Assessing Movements in the Unemployment Rate of Malta

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1. Introduction

The unemployment rate is an important gauge of economic activity. Understanding its movements is useful in assessing the causes of economic fluctuations and their impact on welfare, as well as assessing the trajectory path between activity rate and employment rate.

The unemployment rate is the proportion of resident population aged 15-64 that are actively seeking and available for work at the current wage rate but are not gainfully employed. Various causes of unemployment can be distinguished, namely: (i) Cyclical or Keynesian unemployment – caused by the deficiency of aggregate demand to support full employment; and (ii) Structural or Classical unemployment – which is the result of a slow adjustment to changes in labour market demand conditions. In recent years, attention has focused on the particular problems of long-term unemployment, especially among unskilled persons. It is also argued, that work incentives have correspondingly diminished too over time. The Great Recession of 2008 saw a resurgence of interest in Keynesianism, as wages failed to adjust and consequently resulted into high levels of unemployment and underemployment that still persists today in the European Union (EU).

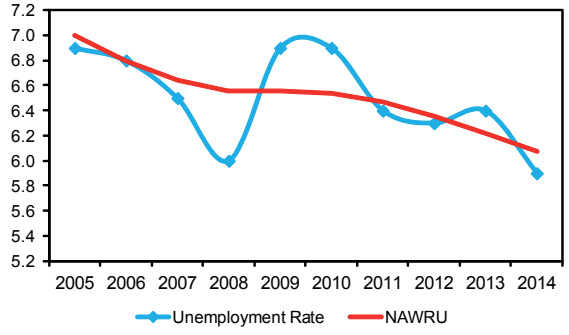
In this note, we present a framework to isolate the different components determining the unemployment rate, and we use that framework to decompose unemployment rate movements into two categories: (i) firm- induced or labour demand driven; and (ii) worker-induced or labour supply driven. The decomposition proposed also allows us to identify structural and cyclical components underlying changes in the unemployment rate.

2. Recent Unemployment Trends

Figure 1 shows how the unemployment rate changed during the period between 2005 and 2014. Unemployment rate figures confirm that the trend in unemployment rate has declined from around 7.0% in 2005 to around 6.1% in 2014 with periods below trend unemployment reached in 2007/8, and 2014 when unemployment fell below the 6.0% mark. Periods of unemployment in excess of trends were recorded in the 2009/10 recession when it reached almost 7.0%.

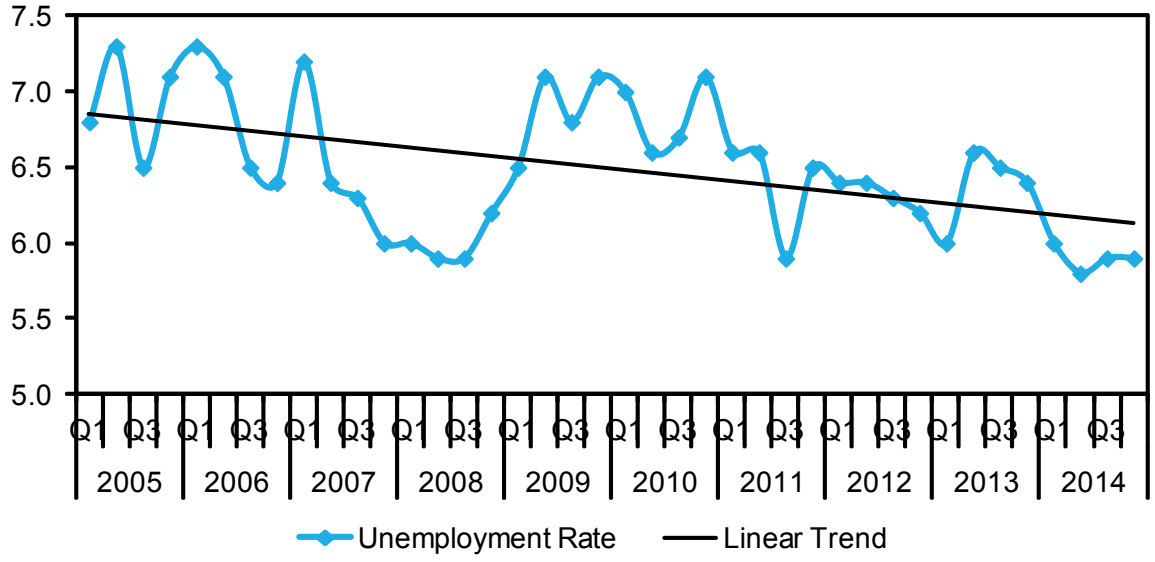
The annual unemployment rate and the non-accelerating wage inflation rate of Unemployment (NAWRU)[1] of Malta, between 2005 and 2014, are shown in Figure 2. It is clear, that the actual unemployment rate moved closely with NAWRU with the exception of 2008 and 2009 when the actual

Figure 2: Unemployment rate, annual 2005–2014



Source: Labour Force Survey, European Commission

Figure 1: Unemployment Rate, quarter 2005–2014



Source: Labour Force Survey

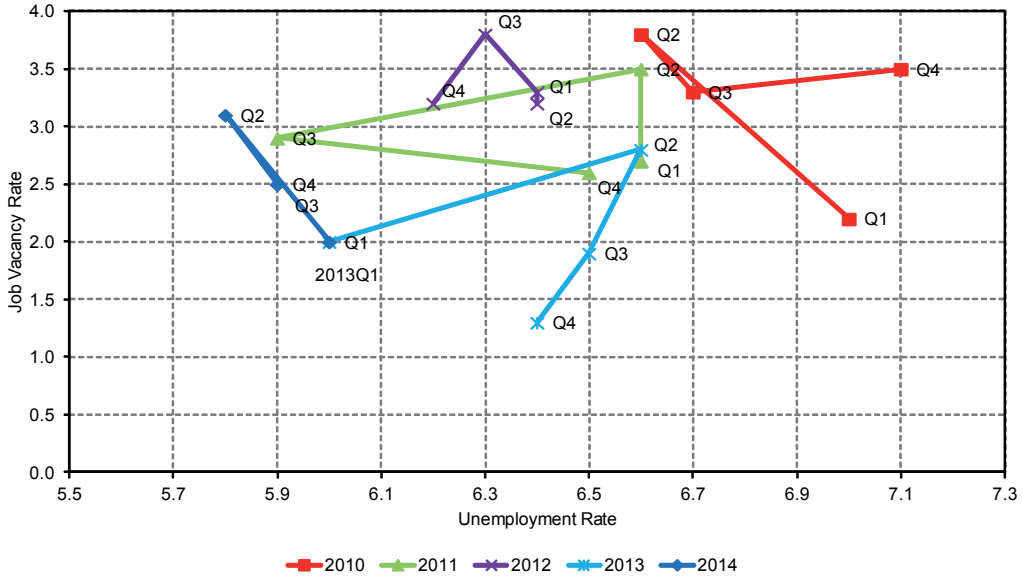
unemployment rate was 0.6 percentage points below NAWRU in the former and 0.4 above NAWRU in the latter. This suggests that structural conditions were mainly responsible for the declining trend in the unemployment rate with abnormal cyclical conditions playing a minor part in 2008 and 2009. A trend decline in the NAWRU is also discernible, declining by almost a full percentage point between 2005 and 2014. Finally, NAWRU remained relatively flat over the crisis years despite variations in actual unemployment rates, such that the NAWRU did not exhibit oscillations. Post-2011, the structural and actual unemployment rates have moved in tandem. This shows that over a period of time, the unemployment rate has been largely driven by structural factors.

Given the predominantly structural nature of unemployment in Malta, this imbalance could be explained by labour market mismatch arising from diversity in the composition of labour demand across skills and industries, and the technological and institutional infrastructure available to facilitate the matching between workers and vacant jobs. A way of capturing the extent of imbalance between the two sides of the labour market is by assessing the negative relationship between unemployment and vacancies, which is widely used to categorise the nature of shocks that hit the labour market.

Figure 3 plots average vacancy rates against average unemployment rates covering the period from 2010–2014. Referred to as the Beveridge curve, movements along this curve show changes in unfilled vacancies brought about by the state of the business cycle, indicating that quarters with relatively weaker labour demand find employers more reluctant to hire, leading to a low number of job vacancy rates. Furthermore, shifts of the curve are associated with structural changes, signifying changes in the NAWRU.

In general, identifying persistent shifts in the Beveridge curves require long time series. However, from the data available, we can still visually identify possible breaks in the relationship over the past 5 years. Apart from quarters illustrating counter-/clockwise loops, because as expected vacancies tend to react faster than unemployment, it shows that the relationship seems to have shifted inwards, suggesting improvement in matching

Figure 3: Beveridge curve, quarter 2010–2014



Source: Labour Force Survey; Job Vacancy Survey

efficiency which would be consistent with a decline in the NAWRU.

Based on this preliminary analysis, the rate of unemployment in the period following the 2009 recession was generally equal to the natural rate of unemployment. This suggests that from 2011 no major deficiencies in aggregate demand can be surmised from the unemployment figures alone. Changes in the unemployment rate observed during the post recession period are thus likely to be mainly determined by structural as opposed to cyclical conditions. What follows is a more systematic decomposition of supply and demand pressures underlying the evolution of unemployment in Malta since 2005.

3. Decomposing Short-Term Movements in the Unemployment Rate

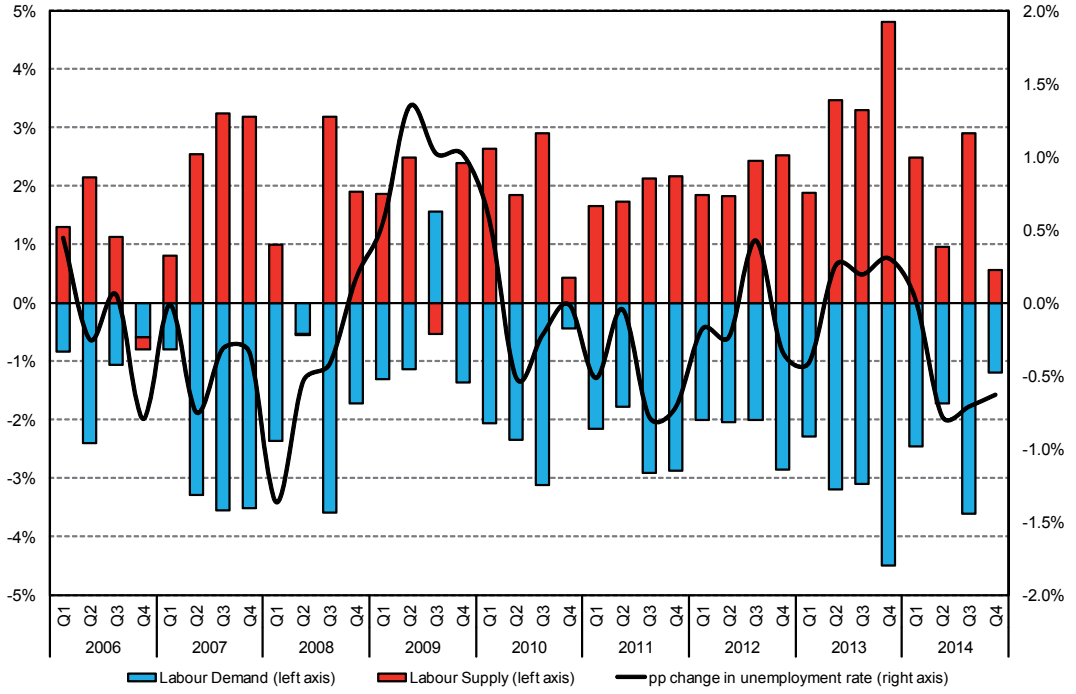
At an aggregate level, the observed developments during the years could reflect the extent of either changes in labour participation rates and demographic developments (labour supply) or changes in job opportunities (labour demand).

The change in the unemployment rate can be decomposed as follows:

$$\Delta\frac{U}{LF} \approx -\Delta\log\left(1-\frac{U}{LF}\right)$$
$$\Delta\frac{U}{LF} \approx \Delta\log\left(\frac{1}{E}\frac{LF}{1}\right) \qquad (1)$$

where U refers to the number of persons unemployed, LF to the number of participants in the labour force, and E to the number of persons employed. It is noteworthy that the decomposition of unemployment rate is capturing both demand-side (employment) and supply-side (labour force) developments. For example, in the case that labour supply (labour force) increases more-than-proportionately than labour demand (hired workers), the unemployment rate would be expected to rise, and vice versa.

Figure 4: Unemployment Rate, quarter 2005–2014



Source: Own calculations, percentage change compared to corresponding period of the previous year

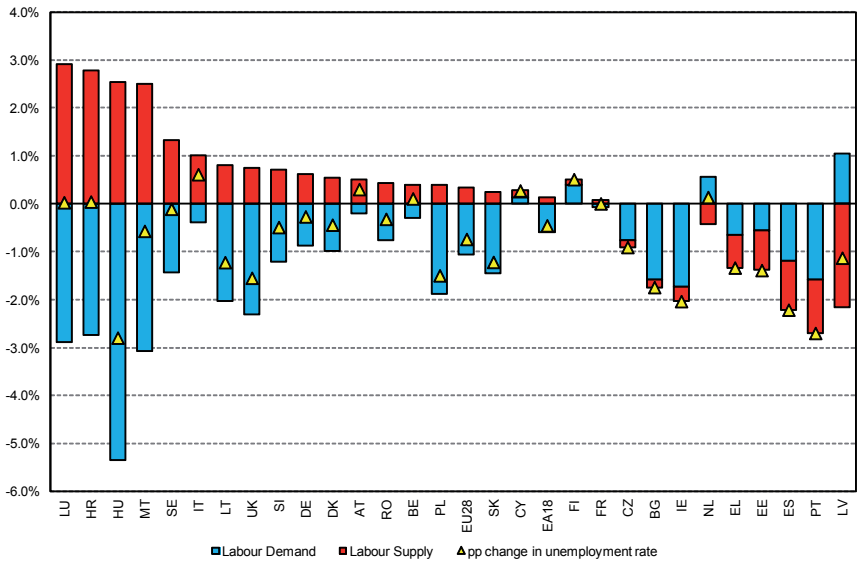
The case of Malta

It is striking that during most of the period under consideration, Malta has experienced a spectacular increase in labour supply; and yet the trend unemployment rate declined. During the period between 2006 and 2008, the decomposition of unemployment shows that the demand-side has counter-balanced the supply-side developments, indicating downward pressures on the unemployment rate – in other words, labour demand was generally more than enough to absorb the persistent increase in labour supply leading to a trend decline in the unemployment rate. Figure 4 suggests that during the last quarter of 2008 and the first quarter of 2010, the increase in unemployment rate was primarily triggered by subdued labour demand whilst labour supply continued to increase. Meanwhile, for the period between the beginning of 2010 and the first quarter of 2013, the growth in labour demand exceeded the growth in supply as job creation generally more than absorbed the persistent increases in net labour market entrants. Consequently, the unemployment rate declined from 7.0% to 6.0%. Between the second quarter of 2013 and the end of 2013, the unemployment rate increased marginally compared to the corresponding period of the previous year. This was a period of record growth in labour demand suggesting that the rise in unemployment was due to a substantial increase in the labour supply rather than a lack of demand generated in the economy. Indeed, in 2013, labour force participation increased more than average. In 2014, the unemployment rate declined further, as employment growth outpaced the increases in persons engaging to the labour market.

The European case

From Figure 5, it can be noted that the decline in unemployment in the EU in 2013/2014 was mostly attributable to a rise in aggregate demand as labour supply generally rose marginally with a few exceptions. During 2013 and 2014, an increase in employment was registered in 24 Member

Figure 5: Decomposing the evolution of unemployment rates in the EU: 2013/2014



Source: Own calculations, percentage change compared to corresponding period of the previous year

States, which accounted for more than half of the decline in unemployment in EU28. In addition, the positive employment growth in EA19 accounted for most of the decline in unemployment rate. However, Greece, Spain, Portugal, Estonia and Latvia were major exceptions to this trend where the decline in unemployment was supported by a decline in labour supply. Meanwhile, Malta and Hungary managed to record a decline in unemployment despite the substantial increase in labour supply.

Accounting for short-term productivity changes

The decomposition can be adjusted to account for short-term productivity changes, by decomposing the role of aggregate demand into: (i) real GDP, and (ii) labour productivity.

The decomposition will be as follows:[2]

$$\Delta \frac{U}{LF} \approx \Delta \log \left(\frac{1}{Y} \frac{Y}{E} \frac{LF}{1} \right) \qquad (2)$$

where $1/Y$ refers to real GDP, and Y/E refers to labour productivity. It is important to note that the methodology being used is an accounting decomposition and does not account for behavioural changes in the labour market. Thus an increase in short term labour productivity increases the unemployment rate (and vice versa) on the assumption that higher productivity allows the production of the same volume of output demanded with less labour resources. leading to labour/capital substitution effects. However labour productivity gains are also associated with improvements in efficiency and competitiveness, which in turn will bring about an increase in growth and a commensurate decline in unemployment. Productivity reduces the unit costs of production which stimulates output in the long run and lowers prices. Thus unemployment is bound to decrease in the medium to long run.

4. Is the decline in unemployment rate cyclical or structural?

The detailed decomposition is indicative of a relatively volatile labour productivity component. This is in line with the findings of many empirical works, with macroeconomic indicators of labour productivity often shown to be pro-cyclical, meaning that labour productivity tends to decrease (increase) during a downturn (upturn). This indicates that labour productivity is an imperfect measure of structural changes in labour demand. Therefore, we can further apply a cyclical adjustment to real Gross Domestic Product (GDP) and labour productivity to control for potential output gaps. By incorporating potential output in the decomposition, we are capturing long-term movements in output and labour productivity which therefore eliminate cyclical effects.

In order to identify the structural components of labour demand from the cyclical components of labour demand, we can use estimates of potential output and estimates of the NAWRU in order to derive a cyclically adjusted measure of labour productivity. Potential output (Y^*), is equal to the real GDP that would prevail in the absence of business cycles. Potential employment is equal to the employment consistent with non-accelerating wage inflation and is estimated as actual employment plus the difference between the actual unemployment (U) and the unemployment equivalent to NAWRU (U^*). The cyclically adjusted measure of labour productivity, is therefore equivalent to the potential output produced per potential person employed, i.e. the point at which an economy is producing at its potential and unemployment is at its NAWRU. This decomposition yields:

$$\Delta\frac{U}{LF} \approx \Delta\log\left(\frac{1}{Y}\frac{Y^*}{E^*}\frac{Y}{Y^*}\frac{E^*}{E}\frac{LF}{1}\right)$$
$$\Delta\frac{U}{LF} \approx \Delta\log\left(\frac{1}{Y^*}\frac{Y^*}{E^*}\frac{E^*}{E}\frac{LF}{1}\right) \quad (3)$$

The first term in brackets on the right hand side of the equation, shows the impact that an increase in potential output growth has on unemployment dynamics, whilst the second term in brackets shows potential labour productivity. Both these terms are structural terms. The third term on the right hand side captures the cyclical conditions of labour demand as measured by the growth in employment in excess of potential employment.

It is also possible to decompose the labour supply part ($LF/1$) into a structural and a cyclical component. This can be done by incorporating potential labour supply LF^*, where

$$LF^* = (WAP \times ER^*) + U^*$$

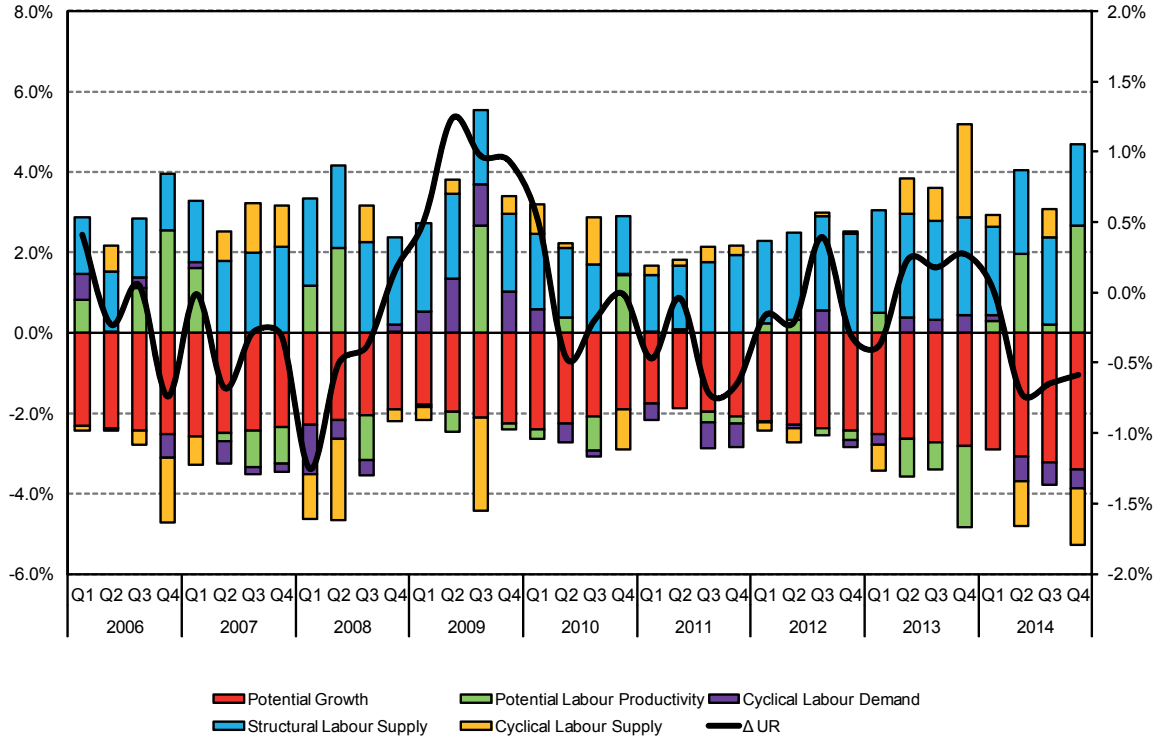
WAP denotes the working age population, ER denotes the employment rate whereas ER^* denotes the trend employment rate which therefore excludes the effects of cyclical conditions (such as the discouraged worker effect in times of high unemployment)[3]. As a result, the change in the unemployment rate can be further decomposed into:

$$\Delta\frac{U}{LF} \approx \Delta\log\left(\frac{1}{Y^*}\frac{Y^*}{E^*}\frac{E^*}{E}\frac{LF^*}{1}\frac{LF}{LF^*}\right) \quad (4)$$

Where $LF^*/1$ denotes structural changes in the labour supply whilst LF/LF^* captures cyclical conditions in labour supply movements. This decomposition is portrayed in Figure 6.

Before analysing the results, it is important to keep in mind that the methodology employed is an accounting decomposition and does not account for behavioural changes in the labour market. For example, an increase in short-term productivity increases the unemployment rate on the assumption that higher productivity allows the production of the same volume of output demanded with less labour resources. Nevertheless, productivity reduces unit labour cost which can affect prices and output and hence increase rather than reduce labour demand over time.

Figure 6: Detailed Decomposition of Labour Supply and Demand Determinants



Source: Own calculations, percentage change compared to corresponding period of the previous year

Another caveat is that the decomposition employed assumes that all changes are significantly different from zero. This might not be the case during periods at which the change in unemployment rate is within the confidence interval around the mean of zero.

Keeping these caveats in mind, the evolution of the unemployment rate can be analysed chronologically over different periods. Let us first take the pre-crisis period between 2006 and early 2008 which was characterised by either a stable or a declining unemployment rate. During this period, the increase in potential labour supply and the rise in productivity were generally absorbed by structural labour demand. Yet, cyclical labour demand also helped to lower the unemployment rate particularly in late 2006 and early 2008 while cyclical labour supply conditions often acted to increase unemployment.

The boom years in the mid-2000s, were short-lived and the recessionary period can be traced to the second half of 2008 and the first half of 2010. Structural conditions typically tended to cancel out each other such that the rise in unemployment can generally be attributable to cyclical labour demand conditions and also to some cyclical supply conditions. Lower potential productivity, tended to dampen unemployment pressures with the exception of the third quarter of 2009 at which a surge in potential productivity was mitigated by a significant cyclical decline in labour supply.

Between the second half of 2010 and 2011, the unemployment rate remained relatively stable at its recessionary levels. Cyclical labour demand conditions only started to improve at the end of 2011 and indeed this contributed to a temporary decline in the unemployment rate. Otherwise, during this period, structural labour supply and labour demand conditions neutralised each other. Losses in potential productivity helped to contain cyclical increases in labour supply.

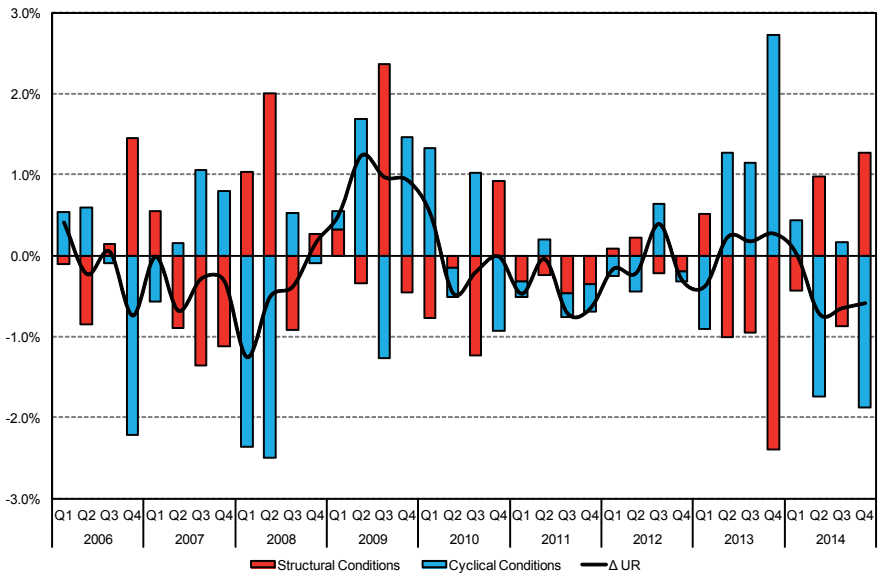
Another period of rising unemployment was recorded between 2012 and 2013. This was a period marked by a strong structural increase in labour supply and a likewise strong increase in structural labour demand. Nevertheless, during this period, cyclical labour supply conditions played a prominent role in the rise in the unemployment rate whilst negative cyclical demand for labour also contributed for an increase in unemployment rate, tough at a smaller magnitude. It is notable, that at the time the fall in potential labour productivity helped to mitigate somewhat the increase in the unemployment rate.

Overall, since 2004 the unemployment rate embarked on a downward trend. This was mainly underpinned by a significant increase in potential growth. Whilst potential labour supply continued to increase, it did so at a more moderate pace. In addition, cyclical conditions improved, marked by a decline in cyclical labour supply and an increase in cyclical labour demand. These forces were strong enough to mitigate the short-term impact of potential productivity gains registered in 2014.

An advantage of the unemployment rate decomposition, is that it allows us to distinguish between structural and cyclical movements. This is illustrated in Figure 7. Upward pressures on the unemployment rate were generally cyclical. Upward pressures on the unemployment rate of a structural nature were observed in 14 quarters out of 32 quarters, whilst the remaining 18 quarters were characterised by cyclical movements. If one had to aggregate the cyclical upward pressures and the structural upward pressures, one arrives at a similar conclusion; upward pressures on the unemployment rate are predominantly cyclical.

Meanwhile, downward pressures on unemployment of a cyclical nature were observed in 18 quarters, while downward structural pressures were noticed in 22 quarters. This suggests that downward pressures were predominantly structural. Nevertheless, if one were to cumulate the downward movements, cyclical movements contributed more strongly even if they were less frequent.

Figure 7: Structural and Cyclical Conditions underlying the Evolution of Unemployment Rates between 2005 and 2014



Source: Own calculations, percentage change compared to corresponding period of the previous year

Over the entire period, the cumulative adjustment in the unemployment rate amounted to 1 percentage point. Around 90% of this downward adjustment is explained by structural conditions as downward pressures on the unemployment rate were generally stronger than upward pressures. On the other hand, downward cyclical pressures on the unemployment rate were mostly mitigated by upward cyclical pressures such that cyclical conditions can only explain around 10% of the improvement in the unemployment rate. This confirms the hypothesis of a trend decline in the unemployment rate which is mostly structural.

5. Conclusion

The article sheds light on unemployment rate movements in the Maltese labour market before and after the crisis. First, it analysed the main changes in the unemployment rate between 2005 and 2014 and how they compared with the NAWRU estimation. It appeared that over a period of time, the unemployment rate has been largely driven by structural factors with a relatively contained cyclical component when one compares Malta's performance with that experienced in a number of EU Member States. The article also delved into the Beveridge curve which showed that the relationship seemed to have shifted inwards, and thus suggesting improvement in matching efficiency.

This hypothesis was tested in detail based on statistical unemployment rate decomposition. On the basis of the standard decomposition, we propose a methodology to identify cyclical and structural factors that affect unemployment rate movements in an economy. Changes in unemployment rate were decomposed into potential output growth, potential labour productivity, structural labour supply, cyclical labour demand, and cyclical labour supply. This allowed us to explore and confirm the hypothesis that the trend decline in the unemployment rate was mostly structural.

Furthermore, the presented evidence suggested that in Malta, over the past years, demand-side has counter-balanced the supply-side developments, while in recent years, an improved job creation growth generally outweighed increases in net labour market entrants. Malta's case is rather unique as the changes in the unemployment rate occurred at a time when labour supply increased strongly and persistently even in recessionary times. This is contrary to the European case, whereby increases in unemployment rates were on average mainly due to falling labour demand in the countries which were worse hit by the crisis and subdued demand in the rest of the EU Member States which experienced rising unemployment.

It is also interesting to note, that the potential declines in labour productivity – possibly reflecting the servicification of the economy and the replacement of capital intensive industries with labour intensive service industries – can also explain the overall reduction in the unemployment rate. This being a structural phenomenon can potentially explain the decline in the NAWRU by almost a percentage point between 2005 and 2014.

References

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Endnotes:

* The views expressed in this research article are those of the authors and do not necessarily reflect those of the Economic Policy Department, Ministry for Finance. The authors are grateful to Daniel Gravino, Godwin Mifsud, and the staff of the Economic Policy Department for helpful comments and suggestions.

[1] NAWRU is a measure of the unemployment prevailing when the inflation rate is constant. NAWRU is not expected to remain unaffected to labour demand shocks. The main reason being that there could be inertia in the adjustment of real wages to changes in labour demand, and therefore, adjustment partially takes place in form of unemployment (Estrella and Mishkin, 2000). For more details on the cyclicality of NAWRU see European Commission (2013). NAWRU is based on estimates provided by the European Commission, soured from AMECO database.

[2] For more details on unemployment rate decomposition see OECD (2012).

[3] The unobserved trend employment rate is calculated by the application of the Hodrick-Prescott filter.