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Stabilizing the Macroeconomy with Labor Market Policies*

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This paper argues that active labor market policies such as work sharing programs should be implemented to stabilize the Korean economy. Using a two-sector post-Keynesian model consisting of manufacturing and services, we identified three directions for labor market policy applicable during a crisis. Under a wage-led demand system with a Keynesian stability condition satisfied, government can reduce the wage gap between the manufacturing and service sectors. Under a profit-led demand regime with the Keynesian stability, it is possible to implement a work sharing program centered on manufacturing. If Harrodian instability exists, the simultaneous adjustment of both wages and working hours focused on manufacturing can be considered. The last direction may be suitable for the Korean economy since the stabilizing forces taming Harrodian instability, such as exports and government expenditure, became less autonomous after the 2008 global financial crisis.

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I. Introduction

During a crisis, we naturally consider aggregate demand policies, such as fiscal or monetary policies, as a remedy. Nonetheless, these policy tools are encumbered by some constraints at times. To combat deflation, an expansionary monetary policy may be inappropriate when the base interest rate is historically low and lowering it further may even prove ineffective. In the depths of a recession, fiscal policy proves

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to be a more potent tonic than monetary policy. However, government can be hesitant to institute policies featuring investment in social overhead capital and large-scale housing to stimulate the economy owing to, among other things for example, its stance on the regulation of real estate speculation.

This study suggests that implementing active labor market policies, alongside demand management policies, may be effective in reversing the effects of a crisis.[1] The active labor market policies in this paper refers to work sharing programs, policy tools for maintaining or creating employment during a recession or structural high unemployment situation.

The use of active labor market policies was particularly critical during the global financial crisis of 2008. For example, the German economy experienced a prompt recovery by implementing previously established work sharing programs. Both the OECD (2010) and European Commission (2013) have also suggested that active labor market policies considerably accounted for the remarkable German recovery during and after the Great Recession.

In Korea, work sharing programs were introduced during the global financial crisis. Firms tried avoiding sudden adjustments in employment while workers made concessions through wage adjustments, a hard-earned lesson from the high cost of mass layoffs during the Asian financial crisis of 1997. However, work sharing programs were adopted by only a small number of public and large corporations, but did not reach a significant proportion of the economy like that of Germany (Cho, 2009; Uh et al., 2014). This paper will address some limitations of Korea's work sharing policies and identify future directions for these policies in the context of the Korean economy.

For this purpose, this paper adopts a post-Keynesian approach developed from John Maynard Keynes' and Michal Kalecki's idea that effective demand is a decisive factor in economic performance.[2] According to post-Keynesian economists, shifts in the distribution of income affect aggregate demand since expenditure propensities differ between capitalist and working classes. New Keynesian economists agree that the economy is demand-led in the short-run.[3] However, post-Keynesian economists diverge from this and asserting that the economy is demand-led both in the short

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[1] Under an "active labor market policy", government is responsible for employment. However, under a "passive labor market policy", it is instead responsible for unemployment. 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, etc., while passive labor market policies include unemployment benefits and assistance, etc.

[2] Keynes (1936) conceptualized this idea as a "paradox of thrift" which is the negative effect of a higher propensity to save on the level of output. Similarly, Kalecki (1969) used the term, "paradox of costs" to describe the situation when a decrease in real wages fails to raise the profits of firms.

[3] Using a New Keynesian dynamic stochastic general equilibrium (DSGE) model, Kim and Lee (2016) showed that demand shocks in the Korean economy play non-negligible roles in fluctuations of GDP and unemployment.

and long-run. Using a post-Keynesian model therefore coincides with our research purpose since we will discuss structural and institutional change for the labor market focusing on the work sharing policies which affect income distribution and, thus, the size of aggregate demand in the economy.

Particularly, we establish a post-Keynesian model in which the entire economy is divided into manufacturing and service sectors, given that the former is the backbone of the Korean economy. On one hand, the manufacturing sector has contributed to the growth of overall labor productivity and also played an important role in exports, accounting for a large portion of Korea's total GDP. On the other hand, the service sector mostly consists of the self-employed whose wages and productivity are lower compared to those in the manufacturing sector.

Among the two-sector post-Keynesian models, Sasaki, Sonoda, and Fujita (2013) address labor market flexibility by dividing labor supply into irregular and regular labor. For our purposes, we modified Sasaki, Sonoda, and Fujita (2013)'s model by dividing the entire economy into manufacturing and service sectors. Using this model, we examine labor market policies intended to reduce the amplitude of economic fluctuations.

Following this theoretical analysis (and on a case-by-case basis), we elicit three possible work sharing policies that can be deployed during an economic crisis. Among them, the case with the existence of the Harrodian instability is most plausible for the Korean economy because the stabilizing forces taming Harrodian instability, such as exports and government expenditures, became less autonomous after the global financial crisis. Here, the simultaneous adjustment of both wages and working hours focused on manufacturing can be considered to have mitigated macroeconomic turmoil.

The remainder of this paper is organized as follows. Section 2 provides a case study on the types of work sharing programs and discusses the importance of these programs during the recovery process of the global financial crisis. Section 3 constructs a two-sector post-Keynesian model consisting of the manufacturing and service sectors to explore the effects of stabilization polices through the labor market. Finally, Section 4 discusses some implications for future policy directions.

II. Work Sharing During Economic Crises

2.1. Types and Cases of Work Sharing Programs

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). Generally, this includes a reorganization of the shift

work system, closure, leaves of absence, educational leave, and salary peaks for senior employees (Cho, 2009).

Son (2009) categorized work sharing types based on the classifications of the Japanese Ministry of Health, Labor and Welfare shown in Table 1. Because this classification of work sharing has been used in several studies (Hwang et al., 2010; Uh et al., 2014), we will proceed with our discussion using this bidimensional classification where "purposes" are divided into either employment maintenance or employment creation, while "means" are subcategorized into either wage reductions or simultaneous adjustment of both working hours and wages.

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". Meanwhile, employment creation is "the case of hiring additional workers, taking advantage of reduced costs (due to wage reductions) or shortened working hours for each employee" (Uh et al., 2014). As a result, four different types of work sharing are presented herein.

[Table 1] Types of Work Sharing

	Wage Adjustment (Reduction)	Simultaneous Adjustment of Working Hours and Wages
Employment Maintenance	**(Type 1)** U.S. automakers in the early 1980s and UAW; many Korean companies after 1997	**(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 (2009); Hwang et al. (2010).

Type 1 is found in countries with so-called "free market economies", where social agreements for work sharing remain undeveloped due to layoffs and re-hirings being relatively unrestricted. Thus, concessions in wages (rather than in employment) have been common practice at the negotiating table during recessions. A best example of this is the "short-time compensation" in the U.S. which has existed since the 1980s. To retain workers and freeze or cut their wages, firms actively utilize unemployment insurance provided by the state. Rather than lay off workers, firms have all workers take unpaid leave on a specified day (called furlough days); workers then receive unemployment insurance benefits in proportion to their lost working hours.

In fact, Type 1 originated from 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 shrinkage in US auto production due to the rise of Japanese automakers, workers wanted to maintain employment even if wages were reduced. Thus, the UAW signed a concession deal with Chrysler

in January 1980 to abolish paid leave and freeze wages. By early 1982, Ford and GM won similar concessions from the UAW.

Type 2 can be observed in some European countries with strong labor unions and high costs for adjusting employment. These countries tend to secure internal flexibility by making working hours more flexible during economic downturns. The best example is the collective bargaining which occurred between Volkswagen and its unions in the early 1990s upon deteriorating profitability. 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%, although the total annual income of workers decreased by just 16%. This negotiation agenda was drawn up by Peter Hartz, Volkswagen's director of human resources. Hartz would later advise German chancellor Gerard Schroder on a series of labor market reforms which eventually became well-known as the Hartz reforms.

The work sharing policy implemented by public and large corporations in Korea during the global financial crisis exemplifies Type 3. As a result of a social compact represented by the Labor-Management Civil Government Committee, the Korean government expanded the amount of the employment maintenance subsidy along with 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, and the expansion of youth internships.

For Type 4, examples include the 1982 Wassenaar Agreement of the Netherlands which aimed at stabilizing the economy and addressing unemployment. The agreement stipulated that unions would accept reductions in wages and working hours in return for the company providing additional part-time regular jobs.

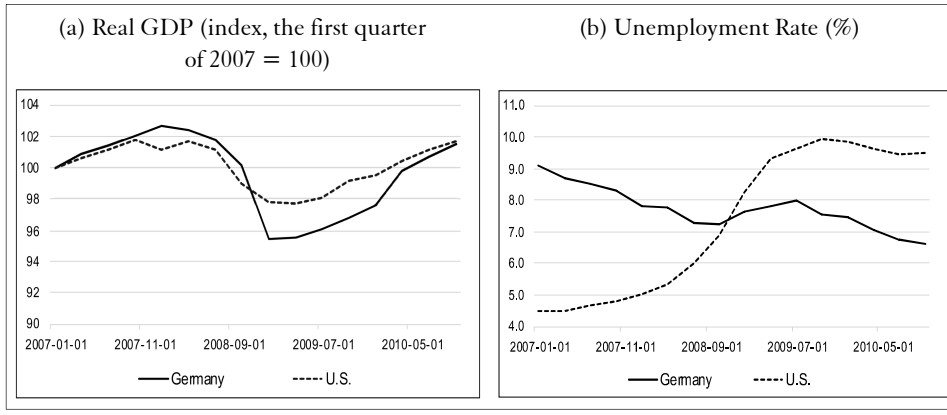
This type of work sharing could be useful if there is a social need for temporary work in a dual-income model where the rate of women's participation in the economy is increasing due to changes in the overall structure of the labor market caused by low birth rates and an aging population. This is known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

The current study will focus on employment maintenance given that its main goal is to provide directions for employment and wage policies which can withstand any economic crisis or recession. Thus, among the four types of work sharing, Types 3 and 4 will be excluded from the discussion as they are designed to stimulate employment to solve structural problems such as demographic change, but do not directly address economic fluctuations. The following section discusses how the German labor market, invoking Type 2, responded to the 2008 global financial crisis.

2.2. Work Sharing Program in Germany

The importance of active labor market policies has been highlighted over the course of the global financial crisis, particularly due to the rapid recovery of the German labor market, which has been referred to as the "German job miracle" (Krugman, 2009; Möller, 2010). Some studies have suggested that Germany's active labor market system played a major role in stabilizing the macroeconomy during that period (OECD, 2010; European Commission, 2013).

[Figure 1] Germany and U.S. Macroeconomies During the Great Recession



Source: Federal Reserve Economic Data (FRED).

As Figure 1 shows, Germany's real GDP fell more than 6% from its peak in the first quarter of 2008, reaching its trough in the third quarter of 2009— a significant drop compared to contractions of 4.2 percent in the United States and 5.5 percent (on average) in European countries. However, the German labor market quickly stabilized: not only had the total number of employees increased, but the unemployment rate was even lower compared to the rates before the crisis.

To understand the success of the German labor market during the global financial crisis, it is necessary to understand how the German labor market system has operated in past economic crises.

Due to the Hartz reforms, the German collective bargaining system exhibited what is called "*reguliete dezentralisierung*" (regulated decentralization). The comprehensive nature of collective agreement at the industry level— which had had a unified discipline of working conditions and wages in an industry— weakened while the proportion of firm-level agreements increased (Lee, 2019). Put differently, the Hartz reforms bear similarities to the increasing flexibility of the Korean labor market since the 1997 Asian financial crisis. However, the German co-determination system and pact for employment and industrial location constitute salient differences.

The co-determination system contributed to rapid economic growth in the postwar period, social integration after reunification in the early 1990s, and the recovery of Germany's international competitiveness after the global financial crisis. Due to the co-determination system in particular, Germany's labor losses from strikes and disputes have remained very low despite the existence of 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. To overcome the crisis in the automotive industry since the mid-1990s, the pact called for management to provide job creation and job stability in return for unions' cooperation with management in measures to strengthen industry competitiveness. Most importantly, the pact enabled the flexible use of working hours. As this pact spread from Volkswagen to the larger German automobile industry, schemes for making working hours more flexible were introduced.

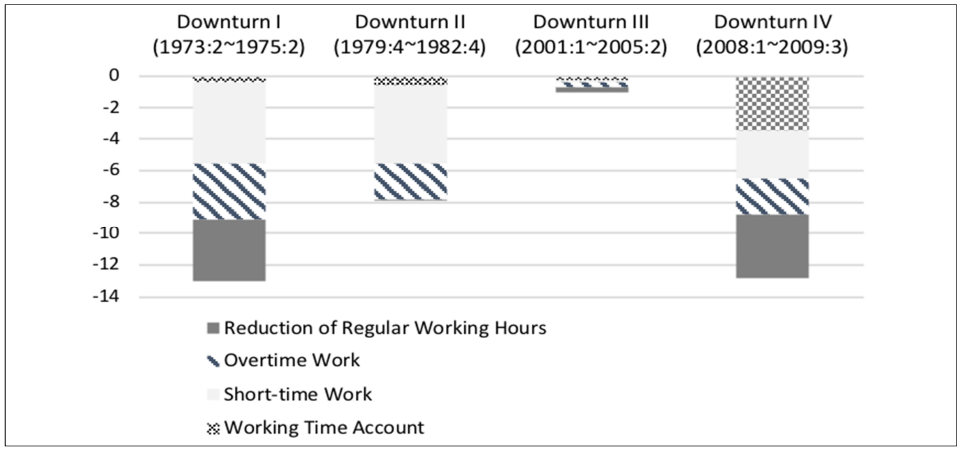
Because of these institutional legacies, the operation of the German flexible working hours system eventually had four main schemes: short-time work, overtime work, temporary reduction of regular working hours through collective bargaining, and working time accounts.

First, short-time work was introduced in the 1920s and has since undergone several revisions. Currently, the government subsidizes 60% of wages if there is a shortfall between regular and actual working hours of workers in a recession. Second, overtime work, which literally means working beyond regular working hours, can be reduced in economic downturns. Aside from cash, it can be paid for with vacation time. Third, firms can temporarily reduce their regular working hours if they are under economic distress. Fourth, following the working time account system, the time value of the differences between workers' contracted and actual working hours accumulate and are settled within a certain period of time.

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 need to cut employment during the global financial crisis because they had not been confident about long-term future economic conditions and had not actively increased employment during the economic upturn before the global financial crisis. For them, although it is true that per-worker hours significantly decreased during the Great Recession, this decrease was proportional and unsurprising given the considerable decline in GDP during the global financial crisis compared to previous ones. Möller (2010) and Boysen-Hogrefe and Groll (2010) also argued that the Hartz reforms had strengthened the German labor market to the point that the impact of the global financial crisis and the subsequent recessionary period were ultimately inconsequential. Essentially, Möller emphasizes the effect of the Hartz reforms on wage moderation compared to

measures for job security or flexible working hours.

[Figure 2] Operation of the German Flexible Working Hours during Downturns



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

Meanwhile, 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 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. Another noteworthy aspect of the global financial crisis is the reduction in regular working hours. Thus, 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 and overtime works) decreased as much as other crises.

In sum, 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. Particularly, 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.

Because Germany is a manufacturing-oriented country where flexible working hours are centered on the manufacturing sector, the case of Germany is worth studying for the future development of Korean labor market policies where, similar to Germany, exports of the manufacturing sector account for a large portion of its GDP. The following section provides a model which emphasizes the centrality of manufacturing to reflect this key feature of the Korean economy.

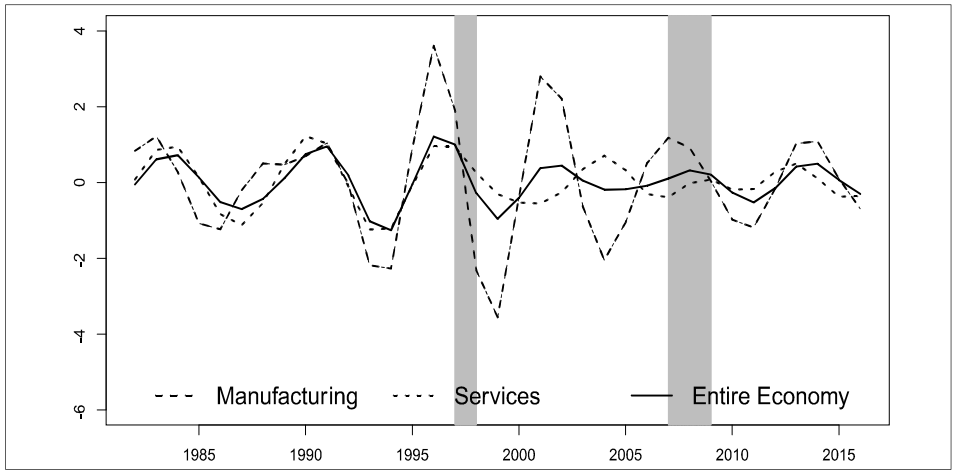
III. Two-sector post-Keynesian Model for Stability Analysis

3.1. Sectoral Cyclicality of Korean Labor Income Share

In this section, a two-sector post-Keynesian model consisting of the manufacturing and service sectors was constructed to explore the effects of stabilization polices via the labor market. Using this model, we recommend directions for labor market policies (employment and wage policies) to be deployed during times of economic crises.

Before constructing the model, different cyclical patterns of labor income share in manufacturing and service sectors must be discussed. The goal of a Keynesian stabilization policy during recession is to prescribe the policy so that effective demand does not fall and rebound. If the share of labor income increases during a downturn or exhibits counter-cyclical movement, we can interpret this as the stable operation of the labor market. If the share of labor income moves procyclically, stabilizing policies will be needed to make it less procyclical or counter-cyclical.[4]

[Figure 3] Cyclical Components of Korean Labor Income Shares (1982-2016)



Notes: All series represent annual data which can be obtained from the Bank of Korea; shaded areas represent the Asian financial crisis (1997-1998) and the global financial crisis (2007-2009).

[4] The literature suggests 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). This counter-cyclicality 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.

To check the cyclicality of the share of labor income, we examined cross-correlations between real GDP and labor income share.[5] This cross-correlation analysis was conducted for the manufacturing sector, service sector and entire economy. To extract the cyclical components, we used the Christiano-Fitzgerald (CF) filter where 4 and 8 are set as the minimum and maximum periods of the stochastic cycles. Figure 3 shows the cyclical components of the share of labor income for the manufacturing (dashed line), services (dotted line), and the entire economy (solid line). Table 2 summarizes the results of cross-correlation analyses. Note that post-1999 data are applied for the cross-correlation analyses considering the structural changes after the Asian financial crisis.

[Table 2] Cross-Correlation Between Cyclical Components of Real GDP and Labor Income Share (1999 – 2016)

	Standard Deviation	Lags and Leads								
		-4	-3	-2	-1	0	1	2	3	4
Manufacturing	1.51	-0.18	-0.51	-0.34	0.35	0.79	0.08	-0.55	-0.44	0.13
Services	0.37	-0.24	0.43	0.70	0.21	-0.47	-0.56	-0.03	0.34	0.18
Entire Economy	0.39	-0.36	-0.25	0.09	0.44	0.45	-0.23	-0.50	-0.20	0.22

First, manufacturing sector's labor income share is strongly correlated with output contemporaneously since the largest correlation is 0.79 at lag 0. This procyclicality seems to exert a strong influence on the entire economy whose cross-correlation result parallels that of manufacturing. Meanwhile, in the service sector, labor income share is modestly procyclical and lags behind output fluctuations.

Second, from the standard deviation in Table 2, we found that the labor income share in manufacturing is more volatile compared to services. This indicates the possibility that in manufacturing, employment or wages (or both) changed in a direction which further destabilized the economy.

These observations suggest that active labor market policies for the Korean economy are particularly essential in the manufacturing sector whose labor income share is relatively procyclical compared to the service sector. This sectoral difference also justifies adopting a two-sector framework in the theoretical analysis below.

3.2. Literature for Two-sector post-Keynesian Model

The most well-known post-Keynesian model is the Kaleckian model which was developed by Rowthorn (1981), Dutt (1984), Marglin and Bhaduri (1990) and Lavoie and Stockhammer (2012). However, several criticisms of the canonical

[5] Shares of labor income are measured by the Bank of Korea's method. Shares of sectoral labor income can be obtained by dividing employee income by factor income for each sector.

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. Hence, because 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.

Second, the canonical Kaleckian model focuses on the growth effects of income distribution while ignoring stability issues, which are another important measure in assessing macroeconomic performance. In the post-Keynesian tradition, macroeconomic stability issues were addressed mainly by Goodwin (1967). In his model, when an economy approaches peak employment, the labor income share tends to increase as workers' bargaining power becomes enhanced. Subsequently, firms begin to reduce investment to confine workers' bargaining power, thereby resulting in economic downturn and higher unemployment. Once the unemployment rate hits a lower bound— which can be interpreted as the point where workers' bargaining power is weakest— firms start increasing investment, thus initiating a new business cycle. The crux of the Goodwin model is that the interaction between the labor market and the product market creates the business cycle through investment.[6] Skott (1989) tried to combine this supply-side Goodwin model with a demand-side Kaldor model to analyze macroeconomic stability in an economy, creating the Kaldor-Goodwin model.

Since the canonical Kaleckian model assumes that labor income share is exogenously given, 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 decomposing (internalizing) the labor income share into its components. However, some recent studies in the Kaleckian tradition addressing the labor market and issues in macroeconomic stability, which include Sasaki (2011), Sasaki, Matsuyama, and Sako (2013), Sasaki, Sonoda, and Fujita (2013), and von Arnim and Barrales (2015).

A fundamental difference between these Kalecki-Goodwin-based models and the Kaldor-Goodwin model in Skott (1989) is that the former assume that the Keynesian stability condition is satisfied, while the latter assumes Harrodian

[6] Compared to mainstream economics where economic fluctuations are caused by exogenous shocks, in the Goodwin model (which is considered an endogenous business cycle theory), fluctuations are generated through endogenous interactions between variables. In any endogenous business cycle theory, there exists a factor that causes constant instability in the model. In the Goodwin model, it is class conflict in the labor market, *i.e.,* wage negotiations between capitalists and workers.

instability. This key difference produces significantly different results regarding the stability of an economy, as will be discussed later.

This study cannot adopt the regular Goodwin model where changes in bargaining power between labor and capitalists create economic fluctuations because, in Korea, wage changes are not significant and union organization rates are relatively lower compared to developed countries. Because manufacturing and services in particular exhibit different labor market characteristics and business cycle patterns, such an analysis would be unrealistic if those differences are not properly considered. Therefore, after assuming two segments (manufacturing and service) in the labor supply, we constructed a revised Goodwin model where changes in labor productivity and wages thereby cause economic fluctuations.

Among the post-Keynesian models analyzing macroeconomic stability using a two-sector framework, Rowthorn (1981) notably divided the entire labor supply into direct and indirect labor.[7] Following Rowthorn's framework, 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, Matsuyama, and Sako (2013) revised Raghavendra's model to address labor market flexibility by dividing labor supply into irregular and regular labor.[8] The following section modifies and develops Sasaki, Matsuyama, and Sako (2013)'s model by dividing the entire labor supply into manufacturing labor and service labor.

3.3. Model

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

$$Y = \min\left\{uK, \frac{L_m}{\alpha(u)}, \frac{uL_s}{\beta}\right\} \tag{1}$$

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.

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[7] Most two-sector post-Keynesian models have dealt with economic growth rather than macroeconomic stability by dividing economies into investment-goods producing and consumption-goods producing sectors. Here, the relative proportion of the two sectors determines the growth of the economy given that the service and production sectors affects consumption and investment levels, respectively (Kim and Lavoie, 2016, 2017; Fujita, 2018).

[8] Along with these studies, the models in Ogawa (2019) and Dutt *et al.* (2015) addressed the differences between the primary and secondary sectors in a dual labor market.

In the basic Kaleckian model, it is typically assumed that the labor utilization rate is fixed to imply no labor hoarding, which is a key criticism of the Kaleckian model's failure in considering labor market analysis. Here, the capital utilization rate and 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, *i.e.*, the use of flexible working hours in the production process.

In the product market, only workers are assumed to consume their income (wages), while only firms are assumed to save their income (profits). Thus, the savings function for this economy is as follows:

$$g^s = s\pi u, \quad 0 < s < 1 \tag{2}$$

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

$$g^d = g^d(u, \pi), \quad g_u^d,\ g_\pi^d > 0 \tag{3}$$

For the dynamics of the capacity utilization rate (which is a proxy variable for aggregate demand in the product market), the capacity utilization rate was adjusted as follows when there is excess demand or supply in the economy:

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

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

For the labor market, the economy consists of the manufacturing and service sectors, and Equations (5) and (6) represent the employment in each sector, respectively.

$$L_m = \alpha(u)Y, \quad 0 < \alpha < 1 \tag{5}$$

$$L_s = \frac{\beta}{u}Y = \beta Y^F, \quad 0 < \beta < 1 \tag{6}$$

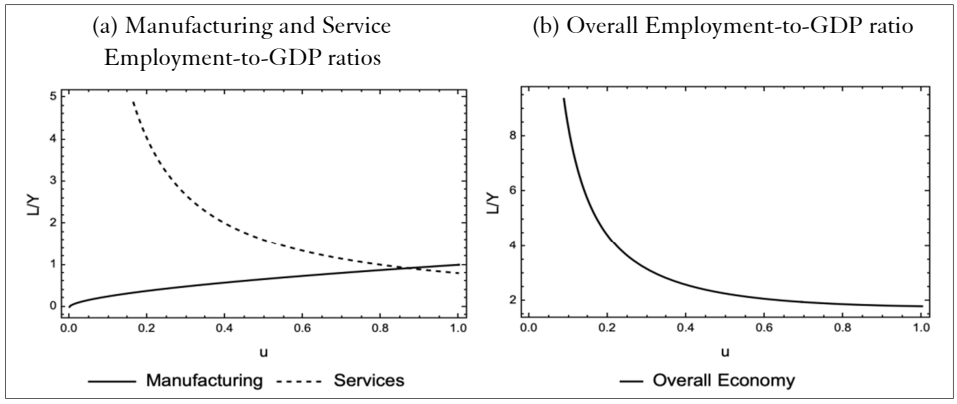
where Y^F is the potential GDP. The level of capital (Y^F / K) at the potential GDP is assumed to be a technically-fixed constant, one. Hence, the following relationship holds and induces Equation (6) on employment in the service sector.

$$u = \frac{Y}{K} = \frac{Y}{Y^F}\frac{Y^F}{K} = \frac{Y}{Y^F}, \quad \frac{Y^F}{K} = 1 \tag{7}$$

The manufacturing employment is assumed proportional to GDP (Y), and service employment is assumed proportional to potential GDP (Y^F).[9] 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. Thus, during downturns the proportion of service employment increases.

In particular, employment in the service industry is counter-cyclical. This is because $L_s = (\beta Y) / u$ and an increase (decrease) in the capacity utilization rate (u) produces 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, increasing the number of public sector jobs. Transitioning from dismissed workers to self-employment also contributes to the counter-cyclicality in service employment.[10] Figure 4 illustrates a numerical example showing employment-to-GDP ratios at different levels of capacity utilization rate.

[Figure 4] Employment in the Model



Notes: Employment-to-GDP ratios for manufacturing, services and the entire economy are $\alpha(u)$, β / u and $\alpha(u) + (\beta / u)$, respectively. The concrete functional forms for the numerical examples are $\alpha(u) = u^{0.6}$ and $\beta = 0.8$.

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

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

[9] Note, in Raghavendra (2006) sets operative labor as being proportional to GDP and non-operative labor proportional to potential GDP. Likewise, the model in Sasaki, Matsuyama, and Sako (2013) sets non-regular labor as proportional to GDP and regular labor proportional to potential GDP.

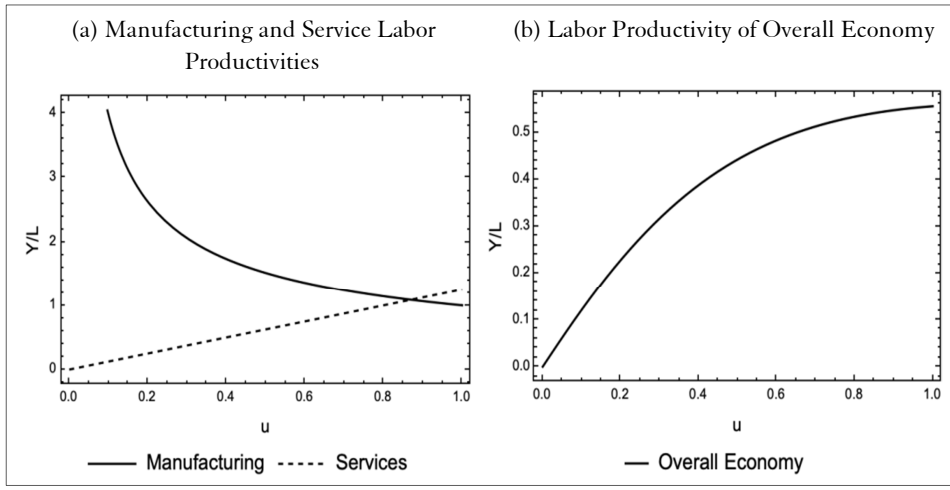
[10] Flaschel and Greiner (2011) constructed a model considering the shift in the labor force within a dual labor market wherein first-tier (regular) workers move to the second-tier (non-regular) during recessions.

As the capacity utilization rate (u) increases during economic expansion, manufacturing labor productivity ($1/\alpha(u)$) decreases and service labor productivity (u/β) increases. Labor productivity of the overall economy initially increases, but the rate of increase gradually declines. At some point, labor productivity may even exhibit negative growth depending on the relative sizes of service employment and manufacturing employment. However, our model excluded the possibility of 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 be always 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. Hence, $\alpha(u)u < \beta$ always holds.

Figure 5 illustrates a numerical example showing labor productivities at different levels of capacity utilization rate. Assumption 1 means that economic fluctuations occur in the left-hand section of the point where labor productivity in the manufacturing and service sectors intersect.

[Figure 5] Labor Productivity in the Model



Notes: Labor productivities for manufacturing, services and the entire economy are $1/\alpha(u)$, u/β and $1/(\alpha(u)+(\beta/u))$, respectively. The concrete functional forms for the numerical examples are $\alpha(u)=u^{0.6}$ and $\beta=0.8$.

For wages in the labor market, the wage in the manufacturing sector in our model was determined by collective bargaining, whereas the wage in the service sector was subordinately determined as a ratio of the manufacturing wage. This ratio is less than unity, hence the wage level of the service sector is lower than that of manufacturing. This is expressed herein as:

$$\gamma w_m = w_s, \quad 0 < \gamma < 1 \tag{9}$$

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. Generally, 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:

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

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

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. Assumably, two target profit shares are identically determined by the Tripartite Commission ($\pi_w = \pi_f = \pi^t$) because the current study seeks an alternative labor market institution based on social agreement. Thus, the law of motion for real wage becomes:

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

where θ is the speed of adjustment for real wages and a caret indicates logarithmic derivatives $\hat{x} = d\log x / dt$. We speculate that this parameter will turn out to be a very small number because actual wage fluctuation is low in Korea (Oh and Hong, 2020).

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

$$\pi^t = \pi^t(u), \quad \pi^{t\prime} < 0 \tag{13}$$

Here, $\pi^{t\prime}$ refers to the magnitude of the industrial reserve army effect, which is the ability of workers to ask for higher wages in wage negotiations based on their bargaining power and typically increases during an economic expansion where the number of unemployed workers who can replace existing workers decreases.

Then, the wage for the entire economy was equaled to the average of manufacturing and service wages weighted by sectoral employment proportional to total employment and expressed as:

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

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 because there are more service employees than manufacturing employees by Assumption 1. In addition, because manufacturing employment is procyclical while service employment is counter-cyclical, the ultimate cyclicality of the overall wage depends on changes in the proportions or weight of employment in the two sectors.

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

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

Using Equation (8), the growth rate of labor productivity was determined through:

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

Evidently, the growth rate of labor productivity (16) also appears in the growth rate of real wages (15), which means that changes in manufacturing and service labor productivity (employment) indirectly affect the weight of real wages. If so, the dynamic equation for the profit share $(\pi = 1 - (wL / Y) = 1 - (w / a))$ becomes (18),[11] and together with the dynamic equation for the capacity utilization rate (17),

[11] To induce Equation (18), we used the law of motion: $\dot{\pi} / (1 - \pi) = -(\dot{w} / w) + (\dot{a} / a)$.

allows us to construct a two-dimensional dynamic system which is as follows:

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

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

We can now obtain a 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). The following section analyzes the stability of this dynamic system.

3.4. Stability Analysis

Post-Keynesian economics addresses the issue of stability from the perspective of the endogenous business cycle theory, which states that the nature of shocks in the creation of the business cycle differs from the exogenous business cycle theories, such as the New Keynesian DSGE or real business cycle models. On one hand, in exogenous business cycle theories, a cyclical pattern is produced by the preference or technology shocks externally imposed along with the propagation mechanisms which spread out the impulse. In endogenous business cycle theories on the other hand, rather than a one-time shock, dynamic interactions among the variables drive the fluctuations of an economy. Goodwin's (1967) model is the most influential example in the tradition of the endogenous business cycle theory. In this paper, similar to the Goodwin model, the stability of the macroeconomy, which is reduced to a two-dimensional dynamic system (17) and (18), can be represented by a Hopf bifurcation showing the emergence of a "limit cycle".

We assume that the initial state of the dynamic system, (17) and (18), exists in a limit cycle state, thus exhibiting "local instability" around the steady-state equilibrium point and "global stability". This state can be understood to mean that the economy is in an unstable situation.[12] In this section, we will figure out the conditions for the existence of a limit cycle for the dynamic system representing the two-sector economy for the analysis of the Korean macroeconomy.

The next section conducts a comparative static analysis by changing the policy parameters on work sharing to examine the direction in change in the amplitude of the limit cycle. We interpret that the economy is stabilized if the limit cycle

[12] There is no need to discuss stabilization policies if the economy is stable.

converges towards the equilibrium point after a change in a policy parameter. Mathematically, the dynamic system will exhibit 'local stability' in this case. If the limit cycle is diverged outwards, or if the dynamic system mathematically exhibits both 'local instability' and 'global instability', the policy change will be interpreted as destabilizing the economy.

For analysis of the stability property around the steady-state equilibrium point, a Jacobian matrix can be constructed as below. Equations (19) to (22) are the equations for each element of a matrix evaluated at the steady-state equilibrium point (u^*, π^*).

$$\mathbf{J} = \begin{pmatrix} \frac{\partial \dot{u}}{\partial u} & \frac{\partial \dot{u}}{\partial \pi} \\ \frac{\partial \dot{\pi}}{\partial u} & \frac{\partial \dot{\pi}}{\partial \pi} \end{pmatrix}$$

$$J_{11} = \phi[g_u^d(u^*, \pi^*) - s\pi^*] \tag{19}$$

$$J_{12} = \phi[g_\pi^d(u^*, \pi^*) - su^*] \tag{20}$$

$$J_{21} = (1-\pi^*)\left[\theta\pi^{t\prime}(u^*) - \left(\frac{\alpha'(u^*) - \gamma\beta/u^{*2}}{\alpha(u^*) + \gamma\beta/u^*} - \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*}\right)J_{11} + \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*}J_{11}\right] \tag{21}$$

$$J_{22} = -(1-\pi^*)\left[\theta + \left(\frac{\alpha'(u^*) - \gamma\beta/u^{*2}}{\alpha(u^*) + \gamma\beta/u^*} - \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*}\right)J_{12} + \frac{\alpha'(u^*) - \beta/u^{*2}}{\alpha(u^*) + \beta/u^*}J_{12}\right] \tag{21}$$

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 $(g_u^d(u^*, \pi^*) < s\pi^*)$ (Marglin and Bhaduri, 1990; Sasaki, Matsuyama, and Sako, 2013; von Arnim and Barrales, 2015). Essentially, according to this view, because savings are more sensitive to economic fluctuations compared to investment, the economy tends to return to the equilibrium point whenever it is out of equilibrium.[13] Meanwhile, studies from a Kaldorian perspective assume that Harrodian instability exists in the economy, which means that investment is more sensitive than savings $(g_u^d(u^*, \pi^*) > s\pi^*)$. Concretely, if firms invest at the

[13] In a simple Keynesian model known as the Keynesian cross, this Keynesian stability condition corresponds to the assumption that marginal propensity to consume (MPC) should lie between 0 and 1, allowing the slope of the aggregate demand to be less than the slope of the 45 degree line.

"warranted" rate of growth, they precisely achieve the desired rate of capacity utilization. However, if they invest more than the warranted rate, the actual rate of capacity utilization exceeds the desired rate. This shortage of capital induces firms to raise their investments even further. Thus, a Harrodian economy occupies a so-called state of "knife-edge equilibrium", drifting farther and farther away from the equilibrium point once it exits from it.

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 would result in a higher capacity utilization rate (more aggregate demand). 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 mainly due to a factor commonly included in both elements: $\alpha'(u^{*}) - \beta / u^{*2}$, which is the difference between the rate of change in manufacturing employment on changes in the capacity utilization rate and of service employment (which is evaluated at steady-state equilibrium). We therefore assume that in a manufacturing-centered economy with a substantial proportion of exports, manufacturing employment is more sensitive to the capacity utilization rate than service employment.[14]

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

The stability of this dynamic system is ultimately hinged on the nature of the economic regime in place, which, in turn, is decided by the stability condition in the goods market and the type of demand regime. The conceivable regimes are three-fold: (1) a wage-led growth regime with Keynesian stability conditions satisfied; (2) a profit-led growth regime with Keynesian stability conditions satisfied; and (3) a profit-led growth regime with Harrodian instability. The first and second regimes are taken mainly from the Kaleckian perspective, while the third is considered seriously by the Kaldorian perspective.[15] We will examine each regime individually.

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[14] Conducting a panel fixed effect analysis using industry-level data, Oh and Hong (2020) posit that manufacturing employment became more procyclical than service employment after the global financial crisis.

[15] Note that Sasaki, Matsuyama, and Sako (2013) analyzes only the first and second regimes from the Kaleckian perspective, thereby excluding the case featuring Harrodian instability.

[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:

$$\mathbf{J}=\begin{pmatrix} - & - \\ ? & ? \end{pmatrix}$$

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 (23) and (24). The signs driven by the given assumptions are shown at the bottom of each term.

$$Det(J)=-(1-\pi^*)\underbrace{\theta}_{+}[\underbrace{J_{11}}_{-}+\underbrace{\pi^{t\prime}(u^*)}_{-}\underbrace{J_{12}}_{-}] \tag{23}$$

$$Tr(J)=\underbrace{J_{11}}_{-}-(1-\pi^*)\Bigg[\underbrace{\theta}_{+}+\underbrace{\left(\frac{\alpha'(u^*)-\gamma\beta/u^{*2}}{\alpha(u^*)+\gamma\beta/u^*}-\frac{\alpha'(u^*)-\beta/u^{*2}}{\alpha(u^*)+\beta/u^*}\right)}_{+}\underbrace{J_{12}}_{-}$$
$$-\underbrace{\frac{\alpha'(u^*)-\beta/u^{*2}}{\alpha(u^*)+\beta/u^*}}_{+}\underbrace{J_{12}}_{-}\Bigg] \tag{24}$$

First, if the industrial reserve army effect, which is represented by the absolute value of $\pi^{t\prime}$, is small, the sign of the determinant (23) becomes positive $(Det(J)>0)$. This excludes 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.

Estimating the effect of changes in output on the manufacturing wage, Oh and Hong (2020) obtained a small and insignificant coefficient, suggesting that the industrial reserve army effect in Korea could possibly be very weak. Thus, it is likely that the sign of the determinant will be positive.

As to the sign of trace (24), 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, then the dynamic system is likely to converge to a steady-state equilibrium. However, if γ in the second term of $[\cdot]$, which represents the

interaction between the labor market and the goods market via distribution, is very small—which also means that the wage gap between the manufacturing and service sectors is large— then the trace will be positive $(Tr(J)>0)$ and the system will therefore be unstable.[16] See the equation (31) for a comparative static analysis of the effect of changes in γ on the value of $[\cdot]$.[17]

Summarily, because the conditions for local instability are met $(Tr(J)>0$ and $Det(J)>0)$, 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 is large, the economy is likely to become unstable during an economic 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:

$$\mathbf{J}=\begin{pmatrix} - & + \\ ? & ? \end{pmatrix}$$

Its determinant and trace are also expressed as:

$$Det(J)=-(1-\pi^*)\underbrace{\theta}_{+}[\underbrace{J_{11}}_{-}+\underbrace{\pi^{t\prime}(u^*)}_{-}\underbrace{J_{12}}_{+}] \tag{25}$$

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

[16] 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 identical with the exception of γ in the first term. Because γ has a value between 0 and 1, 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 the entire term is, undoubtedly, positive.

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

A saddle point equilibrium is automatically excluded because the sign of the determinant (25) is unambiguously positive. As in the case of regime 1, the trace (26) 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 $[\cdot]$, which is the absolute value of the growth rate of labor productivity at steady-state equilibrium (16), overwhelms the values of the other terms whose signs are opposite, $[\cdot]$ ends up with a negative value and the economy will be unstable $(Tr(J) > 0)$. More specifically, in Assumption 2, if manufacturing employment responds more to capacity utilization than does service employment $(\alpha'(u) \gg \beta / u^2)$, the economy becomes more unstable locally, leading us to suggest the following proposition:

Proposition 2: If an economy is a profit-led growth regime with Keynesian stability conditions are satisfied, and manufacturing employment responds more to capacity utilization than does service employment (*i.e.*, if the degree of quantitative flexibility is higher in manufacturing employment than in service employment) the economy is likely to become unstable during an economic downturn.

[Regime 3] Profit-led Growth Regime with Harrodian Instability

In this case, the signs of J_{11} and J_{12} are positive.[18] The signs of the elements in the Jacobian matrix are as below:

$$\mathbf{J} = \begin{pmatrix} + & + \\ ? & ? \end{pmatrix}$$

Its determinant and trace are the following:

$$Det(J) = -(1-\pi^*)\underbrace{\theta}_{+}[\underbrace{J_{11}}_{+} + \underbrace{\pi^{t\prime}(u^*)}_{-}\underbrace{J_{12}}_{+}] \tag{27}$$

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

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

$$-\underbrace{\frac{\alpha'(u^*)-\beta/u^{*2}}{\alpha(u^*)+\beta/u^*}}_{+}\underbrace{J_{12}}_{+}\Bigg] \tag{28}$$

The sign of the determinant (27) would be negative, which means that the equilibrium is a saddle point if the degree of the Harrodian 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 growth is strong enough $(J_{12} \gg 0)$ to dominate the degree of Harrodian instability (J_{11}), the sign of the determinant ultimately can be positive, meaning that the possibility of a saddle point equilibrium can be excluded. The large industrial reserve army effect means a large drop in wages (a small drop in profit share) when the capacity utilization rate falls during an economic downturn. However, based on the estimation in Oh and Hong (2020), it is highly likely that the industrial reserve effect in Korea is quite minimal and the determinant will be negative without policy intervention. Therefore, if Harrodian instability occurs, a policy mitigating the downward rigidity of real wages should be implemented.

Moving on to the trace (28), since J_{11} is positive, the dynamic system of this regime could be unstable. Moreover, even if the last term in $[\cdot]$, 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, $[\cdot]$ yields a negative value and the economy will still be unstable $(Tr(J) > 0)$. As mentioned in the discussion on regime 2, this is a case in which manufacturing employment responds more to capacity utilization than does service employment. Thus, the following can be proposed:

Proposition 3: An economy with a profit-led growth regime with Harrodian instability could encounter an unpredictable and unstable situation if the drop in 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 does service employment.

The next section examines how an unstable dynamic system stabilizes when the parameters related to the work sharing policy are changed.

3.5. Comparative Static Analysis of Work Sharing Policies

In the abovementioned discussion on the types of work sharing in Table 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 both working hours and wages. Thus, in this section, the policy parameters related to work sharing can be separated into either those related to wage adjustment or to working hours adjustment.

In our model, the policy parameters associated with wage adjustment are the magnitude of the industrial reserve army effect $(\pi^{t'})$ and the ratio of service wages to manufacturing wages (γ). Here, we can interpret γ as if it were the minimum wage because not only are wage levels in the service sector lower than those in the manufacturing sector, a considerable number of the self-employed subjects in the service sector are also minimum wage earners.[19] 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 (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. Equation (5), which describes the relationship between manufacturing employment and GDP, allows us to obtain the elasticity of manufacturing employment with respect to the utilization rate (Okun's coefficient) which is as follows:

$$\hat{Y} = \frac{\alpha(u)}{\alpha'(u)} + \hat{L}_m \tag{29}$$

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 (29). Put simply, adjusting working hours reduces the sensitivity of employment to the capacity utilization rate, which is the inverse of the sensitivity of labor productivity $(\alpha'(u)/\alpha(u))$.

Comparative static analyses was conducted for changes in the three policy parameters mentioned above. As to the parameter for the magnitude of the industrial reserve army effect $(\pi^{t'})$, 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 (30). Becuase $\pi^{t'}$ here is a value less than zero, we examined the effect of the change in its absolute value for $\pi^{t'}$ (the strength of the

[19] Sasaki, Matsuyama, and Sako (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.

industrial reserve effect).

$$\frac{dDet(J)}{d|\pi^{*\prime}|} = (1-\pi^*)\theta J_{12} \tag{30}$$

Here, the direction of change from the increase in the denominator will depend on the value of J_{12}. $Det(J)$ will fall if the economy is a wage-led growth regime; it will rise if the economy is a profit-led growth regime. In other words, if the economy operates under a wage-led growth regime and the Labor-Management Civil Government Committee uses policy lowering manufacturing wages to reduce overall wage levels in the event of an economic crisis[20], $Det(J)$ can be negative (which leads to the formation of a saddle point equilibrium); this can plunge the economy into an unpredictable state. Meanwhile, if the economy is under a profit-led growth regime with the Keynesian stability condition being satisfied, the possibility of a saddle point equilibrium is automatically excluded since $Det(J)$ is always positive. Thus, a policy intervention which 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 $Det(J)$.

For other policy parameters associated with wage adjustment, we can consider a policy to reduce the gap between manufacturing and service wages, *i.e.*, one increasing the parameter γ. Since γ is included in the trace, we can analyze the effect of the change in γ on the stability property of our dynamic system by exploring the sign of the following differential equation:

$$\frac{dTr(J)}{d\gamma} = (1-\pi^*)\frac{\beta}{u^{*2}}(\alpha(u^* + \alpha'(u^*)u^*)J_{12} \tag{31}$$

In this case, the direction of change upon changes in γ will also depend on the value of J_{12}. $Tr(J)$ falls if the economy is a wage-led growth regime, but will otherwise rise if the economy is a profit-led growth regime. Thus, a policy which reduces the wage gap between the manufacturing and service sectors by raising the minimum wage is valid when the economy operates under a wage-led regime. Hence, a policy creating effective demand by raising the minimum wage while

[20] This makes the industrial reserve army effect more pronounced, therein leading to a further drop in the labor income share during an economic downturn.

maintaining manufacturing wage levels can be considered when sluggish consumption persists amid a lack of private income during a long-term recession. However, it is undesirable to use a minimum wage policy during a downturn under a profit-led growth regime.[21]

Moving on to the policy parameter associated with working hours adjustment, *i.e.*, reducing the elasticity of manufacturing employment with respect to the capacity utilization rate, the related parameters are evidently included in the trace of the dynamic system. For comparative static analysis, the trace can be reformulated as the following:

$$Tr(J) = J_{11} - (1-\pi^*)\left[\theta + \left(\frac{\frac{\alpha'(u^*)}{\alpha(u^*)} - \frac{\gamma\beta}{\alpha(u^*)u^{*2}}}{1+\frac{\gamma\beta}{\alpha(u^*)u^*}} - \frac{\frac{\alpha'(u^*)}{\alpha(u^*)} - \frac{\beta}{\alpha(u^*)u^{*2}}}{1+\frac{\beta}{\alpha(u^*)u^*}}\right) J_{12}\right.$$
$$\left. - \frac{\frac{\alpha'(u^*)}{\alpha(u^*)} - \frac{\beta}{\alpha(u^*)u^{*2}}}{1+\frac{\beta}{\alpha(u^*)u^*}} J_{12}\right] = J_{11} - (1-\pi^*)[\theta + [W-P]J_{12} - [P]J_{12}] \quad (32)$$

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

As can be seen in (32), the trace includes $\beta/(\alpha(u^*)u^*)$, the relative proportion of service employment to manufacturing employment at a steady-state equilibrium point. In Figure 4 (a), the limit cycle of this economy centered at the steady-state equilibrium point occurs within the left-hand side of the intersection of the two curves representing manufacturing employment and service employment. More 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 $(\alpha(u^*))$.[22] Thus, a decline in the elasticity of manufacturing employment results in an increase in the relative proportion of service employment and manufacturing employment at the steady-

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

[22] 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.

state equilibrium point $(\beta/(\alpha(u^*)u^*))$.

Considering 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 (32) and the effect on the module $[W-P]$.

For module $[P]$, considering the direction of changes in each component of module $[P]$ as below, it is clear that it will be positively affected by changes in the elasticity of manufacturing employment.

$$\frac{d[P]}{d(\alpha'/\alpha)}>0 \quad \left(\because \frac{(\downarrow)-(\uparrow)}{(\uparrow)}\right) \tag{33}$$

In the case of module $[W-P]$, although both $[W]$ and $[P]$ parts fall together, the overall effect will be negative because the $[W]$ part falls less than the $[P]$ part due to the appearance of γ in $[W]$. This is shown in the expression below:

$$\frac{d[W-P]}{d(\alpha'/\alpha)}<0 \quad \left(\because \frac{(\downarrow)-(\gamma\uparrow)}{(\gamma\uparrow)}-\frac{(\downarrow)-(\uparrow)}{(\uparrow)} \ \textit{and} \ \gamma<0\right) \tag{34}$$

The ultimate direction of change in this policy exercise depends on the sign of J_{12}, which is hinged on the type of distribution regime (either 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 $Tr(J)$ larger, while 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 3] Directions of Labor Market Policies for Economic Crises

Regime	Wage Adjustments		Adjustment of Working Hours
	$\lvert\pi'\rvert\uparrow$	$\gamma\uparrow$	$\alpha'/\alpha\downarrow$
(Regime 1) KS + WLG	Destabilizing	Stabilizing	Destabilizing
(Regime 2) KS + PLG	Not Necessary	Destabilizing	Stabilizing
(Regime 3) HI + PLG	Stabilizing	Destabilizing	Stabilizing

Notes: KS implies Keynesian Stability; HI, Harrodian Instability; WLG, Wage-led Growth; PLG, Profit-led Growth.

Table 3 summarizes the results of the analysis in this section and provides directions for labor market policies to be used in economic crises. First, in a wage-

led growth regime with the Keynesian stability condition satisfied, government can help the economy recover from recession by reducing the wage gap between the manufacturing and service sectors. Policies raising the minimum wage or supporting the self-employed can be considered.

Second, in a profit-led growth regime with the Keynesian stability condition satisfied, difficulties in corporate investment due to falling profit margins, especially in the manufacturing sector, can pose an important problem during an economic crisis. In this case, some policy efforts affecting the manufacturing labor market may prove effective as investments converge strongly to equilibrium because the Keynesian stability condition is satisfied in the goods market. In this case, our theoretical analysis recommends a temporary reduction on the burden of firms by implementing work sharing programs to adjust working hours during a crisis. Assuredly, the government must subsidize the cost of these programs.

Finally, if there exists Harrodian instability in an economy, the manufacturing industry can actively consider work sharing programs which simultaneously adjust working hours and wages. In the case of regimes 1 and 2 described above, one policy was sufficient. By contrast, the urgency of crises of this regime 3 requires an omnidirectional policy response which uses both wage flexibility and working time flexibility.

Then, the question that naturally arises is figuring out the regime of the Korean economy where the labor market policies suggested in Table 3 are contingent. There are numerous empirical studies diagnosing the characteristics of the demand regime in Korea based on the Kaleckian framework (Onaran and Stockhammer, 2005; Hong, 2009; Kim, 2013; Hong, 2014; Jeong, 2017). Nevertheless, these studies, assuming that the Keynesian stability condition holds, do not inform us about the current stability conditions of the Korean economy.

Although the empirical question on the stability of the Korean economy should be dealt with in a separate paper (and in a more rigorous manner), related theoretical discussions suggest that the Korean economy likelier exhibits an Harrodian instability instead of Keynesian stability. Thus, the direction of the labor market policy suggested by the theoretical result of this section should be focused on simultaneous adjustment of both working hours and wages centered on manufacturing. Regarding taming Harrodian instability, the Kaleckian view argues that the growth rate of the autonomous demand, which is a component of the aggregate demand exogenously given, is sufficiently high to tame Harrodian instability when an economy deviates from the equilibrium (Lavoie, 2016; Fiebiger and Lavoie, 2019; Girardi and Pariboni, 2016). This non-capacity generating autonomous demand includes exports, private consumption, residential investment and government expenditure. Meanwhile, Skott (2019) criticizes this view and argues that autonomous spending is insufficient to govern Harrodian instability and that it is the labor market instead which stabilizes the economy.

As mentioned above, Korean exports account for a large proportion of its GDP. However, its growth rate has significantly declined since 2010 mainly due to the pervasive protectionism in international trade. The current growth rates of exports have also become more volatile compared to past decades. This fact possibly implies that, in terms of exports, the ability to tame the Harrodian instability has recently been weakened. Moreover, considering the intense international competition, exports cannot be totally exogenous, but can be affected by domestic factors such as domestic supply conditions and the competitiveness of the export sectors (Skott, 2019).

Government spending, which makes up a significant portion of GDP, can be autonomous in most advanced economies. However, Korea, as a small open economy, has constraints in adopting a large-scale discretionary stabilization policy due to its potential impact on its currency value and concern for fiscal sustainability. Regarding the items of government expenditure, the Korean government is currently hesitant to spend on social overhead capital and housing due to its stance on the regulation of the real estate industry.[23]

Therefore, in the case of the Korean economy, the stabilizing forces taming the Harrodian instability enumerated by Kaleckian economists seemed to have waned after the global financial crisis. If this is true, active labor market policies such as work sharing programs can effectively mitigate macroeconomic turmoil.

IV. Concluding Remarks

Hwang *et al.* (2010) maintain that work sharing policies in Korea played a positive role in stabilizing the macroeconomics during the global financial crisis, which was seen in how public firms and large companies froze wage increases or reduced the starting salaries of newly hired recent college graduates and minimized adjustments through employment.

However, the government's role was disproportionately large in that work sharing was performed mainly through the use of incentives provided by employment maintenance subsidies – government support for wages and training expenses if employers did not fire workers and instead utilized employment maintenance measures. Although this measure was similar to Germany's short-time work, the German example also saw both the reduction of regular working hours and the working time account contributing significantly to stabilizing the macroeconomic system. These two measures are applicable when mutual trust exists between labor and management, which is absent in current Korean corporate

[23] It is noteworthy that residential investment is one of the sources of autonomous demand taming Harrodian instability according to the Kaleckian view (Lavoie, 2016; Girardi and Pariboni, 2016).

culture given how the influence of labor unions has been declining amid falling unionization rates.

As a result, Korea's work sharing program was adopted only by a handful of public firms and large corporations, instead of the manufacturing sector in total. It should be noted that, in Germany, which is also a manufacturing powerhouse similar to Korea, various labor market reforms and social agreements stemmed from automobile manufacturers such as Volkswagen, and later expanded to reach the entire manufacturing sector.

Although the role for government in building active labor market policies is crucial, building up work sharing programs at the firm-level is also important. For the manufacturing industry in particular, work sharing confers benefits to both companies as well as employees, who are guaranteed employment. The global financial crisis hit export manufacturers in Germany particularly hard. However, those firms had incentives to keep their employees through work sharing because they believed that their employees possessed firm-specific know-how (Möller, 2010). Maintaining and enhancing firm-specific skills will prove advantageous as it helps firms secure competitiveness during subsequent upturns. This operation of work sharing at the firm level can also preserve the budget for government-level policies such as employment maintenance subsidies, among others.

Appendix: Proof of the Existence of a Unique Solution for the Dynamic System

Two-dimensional dynamic system in Section III is as follows.

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

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

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

■

References

Boysen-Hogrefe, J. and D. Groll (2010), "The German Labour Market Miracle," *National Institute Economic Review*, 214, 38–50.

Burda, M. C. and J. Hunt (2011), "What Explains the German Labor Market Miracle in the Great Recession?" *NBER Working Paper* (17187).

Cho, S. (2009), "Korean Work Sharing Program: Evaluation and Future Development," *KLI Monthly Labor Review*, 39–54. (in Korean).

Dutt, A. K. (1984), "Stagnation, Income Distribution and Monopoly Power," *Cambridge Journal of Economics*, 8, 25–40.

Dutt, A. K., S. Charles, and D. Lang (2015), "Employment Flexibility, Dual Labour Markets, Growth, and Distribution," *Metroeconomica*, 66(4), 771–807.

European Commission (2013), *Employment and Social Developments in Europe 2012*.

Fiebiger, B. and M. Lavoie (2019), "Trend and Business Cycles with External Markets: Non-capacity Generating Semi-autonomous Expenditures and Effective Demand," *Metroeconomica*, 70(2), 247–262.

Flaschel, P. and A. Greiner (2011), "Dual Labor Markets and the Impact of Minimum Wages on Atypical Employment," *Metroeconomica*, 62(3), 512–531.

Fujita, S. (2018), "Mark-up Pricing, Sectoral Dynamics, and the Traverse Process in a Two-sector Kaleckian Economy," *Cambridge Journal of Economics*, 43(2), 465–479.

Girardi, D. and R. Pariboni (2016), "Long-run Effective Demand in the US Economy: An Empirical Test of the Sraffian Supermultiplier," *Review of Political Economy*, 28(4), 523–544.

Goodwin, R. M. (1967), "A Growth Cycle," In C. Feinstein (Ed.), *Socialism, Capitalism, and Growth*, pp. 54–58. Cambridge, U.K.: Cambridge University Press.

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), 206–224.

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 and Economic Studies*, 43, 101–138. (in Korean).

Hong, T. (2009), "Growth and Distribution: An Empirical Result for South Korea by Using Bhaduri and Marglin Model," *Ordo Economics Journal*, 12(3), 43–61. (in Korean).

Hwang, S., Y. Yoon, S. Cho, B. Jeon, K. Park, and J. Ahn (2010), "Economic Crisis and Employment," KLI Report. (in Korean).

Jeong, S. (2017), "Wage-led Demand Regime and Household Debt in Korea: SVAR Analysis," *Review of Social and Economic Studies*, 52, 153–186. (in Korean).

Kalecki, M. (1969), *Studies in the Theory of Business Cycles 1933–1939*, Oxford: Basil Blackwell.

Keynes, J. M. (1936), *The General Theory of Employment Interest and Money*, London: Macmillan.

Kim, G. (2013), "Distribution and Growth in a Small Open Economy: Empirical Research

Using the Kaleckian Model," *Review of Social and Economic Studies*, 42, 119–137. (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), 403–427.

_____ (2017), "Demand-led Growth and Long-run Convergence in a Neo-Kaleckian Two-sector Model," *Korean Economic Review*, 33(1), 179–206.

Kim, T. B. and H. Lee (2016), "Macroeconomic Shocks and Dynamics of Labor Markets in Korea," *Korean Economic Review*, 32(1), 101–136.

Krugman, P. (2009), "Germany's Job, Unemployment Miracle Can Teach the US," *New York Times (17, Novermber)*.

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), 172–201.

Lavoie, M. and E. Stockhammer (2012), "Wage-led Growth: Concept, Theories, and Policies," *Condition of Work and Employment Series*, (41).

Lee, S. (2019), *German Job Miracle*, Sahwepyongnon Academy. (in Korean).

Marglin, S. and A. Bhaduri (1990), "Profit Squeeze and Keynesian Theory," In S. Marglin and J. Schor (Eds.), *The Golden Age of Capitalism: Reinterpreting the postwar Experience*, pp. 153–186. Oxford: Clarendon Press.

Möller, J. (2010), "The German Labor Market Response in the World Recession: Demystifying a Miracle," *Zeitschrift für Arbeitsmarktforschung*, 42(4), 325–336.

OECD (2010), *Employment Outlook: Moving beyond the Jobs Crisis*.

_____ (2015), *The Labour Share in G20 Economies*.

_____ (2019), *Public Spending on Labour Markets (Indicator)*.

Ogawa, S. (2019), "Dynamic Analysis of a Disequilibrium Macroeconomic Model with Dual Labor Markets," *Metroeconomica*, 70(3), 525–550.

Oh, J. and S. Hong (2020), "Cyclicality of Labor Income Share and Stabilizing the Macroeconomy," *Review of Social and Economic Studies*, 63, 103–132. (in Korean).

Onaran, Ö. and E. Stockhammer (2005), "Two Different Export-oriented Growth Strategies: Accumulation and Distribution in Turkey and in South Korea," *Emerging Markets Finance and Trade*, 41(1), 65–89.

Raghavendra, S. (2006), "Limits to Investment Exhilarationism," *Journal of Economics*, 87(3), 257–280.

Rowthorn, R. E. (1977), "Conflict, Inflation and Money," *Cambridge Journal of Economics*, 1(3), 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), 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, 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), 683–715.

Shao, E. and P. Silos (2014), "Accounting for the Cyclical Dynamics of Income Shares," *Economic Inquiry*, 52(2), 778–795.

Skott, P. (1989), "Effective Demand, Class Struggle and Cyclical Growth," *International Economic Review*, 30(1), 231–247.

Skott, P. (2017), "Weakness of 'Wage-led Growth' ," *Review of Keynesian Economics*, 5(3), 336–359.

_____ (2019), "Autonomous Demand, Harrodian Instability and the Supply Side," *Metroeconomica*, 70(2), 233–246.

Son, M. (2009), "Work Sharing Program During Depression," *SERI Research Paper*. (in Korean).

Uh, G., B. Shin, and D. Lee (2014), *Work Sharing Policy: Present and Future*, Research Institute of Federation of Korean Trade Unions. (in Korean).

von Arnim, R. and J. Barrales (2015), "Demand-driven Goodwin Cycles with Kaldorian and Kaleckian Features," *Review of Keynesian Economics*, 3(3), 351–373.

노동시장정책을 통한 거시경제 안정화*

오 종 석**

초 록

본고에서는 일자리 나누기와 같은 적극적 노동시장정책이 한국의 거시경제 안정화에 도움이 될 수 있음을 보여준다. 제조업과 서비스업으로 구성된 2부문 포스트 케인지언 모형을 구축하고 경제위기 시에 고려할 수 있는 세 가지 노동시장정책의 방향을 도출한다. 케인지언 안정성 조건이 만족되는 임금주도수요체제 하에서는 제조업과 서비스업의 임금격차를 줄이는 정책이 도움이 된다. 케인지언 안정성 조건이 만족되는 이윤주도수요체제 하에서는 제조업을 중심으로 한 일자리 나누기가 도움이 된다. 경제에 해로드 불안정성이 존재하는 경우에는 제조업을 중심으로 임금과 노동시간을 동시에 조정하는 일자리 나누기가 도움이 될 수 있다. 글로벌 금융위기 이후에는 특히 마지막 정책방향을 고려할 수 있는데, 이는 해로드 불안정성을 완화시켜주는 수출과 정부지출의 독립적 지출이 감소하였기 때문에 한국경제에 해로드 불안정성이 존재할 가능성이 더욱 커졌기 때문이다.

핵심 주제어: 제도와 거시경제, 노동시장정책, 일자리 나누기, 경기변동

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