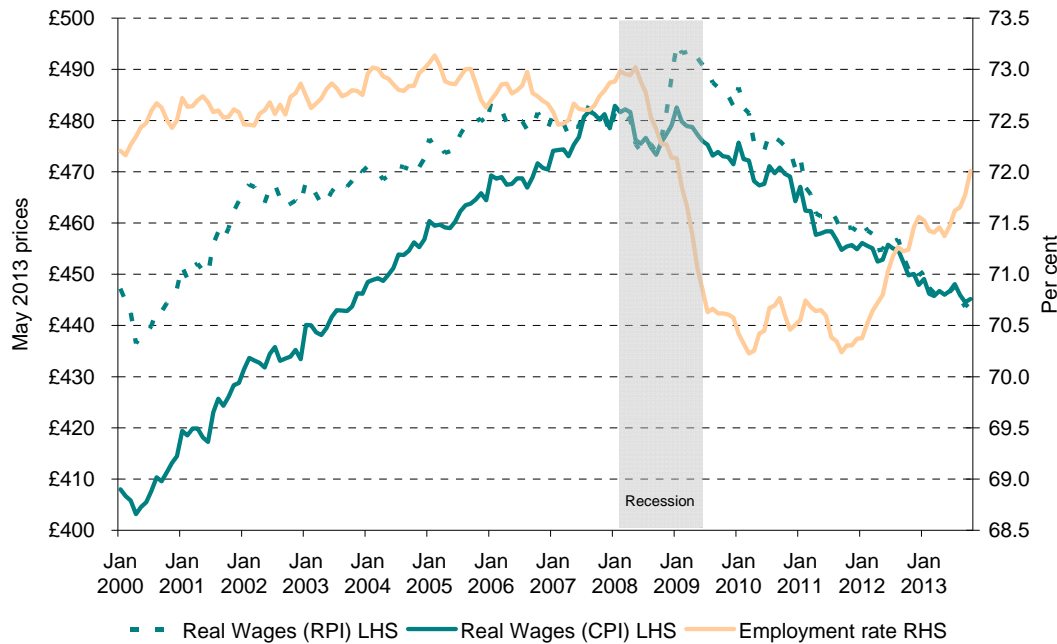
At a time when unemployment is already falling towards the 7% threshold, identified by the Governor of the Bank of England as triggering a tightening of monetary policy, the employment impact of changes in the NMW may in any event be a less pressing concern.

³https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226822/National_minimum_wage_Low_Pay_Commission_report_2013.pdf

Impact of the NMW on employment

As the adjustment in real wages lags behind changes in demand there was an increase in unemployment as a result of the financial crisis. However since the recession real wages have fallen by more than expected when compared historically and internationally.

Chart 4: Real average weekly earnings and the 25 – 64 employment rate



Source: Office for National Statistics, Monthly Labour Market Statistics. Average Weekly Earnings regular pay (KAI7 series) deflated by CPI and RPI.

Following a sharp fall, employment growth has been strong. It is at its highest ever level and has exceeded 30 million for the first time in October 2013 and is up by 1.28 million from the post-recession trough in March 2010.

250,000 jobs were created in October 2013 and 485,000 since the same time last year. There are now over 500,000 more people in work than at the peak employment level before the recession.

The employment rate for the working age population in the three months to October is 72 per cent, up 0.8 per cent since this time last year.

Employment growth in the private sector is more than offsetting falls in the public sector as 1.7 million net new private sector jobs have been created since early 2010, nearly four private sector jobs created for every public sector job lost.

For the purposes of this additional assessment we have focused on the employment rate of adults aged 25 – 64. This is because there appears to be a structural issue in the youth

labour market concerning the transition into employment – the number of young workless people that have never had a paid job has been increasing since the early 2000s. The youth employment rate is more than seven percentage points lower than the pre-recession rate in October 2013, and youth unemployment in October was 941,000.

The Cabinet Office have been leading a cross Government Review considering how to improve labour market outcomes for young people. This ongoing work is continuing to inform Government policy.

The employment rate of adults is more likely to be cyclical and more closely related to demand in the economy.

Chart 5: Employment rate of adults aged 25 – 64



Source: Office for National Statistics, Labour Force Survey, Jan 00 to Oct 13, seasonally adjusted

If the employment rate of the 25-64 age group is rising and either returning to or above the pre-recession peak then there may be greater scope to increase the bite of the NMW without a negative fall in the level of employment.

According to the Labour Force Survey the employment rate of this age group has been increasing sharply since mid 2011 and, since September 2013, is back to its peak before the recession.

Given this strong employment performance what does the LPC consider to be the risk of a rise in NMW damaging overall employment?

In addition, does the LPC believe that a faster rise in the NMW could play a greater role in increasing incentives to work?

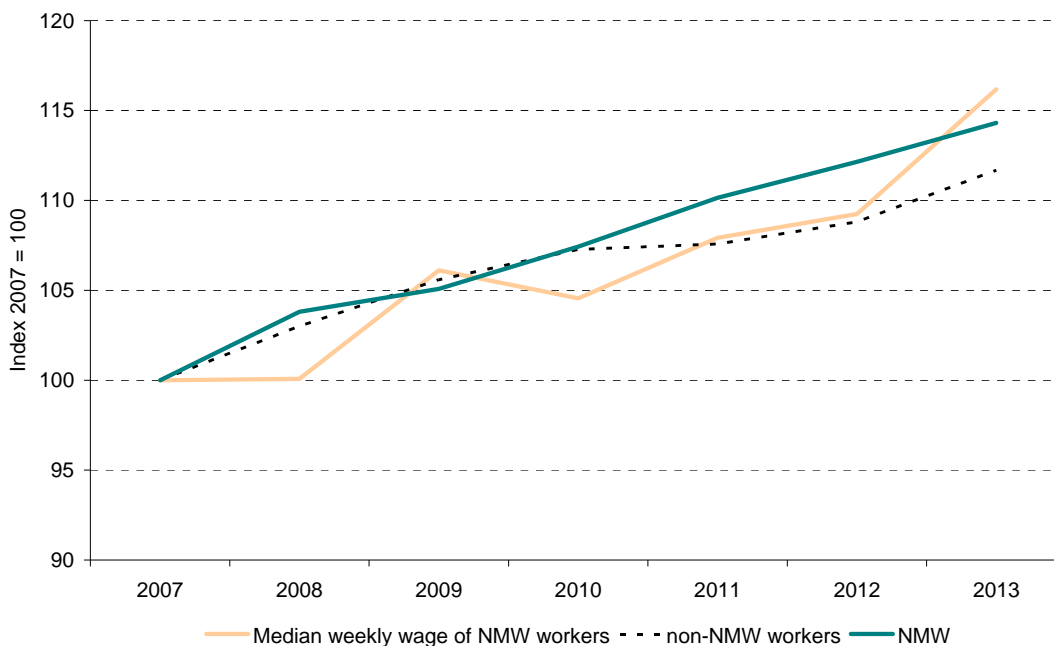
Growth in the weekly earnings of NMW workers

Growth in the hourly NMW does not always translate into growth in the weekly wages of NMW workers as employers can reduce hours and discretionary (non NMW) pay such as overtime or bonuses. Since 2007 this has been the case. The growth in weekly wages for NMW workers has tended to be below growth in the hourly NMW rate.

Does the LPC consider how a rise in the NMW, which is an hourly rate, will feed into their weekly wages of NMW workers?

This suggests that the recent below trend output growth has led to employers cutting back on hours or discretionary pay and so a rise in the NMW has not translated into a rise in weekly wages.

Chart 6: Growth in median weekly earnings of NMW workers, non-NMW workers and the hourly NMW



Source: Office for National Statistics, Annual Survey of Hours and Earnings. 1999-2004 ASHE data - excluding supplementary information 2004-2006 ASHE data - old methodology. 2006-2013 ASHE data - new methodology.

However in the last year the growth of NMW workers weekly pay has increased faster than the hourly rate. Firms employing NMW workers are increasing their hours or discretionary pay faster than the increase in the hourly NMW rate. This suggests that a rise in the NMW is more likely to feed through into their weekly earnings and more likely to have a positive impact on household disposable income.

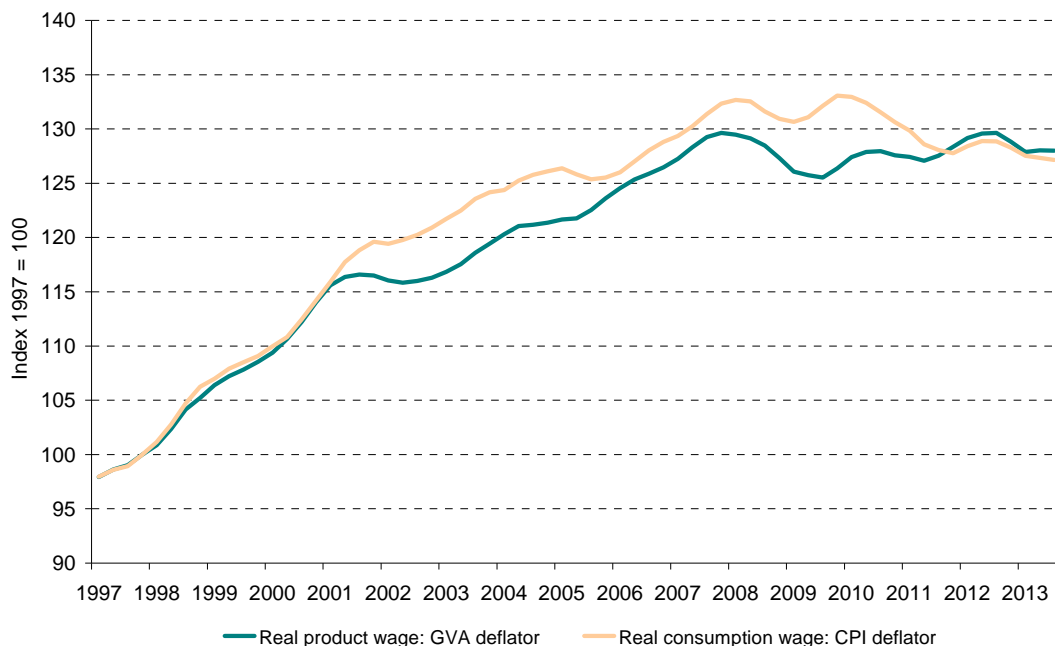
Comparing the consumer wage and the product wage

It is important to note that employers and employees have different concerns over wages. Employers care about the real product wage that is the level of labour costs relative to the price of the products they sell that is typically proxied by the GVA deflator. Employees care about the real consumption wage that is the level of labour income relative to the price of the goods and services they wish to consume, measured by the Consumer Prices Index (CPI). So the product wage includes non-wage labour costs such as employers' National Insurance Contributions (NICs) and also pension contributions, while the consumption wage is after the deduction of income tax and employee NICs.

A falling real product wage means that the expected labour cost to businesses of selling goods or services is reduced.

To what extent does the LPC consider the product wage when assessing the affordability to businesses?

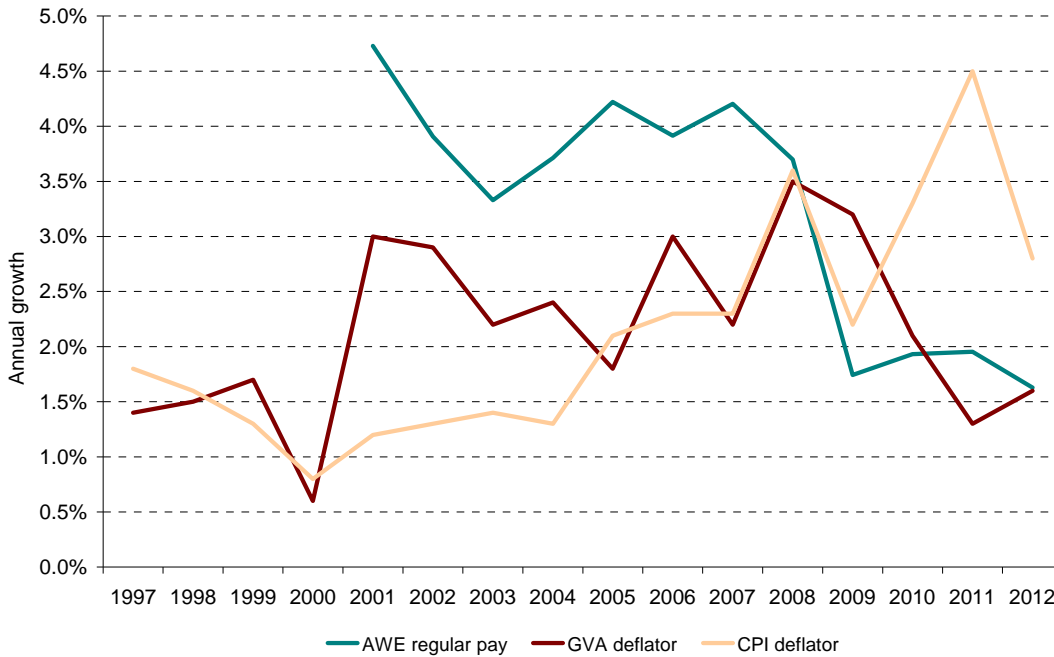
Chart 7: Growth in the real product and consumption wage



Source: Office for National Statistics National Accounts

Chart 8 shows that between 2001 and 2008 growth, in the Average Weekly Earnings (AWE) was higher than both CPI and the GVA deflator indicating, all else being equal, that both the real product wage and real consumer wage were rising. Overall the growth in the GVA deflator was higher than the CPI indicating the real product wage has increased more slowly than the real consumption wage.

Chart 8: Annual percentage growth in Average Weekly Earnings – regular pay, Gross Value Added (GVA) Deflator and CPI.



Source: Office for National Statistics National Accounts

Since 2008, growth in AWE has fallen to below, or similar to, both the CPI and GVA deflator indicating a real terms fall in both the product wage and consumer wage.

Does the LPC agree that a real fall in the product wage is a sign that the expected labour cost of selling goods and services is reduced and firms are more likely to be able to sustain higher increases in the NMW?

Since 2009 the CPI has been higher than the GVA deflator and, although both are expected to fall, the OBR forecast CPI to remain higher than the GVA deflator until 2017.

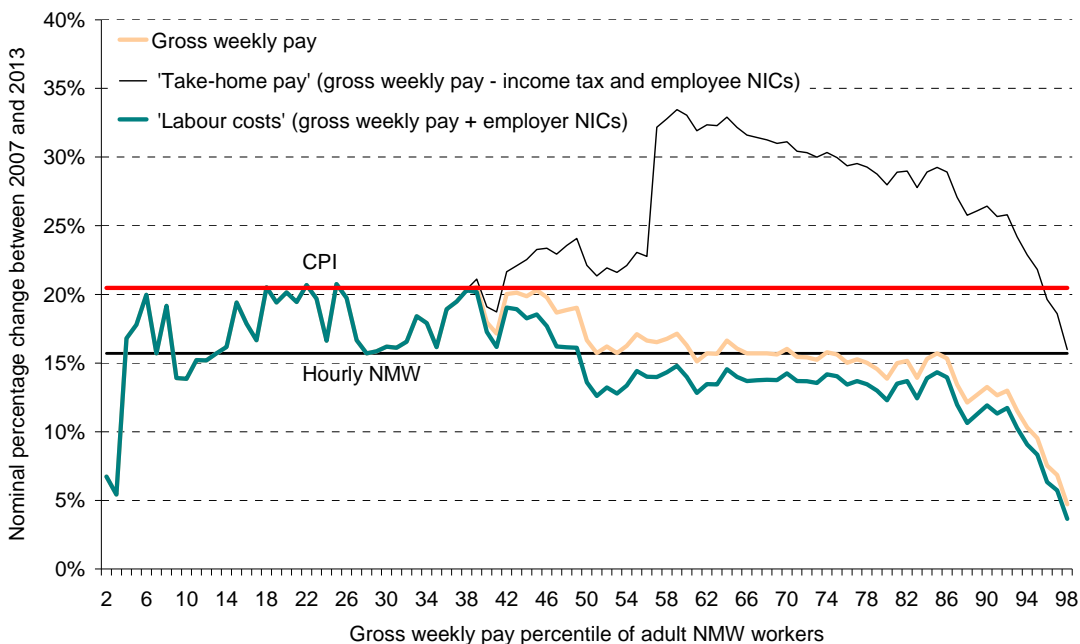
Changes to Government policy that have helped sustain living standards of the lowest paid

This Government recognises that these are tough times and is doing everything it can to help the low paid with their living standards. Autumn Statement 2013 sets out an overview of this Government's action to support living standards.

One of the key government policies supporting the low paid is the NMW and the government has accepted LPC recommendations to increase this by 14% since 2007 maintaining the relative income of the low paid over the recession.

In addition to the NMW, changes to the personal allowance have increased the take home pay⁴ for over 60 per cent of workers.

Chart 9: Change in wages, labour costs and take home pay between 2007 and 2013 for NMW workers.

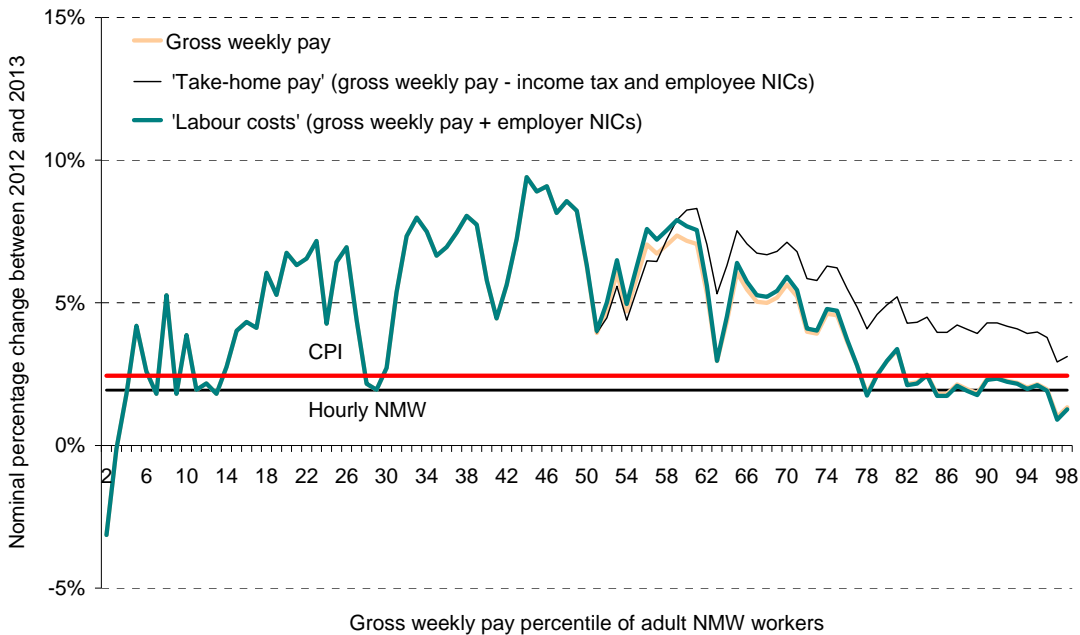


Source: BIS analysis of the Annual Survey of Hours and Earnings micro data

Someone working full time on the NMW will have seen their income tax bill reduced by nearly two thirds by April 2014 due to the personal allowance increases since 2010.

⁴ Take home pay is defined as post-tax earnings or gross weekly pay after income tax and employee NICs. It does not include in work benefits which are likely to be a substantial part of the income of the low paid

Chart 10: Change in wages, labour costs and take home pay between 2012 and 2013 for NMW workers.



Source: BIS analysis of the Annual Survey of Hours and Earnings micro data

Between 2012 and 2013 fewer NMW workers benefitted from the tax changes as a large proportion of NMW workers have been taken out of both income tax and National Insurance contributions. As the personal allowance increases, this will have less of an impact on NMW workers.

Increases in the employer NICs threshold, although below the personal allowance, have reduced labour costs for employers. Further, from April 2015, there will be an added incentive for employers taking on those under 21 – they will not be required to pay National Insurance contributions for these employees on earnings up to £813 per week.

The government has substantially cut taxes for the low paid in order to sustain their living standards during the recession and also increase their incentives to work. Given that there is less scope to reduce taxes for NMW workers going forward does the LPC consider that rises in the National Minimum Wage in the future might play a greater role in increasing incentives to work?

Conclusion

This report sets out the economic data and scenarios that the Low Pay Commission might wish to consider in their additional assessment that could allow faster increases in the NMW. The increase in the NMW can be compared either to historical increases or with average earnings.

We consider the bite to be a fundamental indicator of the impact of the NMW. If the LPC believe that the bite is at the appropriate level then average earnings need to rise in order to increase the NMW faster while maintaining the bite.

However, this report also sets out three economic conditions relating to the employment rate, the weekly wages of NMW workers and the product wage that, if hold, may minimise the risk of a negative fall in employment if the bite is increased.

HM Treasury analysis of fiscal impacts of increasing the NMW

Over the last year there has been an increased focus on the impacts of increases to the NMW, including commentary and analysis around the potential fiscal impacts. This has tended to focus on the immediate impacts in a static (or 'next day') analysis, consisting of changes in direct tax and benefit expenditure but excluding any wider employment effects and further adjustments that are likely to take place in the economy as a result of increases to the NMW. This can play an important role in helping understand the relative merits of changing the NMW, but also omits a number of dynamic responses, that can have a significant bearing on the likely results.

Capturing these dynamic responses in the analysis is important to provide a fuller and more balanced picture on the overall impacts of any increase, once all these adjustments have taken place. These include effects from the wider impacts on the economy, in particular through changes in employers' profits which would decrease Corporate Tax receipts, and increases in prices which would increase social security expenditure through higher benefits uprating costs. Alongside this there could be higher benefits costs due to any increases in unemployment ('employment effects'). Including these wider impacts can produce 'dynamic' or ('post-adjustment') estimates that differ materially from those undertaken only considering static impacts.

This paper sets out an estimate of the overall fiscal impact of increasing the NMW, and concludes that it is unlikely that there will be any large positive fiscal impacts from increasing the NMW. Of course there may be other good reasons for real terms increases in the NMW, but the fiscal impact is not one of them.

Background

As highlighted in the main additional assessment recent employment growth has been strong, with 250,000 jobs being created in October 2013, and 485,000 since the same time last year. There are now over 500,000 more people in work than at the peak employment level before the recession. The employment rate for the working age population, while below its pre-recession peak, is rising as well up 0.8 per cent since this time last year. Going forward the OBR expect employment to grow by around 800,000 between Q4 2014 and Q4 2018.

During this period it has also been widely commentated that the real value of the NMW has fallen relative to its 2007-08 peak. As the recovery takes hold the Government has asked the LPC to consider the conditions that would need to be in place in order to allow a faster increase in the NMW, taking into account the implications on employment. This is to help ensure that the economic recovery benefits all. It is for the LPC, whose independent expertise and advice the Government greatly values, to come to a judgement on this, and the purpose of this document is to provide further evidence on the fiscal and employment impacts to assist in this.

As part of the fiscal assessment, the Government has considered an illustrative scenario of the increase that would be required to restore the 2007-08 real value, using CPI, of the adult NMW rate by NMW year 2015-16. This corresponds to an increase in the adult minimum wage to around £7. This £7 is considered against a counterfactual rate (assuming average earnings growth) of £6.71. Given the importance of understanding and assessing the employment effects of any change, this work has also assessed the potential employment change, which is highly uncertain, but estimated to be an increase in unemployment of around 14,000 in 2018-19. This assumes a labour demand elasticity of 0.4, and (to enable to use of publicly available ready-reckoners) that the full change is realised in employment levels rather than also through hours. However we note that the empirical evidence on employment effects of the NMW through jobs rather than hours is inconclusive.

Any actual change in labour demand depends not only on the NMW, but also wider costs to employers, as well as the wider economic outlook, and how employers choose to respond. The Government is focussed on the need to support business, to help support growth & employment. For example, the coalition government has already announced tax cuts for business worth over £11bn per annum by 2015-16. In addition, by 2015-16, through measures including the Employment Allowance, the Government will have lifted 450,000 employers and nearly 1.2m employees out of employer NICs.

Fiscal Analysis

The new analysis presented here makes use of existing data and models to provide an assessment of both the possible static and dynamic fiscal impacts that might result from an increase to the minimum wage.

Consistent with previous approaches in this area, initially we present the static impacts without taking into account wider adjustments in the economy. The static analysis makes use of HM Treasury's microsimulation model used at Autumn Statement 2013. This produces an overall static fiscal saving of £390m in 2015-16.

To do this, we have developed an approach which allows us to estimate the dynamic impacts of increasing the NMW to £7 including both 'employment effects' and 'post-adjustment effects'. This uses a combination of ASHE⁵ 2013 data, a set of stylised macroeconomic scenarios and fiscal ready-reckoners recently published by the OBR.⁶ Given that it takes some time for dynamic effects to transmit through the economy the analysis focuses on the overall impact in 2018-19.

At this point, the analysis suggests that **it is unlikely there will be any large positive fiscal gains from increasing the NMW**. There are a number of factors driving this, which include:

- Increases in labour costs, as highlighted in the background section, affecting labour demand, which might be realised through changes in hours, employment levels or both.

⁵ The Annual Survey of Hours and Earnings. Further information is available at <http://www.ons.gov.uk>.

⁶ OBR, Briefing Paper No.4 How we present uncertainty (June 2012).

The extent of this impact is uncertain, but to enable to use of publicly available ready-reckoners, if it were seen entirely in employment, it could potentially lead to an increase in unemployment of around 14,000 by 2018-19. This would lead to reduced income tax receipts and NICs, along with higher welfare spending.

- There is uncertainty around the extent to which remaining increases in labour costs would be transmitted to price rises and/or reduced profits for firms. Price rises would lead to increases in social security spending through higher uprating costs. A particular example would be the triple-lock on the basic State Pension, which could be affected by either higher inflation or higher earnings. Reduced profits would feed through into reduced fiscal receipts through reduced Corporation Tax.

This is considered in three different scenarios, set out in the annex. These lead to a decrease in Public Sector Net Borrowing ranging from £30m to £70m. While there are significant uncertainties involved in this work, **a clear conclusion is that dynamic effects have a material impact in this type of analysis and it is unlikely that there will be any large positive fiscal impacts from increasing the NMW.**

Further information on the analysis, its theoretical underpinnings, the models used and results can be found in the annex.

Annex – Further technical detail on analysis presented

The purpose of this annex is to provide some additional detail on the assumptions, theory and methodology used to produce the estimates in of the summary.

All analysis is based on the OBR forecast published at Autumn Statement 2013 and is consistent with a set of fiscal ready-reckoners also published by the OBR. Policies include all those that can be captured within the relevant models, and include measures up to and including those announced at Autumn Statement 2013 as far as is possible.

The modelling is based on an increase in the adult rate only of the NMW to £7 in October 2015. As NMW rates have not yet been set for October 2015, an assumption has been made on what a counterfactual rate might be. For this we have assumed that the NMW rises in line with OBR average earning forecasts in 2014 Q4 and 2015 Q4.

The analysis presents both static impacts (using a similar approach to previous work in this area), and also dynamic impacts. This annex presents the underlying frameworks to both of these approaches along with the assumptions used, and key results.

Static analysis

Static analysis looks at the direct implications of an increase in the NMW rate on tax receipts and welfare spending, assuming no impact on employment levels, wages further up the earnings distribution, or any wider economic impacts. This is the type of analysis that has been usually presented when discussing impacts of increasing the NMW.

The estimate of a saving of £390m in 2015-16 is made using HM Treasury's tax and benefit microsimulation model, used at Autumn Statement 2013.⁷ This uses pooled data from the Living Costs and Food Survey (LCF) collected between April 2008 and March 2011, uprated to reflect the tax year being modelled.

For the relevant tax years, household net incomes are modelled on the basis of a baseline NMW rate and the post-change rate for Oct 2014 and Oct 2015. An assumption for October 2014 is required as the 2015-16 estimates are for financial years, and so include half a year at the October 2014 rate, and half a year at the October 2015 rate. The difference between the base and post rates produces the change in net income for each household, and the overall Exchequer impact.

It is important to note that this static estimate does not take into account:

- any potential employment impacts as a result of an increase in the NMW;

⁷ Details of this can be found in *Impact on households: distributional analysis to accompany Autumn Statement 2013*, available at <https://www.gov.uk>.

- any ‘spillover’ effects on wages further up the income distribution; or
- any wider economic impacts (e.g. on consumption, profits or prices).

Dynamic Analysis

The introduction of dynamics allows for an adjustment period to the change in labour costs rather than employing the assumption that any adjustment happens immediately as is assumed in the static estimate. Moreover, it allows for a fuller analysis of the fiscal impacts of the NMW, taking into account a wider range of fiscal determinants.

The following sections focus on this dynamic analysis, outlining some stylised macroeconomic scenarios, along with the fiscal impacts of the changes along with the sensitivity testing.

Wider Economic Impacts – an overview

Theoretically, firms can make the adjustment to higher labour costs through a variety of channels. The scenarios in this note focus on three: employment, profits and prices. The choice firms make about any adjustment then has a strong bearing on the wider impact of the increase in the minimum wage.

The imposition of a higher wage floor increases wages for those who are affected by the NMW which, all else equal, boosts incomes. The overall effect on wages and income also depends on the extent to which workers further up the wage distribution are able to maintain their differentials with those who are affected by the minimum wage. The net effect on *total* labour income in the economy is then determined by the extent to which firms lay off workers to offset higher labour costs and the extent to which higher unemployment puts downward pressure on wages.

The way firms adjust also affects household income through dividend payments, which will be weaker if firms reduce profits. The overall effect on nominal demand from these changes in household income is then determined by the propensity of households to consume that extra income.

The extent to which nominal consumption feeds through to real consumption depends importantly on whether there is any pass-through of higher labour costs to prices. And the extent to which the rise in prices translates into a permanent shift in the price level would ultimately be determined by the reaction of monetary policy.⁸ The combination of these behavioural changes would determine how household incomes move relative to prices and the consequential effect on both real incomes and real consumption.

⁸ The reaction of monetary policy is not considered in what follows but the judgement of the Monetary Policy Committee will depend on their view of the risks around the extra inflation generated in order to shift the price level. These include issues such as whether the inflation is deemed temporary, the extent to which a response would lead to undesirable volatility in output and the impact on inflation expectations.

For firms, the choice to reduce their profit margins would mean they have reduced internal funding for investment. This is likely to put upward pressure on the cost of capital as credit market imperfections tend to mean internal funding is cheaper than external funding. Also, if future profits are lower, default risk rises, again raising the cost of capital and reducing investment.

With a variety of offsetting effects, the overall effect on GDP of changing the NMW is ambiguous. On the supply-side of the economy, the introduction of the higher wage floor will push wages out of line with the marginal product of those on the current NMW, which *ceteris paribus*, makes them permanently unemployed, pushing up the equilibrium rate of unemployment. Set against this, there is an efficiency wage argument where higher wages induce higher levels of productivity, improving supply capacity. Further, firms themselves could also act to rectify the misalignment of the wage and marginal product in a variety of ways including introducing new technology, improving the capital/labour mix or investing in education and training.

Framework

Wage bill impact

The dynamic impacts start from analysis based on Annual Survey of Hours and Earnings (ASHE) data for 2013. ASHE is an employer survey based on a 1 per cent sample of PAYE records. An hourly wage distribution is produced from this data by grouping employees by wage in 10p bands, based on hourly earnings excluding overtime.

The NMW literature (particularly Butcher et al, 2012) suggests that raising the NMW also pushes up wages further up the distribution (with a lag). This 'spillover' is modelled in the ASHE model, using the evidence that spillovers extend to the 25th percentile of the wage distribution. The spillover effect tapers quickly initially up to 20p or so above NMW, but then has a long tail to the 25th percentile of the wage distribution.

The model produces outputs for wages and salaries, income tax, employer and employee National Insurance Contributions (NICs) based on whether a spillover effect is included or not.

The modelled policy years are 2014-15 and 2015-16. Therefore, the tax thresholds from the year of the ASHE data (2013) do not necessarily apply to the policy years. An adjustment to income tax thresholds is made in the 2013 data to reflect the Government policy to increase the personal allowance to £10,000 within this parliament. This adjustment consists of using thresholds expected in 2015-16 deflated by CPI back to 2013-14.

Macroeconomic Scenarios

The use of scenarios rather than a central estimate allows for a clear illustration of the sensitivity of the public finances to a different choice of adjustment. Each scenario takes as an input, the wage bill impact produced by the ASHE data and uses the following set of consistent assumptions:

1. The wage bill impact from the NMW increase derived from the ASHE data is assumed to **feed directly into higher whole economy earnings in the quarter in which the change is introduced.**
2. **Higher wages are assumed to have a negative impact on labour demand, assuming an elasticity of -0.4.**^{9,10}
3. **Firms are forward looking and are assumed to make the adjustment to their workforce,**¹¹ **over a 3 year period, starting from when the policy is announced.**
4. **The activity rate is assumed to remain unchanged** meaning lower employment feeds one for one into higher unemployment. All of these individuals are assumed to move onto the claimant count.
5. **Higher unemployment is assumed to put downward pressure on earnings over the same time period that employment falls.** An elasticity of -0.05% is assumed and is taken from the earnings equation estimated in the OBR macroeconomic model.

The review of the empirical evidence on each forms of adjustment by Butcher (2012) provides a mixture of evidence for how firms have adjusted in the past to rises in the NMW. Moreover, the academic literature has tended to seek evidence of a particular form of adjustment using firm or industry data rather than taking a holistic view of the macroeconomic impact. At the macro level, which effect dominates will be determined by a variety of factors such as the cyclical position of the economy and sectoral market structures.

The choice to include an employment effect in each of the scenarios is informed by the view that, at least in the short run, the choice of firms is limited as prices are 'sticky'. To continue to profit maximise firms must reduce their labour input on the assumption that they target a 'desired' profit margin. Relaxing the assumption of a constant margin allows firms more room to adjust outside of their workforce but even then this choice is likely to be determined by the cyclical position of the economy where some¹² theories would suggest firms tend to rebuild margins when the economy is operating below capacity.

⁹ The elasticity of labour demand is applied to the estimated weighted average rise in market sector wages. Estimating the unemployment impacts on a more granular level, e.g. by income percentile, is likely to produce a higher estimate for the unemployment impact because there are disproportionate numbers of workers affected relative to the proportion of wages they account for.

¹⁰ See Hamermesh (1993) for a range of estimates from the literature and Fabbri, Haskel and Slaughter (2002) for UK estimates. The value is also consistent with estimates of the elasticity of substitution in the UK (see Barnes (2008)).

¹¹ The scenarios assume that all the adjustment in employment is made at the extensive margin (i.e. through jobs rather than hours). To the extent that firms target an absolute reduction in the level of labour costs, the PAYE/NICs outcome from the ready-reckoner is invariant to whether the adjustment occurs at the intensive or extensive margin, although the total fiscal effect may differ.

¹² See Rotemberg and Woodford (1996).

The effect on the workforce¹³ included in each scenario is never enough to fully offset the higher wage costs from raising the NMW and so firms have to make the remaining adjustment elsewhere. Three scenarios are described below.

Scenario 1: The key feature of this scenario is that, after taking account of the workforce adjustment, firms make the remaining adjustment **by reducing their profit margin**. With less availability of internal finance, investment is adversely affected, offsetting any positive effects of higher consumption resulting from higher labour income. Specifically, it is assumed that:

- Firms keep prices unchanged so that the remaining increase in labour costs reduces profits pound for pound.
- The net positive effect on labour income is assumed to feed through to nominal consumption, with a marginal propensity to consume (MPC) out of income of 0.4. This is informed by a recent Bank of England Quarterly Bulletin (2012Q4) article which presents a range of evidence from the 2011 NMG survey. The estimate is seen as central and should be interpreted as an average MPC for the UK economy. This interpretation is helpful as it is unclear what type of household is being affected by the NMW. On the one hand, one could motivate a theoretical argument that 0.4 was too *low*. For example the permanent income hypothesis implies that individuals are much more likely to consume permanent rather than transitory shifts in their income.¹⁴ Further, the extent to which those benefitting from the higher NMW are affected by tight credit conditions will affect the amount of ‘smoothing’ that takes place with those less able to access credit, more likely to consume the income surprise. Set against that is the evidence that second earners within a household also receive the NMW, which is likely to reduce the impact of higher income on consumption patterns as credit constraints are less binding.
- Lower profits are assumed to reduce investment to the extent that it fully offsets the increase in private demand – which is all assumed to be real as there are no changes to prices.
- The net result is no change to either real or nominal GDP by 2018-19. However, the labour share is higher due to reduced profit margins and higher labour income.

Scenario 2: In this scenario, after taking account of the workforce adjustment, **firms use higher nominal demand to accommodate a rise in prices with the remaining adjustment coming on profits**¹⁵. The result is a higher price level at the end of the forecast with real activity unchanged.

¹³ The framework used in this note relates to forms of adjustment in the market sector and therefore the 14,000 reduction in employment is all assumed to take place in that sector of the economy. Consideration of adjustment in the Government sector would require a different focus, namely on the constraint of a fixed departmental budget.

¹⁴ It is worth noting that a permanent shift is consistent with the change in the NMW being ‘locked-in’.

¹⁵ By allowing the price level to rise, Scenarios 2 and 3 are not making an implicit judgement about the reaction of monetary policy. The price level is allowed to elevate in order to capture the fiscal implications of

- As in Scenario 1, higher nominal demand translates immediately into higher real consumption using the same MPC.
- It is then assumed that firms use stronger nominal demand to accommodate higher labour costs, leading to the nominal demand increase passing through fully to prices after four years (see Wadsworth (2009)). This raises the price level and brings real consumption back to the baseline. Firms make the remainder of the adjustment on profits.
- The net result is a short term boost to real GDP from higher private consumption which disappears after four years leaving the price level in the economy higher at the end of the forecast, raising nominal GDP.

Scenario 3: In this case, after taking account of the workforce adjustment, the **remaining adjustment occurs fully on prices with full pass-through after four years**¹⁶. The price level is therefore higher at the end of the scenario leading to higher nominal GDP but unchanged real GDP.

- In line with Scenario 2, there is a short-run boost to real GDP from higher consumption but at the same time, firms raise prices faced by consumers to the extent that the rise fully offsets higher labour costs after four years. The result is that nominal consumption is higher at the end of the scenario than in Scenarios 1 and 2 but purely as a result of a higher price level.¹⁷
- The net result is a short term boost to real GDP from higher private consumption which disappears after four years leaving the price level in the economy higher at the end of the forecast, raising nominal GDP. With the effect on prices larger than in scenario 2, the rise in nominal GDP is also greater.

General Equilibrium effects

The aim of producing these scenarios is to give a fuller picture of how the rise in the NMW might translate through the economy. Taking an approach which employs a set of clear assumptions has the benefit of transparency and tractability but may miss some feedback loops which a fully specified general equilibrium model could capture. One example of such a feedback loop would be the effect of price on real wages. The higher price level would erode the real value of the wage increase from the NMW which, in turn, would reduce the workforce reaction of firms. The extent and magnitude of these feedback loops would be a function of both the richness and structure of the model employed. The final part of this note on sensitivity analysis gives an overview of the possible fiscal implications of changes to any of the key fiscal determinants.

price level changes.

¹⁶ See above.

¹⁷ As labour costs rise immediately but there is an adjustment period for prices, firms are required to make a small adjustment on profits to ensure the GDP identity holds.

Fiscal impact

In broad terms, changes in the NMW are expected to affect Government spending and receipts mainly through four channels: (i) the increase in earnings affecting personal income tax and National Insurance Contributions (NICs), (ii) the change in profits for firms affecting Corporation Tax, (iii) the change in unemployment affecting both personal income tax, NICs and benefits and (iv) the change in inflation affecting indexed benefits and interest payments via index-linked gilts.

In 2012 the OBR published a set of ready-reckoners used to produce sensitivity analysis of how certain taxes or spending items could react to changes in the economy, derived from the models used in the production of the *Economic and fiscal outlook forecast*.¹⁸ Consistent with these ready-reckoners, we produced estimates of the possible fiscal impact of each scenario developed above. It is worth stressing, however, that as noted by the OBR (page 30) these ready-reckoners “only show the direct effect of changes in the main economic determinants and not any indirect effect which may outweigh these.” Therefore, our results present a large degree of uncertainty.

Notwithstanding these caveats, the main result from the analysis is that there would be no significant fiscal gain once all these effects are taken into account, as the initial benefits from higher earnings are eroded by a combination of the costs from higher unemployment, lower profits and higher inflation. Overall, the net benefits on Public Sector Net Borrowing (PSNB) are very small, not significantly different from zero. There are a number of reasons for this:

1. First, the increase in PAYE income tax and NICs receipts due to higher earnings is at least partly offset by higher unemployment.¹⁹
2. Lower Corporation Tax due to lower profits – which will of course be more pronounced in the scenario where firms take the full hit, and disappear progressively in the scenario where the impact is through prices;
3. Higher earnings will lead to lower expenditure on tax credits²⁰, but this will be partly offset by higher unemployment and higher benefit uprating due to the price increase;

¹⁸ OBR, Briefing Paper No.4 How we present uncertainty (June 2012)

¹⁹ Based on the ASHE model, we have assumed an Effective Tax Rate (ETR) of about one-third, broadly in line with the whole-economy total ETR. Given that many people on NMW rates will pay relatively little tax on their earnings, particularly if their income is below the Personal Allowance, it is possible the ETR will be lower. Therefore, this should be seen as an upper bound of the possible gains on PAYE income tax and NICs receipts. For example, if the ETR was one-fourth, this would reduce the gains by around £50 million in each scenario.

²⁰ Using HM Treasury’s microsimulation model, we have estimated the impact on tax credits for those earning the NMW. In order to provide an assessment of spillover effects we have assumed the fiscal impacts for the spillover population are proportionate to the tax credits received by this population relative to those earning the NMW. Because tax credit receipt, and the impact of any spillover adjustment, should generally fall as we move up the earnings distribution, our estimate should provide an upper bound to the likely fiscal benefits to the Exchequer from lower tax credit expenditure.

4. There is a marginal positive impact on PSNB from higher indirect tax receipts - including VAT - from the increase in consumption – and through higher inflation;
5. Social security spending is expected to increase. The main drivers are higher Jobseekers Allowance due to higher unemployment; higher uprating costs due to inflation; and higher uprating of the basic State Pension through the triple-lock, which can be driven by higher earnings as well as higher inflation. Higher inflation will also lead to higher spending on Child Benefit and public service pensions. We can also expect an offsetting element from income-related benefits (e.g. Housing Benefit) related to the increasing in earnings;²¹
 - i. Finally, higher inflation will also lead to an increase in interest and principal payments from index-linked gilts.

Having taken all these elements into account, our analysis suggests that **Public Sector Net Borrowing (PSNB) could fall by between £30-70 million as a result of the increase in the NMW in once all the adjustments in the economy have taken place (2018-19)**. These results are broadly consistent across the three scenarios: in the scenario where all the hit is on profits, there is a stronger impact through lower Corporation Tax; in the other scenarios spending increases more due to the increase in inflation.²²

²¹ The latter is more difficult to estimate due to the spillovers to workers above the NMW threshold, so overall it is possible the impact on social security spending might be overestimated. Furthermore, it is not possible to capture the potential impact of Universal Credit within this analysis as this analysis is based on available ready reckoners.

²² Based on estimates from the Living Costs and Food Survey around 20 per cent of affected households are in receipt of Tax Credits. Note there is a small component of the Tax Credit which, for accounting purposes, is scored as a negative receipt. For simplicity this is included within the overall Tax Credit estimate.

Table 1: Estimated changes in the key Government spending and receipts items under the different scenarios once all the adjustments have taken place (2018-19).

Figures in £ million, rounded

Fiscal impact in 2018-19	Profits	Profits & Prices	Prices
Receipts (+ve = higher receipts)			
PAYE & NICs (employer and employee)	+160	+160	+160
Corporation tax	-100	-70	-10
Indirect taxes (VAT and uprating of other taxes)	+10	+20	+50
Spending (+ve = higher spending)			
DWP social security and other benefits	+140	+160	+210
o/w price effect	+0	+20	+50
Earning effect triple lock	+90	+90	+90
Employment effect (JSA, HB)	+50	+50	+50
Tax credits	-140	-130	-120
Debt interest	+0	+20	+80
Net borrowing effect (+ve = higher PSNB)	-70	-50	-30

Source: HM Treasury analysis

Sensitivity Analysis

As mentioned above, the results are subject to a large degree of uncertainty – among other things due to the use of ready-reckoners - and the results are of course sensitive to the economic assumptions made. As discussed, there are a number of key channels through which changes in the economy could affect public sector spending and receipts. Therefore, changing some of the assumptions made on the way the economy reacts to the increase in NMW would change some of the results.

There are a number of elements in each scenario which offset the initial positive impact due to the increase in PAYE and NICs contributions – which itself presents an element of uncertainty in the Effective Tax Rate as mentioned previously. These work mainly through the change in consumption, changes in employment, the fall in profits and the increase in inflation. Therefore, a different set of economic assumptions would lead to a change in the results, possibly altering the sign of the impact of the fiscal position. Using the ready-reckoners published by the OBR, it is possible to get an idea of the uncertainties involved.

One element of uncertainty relates to the extent to which firms reduce their workforce. If the labour market response was, for example, only half of that assumed in the scenarios, PSNB would improve by around £80m as a result of higher PAYE income tax & NICs, with a further improvement of between £70-90m through lower benefits and tax credits. Overall, the net fiscal benefit would be between £100m and £120m, depending on the assumptions on the pass-through to higher inflation or lower firms' profits.

Even if the employment effect was zero, there would still remain a dynamic impact due to the pass-through of the increase in the NMW either to higher inflation, or lower profits. For instance, the increase in inflation generated by the model in the scenario where all the pass-through is to prices would, consistently with the ready-reckoners, translate into a deterioration of the fiscal position by around £150-200m (due to the uprating of indirect taxes, business rates, IT & NICs, benefits, tax credits, public sector pensions and the debt-interest channel). If some of the pass-through was instead to lower firms' profits, then Corporation Tax would fall by up to £100m, as shown in the table above.

Therefore, the overall results appear to be relatively robust to the different scenarios, which inform the broad conclusion that, once a fuller view includes some of the likely adjustments that will take place in the economy, it is unlikely there will be a significant positive fiscal impact from increasing the NMW. It is important to note that even if employment effects were excluded, prices and/or profit effects alone would drive a significantly lower overall net fiscal gain relative to a purely 'static' only analysis.

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