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**Dissertation Title:** “*An Equilibrium Analysis of Labor Market Policies: Theory and Estimation*”

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**Expected Completion Date:** May 2009

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Ph.D. Economics, Yale University, May 2009 (Expected)  
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M.A. Economics, Yale University, 2006  
M.A. Applied Economics (highest GPA), Universidad de Chile, 2003  
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B.A. Engineering Sciences, Major in Mathematics, Universidad de Chile, 2001

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Summer Fellowship, Yale University, 2004-2006  
Cowles Foundation Graduate Student Fellowship, Yale University, 2003-2007  
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 Teaching Fellow, Introductory Macroeconomics (undergrad), Yale University, Fall 2006  
 Teaching Fellow, Intermediate Macroeconomics (undergrad), Yale University, Spring 2006  
 Teaching Fellow, Macroeconomics (Ph.D.), Yale University, Fall 2005  
 Teaching Fellow, Econometrics (M.A.), Universidad de Chile, 2000, 2001 and 2002  
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Research Assistant to Professors John Geanakoplos and Stephen Zeldes on the project “Reforming Social Security with Progressive Personal Accounts”, summer 2005

**Papers:**

“The Interaction of Minimum Wage and Severance Payments in a Frictional Labor Market: Theory and Estimation” (job market paper)

“An Empirical Analysis of the Minimum Wage in Chile”

**References:**

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**Dissertation Abstract**

A country's economic development and the well-being of its population are profoundly affected by its labor market performance. The performance of the labor market and the policies that regulate it are tightly linked. In this dissertation we study the impact and the interaction of two policies, minimum wage and severance payments. In the first chapter we theoretically and empirically study the positive and normative equilibrium implications of these two institutions. In the second chapter we perform a quantitative welfare analysis of the impact of the minimum wage alone, but with variable labor force participation.

We introduce a minimum wage and mandatory severance payments in an equilibrium model of a labor market with search frictions. We study how these policies affect the endogenous job creation and destruction decisions and, more generally, the general equilibrium allocation. We then structurally estimate the parameters of the model with data on employment histories from Chile, a country where labor market regulations prescribe high severance payments and minimum wage. With these estimates, we perform counterfactual experiments that allow us to answer questions about optimal policy combinations. We reach three main conclusions. First, when the share that workers receive from the surplus that their job generates is too low, severance payments alone can implement the constrained (by search frictions) social optimum by increasing the "effective" bargaining share of workers. Second, the same second best outcome can be reached by an appropriate combination of a binding minimum wage and positive severance payments. Third, no level of the minimum wage can implement the efficient outcome without severance payments, because the impact of the minimum wage is too focused on the job destruction decision.

## **I. The Interaction of Minimum Wage and Severance Payments in a Frictional Labor Market: Theory and Estimation [job market paper]**

Most of the literature focuses on the impact of individual labor market institutions on employment. Most countries, however, have multiple labor market policies in place, and the main focus should be on welfare. In this paper we formulate and structurally estimate an equilibrium search-and-matching model of an economy with severance payments and minimum wage. We use the estimates of the model's parameters to perform counterfactual experiments.

We introduce severance payments and a minimum wage in Prat (2007)'s setting: a continuous-time equilibrium model of the labor market, with search frictions and Nash bargaining, in a stationary environment. Ex-ante homogenous workers and firms make contact according to a standard matching technology. Upon contact, they draw their match-specific productivity, a dimension of initial heterogeneity that generates a job creation decision. After the initial draw, productivity fluctuates stochastically, a source of ex-post heterogeneity that introduces an endogenous destruction decision in the model. In addition, there are two possible large shocks leading to exogenous match destruction, but only one of the two endows the worker with the right to receive severance payments.

Parametric assumptions on the distribution of initial productivity and on its stochastic evolution allow us to explicitly derive the likelihood of the model, thus, to use an efficient estimation method. We estimate the model using data from Chile, which is an interesting case because a large fraction of the population earns the minimum wage and severance payments are high by international standards. Severance payments are due when the worker is fired because of "firm's necessities" (changes in demand, modernization, etc.) in the amount of one monthly wage for each year worked in the firm, with an upper bound of 11 years. We draw from the Employment Protection Survey longitudinal information on up to 20 years of the labor market histories (wages, spell durations, etc.), including reception of severance payments for completed employment spells.

Armed with the estimated model, we perform a quantitative analysis of the welfare effects of severance payments and minimum wage. When setting the workers' share of the match surplus equal to the matching function elasticity, welfare is maximized by a non-binding minimum wage and no severance payments. Whereas when setting the workers' share equal to 0.3 and the matching function elasticity equal to 0.5, the same welfare level implied by the constrained efficient allocation can be implemented by two different policy menus: either severance payments by themselves or a particular combination of a binding minimum wage and a slightly lower level of severance payments. In the absence of severance payments, a binding minimum wage can improve equilibrium welfare, but cannot attain the second best.

When the worker bargaining share is too low, labor is cheap, leading firms to create too many vacancies. As policies raise the effective worker bargaining power, firms create fewer vacancies. In equilibrium, a binding minimum wage affects the whole wage distribution, but it has a relatively larger impact at the bottom of the distribution, where jobs are more vulnerable to endogenous termination. Therefore, small changes in the minimum wage have a large impact on the job destruction threshold, but their impact on labor demand and market tightness is modest. On the other hand, severance payments affect the whole wage distribution, and all workers are equally eligible to receive an amount that is increasing in the wage, so the impact of severance payments is more widespread. As a result, severance payments can be increased as much as necessary to implement the socially efficient market tightness, without an excessive impact on job destruction.

## **II. An Empirical Analysis of the Minimum Wage in Chile**

At the end of the 1990s, Chilean legislators mandated substantial increases in the minimum wage. We perform an empirical study of the minimum wage welfare effects on the Chilean market using Flinn's (2007) framework, which is a continuous time search model with participation decision, Nash bargaining, and match specific heterogeneity. We use Flinn's strategy to estimate the structural parameters of the model except for the share that workers receive from the surplus generated by the match. Due to inadequate demand side data, we estimate the model fixing the workers' share ( $\alpha$ ) at different levels in the  $[0,0.5]$  interval, and perform the welfare analysis for each set of parameters. A first result is that the optimal minimum wage is decreasing in the workers' share, and for  $\alpha$  near 0.13, the actual 2000 level would have been optimal.

We then extend Flinn's welfare analysis in two directions. We identify the elements of the equilibrium allocation that are mainly affected by the changes in the minimum wage, and we study the minimum wage as a second-best tool for reaching the constrained efficient allocation. Our second finding is that, for every set of estimates, the change in the participation rate accounts for more than half of the welfare gain induced by the optimal minimum wage. Thirdly, the maximum welfare gain increases with larger values of  $\alpha$ . That is, the gap between the planner's welfare and the equilibrium one becomes more significant as the workers' share increases. On the other hand, for larger  $\alpha$ 's, the optimal minimum wage closes a smaller fraction of the gap, and is therefore less effective. The results of the paper suggest that, at least for larger  $\alpha$ 's, some labor market policy aimed directly at participation would have been more effective than a mandatory minimum wage.