

科学研究費助成事業 研究成果報告書

平成 28 年 6 月 22 日現在

機関番号：33102

研究種目：若手研究(B)

研究期間：2013～2015

課題番号：25780195

研究課題名(和文) 財政政策が労働市場に与える影響についての理論、実証分析

研究課題名(英文) The Effects of Partial Labor Reforms on the Macroeconomic Outcomes

研究代表者

Lin Ching (Lin, Ching-Yang)

国際大学・国際関係学研究科・准教授

研究者番号：70582287

交付決定額(研究期間全体)：(直接経費) 2,600,000円

研究成果の概要(和文)：本研究では、マクロ経済的な結果に対する、いくつかの種類労働改革政策の定量的な効果を調査する。主要な調査結果は以下の通りである。(1) 熟練労働者の解雇費用を低減する労働改革により、生産性と生産高と労働者の福祉への好ましい効果が最大になる。(2) 労働市場が厳しく規制されている場合、労働改革がかなり大きな効果を生む。逆に、市場があまり規制されていない場合、この労働改革の政策の効果はごくわずかである。

この研究は2つの国際学会にて発表されており、今年の6月に米国のポートランドで開催されるWEAIの国際学会において発表される予定である。そして、この研究論文を国際的な学術誌に今年の夏に投稿する予定である。

研究成果の概要(英文)：This study investigates the quantitative effects of several types of labor reform on the macroeconomic outcomes. I construct a theoretical model and conduct simulations to assess the policy effects. The key findings are as follows: (1) A labor reform that reduces skilled workers' firing cost leads to the largest favorable effects on productivity, output and workers' welfare. (2) A labor reform generates sizable effects when the labor market is strictly regulated; in contrast, the policy effects are negligible when the market is moderately regulated.

This study has been presented in two international conferences and will be presented in the Western Economic Association International Conference in this June in Portland, USA. Afterward, the research paper will be submitted to the international journal this summer.

研究分野：macroeconomics

キーワード：労働生産性 労働改革政策 異質性 サーチ摩擦 一般均衡

1 研究開始当初の背景

Policymakers have been viewing liberalizing the labor market—through easing the use of temporary contracts or reducing the employment protection legislation (EPL)—as the panacea to improve labor market performance and revive macroeconomic activities. By reducing firms’ labor adjustment cost, this type of policy reform encourages firms to hire new workers, even in the face of uncertainty; on the other hand, it also induces firms to fire unneeded workers, allowing production factors to be allocated more efficiently. The overall effects lead to a rise in firms’ productivity and output.

In theory, there is consensus on the above-mentioned benefits, but in practice, there are doubts about its effectiveness and fairness. When it comes to the practical implementation, the labor reform is usually shaped into a type of partial reform. That is, not all but only a specific group of workers’ employment conditions are altered. For instance, as argued in previous studies, there exists discrepancy in the employment conditions of the newly hired workers and currently employed workers. The partial reform leads to a two-tier labor market, which comes with myriad social and economic problems. (Blanchard and Landier (2002), Saint-Paul (2002) and Bentolila *et al.* (2012))

2 研究の目的

In this study I follow this strand of this study to revisit the question: how good (bad) a partial reform is. In contrast with previous studies, I explore the effects of a skill biased reform, whose influences only placed a specific skill group of workers. For instance, when the government eases the restrictions on the use of temporary contracts, evidence suggest that these temporary contracts are usually used for the employment of unskilled workers. For the skilled workers, however, their employments remain protected by the permanent contracts.¹

Under this situation, we may have to consider the following possibilities:

1. Since skilled and unskilled workers make different contributions in production, the policy effects of a reform that targets to liberalize the employment of unskilled workers will be different from the policy effects of another policy that targets to skilled workers.
2. Because the influences of on turnovers, flows, and wages across workers’ types are different, a policy reform may generate considerable distribution effects.

These concerns imply that a skilled biased partial reform may lead to not only dampened effects but also unintended consequences. To explore this argument, I construct a theoretical model. Using the calibrated model, I conduct simulations to quantitatively assess the effects of skill-biased partial reforms.

3 研究の方法

My model is on the basis of the framework developed by Hopenhayn and Rogerson (1993), which provides an environment to study the extent to which the distortions in production in the presence of firing cost. I incorporate workers’ heterogeneity by embedding the Krusell *et al.* (2000) style capital-skill complementary production function. This function specifically characterizes the role of each production factors—including skilled and unskilled workers, and two types of capital—and the relationship (substitutability) among them. We can thus explore how the distortion might be amplified (or alleviated) by these factors.

The model considers both the search frictions and workers’ labor market participation decision. While the participation decision is often abstracting from the flow approach to modeling labor markets, it is crucial in studying the policy effects on labor market outcomes. As Pries and Rogerson (2009) suggests based on cross country data, that “differences in labor market participation are often larger than differences in unemployment rates”. This large difference may be caused by the labor

policy. Moreover, by considering labor market participation decision, the model prediction on policy effects precludes the case Ljungqvist (2002) suggests, that those three major frameworks' predictions on the policy effect hinges on each models' assumption on the labor market structure. In my model's setting, the worker's decision on market participation, becoming one of the key element determining the policy effects, are responsive to the equilibrium wage, probability of being dismissed, and the severance payment, all of which are affected by policy.

I calibrate the model parameters using U.S. data and conduct various policy simulation. I consider three types of partial reform: (1) A reform that reduces only firms' firing cost (by reducing EPL or increase the use of temporary contract) of the unskilled worker, keeping skilled workers' firing cost remaining the same (henceforth, *L-reform*), and (2) A reform that reduces the firing cost of the skilled worker, keeping unskilled workers' firing cost remaining the same (henceforth, *H-reform*). In comparison, I also investigate the effects of the reform that simultaneously reduces both types of workers' firing cost (*Full-reform*).

In practice, it may be unusual to see a labor reform explicitly aiming at a specific skill group. But a skill biased reform may occur under the influence of labor provision or due to firms' response to the reform. For instance, the temporary contracts are usually restricted to the employment of the young and the long-term unemployed, while a large share of this group members is unskilled. Another situation is that firms tend to use the *inferior* temporary contract, which provides less job security, to hire those less competitive unskilled workers but use the permanent contract for those skilled workers. Thus we can categorize as follows: a policy that eases the use of temporary contract can be regard as an *L-reform*, while a policy that reduces the employment protection for permanent employees—most likely reduces the skilled workers' firing cost—is equivalent to an *H-reform*.²

4 研究成果

I simulate economies with different level of labor market rigidity, characterized by a pair of firing cost, measured by monthly wage, on skilled (ϵ_h) and unskilled workers (ϵ_l), ranging from 1 to 18 months. To examine the policy effect, I pick two starting points representing the labor markets before the reform: (1) a rather rigid labor market **R**, where $(\epsilon_h, \epsilon_l) = (18, 18)$; and (2) a moderate regulated labor market, **M**, where $(\epsilon_h, \epsilon_l) = (6, 6)$. An *H-reform* is to reduce ϵ_h to 0, leaving ϵ_l unchanged at benchmark value; and an *L-reform* is to reduce ϵ_l to 0, leaving ϵ_h unchanged; while a *complete reform* is to reduce both ϵ_l and ϵ_h to 0.

Table 1 reports the effects of each reform implemented in different markets.³The values represent the percentage change after reform in comparison with the initial state. In addition, I also use Figure 1 to illustrates how equilibrium allocations change in respond to the changes in firing cost.⁴

(1) Productivity and Output

As reported in Table 1, both output Y and labor productivity $Y/(l+h)$ (output per worker) increase as either ϵ_h or ϵ_l declines. Figure 1 indicates that this improvement is particularly significant when the labor market is rigid. The *H-reform* increases by 3.2% and 2.1%; the *L-reform* raises 2.4% and 1.6%, and a full reform increases by 3.4% and 2.3%.

How do the reforms give rise to such effects? When the market is strictly regulated, sometimes firms produce inefficiently—those firms hoard workers to avoid firing cost. As shown in the plot with title “share of workers in inefficient firms”, among all the workers, around 10% are working in those firms. This behavior reduces a firm's expected profits, deters new firms' entry, and thereby reduces the aggregate output. The shrink in the entire industry reduces the aggregate capital employment, and makes the labor productivity declines. Thus, either reform—by decreasing the firing cost—can reduce these distortions.

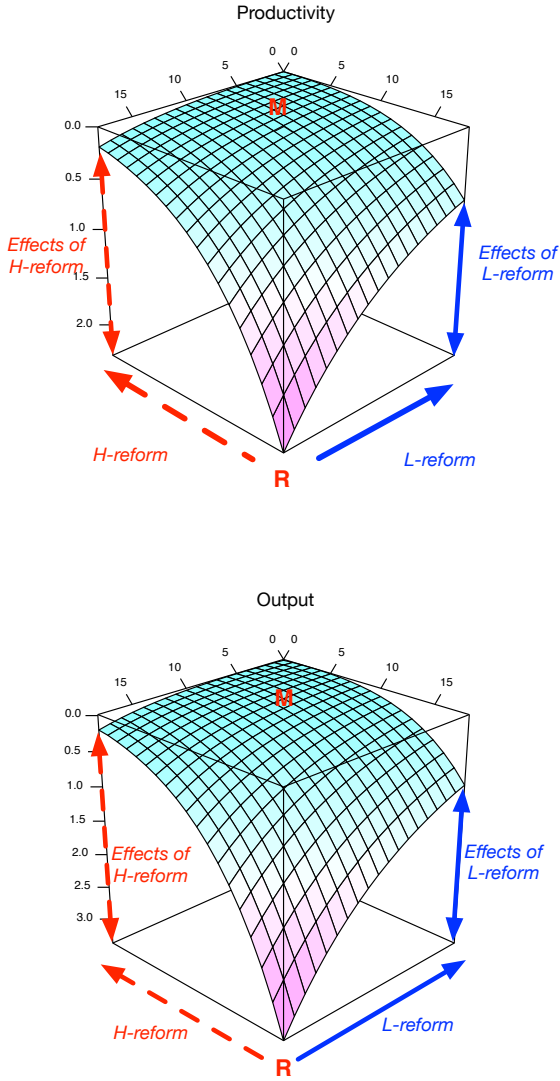


Figure 1: Productivity and output

(2) Labor market performance

We also notice that for all these aggregate variables (output, employment, capital and productivity), the *H-reform* generates 30% higher effects than the *L-reform*. Moreover, the *H-reform* can lead to very similar effects as the full reform do. The *H-reform* is more effective because the marginal product of skilled labor is higher, so as the distortion caused by firing cost. This finding and its explanation can shed light on a similar issue: the distortion caused by the *skill biased protection* would be much larger if such protection is biased

to the skilled worker. For instance, suppose initially the market is *laissez-faire*. To raise the skilled workers' protection $((\epsilon_h, \epsilon_l) = (18, 0))$ would cause output decline by 1%, around five times higher than the damage caused by raising the unskilled workers' protection $((\epsilon_h, \epsilon_l) = (0, 18))$. These separate experiments are not reported in the table. Precisely, when ϵ_h raises to 18—raise the employment protection only on skilled worker, the output and productivity decrease by 0.98 and 0.71, respectively; when ϵ_l raises to 18, the output and productivity decrease by 0.98% and 0.71%, respectively 0.20% and 0.19%.

The above mentioned effects, however, are negligible (less than 0.1%) if the reforms are conducted in a moderate regulated market. As shown in the Figure 1, the effects—generated by distortions—are convex to the firing cost. This distortion convexly increases because the amount of firms' labor hoarding also convexly increases. The simulation results indicate that when labor market is rigid, around 10% of the workers belong to this category; while when labor market is moderate regulated, the fraction of this type of workers is only 1.7%. This also verifies the earlier arguments that the distortions are related to the inefficient allocated resources.

The labor reforms raises the wage. There are two reasons: one is the decrease in the expected employment cost, this leads firms' willing to pay for the wage increases. Another reason is that the more efficient production increases the aggregate labor demand (recall that firms' number declines). The higher labor demand increases both types of workers wage, even for the workers not directly affected by the labor reforms.

Moreover, the reforms increases the separation rate. The reason is as follows: the firing cost leads the firm to keep non-productive workers. As the firing cost decreases, the amount of labor hoarding decreases, implying a lower firing rate.

There exist two opposite forces affect workers' decision on the job participation (PAT_h and PAT_l). As the firing cost decrease, the rise in separation rates and the decline in severance payments

may discourage workers to participate in the labor market. However, the rise in the wages increases the value of a workers. The numerical results show that latter effect is so strong that makes the value to stay in the labor market increases.

The equilibrium employment is determined by job participation rates and the equilibrium employment rate. While the reform encourages workers' job participation, it decreases the employment rate because it raises outflows of the labor market. Thus, the net effects of the reform depends on the existing labor market status. When market is rigid, both reforms raises the employment. That means the effects from the increase in job participation dominates. On the other hand, when the market is moderate regulated, both reforms discourages the employment. In this case the decline on firms' firing dominates.

(3) Welfare and Inequality

The welfare is measured by the value of a worker participating in the labor market. All reforms can improve all workers welfare. Similar to the explanation on the market participation rate, the reform improves the production efficiency, raising the wages paid to workers and the value staying in the labor market.

As for the impacts of reform on inequality, they come from two sources: the wage gap and the relative proportions between these two types of workers. When ϵ_h declines, skilled workers' wage largely increases, so as the wage gap. Meanwhile, firms rises their demand for the relative cheaper unskilled workers as substitutes, increasing the relative size of the poor in the economy. Both forces intensify the income inequality, as we see in the plot. The same explanation can be applied to the partial reform on the unskilled worker reducing the income inequality: wage gap and the size of the poor both declines.

Table 1: Results of different reforms

	Moderate			Rigid		
	L	H	$Full$	L	H	$Full$
K	0.03	0.04	0.03	2.07	2.77	2.92
l	-0.02	-0.01	-0.04	0.64	1.03	0.99
h	0	-0.02	-0.03	0.96	1.1	1.16
Y	0.04	0.05	0.05	2.41	3.18	3.38
$\frac{Y}{l+h}$	0.05	0.07	0.08	1.63	2.14	2.33
PAT_h	0.02	0.02	0.02	1.16	1.48	1.57
PAT_l	0.01	0.02	0.01	0.95	1.34	1.39
U_l	0.01	0.02	0.01	0.95	1.34	1.39
U_h	0.02	0.02	0.02	1.16	1.48	1.57
w_h	0	3.64	3.65	0.09	9.66	9.8
w_l	3.61	-0.02	3.63	8.81	-0.49	9.35
$Gini_u$	-4.19	4.43	0.23	-9.69	13.72	2.39

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Notes

¹Belot *et al.* (2007) shows that in most countries the share of temporary jobs among those with a high education is substantially lower than among those with a low education

²A good example of *H-reform* and *L-reform* is the experiences in Spain during the 80s and 90s. In the 80s, Spanish government initiated a series of policy reforms to liberalize the use of temporary contracts. Bentolila *et al.* (1994) report that unskilled workers are over-represented in this temporary employment. The reform during this period can be regarded as an *L-reform*. During the 90s, Spanish government conducted another reform, which intends to reduce the temporary employment by reducing the EPL of those permanent employed workers. This reform can be regarded as *H-reform*. (See and Bentolila *et al.* (1994) for detail)

³The *H* stands for the *H-reform*; The *L* stands for the *L-reform*

⁴The x-y axis represents the magnitude of firing cost for skilled (ϵ_h) and unskilled worker (ϵ_l), while the z-axis reports the equilibrium outcomes as the percentage deviation to a *laissez-faire* economy. The point *M* (moderate labor market) and *R* (rigid labor market) represent the different starting point before the reform. While the intervals highlighted by a dashed line and a real line in each side of these two three dimensional plots represents the effects of an *H-reform* and *L-reform* implemented in a rigid markets.

5 主な発表論文等

1. 雑誌論文 (計 2 件)

i Ching-Yang Lin (2016). The Effects of Skill-biased Partial Labor Reforms on the Macroeconomic Outcomes. *Economic research center discussion paper E-series*, No.E16-1. (Non-refereed)

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2. 学会発表 (計 6 件)

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6 研究組織

- 研究代表者 : Lin, Ching-Yang
- 国際大学・国際関係学研究所・准教授
- 研究者番号 : 70582287