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Stabilizing the Macroeconomy with Labor Market Policies

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Contents

Abstract	7
I. Introduction	11
II. The Cyclicity of Labor Income Share and its Implications for Macroeconomic Stability	18
1. The Korean Economic Situation	18
2. The Changing Cyclicity of the Korean Labor Income Share	22
III. Work Sharing Programs during Economic Crises	30
1. Case Studies in Work Sharing Programs	30
2. Work Sharing Programs during the Global Financial Crisis	37
(1) Responses of the U.S. and German Labor Markets	37
(2) Response of the Korean Labor Market	46
IV. Theoretical Analysis of Macroeconomic Stability using a Two-sector(Manufacturing and Service) post-Keynesian Model	49
1. Literature Review	49
2. Model	54
3. Stability Analysis	62
4. Comparative Static Analysis of Work Sharing Policies	70
V. Conclusion	78
References	83
Appendix	89

Table Contents

Table III-1. Types of Work Sharing	32
Table IV-1. Directions of Labor Market Policies for Economic Crises	75

Figure Contents

Figure I -1. Bank of Korea Base Rate	12
Figure I -2. Trends in and Projections of Fiscal Expenditure	13
Figure II-1. Real GDP growth rates	18
Figure II-2. Real GDP Growth Rates and the Growth rates of its Components ..	19
Figure II-3. Growth Rate of Total Savings and Total Investment Rates	21
Figure II-4. Growth Rates of Korea's Labor Income Share by Measurement Method	24
Figure II-5. Labor Income Share and National Real GDP Growth Rates	24
Figure II-6. Moving Correlations between Labor Income Share Growth and Real GDP Growth Rate(Entire Economy)	25
Figure II-7. Manufacturing Labor Income Share Growth and Real GDP growth rate	26
Figure II-8. Moving Correlations between Labor Income Share Growth and Real GDP Growth Rate(Manufacturing Sector)	26
Figure II-9. Labor Income Share Growth in the Service Sector and Real GDP growth rate	27
Figure II-10. Moving Correlations between Labor Income Share Growth and Real GDP Growth Rate(Service Sector)	28
Figure III-1. Trends in Real GDP(above figure) and unemployment(lower figure) in the U.S. and Germany	38
Figure III-2. Operation of the German Flexible Working Hours during Downturns	45
Figure IV-1. Numerical Examples of Manufacturing and Service Employment as Proportion of GDP(left) vs. Overall Employment as a Proportion of GDP(right)	57
Figure IV-2. Numerical Examples of Manufacturing and Service Labor Productivity(left) and Labor Productivity of the Overall Economy(right)	58

Abstract

This study argues that aggregate demand management policies alone (which have traditionally been used to stabilize economies) may not be effective in the current crisis and argues that they should instead be implemented alongside labor market policies such as work sharing programs. The use of active labor market policies was critical during the global financial crisis of 2008. While the U.S. economy underwent a slow recovery despite the most aggressive fiscal and monetary policies pursued since the Great Depression, by contrast the German economy, having implemented active labor market policies such as the Working Time Account, experienced a prompt recovery process.

To begin with, we focus on the cyclicity of the share of labor income, that is, the moving correlation between the GDP growth rate and the share of labor income, as a measure of stability in the labor market. If the labor income share exhibits counter-cyclical movement in the business cycle, we can interpret that the labor market is stable. On the other hand, if it shows a procyclical movement, it implies that some stabilizing policy measures are required.

We found that in Korea, the share of labor income is mostly counter-cyclical and the share of labor income in the manufacturing sector was

procyclical in the period between the East Asian economic crisis and the global financial crisis. In addition, the counter-cyclicality of the labor income share in the overall economy seems to be led by the service sector, since the service sector's moving correlation is located below that of the manufacturing sector.

We can categorize the work sharing program into two dimensions. As for objectives, there are work sharing programs for either maintaining employment or creating employment. In terms of the instrument used, a firm can either adjust wages or adjust both working hours and wages. We exclude the employment-creating type of work sharing programs from our discussion since it is aimed at long-term and structural issues and not on short-run business cycles on which this study focuses. The wage-adjustment/employment maintenance type can be seen in countries with a free market system and a flexible labor market. The best example of this type can be found in the bargaining between U.S. automakers and the UAW in the early 1980s. In addition, a number of Korean companies that employed the Anglo Saxon flexible labor market since the 1997 economic crisis also exercised this type of work sharing program. On the other hand, the best example of the simultaneous adjustment of wages and working hours and the maintenance of employment can be found in the collective bargaining between Germany's Volkswagen, at which profitability deteriorated in the early 1990s, and its unions.

The German case in particular draws to our attention the fact that Germany is a manufacturing-oriented country in which flexible working hours have been instituted across a considerable part of the manufacturing sector. Since Korea has a similar industrial structure, we can refer to the German experience in establishing labor market policy during an economic crisis.

In this study we also address some of the issues with Korea's work sharing programs during the global financial crisis. First, the work sharing program at that time was mainly implemented through an employment maintenance subsidy, which is similar to Germany's short time work policy. But crucially, the German stabilization system was a manifold system: it included temporary reductions in regular working times and the utilization of the working time account, which itself constitutes a system based on trust between labor and management. This trust-based relationship is still absent from Korean corporate culture.

Second, lacking in methods to actively adjust working hours, it was mainly bargaining concessions resulting in wage decreases that reduced firms' costs during the downturn.

Third, bargaining concessions were achieved through wage adjustment mainly at public firms and large corporations. But given the structure of the dual labor market, employment was still unstable for irregular workers and subcontractors. In particular, the procyclical movement of manufacturing employment even after the global financial crisis — as we found in our empirical analysis — could imply that work sharing policies at that time were adopted by just a handful of companies rather than across a broad swath of the manufacturing industry.

We built a two-sector post-Keynesian model consisting of manufacturing and service(non-manufacturing) industries, taking into account the characteristics of the macro-economy and labor market in Korea. The directions for labor market policy suggested by the model are as follows. First, in an economic crisis, when the Keynesian stability condition is satisfied under a wage-led demand system, it is necessary to promote consumption by reducing the wage gap between the manufacturing and service sectors through either a minimum wage increase or various self-employment support policies. Second, when the Keynesian

stability condition is met under a profit-led demand regime, it is possible to find a way to temporarily reduce the burden on firms by implementing a work sharing program centering on manufacturing. Lastly, if there is Harrodian instability in the economy, it is possible to actively consider the simultaneous adjustment of wages and working hours centered on manufacturing as well.

Introduction

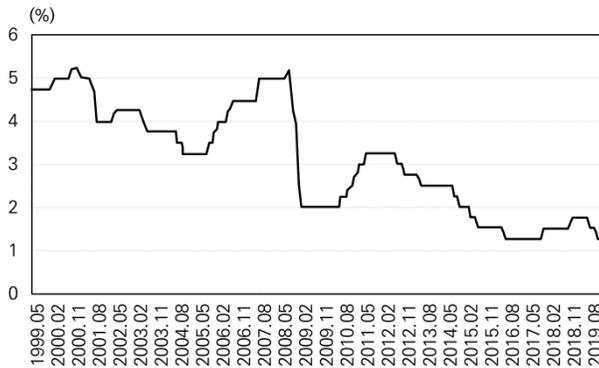
Three years have lapsed since the pro-business distribution policy in Korea was converted into a new growth paradigm known as the income-led growth model. The key element of the income-led growth model is the creation of effective demand by enhancing the household income, and by doing so restore the employment-distribution-growth virtuous circle. To realize this policy goal, the government has used various policy tools, such as increasing the minimum wage, reducing the maximum workweek to 52 hours, converting irregular positions in the public sector to regular jobs, and others.

This policy seemed to be successful, since economic growth returned in 2018 to a rate of 3 percent, two years after the policy was first implemented. However, the revival was short-lived due to the impacts of the global trade slump caused by the U.S.-China trade conflict in 2019 and the outbreak of COVID-19 in 2020. These events exerted considerable downward pressure on economic growth in Korea, which sank to 2 percent in 2019 and entered negative territory in 2020.

Although a fundamental solution is not at hand since the factors that triggered the current economic crisis are external ones, we can naturally consider aggregate demand policy, such as fiscal or monetary policy

(or both) as an option for treatment. Nonetheless, these traditional policy tools have some constraints at the moment. To combat deflation, an expansionary monetary policy may not be appropriate since the current base interest rate is historically low, as Figure I-1 below shows, and lowering it further would be ineffective.

Figure I-1. Bank of Korea Base Rate

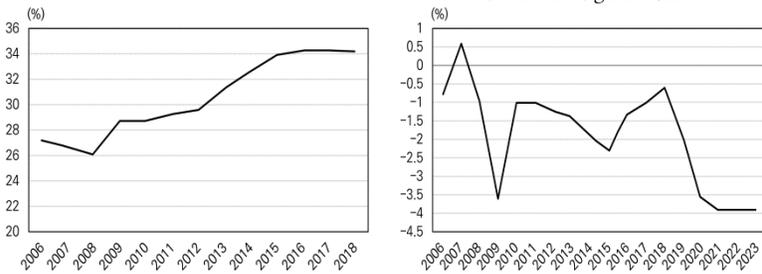


Source: Bank of Korea.

Fiscal policy is seen as a crucial factor in the recovery of the Korean economy following the global financial crisis of 2009; expenditure increased by 10.6 percent compared to before the crisis. In the depths of the recession, fiscal policy proved to be a more potent tonic than monetary policy. However, the ratio of national debt to GDP has continued to rise since the global financial crisis (Figure I-2, left). The managed fiscal balance as a percentage of GDP, which represents fiscal soundness, is expected to record a deficit of 3.6 percent in 2020 and deteriorate to 3.9 percent by 2023 (Figure I-2, right). Furthermore, the government's 2020 budget has increased significantly in areas that can improve the potential economic growth rate, establish a social safety net, and respond to changes in the demographic structure. The effects of these

expenditures will be felt in the medium-to-long run, rather than immediately. Above all, the current government is now hesitant to employ policies featuring investment in social overhead capital(SOC) and large-scale housing — the main tools wielded by previous governments — to stimulate the economy owing to its stance on the regulation of real estate speculation.

Figure I -2. Trends in and Projections of Fiscal Expenditure
 Ratio of National Debt to GDP Managed Fiscal Balance as a Percentage of GDP



Source: Ministry of Economy and Finance(2020).

In this study we argue that these aggregate demand management policies alone, which have traditionally been used to stabilize economies, may not be effective in the current crisis and that they should instead be implemented alongside active labor market policies.¹ At the same time, this study also suggests desirable directions for change in Korean labor market policies considering the current economic situation in Korea.

¹ The government is responsible for employment under an ‘active labor market policy’; on the other hand, the government is responsible for unemployment under a ‘passive labor market policy’. According to the OECD(2019) classification, active labor market policies include provisions for vocational training, employment subsidies and supports, direct job creation in the public sector and so on. Passive labor market policies include unemployment benefits and assistance and so on.

The active labor market policy in this paper refers to the work sharing programs, or “policy tools for maintaining or creating employment in a recession or structural high unemployment situation”(Son et al., 2009). The use of active labor market policies was particularly critical during the global financial crisis of 2008. While the U.S. economy underwent a slow recovery despite the most aggressive fiscal and monetary policies pursued since the Great Depression, the German economy, by contrast, having implemented active labor market policies such as the working time account, enjoyed a prompt recovery. The decline in economic growth was much larger than in the United States and Britain, reflecting the Anglo-Saxon model, but in Germany, the production market quickly stabilized based on the rapid recovery of unemployment rates. Some studies have suggested that Germany’s active labor market policies effectively made up the difference in the recovery processes after the Great Recession(OECD, 2010; Burda and Hunt, 2011; European Commission, 2013).

In Korea, similar work sharing policies were implemented to prevent mass unemployment by reducing working hours during the 2008 crisis and, as they were in Germany, have been judged to have played a positive role in the economic recovery process at that time(Hwang et al., 2010; Uh et al., 2014). Immediately following the crisis, the Labor-Management Civil Government Committee was formed to promote work sharing and the government’s job subsidy programs. As a result, although the decline in the real economic growth rate was similar to that experienced during the 1997 East Asian crisis, employment indicators did not experience the same turmoil.

In this study we also address some of the issues with Korea’s work sharing programs during the global financial crisis. First, the work sharing program at that time was mainly implemented through an employ-

ment maintenance subsidy, which is similar to Germany's short-time work policy. However, as we will see, there were two crucial components of the German stabilization system: temporary reductions in regular working times and the utilization of the working time account, which constitutes a system based on mutual trust between labor and management. This relationship is absent from Korean corporate culture.

Second, lacking a method to actively adjust working hours, firms reduced costs during the downturn mainly by obtaining concessions through bargaining that resulted in wage decreases. Any discussion on the compensation mechanism when the company is normalized and profits are high is absent(Uh et. al., 2014).

Third, although concessions on wages were won mainly at public firms and large corporations, employment was still unstable for irregular workers and subcontractors given the structure of the dual labor market. In other words, work sharing policies were adopted among a handful of companies rather than across a broad swath of the manufacturing industry. Stabilizing manufacturing employment is especially important in Korea because, as in Germany, the share of added value produced by manufacturing in total gross domestic product is quite significant. If the cause of the economic crisis is not firm- or industry-specific factors but global shocks, then some policy measures to keep employment as high as possible will be necessary. Doing so can minimize layoffs and maintain employees' skills for when the economy rebounds.

We divide the entire economy into the manufacturing and service sectors, and focusing on manufacturing, and consider labor market policies to reduce the amplitude of economic fluctuations. The service sector in this paper refers to social overhead capital and other services as defined by the Korean Standard Industry Classification System.

As a starting point, we focus on the cyclical movement of the share of labor income as a measure of stability in the labor market. If the labor income share exhibits counter-cyclical movement over a business cycle, we can interpret that the labor market is stable. On the other hand, if it shows a procyclical movement, it implies that some stabilizing policy measures are required. The key to a Keynesian stabilization policy during recession is to prescribe the policy so that effective demand does not fall and rebound. Keynes (1936) opposed the argument that the rigidity of the nominal wage during recession was the cause of unemployment and that the flexible adjustment of the nominal wage was the solution. Thus, if the share of labor income increases during a downturn, or exhibits counter-cyclical movement, we can interpret this as the labor market operating soundly. However, if the share of labor income moves procyclically, policy efforts will be needed to make it less procyclical or countercyclical through monetary and financial policies or labor market policies.

In general, economists have argued that the labor income share is counter-cyclical since households are risk-averse, not asking for wages corresponding with their productivity in negotiations, and enterprises do not actively increase employment in anticipation of downturns (Shao and Silos, 2014; OECD, 2015). On the other hand, Botelho (2018) points out that the U.S. labor income share began to show procyclical movement in the mid-1980s, mainly due to weakening procyclicality (counter-cyclical) of labor productivity (employment). Gordon (2010) also suggests that labor market flexibility has made employment more procyclical in the U.S. after 1985.

As for the literature on the Korean economy regarding this issue, Hong (2011) argues that the share of labor income in Korea moves procyclically, unlike other countries. This study analyzes the cyclical char-

acteristics of Korea's labor income share across business cycles by examining the moving correlations between labor income share growth and GDP growth rate. We perform this analysis not only for the entire economy but also by industry, specifically the manufacturing and service sectors. In doing so, we provide basic stylized facts for labor market policies to stabilize the macroeconomy during any future economic crisis, including the current one.

In this study, we also established a macroeconomic model in which several important characteristics of Korean economy are taken into account. Using this model, we recommend directions for labor market (employment and wage) policies that can be deployed in the event of an economic crisis.

The remainder of this report is organized as follows. Chapter 2 analyzes the cyclicity of the Korean labor income share. We first point out the necessity of active labor market policies during recessions, when traditional stabilization policies (such as monetary or fiscal policies) are not easily applied. Bifurcating the economy into manufacturing and service sectors, we statistically analyze the cyclicity of the Korean labor income share and its changes over time. Chapter 3 provides a case study regarding labor market reforms and work sharing programs and discusses the importance of work sharing programs in the recovery process of the global financial crisis, highlighting the differences in the labor market policies in the U.S. and Germany. In Chapter 4, we built a two-sector post-Keynesian model consisting of the manufacturing and service sectors to explore the effects of stabilization policies via the labor market. Finally, Chapter 5 summarizes the discussions and describes some implications for policy.

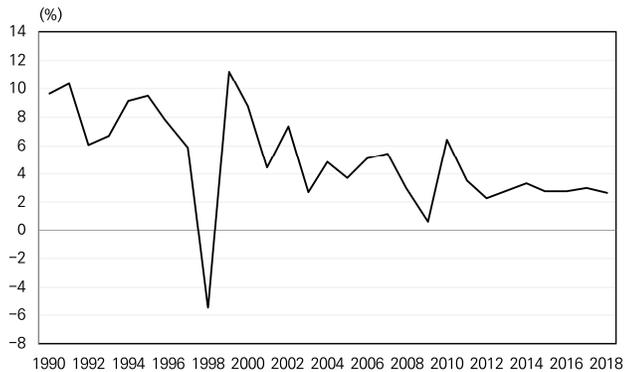
II

The Cyclical Nature of Labor Income Share and its Implications for Macroeconomic Stability

1. The Korean Economic Situation

According to Statistics Korea's business cycle reference dates, the Korean economy is in the downward phase of the 11th cycle, which peaked in September 2017, and has been on the decline for about 27 months as of December 2019(Figure II-1).

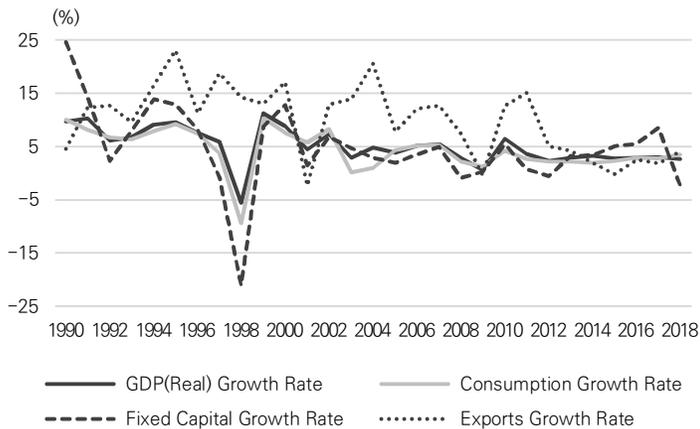
Figure II-1. Real GDP growth rates



Source: Bank of Korea(National Account).

Recent hardship in Korea is largely ascribed to the U.S.-China trade conflict and subsequent global economic slowdown, since Korea is a small open economy with a relatively large proportion of export sectors. It is still uncertain how the ongoing U.S.-China trade negotiations will be settled or if the current downturn will abate due to the effects of government policies, but the recent declines in gross fixed capital formation and facility investment – its most important factor – are very worrisome(Figure II-2). Although the length of business cycles in the Korean economy tend to be relatively short(it has previously exhibited quick recoveries from downturns) except during major crises such as the 1997 East Asian crisis and the 2008 global financial crisis when significant drops in GDP were observed, this time truly could be different.

Figure II-2. Real GDP Growth Rates and the Growth rates of its Components



Source: Bank of Korea(National Account).

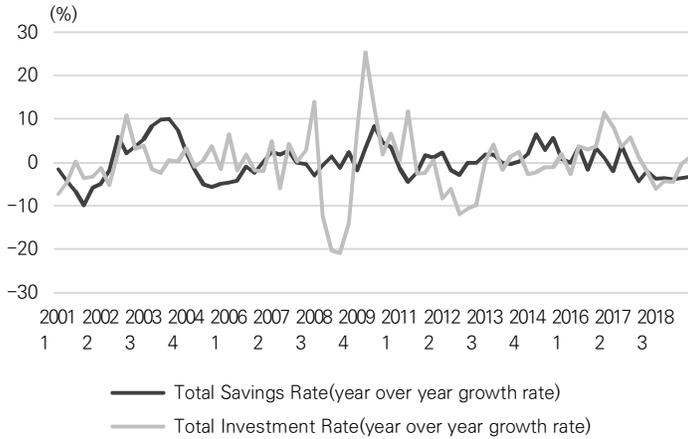
There are two opposing positions in post-Keynesian dialectics regarding the stability of an economy. First, Kalecki argues that the econ-

omy can easily converge to equilibrium by injecting a certain level of autonomous spending when the capacity utilization rate is off balance since savings is more sensitive to the business cycle than investment(Lavoie, 2016; Fiebiger and Lavoie, 2019). In other words, they believe that the Keynesian stability condition is usually satisfied in an economy. Here, the source of autonomous spending can be expenditure from external markets unrelated to domestic income, such as exports, residential investment, government expenditure and others(Fiebiger and Lavoie, 2019).

Second, in the Kaldorian approach, it is more common to assume a Harroddian investment function in which investment is more sensitive to the business cycle than savings, and the capacity utilization rate tends to move away from equilibrium when it is out of balance. Skott(2019) argued that any autonomous spending is insufficient to govern this Harroddian instability, and it is the labor market, which the Kaleckian perspective fails to actively address, that stabilizes the economy.

From a long-run perspective, the two positions are theoretically at odds with respect to the overall stability of an economy. This study assumes that the stability of an economy may change depending on the situation from a short-run business cycle perspective. We believe that at most times in the Korean economy the Keynesian stability condition is satisfied as the Kaleckian view assumes while Harroddian instability works in exceptional times such as during the 1997 East Asian crisis or the 2008 global financial crisis. Figure II-3 shows trends in the domestic total investment and total savings rates since 2001, indicating that the total investment rate was more sensitive to the business cycle compared to the total savings rate, especially during and after the 2008 global financial crisis.

Figure II-3. Growth Rate of Total Savings and Total Investment Rates



Source: Bank of Korea.

A recession in which the Keynesian stability condition is satisfied can be stabilized through traditional aggregate demand policies by increasing autonomous spending, as the Kaleckian school claims. However, if investment falls sharply — as was the case during the East Asian crisis and the global financial crisis — active labor market policies need to be implemented in addition to the aggregate demand policies. Furthermore, as mentioned in the introduction, since there are restrictions on the active use of monetary and fiscal policies to increase autonomous spending, and given that increases in overseas demand are also uncertain due to the deadlock in the U.S.-China trade conflict, the use of active labor market policies is an option that can be considered seriously.

2. The Changing Cyclicity of the Korean Labor Income Share

This section focuses on the cyclicity of the share of labor income as a measure of stability in the labor market. If the labor income share moves counter-cyclically, calls for a Keynesian policy intervention to stimulate demand during a recession will be subdued. On the other hand, if it demonstrates pro-cyclical movement, some stabilization measures that alter the labor income share to run counter-cyclically may be required.² First, we will examine the cyclicity of the labor income share of the entire economy and then divide it into the manufacturing and service sectors to assess sectoral differences.

A stylized fact from the literature on the cyclicity of the labor income share state that that the labor income share moves counter-cyclically due to the risk-averse behaviors of enterprises and workers in wage negotiations(Shao and Silos, 2014; OECD, 2015; Botelho, 2018). That is, this counter-cyclicity is allegedly driven by businesses' tendency to hoard skilled workers in times of recession and by workers' tendency to avoid the risk of unemployment by accepting reductions in future income in times of recession. In addition, the payment of unemployment benefits during recessions may not reduce income proportionally to the actual economic hardship in the economy in question, which may cause the labor income share to exhibit counter-cyclical movement.

On the cyclicity of Korea's share of labor income, there exist relatively few studies in the literature. One of note is Hong(2011), which

² Of course, we should take into account the asymmetric business cycle and apply more advanced econometric method to figure out the cyclicity of labor income share since this description is only valid for the downturn phases.

applied cross-correlation methods to analyze the cyclical movement of the labor income share from 1970 to 2010. The author claimed that, contrary to the stylized fact described previously, the labor income share in Korea demonstrated procyclical movement vis a vis the business cycle. In this paper, we conduct a statistical analysis on the cyclicity of Korea's labor income share not only for the entire economy but also for the two major sectors: manufacturing and services.

The level of labor income share is contingent on how it is measured. For example, the Bank of Korea's method for measuring the labor income share considers all individual operating surpluses, corresponding to the income of the self-employed, as capital income, which will underestimate the share of labor income. To resolve this problem, Gollin(2002)'s third method, LS3, converts part of self-employed operating surpluses to employee income by assuming that on average the income of the self-employed is equal to that of the employee. An alternate method is Gollin(2002)'s second method, LS2, in which the proportion of labor and capital income for the self-employed sector is assumed to be identical to other sectors. The calculations for each measurement method are as follows.

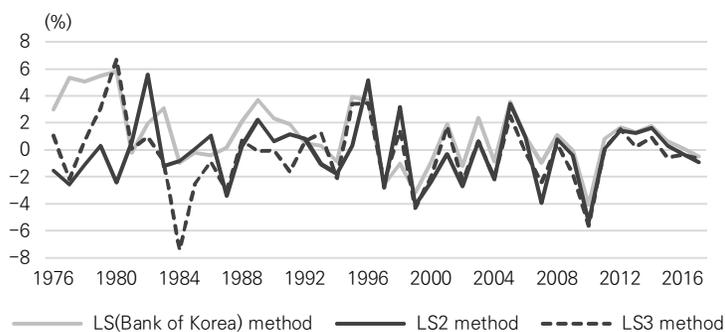
$$LS(\text{Bank of Korea}) = \frac{\text{employee income}}{\text{national income}} \quad (2-1)$$

$$LS3 = \frac{\text{employee income} + \left(\frac{\text{employee income}}{\text{number of salary workers}} \times \text{number of nonsalary workers} \right)}{\text{national income}} \quad (2-2)$$

$$LS2 = \frac{\text{employee income}}{\text{national income} - \text{individual operating surplus}} \quad (2-3)$$

As shown in Figure II-4, the fluctuation patterns of the growth rates of the three measurements are almost identical, especially after 1994, which means that while the method of measurement of the labor income

Figure II-4. Growth Rates of Korea's Labor Income Share by Measurement Method

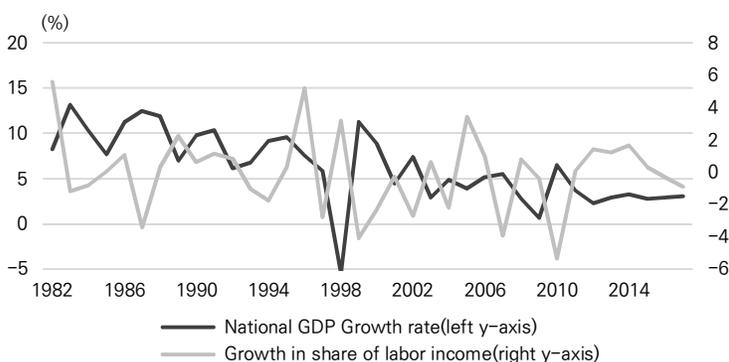


Source: Bank of Korea(National Account); authorial calculation.

share could be a thorny issue in an analysis of the levels of the labor income share, it is not relevant in an analysis of the cyclicity of the labor income share.

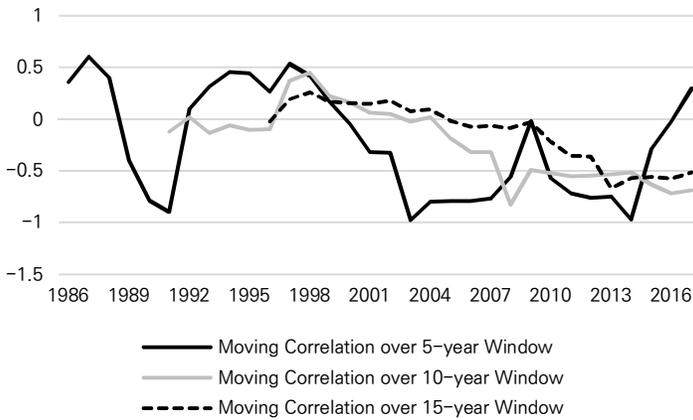
We use the Bank of Korea's method to compare the growth rate of the labor income share and economic growth rate of the entire economy, as shown in Figure II-5.

Figure II-5. Labor Income Share and National Real GDP Growth Rates



Source: Bank of Korea(National Account); authorial calculation.

Figure II-6. Moving Correlations between Labor Income Share Growth and Real GDP Growth Rate(Entire Economy)



Source: Bank of Korea(National Account) and author's calculation.

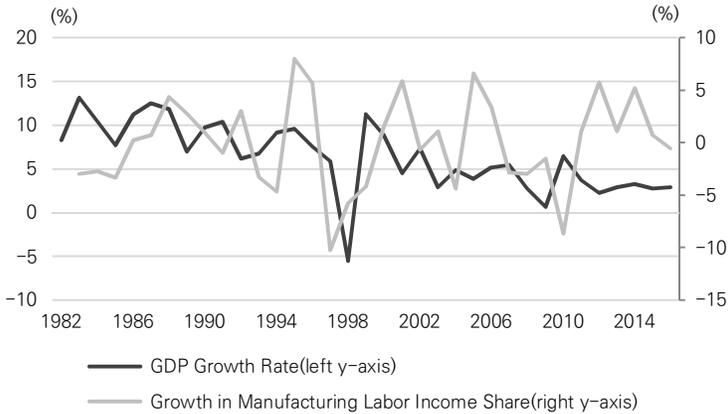
Next, we looked at the moving correlations between the rates of growth in the share of labor income share and GDP over five, ten, and fifteen-year windows(Figure II-6). The results for the entire economy show that, contrary to Hong(2011), the labor income share is mostly counter-cyclical(that is, correlation is less than zero) except for the period from 1993 to 1997.

However, even given the counter-cyclical movement of the overall share of labor income, we need to inspect for heterogeneity across industries. Here, we will divide the entire economy into the manufacturing and service sectors to examine the share of labor income of each and their cyclicity; that is, their correlation with the GDP growth rate.

Using Gross Value Added by Economic Activity and Factor Income data extracted from the Bank of Korea's national accounts, the share of labor income in the manufacturing sector can be obtained by dividing manufacturing employee income by manufacturing factor income. Figure II-7 shows trends in the rate of growth in the share of labor income

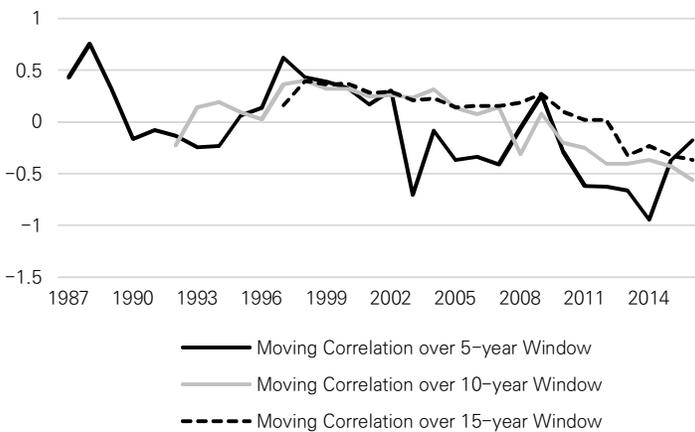
in the manufacturing sector and the GDP growth rate. Figure II-8 shows the moving correlations between the two variables over five, ten, and fifteen-year windows.

Figure II-7. Manufacturing Labor Income Share Growth and Real GDP growth rate



Source: Bank of Korea(National Account); authorial calculation.

Figure II-8. Moving Correlations between Labor Income Share Growth and Real GDP Growth Rate(Manufacturing Sector)

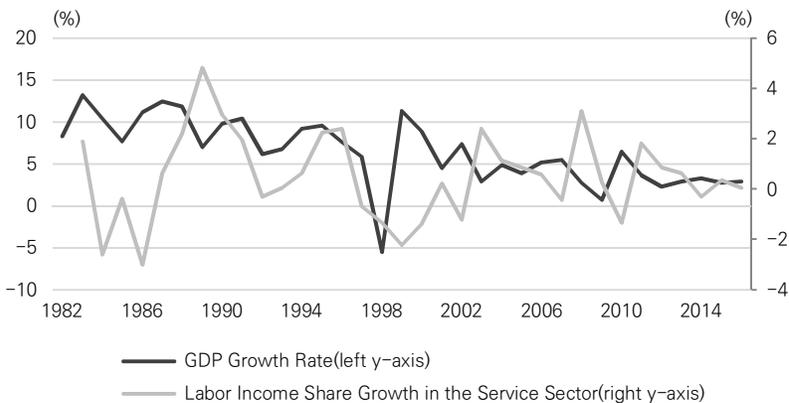


Source: Bank of Korea(National Account); authorial calculation.

Figure II-8 shows that moving correlations in the manufacturing sector are higher compared to those in the entire economy as shown in Figure II-6. We also observe a procyclical labor income share (correlation greater than zero), particularly in moving correlations over 10 and 15-year windows in the period between the East Asian economic crisis and the global financial crisis. This indicates the possibility that in manufacturing, employment or wages (or both variables) changed in a direction that further destabilized the economy, not one that stabilized it.

Moving on to the service sector, the labor income share and GDP growth rates and the moving correlation between the two variables are shown in Figures 2-9 and 2-10, respectively.

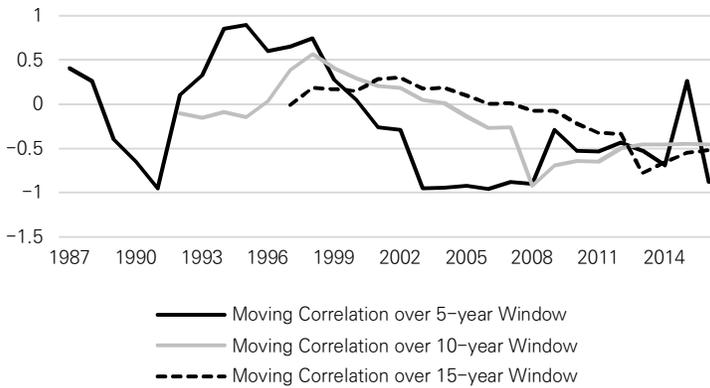
Figure II-9. Labor Income Share Growth in the Service Sector and Real GDP growth rate



Source: Bank of Korea(National Account); authorial calculation.

In the case of the service sector, the moving correlation shows a procyclical movement before the global financial crisis and a countercyclical movement following it (Figure II-10). However, since it is generally lower than the values of the moving correlations in the manufacturing

Figure II-10. Moving Correlations between Labor Income Share Growth and Real GDP Growth Rate(Service Sector)



Source: Bank of Korea(National Account); authorial calculation.

sector(Figure II-8), it can be interpreted that the service industry is the main driver of the strong counter-cyclical movement of the share of labor income in the overall economy.

The high proportion of self-employed within Korea’s service sector is also a major factor to consider in examining the counter-cyclical movement of the sector’s share of labor income. Unlike in European countries, workers laid off during a recession in Korea tend to switch to small-scale self-employment because Korea lacks a proper social safety net featuring retraining programs or sufficient unemployment insurance. It is of particular note that, since those self-employed without employees or unpaid family workers cannot fire themselves during a recession, employment volatility is underrepresented during periods of economic hardship. If this effect is significant, there is a possibility that employment of non-wage workers in the service industry may be less procyclical(or more counter-cyclical) than in other sectors.

The implications for policy carried by the results of the analysis in this chapter are as follows. First, active labor market policies such as work sharing programs are particularly essential in the manufacturing sector since that sector's share of labor income is relatively procyclical (or less counter-cyclical) compared to that of the service sector. And as we will see in the next chapter, work sharing programs in Korea after the global financial crisis actually worked only at public institutions and at some large companies — not in the wider manufacturing industry.

For this reason, some institutional improvements to the Korean labor market are needed. Second, in the service sector, policy measures for the self-employed are important during a recession, as the proportion of non-wage workers in Korea is substantially higher than many other OECD countries (Kum et al., 2009). In addition, because subsectoral heterogeneity is significant in the larger service sector, the provision of subsector-specific approaches is a crucial element of any stabilizing policy.

In the next chapter, we will provide a case study regarding labor market reforms and work sharing programs and discuss the importance of work sharing programs in the recovery process that followed the global financial crisis.

Work Sharing Programs during Economic Crises

1. Case Studies in Work Sharing Programs

The ‘labor regime’ is a conceptual device to aid in dealing with labor issues comprehensively and structurally. It consists of the labor market structure, the labor reproduction structure, the labor process as well as the workplace and political systems among economic agents. It is generally regarded that the current labor regime in Korea falls under the so-called 1987 labor regime, which was formed after the collapse of the authoritarian labor regime in the wake of the 1987 labor struggle(Jang et al., 2016).

Under the 1987 labor regime, while overall labor relations have been democratized and the constitutional labor rights improved compared to the previous regime, individual labor laws were revised to promote labor market flexibility immediately after the 1997 East Asian economic crisis. For example, the IMF demanded easing the legal procedure for laying off workers and allowing dispatched labor in return for relief loans, the Labor Standards Act was revised in a way that justifies layoffs for management purposes, and the Act for the Protection of Dispatched

Workers was enacted to reduce labor costs and promote indirect employment.

The evolution of power between classes, which is characterized by a widening dual labor market structure and a long-term decline in union membership made such legislation possible. In the meantime, European-style corporatism epitomized by the formation of the Labor-Management Civil Government Committee emerged and thus the role of the government became relatively more important in major social decisions.

Due to this series of changes in labor market institutions, which accelerated quantitative flexibility in the labor market, the share of labor income in Korea has exhibited unstable secular decreases. At the same time, declines in household income and the marginal propensity to consume has made domestic consumption less viable than exports (Kang and Lee, 2012; Joo, 2017; Hwang, et al., 2017). In response to this problem, the government is attempting to change its corporate income-oriented distribution policy to a distribution policy aimed at boosting domestic consumption through a new economic paradigm called the income-led growth policy.

In order to remedy the aforementioned problems of the 1987 labor regime, a number of possible alternatives have been studied, including the Social Democratic welfare state model of Northern European countries, the 'flexicurity' model of the Netherlands and Denmark and the co-determination system in Germany. These multidisciplinary studies are related to the components of the labor regime mentioned in the beginning of this chapter, including the welfare state, workplace innovation, social dialogue, and so forth. However, there are few studies that address the macroeconomic effects of the labor market structure. Therefore, focusing on the labor market structure, this chapter exam-

ines what system would prove most advantageous in stabilizing the macroeconomy in the event of an economic crisis.

Work sharing can be defined as ‘the process of maintaining or creating jobs by reducing working hours or freezing(or reducing) wages’ to overcome an economic crisis(Hwang et al., 2010). In a broader sense, it may include a reorganization of the shift system, closure, leaves of absence, educational leave and salary peaks for the senior employees, among others(Jo, 2009).

Son et al.(2009) categorized work sharing types(Table III-1) based on classifications of the Japanese Ministry of Health, Labor and Welfare. This classification has been used in several studies on this issue(Hwang et al., 2010; Uh et. al., 2014). From this point forward, we will proceed our discussion using this classification of work sharing. As can be seen in Table III-1, work sharing classifications are bidimensional: work sharing purposes and work sharing means. Purposes are divided into either employment maintenance or employment creation, while means are subcategorized into wage reductions or simultaneous shortened work hours and wage reductions.

Table III-1. Types of Work Sharing

	Wage adjustments(reductions)	Simultaneous adjustment of working hours and wages
Employment maintenance	Type 1: U.S. automakers in the early 1980s and UAW; many Korean companies after East Asian economic crisis	Type 2: Volkswagen in Germany
Employment creation	Type 3: Some large companies and public corporations in Korea	Type 4: Regular part-time jobs in Netherlands

Source: Son et al.(2009), Hwang et al.(2010).

Employment maintenance is “the case of keeping non-regular workers, subcontractors and other workers employed through wage concessions, or maintaining employment through reductions of working hours and sharing of work among existing workers”(Uh et al., 2014). Work reductions begin with reductions in overtime work. If the situation worsens further, closure, leaves of absence, and educational leave can be applied.

Employment creation is “the case hiring additional workers, taking advantage of reduced costs(thanks to wage reductions) or shortened working hours for each employee”(Uh et al., 2014). If employment maintenance is a policy that can be used directly during an economic crisis, employment creation is a way to create additional jobs with lower labor costs from more of a long-run perspective.³ In this chapter, we will focus more on employment maintenance, since the main goal of this study is to provide directions for employment and wage policies that can work during any economic crisis or recession. Nevertheless, we need to take a look at examples for each type, which can be derived from combinations of both goals and means as shown in Table III-1.

The examples of Type 1(employment maintenance, wage adjustment) can be found in countries that possess so-called free market economies, in which social agreements for work sharing have not developed partly because layoffs and re-hirings are relatively free. Thus, concessions in wages rather than employment were common practice in at the negotiating table during recessions in these countries.

³ There also exist some negative views about the job creating effect of reductions in working hours. For example, if labor costs rise due to shortened working hours, a firm may prefer overtime work to new employment or replace labor with capital. In the latter case, additional employment can be offset if productivity increases due to shortened working hours(Uh et al., 2014).

One of the best examples of this type is ‘short-time compensation’, in the U.S., which has existed since the 1980s. In order to retain workers and freeze or cutting their wages, firms deploy this measure to actively utilize unemployment insurance provided by the state. In other words, instead of firing workers, companies have all workers take unpaid leave on a specified day; the workers receive unemployment insurance benefits in proportion to their lost working hours.

In fact, this type originated in negotiations between the Big Three U.S. automakers(Chrysler, GM and Ford) and the United Auto Workers (UAW) in the early 1980s. Faced with a productivity crisis and rise of the Japanese automakers, the U.S. auto industry began to lose its share of the U.S. market. Having already experienced job insecurity due to massive firings in the late 1970s, workers wanted to maintain employment even if wages were reduced. As the union’s bargaining power had weakened significantly, in proportion with corporate hardship, the UAW signed a concession deal with Chrysler in January 1980 to abolish paid leave and freeze wages. In early 1982, Ford and GM won similar concessions from the UAW. These negotiations allowed companies to cut costs and workers to keep their jobs during that crisis in the U.S. automotive industry.⁴

The Type 2 examples(employment maintenance, simultaneous adjustment of working hours and wages) can be observed in some European countries, including Germany. These countries, with strong labor unions and high costs to adjusting employment, tend to secure internal flexibility by making working hours more flexible during downturns.

⁴ Another example of this type is the case of many companies in Korea, where various legislation for the flexible labor market has been introduced since the 1997 East Asian crisis.

The best example of this type was the collective bargaining that occurred between Volkswagen and its unions in the early 1990s upon deteriorating profitability at that company. In the early 1980s, the German economy had a serious unemployment problem. To overcome this, a nationwide policy for adjusting working hours without decreasing wages by compensating for wages instead of reducing working hours was implemented. The government financially supported shipbuilding, steel and automotive industries hit by the economic recession. Yet despite such measures, the unemployment rate remained high and both the rigid labor market and high unemployment benefits were blamed for the chronically high unemployment rate in Germany at the time. As a prescription for this, the German government attempted to introduce U.S.-style flexibility into the labor market, which generated strong opposition from labor unions.

In 1993 Volkswagen and the Metal Workers Union (IG) agreed to a reduction in regular working hours, from 36 to 28.8 hours and a downward adjustment of wages. As a result, working hours were reduced by 20 percent but total annual income decreased by just 16 percent.⁵ This negotiation agenda was drawn up by Peter Hartz, Volkswagen's human resources manager. Hartz would later go on to advise German chancellor Gerard Schroder on a series of labor market reforms that eventually became well-known as the Hartz reforms. Based on that series of compromises, Germany's employment rate has risen sharply since 2005, with a significant increase in full-time regular employment.⁶

⁵ Volkswagen workers were able to accept wage cuts because their wages were 12 percent higher than the average income of all German workers in 1994.

⁶ This was contrasted to the reform in the Netherlands, where the number of 'part-time' regular workers increased (Kum, 2013).

An example of Type 3 (employment creation, wage adjustment) is the work sharing policy implemented by public firms and large corporations in Korea during the global financial crisis. At that time, as a result of a social compact represented by the Labor-Management Civil Government Committee, the government expanded the amount of the employment maintenance subsidy by adding it to the supplementary budget of 2009. The government also implemented various kinds of active labor market policies, such as income support for workers during unpaid leave, employment maintenance subsidies for companies utilizing a shift system, employment stabilization funds for small businesses, the promotion of the labor-management cooperation at the local level, and the expansion of youth internships.

An example of Type 4 (employment creation, simultaneous adjustment of working hours and wages) is the Wassenaar Agreement of the Netherlands in 1982, aimed at stabilizing the economy and addressing the unemployment problem. The agreement stipulated that unions should accept 5 percent curbs on wages and reductions in return for the company providing additional part-time jobs, which resulted in an increase in the number of part-time regular workers.

In particular, this type of work sharing could be useful if there is a social need for temporary work in a dual-income model, where women's participation rate in the economy is increasing due to changes in the overall structure of the population due to low birth rates and aging. This model is known as the 'flexicurity' model, because unemployment protection systems are highly developed in these countries, despite regulations regarding layoffs being more relaxed than in Germany.

We reviewed the cases of four different types of work sharing. Among them, Types 3 and 4 will be excluded from our discussion since they are designed to stimulate employment, and are thus not directly

addressed at short-run economic fluctuations but rather are labor market reforms intended to solve long-term structural problems in the labor market (such as demographic change). Types 1 and 2 can be seen as responses to economic fluctuations in the Anglo-Saxon model and German labor markets, respectively. They are also noteworthy because they are directly related to the labor market in the manufacturing sector, and especially the automobile industry. In the next section, we will compare how the U.S. and German labor markets responded to the 2008 global financial crisis. Then we will evaluate work sharing programs in Korea during that same period.

2. Work Sharing Programs during the Global Financial Crisis

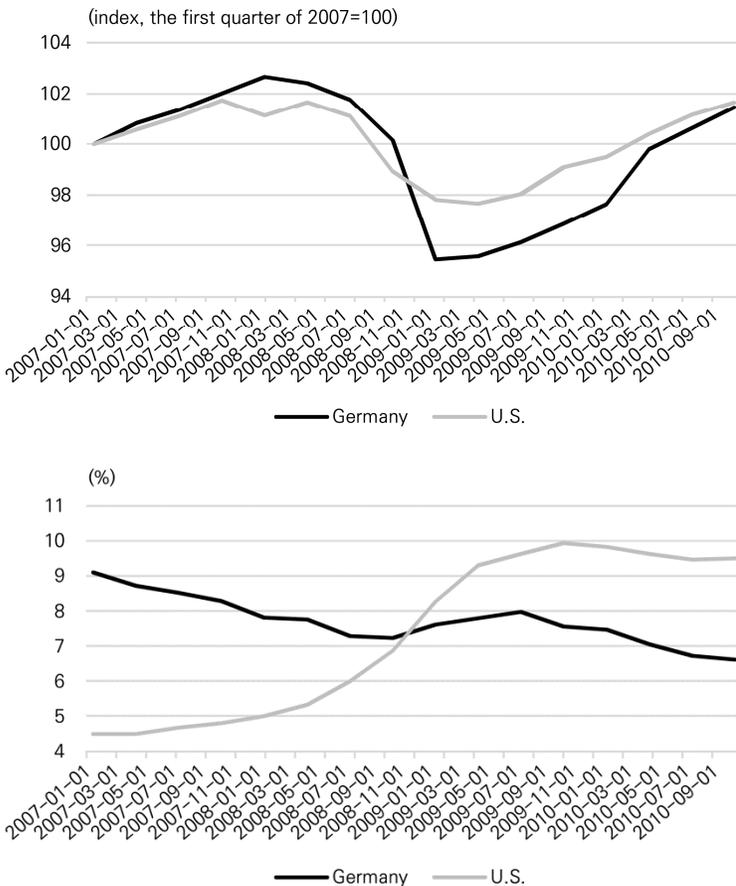
(1) Responses of the U.S. and German Labor Markets

The global financial crisis that erupted in December 2007 was triggered by financial factors, and is thus widely known as the subprime mortgage crisis. With skyrocketing real estate prices, securities such as collateralized debt obligations (CDO) and credit default swaps (CDS) were issued on an astronomical scale. However, a sharp drop in housing prices eventually caused financial companies to undergo a series of bankruptcies, leading to the Great Recession, an economic crisis unprecedented since the Great Depression of the 1930s.

Over the course of overcoming the global financial crisis, the importance of active labor market policies was highlighted particularly because the slow recovery of the U.S. economy (despite the large-scale implementation of expansionary fiscal policy) stood in stark contrast to the rapid recovery of the German economy, which utilized labor mar-

ket policies such as the aforementioned work sharing and working time accounts. Some international organizations and studies have suggested that Germany's active labor market system played a major role in differentiating the two countries(OECD, 2010; European Commission, 2013).

Figure III-1. Trends in Real GDP(above figure) and unemployment(lower figure) in the U.S. and Germany



Source: Federal Reserve Economic Data(FRED).

As Figure III-1 shows, Germany's real GDP fell more than 6 percent from its peak in the first quarter of 2008, reaching its trough in the third quarter of 2009 — no small drop compared to contractions of 4.2 percent in the United States and 5.5 percent (on average) in European countries.⁷ However, the German labor market quickly stabilized. Not only had the total number of employees increased, the unemployment rate was even lower compared to before the crisis. For this reason, the performance of the German labor market has sometimes been referred to as the 'German job miracle' (Krugman, 2009; Möller, 2010).

On the other hand, the Obama administration in the U.S. oversaw the passage of the American Recovery and Reinvestment Act (ARRA) shortly after its inauguration in January 2009. The 787.6 billion USD stimulus package included programs related to unemployment insurance, employment for the elderly in community services, state-level subsidies for employment and others (Hwang et al., 2010).

In the United States, the form of work sharing known as short-time compensation, in which firms allow all workers to take unpaid days off (called furlough days) instead of being laid off and receive unemployment insurance benefits in proportion to the lost working hours, was described in detail in the first section of this Chapter. But it was not much used during the global financial crisis, with the number of workers nationwide participating in the short-time compensation immediately after the crisis (June 2009) being only 153,000 and having fallen to 50,000 by 2011 (Uh et al., 2014).⁸

⁷ All these numbers are quoted from Herzog-Stein et al. (2018).

⁸ Hassett and Strain (2014) points out that the plan itself is not preferred or understood in about half of the states of the United States, and is not consistent with American corporate culture and practices. They also point out that workers are usually opposed to wage cuts, and that restructuring is not easy for long-run optimization of business activities (Uh et al. 2014).

In order to understand the success of the German labor market during the global financial crisis, it is necessary to understand how the current German labor market system came to be, including the Hartz reforms.

As mentioned in the previous section, Volkswagen and the Metal Workers Union(IG) agreed in late 1993 to reduce working hours and adjust wages. Peter Hartz represented Volkswagen in these negotiations; he would later be responsible for proposing a series of reforms that came to bear his name, the first of what would eventually become four major reforms (based on 13 reform bills) was implemented in 2002. Its key elements include establishing mandatory vocational training from the fourth month of unemployment(Hartz I), granting minibobs (working shorter than 15 hours a week) exemptions from the social insurance fee and earned income taxes(Hartz II), tightening eligibility for unemployment benefits and reducing the period of benefits, which was originally from six to 32 months, to six to 12 months(Hartz III), and abolishing unemployment assistance for long-term unemployed and integrating it with social assistance for the working poor(Hartz IV).

In short, the Hartz reforms transformed the existing labor market policies into '*aktivierende*'(activation) labor market policies. If active labor market policies encourage the unemployed to participate in vocational training, the *aktivierende* labor market policy is to strictly manage the conditions for the supply and demand of unemployment benefits and encourage the unemployed to voluntarily participate in the labor market(Lee, 2019).

Due to the Hartz reforms, the German collective bargaining system since the 1990s has exhibited what is called '*regulierte dezentralisierung*' (regulated decentralization). The comprehensive nature of collective agreement at the industry level(*flächentarifvertrag*: master contract) —

which had unified discipline of working conditions and wages in an industry — weakened and the proportion of firm-level agreements increased. And occasionally the application of collective agreements varied according to geographical or occupational differences within the same industry and labor unions(Lee, 2019).

Germany's Hartz reforms bear similarities to the increasing flexibility of the Korean labor market since the 1997 East Asian crisis. However, Germany's co-determination system and its pact for employment and industrial location constitute salient differences.

The co-determination system, a model of worker participation in management, contributed to rapid economic growth in the postwar period, social integration after reunification in the early 1990s and the recovery of the Germany's international competitiveness after the global financial crisis. In particular, thanks to the co-determination system, the Germany's labor losses from strikes and disputes are very low despite the existence of the strong labor unions and labor protection measures.

The pact for employment and industrial location is also an important factor that enabled a strategic compromise between labor and management. The labor and management of European carmakers had sought a strategic compromise to overcome the crisis in the car industry since the mid-1990s. In these circumstances, the Germany's pact for employment and industrial location also called for management to provide job creation and job stability for unions to cooperate with management in measures to strengthen the competitiveness of the industry. After the late 1970s, this strategic compromise shifted the content of German collective bargaining, from a distributive agenda relating to wages or employment to a manifold agenda that included productivity and competitiveness issues(Lee, 2019).

Most importantly, the pact for employment and industrial location enabled the flexible use of working hours. As this pact spread from Volkswagen to the German automobile industry as a whole, schemes for reducing or making working hours more flexible were introduced, such as the full implementation of the working time account, the expansion of Saturday morning work to workdays, the activation of the life-allocation working-hour system, an escape clause in contracted working hours and the replacement of monetary compensation with vacation if certain overtime thresholds are met(Lee, 2019).

Taking a closer look at the operation of the German flexible working hours system, there are four main schemes for adjusting employees' working time: short-time work, overtime work, the temporary reduction of regular working hours through collective bargaining and working time accounts.

First, short-time work was introduced in the 1920s and has since undergone several revisions. Currently, the government will subsidize 60 percent of wages if there is a difference between regular and actual working hours of workers in a recession. Second, overtime work, which literally means working in excess of regular working hours, can be reduced if the state of the economy is bad. It can be paid not only with money but also with vacation time.

Third, firms can temporarily reduce their regular working hours if they are under managerial hardship. The first case of temporarily reducing regular working hours can be seen in Volkswagen's conversion to a four-day workweek in 1993. Fourth, by the working time account system, the time value of the differences between workers' contracted and actual working hours are accumulated and settled within a certain period of time.

The working time account system is further subdivided into short-term accounts (*kurzeitkonten*), with settlement periods of less than one month to one year, and long-term accounts (*langzeitkonten*), with settlement periods of more than one year. The latter can be used after accumulating a considerable amount of working hours for personal purposes, such as for sabbatical, vocational education or early retirement. On the other hand, the main purpose of short-term accounts is to stabilize employment by adjusting regular working hours in the event of an economic recession.

In 1999, only 35 percent of workers used the working time account, but since then, the account utilization rate has increased as the amount of the time to save and the settlement period have increased. In 2009, 50 percent of workers used working time account, especially in the manufacturing sector and at large corporations (Zapf and Brehmer, 2010).

It is then necessary to determine whether the active labor market policy of flexible working hours played a positive role in stabilizing Germany's macroeconomic system during the global financial crisis. Taking an opposing view, Burda and Hunt (2011) argued that German companies did not have to cut employment during the global financial crisis because they were not confident about future economic conditions and did not actively increase employment during the economic upturn before the global financial crisis. They also pointed out that shortened working hours did not significantly contribute to reducing layoffs. In other words, although it is true that per-worker hours decreased significantly during the Great Recession, the decrease was proportional and unsurprising given the considerable decline in GDP of that crisis compared to previous ones.

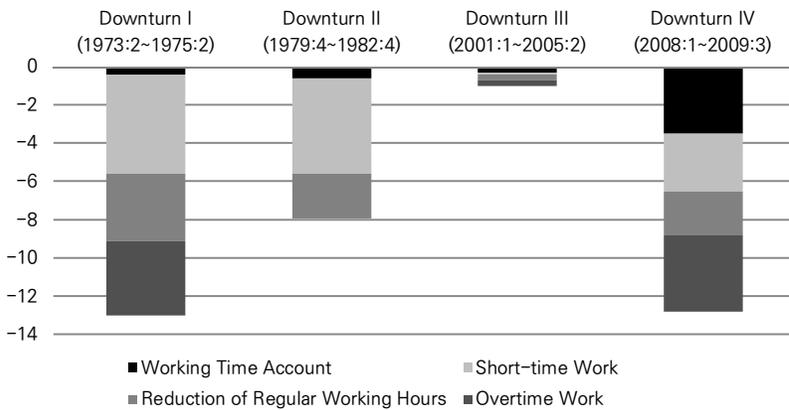
Möller(2010) also argues that the Hartz reforms had strengthened the German labor market such that the impact of the global financial crisis and the recessionary period that followed was ultimately inconsequential; it was able to recover immediately following the dissipation of those external shocks. Put simply, Möller pays more heed to the effect of the Hartz reforms on wage moderation than on measures for job security or flexible working hours. In a similar vein, Boysen-Hogrefe and Groll(2010) attributed the main reason for the stabilization of employment during the global financial crisis to restrained wage increases in the pre-crisis period.

On the other hand, comparing changes in labor market variables in the major post-1970 German recessions, Herzog-Stein et al.(2018) argued that, in almost every recession, changes in productivity per working hour contributed to labor hoarding, but it was only during the global financial crisis that we can observe the contribution from changes in working hours.

Herzog-Stein et al.(2018) compared Germany's past economic downturns with the four previously-described means of adjusting working hours in examining how they were specifically adjusted. As shown in Figure III-2, it was only during the global financial crisis(out of the four downturns analyzed) that the proportion of adjustment through working time accounts was significant(Herzog-Stein et al., 2018).

Another noteworthy aspect of the global financial crisis is the reduction in regular working hours. In fact, a major difference between the global financial crisis and other crises is the reduction of regular working hours and flexible working hours through the working time account, while the remaining two adjustments(short-time work and overtime work) reduced as much as before(Herzog-Stein et al., 2018).

Figure III-2. Operation of the German Flexible Working Hours during Downturns



Source: Herzog-Stein et al.(2018).

To sum up, the Hartz reforms are said to have widened the income gap by encouraging the use of short-term, low-wage labor and making employment relationships vulnerable. However, the pact for employment and industrial location served as a stabilizing force for the economy by ensuring both job security and enabling flexible working hours during economic downturns. In particular, during the global financial crisis, the temporary reduction of regular working hours and the adjustment of working hours through the working time account contributed greatly to stabilizing the German macroeconomy through active labor market policies.

Since Germany is a manufacturing-oriented country in which flexible working hours are centered on the manufacturing sector, the German case is worth studying for the future development of labor market policy in Korea, where like Germany exports of the manufacturing sector account for a large portion of GDP.

(2) Response of the Korean Labor Market

In the case of Korea, the macroeconomy stabilized relatively quickly following the global financial crisis. Hwang et al.(2010) maintains that work sharing policies played a positive role in stabilizing the situation. Korea's work sharing policies at that time could be classified as Type 1 in Table III-1, in which wages are reduced while employment is maintained. For example, public firms and large companies froze wage increases or reduced the starting salaries of new employees fresh out of college, and instead minimized adjustments through employment. Firms avoided sudden employment adjustments and workers made concessions through wage adjustments, evidence of a learning effect to avoid the high cost of mass layoffs during the East Asian crisis.

Korea's work sharing was mainly done with support from government policy, including tax benefits, exemptions from and suspensions of tax audits, preferential financial treatment for small businesses, an employment maintenance subsidy, a subsidy for the vocational training for firms that retained employees, support for workplace innovation and others(Uh et al., 2014).

However, Korea's work sharing policies during the global financial crisis exhibited some limitations. First, the government's role was asymmetrically large, in that work sharing was mainly performed through the use of incentives provided by employment maintenance subsidies.⁹ The employment maintenance subsidy, which is similar to Germany's short-time work policy, is essentially government support for wages and training expenses if employers do not fire workers and

⁹ The employment maintenance subsidy totaled 4,425 cases in 2007, but had increased tenfold to 44,190 in 2009(Uh et al., 2014).

instead utilize employment maintenance measures, such as temporary leave, training, and the redeployment of workers.

In Germany, however, not only short-time work but also both the reduction of regular working hours and the working time account contributed significantly to stabilizing the macroeconomic system immediately after the global financial crisis. However, these two measures are applicable when there exists mutual trust between labor and management, a feature of the co-determination system or the pact for employment and industrial location. These measures basically assume compensation when the company normalizes and profits increase. This trust is absent in Korean corporate culture. And it is especially hard to build these days, as the influence of labor unions wanes amid falling unionization rates. It is difficult to maintain a work sharing program that relies solely on government support without effort from workers and management(Uh et al., 2014).¹⁰

Second, due to a lack of means to actively adjust of working hours, the expected result of most collective bargaining between labor and management is concessions through wage adjustment. According to a survey conducted by Cho(2009), 24.6 percent of all surveyed businesses implemented wage-adjusting work sharing programs without working hours adjustments, while only 5.5 percent implemented work sharing programs with simultaneous adjustments for wages and working hours. In the same survey, 17.9 percent of all surveyed businesses and 38.3 percent of manufacturers answered that overtime was reduced, indicating a reduction in overtime pay and hence overall wage-adjustment. However, only 1.9 percent of businesses cut their regular working hours.

¹⁰ Due to the government's dominant role in the Labor-Management Civil Government Committee, it was not possible to have various forms of adjustment of working hours elicited from the negotiations between labor and management(Bae et al. 2011).

This is evidence of the difficulties in addressing the chronic problem of overlong working hours in Korea, which could be transformed into an employment creation work sharing program.

Finally, even as concession bargaining through wage adjustment, rather than quantitative flexibility, was feasible at public firms and large corporations, employment was still unstable for irregular workers and subcontractors under the structure of the dual labor market. They actually served as a buffer to reduce costs. While large corporations are likely to react to economic crises with wage adjustments utilizing their internal labor market, small and medium-sized companies are more likely to react by reducing the scale of employment. For example, Cho(2009)'s survey on work sharing by firm size shows that, the smaller the business, the lower the participation in the any work sharing programs and relatively weaker job adjustment capabilities.

Korea's work sharing program was also adopted by only a handful companies(some major conglomerates among them) and not by the manufacturing sector as a whole. However, it should be noted that, in Germany, a manufacturing powerhouse like Korea, various labor market reforms and social agreements began at automobile manufacturers such as Volkswagen and expanded to the overall manufacturing sector.

In the next section, we will try to address the problems described above by presenting directions for Korean labor market policies that can work in the event of an economic crisis. To this end, we will establish a macroeconomic model considering the specific peculiarities of the Korean economy and analyze the macroeconomic effects of changes in the labor market policies.

Theoretical Analysis of Macroeconomic Stability using a Two-sector (Manufacturing and Service) post-Keynesian Model

1. Literature Review

In this chapter, we build a two-sector post-Keynesian model for the Korean economy consisting of the manufacturing and service sectors to explore the effects of stabilization policies via the labor market. Using this model, we recommend directions for labor market policies (employment and wage policies) that can be deployed in the event of an economic crisis.

Post-Keynesian theory deals largely with the relationship between income distribution and economic growth in the long-run. The most well-known post-Keynesian model in this tradition is the Kaleckian model, which was developed by Rowthorn(1981), Dutt(1984) and Marlin and Baduri(1990). More recently, Lavoie and Stockhammer's ILO project has influenced pro-labor distribution policies in several countries, such as Korea's income-led growth policy(Lavoie and Stockhammer, 2012).¹¹

¹¹ As for the Korean literature using the Kaleckian framework, Kim(2008) and Hong(2014) show that declines in the labor income share dampened consumption after the 1997 East Asian crisis.

However, several criticisms of the Kaleckian model have been made within the post-Keynesian discourse. First, Skott(2017) pointed out that the Kaleckian model only considers the product market by excluding the labor market from the analysis, arguing that whether an economy is wage-led or profit-led is determined by the interaction between factors in the product market and labor market. In this respect, since the labor income share itself can be an endogenous variable affected by labor productivity, price, wages, and other factors, it is necessary to internalize the labor income share in the model to conduct a specific analysis of the labor market. However, the Kaleckian model abstracts away this analysis of the labor market by assuming the labor income share as exogenously given(Skott, 2017; Blecker, 2018).

Second, it has been pointed out that the Kaleckian model focuses on the growth effects of income distribution from a long-run perspective while it does not address short-run stability issues, another important measure in the assessment of macroeconomic performance. In the post-Keynesian tradition, macroeconomic stability issues in the labor market were mainly addressed by Goodwin(1967). In his canonical model, when an economy approaches peak employment, the labor income share tends to increase as workers' bargaining power is enhanced. Then, firms begins to reduce investment to contain workers' bargaining power, which results in economic downturn and higher unemployment. Once the unemployment rate hits a lower bound — which can be interpreted as the point when workers' bargaining power is weakest — firms will start increasing investment, initiating a new business cycle. The crux of this Goodwinian model is that the interaction between the la-

while increases in capital income share did not lead to increases in investments or net exports, which implies that the Korean economy shifted from a profit-led to a wage-led growth regime.

bor market and the product market creates the business cycle through investment.¹² Skott(1989) and Oh(2018) try to combine this supply-side Goodwin model with demand-side Kaldor model to analyze macroeconomic stability in an economy.

Since the basic Kaleckian model assumes that the labor income share is exogenous, depending on the degree of monopolization in an economy, it is difficult to examine the dynamic mechanism of the labor income share and its cyclical properties by internalizing it. That is to say, by decomposing it into its components. However, there exist a number of recent studies in the Kaleckian tradition addressing the labor market and macroeconomic stability issues, including Sasaki(2011), Sasaki, Sonoda, and Fujita(2013), Sasaki, Matsuyama, Sako(2013) and von Arnim and Barrales(2015).

A fundamental difference between the so-called Kalecki-Goodwin-based models and the Kaldor-Goodwin model in Skott(1989) is that former assume the Keynesian stability condition is satisfied, while the latter assumes Harrodian instability. This difference produces significantly different results regarding the stability of an economy, as we will see later.

To model the effects of Korea's work sharing policy, the following key features of the Korean economy must be reflected in the model. First, the centrality of manufacturing must be emphasized. The manufacturing industry not only has contributed to the growth of overall labor productivity, it has also played an important part in exports, which

¹² Unlike in mainstream economics, in which economic fluctuations are caused by exogenous shocks, in the Goodwin model(which can be thought of as an endogenous business cycle theory), fluctuations are generated through endogenous interactions between variables. In any endogenous business cycle theory, there is a factor that causes constant instability in the model. In the Goodwin model, it is class conflict in the labor market — wage negotiations — between capitalists and workers.

account for a large portion of Korea's total GDP. Second, the average wage in the manufacturing industry is also higher than in other industries, which means that, in addition to functional inequality between labor and capital income, there exists intra-group inequality in labor income between industries.¹³

Third, in Chapter 2, we showed that the share of income in manufacturing moves more procyclically(or less counter-cyclically) than in the service industries. Oh and Hong(2020) found that, in the manufacturing sector, employment(which constitutes the share of labor income) responds more procyclically over the business cycle. This suggests that among other things, it is necessary to ease the quantitative flexibility of manufacturing employment in order to stabilize the Korean economy, or make the share of Korean labor income more counter-cyclical.

Fourth, Oh and Hong(2020) also found that in Korea, wage volatility is weaker than employment volatility. This indicates that wage flexibility, an axis of functional flexibility, is not working properly in Korea in that the cyclical movements of wages has not been pronounced in either the manufacturing or the service industries.

In consideration of the above, we cannot adopt the regular Goodwin model — in which it is assumed that changes in bargaining power between labor and capitalists create economic fluctuations — since in Korea, wage changes are not significant and union organization rates are relatively lower than in other developed countries. In particular, since manufacturing and services exhibit different labor market characteristics and business cycle patterns, such an analysis would diverge

¹³ In general, wage levels are higher in the manufacturing industry. However, as was identified in Autor et al.(2017), the labor income share in the manufacturing sector is lower than in the service sector due to higher labor productivity in manufacturing, with a large number of superstar firms.

from reality if those differences are not properly taken into account. Therefore, after assuming two segments (manufacturing and service) in the labor supply, we construct a revised Goodwin model in which changes in labor productivity and wages cause economic fluctuations.¹⁴

Among the post-Keynesian models analyzing macroeconomic stability using a two-sector framework, Rowthorn (1981) divided the entire labor supply into direct and indirect labor. Following Rowthorn's framework given a lapse of time, Raghavendra (2006) separated the overall labor supply into operative and non-operative labor to address the relationship between changes in their composition and macroeconomic stability. Thereafter, Sasaki et al. (2013) revised Raghavendra's model to address labor market flexibility by dividing labor supply into irregular and regular labor.¹⁵

In this study, we modify and develop Sasaki et al. (2013)'s model by dividing the entire labor supply into manufacturing and service labor. It is also noteworthy that most two-sector (manufacturing and services) post-Keynesian models have dealt with economic growth, rather than macroeconomic stability (Lee and Ko, 2019).¹⁶

However, few studies have dealt with macroeconomic stability employing a two-sector model representing the manufacturing and service industries. If any, the ultimate stability of the economy would be determined by institutional conditions for wages and employment decisions

¹⁴ Despite using a one-sector model, Shah and Desai (1981) investigated the Goodwin cycle caused by changes in productivity, rather than changes in unemployment or wages.

¹⁵ In addition to these studies, the models in Ogawa (2018) and Dutt et al. (2015) models addressed the differences between the primary and secondary sectors in the dual labor market.

¹⁶ There are also studies dividing the economy into investment-goods producing and consumption-goods producing sectors. In this case, the relative proportion of the two sectors determines the growth of the economy, as the service sector affects consumption levels and the production sector affects investment, respectively (Kim and Lavoie, 2016; Kim and Lavoie 2017; Fujita, 2018).

in each sector via the interaction of the labor market and the product market. These points will be considered as we build the model in following section.

2. Model

To begin with, the production function is a fixed-input Leontief function, as shown below.

$$Y = \min\{uK, \frac{L_m}{\alpha(u)}, \frac{uL_s}{\beta}\}, \quad (4-1)$$

where K is capital, L_m is manufacturing labor, L_s is service labor, u is the capacity utilization rate, $\alpha(u)$ is the inverse of the labor productivity in the manufacturing sector and β/u is the inverse of the labor productivity in the service sector.

In the basic Kaleckian model, it is typically assumed that the labor utilization rate is fixed to imply no labor hoarding, which is one of the reasons for criticism that the Kaleckian model does not take account of the labor market analysis. Here, not only the capital utilization rate but also the utilization rate of both types of labor vary with the business cycle. This is because the behavior of labor hoarding should be reflected in the model in order to analyze work sharing. That is, the use of flexible working hours in the production process.

In the product market, it is assumed that workers consume their income(wages); only firms(capitalists) save their income (profits). Thus, the savings function for this economy is as follows.

$$g^s = s\pi u, \quad 0 < s < 1, \quad (4-2)$$

where s denotes the savings rate and π the profit share. Following Marglin and Bhaduri(1990), we assume that the investment function is a function of the capacity utilization rate (u) and the profit share (π).

$$g^d = g^d(u, \pi), \quad g_u^d, \quad g_\pi^d > 0 \quad (4-3)$$

As for the dynamics of the capacity utilization rate, which is a proxy variable for aggregate demand in the product market, the capacity utilization rate is adjusted as follows when there is excess demand or supply in the economy.

$$\dot{u} = \phi(g^d - g^s), \quad \phi > 0, \quad (4-4)$$

where ϕ is a parameter indicating the speed of adjustment in the product market.

Moving on to the labor market, the economy consists of the manufacturing and service sectors, and the equations (4-5) and (4-6) represent the supply of labor in each sector, respectively.

$$L_m = \alpha(u)Y, \quad 0 < \alpha(u) < 1 \quad (4-5)$$

$$L_s = \frac{\beta}{u}Y = \beta Y^F, \quad 0 < \beta < 1, \quad (4-6)$$

where Y^F is the potential GDP. The level of capital (Y^F/K) at the potential GDP is assumed to be a technically-fixed constant, one. Given so, the following relationship holds, which can induce the above equation (4-6) on the employment in the service sector.

$$u = \frac{Y}{K} = \frac{Y}{Y^F} \frac{Y^F}{K} = \frac{Y}{Y^F} \quad (\because \frac{Y^F}{K} = 1) \quad (4-7)$$

While manufacturing employment is proportional to GDP (Y), service employment is proportional to potential GDP (Y^F).¹⁷ Then, the ratio of employment in the two sectors becomes $L_m/L_s = \alpha(u)u/\beta$. As the economy expands, the proportion of manufacturing employment increases. During downturns the proportion of service employment increases.

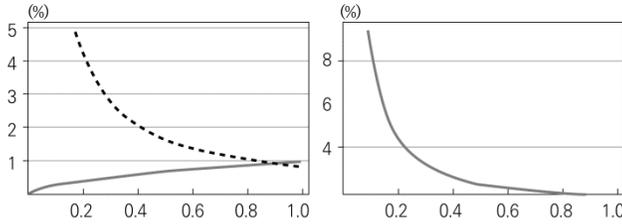
In particular, employment in the service industry is counter-cyclical. It is because $L_s = (\beta Y)/u$ and an increase(decrease) in the capacity utilization rate (u) will produce a decrease(increase) in service employment (L_s). More intuitively, service employment is counter-cyclical due to the government's use of fiscal policy during recessions, which increases the number of public sector jobs¹⁸ and due to unemployed manufacturing labor transitioning to self-employment.¹⁹ Figure IV-1 illustrates a numerical example showing the cyclical patterns of employment in the manufacturing and service industries.

¹⁷ Note that the model in Raghavendra(2006) set operative labor as being proportional to GDP, and non-operative labor proportional to potential GDP. Likewise, the model in Sasaki et al.(2013) model set non-regular labor as being proportional to GDP and regular labor proportional to potential GDP.

¹⁸ Modern Money Theory(MMT) also argues that automatic stabilizer would work if the government were to provide Job Guarantee (JG) program during recessions. The key here is to ensure the wages of the program be a uniform basic wage higher than private wages during recessions to prevent a sharp drop in aggregate demand and to design the jobs to be employable in the private sector during booms(Wray, 2012).

¹⁹ Flaschel and Greiner(2011) constructed a model considering the shift in the labor force within a dual labor market wherein first-tier(regular) workers move to the second-tier(non-regular) during recessions.

Figure IV-1. Numerical Examples of Manufacturing and Service Employment as Proportion of GDP(left) vs. Overall Employment as a Proportion of GDP(right)



Notes: The concrete functional forms for the numerical examples are $\alpha(u) = u^{0.6}$ and $\beta = 0.8$. In figure on the left, the solid line represents the proportion of manufacturing employment and the dashed line represents the proportion of service employment.

Thus average labor productivity (a) in the entire economy(the inverse of employment) is:

$$a = \frac{Y}{L_m + L_s} = \frac{1}{\alpha(u) + \beta/u} \tag{4-8}$$

As the capacity utilization rate (u) increases during economic expansion, manufacturing labor productivity ($1/\alpha(u)$) decreases, and service labor productivity (u/β) increases. The labor productivity of the overall economy initially increases but rate of increase gradually declines. At some point, labor productivity may exhibit negative growth depending on the relative sizes of service employment and manufacturing employment. However in our model we exclude this possibility, which reflects a reversal in the relative rates of labor productivity considering the centrality of manufacturing in the Korean economy: the proportion of manufacturing employment is assumed to always be smaller than the proportion of service employment. This assumption can also be justified since deindustrialization is underway in the Korean economy, in

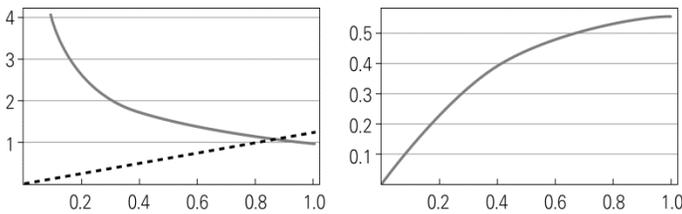
which manufacturing employment has peaked. This follows the general pattern of most developed countries.

Assumption 1

The proportion of employment (productivity) is smaller (bigger) in the manufacturing sector than in the service sector. In other words, $\alpha(u)u < \beta$ always holds.

This assumption is illustrated in the left panel of Figure IV-2, in which the economic fluctuations would occur in the left-hand section where labor productivity in the manufacturing and service sectors intersect.

Figure IV-2. Numerical Examples of Manufacturing and Service Labor Productivity(left) and Labor Productivity of the Overall Economy(right)



Notes: The concrete functional forms for numerical examples are $\alpha(u) = u^{0.6}$ and $\beta = 0.8$. In the left figure, the solid line represents manufacturing labor productivity and the dashed line represents service labor productivity

Moving on to wages in the labor market, in our model, the wage in the manufacturing sector is determined by collective bargaining while the wage in the service sector is subordinately determined as a ratio of the manufacturing wage. The ratio is less than unity so that the wage level of the service sector is lower than that of manufacturing.

$$\gamma w_m = w_s, \quad 0 < \gamma < 1, \quad (4-9)$$

where w_m is manufacturing wages, w_s is the service wage and γ is the ratio of service wages to manufacturing wages. For wage-determination in the manufacturing sector, a post-Keynesian model of conflicting claims was applied with some modifications. In general, the conflicting claims model consists of two functions on nominal wages and prices, each representing unions' claims on nominal wages based on their bargaining power and firms' mark-up pricing based on their monopoly power. The actual growth rate of real wages is determined by the interaction of these two behavioral functions (Rowthorn, 1977). The functions in the existing literature can be simplified as follows.

$$\frac{\dot{W}_m}{W_m} = A(\pi - \pi_w), \quad 0 < A < 1, \quad 0 < \pi_w < 1 \quad (4-10)$$

$$\frac{\dot{P}}{P} = B(\pi_f - \pi), \quad 0 < B < 1, \quad 0 < \pi_f < 1, \quad (4-11)$$

where P is the price level, W_m is the nominal wage in the manufacturing sector, A and B are the speeds of adjustment for nominal wages and prices, π_f is firms' target profit share and π_w is unions' target profit share. It is assumed that two target profit shares are determined identically by Tripartite Commission ($\pi_w = \pi_f = \pi^t$) because our research objective is to seek an alternative labor market institution based on social agreement. Thus, the law of motion for the real wage becomes:

$$\hat{w}_m = \hat{W}_m - \hat{P} = \theta(\pi - \pi^t), \quad \text{let } A + B = \theta, \quad \theta > 0, \quad (4-12)$$

where θ is the speed of adjustment for real wages. We can conjecture that this parameter will be a very small number since actual wage fluctuation is not that large in Korea (Oh and Hong, 2020).

Next, the agreed profit share is assumed to be a negative function of the capacity utilization rate.

$$\pi^t = \pi^t(u), \quad \pi' < 0 \quad (4-13)$$

Here, π' refers to the magnitude of the industrial reserve army effect, the ability of workers to ask for higher wages in wage negotiations based on their bargaining power, which is typically enhancing during an economic expansion when the number of unemployed workers who can replace existing workers is decreasing.

Then, the wage for the entire economy is equal to the average of manufacturing and service wages weighted by sectoral employment proportional to total employment.

$$w = \frac{L_m}{L} w_m + \frac{L_s}{L} w_s = \left[\frac{\alpha(u) + \gamma\beta/u}{\alpha(u) + \beta/u} \right] w_m \quad (4-14)$$

Although the wage level of the service sector is lower than that of the manufacturing sector, it is more heavily weighted than the manufacturing sector owing to the fact that there are more service employees than manufacturing employees. This is Assumption 1. In addition, since manufacturing employment is procyclical and service employment is counter-cyclical, the ultimate cyclicity of the overall wage depends on changes in the proportions or weight of employment in two sectors.

Finally, we can construct a dynamic system reflecting the features of the Korean economy. Using the equations (4-12), (4-13) and (4-14), we can derive the growth rate of the average real wage in the economy as below.

$$\frac{\dot{w}}{w} = \left[\frac{\alpha'(u) - \gamma\beta/u^2}{\alpha(u) + \gamma\beta/u} - \frac{\alpha'(u) - \beta/u^2}{\alpha(u) + \beta/u} \right] \dot{u} + \theta[\pi - \pi^t(u)] \quad (4-15)$$

Using equation (4-8), the growth rate of labor productivity can be determined by:

$$\frac{\dot{a}}{a} = - \frac{\alpha'(u) - \beta/u^2}{\alpha(u) + \beta/u} \dot{u} \quad (4-16)$$

We can see that the growth rate of labor productivity (4-16) also appears in the growth rate of real wages (4-15), which means that the changes in manufacturing and service labor productivity(employment) indirectly affect the weights of real wages. If so, the dynamic equation for the profit share ($\pi = 1 - (wL/Y) = 1 - (w/a)$) becomes (4-18)²⁰, and together with the dynamic equation for the capacity utilization rate (4-17), we can construct a two-dimensional dynamic system as follows:

$$\dot{u} = \phi[g^d(u, \pi) - s\pi u] \quad (4-17)$$

$$\begin{aligned} \dot{\pi} = -(1 - \pi)[\theta(\pi - \pi^t(u)) + \left(\frac{\alpha'(u) - \gamma\beta/u^2}{\alpha(u) + \gamma\beta/u} - \frac{\alpha'(u) - \beta/u^2}{\alpha(u) + \beta/u} \right) \dot{u} \\ - \frac{\alpha'(u) - \beta/u^2}{\alpha(u) + \beta/u} \dot{u}] \end{aligned} \quad (4-18)$$

We can now obtain the steady-state equilibrium of this dynamic system, satisfying $\dot{u} = \dot{\pi} = 0$. We can also easily prove that this equilibrium point (u^*, π^*) is a unique solution to this system (see Appendix). Next, we analyze the stability of this dynamic system.

²⁰ To induce the equation (4-18), we can use the law of motion, $\frac{\dot{\pi}}{1-\pi} = -\frac{\dot{w}}{w} + \frac{\dot{a}}{a}$.

3. Stability Analysis

We assume that the initial state of the two-dimensional dynamic system, (4-17) and (4-18), exists in a 'limit cycle' state, exhibiting 'local instability' and 'global stability'. This state can be understood to mean that the economy is in an unstable crisis situation. It is obvious to state that there is no need to discuss stabilization policies if the economy is stable.

For the analysis of the local stability around the steady-state equilibrium point, a Jacobian matrix can be constructed as equation (4-19) and equations (4-20) to (4-23) are the equations for each element of a matrix evaluated at the steady-state equilibrium point (u^* , π^*).

$$J = \begin{pmatrix} \frac{\partial \dot{u}}{\partial u} & \frac{\partial \dot{u}}{\partial \pi} \\ \frac{\partial \dot{\pi}}{\partial u} & \frac{\partial \dot{\pi}}{\partial \pi} \end{pmatrix} \quad (4-19)$$

$$J_{11} = \Phi[g_u^d(u^*, \pi^*) - s\pi^*] \quad (4-20)$$

$$J_{12} = \Phi[g_\pi^d(u^*, \pi^*) - su^*] \quad (4-21)$$

$$J_{21} = (1 - \pi^*)[\theta\pi^{\nu'}(u^*) - \left(\frac{\alpha'(u^*) - \gamma\beta/u^{*2}}{\alpha(u^*) + \gamma\beta/u^*} - \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*}\right)J_{11} + \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*}J_{11}] \quad (4-22)$$

$$J_{22} = -(1 - \pi^*)[\theta + \left(\frac{\alpha'(u^*) - \gamma\beta/u^{*2}}{\alpha(u^*) + \gamma\beta/u^*} - \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*}\right)J_{12} - \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*}J_{12}] \quad (4-23)$$

As to the sign of J_{11} , studies dealing with economic stability from a Kaleckian perspective generally assume that the Keynesian stability condition is satisfied ($g_u^d(u^*, \pi^*) < s\pi^*$) (Marlin and Bhaduri, 1990; Sasaki et al., 2013; von Arnim and Barrales, 2015). In other words, according to this view, since savings are more sensitive to economic fluctuations than investment, the economy tends to return to equilibrium point whenever it is out of equilibrium. On the other hand, studies from a Kaldorian perspective assume that Harroddian instability exists in the economy, which means that investment is more sensitive than savings ($g_u^d(u^*, \pi^*) > s\pi^*$). Thus, a Harroddian economy occupies a state of so-called 'knife-edge equilibrium' in which it drifts further and further away from equilibrium point once it gets out of the equilibrium (Skott, 1989).

The sign of J_{12} relates to the effects of changes in the distribution on the capacity utilization rate (aggregate demand). If $g_\pi^d(u^*, \pi^*) > su^*$ or $\partial \dot{u} / \partial \pi > 0$, a higher profit share results in a higher capacity utilization rate (more aggregate demand) and thus the economy can be seen as a profit-led demand regime. The opposite case would be known as a wage-led demand regime.

The sign of J_{21} represents the effect of changes in the capacity utilization rate on income distribution of the economy, and the sign of J_{22} relates to the stability of the labor market itself. The values of these elements are determined by the parameters of the labor and product markets and thus their signs are ambiguous. This ambiguity is due mainly to the factor commonly included in both elements, $\alpha'(u^*) - \beta/u^{*2}$, the difference between the rate of change in manufacturing employment on changes in the capacity utilization rate and that of service employment (evaluated at steady-state equilibrium). We assume that, in a manufacturing-centered economy with a large proportion of exports,

manufacturing employment is more sensitive to the capacity utilization rate than service employment.

Assumption 2

The rate of change in employment on changes in the capacity utilization rate is greater in the manufacturing sector than service sector. In other words, $\alpha'(u) > \beta/u^2$ holds.

The stability of this dynamic system is ultimately contingent on the nature of the economic regime in place, which is in turn decided by the stability condition in the goods market and the type of demand regime. The conceivable regimes are (1) a wage-led growth regime with Keynesian stability conditions being satisfied, (2) a profit-led growth regime with Keynesian stability conditions being satisfied and (3) a profit-led growth regime with Harrodian instability. The first and second regimes are mainly taken from the Kaleckian perspective whereas the third is considered seriously by the Kaldorian perspective.²¹ We will now examine each regime individually.

Regime 1: Wage-led Growth Regime with Keynesian Stability Condition Satisfied

In this case, the signs of J_{11} and J_{12} are negative. Then, the elements of the Jacobian matrix become:

$$J = \begin{pmatrix} - & - \\ ? & ? \end{pmatrix} \quad (4-24)$$

²¹ Note that Sasaki et al.(2013) analyzes only the first and second regimes from the Kaleckian perspective, excluding the case featuring Harrodian instability.

Before we analyze the dynamic property of this system at its steady-state equilibrium point (u^*, π^*) , we assume that the economy is initially in an unstable state (namely, a crisis situation). This is because the purpose of this study is to provide directions for policy interventions applicable to an unstable economy experiencing crisis or recession.

The conditions for local instability at the steady-state equilibrium point are positive trace and positive determinant of the Jacobian matrix. The determinant $(J_{11}J_{22} - J_{12}J_{21})$ and diagonal sum $(J_{11} + J_{22})$ of the Jacobian matrix are (4-25) and (4-26). The signs driven by the given assumptions are shown at the bottom of each term.

$$\text{Det}(J) = -(1 - \pi^*) \theta [J_{11} + \pi^{t'}(u^*)J_{12}] \quad (4-25)$$

$$\text{Tr}(J) = J_{11} - (1 - \pi^*)[\theta + \left(\frac{\alpha'(u^*) - \gamma\beta/u^{*2}}{\alpha(u^*) + \gamma\beta/u^*} - \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*}\right)J_{12} - \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*}J_{12}] \quad (4-26)$$

First of all, if the industrial reserve army effect — which is represented by the absolute value of $\pi^{t'}$ — is small, the sign of the determinant (4-25) becomes positive ($\text{Det}(J) > 0$), excluding the possibility that the equilibrium is a saddle point. Taking an example of an economic downturn, a small industrial reserve army effect leads to a small drop in wages (a large drop in profit share) when the capacity utilization rate falls.

In their empirical study, Oh and Hong(2020) estimated the effect of changes in output on the manufacturing wage. They obtain a small, insignificant coefficient, which suggests that the industrial reserve army effect in Korea is possibly very weak. Therefore, it is highly likely that the sign of the determinant will be positive.

As to the sign of trace (4-26), the first term, J_{11} , can be interpreted as the degree of (Keynesian) stability in the goods market. If the absolute value of this term is overwhelmingly large, the dynamic system is likely to converge to steady-state equilibrium. However, if γ in the second term of $[\bullet]$, which represents the interaction between the labor market and the goods market via distribution, is very small — in other words, the wage gap between the manufacturing and service sectors is large — trace will be positive ($\text{Tr}(J) > 0$) and hence the system will be unstable.²² See the equation (4-35) for a comparative static analysis of the effect of changes in γ on the value of $[\bullet]$.²³

In sum, since the conditions for local instability are met ($\text{Tr}(J) > 0$ and $\text{Det}(J) > 0$), this system is likely to exhibit a ‘limit cycle’. Thus, the following theorem can be proposed:

Proposition 1

If an economy is a wage-led growth regime with Keynesian stability conditions satisfied and the wage gap between the manufacturing and service sectors in this economy is large, the economy is likely to become unstable during a downturn.

Regime 2: Profit-led Growth Regime with Keynesian Stability Condition Satisfied

In this case, the sign of J_{11} is negative and the sign of J_{12} is positive. The signs of the elements in the Jacobian matrix are as below.

²² Looking at $\frac{\alpha(u^*) - \gamma\beta/u^{*2}}{\alpha(u^*) + \gamma\beta/u^*} - \frac{\alpha(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*}$, the first and second terms are exactly same with the exception of γ in the first term. Since γ has a value of between zero and one, the numerator of the first term is larger than that of the second term, whereas the denominator of the second term is larger than that of the first term. Therefore, the sign for entire term is undoubtedly positive.

²³ Note that $\alpha'(u^*) - \beta/u^{*2}$ is always positive under Assumption 2.

$$J = \begin{pmatrix} - & + \\ ? & ? \end{pmatrix} \quad (4-27)$$

Its determinant and trace are:

$$\text{Det}(J) = -(1 - \pi^*) \theta [J_{11} + \pi^{t'}(u^*)J_{12}] \quad (4-28)$$

$$\text{Tr}(J) = J_{11} - (1 - \pi^*)[\theta + \left(\frac{\alpha'(u^*) - \gamma\beta/u^{*2}}{\alpha(u^*) + \gamma\beta/u^*} - \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*} \right)J_{12} - \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*}J_{22}] \quad (4-29)$$

A saddle point equilibrium is automatically excluded because the sign of determinant (4-28) is unambiguously positive. As in the case of regime 1, the trace (4-29) of this dynamic system is likely to be stable if the absolute value of J_{11} (the degree of stability in the product market) is overwhelmingly large. However, if the last term in $[\bullet]$, which is the absolute value of the growth rate of labor productivity at steady-state equilibrium (4-16), overwhelms the values of the other terms whose signs are opposite, $[\bullet]$ will end up with a negative value and the economy will be unstable ($\text{Tr}(J) > 0$). More specifically, in Assumption 2, if manufacturing employment responds more to capacity utilization than service employment ($\alpha'(u) \gg \beta/u^2$), the economy becomes more unstable locally, which leads us to suggest the following proposition:

Proposition 2

If an economy is a profit-led growth regime with Keynesian stability conditions being satisfied, and manufacturing employment responds more to capacity utilization than service employment — in other words, if the degree of quantitative flexibility is higher in manufacturing employment than in service employment — than the economy is likely to become unstable during a downturn.

Regime 3: Profit-led Growth Regime with Harroddian Instability

In this case, the signs of J_{11} and J_{12} are positive.²⁴ The signs of the elements in the Jacobian matrix are as below.

$$J = \begin{pmatrix} + & + \\ ? & ? \end{pmatrix} \quad (4-30)$$

Its determinant and trace are:

$$\text{Det}(J) = -(1 - \pi^*) \theta [J_{11} + \pi^{t'}(u^*)J_{12}] \quad (4-31)$$

$$\text{Tr}(J) = J_{11} - (1 - \pi^*)\theta + \left(\frac{\alpha'(u^*) - \gamma\beta/u^{*2}}{\alpha(u^*) + \gamma\beta/u^*} - \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*} \right) J_{12} - \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*} J_{12} \quad (4-32)$$

The sign of the determinant (4-31) would be negative, which means that the equilibrium is a saddle point if the degree of the Harroddian instability (J_{11}) is large (that is, the goods market is unstable). If so, this system could develop into an unpredictable and unstable situation. However, this instability in the goods market can be curbed by the labor market. If the absolute value of $\pi^{t'}$ (the industrial reserve army effect) is large and the degree of profit-led is strong enough ($J_{12} \gg 0$) to dominate the degree of Harroddian instability (J_{11}), the sign of the determinant ultimately can be positive, which means that the possibility of saddle point equilibrium can be excluded. The large industrial reserve army effect means a large drop in wages (a small drop in profit share)

²⁴ In an economy with Harroddian instability, stabilizing investment is a top priority since investment reactions are very sensitive in the course of a business cycle. Thus, the demand regime under Harroddian instability is a profit-led growth regime. An economy with both a wage-led growth regime and Harrod instability cannot exist by definition.

when the capacity utilization rate falls during the economic downturn. However, based on the estimation in Oh and Hong(2020), it is highly likely that the industrial reserve effect in Korea is very small and the determinant will be negative without policy intervention. Therefore, if Harrodian instability occurs, a policy to mitigate the downward rigidity of real wages should be implemented.

Moving on to the trace (4-32), since J_{11} is positive, the dynamic system of this regime could be unstable. In addition, even if the last term in [•], which is the absolute value of the growth rate of labor productivity at the steady-state equilibrium point, overwhelms the values of the other terms whose signs are the opposite, [•] will end up with a negative value and the economy will be unstable ($\text{Tr}(J) > 0$). As we mentioned above in the discussion on regime 2, this is a case in which manufacturing employment responds more to capacity utilization than service employment. We can thus propose the following:

Proposition 3

An economy with a profit-led growth regime with Harrodian instability could encounter an unpredictable and unstable situation if the drop in the share of labor income is insufficient during an economic downturn. In addition, the economy is likely to become unstable when manufacturing employment responds more to capacity utilization than service employment.

In the next section, we will examine how an unstable dynamic system stabilizes when the parameters related to the work sharing policy are changed.

4. Comparative Static Analysis of Work Sharing Policies

In the discussion on the types of work sharing in Table III-1, we argued that during the 2008 global financial crisis, Korea's work sharing programs were centered on wage adjustments (reductions) mainly at public firms and large corporations. We alternatively focused on work sharing programs in Germany, which can be characterized by the simultaneous adjustment of working hours and wages. Thus, in this chapter, the policy parameters related to work sharing can be separated into those related to wage adjustment and those related to working hours adjustment.

In our model, the policy parameters associated with wage adjustment are the magnitude of the industrial reserve army effect (π') and the ratio of service wages to manufacturing wages (γ). Here, we can interpret γ as if it is the minimum wage, since not only are wage levels in the service sector lower than those in the manufacturing sector, a considerable number of self-employed subject to the minimum wage exist in the service sector.²⁵ Remember that, once the real wage of the manufacturing sector is determined by a social negotiation process, the real wage of the service sector is subsequently determined at a level discounted by γ in equation (4-9).

The policy associated with working hours adjustment during an economic crisis reduces the elasticity of manufacturing employment (labor productivity) with respect to the capacity utilization rate. From the equation (4-5), which is about the relationship between manufacturing employment and GDP, we can obtain the elasticity of manufacturing

²⁵ Sasaki et al. (2013) analyzed the minimum wage effect in its model by setting an upper bound for the profit share, which will contribute to mitigating the amplitude of business cycle fluctuations in an economy.

employment with respect to the utilization rate (Okun's coefficient) as follows.

$$\hat{Y} = \frac{\alpha(u)}{\alpha'(u)} + \hat{L}_m \quad (4-33)$$

Adjusting working hours or labor hoarding can be expressed by increasing the sensitivity of labor productivity to the capacity utilization rate, which corresponds to the first term on the right hand side of (4-33). Put another way, it reduces the sensitivity of employment to the capacity utilization rate, which is the inverse of the sensitivity of labor productivity ($\alpha'(u)/\alpha(u)$).

We conduct a comparative static analysis for changes in the three policy parameters mentioned above. As to the parameter for the magnitude of the industrial reserve army effect (π'), which is included in the determinant of our dynamic system, the effect of the change in this parameter on the size of the determinant is suggested in (4-34). Here, since π' is a value less than zero, we examine the effect of the change in its absolute value for π' (the strength of the industrial reserve effect).

$$\frac{d\text{Det}(J)}{d|\pi'|} = (1 - \pi') \theta J_{12} \quad (4-34)$$

In this case, the direction of change from the increase in the denominator will depend on the value of J_{12} . $\text{Det}(J)$ will fall if the economy is a wage-led growth regime; it will rise if the economy is profit-led growth regime. In other words, if the economy operates under a wage-led growth regime and the Labor-Management Civil Government Committee use a policy lowering manufacturing wages to reduce overall wage

levels in the event of an economic crisis²⁶, $\text{Det}(J)$ can be negative (which leads to the formation of saddle point equilibrium); this could plunge the economy into an unpredictable state. On the other hand, if the economy is under a profit-led growth regime with Keynesian stability condition being satisfied, the possibility of saddle point equilibrium is automatically excluded since $\text{Det}(J)$ is always positive. Thus, a policy intervention that lowers manufacturing wages is not required.

However, in a profit-led growth regime with Harrodian instability, a policy influencing the industrial reserve army effect can be very effective. In other words, even though the economy may face an unpredictable and unstable circumstance (a saddle point equilibrium) during an economic crisis, a labor market policy of wage adjustment can stabilize the economy by changing the sign of $\text{Det}(J)$.

Next, as to other policy parameters associated with wage adjustment, we can consider a policy to reduce the gap between manufacturing and service wages, that is, one increasing the parameter γ . Since γ is included in the trace, we can analyse the effect of the change in γ to the stability property of our dynamic system by exploring the sign of the following differential equations.

$$\frac{d\text{Tr}(J)}{d\gamma} = (1 - \pi^*) \frac{\beta}{u^{*2}} (\alpha(u^*) + \alpha'(u^*)u^*) J_{12} \quad (4-35)$$

In this case, the direction of change upon changes in γ will also depend on the value of J_{12} . $\text{Tr}(J)$ will fall if the economy is a wage-led growth regime; it will rise if the economy is a profit-led growth regime. Thus, a policy that reduces the wage gap between the manufacturing

²⁶ This will make the industrial reserve army effect more pronounced, leading to a further drop in the labor income share during a downturn.

and service sectors by raising the minimum wage is valid when the economy operates under a wage-led regime; it will destabilize a profit-led regime economy. In other words, a policy creating effective demand by raising the minimum wage while maintaining manufacturing wage levels can be considered when sluggish consumption persists amid a lack of private income during a long-term recession. On the other hand, it is not desirable to use a minimum wage policy during a downturn under a profit-led growth regime.²⁷

Moving on to the policy parameter associated with working hours adjustment, that is, reducing the elasticity of manufacturing employment with respect to the capacity utilization rate, we can see that the related parameters are included in the trace of the dynamic system. For the comparative static analysis, the trace can be reformulated in the following way.

$$\begin{aligned} \text{Tr}(J) = J_{11} - (1 - \pi^*)[\theta + & \left(\frac{\frac{\alpha'(u^*)}{\alpha(u^*)} - \frac{\gamma\beta}{\alpha(u^*)u^{*2}}}{1 + \frac{\gamma\beta}{\alpha(u^*)u^*}} - \frac{\frac{\alpha'(u^*)}{\alpha(u^*)} - \frac{\beta}{\alpha(u^*)u^{*2}}}{1 + \frac{\beta}{\alpha(u^*)u^*}} \right) J_{12} \\ & - \frac{\frac{\alpha'(u^*)}{\alpha(u^*)} - \frac{\beta}{\alpha(u^*)u^{*2}}}{1 + \frac{\beta}{\alpha(u^*)u^*}} J_{22}] \end{aligned} \quad (4-36)$$

$$= J_{11} - (1 - \pi^*)[\theta + [W - P]J_{12} - [P]J_{22}]$$

$$\text{where, } [P] = \frac{\frac{\alpha'(u^*)}{\alpha(u^*)} - \frac{\beta}{\alpha(u^*)u^{*2}}}{1 + \frac{\beta}{\alpha(u^*)u^*}}, \quad [W - P] = \frac{\frac{\alpha'(u^*)}{\alpha(u^*)} - \frac{\gamma\beta}{\alpha(u^*)u^{*2}}}{1 + \frac{\gamma\beta}{\alpha(u^*)u^*}} - [P]$$

²⁷ Of course, if wage inequality in an economy is severe, income redistribution through minimum wage increases can be implemented during economic expansion as well.

As can be seen in (4-36), the trace includes $\beta/(\alpha(u^*)u^*)$, the relative proportion of service employment to manufacturing employment at a steady-state equilibrium point. In the left graph of Figure IV-1, the cyclical fluctuation of this economy centered at the steady-state equilibrium point will take place within the left-hand side of the intersection of the two curves representing manufacturing employment and service employment. Importantly, the decline of the slope of the manufacturing employment curve at the steady-state equilibrium point ($\alpha'(u^*)$) is itself accompanied by a downward shift in the proportion of manufacturing employment ($\alpha(u^*)$).²⁸ Thus, a decline in the elasticity of manufacturing employment would result in an increase in the relative proportion of service employment and manufacturing employment at the steady-state equilibrium point ($\beta/(\alpha(u^*)u^*)$).

Taking into consideration these facts, the effect of change in the elasticity of manufacturing employment with respect to the capacity utilization rate on the size of the determinant can be separated into the effect on the module [P] in the last line of the determinant (4-36) and the effect on the module [W-P].

As for the module [P], considering the direction of changes in each component of module [P] as below, we can see that it will be positively affected by changes in the elasticity of manufacturing employment.

$$\frac{d[P]}{d(\alpha'/\alpha)} > 0 \quad (\because \frac{(\downarrow) - (\uparrow)}{(\uparrow)}) \quad (4-37)$$

²⁸ The elasticity of manufacturing employment with respect to the utilization rate at a steady-state equilibrium point ($\alpha'(u^*)/\alpha(u^*)$) falls since the drop in its numerator is greater than the drop in its denominator.

In the case of module [W–P], although both [W] and [P] parts fall together, the overall effect will be negative since [W] part falls less than [P] part due to the appearance of γ in [W], as shown below.

$$\frac{d[W - P]}{d(\alpha'/\alpha)} < 0 \quad (\because \frac{(\downarrow) - (\gamma \uparrow)}{(\gamma \uparrow)} - \frac{(\downarrow) - (\uparrow)}{(\uparrow)} \text{ and } \gamma < 0) \quad (4-38)$$

The ultimate direction of change in this policy exercise depends on the sign of J_{12} , which is contingent on the type of distribution regime (wage-led or profit-led growth regime) in place. If the economy is a wage-led growth regime, lowering the elasticity of manufacturing employment (α'/α) will make $\text{Tr}(J)$ bigger; the opposite will occur in a profit-led economy. In other words, if the economy is a profit-led growth regime, easing flexibility in manufacturing employment can be more helpful in stabilizing the macroeconomy.

Table IV-1. Directions of Labor Market Policies for Economic Crises

Regime	Wage Adjustments		Adjustment of Working Hours
	$ \pi' \uparrow$	$\gamma \uparrow$	$\alpha' / \alpha \downarrow$
(Regime 1) Keynesian Stability Condition + Wage-led Growth	Destabilizing	Stabilizing	Destabilizing
(Regime 2) Keynesian Stability Condition + Profit-led Growth	Not Necessary	Destabilizing	Stabilizing
(Regime 3) Harrodian Instability + Profit-led Growth	Stabilizing	Destabilizing	Stabilizing

Table IV-1 summarizes the results of the analysis in this chapter, providing directions for labor market policies that can be used in economic crises. First, an economic crisis in a wage-led growth regime with

Keynesian stability condition satisfied can be mainly due to a lack of domestic demand resulting from the sluggish consumption. In this case, the government can help the economy emerge from recession by raising the minimum wage and supporting the self-employed to reduce the wage gap between the manufacturing and service sectors.

Second, a crisis in a profit-led growth regime with Keynesian stability condition satisfied can be ascribed to difficulties in corporate investment due to falling profit margins, especially in the manufacturing sector. Some policy efforts for the manufacturing labor market may be effective as investment converges strongly to equilibrium because Keynesian stability condition is satisfied in the goods market. In this case, our theoretical analysis recommends a temporary reduction in firms' burdens by implementing work sharing programs to adjust working hours during the crisis. Of course, the government can subsidize the cost of these programs.

Finally, according to our theoretical model, if there exists Harroddian instability in an economy, the manufacturing industry can actively consider work sharing programs that adjust working hours and wages simultaneously. In the case of regimes 1 and 2 described above, one policy was sufficient, but the urgency of crises of this type requires an omnidirectional policy response that uses both wage flexibility and working time flexibility.

In the beginning of this chapter, we discussed the Kaleckian and Kaldorian approaches and their different views on the stability of an economy. Here, we take more practical stance by assuming that an economy in a crisis can satisfy either Harroddian instability or Keynesian stability depending on the characteristics of the crisis. Upon the diagnosis, the remedy suggested in Table IV-1 will be followed.

The current economic downturn in Korea(as of December 2019) is not a case in which Harrodian instability exists, such as in the East Asian financial crisis or the global financial crisis. Rather, it represents a case in which the economy operates under a profit-led growth regime with Keynesian stability condition satisfied, and thus one in which rebounding investment is the most important task. In this case, a policy to reduce the elasticity of manufacturing employment through work sharing is required. In the event that this crisis becomes aggravated and develops into a situation with Harrodian instability, the provision of an instrument enabling the simultaneous adjustment of wages and working hours(especially in the manufacturing sector) is required. In addition, a compensation mechanism, which can be activated during the subsequent upturn, must also be prepared in order to prevent wage adjustments from being abused in concession negotiations as they were during the global financial crisis.

Conclusion

Economic growth, which had recovered to the three-percent range by 2017, gradually declined due to worsening external conditions amid a global economic slowdown mainly resulting from the U.S.-China trade conflict in 2019 and the COVID-19 outbreak in 2020. Under these circumstances and historically-low base interest rates, the effectiveness of monetary policy is questionable. Fiscal policy is also constrained in that policies to stimulate the economy through investment in social overhead capital(SOC) and large-scale housing are difficult to actively employ owing to the current government's stance on real estate regulation. This study argues that labor market policies such as work sharing should be used in combination with other policy tools to overcome economic crises.

If the labor income share exhibits counter-cyclical movement over a business cycle, we can deduce that the labor market is stable. If it shows procyclical movement, this implies that some stabilizing policy measures are required. Hong(2011) argues that the share of labor income in Korea moves procyclically, unlike in other countries.

However, our findings in Chapter 2 produced somewhat different results. First of all, we found that in Korea the share of labor income is

mostly counter-cyclical, excepting a very short period between 1993 and 1997. Second, the share of labor income in the manufacturing sector was procyclical in the period between the East Asian economic crisis and the global financial crisis. Third, the share of labor income in the service sector exhibited procyclical movement before the global financial crisis and a counter-cyclical movement thereafter. In addition, the counter-cyclicity of the labor income share in the overall economy seems to be led by the service sector, since the service sector's moving correlation is located below that of the manufacturing sector.

We can categorize the work sharing program into two dimensions. In terms of objectives, there are work sharing programs for maintaining employment and those for creating employment. As an instrument, a firm can either adjust wages or adjust both working hours and wages. We exclude the employment-creating type of work sharing program from our discussion since they are designed to address long-term and structural issues and not problems that emerge in the short-run over business cycles, which is the focus of this study. The wage-adjustment/employment maintenance type of work sharing program can be seen in countries with a free market system and a flexible labor market. The best example of this program can be found in the bargaining between U.S. automakers and the UAW in the early 1980s. In addition, a number of Korean companies that employed the Anglo-Saxon flexible labor market model since the 1997 economic crisis also implemented this type of work sharing program. The best example of a work sharing program in which wages and working hours were simultaneously adjusted to maintain employment is evident in the collective bargaining between German automaker Volkswagen and its unions following deteriorating profitability in the early 1990s.

The German case in particular draws to our attention the fact that Germany is a manufacturing-oriented country in which flexible working hours have been instituted across a considerable part of the manufacturing sector. Since Korea has a similar industrial structure, we can refer to the German experience in establishing labor market policy during an economic crisis.

However, Korea's work sharing policies during the global financial crisis exhibited some limitations. First, the government's role was asymmetrically large, in that work sharing was mainly performed through the use of incentives provided by employment maintenance subsidies. In Germany, not only short-time work but also both the reduction of regular working hours and working time accounts contributed significantly to stabilizing the macroeconomic system immediately after the global financial crisis. Critically, the reduction of regular working hours and the working time account are systems based on mutual trust between labor and management.

Second, due to a lack of means to actively utilize adjustment of working hours, the expected result of most collective bargaining between labor and management in Korea is concessions through wage adjustment.

Finally, while concession bargaining through wage adjustment, rather than quantitative flexibility was feasible at public firms and large corporations, employment was still unstable for irregular workers and subcontractors given the structure of the dual labor market.

The policy suggestions for these three issues are as follows.

① From Western experience, the key element of work sharing is to establish a conflicting partnership between labor and management (Lee, 2019). Despite the existence of a social dialogue body known as Labor-Management Civil Government Committee in Korea, there have been

no serious discussions on how to build a conflicting partnership due to a long history of conflict in labor-management relations and a recent decline in union organization rates. The Committee's functionality is also not ideal owing to the fact that among interested groups, the government's influence through subsidies is enormous. In the same vein, so-called 'Gwangju-type jobs' planned and designed by the Labor-Management Civil Government Committee have encountered difficulties.

Therefore, it is necessary to establish systems such as the operation of working hours accounts or temporary reductions of regular working hours in crises through dialogues between labor and management. This will be the starting point for forming a conflicting partnership.

In particular, Korea recently implemented a 52-hour workweek to reduce total annual working hours and craft a better balance between work and leisure. Part of this flexible work-hour system for the 52-hour workweek is an 'annual leave savings system', which is similar in terms of content with working hours accounts in Germany. However, this system has not become an important element of a work sharing program that can respond to economic fluctuations. In other words, it is necessary to further develop working hours flexibility aspect of the 52-hour workweek system for it to become an employment-maintenance-type of work sharing program as well as employment-creation-type work sharing program(Table III-1).

② Above all, during economic expansion, there should be give-back bargaining that follows work sharing and wage concessions in the economic crisis. This will contingent on the degree of maturity in labor-management relations. A channel to promote smooth dialogue between labor and management should be restored as part of Korea's government-led attempts at stimulating robust social discourse to boost recov-

ery negotiations and thus accelerate growth through more equal distribution during periods of economic expansion. Nevertheless, in work sharing precedents set during the global financial crisis, give-backs were not made at the bargaining table following the end of the crisis since negotiations were beset not only by elements of labor-management conflicts but also by labor-labor conflicts, such as lower starting wages for college graduates, a peak wage system and other issues.

③ Particularly in the manufacturing industry, work sharing confers benefits to companies as well as employees, who are guaranteed employment. During the global financial crisis, export manufacturers in Germany was hit particularly hard by the crisis. However, those firms had incentives to keep their employees through work sharing, since the companies believed that their employees possessed firm-specific know-how(Möller, 2010). Maintaining and enhancing industry- and firm-specific skills will prove advantageous, as doing so can help firms secure competitiveness during subsequent upturns. When working hours are reduced during recessions, companies can induce employees to participate in vocational training.

References

- Autor, D., D. Dorn, L. F. Katz, C. Patterson, and J. Van Reenen(2017), "Concentrating on the Fall of the Labor Share", *American Economic Review*, 107(5), pp. 180~185.
- Bae, K. et al.(2011), "Working Hours Flexibility and Its Improvement Plan", *Policy Research* 2011-06, KLI, (in Korean).
- Blecker, R. A.(2018), "Wage-led Growth: Theory and Empirical Evidence", Presentation in the International Conference for the Korean Income-led Growth(June 29th, 2018).
- Botelho, V.(2018), *The Structure Shift of the Cyclicalty of the Labor Income Share for the Unite States*, Working Paper.
- Boysen-Hogrefe, J. and D. Groll(2010), "The German Labour Market Miracle", *National Institute Economic Review*, 214, pp. 38~50.
- Burda, M. C. and J. Hunt(2011), "What Explains the German Labor Market Miracle in the Great Recession?", NBER Working Paper, No. 17187.
- Cho, S.(2009), "Evaluation and Task of Work Sharing", *Monthly Labor Review*, August 2009, KLI, pp. 39~54(in Korean).
- Dutt, A. K.(1984), "Stagnation, Income Distribution and Monopoly Power", *Cambridge Journal of Economics*, 8, pp. 25~40.
- Dutt, A. K., S. Charles, and D. Lang(2015), "Employment Flexibility, Dual Labour Markets, Growth, and Distribution", *Metroeconomica*, 66(4), pp. 771~807.
- European Commission(2013), *Employment and Social Developments in Europe 2012*, European Commission.
- Fiebigler, B. and M. Lavoie(2019), "Trend and Business Cycle with External Markets: Non-capacity Generating Semi-autonomous Expenditures and Effective Demand", *Metroeconomica*, 70, pp. 247~262.
- Flaschel, P. and A. Greiner(2011), "Dual Labor Markets and the Impact of Minimum Wages on Atypical Employment", *Metroeconomica*, 62(3), pp. 512~531.
- Fujita, S.(2018), "Mark-up Pricing, Sectoral Dynamics, and the Traverse Process in a Two-sector Kaleckian Economy", *Cambridge Journal of Eco-*

- nomics*, 43(2), pp. 465~479.
- Gollin, D.(2002), "Getting Income Shars Right", *Journal of Political Economy*, 110(2), pp. 458~474.
 - Goodwin, R. M.(1967), "A Growth Cycle", In *Socialism, Capitalism, and Growth*, edited by C. Feinstein, Cambridge, U.K.: Cambridge University Press, pp. 54~58.
 - Gordon, R.(2010), "Okun's Law and productivity innovations", *American Economic Review*, 100(2), pp. 11~15.
 - Hassett, K. and R. Strain(2014), "Worksharing and Long-Term Unemployment", Center on Budget and Policy Priorities.
 - Herzog-Stein, A, F. Lindner, and S. Sturn(2018), "The German Employment Miracle in the Great Recession: The Significance and Institutional Foundations of Temporary Working-Time Reductions", *Oxford Economic Papers*, 70(1), pp. 206~224.
 - Hong, M.(2011), "The Cyclicalty of Labor Share in Korea", *Review of Social & Economic Studies*, 36, pp. 49~73(in Korean).
 - Hong, J.(2014), "The Effect of Changes in the Labor Share of Income on the Aggregate Demand in Korea: Application for Wage-led Growth Model", *Review of Social & Economic Studies*, 43, pp. 101~138(in Korean).
 - Hwang, S. et al.(2017), "Income Distribution and Economic Growth", Cooperative Projects Series, National Research Council for Economics, Humanities, and Social Science(in Korean).
 - Hwang, S. et al.(2010), "Economic Crisis and Employment", *KLI Report*(in Korean).
 - Jang, H. et al.(2016), "Exploring Alternative Labor Systems - Thirty Years Since 1987, the Structure and Dynamics of the Korean Labor System", *KLI Report*(in Korean).
 - Joo, S.(2017), "Korean Economic Problems from the Perspective of Consumption Propensity", *Review of Social & Economic Studies*, 53, pp. 105~131 (in Korean).
 - Kang, D. and S. Lee(2012), "Income growth imbalance between households and businesses in the Korean economy", *Issue Paper 2012-296*, KIET(in Korean).
 - Keynes, J. M.(1936), *The General Theory of Employment, Interest and Money*,

MacMillan.

- Kim, G.(2008), “Income Distribution and Economic Growth: A Kaleckian Macroeconomic Analysis”, *Journal of Korean Economic Development*, 14(1), pp. 151~66(in Korean).
- Kim, J. H. and M. Lavoie(2016), “A Two-sector Model with Target-return Pricing in a Stock-flow Consistent Framework”, *Economic Systems Research*, 28(3), pp. 403~427.
- ____ (2017), “Demand-led Growth and Long-run Convergence in a Neo-Kaleckian Two-sector Model”, *Korean Economic Review*, 33(1), pp. 179~206.
- Krugman, P.(2009), “Germany’s Job, Unemployment Miracle Can Teach the US”, *New York Times*, 17 November.
- Kum, J. et al.(2009), “A Study on the Self-employed Workers (I)”, *Policy Report 2009-03*, KLI(in Korean).
- Kum, J.(2013), “What to Learn from the German Labor Market?”, *Monthly Labor Review*, June 2013, KLI, pp. 75~88(in Korean).
- Lavoie, M. and E. Stockhammer(2012), “Wage-led Growth: Concept, Theories, and Policies”, *Condition of Work and Employment Series*, No. 41, ILO.
- Lavoie, M.(2016), “Convergence towards the Normal Rate of Capacity Utilization in Neo-Kaleckian Models: The Role of Non-Capacity Generating Autonomous Expenditures”, *Metroeconomica*, 67(1), pp. 172~201.
- Lee, S.(2019), *German Job Miracle*, Sahwepyongnon Academy.
- Lee, S. and M. Ko(2019), “A High Minimum Wage Rate, Employment, and Growth: A Two-Sector Model Analysis of Post Keynesian Theory of Growth and Distribution”, *Review of Social & Economic Studies*, 58, pp. 103~131(in Korean).
- Marglin, S. and A. Bhaduri(1990), “Profit Squeeze and Keynesian Theory”, in Marglin, S., Schor, J.(Eds), *The Golden Age of Capitalism: Reinterpreting the postwar Experience*, Clarendon Press, Oxford, pp. 153~186.
- Ministry of Economy and Finance(2020), “National Fiscal Management Plan: 2019~2023”, JInhan M&B(in Korean).
- Möller, J.(2010), “The German Labor Market Response in the World Recession: De-mystifying a Miracle”, *Zeitschrift für Arbeitsmarktforschung*, 42(4), pp. 325~336.

- OECD(2010), *Employment Outlook 2010: Moving beyond the Jobs Crisis*, OECD.
- _____(2015), *The Labour Share in G20 Economies*, OECD.
- _____(2019), *Public spending on labour markets (indicator)*, OECD.
- Ogawa, S.(2018), "Dynamic Analysis of a Disequilibrium Macroeconomic Model with Dual Labor Markets", MPRA.
- Oh, J.(2018), "Macroeconomic Stability in a Flexible Labor Market", *Metroeconomica*, 69(3), pp. 655~680.
- Oh, J, and S. Hong(2020), "Cyclicality of Labor Income Share and Stabilizing the Macroeconomy", *Review of Social & Economic Studies*, 63, pp. 103~132(in Korean).
- Raghavendra, S.(2006), "Limits to Investment Exhilarationism", *Journal of Economics*, 87(3), pp. 257~280.
- Rowthorn, R. E.(1977), "Conflict, Inflation and Money", *Cambridge Journal of Economics*, 1(3), pp. 215~239.
- _____(1981), "Demand, Real Wages and Economic Growth", *Thames Papers in Political Economy*.
- Sasaki, H.(2011), "Conflict, Growth, Distribution, and Employment: A Long-run Kaleckian Model", *International Review of Applied Economics*, 25(5), pp. 539~557.
- Sasaki, H., J. Matsuyama, and K. Sako(2013), "The Macroeconomic Effects of the Wage Gap between Regular and Non-regular Employment and of Minimum Wages", *Structural Change and Economic Dynamics*, 26, pp. 61~72.
- Sasaki, H., R. Sonoda, and S. Fujita(2013), "International Competition and Distributive Class Conflict in an Open Economy Kaleckian Model", *Metroeconomica*, 64(4), pp. 683~715.
- Shah and Desai(1981), "Growth Cycles with Induced Technical Change", *Economic Journal*, 91, pp. 1006~1010.
- Shao, E. and P. Silos(2014), "Accounting for the Cyclical Dynamics of Income Shares", *Economic Inquiry*, 52(2), pp. 778~795.
- Skott, P.(1989), "Effective Demand, Class Struggle and Cyclical Growth", *International Economic Review*, 30(1), pp. 231~247.
- _____(2017), "Weakness of 'Wage-led Growth'", *Review of Keynesian Econom-*

- ics*, 5(3), pp. 336~359.
- _____(2019), "Autonomous Demand, Harrodian Instability and the Supply side", *Metroeconomica*, 70, pp. 233~246.
 - Son, M. et al.(2009), "Work Sharing Programe During Depression", *SERI Research Paper* No.3(in Korean).
 - Uh, G. et al.(2014), "Work Sharing Policy: Present and Future", Research Institute of Federation of Korean Trade Unions(in Korean).
 - Wray, L. R.(2012), *Modern Money Thoery*, Palgrave Macmillan.
 - von Arnim, R. and J. Barrales(2015), "Demand-driven Goodwin cycles with Kaldorian and Kaleckian features", *Review of Keynesian Economics*, 3(3), pp. 351~373.
 - Zapf, I. and W. Brehmer(2010), "Flexibilität in der Wirtschaftskrise", *IAB Kurzbericht*, 22, 2010.



Appendix



Appendix

Proof of the Existence of Unique Solution for the Dynamic System

Two-dimensional dynamic system in Chapter 4 is as follows.

$$\dot{u} = \varphi[g^d(u, \pi) - s\pi u]$$

$$\dot{\pi} = -(1 - \pi)[\theta(\pi - \pi^t(u)) + \left(\frac{\alpha'(u) - \frac{\gamma\beta}{u^2}}{\alpha(u) + \frac{\gamma\beta}{u}} - \frac{\alpha'(u) - \frac{\beta}{u^2}}{\alpha(u) + \frac{\beta}{u}}\right) \dot{u} - \frac{\alpha'(u) - \beta/u^2}{\alpha(u) + \beta/u} \dot{u}]$$

Since the steady-state equilibrium point (u^*, π^*) should satisfy $\dot{u} = \dot{\pi} = 0$, and, labor income share cannot be zero ($\pi \neq 1$) in the second equation, $[\cdot]$ must be zero. Therefore, the solution satisfies the following two equations is the unique solution of this dynamic system.

$$g^d(u^*, \pi^*) = s\pi^* u^*$$

$$\pi^* = \pi^t(u^*)$$