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The myth of employment enhancing flexible labour markets

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1. Introduction

Mitchell and Muysken (2008a) analysed why inflation fell in Australia in the period leading up to the financial crisis despite sustained and strong employment growth. The question of interest was why wage pressures had been relatively benign? The underlying proposition was that rise in underemployment since the early 1990s has changed the wage setting process in the labour market and employers use this slack as a means of disciplining wages growth and adjusting to the flux and uncertainty of the business cycle. In other words they considered the Phillips curve relationship had altered and within-firm slack was an additional disciplinary force on inflation.

This paper extends that work and argues against the notion that when unemployment is low, additional government expenditures will add to inflationary pressure and hence harm the economy. This fallacy follows from the notion that low unemployment indicates that the economy is close to full capacity: In that case, additional government expenditures will compete for productive resources and drive up prices and wages. This reasoning is consistent with the traditional Phillips curve, where unemployment has a negative impact on inflation – and a natural rate of unemployment is consistent with absence of (accelerating) inflation.

The reasoning above, however, ignores fundamental shifts in the labour market that have been taking place in the last three decades. The way labour markets operate shifted significantly in the early 1980s, in tandem with the rise of Reaganomics and Thatcherism and culminated, in a policy sense with the release of the OECD Jobs Study in 1994 (Mitchell and Muysken, 2008b). Mitchell and Muysken (2008b) demonstrate that on conceptual and empirical grounds, the OECD Job Study paradigm failed to deliver on its promise to generate full employment and enhanced skill levels. This paradigm underpinned the demise of full employment and focus by most national governments on active labour market programs, or full employability. The pursuit of full employability has been characterised by a myriad of training programs, coercive welfare-to-work policies and a withdrawal of government responsibility for ensuring enough jobs are generated to match the preferences of the labour force.

The supply-side emphasis of the OECD Jobs Study was associated with strong calls for deregulation of labour market, allegedly to increase the flexibility and efficiency of the process of matching supply and demand. It was erroneously claimed that the persistent unemployment was structural in origin (rather than demand-deficient) and that various rigidities had to be removed as an effective resolution. The claim was that by increasing labour market flexibility, resources could be used more efficiently and hence economic growth and prosperity would be enhanced. As a consequence the nature of relations in the labour market shifted fundamentally.

Prior to the early 1980s, labour market were characterised by a high proportions of well-paid permanent jobs with strong dismissal protection and strong trade union involvement. Since then, labour markets have become more fragmented and union influence has become weaker. Permanent jobs have been replaced by temporary jobs in various guises with working hours within these latter jobs becoming more flexible. Additionally, within part-time employment the trend has been towards increasing casualisation of work and this has led to a widening of pay differentials.

While there has been no formal study that has shown that these tendencies have led to higher economic growth and prosperity, our concern is focused on how these developments have affected the wage determination process. We are specifically

interested in how the labour market trends have undermined the reasoning behind the traditional Phillips curve. By seeking an understanding of the way the labour market impacts on inflation, we aim to provide a framework for considering the impact of additional government expenditures in times of low inflation.

This paper aims to address the first part of this story by analysing increased labour market flexibility in terms of the shift from permanent to temporary work and self-employment, and the impact on hours worked. We discuss three important aspects of that trend.

First, the relationship between firms and workers has changed fundamentally. Traditionally, the aggregate rate of unemployment could be seen as a threat to workers which is external to the firm - notwithstanding that the threat of unemployment was often hard to implement). However, as a result of the increased flexibility, it is now relatively easy for firms to modify the number of hours worked or to terminate temporary contracts. Therefore firms have gained significant new capacity to adjust to business cycle fluctuations which is internal to their operations and which they can use to discipline wage demands from their work forces. The sharp rise in underemployment in many economies is evidence of this increasing internal slack. In Section 2, we develop a model to explain this phenomenon.

Second, the shift from permanent to temporary work has not been a gradual process, but has proceeded in jumps where these sharp rises have been induced by recessions. After each recession it appears that the increased “flexibility” which occurred during the period of low activity is locked in and the trend continues from this higher level. We hypothesise that recessions facilitate a “paradigm shift”, which allows employers to intensify the underlying shifts that are occurring as a result of decreased union power and increased globalisation. Once the economy is in recession, some critical threshold is passed, after which it is hard to ‘turn the clock back’. As a result an erosion of previously held norms becomes accepted. In this paper, we identify and analyse such shifts for Netherlands.

Third, it was argued in the OECD Jobs Study and countless supporting documents and research papers that the increased labour market flexibility market would lead to more efficient labour utilisation. Mitchell and Muysken (2008b) show that, in fact, this has not been the case for OECD nations. In this paper we focus on the Dutch experience.

The paper is laid out as follows. Section 2 presents the formal model and develops a series of testable hypotheses. Section 3 examines recent trends in the Dutch economy in relation to these hypotheses. Concluding remarks follow.

2. Permanent versus temporary jobs and the implications for hours worked

2.1 Overview

There is ample evidence of an increasing share of temporary jobs relative to permanent jobs following the waves of labour market deregulation in the late 1980’s and 1990’s (OECD, 2002). The motivation for deregulation of working conditions was to promote economic growth and increase employment (see OECD, 1994). Mitchell and Muysken (2008b) show how the supply-side agenda promoted by the OECD has had a huge influence on the policy in many Western economies. The intention was also to enhance accessibility to the labour market for unemployed individuals and to provide them with

better job prospects, through measures such as facilitating temporary work agreements and decreasing firing costs for permanent workers. However, the success of these reforms has been quite limited: an increased incidence of temporary employment, no clear indications that the ‘stepping-stone’ theory from temporary to permanent jobs was validated and no clear employment growth (see Kahn, 2010).

In addition to the lack of empirical support for the policies, several papers also questioned the reform agenda from a theoretical perspective. Both Blanchard and Landier (2002) and Cahuc and Postel-Venay (2002) argue that while making temporary work more feasible will lower the costs of offering jobs, the consequence also is a higher turnover on the labour market. The latter may lead to higher unemployment. In a similar vein, Wasmer (1999: 365) argues that “firms are more willing to use temporary contracts when growth is low. Firms then prefer high turnover workers with low turnover costs.”

However, two aspects that have been largely ignored in both the theoretical work and in the vast amount of empirical literature analysing the reforms are:

1. The cyclical variation in the transition of permanent to temporary jobs – this transition is accelerated during a boom; and
2. That labour market adjustment to demand shocks does not only take place through the shift from permanent to temporary work, but also through an increased flexibility of working hours within temporary jobs. During periods of high activity employers will tend to increase the number of hours worked per worker, whereas they decrease them during recessions.

The consequence of these cyclical variations, which overlay the trend towards more casual work, is that underemployment provides firms with a significant adjustment capacity, in the same way that unemployment did in the past.

We develop a small conceptual model in order to get a better understanding of the increasing incidence of temporary jobs relative to permanent jobs, the cyclical variation therein, and the pro-cyclical variation in hours worked. However, we choose not to follow the theoretical approach mentioned above, which employs a general equilibrium model in the tradition of Mortensen and Pissarides (1994). Although an advantage of that approach is that a closed model is presented, there are several serious drawbacks of that line of reasoning for the analysis we are interested in (see Mitchell and Muysken, 2008). First, there is no role for demand shocks and it is clear that these play an important role in the type of problems we are analysing. Second, there are many institutional characteristics in the economy which cannot be properly accounted for in such an approach but which are nonetheless important for a proper understanding of the impact of demand shocks. For example, Ohanian *et al* (2009) identify both institutional aspects and gender differences. Third, employers and workers behaviour are analysed in a symmetrical way, which seems highly implausible to us given the disparate power that each has in the labour market relationship. For that reason, we will construct employers as making decisions about the nature of the job they offer, while workers will be considered to accept any job offer that exceeds their reservation wage. We will use a partial equilibrium approach, focusing on firm behaviour in choosing between permanent and temporary positions and the choice of the number of hours worked in reaction to demand shocks.

In our analysis, we follow the model developed in Kahn (2010), where he explains that employers will be more inclined to choose temporary jobs instead of permanent jobs

during a recession than in a boom. The intuition is that workers are on average more productive during a boom compared to a recession. The incidence of workers with productivity below a given wage rate therefore is higher during a recession. This will induce employers to opt more for temporary jobs, since they then can weed out the unproductive workers. Additionally, Kahn models the impact of firing costs on the choice between temporary and permanent jobs, both during recessions and the expansionary phase. In line with the intuition above he finds that these costs are more important during recessions. We summarise Kahn's analysis in the Section 2.2. In Section 2.3, we then modify the model to include hours worked as a variable that the employer can use in case of temporary employment. We show that employers will cut the amount of hours worked per worker during a recession. The result is that during a recession more temporary jobs will be created relative to permanent jobs than during a boom, and that these temporary jobs will consist of less hours worked compared to a boom.

2.2 A simple model of firm behaviour

A crucial assumption in Kahn's (2010) model is that during an expansion workers' productivity will be higher on average than during a recession. Surprisingly enough Kahn does not elaborate upon this assertion despite it being crucial for his model. A typical explanation for this phenomenon would be Verdoorn's Law (for a recent application see Stilianos and Tsagdis, 2009).

In line with the above reasoning, we assume that workers productivity e is uniformly distributed between 0 and 1 during a recession and between 0 and $a > 1$ during an expansion. The uniform distributions are $L(e)$ and $H(e)$, indicating periods of low and high activity, denoted by L and H respectively.¹

We will first analyse what this implies for permanent jobs and next compare that to the case of temporary jobs. We assume that the firm is confronted with a central bargained wage W , which is invariant over the cycle. Moreover, for sake of simplicity the expected wage is assumed to be equal to W for both permanent and temporary workers. Finally we focus on firm behaviour during one period only. Extending the analysis to a multi-period study will make the conclusions stronger.

Permanent jobs

A permanent job is characterised by set-up costs h_P and firing costs c . Workers are randomly drawn from the uniform distribution. Given a central bargained wage W , we assume that only workers are kept with productivity $e > W - c$. However, upfront payments M have to be made to entice workers to accept the jobs, since they run the risk of being fired.

The profits for the firm on a permanent job V_{Pi} , where $i=L,H$ indicates the periods of low and high activity, respectively, are given by:

$$V_{PL} = -h_P - M_{PL} + \int_{W-c}^1 (e - W)dL(e) - c \int_0^{W-c} dL(e) \quad (1a)$$

$$V_{PH} = -h_P - M_{PH} + \int_{W-c}^a (e - W)dH(e) - c \int_0^{W-c} dH(e) \quad (1b)$$

¹ This implies that $dL(e) = 1.de$ and $dH(e) = (1/a).de$.

The upfront payments to entice workers to accept the jobs, M_{PL} and M_{PH} respectively, are such that the expected wage of the workers equals W :

$$M_{PL} = W - W \int_{W-c}^1 dL(e) - b \int_0^{W-c} dL(e) = (W - c)(W - b) \quad (2a)$$

$$M_{PH} = W - W \int_{W-c}^a dH(e) - b \int_0^{W-c} dH(e) = \left(\frac{1}{a}\right)(W - c)(W - b) \quad (2b)$$

One sees that when $c = W$ the firing costs are prohibitive, that is, the contract becomes permanent and there are no upfront costs needed to attract workers. Moreover, the wage compensation is larger during a recession, since the risk of unemployment then is greater.

Substituting Equation (2) in Equation (1) shows that the profits for each permanent job are:

$$V_{PL} = -h_p + 0.5 - W + 0.5(W - c)[2b - c - W] \quad (3a)$$

$$V_{PH} = -h_p + 0.5a - W + \left(\frac{0.5}{a}\right)(W - c)[2b - c - W] \quad (3b)$$

The gain of being able to fire workers at costs $c < W$ follows from the last part of Equations (3a) and (3b), respectively. These gains are positive as long as $b > (c + W)/2$ – we assume this to be the case. An interesting observation (OBSERVATION 1) is that the gain of firing unproductive workers is larger during a recession, since $a > 1$.

Temporary jobs

Initially in a temporary contract the firm can observe the productivity of the worker, but obtains no output. The set-up costs are h_T and M_{TL} and M_{TP} are the upfront payments firms must pay to attract temporary workers. The firm will employ workers only when their productivity is at least the central bargained wage W .

The profits on a temporary job then are given by:

$$V_{TL} = -h_T + \int_W^1 (e - W)dL(e) - M_{TL} = -h_T + 0.5 - W + 0.5W^2 - M_{TL} \quad (4a)$$

$$V_{TH} = -h_T + \int_W^a (e - W)dH(e) - M_{TP} = -h_T + 0.5a - W + \left(\frac{0.5}{a}\right)W^2 - M_{TP} \quad (4b)$$

The upfront payments M_{TL} and M_{TP} are such that workers obtain the expected wage W :

$$M_{TL} = W - W \int_W^1 dL(e) - b \int_0^W dL(e) = W(W - b) \quad (5a)$$

$$M_{TH} = W - W \int_W^a dH(e) - b \int_0^W dH(e) = \left(\frac{1}{a}\right)W(W - b) \quad (5b)$$

Substituting Equation (5) in Equation (4) shows that a temporary contract is more advantageous for the firm during a recession than during an upswing (OBSERVATION 2). The intuition for this result is that the incidence of low productive workers, which can be dismissed without any cost, is higher in a recession.

Kahn (2010) only analyses the case where permanent workers cannot be fired. In our model we show that when we allow for firing costs, similar results are found. So the gains for the firm of employing a temporary person instead of a permanent position are:

$$V_{TL} - V_{PL} = h_p - h_T + c[b - 0.5c] \quad (6a)$$

$$V_{TH} - V_{PH} = h_p - h_T + \frac{1}{a}c[b - 0.5c] \quad (6b)$$

One sees from Equation (6) that temporary workers are more profitable for the firm than permanent workers, assuming that set-up costs for permanent workers at least equal

those for temporary workers. We know that $b \geq 0.5c$ holds because we assumed that $b > (c + W)/2$. In this respect one can interpret differences in set-up costs to also reflect productivity differentials between permanent and temporary jobs. Assuming both types of set-up costs to be distributed over the whole range of jobs, this then also explains why some permanent jobs are replaced by temporary jobs and others not.

Another observation from Equation (6) (OBSERVATION 3) is that the gain of replacing permanent by temporal workers is larger during a recession, since $a > 1$. This is consistent with both earlier observations.

Also, as a consequence of the possibility to fire workers, the fraction of permanent jobs lost in a recession ($W - c$), exceeds that lost in an expansion $(1/a)(W - c)$. This is similar to the point made by Blanchard and Landier (2002) and Cahuc and Postel-Venay (2002), albeit for different reasons.

2.3 Hours worked

A frequently observed phenomenon is that temporary jobs are also characterised by flexible hours – when there is a slack, the employer can reduce the working hours of the worker. We include that feature in the model by allowing each worker to work a flexible number of hours. Instead of assuming a fixed productivity per worker, we allow productivity to depend on hours worked h . That is, we assume the productivity of a worker who works h hours to be equal to $e.g(h)$, while we assume e to be distributed uniformly, as before. We assume a declining marginal productivity of hours, reaching a maximum total productivity per worker at h^{max} hours.

When we introduce these assumptions in the model and interpret W as wage per hour, we find the profits on a temporary job to be given by:

$$V_{TL} = -h_T + \int_{Wh/g(h)}^1 (e.g(h) - W.h)dL(e) - W_{OL} =$$

$$-h_T + 0.5g(h) - hW + 0.5 \frac{(hW)^2}{g(h)} - W_{OL} \quad (7a)$$

$$V_{TH} = -h_T + \int_{Wh/g(h)}^a (e.g(h) - W.h)dH(e) - W_{OH} =$$

$$-h_T + 0.5ag(h) - hW + \frac{0.5(hW)^2}{a g(h)} - W_{OH} \quad (8b)$$

Note that compared to the previous analysis we now require $e.g(h) > W.h$ instead of $e > W$. We assume that employers will set the number of hours worked such as to maximize profits per worker. Moreover, to facilitate the analysis, we assume $g(h) = \alpha[h - h^2/(2h^{max})]$. This specification is consistent with a declining marginal productivity of hours, together with maximum productivity at h^{max} .

Then we find:

$$\frac{dV_{TL}}{dh} = \frac{\alpha}{2} \left[1 - \frac{h}{h^{max}} \right] - W + \frac{W^2}{2\alpha} \left[\frac{2h^{max}}{2h^{max}-h} \right]^2 = 0 \quad (9a)$$

$$\frac{dV_{TH}}{dh} = \frac{\alpha a}{2} \left[1 - \frac{h}{h^{max}} \right] - W + \frac{W^2}{2\alpha a} \left[\frac{2h^{max}}{2h^{max}-h} \right]^2 = 0 \quad (9b)$$

Since $a > 1$, this implies that employers will increase the number of hours worked in the temporary job during an expansion. Or, alternatively, decrease the number of hours

worked during a recession (OBSERVATION 4). Also, as one might expect, employers will decrease the working time per job when the wage rate is higher. A formal proof for these statements is provided in the Appendix.

Finally, since the possibility to manipulate hours of work makes temporary jobs even more attractive for employers, these jobs will be even more preferred to permanent jobs than in the previous analysis.

2.4 Summary of model

The previous analysis was based on the behaviour of a typical firm. Aggregate behaviour follows when we allow for a distribution of firms over set-up costs h_T and h_P . When that distribution is given, our model shows that a declining trend in firing costs will lead towards a rising trend in temporary jobs: this is consistent with our first stylised fact. The presence of demand shocks will also lead to more temporary jobs being created relative to permanent jobs during a recession than during a boom (second stylised fact). Further, these temporary jobs consist of less hours worked compared to the situation that would be found at the top of the cycle (third stylised fact).

An element of the analysis which we have not elaborated is that the net employment gains of these developments are not necessarily positive. As is shown by others, the increased turnover on the labour market implied by the transformation of permanent into temporary jobs has a negative employment impact. The net-result is unclear.

The model thus provides several testable hypotheses about the way the labour market responds to the business cycle. We consider these implications as a precursor to a following paper which analyses the impact of broader labour market slack for the inflation generating process.

By way of summary, the hypotheses of interest that we examine in Section 3 are:

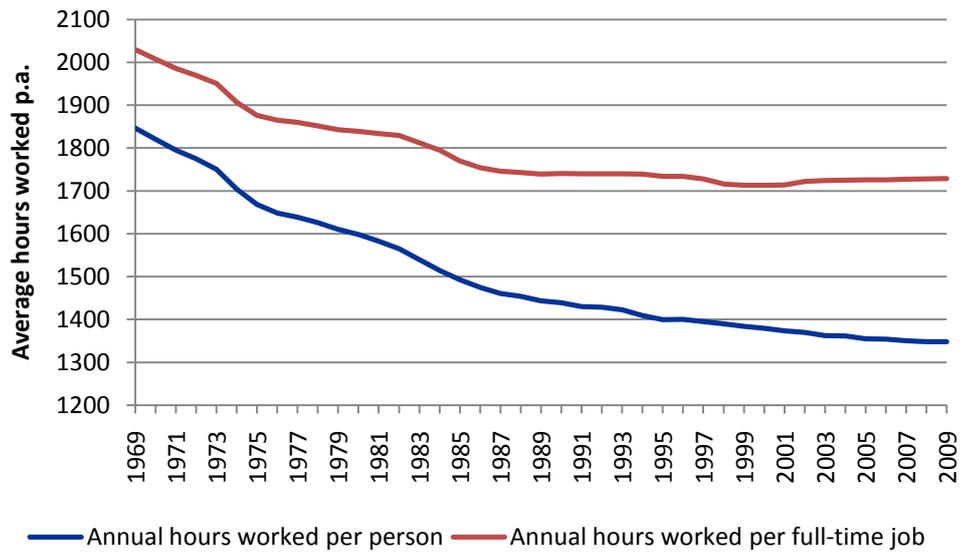
- Firms shed full-time jobs to adjust their activity levels during a major cyclical downturn. Recessions reinforce the trend away from full-time employment.
- Part-time employment resists the cyclical decline in economic activity associated with recessions. Firms use part-time employment to maintain activity while gaining adjustments (in terms of hours and persons) via full-time job shedding.
- Flexible employment and short-hours employment is used during recessions by firms as an hours-buffer to meet the flux and uncertainty of aggregate demand.

3. Employment and hours worked in the Netherlands, 1969 – 2009

3.1 Trends in the Dutch labour market

Figure 1 shows that the annual number of hours worked per person has decreased steadily over the sample period (1969-2009) from about 1850 hrs/year in 1969 to about 1350 hrs/year in 2009. Part of this trend can be ascribed to a similar decline in the number of hours per full-time job, from about 2050 hrs/year in 1969 to around 1730 since the mid-1990s.

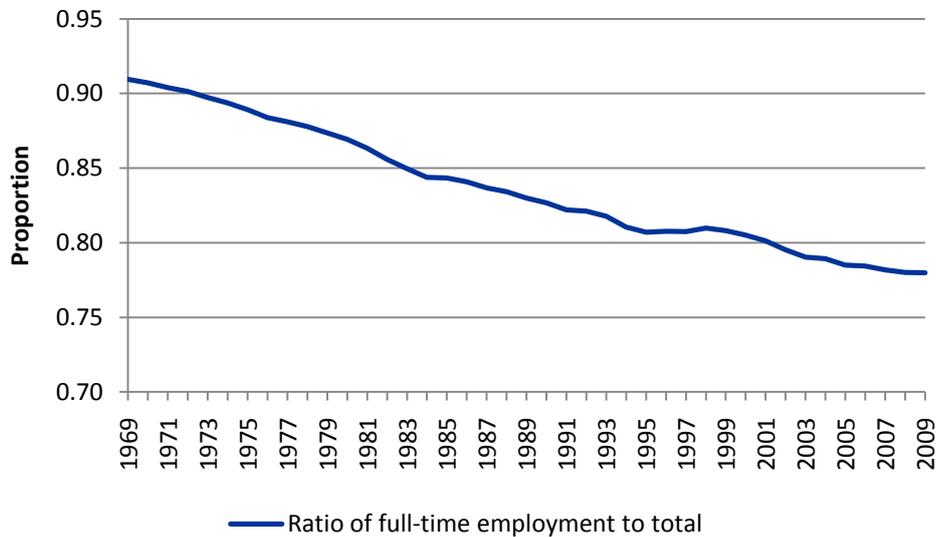
Figure 1 Average annual hours worked per person and per full-time job, Netherlands, 1969-2009



Source: CPB, Netherlands.

In addition, the proportion of full-time equivalent jobs in total employment has decreased over the sample period in an almost linear fashion (see Figure 2).

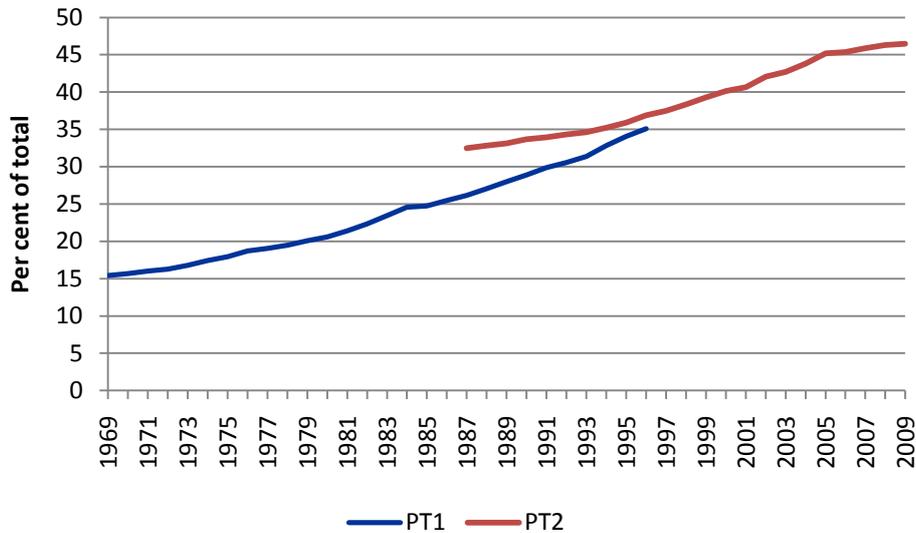
Figure 2 Ratio of full-time equivalent employment to total employment, Netherlands, 1969-2009



Source: CPB, Netherlands.

Figure 3 shows the ratio of part-time employment to total employment for the Netherlands from 1969 to 2009. Underlying the decline in the number of full-time hours per person is the steady increase in part-time employment in the Netherlands, from 15.7 per cent of employed workers in 1969 to 46.5 per cent in 2009.

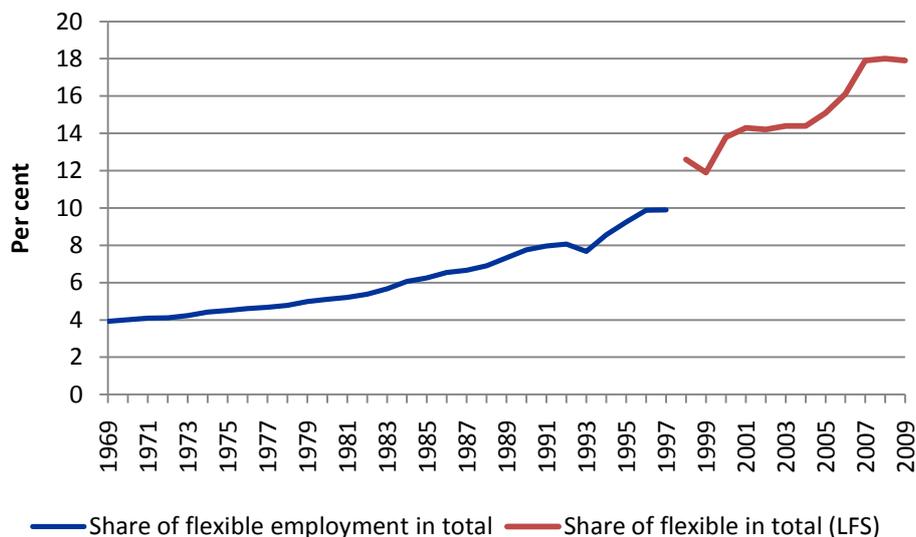
Figure 3 Part-time employment as a percent of total employment, Netherlands, 1969-1970



Source: CPB, Netherlands. We use two sources for full-time and part-time employment. The CBS published data from 1969 to 1996 in the “Arbeitsrekeningen” (PT1) category, which also includes flexible employment, which we allocated to part-time employment. From 1987 the CBS published data for full-time and part-time (PT2) employed workers.

Together with an increasing incidence of part-time employment we also observe an increasing share of so-called “flexible employment”, which is defined as having a contract of limited duration and/or a flexible number of working hours (CBS, National Accounts). Figure 4 shows the ratio of flexible employment to total employment between 1969 and 2009. The ratio rose from 3.9 percent in 1969 to 18 per cent in 2009

Figure 4 Share of flexible employment in total employment, Netherlands, 1969-2009

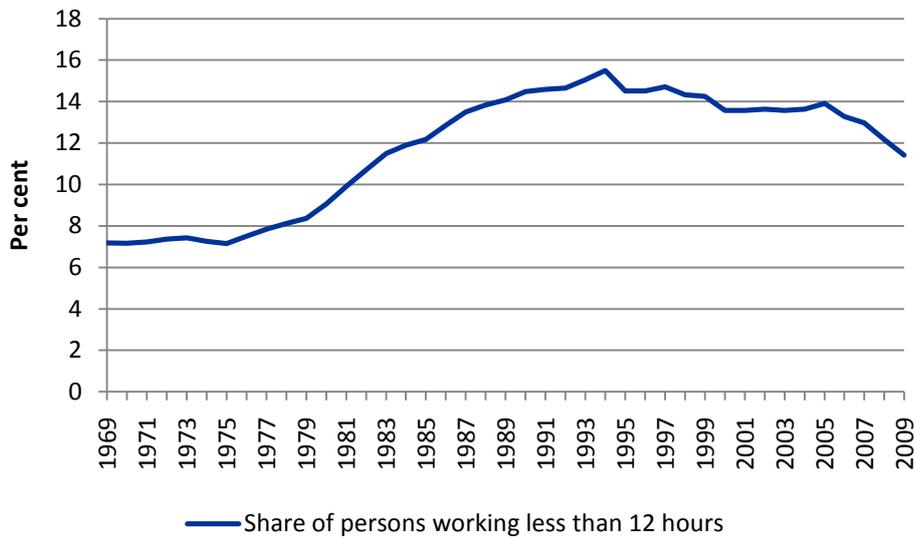


Source: CPB, Netherlands (prior to 1997) and Eurostat Labour Force Survey (LFS) (post 1997).

Flexible work has also become a larger proportion of part-time employment rising from 25 per cent in 1969 to over 30 per cent in 2009 (CPB, Netherlands). There has also been an increase in the proportion of Dutch workers employed for less than 12 hours per week although that trend has reversed since 1993. The large rise in the early 1980s was

associated with a major recession in the Netherlands in 1982-83. It is clear that firms increased the number of jobs available which provided less than 12 hours per week. Eurostat data on involuntary part-time work shows a similar pattern with a large hump during the recession years of 1982 and 1983. This supports our view that this adjustment was driven from the demand-side and imposed on the workers. Underemployment steadily fell again as growth resumed.

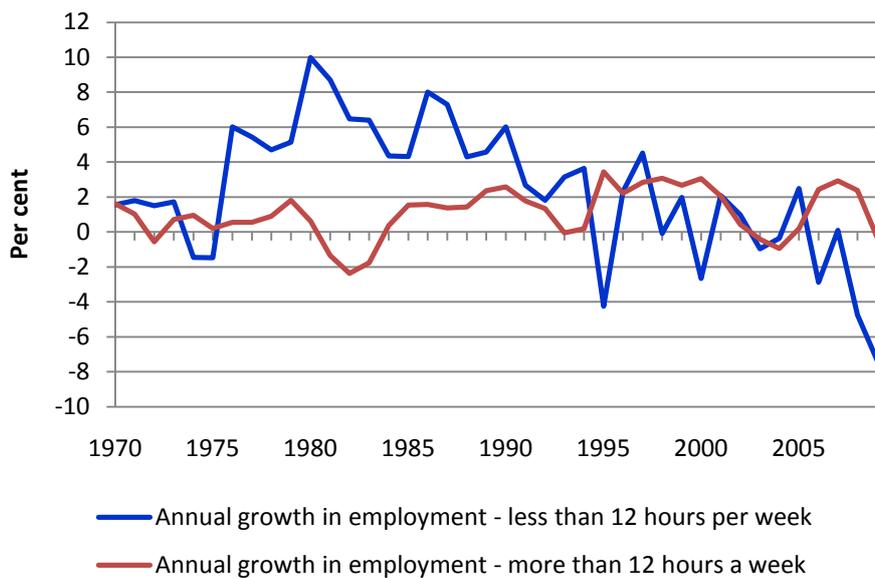
Figure 5 Workers employed less than 12 hours per week as a percent of total employment, Netherlands, 1969-2009



Source: CPB, Netherlands.

Figure 6 helps us understand the declining trend in since the early 1990s in employment of less than 12 hours per week. It is clear a significant amount of the net employment creation in the Netherlands after the first OPEC oil crisis was at the low end of the hours distribution as full-time work opportunities declined.

Figure 6 Annual growth in employment components by hours, Netherlands, 1970-2009



Source: CPB, Netherlands.

In the 1990s this trend reversed with more part-time jobs offering more than 12 hours per week being created relative to those offering less than 12 hours per week. Overall, there have been a larger number of part-time jobs replacing full-time work over this period.

Finally, the increased incidence of flexible employment also implies an increasing share of self-employed. Figure 7 shows that the share of self-employed in total employment has risen since 1996. The data is not available prior to 1996. The availability of this data series coincides with the relatively recent phenomenon of persons now working in jobs which were previously deemed to be offered by an employer but have since been outsourced (see van Es and van Vuuren, 2010).

Figure 7 Share of self-employed (ZZP) in total employment, Netherlands, 1996-2009



Source: CPB, Netherlands.

In summary, the trends in the Dutch labour market are rather stark. There has been a

- There has been a decline in hours worked per person overall and for those engaged in full-time employment.
- The ratio of full-time equivalent employment to total employment has systematically declined since 1969.
- Part-time employment has risen as a percent of total employment since 1969 and now accounts for nearly 50 per cent of total employment.
- Share of flexible employment in total employment has risen dramatically since 1969.
- More part-time workers are now engaged in flexible employment.
- There has been a rise in the proportion of workers employed for less than 12 hours per week.
- The proportion of self-employed workers has risen since 1969.

3.2 Cyclical behaviour of the Dutch labour market

In Section 3.1 we documented the underlying trends in the Dutch labour market. However, the model we developed in Section 2 describes the labour market behaviour during recessions and growth periods. In this section we consider some of the evidence relating to the cyclical behaviour of the Dutch labour market.

Following the analysis of the trend developments, we first look at the decomposition:

$$\frac{\text{hours}}{\text{person}} = \frac{\text{hours}}{\text{fte job}} \frac{\text{fte job}}{\text{person}}$$

We use this decomposition in relation to Figures 1 and 2 above which show trend movements in average annual hours worked per person and per full-time job (Figure 1) and the ratio of full-time equivalent employment to total employment (Figure 2).

Figure 8 shows the relationship between the growth rate of hours worked per full-time job and real GDP growth in the Netherlands from 1970 to 2009. There is no clear cyclical pattern, although one might expect a pro-cyclical pattern. The likely reason for this result is that the decrease in hours per full-time equivalent job is a structural phenomenon. A better indication of cyclical adjustments might be provided by the number of full-time equivalent jobs per person, since that indicates changes in labour market flexibility.

Figure 8 Hours worked per full-time job and real GDP growth, Netherlands, 1970-2009

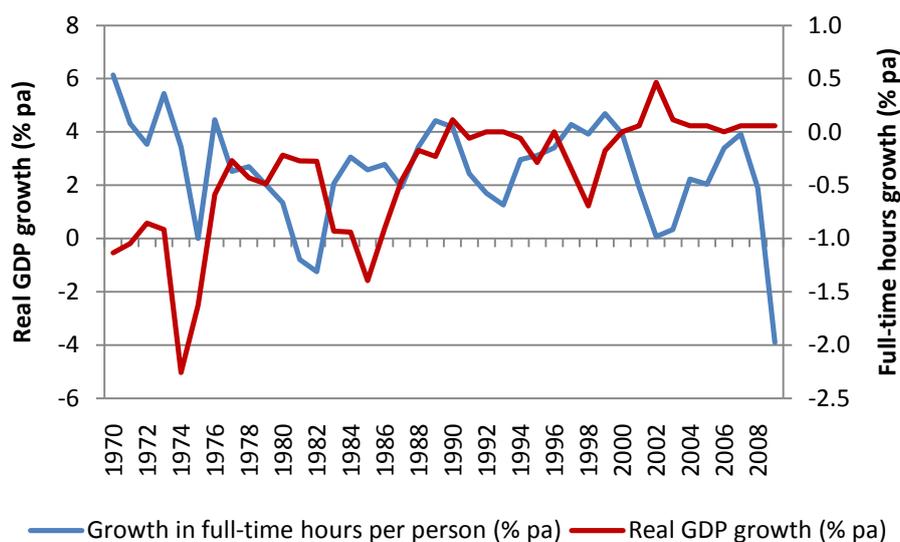
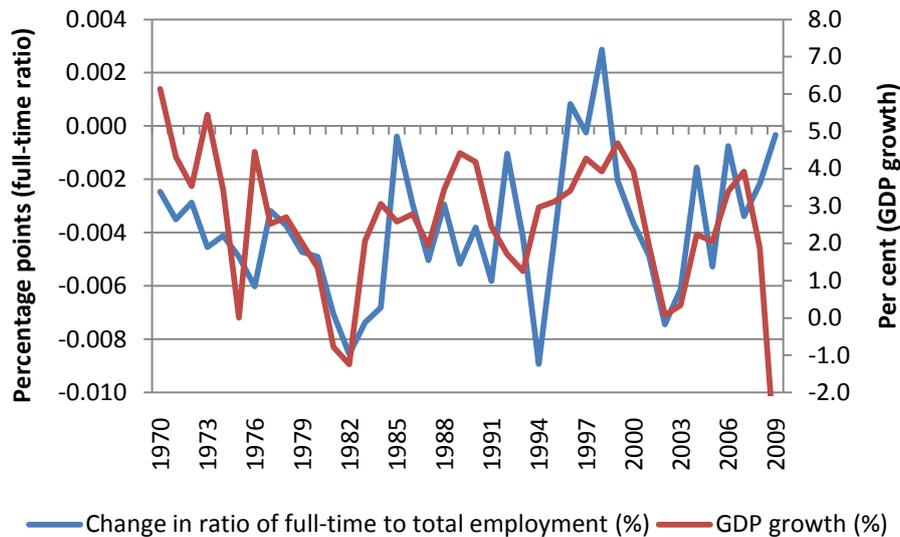


Figure 9 shows the relationship between the changing ratio of full-time equivalent employment to total employment in persons (percentage points – left-axis) and real GDP growth (% per annum) for the period 1970 to 2009. While the overall trend in of full-time equivalent jobs per person has been negative over this period (Figure 2), the rate of decline has fluctuated in a very clear pro-cyclical manner. That is, a downturn generated a stronger decline in the number of full-time hours per person. This is consistent with our model.

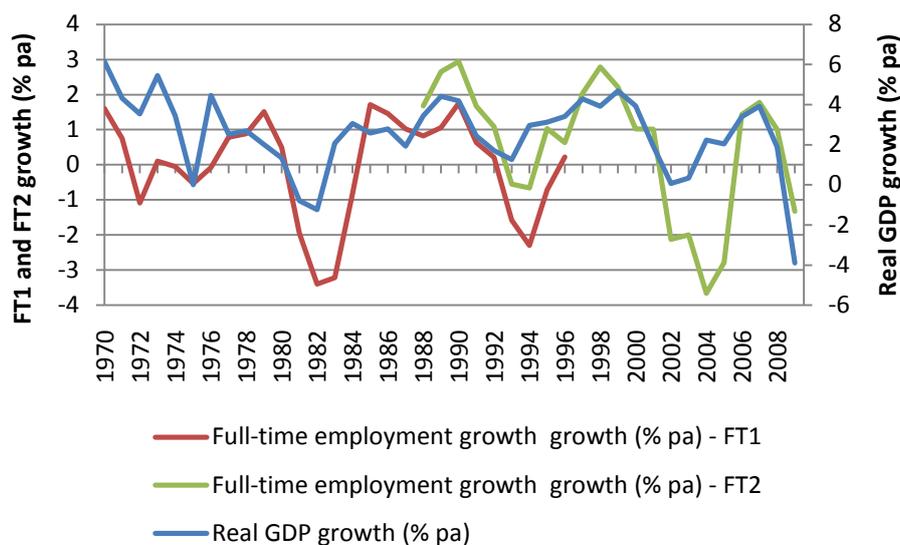
Figure 9 Change in full-time equivalent jobs per person and real GDP growth, Netherlands, 1970-2009



Source: CPB, Netherlands.

Underlying the cyclical behaviour of full-time equivalent jobs per person is the cyclical flexibility of full-time and part-time employment. An analysis of the dynamics of full-time employment shows consistent decline, in line with the increasing share of part-time employment (see Figure 3). However, in terms of cyclical behaviour, Figure 10 shows us that the recessions in 1981, 1993 and 2002 resulted in a disproportionately strong decline in full-time employment. This cyclical pattern is also observed in Australia (Mitchell and Muysken, 2008a). Recessions clearly have been used to shed full-time employment and replace the jobs by part-time employment jobs which reinforces the underlying trend towards increased fractionalisation of employment. The transition from full-time to part-time jobs is again consistent with our model in Section 2.

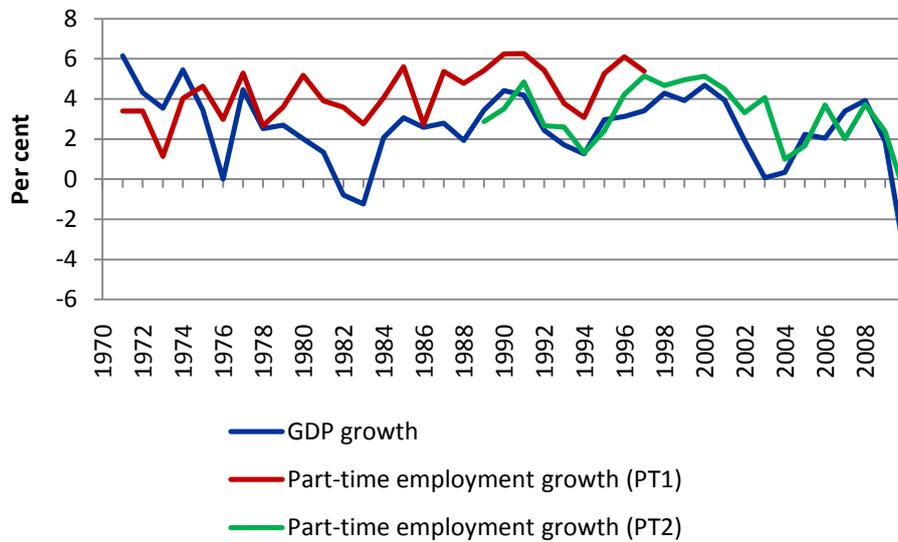
Figure 10 Full-time employment growth and real GDP growth, Netherlands, 1970-2009



Source: CPB, Netherlands. See notes for Figure 3 about FT1 and FT2.

Figure 11 shows that the growth of part-time employment is also typically pro-cyclical, although it is clear that this occurs with a lag such that early in a downturn part-time employment continues to grow. Moreover, there is no disproportionately strong decline in part-time employment during the sharp recessions of 1981, 1993 and 2002, which is consistent with the observation that these recessions clearly have been used to shed full-time employment and replace the jobs by part-time employment jobs (see also Mitchell and Muysken, 2008a for consistent Australian evidence).

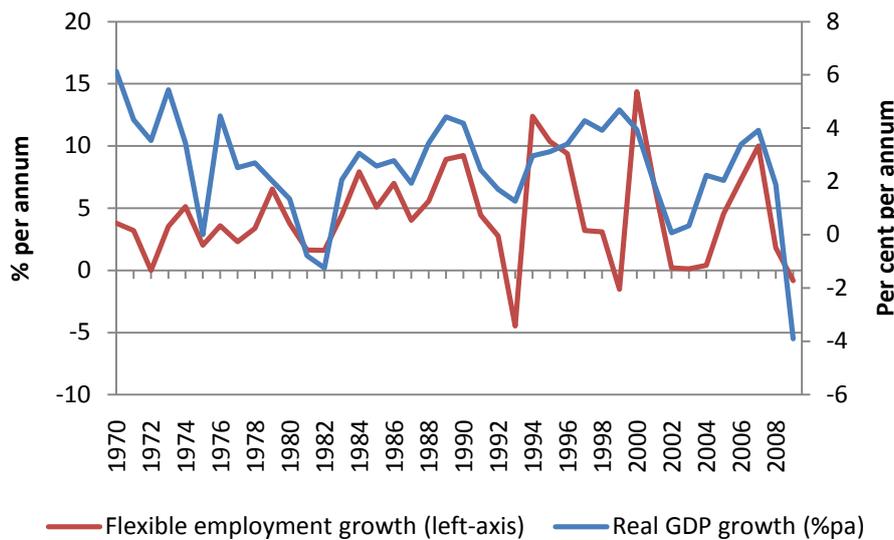
Figure 11 Part-time employment growth and real GDP growth, Netherlands, 1970-2009



Source: CPB, Netherlands. See notes for Figure 3 about PT1 and PT2.

Finally, the increased incidence of flexible employment also exhibits pro-cyclical characteristics (see Figure 12) and suggests that firms use these jobs as a buffer to keep some activity going while sales are falling.

Figure 12 Flexible employment growth and real GDP growth, Netherlands, 1970-2009

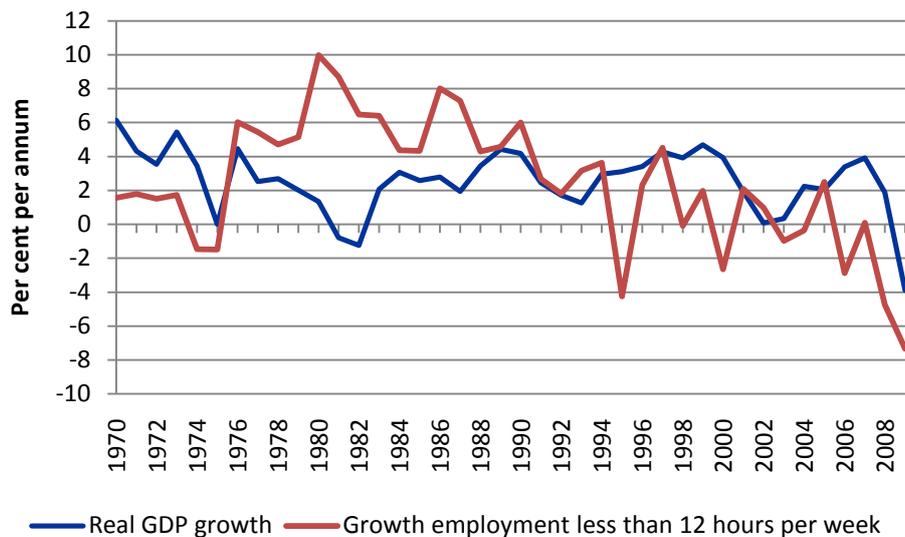


Source: CPB, Netherlands.

Our model in Section 2 suggests that firms also use short-hours jobs (less than 12 hours a week) as a means of adjusting to cyclical fluctuations in sales. So when demand is

falling, firms shorten the part-time hours they are prepared to offer as they shed full-time jobs. Figure 13 shows that growth in employment of jobs offering than 12 hours per week exhibited clearly countercyclical behaviour in the 1980s, which consistent with our model. It is clear that the 1982-83 recession was a very significant downturn in the Netherlands and led to major shedding of full-time jobs and signified the start of the trend towards increased labour market flexibility after the second oil crisis. Similar tendencies can be observed for flexible employment in that period. So the recession set in place the trend processes towards increased fractionalisation of employment that continued after the economy had resumed growth.

Figure 13 Growth in employment less than 12 hours per week and GDP growth, Netherlands, 1970-2009



Source: CPB, Netherlands.

The period after the first oil crisis up until the early 1990s was characterised by very significant transformation of the Dutch labour market towards increased flexibility and fractionalisation of employment. This process led to the decline in number of hours per full-time equivalent job (see Figure 1). However, the pace of change slowed around 1990, after which the growth in flexible and short-hours employment fell and also became pro-cyclical (see Figure 12). It is clear that once the labour market achieved a certain level of flexibility both part-time and full-time jobs became precarious during subsequent recessions (Figures 10 and 11). This is also consistent with the observation in Figure 6 that in the 1990s the upward trend of short-hour jobs reversed with more part-time jobs offering more than 12 hours per week being created relative to those offering less than 12 hours per week.

4. Conclusion

This paper is a precursor to a more detailed study of the adjustment processes that firms use to deal with major fluctuations in sales. The underlying aim of this research is to investigate how within-firm adjustments lead to underemployment which, in turn, becomes a disciplinary force on the inflation generating process.

In this paper we have considered a simple model of within-firm adjustments that helps us understand how firms adjust the different components of employment (full- and part-

time; temporary, short-hours) to meet the flux and uncertainty of the demand conditions they face.

We chose the Netherlands as a test case because it has experienced some stark shifts in full-time and part-time employment over the last 35 years since the oil shocks of the 1970s and early 1980s. Unfortunately, we only have annual data available to us for the Netherlands within the employment categories of interest. This precludes a more detailed econometric study to explore the asymmetries of the cyclical adjustments which is a further feature of the model developed in Section 2. In a further study using quarterly data (for a shorter period) we will demonstrate that the model predictions regarding these asymmetries are consistent with the information in the data. We are also extending this work to encompass the developments in several OECD countries where such data is available.

It is clear that while the overall trend in of full-time equivalent jobs per person has been negative over the period examined (1969-2009), the rate of decline has fluctuated in a very clear pro-cyclical manner. This means that cyclical downturns in the Netherlands generated a stronger decline in the number of full-time hours per person and reinforced the declining trend.

The recessions in 1981, 1993 and 2002 also resulted in a disproportionately strong decline in full-time employment and were times when firms shed full-time employment and replaced this capacity with part-time employment jobs. Those full-time jobs did not reappear in the subsequent upturn. It is in this sense that we say that recessions constitute major turning points in labour market structure. In the Netherlands, the 1982-83 recession set off a dynamic that led to very significant increases in labour market flexibility that has persisted as a permanent feature.

Finally, there is no disproportionately strong decline in part-time employment during the sharp recessions of 1981, 1993 and 2002, which is consistent with the previous observations. Overall, as far as this paper has gone, the model developed in Section 2 is consistent with the data movements and helps us explain these processes.

References

- Blanchard, O. and Landier, A., (2002) 'The Perverse Effects of Partial Labour Market Reform: Fixed-Term Contracts in France', *Economic Journal*, June 2002, 112(480), F214-44.
- Cahuc, P. and Postel-Vinay, F. (2002) 'Temporary Jobs, Employment Protection and Labor Market Performance', *Labour Economics*, 9(1), 63-91.
- Dolado, J., Jansen, M. and Jimeno-Serrano, J., (2005) 'Dual Employment Protection Legislation: A Framework for Analysis', *C.E.P.R. Discussion Papers*, 5033.
- van Es, F. and van Vuuren, D. (2010) "A decomposition of the growth in self employment", *CPB Discussion Paper*, 145, March 2010
- Kahn, L.M., (2010) 'Employment Protection Reforms, Employment and the Incidence of Temporary Jobs in Europe: 1996-2001', *Labour Economics*, 17(1), 1-15.
- Mitchell, W.F. and Muysken, J. (2008a) 'Labour underutilisation and the Phillips Curve', *Working Paper 08-09*, Centre of Full Employment and Equity.
- Mitchell, W.F. and Muysken, J. (2008b) *Full employment abandoned: shifting sands and policy failures*, Aldershot, Edward Elgar.
- Mortensen, D.T. and Pissarides, C.A. (1994) 'Job creation and job destruction in the theory of unemployment', *Review of Economic Studies*, 61(3), 397-415.
- OECD (1994) *Jobs Study*, Organisation for Economic Co-operation and Development, Paris.
- OECD (2002) *Employment Outlook*, Organisation for Economic Co-operation and Development, Paris.
- Ohanian, L., Raffo, A. and Rogerson, R. (2008) 'Long-Term Changes in Labor Supply and Taxes: Evidence from OECD Countries, 1956-2004', *Journal of Monetary Economics*, 55(8), 1353-62.
- Stilianos, A. and Dimitrios, T. (2006) 'Reassessing the Validity of Verdoorn's Law Under Conditions of Spatial Dependence: A Case Study of the Greek Regions', *Journal of Post Keynesian Economics*, 29(1), 149-75.
- Wasmer, E. (1999) 'Competition for Jobs in a Growing Economy and the Emergence of Dualism', *Economic Journal*, 109(457), 349-71.

Appendix

Let $x = g(h)/h = \alpha[1 - h/(2h^{\max})]$. Then equation (9b) can be rewritten as:

$$\frac{\alpha a}{2} \left[\frac{2}{\alpha} x - 1 \right] - W + \frac{\alpha W^2}{2a} \frac{1}{x^2} = 0 \text{ hence } [ax - W] - \frac{\alpha a}{2} \left[1 - \left(\frac{W}{ax} \right)^2 \right] = 0 \text{ or}$$

$$ax \left[1 - \frac{W}{ax} \right] = \frac{\alpha a}{2} \left[1 - \frac{W}{ax} \right] \left[1 + \frac{W}{ax} \right]$$

This can be written as a quadratic function in x : $\frac{\alpha a}{2} x^2 - ax - W = 0$ which yields as

$$\text{solution:}^2 x = \frac{\alpha}{4} \left[1 + \sqrt{1 + \frac{8}{\alpha a} w} \right]$$

This solution shows that x is decreasing in a , and hence h is increasing in a . Hence, in an expansion, characterised by $a > 1$, employers will employ more hours in a temporary job than in a recession. Moreover, since x is increasing in W , h is decreasing.

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² The solution $x = \frac{\alpha}{4} \left[1 - \sqrt{1 + \frac{8}{\alpha a} w} \right]$ leads to a negative value of x , which is impossible by definition.