

Firing Costs and Labor Demand in Recessions

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Abstract: A matching model is proposed to investigate the equilibrium effects of flexible counter-cyclical employment policies in recessions. In particular, the model is characterized by - partial - wage rigidity and diminishing marginal returns to labor and focuses on firing costs policies that help firms lowering the costs of employment during bad times. The model's theoretical predictions are tested empirically in an analysis of two different procedures to terminate permanent worker contracts: in civil court and by approval of the public employment service. The procedures make up the flexible system of counter-cyclical labor market policy in the Netherlands. Individual data on worker-firm pairs of lay-off requests identifies key differences in incidence, procedural durations, and firing costs distributions for permanent contract terminations for the period 2006-2009. Firing costs exemption obtained after scrutiny by a public employment service neutralizes the labor market effects of employer moral hazard.

Keywords: job security, social insurance, severance pay, moral hazard of employers.

JEL Codes: J20, J64, J68

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“The effect of laws on employment depends on the state of demand.”
Ed Lazear (1990, p.705)

1. Introduction

For individual workers job security is one of the most attractive amenities of a job. In surveys on relevant employment features job security ranks invariably above career perspectives and attractive remuneration. But economic theory and empirical evidence are ambiguous about the labor market consequences of job security programs. These programs may provide employment stability to incumbent workers, especially to those with permanent contracts, but at the same time they make employers more reluctant to hire, induce capital-labor substitution, and condense entry. Empirical research in the US estimates the social costs, in possibly lower employment, wages, and productivity of wrongful discharge laws and disability acts (eg. Acemoglu and Angrist (2001), Autor, Donahue and Schwab (2006)). Empirical research in Europe predominantly studies how employment protection legislation influences labor market participation and unemployment duration (Boeri and Van Ours (2013)).

Even though employment protection laws are meant to be effective during bad times for groups of vulnerable workers, in general they are not easily adjustable to changing economic conditions. During the Great Recession some countries' labor markets performed better than others. Recent applied studies suggested that those differences arise because some labor markets have flexible counter-cyclical employment policies. These policies aim at returning the economy back to full employment and are specifically designed to become effective for individual workers or firms in downturns. Such policies are more successful in lowering the rise of unemployment during recessions than inert job security legislation.¹

¹ For example, Burda and Hunt (2011) argue that the *short time compensation* policy together with careful pre-crisis hiring and wage moderations can explain the decrease in real GDP with excessive job loss in Germany during the Great Recession.

This paper proposes a matching model with - partial - wage rigidity and diminishing marginal returns to labor in order to investigate the equilibrium effects of flexible counter-cyclical employment policies in recessions. In particular, the analysis focuses on firing costs policies that help firms lowering the costs of employment when times are bad. Crépon *et al.* (2013)) use a model with wage rigidity and diminishing marginal returns to labor to investigate the effects of an active labor market policy for job seekers that shifts the *labor supply* curve outwards. This paper studies the effect of job protection policy shifting the *labor demand* curve upwards.

The empirical part of the paper represents a specific counter-cyclical labor market policy, namely the possibility to obtain firing costs exemption for firms in demise. This policy is operative in The Netherlands since World War II. It results from the First Enforcement Resolution (*‘Eerste Uitvaardigingsbesluit’*), enacted by the German occupying forces on June 11th 1940. The empirical analysis is based on a novel representative data set on individual dismissal procedures for the period 2006-2009.

The paper is organized as follows. Section 2 presents the matching model with firing costs as transfers and taxes. Section 3 studies the labor market consequences of moral hazard of employers, when the probability to obtain firing costs exemption varies cyclically. Section 4 discusses in short the history and some of the specific institutional aspects of the Dutch labor market. In Section 5 the data are presented. In Section 6 differences in firing costs are estimated. In Section 7 worker-firm pairs of dismissal requests are used to estimate the determinants of the probability for a firm to be granted firing costs exemption. Section 8 concludes.

2. The model

Concerns about everlasting job shortage in modern labor markets challenged the equilibrium market hypothesis and led to the theoretical analysis of the role of labor market rigidities (Akerlof and Yellen (1985), Nickell (1997)). In competitive labor markets, however, government mandated severance payments are transfers that can be offset by optimal contracts between the worker and the firm (Lazear (1990), Acemoglu and Shimer (1999)). In an equilibrium model with perfectly elastic labor demand matching frictions form the basis of equilibrium unemployment (Mortensen and Pissarides (1994)). When firing costs can be considered as pure taxations to the employer that are paid out to the worker, they cancel out in wage bargaining and do not reduce the overall employment level (Pissarides (2001)).

But, in periods of contraction matching frictions are relatively unimportant. In recessions competition for jobs intensifies, labor supply is in excess, and marginal returns to labor decline. Job shortage can occur in equilibrium nevertheless as a result from a combination of wage rigidity (Bewley (1999), Hall (2005)), and a production technology that is characterized by diminishing marginal returns to labor (Michaillat (2012)). This changes the curvature of labor demand such that marginal productivity of labor decreases when the employment level goes up, which in equilibrium leads to an adjustment of the unemployment/vacancy ratio that differs fundamentally from equilibrium search models with perfectly elastic labor demand.

Consider an economy with one sector and one input, labor. Let L be the labor force, that is homogeneous; N is the number of workers with a job; U is the number of unemployed workers; and V is the total number of vacancies. Jobs end exogenously at rate λ . The employment rate is $n \equiv N/L$ and the unemployment rate is $u \equiv U/L$, such that $n+u=1$. The vacancy rate is $v \equiv V/L$; labor market tightness is $\theta \equiv v/u$. A recession coincides with θ being low. As in Pissarides (2000) the matching function $m(u;v)$ is homogeneous of degree one, and increasing and

concave in u and v . The probability that a firm fills a vacancy is $m(u,v)/v = m(\theta^{-1};1) \equiv q(\theta)$, which is decreasing in θ . The probability that an unemployed worker finds a job is $m(u,v)/u = m(1; \theta) = \theta m(\theta^{-1};1) = \theta q(\theta)$, which is concave and increasing in θ .

The labor supply curve

The inflow into unemployment is $(L-U)\lambda$. The outflow out of unemployment is $U\theta q(\theta)$. In steady state it holds that

$$(L-U)\lambda = U\theta q(\theta) . \quad (1)$$

Equation (1) defines the Beveridge curve

$$u = \frac{\lambda}{\lambda + \theta q(\theta)} . \quad (2)$$

Given that $u=1-n$, the Beveridge curve can be rewritten as the labor supply curve as follows

$$n_s = \frac{\theta q(\theta)}{\lambda + \theta q(\theta)} , \quad (3)$$

with $\frac{\partial n_s}{\partial \theta} > 0$, so that the labor supply curve is upward sloping in θ , and with $\frac{\partial n_s}{\partial \lambda} < 0$, so that when the mean duration of a job increases, the level of employment increases as well.

The labor demand curve

The firm's input decision is subject to a Cobb-Douglas production technology with decreasing returns to scale. The marginal revenue associated with a newly hired worker is $\alpha A n^{\alpha-1}$, with $\alpha \in (0,1)$, and A represents the state of the economy, drawn randomly from a bounded technology shock distribution with support $[A_{\min} ; A_{\max}]$, with $0 < A_{\min} < A_{\max} < \infty$. Vacancies can be posted at costs c . Firms will post a vacancy when the expected returns are equal to the costs. In a labor market with search and matching and free entry the costs of posting a vacancy

are equal to the expected returns. The Bellman equation for having a vacancy posted can be written as

$$\Omega = \frac{c}{q(\theta)}, \quad (4)$$

where Ω is the present value of filling a job opening. The Bellman equation for having a job filled is

$$r\Omega = \alpha A n_D^{\alpha-1} - w - \lambda\Omega, \quad (5)$$

with r being the interest rate and w is the total costs of a filled job.

Wages

Following Michaillat (2012) wages only partially adjust to technology shock A , such that

$$w = \omega A^\gamma, \quad (6)$$

with $0 < \gamma < 1$, and $\omega > 0$. In absence of unemployment benefits a necessary and sufficient condition for workers not to separate from their jobs endogenously in recessions is $\omega(A_{min})^\gamma > 0$. Wages must be privately efficient, such that all worker-firm matches are Pareto optimal. Given (5) and (6) in a static environment a necessary and sufficient condition for private efficiency yields²

$$0 < w = \omega A^\gamma < \alpha A n^{\alpha-1} - (r + \lambda) \frac{c}{q(\theta)}. \quad (7)$$

If wages are fully rigid, *i.e.* $\gamma = 0$, the likelihood that (7) is violated increases especially when A is low. Therefore wages must be sufficiently flexible, with $\gamma > 0$.

² Applying the equilibrium constraint from Hall (2005) for privately efficient wages, and equation (8) from Michaillat (2012).

Firing costs as a tax

The effects of firing costs as transfers or firing costs as taxes may depend of the rigidity of wages. Garibaldi and Violante (2005) predict that in the short run, with full wage rigidity, the effects of transfer payments (severance pay) and firing taxes are identical. But when wages are not fixed, or rigidity is endogenous, the equilibrium effect of pure transfers F differs from that of firing costs as taxes. Transfers between a firm and a worker can be undone through wage bargaining, but firing costs taxes can't be undone as they are set outside the direct employee-firm influence. To enable a comparison of the effects of transfers and taxes in the current framework a firing costs tax τ is introduced that is levied to finance unemployment benefits, or exemptions of transfers. The costs of a filled job, w , exists of wage costs w_τ plus a mark-up τ

$$w = (1 + \tau)w_\tau. \quad (8)$$

Firing costs as a transfer

Let $F > 0$ denote firing costs that must be paid by the employer for a worker that is laid off. The Bellman equation of the value of a filled vacancy alters into

$$r\Omega = \alpha A n_D^{\alpha-1} - (1 + \tau)w_\tau - \lambda(\Omega + F) \quad (9)$$

Let $0 < p_f < 1$ denote the probability that a firm in demise is exempted from paying F . In first instance, let p_f be determined exogenously by a public employment service. The labor demand curve can be written as

$$n_D = \left(\frac{1}{\alpha A} \left[(1 + \tau)w_\tau + (r + \lambda) \frac{c}{q(\theta)} + \lambda(1 - p_f)F \right] \right)^{\frac{-1}{1-\alpha}} \quad (10)$$

with $\frac{\partial n_D}{\partial \theta} < 0$, so that the labor demand curve is downward sloping in θ ; with $\frac{\partial n_D}{\partial \tau} < 0$ and $\frac{\partial n_D}{\partial F} < 0$, so that firing costs as taxes and transfers diminish the demand for labor demand^{3,4}; and with $\frac{\partial n_D}{\partial p_f} > 0$, so that labor demand increases with a rise in the probability to be granted firing costs exemption. Consequently, when a firm faces chances of being relieved from the burden of paying F in bad times, the labor demand curve shifts upwards.

The equilibrium effects of firing costs exemption

Equilibrium values n^* and θ^* are obtained for $n_D = n_S$. Given the properties of the probability that an unemployed worker finds a job - $\theta q(\theta)$ being concave and increasing in θ - it holds that when labor demand is high so that labor market tightness is high, the curvature of the labor supply curve is steeper than when labor market tightness is low.

[INSERT FIGURE 1 ABOUT HERE]

Figure 1 demonstrates labor market equilibriums when labor market tightness is low [red curve; low labor demand; n_2^*], and when labor market tightness is high [green curve; high labor demand; firing costs exemption policy operative; n_1^*]. If the exemption of firing costs boosts labor demand one may ask, why not getting rid of firing costs all together? This question can be answered as follows.

Moral hazard of an employer

Consider a firm that is characterized by δ being drawn from the distribution of propensities to terminate a worker contract on justified grounds. When δ is low the firm is more likely to

³ See also Bentolila and Bertola (1990) for a comparable result in a partial adjustment model; Hopenhayn and Rogerson (1993) for a general equilibrium model without search frictions; and Alvarez and Veracierto (2001) for an equilibrium model with severance payments and frictions.

⁴ Focusing on labor market policy in recessions alone, Michaillat (2012) assumes unemployment benefits are zero. But when $\tau=0$, labor supply must be influenced in equilibrium, as expected unemployment benefits reduce to zero. In the current model $\tau>0$. Although not explicitly modeled the assumption is that labor supply is unaffected by the employment protection policy due to an optimal replacement rate set by the government.

submit a request for exemption of F that is not justified. A request from a low δ -employer will have a higher likelihood to be rejected by the public employment service. Then, the exemption probability will depend on δ and becomes $p_f(\delta)$, with $p'_f > 0$ and $p''_f < 0$. The labor demand curve alters into

$$n_D = \left(\frac{1}{\alpha A} \left[(1 + \tau)w_\tau + (r + \lambda) \frac{c}{q(\theta)} + \lambda (1 - p_f(\delta)) F \right] \right)^{-\frac{1}{1-\alpha}}, \quad (13)$$

with $\frac{\partial n_D}{\partial \delta} = \frac{\partial n_D}{\partial p_f} \frac{\partial p_f}{\partial \delta} > 0$, so that labor demand is higher for high δ -employers.

[INSERT FIGURE 2 ABOUT HERE]

Figure 2 illustrates the effect of the firing costs exemption policy on the equilibrium employment when the probability to obtain firing costs exemption depends on δ . The solid lines represent the labor demand curves for high δ -employers and low δ -employers, respectively. The dotted lines represent the labor demand curves when the exemption policy is operational [$p_f(\delta) > 0$]. The graphs show that the exemption is especially effective for low δ -employers when labor demand and labor market tightness θ are low. This prediction differs fundamentally from the standard equilibrium matching framework, and is based on the fundamental assumptions of wage rigidity and diminishing returns in recessions. The possibility of firing costs exemption as a result of thorough investigation by a public employment service of the dismissal proposal neutralizes the labor market effects of employer moral hazard.

4. Institutional aspects of the Dutch labor market

It is well known that job protection against individual dismissal of workers with permanent employment contracts in the Netherlands is one of the strictest in the EU (OECD, 2013). According to existing labor market theory, labor markets with strict employment protection

laws are characterized by high unemployment rates and low employment participation levels. Moreover, differences in firing costs can account for a significant proportion of differences in labor market fluctuations observed in OECD data (*cf.* Llosa *et al.* (2012)). In the Netherlands, however, labor market participation is the highest in the EU, long-term labor market participation growth and labor productivity exceed the EU average, and the unemployment rate is structurally among the lowest in the EU (Figure 3). These are contradictory findings. Despite strict job security legislation and high firing costs the Dutch labor market appears resilient against deep recessions.

[INSERT FIGURE 3 ABOUT HERE]

Legal provision requires checking the legality, validity, carefulness and reasonability of a dismissal request *before* a permanent worker contract can actually be terminated. Preventive dismissal checks and the possibility to obtain an exemption to pay firing costs are characteristic features of the Dutch labor market. But these institutions have been overlooked in most of the existing scholarly research on international comparisons of employment protection legislation, job security, and social insurance.⁵ The Dutch system of job security is unique in Europe. Firms are obliged to seek *a priori* permission to dissolve a permanent worker contract⁶. Permissions can be obtained from two different institutions: the civil courts and the public employment service. The firm is free to choose from which institution it seeks to get a lay-off permit.

The civil court

The introduction of the Civil Code of Law in 1838 can be regarded as a milestone in the history of labor market legislation in the Netherlands. Inspired by the French Code Civil of 1804, the Dutch Civil Code introduced a new national civil law that contained three articles regarding the

⁵ See, for example, Addison and Teixeira (2003), Belot *et al.* (2007), and Freeman (2007).

⁶ A third option is by mutual consent: approximately 20 percent of all permanent job endings in the Netherlands result from mutual consent. No data are available for this category.

employment relationship between an employer and an employee. Originally, these articles were all written to protect the employer, rather than the employee. The introduction of the first legislative measures that aimed for the protection of the employee was not until 1909 when the Law on Employment Contracts was enacted. The basis of Dutch labor law is Chapter 7 of the Civil Code that is used by civil courts to deal with controversies on employment provisions.

The public employment service

On June 11th 1940 the German occupying forces enacted the First Enforcement Resolution (*‘Eerste Uitvaardigingsbesluit’*), prohibiting any dismissal without prior permission of the Labor Inspectorate. To obtain a lay-off permit a reasonable cause was required. If the inspectorate judged a dismissal to be unreasonable, permission to terminate the employment contract was not given.

After the war the Dutch government upheld this resolution by the declaration of the Extraordinary Resolution Labor Relations of October 5th, 1945 (*Buitengewoon Besluit Arbeidsverhoudingen 1945*). The goal of the declaration was “*to sustain and increase employment and to encourage production and productivity in order to stimulate the post WWII economic recovery*” in the Netherlands. The public employment service (PES) replaced the Labor Inspectorate. With more than 100 local offices spread across the country the PES was made responsible for observing the implementation and execution of the 1945 resolution by order of the government.⁷ Notwithstanding fierce political debate, the resolution is still in force today with the PES being responsible for implementation, organization, and control of its objectives. The relevant difference between permanent worker contract termination through the civil court or the public employment service is the fact that when lay-off permission is obtained from the PES the firm is also granted exemption of severance pay to the worker.

⁷ See also Chapter 7: The Termination of the Contract of Employment in Antoine T.J.M. Jacobs (2004).

5. A quantitative comparison of the two types of lay-off permits

Figure 4 shows all the requests for dismissals that have been submitted to the two institutions during the period 2001 through 2011. In the periods 2003 – 2004 and 2008 – 2009 at the onset of the Great Recession the number of dismissal requests to the public employment service increased relative to the number of requests to the civil court. These increases coincide with growing unemployment rates during the same periods. The volumes of requests to both institutions are *leading indicators* for the unemployment rate. In recessions as well as during expansions firms are granted permission to dismiss workers and so avoid paying firing costs. This is consistent with the fact that job destruction occurs throughout the business cycle, though fewer firms decline in good times.

[INSERT FIGURE 4 ABOUT HERE]

In recessions, when more firms are hit by downward shocks, the number of dismissal requests directed to the civil courts and to the PES will increase both in recessions, but the increase of requests to the PES will be higher. The fact that the number of requests to the PES increases during recessions shows the efficacy of the policy. More firms seek to lay-off workers during recessions. This implies that the flexibility to lay-off permanent workers in the Netherlands is higher than is suggested often by aggregate statistics such as the EPL index numbers published by the OECD. That this is indeed the case is shown in Figure 5, which displays the cyclical fluctuations of permanent and temporary work in the Netherlands for the period 2001–2011.

[INSERT FIGURE 5 ABOUT HERE]

During the period 2001-2011 there has been a shift of 140,000 workers -- or 2.6 percent of the workforce -- from the permanent to the temporary jobs. From 2005 to 2008 employment in both categories increased. The number of temporary jobs grew from 0.8 million in 2001 to 1.13

million in 2008. In 2009 it went down, but stayed above 1.1 million until 2011. The average number of permanent jobs is 5.25 million and fluctuates between 5.19 million and 5.33 million. In the years 2002 - 2005 and 2009 - 2011 as a result of the Great Recession permanent employment declined. Despite strict laws to reduce permanent job loss the number of tenured workers shows substantial cyclical fluctuation.

Information from micro-data

An electronic database allows the civil courts to keep track of the number of dismissal cases filed each year. But, this database does not contain any detailed information on particular cases. All civil court files on individual dismissal cases are stored in archives administered by the organization of the courts. Detailed information is stored in paper folders only, each containing a written appeal, a written defense, and the judge's verdict. Each folder has a concise description of the reason for dismissal and some employee related characteristics such as job tenure, position, date of birth and earnings. Shortly after a case is closed the folder is moved to and stored in the local court's data archives where it is kept for a period longer than twenty-five years.

Each dismissal case filed at the public employment service is recorded in the Automation of Reports and Consolidated Orders System (ARCOS) database.⁸ ARCOS files a small number of employer and employee related characteristics, such as the reason for dismissal and the duration of the dismissal procedure. Further specific information about each case -- including the wage of the employee, age, the number of years of tenure, and the number of working hours per week -- is kept in hard-copy files only that are stored in a national archive located in the city of Almere.

[INSERT TABLE 1 ABOUT HERE]

⁸ Other databases that contain information of job dismissals through the public employment service, for example at the Central Bureau of Statistics in the Netherlands, are admittedly incomplete (*cf.* CBS (2011)).

The data that have been collected for this study consists of a randomly selected and representative sample of 2,407 individual dismissal requests from the years 2006 to 2009 of which 1,140 are civil court cases and 1,267 are cases from the public employment service. Table 1 shows the numbers and percentages of requests divided by employment sector, firm size and gender.⁹ The distribution over the various sectors does not differ in great detail between the civil court and the PES. The data show no significant gender difference. Larger firms tend to go to court more often. Why small firms are more likely to submit dismissal requests to the PES than large firms is not known. But the fact that large firms go to court more often is in line with the outcomes of related research for small and large firms in other European countries (*cf.* Bender *et al.* (2002) for Germany and France; Boeri and Jimeno (2005) for Italy).

[INSERT TABLE 2 ABOUT HERE]

Table 2 presents summary statistics on the differences in duration of the dismissal procedures and of other job characteristics. The mean duration of the civil court procedure is almost three weeks shorter than the PES procedure (20.3 days). However, the variance of court procedure duration is 2.5 times larger than the variance of the duration of PES procedures. Interestingly, there are practically no significant differences in tenure, age and hourly wage profiles between the two procedures.

Reasons for ending permanent employer-employee relationships

Table 3A gives an overview of the different reasons for which terminations of permanent contracts have been requested. These reasons form a direct link between the cause of a – negative – shock and the productive employer-employee relationship. This information is relevant for the development of theoretical models of employer-employee relationships. The uncertainty underlying the probabilities of shocks in such models are shown here to come from a variety of sources. Illnesses, disturbed employer-employee relationships, demand or

⁹ See Frenk (2013) for a detailed explanation and description of collection of the individual data.

technology shocks influence the value of the relationship all in different ways. Each cause leads to a different evaluation by the employer and possibly to a different choice of the optimal route to follow to undo a contract for which the marginal value has fallen below the reservation value.

[INSERT TABLES 3A & 3B ABOUT HERE]

In the data files distinctions are being made between economic and non-economic reasons for dismissal requests. Table 3B reports rates of dismissal for economic and non-economic reasons. Important economic reasons are demonstrable structural declines in sales or the reduction in orders. The data include 1171 dismissal requests for economic reasons. Most dismissal requests submitted to the PES are economically motivated job reductions (71.3 percent). But a substantial amount of 22.8 percent of dismissal requests for economic reasons end up at the civil court. Non-economic reasons are divided into dysfunction, disturbed relationship, reproachable behavior, prolonged illness, and a rest category. Almost all cases of prolonged illness are approved by the public employment service. Most other cases are based on disputes between employers and employees.

6. Differences in firing costs

Firing costs differences are computed between dismissals with permission from the public employment service and permanent job contract rescission by the civil court. To obtain a better understanding of the consequences of the exemption policy on idiosyncratic firing costs we estimate differences in cost distributions for all cases¹⁰.

Firing costs and the civil court

Before starting a civil court procedure the employer is obliged to pay a court fee. The size of this fee depends on the legal form of the employer. The employer will also incur the costs of

¹⁰ See Pfann (2006) for an elaborate description on how to compute heterogeneous firing costs for individual workers in the Dutch labor market.

ongoing wage payments for the duration of the dismissal. This duration period can be divided into two components. The first component is the duration of the civil court procedure; or the time the court needs for a verdict. This starts at the moment a request is registered and lasts until the moment the court reaches a decision. The second component is the time between the verdict and the duration of employment contract termination, which is determined by court ruling. The civil court is not bound to observe the statutory notice period; and can decide when the employment contracted shall be dissolved. The final cost component is the firing costs to be borne by the firm. In the Netherlands courts have a guideline to determine these costs; a “*formula for cantonal judges*” states that firing costs should, in principal, be equal to the product of three factors. A is a weighting factor of the years of age of the employee $A = 0.5$ for $\text{age} < 35$; $A = 1$ for $35 \leq \text{age} < 45$; $A = 1.5$ for $45 \leq \text{age} < 55$, and $A = 2$ for $\text{age} \geq 55$. Factor B is the gross monthly wage. C is a correction factor that is determined by the civil court, with $0 \leq C \leq 2$. If $C < 1$, the employee is held liable for negligence, and if $C > 1$ the employer is held liable. In all other cases $C = 1$. The compensation formula provides guidance, but the courts are free to determine the exact amounts. The data on compensation decisions are obtained directly from the court records.

Firing costs and the public employment service

An employer that submits a request for dismissal to the public employment service will incur ongoing wage costs during the time of the dismissal procedure. The period can be divided into three parts: the procedural time, the time to notice, and the period of notice. The procedural time is the time between submission and the pronouncement. The time to notice is the period between the pronouncement and the start of the notice period. The notice period is defined by the employee’s years of tenure. Currently, a notice period equals 1 month for tenure less than 5 years, 2 months for tenure less than 10 years, 3 months for tenure less than 15 years, and 4 months for tenure of 15 years or longer.

[INSERT TABLE 4 ABOUT HERE]

Table 4 shows the outcomes of the computations of idiosyncratic firing costs based on our data set on individual dismissal cases. The average firing costs that a firm faces if a dismissal request is approved by the PES is € 7,480. That is about 500 times the average hourly wage rate of a worker permitted to be laid off by the PES. The average firing costs a firm faces if a dismissal request is submitted to and approved by the civil court is € 30,982. That is about 2,000 times the average hourly wage rate of a worker permitted to be laid off by the court. The average firing costs for the civil court procedure are found to be four times the average PES firing costs. The median costs are two times larger.

“Courts are free to assess the amount of compensation to be paid by the employer; there is no statutory minimum or maximum. This made it very difficult to forecast the results of the procedure.” (op cit. Jacobs (2004), p103).

The most striking dissimilarity between the two procedures is the differences in variances of the firing costs. The standard deviation of the firing costs through the civil court is € 54,808; the standard deviation of firing costs associated with the public employment service is € 5,648. Consequently, the standard deviation of expected firing costs that result from civil court procedures is almost ten times higher. Dismissal through court is characterized by higher costs and much larger variations in costs and duration.

Given these outcomes, the question arises: “Why do not all employers apply for dismissal permission from the public employment service always?” The reason is primarily an argument of expected time-saving. The decisions taken by the PES can be challenged in court by the employer as well as by the employee; and cases of troubled employer/employee relationships will not be dealt with by the public employment service. If a request is considered unreasonable, permission to terminate the employment contract shall not be granted (but valuable time and costs are foregone). An unconditional estimate for the expected probability,

p_f , to receive approval of firing costs exemption for the period 2006-2009 can be obtained from Table 3B: $\hat{p}_f = .75^{11}$. Three out of four permanent contract jobs that are terminated for economic reasons receive approval from the PES. The fourth ends up in court.

[INSERT TABLE 5 ABOUT HERE]

Table 5 reports the differences in costs between economic and non-economic reasons. Firing costs for the public employment service are almost equal, while firing costs determined by the civil court is almost double the size for permanent job endings for economic reasons. Observable differences are in the wage rate, age, and tenure, as well as in the determination of the factor in the formula for cantonal judges that puts weight on who is held responsible most for the termination of a permanent worker's contract. The difference in average age between public service and civil court dismissals for economic reasons equals four months. The tenure difference is two months. Both differences are not significant. Public service dismissals for non-economic reasons include primarily those workers whose permanent contracts are being dissolved due to long-term illnesses. Surprisingly, their average age is four and a half years lower than that of workers that are laid off on non-economic grounds (disputes) by civil courts, but their tenure is almost two years longer.

The incidence, the duration and the costs have been compared for the two separate options to terminate permanent workers' contracts. Contract termination in civil court is found to be costlier and more uncertain. The incidence of both procedures is about equal during periods of expansion. But in times of contraction the PES route is followed more often.

7. The probability to obtain firing costs exemption

The firing costs exemption policy lowers the expected costs of labor turnover. Consequently, two effects induce a reduction of the inflow into unemployment: (i) labor demand is higher;

¹¹ $\hat{p}_f = [904/1267] / [(267/1140) + (904/1267)] = 0.75$

and (ii) as a result of the *a priori* reasonability checks lay-offs based on unjustifiable grounds are discouraged. The theory predicts that the exemption of firing costs is an effective flexible counter-cyclical labor market policy that increases the equilibrium level of employment especially when labor market tightness is low, and if p_f in equation (13) depends on δ . This policy renders permanent jobs being more receptive to cyclical fluctuations, and that is consistent with the data of the Dutch labor market presented in Figures 4 and 5 that show when labor market tightness is low that the number of dismissal requests to the PES increase and permanent jobs fluctuate cyclically.

Contrary to the US labor market, Europe does not have a tax-based system of *experience-rating* to measure a firm's lay-off history. Hence, the *ex-ante* control of reasonability is one the most important disciplinary instruments for labor market policy currently available in countries like the Netherlands. One of the formal tasks assigned to public employment services is to assess whether or not a request for permission to dissolve a permanent worker contract is based on reasonable grounds. Preventive dismissal checks restrain firms to seek exemption of firing cost payments on unjustifiable grounds, while courts can discipline a firm for negligent behavior that leads to dissolution of a contract. Dutch firms are thus discouraged to shift private costs to society for considerations of self-interest alone.¹²

Dismissal requests that are based on unjustifiable grounds are evidence of firms willing to shift private costs to society. The employer's moral dilemma can be explained as follows. Suppose that a firm wants to get rid of a worker for reasons not justified by the public employment service. Reaching a mutual agreement between the employer and the employee is not an option, and the firm knows that a request to the court is likely to be either rejected by the court -- and

¹² Jacobs (2004) concludes that "the juridical control on 'manifestly unfair dismissals' -- Article 7:681 Civil Code -- is a procedure which is hardly used in The Netherlands. Its very existence, however, supports the employee in negotiating some sort of severance pay." (p.103).

the opportunity to fire this worker will be foregone -- or be granted by the court at high costs. When the firm is hit by a downward shock, the firm faces an alternative to undo an employer-employee relationship lay off at lower costs for the firm (but at high costs for society). The low δ -employer will be more likely to submit a request to the public employment service for permission to fire the worker, and at the same time will not be losing the option to go to court. The firm benefits when a judgment of the public employment service is in favor of the worker's dismissal request. This provides the possibility of an empirical test of the role of moral hazard of employers in the labor market.

Testing for employers' moral hazard

For the U.S. LeRoy (2008) finds that state courts create conditions for employer moral hazard in the arbitration of employment disputes. A formal test for *ex-post* moral hazard has been developed for asymmetric information in insurance markets by Chiappori and Salanié (2000). This test has recently been applied to public procurement by Lewis and Bajari (2014) who investigate moral hazard of US highway contractors' studying their effort levels in relation to unexpected productivity shocks during the contract period. In an experimental laboratory study De Haan *et al.* (2013) find employee favoritism of employers increases when labor market tightness decreases.

Preventive dismissal checks restrain firms to seek reduction of firing costs on unjustifiable grounds indeed. Firms are discouraged to shift private costs to society on considerations of self-interest alone diminishing the effect of employer moral hazard in the labor market, which other things equal results in lower rates of unemployment in recessions. If employer moral hazard is prevalent in the labor market, the public employment service will receive more unjustified requests in recessions than in booms. Consequently, the rejection rate will be counter-cyclical.

The PES is expert in the identification of dismissal requests that are not based on justifiable grounds. Under the null hypothesis of no employer moral hazard δ is constant for all employers. Then p_f is constant and the *rate* of unjustified dismissal requests will not vary systematically over the business cycle. Alternatively, however, δ may not be constant across firms.¹³ A high δ -employer faces a higher $p_f(\delta)$ than a low δ -employer. When expected firing costs are higher, labor demand is lower. Labor demand is higher for high δ -employers. A low δ -employer has a higher probability for a request to be exempted from paying F to be rejected. In recessions, when more firms are hit by downward shocks, the rejection rate, $1 - p_f(\delta)$, will increase more for low δ -employer. The alternative hypothesis is that, when employer moral hazard is prevalent in the labor market, the rejection rate will be counter-cyclical.

The individual firm-worker dismissal request data are, unfortunately, insufficiently rich to distinguish explicitly between low- δ and high- δ employers. Consequently, the Chiappori-Salanié test cannot be applied here. But it is possible to relate the unemployment rate to the rejection rate for the years covered by the data. This relationship indicates whether or not low- δ employers actively submit more unjust dismissal request during recessions that are discovered by the PES, that is when the rejection rate of dismissal requests to the PES is counter-cyclical. In that case changes in the unemployment rate are expected to coincide with changes in the PES rejection rates.¹⁴

[INSERT TABLE 6 ABOUT HERE]

Table 6 shows dismissal requests that are not granted by the PES for the period 2006-2009. In the first three years of that period the unemployment rate is declining, while in 2009 at the onset of the Great Recession the unemployment rate increases. The rejection rate of dismissal

¹³ If δ can be chosen by the firm, then p_f becomes endogenous.

¹⁴ Siegelman and Donohue (1995) use US time series records of all employment discrimination litigations in federal trial courts over a 20-year period. They find that the number of employment discrimination cases filed increases substantial in recessions, and that the incremental (recession-induced) cases are much weaker than average.

requests presented to the public employment increases as well. The increase is observed for dismissal requests for economic as well as for non-economic reasons. More requests are rejected during recessions. Although this is not a formal test, it does indicate that p_f is counter-cyclical indeed.

To test the hypothesis that the PES rejection rate is counter-cyclical all the individual dismissal requests submitted to the PES during the period 2006-2009 are included except those cases that are part of collective dismissals of at least 20 employees. The probability that a dismissal request is rejected by the PES is estimated using a probit regression of 823 worker-firm pairs recorded at the month in which the decision was taken. Each decision is associated with the nationwide monthly unemployment rate u , the duration of the procedure Δ , plus variables to describe worker characteristics (gender, age, tenure, hours worked, hourly wage), firm characteristics (industry, firm size, legal form, economic status), variables describing whether or not legal assistance was available to the worker, to the firm, or to both, and seasonal dummies. In Appendix I variable definitions, summary statistics, and the overall regression results are presented. The estimated model is as follows

$$\Pr[Dismissal Request Rejected_i] = \Phi(.018u_i + .008\Delta_i + \hat{\beta}'X_i) \quad (13)$$

$(p_u = .041) \quad (p_\Delta = .049)$

with $i = 1, \dots, 823$. The estimation results show that the rejection rate increases when the unemployment rate is higher. Moreover, cases that need more decision time are more likely to be rejected. Finally, dismissal requests where employees received legal assistance are rejected significantly more often than cases without legal assistance (see Table A1).

Thus p_f is not constant, and the role of the PES to detect unjust firing requests in combination with the firing costs exemption policy for firms in demise is crucial. Figure 2 illustrates the effects of the firing costs exemption policy on the equilibrium employment when the

probability to obtain firing costs exemption is not constant. The model predicts and the empirical analysis confirms that the firing costs exemption policy combined with *a priori* permission of the public employment service to fire tenured workers lowers the inflow into unemployment. The effects of the policy are most profound in recessions.

8. Conclusions

This paper has proposed a matching model to investigate the equilibrium effects of flexible counter-cyclical employment policies in recessions. In particular, the model is characterized by - partial - wage rigidity and diminishing returns to scale, and the analysis focused on firing costs policies that helps firms to lower the costs of employment when times are bad. The empirical part of the paper represented a specific counter-cyclical labor market policy, namely the analysis of the labor market policy in the Netherlands where firms in demise have the possibility to obtain exemption of severance payments. The Dutch system of job security is unique in Europe, and consequently, it is an appropriate laboratory to study the labor market effects of the policy. Firms are obliged to seek *a priori* permission to dissolve a permanent worker contract. Dismissal permission can be obtained from two different institutions: the civil courts and the public employment service. The two procedures make up the dual system of counter-cyclical labor market policy in the Netherlands. Approval from the public employment service exempts the firm from severance payment to that worker. This dual system exists since WWII. Duration and costs of the two different procedures to dissolve permanent worker contracts have been compared. In periods of contraction firms are more likely to seek approval from the public employment service to terminate contracts. Contract termination in civil court is costlier, but also more uncertain in terms of costs and duration.

Labor market flexibility resulting from a flexible system of counter-cyclical labor market policy of firing costs exemption for firms in demise increases labor demand and lowers

equilibrium unemployment. Moreover, when unjustified lay-offs are prevalent due to employer moral hazard, the policy neutralizes the downward effect on labor demand thereof. The paper leaves ample ground for extension, specialization, and generalization. One extension is to model the possibility of entry and exit of heterogeneous δ -firms. Accommodating for increases in the number of firm bankruptcies in recessions that lead to rising unemployment is often seen when government budgets for counter-cyclical labor market policies deplete due to unexpectedly long-lasting recessions. The labor market effects of employer moral hazard and further analysis of policies to prevent firms from unjust dismissals at the costs of society are relevant and important future research topics.

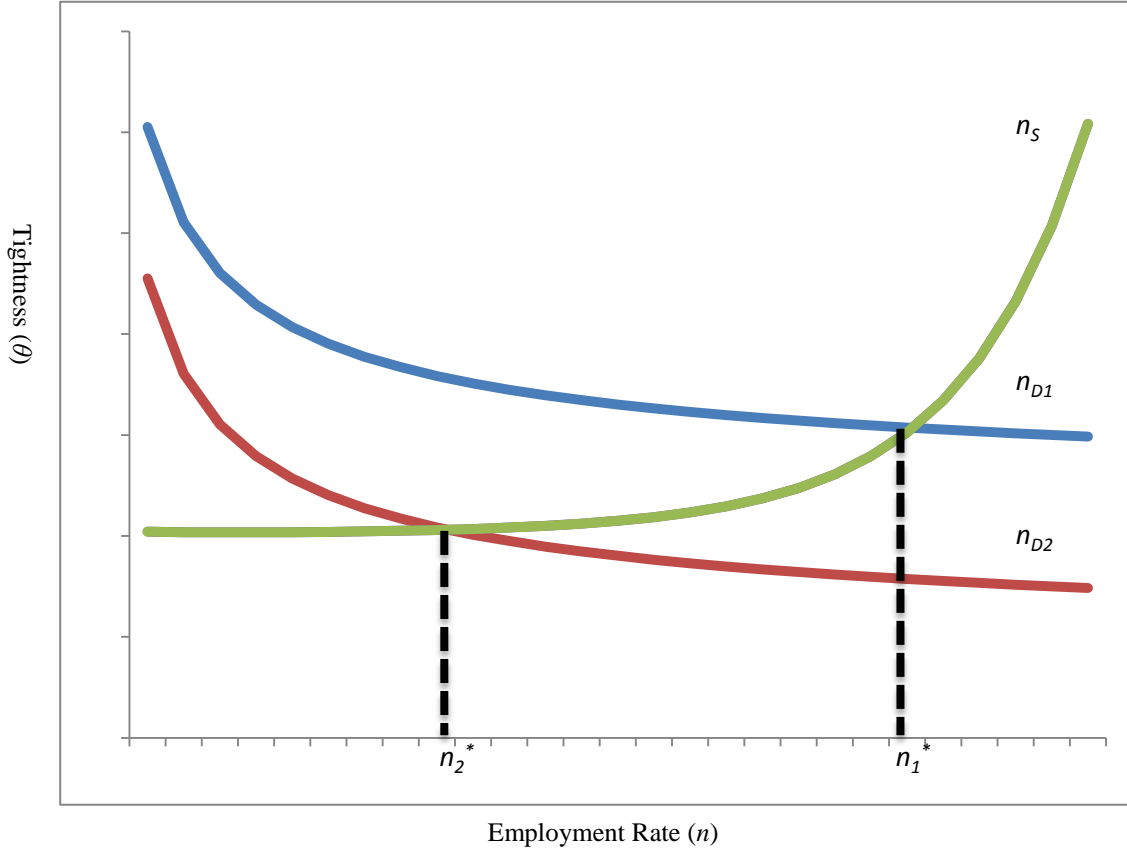
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Figure 1:

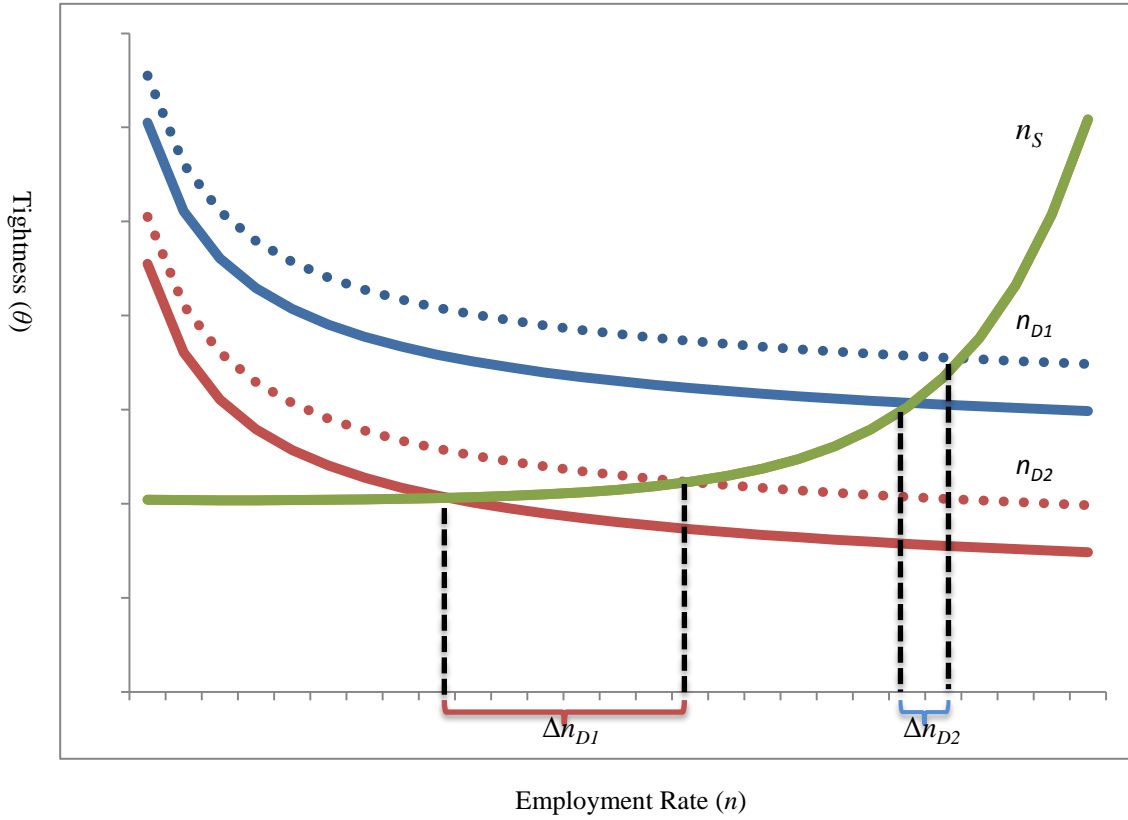
Labor Supply and Labor Demand With and Without Firing Costs Exemption



Notes: This Figure demonstrates labor market equilibriums when labor market tightness is low [red curve; low labor demand; n_2^*], and when labor market tightness is high [green curve; high labor demand; firing costs exemption policy operative; n_1^*]. Given the properties of the probability that an unemployed worker finds a job -- $\theta q(\theta)$ being concave and increasing in θ -- it holds that when labor demand is high (high θ) the curvature of the labor supply curve is steeper than when labor demand is low (low θ).

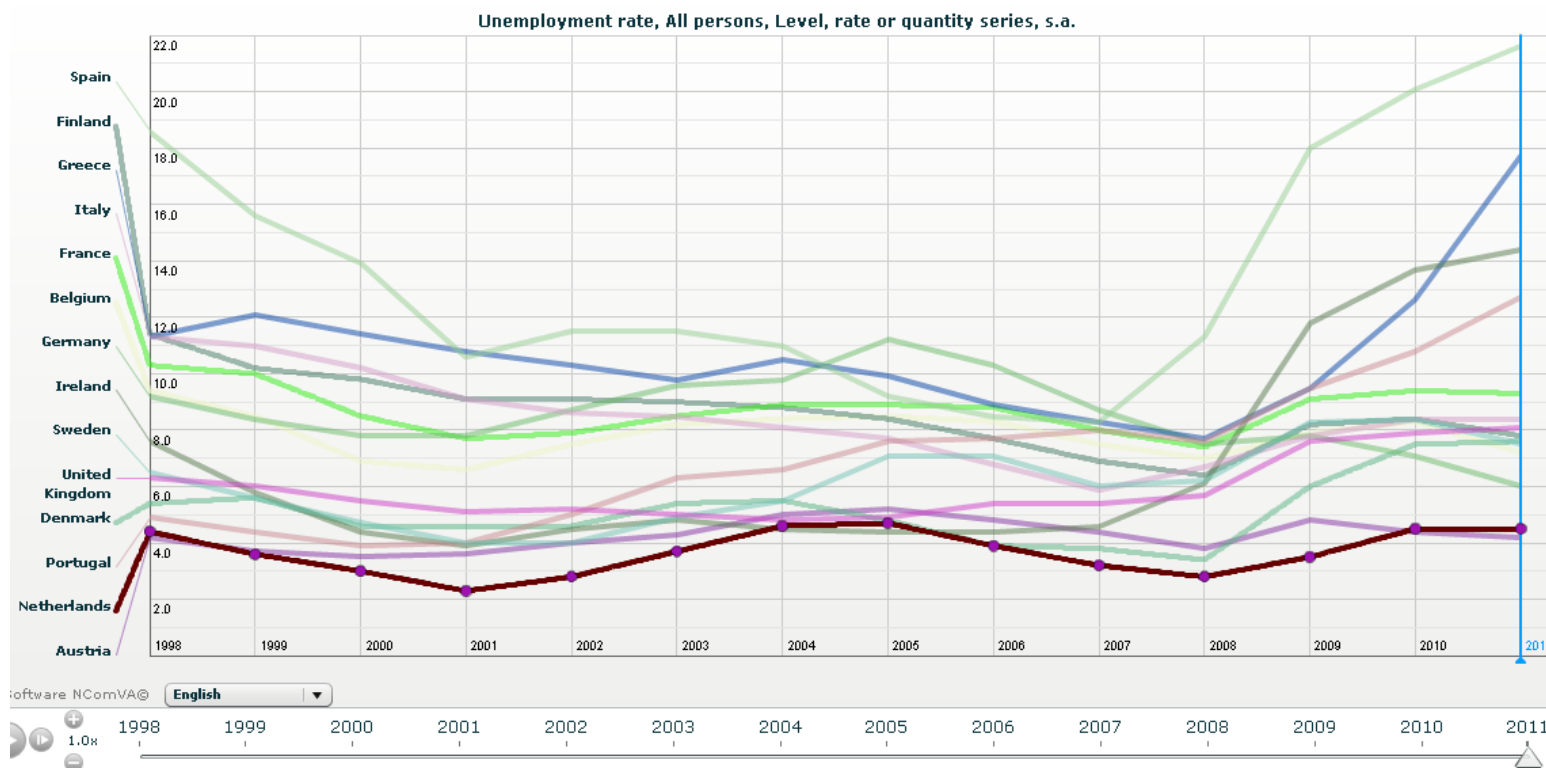
Figure 2:

The Employment Effects of Firing Costs Reduction for High and Low δ -Employers



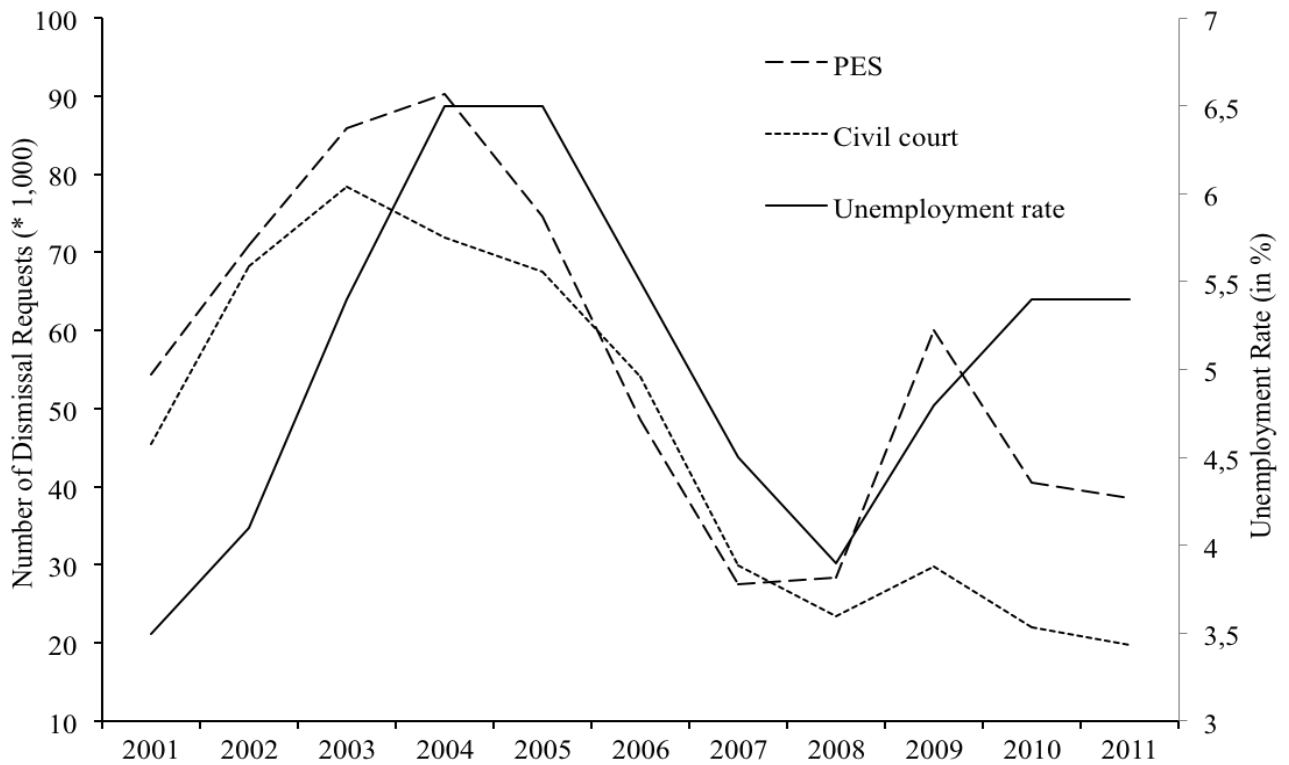
Notes: This Figure illustrates the effect of the firing costs exemption policy on the equilibrium employment when moral hazard of employers prevails in the labor market. The solid lines represent the labor demand curves for high (blue) and low (red) δ -employers, respectively. The dotted lines represent the labor demand curves when the exemption policy is operational [$p_f(\delta) > 0$]. The graphs show that the exemption is especially effective when labor demand and labor market tightness θ are low, and for low δ -employers, with $\Delta n_{D1} > \Delta n_{D2}$. This result differs fundamentally from the standard equilibrium search framework. It is driven by the assumptions of wage rigidity during recessions and diminishing returns to labor, and it renders permanent jobs being more receptive to cyclical fluctuations.

Figure 3:
Unemployment Rates of EU15 Countries through Time (1998 – 2011)



Notes: The EU15 refers to the number of member countries of the European Union prior to May 1st, 2004. The countries are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom. The unemployment rate is measured as all unemployed persons as a percentage of the labor force, based on the definition of the International Labour Office (ILO). Source: OECD StatExtracts; OECD iLibrary.

Figure 4:
Duality in the Dutch Labor Market*

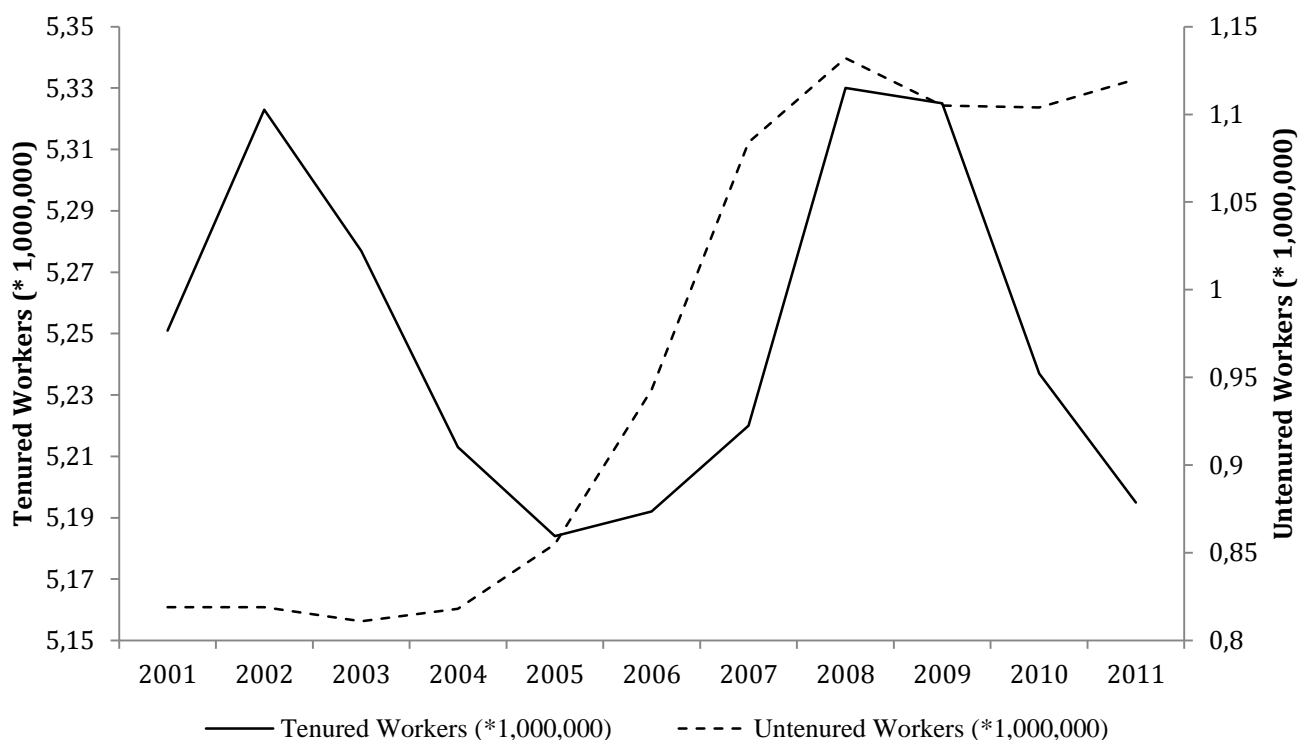


Notes: This Figure shows all the requests for dismissals that have been submitted to the two institutions during the period 2001 through 2011. In recessions as well as during expansions firms are granted permission to dismiss workers and so avoid firing costs. In the periods 2003 – 2004 and 2008 – 2009 at the onset of the Great Recession the number of dismissal requests to the public employment service increased relative to the number of requests to the civil court. These increases coincide with growing unemployment rates during the same periods. This finding is consistent with the theoretical result that when labor market tightness θ is low the policy is more effective and the number of dismissal requests increase. The volumes of requests to both institutions are leading indicators for the unemployment rate.

* Source: Frenk (2013)

Figure 5:

Permanent and Temporary Employment in the Netherlands*



Notes: This Figure shows cyclical fluctuations of permanent and temporary work in the Netherlands for the period 2001–2011. In this period there has been a shift of 140,000 workers or 2.6 percent of the workforce from the permanent to the temporary jobs. From 2005 to 2008 employment in both categories increased. The number of temporary jobs grew from 0.8 million in 2001 to 1.13 million in 2008. In 2009 it went down, but stayed above 1.1 million until 2011. The average number of permanent jobs is 5.25 million and fluctuates between 5.19 million and 5.33 million. In the years 2002 - 2005 and 2009 - 2011 as a result of the Great Recession permanent employment declined. Despite strict laws to reduce permanent job loss the number of tenured workers shows substantial cyclical fluctuation.

*Source: Statistics Netherlands – Labour and Social Security Statistics.

Table 1:**Dismissals through Civil Court or PES: Descriptives for the period 2006-2009***

	Civil Court		PES	
<u>Sectors of Employment</u>	N	%	N	%
Industry	284	24,9	362	28,6
Wholesale	157	13,8	287	22,7
Transport	121	10,6	79	6,2
Hotel and catering	30	2,6	34	2,7
Commercial services	207	18,2	170	13,4
Health and wellness	129	11,3	159	12,5
Culture and recreation	41	3,6	40	3,2
Construction	49	4,3	79	6,2
Other	119	10,4	47	3,7
Missing	3	0,3	10	0,8
Total	1140	100,0	1267	100,0
<u>Firm size</u>				
Less than 10	171	15,0	257	20,3
Between 10 and 100	304	26,7	731	57,7
More than 100	570	50,0	265	20,9
Missing	95	8,3	14	1,1
Total	1140	100,0	1267	100,0
<u>Gender</u>				
Male	717	62,9	751	59,3
Female	423	37,1	516	40,7
Total	1140	100,0	1267	100,0

Notes: This Table shows the numbers of requests per employment sector, firm size and gender. The distribution over the various sectors does not differ in great detail between the civil court and the PES. The data show no significant gender difference. There are differences with respect to firm size. Larger firms tend go to court more often. For further details about the methods of data collection, see Frenk (2013).

Table 2:
Summary Statistics of Dismissals for the Period 2006-2009 *

<u>Civil Court</u> 2006-2009	Duration (in days)	Tenure (in months)	Age when employed	Hourly wage
Mean	13,54	123,38	32,21	15,81
Median	3,00	78,00	30,72	13,46
Std. Deviation	51,42	121,17	9,69	7,75
Minimum	0,00	0,00	15,16	4,80
Maximum	1122,00	606,00	64,88	83,33

<u>PES</u> 2006-2009	Duration (in days)	Tenure (in months)	Age when employed	Hourly wage
Mean	33,88	127,66	33,82	14,04
Median	25,00	91,00	32,83	12,69
Std. Deviation	32,25	105,45	10,35	5,70
Minimum	0,00	1,00	15,59	3,58
Maximum	309,00	513,00	65,45	73,48

Notes: Duration is defined as the time in days that passes between the submission of a permanent contract termination request and the final ruling; tenure is the time that a worker is employed measured in months at the moment of request submission; age of a worker is measured in years at the moment of request submission; hourly wage is the contract wage per hour worked measured in 2009 euros at the time of request submission excluding bonuses, holiday payments, and other fees from employment.

Table 3A:**Reasons to Request the Termination of Permanent Contracts ***

	PES		Civil Court	
<u>Reasons for dismissal:</u>	N	%	N	%
Economic reasons	904	71,3	267	23,4
Non-economic reasons:				
Dysfunctional	23	1,8	44	3,9
Disturbed relationship	14	1,1	788	69,1
Reproachable behavior	28	2,2	26	2,3
Prolonged illness	286	22,6	13	1,1
Other	12	0,9	2	0,2
Total	1,267	100,0	1,140	100,0

Table 3B:**Rates of Dismissal for Economic and Non-Economic Reasons ***

	PES	Civil Court	Both
Economic reasons	0.376	0.111	0.486
	(904)	(267)	(1,171)
Non-economic reasons	0.151	0.363	0.514
	(363)	(873)	(1,236)
All	0.526	0.474	1.000
	(1,267)	(1,140)	(2,407)

Notes: Results shown in these Tables are based on individual data for the period 2006-2009. Dysfunctional refers to abnormal behavior of a worker, behavior outside standard norms; disturbed relationship characterizes a breakdown of a normal or beneficial relationship between the employer and the employee; reproachable behavior refers to worker's conduct that incurs disgrace, discredit, or blame upon the firm; prolonged illness refers to registered long-term disease with reduced cure chances. The most important economic reasons are: structural declines in sales, and reductions in the order portfolio.

Table 4:

**Differences in Firing Costs Distributions Between Outcomes of the Dismissal Procedures
Of the Civil Court and the Public Employment Service**

PES		Wage costs duration of process	Wage costs time to notice	Wage costs period of notice	Total average firing costs
Mean		€ 2,964	€ 787	€ 3,728	€ 7,480
Median		€ 2,347	€ 583	€ 2,458	€ 6,054
Std. Dev.		€ 3.098	€ 685	€ 3,102	€ 5,648
Minimum		€ 0	€ 9	€ 92	€ 171
Maximum		€ 32,651	€ 3,948	€ 25,685	€ 61,714

Civil Court	Court fee	Wage costs duration of process	Wage costs during time to contract termination	Transfer payments	Total average firing costs
Mean	€ 102	€ 765	€ 3,496	€ 26,619	€ 30,982
Median	€ 104	€ 216	€ 2,213	€ 10,159	€ 13,708
Std. Dev.	€ 7	€ 1,791	€ 4,315	€ 52,370	€ 54,808
Minimum	€ 67	€ 0	€ 0	€ 0	€ 97
Maximum	€ 118	€ 17,033	€ 37,730	€ 664,174	€ 683,947

Notes: This Table shows the composition of firing costs during the lay-off procedure. The duration time can be divided into the procedural time, the time to notice, and the period of notice. The procedural time is the time between submission and the pronouncement. The time to notice is the period between the pronouncement and the start of the notice period. The notice period is defined by the employee's years of tenure. A notice period equals 1 month for tenure less than 5 years, 2 months for tenure less than 10 years, 3 months for tenure less than 15 years, and 4 months for tenure of 15 years or longer.

Table 5:
Differences in Firing Costs Divided by Reason of Dismissal

	1.Procedural costs	2. Wage costs during the process of dismissal		3.Transfer pay	4.Total average costs	
PES	No costs	Duration of PES procedure	Time to notice	Period of notice	Zero transfer pay	PES average dismissal costs
Civil court	Court fee	Duration of civil court procedure	Time to termination of the employment relationship		Transfer pay	Civil court average dismissal costs

NON-ECONOMIC REASONS						
	1.Procedural costs	2. Wage costs during the process of dismissal		3.Transfer pay	4.Total average costs	
PES	€ 0	€ 3,437	€ 866	€ 3,037	€ 0	€ 7,339
Civil court	€ 102	€ 740	€ 3,357		€ 22,718	€ 26,918

ECONOMIC REASONS						
	1.Procedural costs	2. Wage costs during the process of dismissal		3.Transfer pay	4.Total average costs	
PES	€ 0	€ 2,786	€ 758	€ 3,988	€ 0	€ 7,532
Civil court	€ 104	€ 839	€ 3,905		€ 38,146	€ 42,994

Notes: This Table divides firing costs compositions between economic and non-economic reasons. Firing costs for the public employment service are almost equal, while firing costs determined by the civil court is almost double the size for permanent job endings for economic reasons. Differences are determined by differences in wage rate, age, and tenure, as well as by the determination of the factor in the formula for cantonal judges that puts weight on who is held responsible most for the termination of a permanent worker's contract.

Table 6:
Dismissal Requests Not Granted by the Public Employment Service over Time

Year	Percentage of Requests Not Granted	Percentage of Requests Not Granted (Economic)	Percentage of Requests Not Granted (Non-Economic)	Change in Unemployment Rate
2006	4.4	2.9	7.9	-1.0
2007	4.2	2.0	8.0	-1.0
2008	4.2	2.7	6.6	-0.6
2009	6.0	4.6	11.0	+0.9

Notes: This Table reports percentages of dismissal requests that are not granted by the PES for the period 2006-2009. In the first three years of that period the unemployment rate is declining, while in 2009 at the onset of the Great Recession the unemployment rate increases. The rejection rate by the public employment increases when unemployment rises. The increase is observed for dismissal requests for economic as well as for non-economic reasons. More requests are rejected during recessions, indicating indeed that the probability to obtain firing cost exemption is pro-cyclical.

Appendix I

Variable definitions – PES Data

Dependent variable

Y Dummy variable. $Y=1$ “dismissal request rejected” ; $Y=0$ “request granted”.

Explanatory variables

u The nationwide rate of unemployment during the month the decision is made.

Δ Time elapsed between the request registration and the decision (in months).

Worker characteristics (at the request registration date)

Male Dummy variable equals 1 for men and 0 for women.

Age Age of the employee (divided by 100).

Tenure Tenure of the employee in months (divided by 100).

Hours Weekly hours worked.

Wage Hourly wage in €.

Employer characteristics

Industry Dummy variables for commercial services, construction, health and wellness, industry, transport, wholesale, and other.

Size Dummy variables for less than 10 employees, between 10 and 100 employees, and more than 100 employees.

Entity Dummy variables for corporation, limited liability, and other.

Econ Dummy variable if dismissal request is for economic reason.

Other explanatory variables

ELegal Dummy variable if employee receives legal assistance only.

FLegal Dummy variable if employer receives legal assistance only.

BLegal Dummy variable if employee and employer receive both legal assistance.

NoLegal Reference category

Table A1:
Regression Results of the Probability that a Dismissal Request is Rejected

Variable	dy/dx	SE	p-value	X-bar
<i>u</i>	.018	.009	.041	4.76
Δ	.008	.004	.049	1.50
<i>Male</i>	.007	.016	.662	0.54
<i>Age</i>	-.020	.062	.742	0.46
<i>Tenure</i>	-.003	.006	.675	1.24
<i>Hours</i>	.001	.001	.602	13.1
<i>Wage</i>	.001	.001	.214	30.7
<i>Econ</i>	-.018	.016	.263	0.64
<i>ELegal</i>	.089	.039	.023	0.14
<i>FLegal</i>	-.018	.017	.289	0.34
<i>BLegal</i>	.030	.026	.247	0.20
<i>Log L</i>		-148.98		
# Obs.		823		

Notes: To test the hypothesis that the PES rejection rate is counter-cyclical all the individual dismissal requests submitted to the PES during the period 2006-2009 are included except those cases that are part of collective dismissals of at least 20 employees. The probability that a dismissal request is rejected by the PES is estimated using a probit regression of 823 worker-firm pairs recorded at the month in which the decision was taken. Listed for each decision are the estimated effects of the nationwide monthly unemployment rate u , the duration of each of the procedures Δ_i , plus worker characteristics (gender, age, tenure, hours worked, hourly wage), firm characteristics (economic status), variables describing whether or not legal assistance was available to the worker, to the firm, or to both. Not listed but also included in the regression are controls for industry effects, seasonal effects, the entity of each firm, and the size of each firm.