Economic growth in the face of changes

Summary

Because of the fast developments in technologies, our lives have been constantly changing and the impact of changes on labor markets is essential for economic growth and inequality. This dissertation explores how labor adjustment costs influence aggregate dynamics and policy-making.

Chapter 2 and 3 focus on labor adjustment costs of labor inputs. Both chapters try to model the effect of on-the-job learning on productivity change and how this effect interacts with technical change and wage dynamics. Chapter 2 finds that labor of different skill levels has different costs of on-the-job learning and those different costs reduce productivity at different rates. Compared with low-skilled labor, high-skilled labor has higher costs of on-the-job learning and higher decreases in their productivity. This effect of on-the-job learning impairs the contribution of technical change to economic growth. Chapter 3 extends this finding to theoretically show that the higher costs of on-the-job learning of high-skilled labor can hinder technological development in skill-intensive industries. Chapter 4 focuses on labor adjustment costs of labor market policies. It adopts a similar empirical framework as Chapter 2 and finds that labor market frictions can affect the distance from the frontier of the best combinations of inflation and unemployment.

In particular, I begin with the adjustment costs of changes in the skill composition. Technical change is biased towards specific inputs of production in the sense that the marginal productivities of those inputs do not increase at the same rate over time. If technical change is characterized by a skill bias, it increases the demand for high-skilled labor relative to lower-skilled labor. Therefore, the adjustments in the skill composition of the labor employed in production contribute to growth. This contribution changes further if workers of different skill levels differ in their ability to learn on the job and become efficient. As the skill composition changes, newly hired workers adapt to their new job and are temporarily less efficient at their job, which causes adjustment costs. Chapter 2 focuses on this often ignored aspect, although there is extensive literature on technical change. In this chapter, I build a simple model to explain how the increase of newly hired workers causes efficiency loss. It illustrates that the rising newly hired high-skilled labor can slow down productivity increases, and thus skill-biased technical change can be underestimated. Then I theoretically derive the bias in the measurement of technical change, which is due

to inefficient labor. Based on that model, I conduct an empirical analysis of panel data covering 40 countries and 31 industries during the period from 1995 to 2009. The results show that the increase in high-skilled labor can decrease efficiency at a higher rate than low-skilled labor, and this effect offsets the effect of skill-biased technical change. I also find that after accounting for adjustment costs, the estimation demonstrates higher rates of skill-biased technical change. This estimation provides evidence that skill-biased technical change can increase the wage differential between high- and relatively lower-skilled labor. Moreover, the empirical findings also provide evidence that the skill intensity and institutional effects can also influence wage differentials and thus contribute to the overcompensation or undercompensation of high-skilled labor.

Chapter 3 focuses on the adjustment costs of inter-industry labor mobility. Many economies put emphasis on technologically emerging industries. Because technological progress will change the demand for skills, it will inevitably affect labor reallocation across industries. Chapter 3 theoretically explores how the labor market adjusts to industry-specific technology shocks in the short run, especially when adjustment costs exist. I analyze to what extent SBTC and human capital specificity can affect the labor market's response to technology shocks. In doing so, I build a two-industry model, incorporated with skill-biased technical change, and compare the outcomes with perfect and imperfect inter-industry labor mobility. In particular, I investigate how the interaction between skill levels and human capital specificity affects inter-industry labor mobility, skill premiums, and skill upgrading. I consider those effects under different circumstances, for example, the partial equilibrium or the general equilibrium, and with wage compression or without it. My analysis illustrates that in the partial equilibrium of a competitive labor market, the expanding industry, after a technology shock, attracts both high- and low-skilled labor, and more high-skilled labor will switch industries. This is called the mobility effect. In the general equilibrium, the elasticity of substitution between two goods plays a crucial role in labor mobility. When products are more substitutable, there will be more labor mobility. This is called the price effect. The price effect mitigates the mobility effect. In the partial equilibrium of an imperfect labor market, when high-skilled labor has more specific human capital than low-skilled labor, the wage differential will be higher in the expanding industry than in the contracting one. In addition, wage compression assists skill upgrading, especially when high-skilled labor has higher specific human capital than low-skilled labor. In the general equilibrium, the price effect and the effect of specificity mitigate the reaction of the labor market to technology shocks

and make inter-industry labor mobility and skill upgrading difficult. Overall, the results suggest that policymakers should consider four factors: the competitiveness of product markets, the specificity of human capital, the bargaining power of firms, and education costs.

Chapter 4 examines the adjustment costs of labor market policies and provides some implications for policy-making. Labor market policies may affect the relationship between inflation and unemployment, the Phillips curve. Disregarding the shape of the Phillips curve, some advanced economies have achieved better economic performance by lowering unemployment while keeping low inflation. In this chapter, I benchmark the extent to which countries can manage inflation and unemployment and explore how labor market policies can drive the gaps between those economies. In doing so, we build a global best practice frontier, that describes the optimal combinations of low unemployment and inflation that are deemed feasible given the data at hand. We also account for deviations from this frontier and relate those deviations to labor market frictions, in particular to minimum wage, trade union density, and collective bargaining coverage. The key consequence of these frictions is that they are often deemed to result in downward nominal wage rigidities (DNWR). DNWR means that nominal wages do not adjust downwards in response to a decrease in the demand for labor or a decrease in the price level. As a consequence, some countries may - ceteris paribus - drift upwards from the optimal frontier, whereas others are able to maintain a combination of low inflation and unemployment. The results provide sufficient evidence that there is a negative nonlinear relation between inflation and unemployment. It is harder to manage both in a low inflationary environment because inefficiency and uncertainty are larger, and the volatility is higher. Subsequently, the results further demonstrate that labor market policies can drive the gap between efficient performance and inefficient performance. In particular, increasing collective bargaining coverage ratios can not only narrow the gap but also decrease the uncertainty of inefficiency. On the contrary, the rising trade union density or minimum wage can not only widen the gap but also induce more uncertainty, resulting in worse economic performance. On average, countries with higher collective bargaining coverage and trade union density are more efficient than their lower counterparts, whereas countries with relatively higher minimum wages are less efficient. Finally, the findings suggest a strong convergence across countries and a negative impact of high labor market frictions on macroeconomic performance. Therefore, well-designed labor market institutions are needed to reduce

labor market frictions and hence diminish downward nominal wage rigidities. When collective bargaining coverage and union density are higher, it is better to consider both the inflationary and unemployment effects of wage increases and achieve high coordination at the national level. Additionally, policymakers need careful thoughts to adjust minimum wages.

Since on the aggregate level, it is difficult to control other factors that may influence adjustment costs, I propose to use firm-level data and dive into the specificity of different jobs or tasks for future research. It is of vital importance to develop a measure for the specificity of human capital. It is worth trying to combine micro-economic and macro-economic analyses. As a further matter, other labor market frictions can be considered, for example, matching and searching frictions in the labor market.