
Note

“Polarization” in the U.S. Regions: A Rough Portrait of the Economic Background of Regional Polarizations

Hiroyuki Yamagata[†]

Abstract

In the U.S., political polarization in the U.S. is increasing regionally. This study analyzed the economic background of this trend; it focused on the changes in the composition of employees by industry since 1990 and further divided the analysis in terms of U.S. units and individual states. In contrast to the U.S. national average trends, trends the individual states have moved in different directions. This may have led to different political polarization trends in each state. The following categories were observed: a polarized category toward high-skilled & wage industries, bias category toward high-skilled industries, bias category toward low-skilled & wage industries, and category involving middle-skilled and wage industries. Considering industry characteristics, we identified that states with the high employment weights of high-skilled and wage industries provided a strong support to the Democratic Party. States with high employment weights of middle and low-skill & wage industries did not show clear trends of support for either Party. However, states with high employment weights of manufacturing employment showed a confirmed trend of the Republican Party support. Therefore, if the number of states with high-skilled & wage industries increases sufficiently, a new political polarization trend could emerge.

I Introduction: Literature and Purpose of This Paper

(1) Political Polarization, Regional Polarization, and Position of Economic Factors

Political polarization continues in the U.S. Several studies suggest that partisan conflicts have been fiercest since the Civil War (Kaplan, Spenkuch and Sullivan 2020).

Some researchers insist that political polarization progresses in regional dimensions.

[†] Professor, College of Economics, Rikkyo University

This phenomenon has two aspects: urban versus rural (county) regions and state-by-state political polarization (Rodden 2019).

What do urban regions vs. rural (county-side) regions mean? Economic factors include the differences in employment composition and job polarization between urban and rural areas (Yamagata 2019 and 2020).

The purpose of this note is to analyze the dynamics and their relationships with political polarization by state because states influence presidential and senatorial elections.

While a few studies focus on economic factor such as income inequality (McCarty, Poole and Rosenthal 2008), various studies on the Trump phenomenon, which is closely related to political polarization, have pointed out that the strongest and most direct factor is white nationalism (a cultural factor). The impact of globalization and deindustrialization are the underlying factors that increase dissatisfaction among white manufacturing workers (Inglehart and Norris 2017).

Most studies have shown that economic conditions are an indirect factor in political polarization and should be considered as a mid or long-term background. Therefore, this note also considers economic factors as a medium or long-term background rather than a direct factor in political polarization.

Several studies have suggested that political polarization has also progressed geographically. These views pointed out that the tendency for states to support the Republican Party and others to support the Democratic Party has become stronger and more consolidated over the years (Hopkins 2010 and Buchler 2018). This note describes this trend as the “regional polarization.”

It has been pointed out that research on differences in economic conditions in different regions is needed concerning this phenomenon (Irwin and Katz 2016). Martin and Webster (2018) argued that the economic factors behind regional polarization are that most people move and reside where their jobs are located.

Studies of the impact of technological innovation and international trade (Autor et al. 2013, Autor et al. 2020) showed that these differ by region. According to these studies, different impacts may create different political situations in different regions. The negative impact of free trade on regions, especially China, has increased opposition to free trade in these regions and has promoted political polarization. However, differences in industrial composition changes and job polarization development among regions have not been well studied.

Therefore, many previous studies have not considered regional polarization. This recent research trend also includes a lack of detailed research on the different economic fates

of different regions in the post-industrial society of the post-1990s.

(2) Purpose, Character, and Structure of This Note

This note focuses on changes in the composition of employment by industry, which are thought to affect the character of the residents of each state.

The following aspects will be examined: the path of changing employment composition that each state has taken concerning the U.S. average, and how each state currently differs in its composition of employment by industry, categorized into the high-skill & wage industries, middle-skill & wage industry, and low-skill & wage industry. These three categories have changed differently due to technological change and globalization.

This simplified classification of industry categories makes it possible to investigate changes in the composition of the workforce and specialization coefficients for all states and examine the changes that occur in each state with respect to the U.S. average.

The quality of employment in these three industrial categories varies according to the level of requested skills and wages. Therefore, the difference in the composition and weight of employment in each category may produce different composition for the residents of each state. These differences may be due to economic background of political polarization in each state. Specifically, we hypothetically surveyed the relationship several indicators related to the composition of employment by industry and the tendency to support political parties in each state.

The period of analysis in this study was after 1990. The 1970s and the 1980s are generally considered to be a period of deindustrialization. A huge amount of research has been conducted on the composition of employment by industry, focusing on the decline in manufacturing employment and the shift to service sectors (Yamagata 2017). This note focuses on the dynamics after the 1990s, which have not been sufficiently studied.

To examine the connection between the composition of employment by industry and political polarization. The relationship between the specialization coefficient of industry employment and the propensity to support a state’s political party will be evaluated, specifically analyzing the most recent and multiple years, 2016 and 2020.

The analysis result will be summarized and discussed at the end of this note. The relationship between economic background and political polarization will be examined, and possible future directions will be considered.

This note is not a research paper following U.S. and European research and writing methods, but a hypothetical English presentation from the Japanese political economy’s per-

spective, using mainly classical methods of economic geography.

This exploratory study that limited the analysis items and organized the data using a hypothetical method. The purpose of this study was to conduct a preliminary examination of the economic background of political polarization. An analysis of job polarization based on occupational data, which is often utilized in job structure analysis, will be conducted in the next paper.

II Methods (Analytical Viewpoint) and Data from This Note

(1) Industrial Categorization of This Note and Its Intention

The high-skill & wage industry category consists of the four industries at the top of Table 1. The middle-skill & wage category includes the 11 industries below the high-skill & wage category. The other services in this category are limited to industries with middle wages. Utilities are classified as middle-skill & wage industries. Although this industry offers a high wage, it does not require necessarily high skill that need a high level of education. The low-skill and wage industries include the three industries shown at the bottom of the table. The other services in this category are limited to low-wage industries.

The classification into high, middle, and low-skill & wage industries is based on the average hourly earnings of \$30.1 for all industries. They are divided into industries which earns over \$35, \$34.9, \$25.0, and \$24.9 or less. The classification is also based on the required skills of each industry (e.g., the percentage of the labor force with a bachelor's degree or higher; Acemoglu and Autor 2011).

Research on job polarization has revealed that innovation and globalization have led to the development of job polarization. The weights of high-skill & wage occupations and low-skill & wage occupations have increased. The weights of middle skill & wage occupations, whose main occupation was production in the past, have decreased. In particular, the weight of low-skill & wage occupations has increased, especially in the U.S. in recent years (Autor 2010, Autor et al. 2013 and 2020).

The factors creating this trend are as follows. The high-category industry that produces professional knowledge is difficult to relocate overseas is replaced by A.I. or machines and increases in proportion to technological evolution. Low wages do not offer strong incentives to replace machines and are easily increased in the low category. Many industries in this category provide face-to-face contact. Therefore, it is difficult for employment in this category to flow overseas. In contrast, the middle category, typically the manufacturing in-

Table 1 High, Middle, and Low Skill & Wage Industry

	Industry	Hourly Earnings
High Skill & Wage Industries	Information	43.3
	Finance and insurance	41.5
	Professional and technical services	43.3
	Management of companies and enterprises	42.8
Middle Skill & Wage Industries	Mining and logging	34.7
	Construction	31.4
	Manufacturing	28.4
	Wholesale trade	31.9
	Transportation and warehousing	25.1
	Utilities	42.6
	Real estate and rental and leasing	28.3
	Education and health services	28.2
Other services (Middle)	>25.78	
Low Skill & Wage Industries	Administrative and waste management services	21.9
	Retail trade	20.3
	Leisure and hospitality	16.9
	Other services (Low)	25.78>
Total Private		30.1

note 1) All data is as of March 2020.

note 2) Although the wage of Utilities is high, its skill is not necessary high. So this industry are caged in the middle skill and wage industry in this note.

note 3) Other services are divide in the middle and low industry categories according to their wages and necessary skills.

Source) Created by US Dept. of labor, BLS (monthly).

dustry, has difficulty adding or reducing jobs because its wage is in the middle, and it has a relatively strong incentive to replace its jobs with robots. It also has many processes and jobs that can be easily transferred overseas.

Extensive research has been conducted on the manufacturing industry. The industry classification in this note allows for the middle skill & wage industry analysis, including the construction, transportation, and education & healthcare industries. The construction and transportation industries are meaningful employers for middle-skill & wage employments associated with the expansion of logistics and growth of e-commerce and domestic demand. At the same time, the education & health care industries are growing with the development of

Table 2 Worker's Education Attainment, Race, and Internationalization of Each Industry

	Educational Attainment	Race				Foreign Born Ratio
	University or more high	White	Black or African American	Asian	Hispanic or Latino	
High Skill and Wage Industries	51.5	76.5	10.0	10.7	10.4	19.1
Middle Skill and Wage Industries	27.8	78.5	12.8	5.3	19.1	16.9
Low Skill and Wage Industries	20.1	76.9	7.1	6.3	21.1	17.4

note 1) All data is as of March 2020.

Source) Created by US Census Bureau (2021a), (2021b).

the social division of labor associated with the progress of innovations, population aging, and advanced healthcare (Yamagata 2017).

(2) The Reasons Why It Can Be Considered the Composition of Employment by Industry, Its Composition Change, and Differences in Their Composition as the Economic Background to Political Polarization

Table 2 shows that education, race, and the foreign-born labor force ratio differ in high, middle, and low-skill & wage industries. These factors have been identified in political science literature as influencing political polarization (Maisel and Berry eds. 2010).

According to political science research, Republican supporters are predominantly white and county (rural areas) -based. Although the main support used to be the wealthy and large corporations in the past, the support base also has included the middle class, non-bachelor or higher degrees, and anti-immigrant-populists chiefly in white manufacturing workers after the Trump phenomenon.

By contrast, supporters of the Democratic Party respect racial and other diversities, are based in metropolitan areas, and support immigration policies. Although the Democratic Party's primary support base used to be middle- and low-income layers and labor unions, the party's support base has grown to include persons with bachelor's or higher degrees (Maisel and Berry eds. 2010; Kawasaki, Kawane and Fujiki 2021).

The different compositions of employment by industry and its changes in each state create socially distinct resident groups. These differences affect tendency to support political parties. Therefore, this relation can be considered a background of regional polarization.

III Changes in the Composition of Employment by Industry in the U.S. and Its Regional Differences

(1) Changes in the Composition of the U.S. Employment by Industry

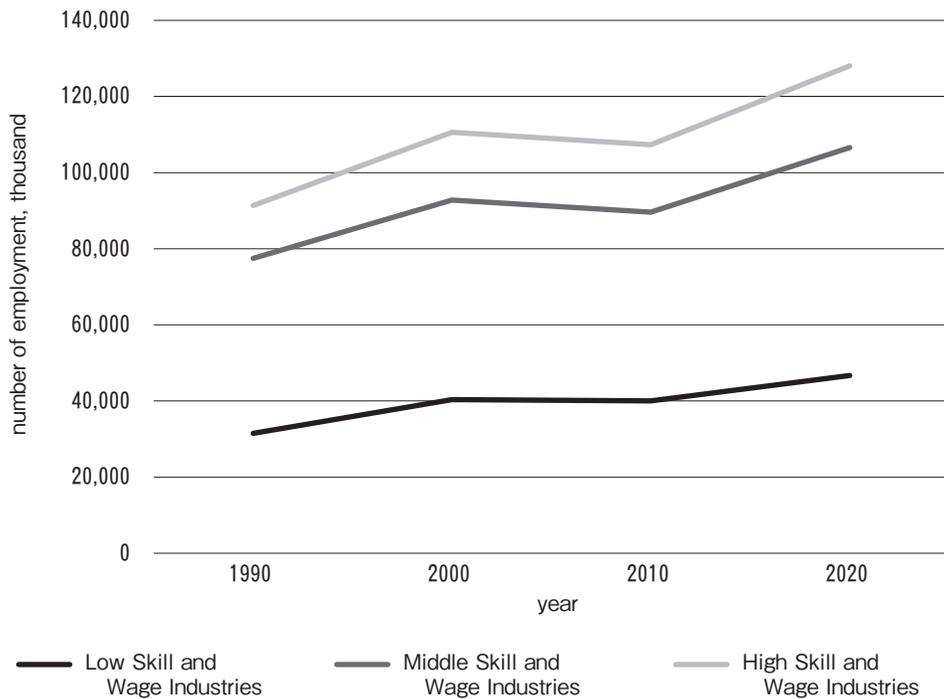
Figure 1 shows the employment compositions of the high-skill & wage industry, low-skill & wage industry, and middle-skill & wage industry.

Although the total number of jobs decreased because of the Great Recession in 2010, it increased significantly from 1990 to 2020.

The weight of the high skill & wage industry slightly increased (15.2% to 16.8%, 1.58 percentage points increase), the weight of the middle-skill & wage industry decreased (50.3% to 46.8%, 3.56 percentage points), and the weight of the low skill & wage industry slightly increased (34.5% to 36.5%, 1.98 percentage points).

As previous studies have pointed out, job polarization is progressing at the industry level, with an increase in the weight of the upper and lower categories and a decrease in the weight of the middle categories (Autor 2010).

Although the overall composition of the labor force is slightly decreasing, a more de-



Source) Created by US Dept. of Labor (monthly).

Figure 1 US Employment by Industry (The High, Middle, and Low Skill & Wage Industry)

tailed analysis shows that the following changes are confirmed in the middle-skill & wage industry: the employment ratio in the manufacturing industry is decreasing due to increased productivity and the globalization of manufacturing (U.S. Dept. of Labor, BLS, monthly). The employment ratio in the construction, education & healthcare industry increased due to domestic economic growth and the social division of labor resulting from innovation progress, advanced healthcare and population aging (Yamagata 2017).

However, as shown in III (2), there are differences in the direction of change in the composition of employment by industry in each state. This is one of the reasons for regional polarization.

In the middle-skill & wage industries, trends among manufacturing workers are closely related to the rise of U.S. populism (the Trump phenomenon), which brings a new development to political polarization. Therefore, the manufacturing industry was analyzed separately.

(2) Differences in the Direction of Change and the Employment Composition of the Industry by State

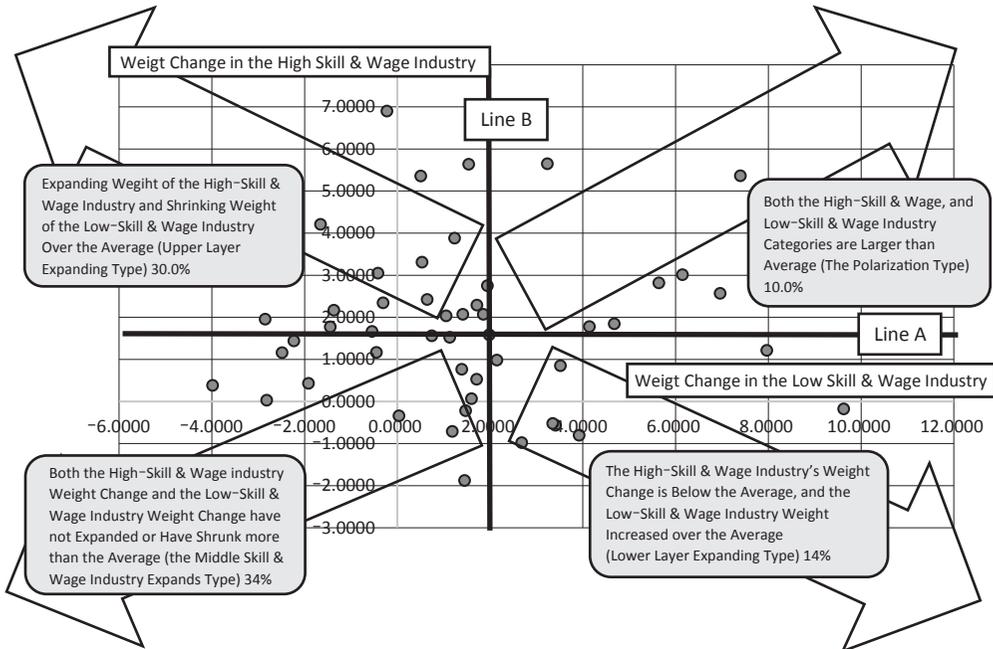
(a) Typology Based on the Changing Degree in the Composition of Employment by Industry: The Evolution to "Different Americas"

How are the "different Americas" formed? Let us examine the changes in employment weight in the high, middle, and low-skill & wage industries in each state from 1990 to 2020, setting the U.S. average as a benchmark, and categorizing the differences in each state's direction.

Figure 2 shows that in absolute values, 43 states (86.0%) increased employment weight in the high-skill & wage industry in absolute values, while only seven states (14.0%) reduced their weights. In low-skill & wage industries, 72.0% of states have decreased the weight, and only 28.0% have increased it. The major trend in the absolute terms analysis was the upper-layer expansion pattern.

In the next step, the pattern of change in each state is typified based on the average U.S. change. This is to elucidate the relative direction of change in the industrial structure of each state for the U.S. average trend to clarify the changing direction of each state.

Figure 2 also illustrates the weight change of the U.S. average with line A (the high-skill & wage industry average) and line B (the low-skill & wage industry average). This figure shows that approximately over half of the states (48.0%) have increased the weight of the high-skill & wage industry above the U.S. average, and 46.0% of states with below-average



Note) Based on the Weight Change between 1990 and 2020 of the Three Industrial Categories, the Classification was Based on the Weight Change of Each State.

Source) Created by US Dept. of Labor, BLS (monthly).

Figure 2 The High-Skill & Wage and Low Skill & Wage Industry's Employment Weight Change from 1990 to 2020 (Position of Each State Relative to U.S. Average)

age weight change. Approximately one-third of the states (26.0%) increased the weight of low-skill & wage employment above the average, while most states (70.0%) decreased the weight below the average.

Accordingly, this figure shows that the relative positions of these states can be classified into four types. States that were difficult to classify on the line were excluded and their distributions were counted.

In the first type, the weight change of the high-skill & wage, and low-skill & wage industry categories is larger than average. These are distributed in the upper right of the figure and account for five states (10% of the total). This type is a “polarized type” in which the weight of the middle category is contracting. The existence of this type suggests that a few states in the U.S. is more polarized than average.

The second type is the expanding weight of the high-skill & wage industry and the shrinking employment weight in the low-skill & wage industry over the average. This type states is distributed in the upper left of this figure and is the largest category, accounting for 18 states (34.0%) of the total. Compared to the U.S. average, this type is more inclined to-

ward the high-skill & wage industry. Contrary to our predictions, this was the most common type.

The third type is seven states (14%), and the high-skill & wage industry's weight change is below the average, while the low skill & wage industry weight increases over the average. This is the type in which the lower class has expanded more than the U.S. average, suggesting that the socioeconomic status of residents may not have improved as much as the U.S. average even with economic growth and job creation in these states.

The fourth type (14%) is both a high-skill & wage industry weight change and the low-skill & wage industry weight changes have not expanded or have contracted more than the average. However, it has been founded that the percentage of construction, transportation, and education & healthcare industries has developed, not manufacturing. Although this pattern is consistent with the direction of industrial employment change in the U.S., the middle-skill & wage industry defined in this note is expanding.

This analysis shows that almost half of the states increased employment weight in the high-skill & wage industry more than the average. That a small part of the states followed a "polarization" path in which they increased the weight of employment in the low-skill & wage industries more than the average, while others followed an "upper-layer expansion" path in which they expanded the high skill & wage industry more than the average from 1990 to 2020.

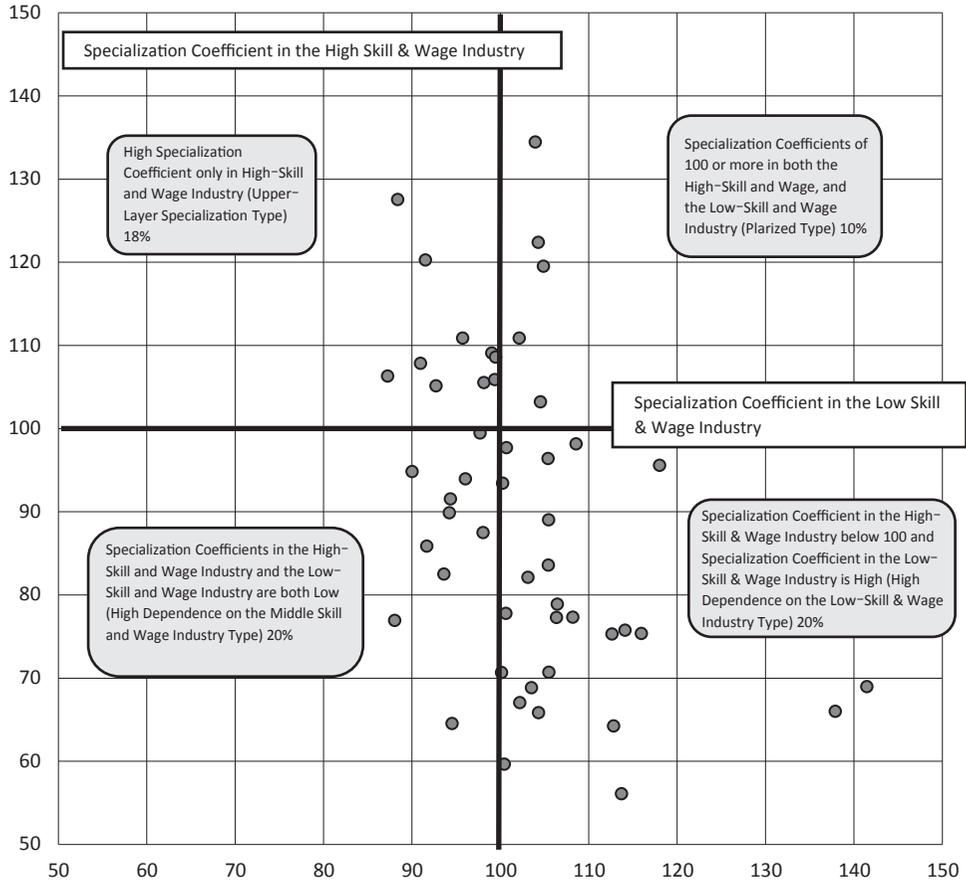
These differences in the changing direction among the states suggest that although the U.S. average seems to have changed slightly, each state's change directions are quite different. This dynamic suggests that "different Americas" were generated from a regional perspective.

In the next section, the relative positions (the specialization coefficients) of the composition of each industry category will be examined for the U.S. average as of 2020. The changes in structure that have generated places from 1990 to 2020 were confirmed.

(b) Topology by Specialization Coefficients 2020: "Different Americas"

Figure 3 shows that distribution of the specialization coefficients of the high and low industry categories by state based on the specialization coefficients to the U.S. average as of 2020. Each state can be classified by these indexes. The middle skill & wage industry distribution can be estimated to some extent as the inversely correlated values of these figures.

This analysis is necessary to clarify the relative position of each state for the U.S. average, and the specialization coefficient is used in the analysis in the next chapter.



Note) Classification based on the 2020 average specialization coefficient for industries in the three categories.
Source) Created by US Dept. of Labor, BLS (monthly) .

Figure 3 4 Types of Each State Based on Specialization Coefficient

First, the overall distribution trend is that a minority of 14 states (28.0%) have a specialization coefficient of more than 100 for the high-skill & wage industry. The majority of the 36 states (72.0%) have a specialization coefficient of less than 100, indicating that a greater part of the states is less dependent on the high-skill & wage industry than the U.S. average.

In the analysis of III (2) (a), the majority of the states have increased the weight of the high-skill & wage industry above the average. However, this figure shows that the majority of the states depend less on the high-skill & wage industry than the U.S. average in 2020.

In addition, the dependence on employment in the high-skill & wage industry is more diversified, ranging from 134.62 to 56.25. In contrast, the dependence on the low-skill & wage

industry is less diversified, ranging from 89.78 to 116.87 in most states, except for a few states. The four states have a considerably large specialization coefficient in the low-skill & wage industries. This implies that these states depend far more on the low-skill & wage industry than the U.S. average.

Second, **figure 3** shows that five states (10.0%) are of the “polarized” type, with specialization coefficients of 100 or more in both the high-skill & wage, and the low-skill & wage industry. Nine states (18.0%) are of the “upper-layer specialization” type, with high specialization coefficients only in the high skill & wage industries.

However, just half of the 25 states (50.0%) are the “high dependence on the low-skill & wage industry” type, with specialization in the high-skill & wage industry below 100 and specialization in the low-skill & wage industry above 100. The ten states (20.0%) are of the “high dependence on both the middle-skill & wage and the low-skill & wage industry” type, with specialization coefficients in the high skill & wage and the low skill & wage industries below 100. The ten states (20.0%) are the “high dependence on the middle skill & wage industry” type, whose specialization coefficients for the high-skill & wage industry and the low-skill & wage industry are less than 100.

The analysis in III (2) (a) and (b) shows that while the high-skill & wage industry’s weight of most of the states has indeed increased from 1990 to 2020. After states have increased their weight in the high-skill & wage industry above the U.S. average. In addition to these results, some states are likely to rely on the middle-skill & wage industry, though a small portion of the total.

The next section examines the relationship between the specialization coefficient of employment in each industry (dependency ratio compared to the U.S. average) and political polarization. It is more articulated to understand the degree of dependence of each state on each industry and to obtain a clear trend with a relative index rather than with an analysis of absolute values.

IV “Different Americas” and Political Polarization

This section surveys the relationship between the specialization coefficients of the high, middle, and low-skill & wage industries, and manufacturing industry employment in each state and their relationship to the Republican or Democratic Party support trends.

The trends supporting Republicans and Democrats in each state are a composite of the results of the 2016 and 2020 presidential and senatorial elections (counting parties that

won at least two of the three factors in each state).

Although to examine the relationship with a support trend by political parties in 2020, the employment specialization coefficient data in 2020 should be used, the current employment survey used in section III is statistical data in units of 1,000 persons.

This statistic provides us most up-to-date data available. However, this value is too low to be used in this section, which requires more precise analysis. It uses the closest 2019 data from the regional economic statistics, and county business patterns aggregated per capita for a more precise analysis.

(1) Specialization Coefficients of the High-Skill & Wage Industry and Party Support Trends

Figures 4 - 1 and 4 - 2 illustrate the employment specialization coefficients in the high-skill & wage industry for each state and the trends of each state to support the Republican and Democratic parties in 2016 and 2020.

The states with high specific coefficients of the high-skill & wage industry are the states on both coasts, states with high-tech industrial areas, and Illinois (mainly due to Chicago).

The figure indicated that the median and mean specialization coefficients for Democratic-supporting states in 2016 are 112.63 and 104.51, respectively. The distribution shows that Democratic-supporting states are generally distributed in a higher value range than Republican-supporting states.

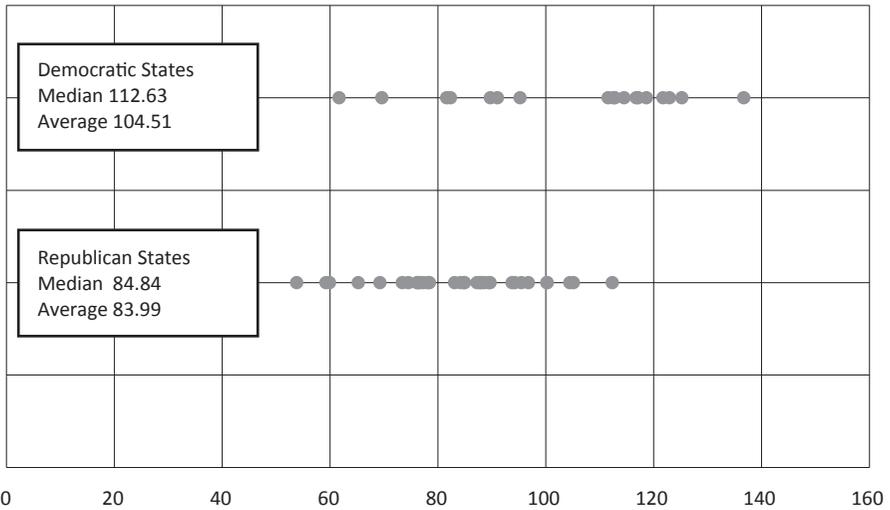
The median for Democratic states is 112.63 and the mean is 104.51 in 2020, while the median for Republican states is 106.72 and the mean is 101.96. Generally, democratic states are distributed over a wider range than Republican states.

Thus, the median, mean value, and distributional trends confirm that states with high specialization coefficients for the high-skill & wage industry generally tend to be more democratic states than the republican states.

The first reason is that the requested educational attainment of employment in high-skill & wage industries deviates more toward a bachelor's degree or above than other categories¹⁾.

In addition, the more diverse racial composition of the population especially with Asians, and the higher percentage of the foreign-born workforce especially among highly

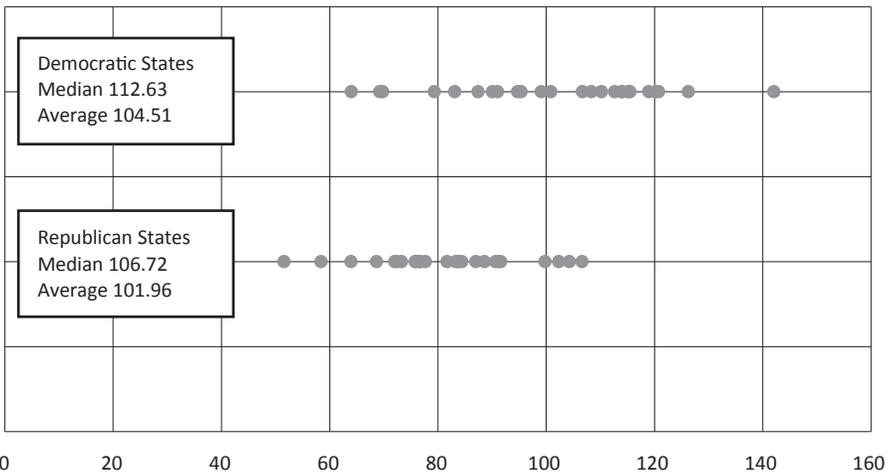
1) In addition, the workforce in this industry category is relatively young. This factor is also expected to increase the tendency to support the Democratic Party.



Note) Create Distribution Based on the Specialization Coefficient of Each State to the U.S. Average of the High-Skill and Wages Industry in 2016.

Source) Created by US Dept. of Commerce (2018) and Real Clear Politics (2016).

Figure 4 - 1 Distributin of Each State's Specialization Coefficient of the High-Skill and Wage Industries and Political Polarization in 2016



Note) Create Distribution Based on the Specialization Coefficient of Each State to the U.S. Average of the High-Skill and Wages Industry in 2019.

Source) Created by US Dept. of Commerce (2021) and Real Clear Politics (2020).

Figure 4 - 2 Distribution of Each State's Specializaion Coefficient of the High-Skill and Wage Industries (in 2019) and Political Polarization in 2020

skilled immigrants are expected to lead to a strong tendency for the Democratic Party.

Next, let us move to the survey on the relationship between middle-skill & wage industry specialization coefficients with party support trend in each state.

(2) Specialization Coefficients of Middle-Skill & Wage Industry and Party Support Trends

Figures 5-1 and 5-2 show the employment specialization coefficients for the middle & wage industry and the distribution of Republican- and Democratic-supporting states in 2016 and 2020, respectively.

High specialization coefficients for this category are generally found in the Rust Belt, especially in the Midwest.

Democratic-supporting states' median and mean values were 97.93 and 104.51 in 2016, while the median and mean values of Republican-supporting states were 98.93 and 96.50 in 2016. Democratic-supporting states' median and mean values were 100.71 and 95.55, respectively in 2020, while Republican-supporting states' the median and mean values were 96.40 and 93.48, respectively. Two states are located at the low end of the distribution, such as Nevada, which has a unique composition of employment in the low-skill & wage industry.

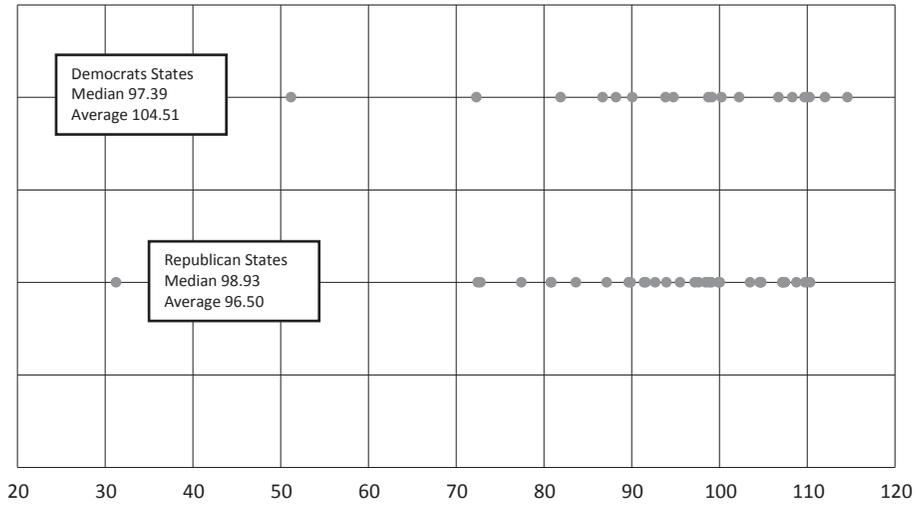
Except for these unique states, both figures suggest that slightly more democratic states are distributed at the high end of the spectrum, suggesting that states that rely more on the middle-skill & wage industry than the national average tend to be more democratic to a small extent.

Its share decreased considerably from 1990 to 2020. In addition, states with a high dependence on manufacturing employment have shown a strong tendency to support the Republican Party since 2016 as described in Section IV (3).

Instead, the construction, transportation, and education & health care industry have increased their share. The construction industry has many Hispanic and immigrant workers, the transportation industry has a high percentage of Blacks, and the education & health care industry has many highly educated workers. This combination of factors suggests that the overall trend supporting the Democratic Party was only slightly stronger.

The actual support tendency might be swinging or determined by factors other than middle-skill and wage industry because the middle-skill & wage industry have little difference in the support trend.

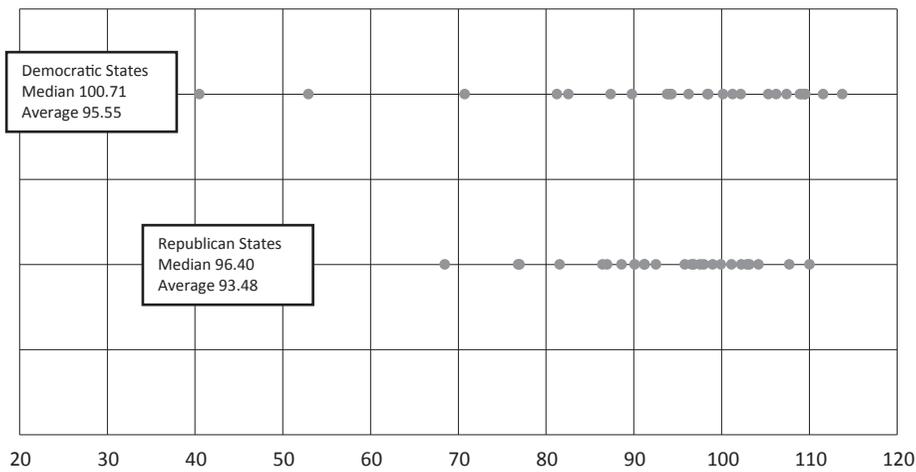
The next step is the analysis of employment in the manufacturing industry, which has been the focus of a recent important political issue.



Note) Create Distribution Based on the Specialization Coefficient of Each State to the U.S. Average of the Middle-Skill and Wages Industry in 2016.

Source) Created by US Dept. of Commerce (2018) and Real Clear Politics (2016).

Figure 5 - 1 Distribuion of Each State's Specialization coefficient of the Middle Skill and Wage Industry and Political Polarization in 2016



Note) Create Distribution Based on the Specialization Coefficient of Each State to the U.S. Average of the Middle-Skill and Wages Industry in 2019.

Source) Created by US Dept. of Commerce (2021) and Real Clear Politics (2020).

Figure 5 - 2 Distribuion of Each State's Specialization Coefficient of the Middle Skill & Wage Industry (in 2019) and Political Polarization in 2020

(3) Specialization Coefficients of Manufacturing Industry and Party Support Trends

Figures 6-1 and 6-2 show the employment specialization coefficients for the manufacturing industry and the distribution of Republican- and Democratic-supporting states in 2016 and 2020, respectively.

High manufacturing employment specialization coefficient states are found in the Rust Belt (especially in the Midwest), and the south and southeast regions.

Figure 6-1 shows that in 2016 the median and mean values of Democratic-supporting states were 83.62 and 85.09, respectively, while the median and mean values of Republican-supporting states are 113.95 and 116.6, respectively. Figure 6-2 shows that in 2020 the median and mean values of Democratic-supporting states are 97.42 and 93.11, respectively, while the median and mean values of Republican-supporting states are 126.01 and 120.66, respectively.

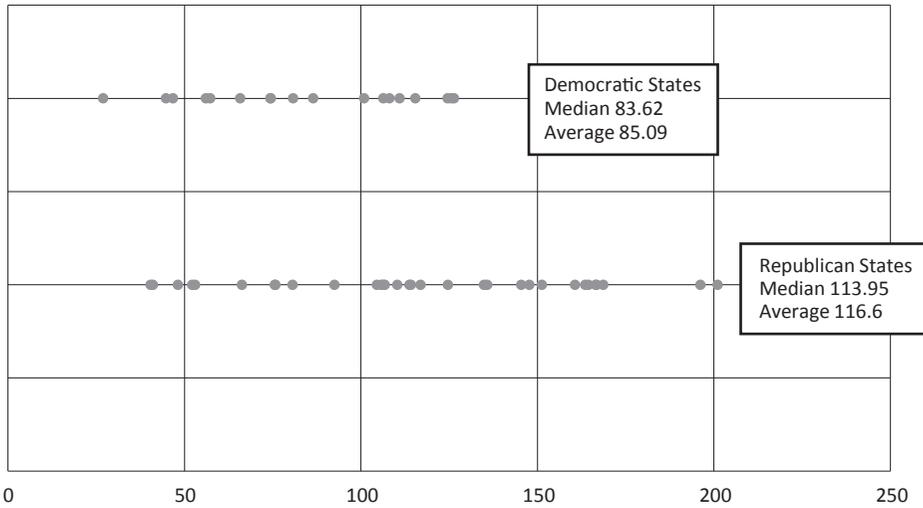
Thus, both figures show that states that rely more on manufacturing employment than the national average tend to be Republican states.

Although in the 2020 President and Senate elections, the Democrats recaptured several states with high dependence on manufacturing employment including the three Rust Belt states from Republicans, the basic trend has not changed.

States with high dependence on manufacturing employment, which tended to support Democrats in the 1960s and other golden years of manufacturing, have supported Republicans more since 2016.

However, it should be noted that there are many conservative states with strong Republican support in the south and southeast in the states with high dependence on manufacturing, and the existence of these states may be reflected in the data in Figures 6-1 and 6-2.

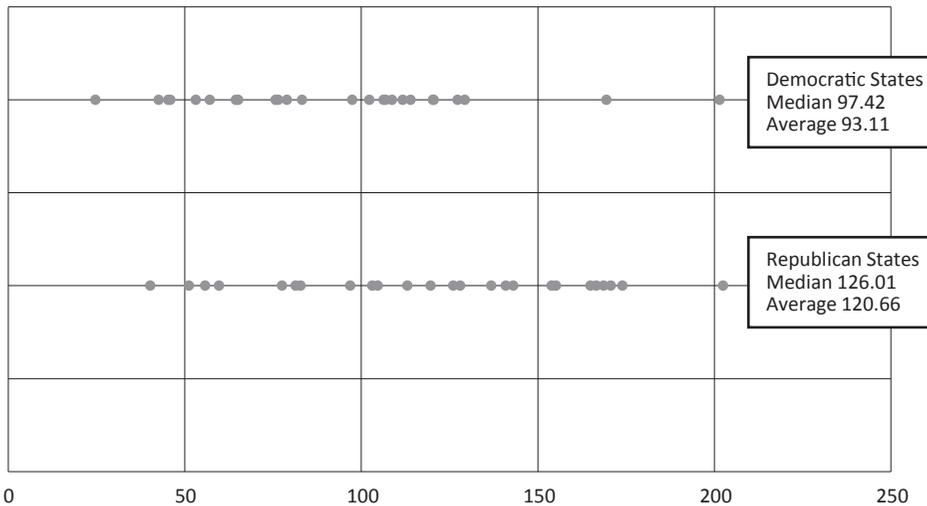
Whether this trend continues will be influenced by the “Trump phenomenon” which has drawn white manufacturing workers into the Republican base of support.



Note) Create Distribution Based on the Specialization Coefficient of Each State to the U.S. Average of the Manufacturing Industry in 2016.

Source) Created by US Dept. of Commerce (2018) and Real Clear Politics (2016).

Figure 6 - 1 Distribution of Each State's Specialization Quotient of the Manufacturing Industry and Political Polarization in 2016



Note) Create Distribution Based on the Specialization Coefficient of Each State to the U.S. Average of the Middle-Skill and Wages Industry in 2019.

Source) Created by US Dept. of Commerce (2021) and Real Clear Politics (2020).

Figure 6 - 2 Distribution of Each State's Specialization Coefficient of the Manufacturing Industry (in 2019) and Political Polarization in 2020

(4) Specialization Coefficients of the Low-skill & Wage Industry and Party Support Trends

To conclude the data analysis parts, we will examine relationship between the low-skill & wage industry and party support trend in each state.

Figures 7-1 and 7-2 show the employment specialization coefficients for the low-skill & wage industry and the distribution of Republican- and Democratic-supporting states in 2016 and 2020, respectively.

Most of the states' high specialization coefficients for the low-skill & wage industry are in the southern and southeastern regions.

Figure 7-1 shows that in 2016 the median for Democratic-supporting states is 97.42 with a mean of 93.11, and the median for Republican-supporting states is 100.84 with a mean of 103.49. Figure 7-2 shows in 2020 the median for Democratic-supporting states is 101.28 with a mean of 104.57, and the median for Republican-supporting states is 102.90 with a mean of 105.23.

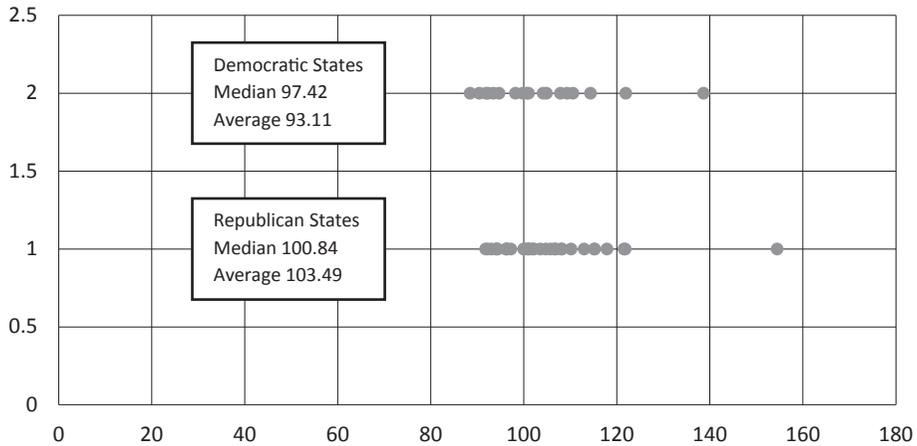
Both figures show that although Democratic-supporting states were more distributed in the lower and higher ranges in 2020, Republican-supporting states are distributed in the higher range in 2016 and 2020, and Republican-supporting states show slightly higher median and mean values in 2020.

As for the assessment, it can be considered that Republican states are distributed in a minimally higher-value range.

As shown in Table 2, the low-skill & wage industry, especially leisure and hospitality, employs many Hispanic/Latino workers. Therefore, it is not surprising that support for immigration policies makes them more inclined to support the Democratic Party. However, the data show a small tendency to support the Republican Party.

The reasons for this result could be the following: in the retail, personal services, and administrative and waste management (routine business) services industry, union membership participation rate is low and the tendency to support the Democratic Party is not very strong. Most states with high dependence on the low-skill and wage industry are in the south and southeast where conservative political movements and culture are very persistent and have strong Republican support.

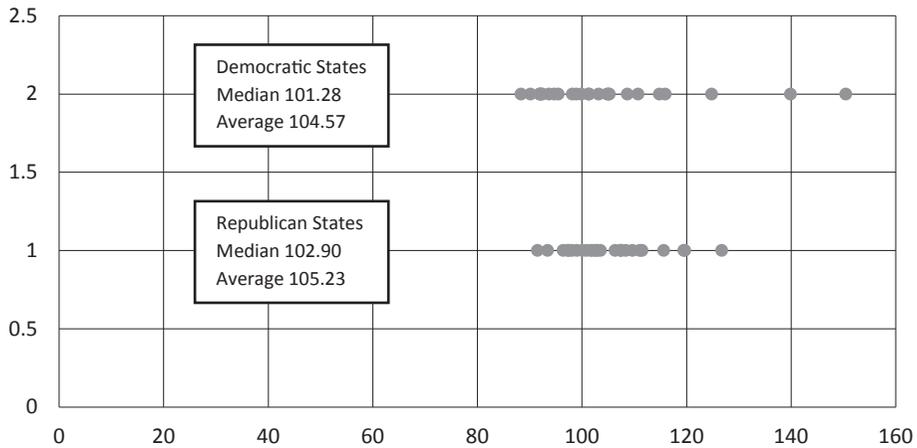
Similarly, by examining dependence on manufacturing employment, it is important to recognize the possibility that these unique conditions in the south and southeast regions may accentuate the tendency to support the Republican Party.



Note) Create Distribution Based on the Specialization Coefficient of Each State to the U.S. Average of the Low-Skill and Wages Industry in 2016.

Source) Created by US Dept. of Commerce (2018) and Real Clear Politics (2016).

Figure 7 - 1 Distribution of the Each State's Specialized Coefficient of the Low Skill and Wage Industry and Political Polarization in 2016



Note) Create Distribution Based on the Specialization Coefficient of Each State to the U.S. Average of the Low-Skill and Wages Industry in 2019.

Source) Created by US Dept. of Commerce (2021) and Real Clear Politics (2020).

Figure 7 - 2 Distribution of Each State's Specialized Coefficient of the Low Skill and Wage Industry (in 2019) and Political Polarization in 2020

V Conclusions

Finally, the analytical results of this study are summarized, and prospects are hypothetically discussed.

The composition of U.S. employment based on the high, middle, and low industry classification shows an expansion in the weight of the upper and lower layers, with the lower layer increasing more, and the middle layer decreasing. A polarization trend was observed.

Results showed that the change in employment weights by industry by state referred to the U.S. average from 1990 to 2020 is not “uniform.” Still, it had different paths to take in the form of (1) upper and lower-layer expansion type (polarization type: a few), (2) upper layer expansion type (a lot), (3) lower layer expansion type (a few), and (4) upper and lower class decline type (middle-class expansion type, a few).

The most recent categorization of the states in 2020 based on the specialization coefficients of the high and low industries shows that specialization in the upper layer has not progressed at the state level as much as expected based on the direction of weight changes since 1990. The categorization shows (1) upper- and lower-layer high type (polarization type: a few), (2) upper layer bias type (a lot), lower layer bias type (major), and upper- and lower-layer low (middle-class bias type, a few).

In section IV, we examine the relationship between the specialization coefficients of each industry category and party support trends and confirm that states with strong upper-layer specialization coefficients tend to support the Democratic Party strongly. In contrast, while states with middle- and lower-layer specialization coefficients do not differ to a great extent in their support tendencies.

The reasons are considered as follows: the upper layer has many highly educated workers with bachelor’s degrees or higher. A high proportion of first-generation immigrants may have contributed to the relatively strong tendency to support the Democratic Party.

In the middle and lower layers, states with high dependence on manufacturing are more inclined to support the Republican Party. The Trump phenomenon has increased the tendency of white manufacturing workers to support the Republican support base and may be influenced by their support for anti-free trade trends. The overall percentage of workers with a bachelor’s degree or higher is low, the percentage of first-generation immigrants is not as high as in the upper layer, and the power of labor unions has been lost in recent years. However, black and Hispanic/Latino employment rates are not low. Combining these

factors may not bring a unilateral trend in favor of either the Democratic Party or the Republican Party.

The Rust Belt states (especially the Midwest) may become swing state because of their high dependence on the middle-skill & wage and manufacturing industries.

However, states that rely on the middle and lower layers currently have little support trends, and industrial dynamics cannot be seen as a decisive factor that significantly changes the support trends. It is possible that support trends are fixed because of sociocultural factors unique to each state.

The current situation continues until the degree of upper-layer employment sufficiently increases in more states. Even if the U.S. reaches this point, parts of the states shift toward a greater reliance on the middle and lower layers than the U.S. average. These dynamics suggest that “different Americas” will exist, rather than states simply converging in an upper-layer-centric direction.

The recent policies of the Democratic Party and the Biden administration to revitalize the middle class and manufacturing sector can be understood as an attempt to counter these trends by strengthening the Democratic Party’s support among the middle class. The Trump phenomenon can be thought of as a movement to realign the Republican Party to strengthen the tendency to support the Republican Party in manufacturing-dependent states.

Progressives who emphasize identity politics are gaining more influence within the Democratic Party. It is necessary to refine the analytical framework with the emergence of a conflict between elites and populists within the two parties (Kawasaki, Kawane and Fujiki 2021; Packer 2021).

References

- Daron Acemoglu and David H. Autor (2011) “Skills, Tasks and Technologies: Implications for Employment and Earnings,” Orley Ashenfelter and David E. Card (eds.), *Handbook of Labor Economics*, Vol. 4, Elsevier, 1043–1171.
- David Autor (2010) *The Polarization of Job Opportunities in the U.S. Labor Market: Implications for Employment and Earnings*, Center for American Progress and The Hamilton Project.
- David Autor, et al. (2013) The Geography of Trade and Technology Shocks in the United States, *American Economic Review Papers and Proceedings*, 103 (3), 220–225.
- David Autor, et al. (2020) Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure, *American Economic Review*, 110 (10), 3139–3183.
- David A. Hopkins (2010) *The Geographic Polarization of American Politics*, Doctoral thesis of Philosophy in Political Science, University of California, Berkeley.
- Ethan Kaplan, Jorg L. Spenkuch and Rebecca Sullivan (2020) *Partisan Spatial Sorting in the United States: A Theoretical and Empirical Overview*, University of Maryland Working Paper.

- Gabriel Winant (2021) *The Next Shift: The Fall of Industry and the Rise of Health Care in Rust Belt America*, Harvard University Press.
- George Packer (2021) *Last Best Hope: America in Crisis*, Basic Books.
- Greg Martin and Steven Webster (2018) The Real Culprit Behind Geographic Polarization, *The Atlantic*.
- Hiroyuki YAMAGATA (2017) “Dynamics of the U. S. Industrial Structure after Lehman Brothers’ Bankruptcy: Innovation, Globalization,” the Social Division of Labor, and Income Polarization, *Rikkyo Economic Review*, 71-1, pp. 65-102.
- Hiroyuki YAMAGATA (2019) “Economic Backgrounds of the Trump Phenomenon,” *The Journal of Ohara Institute for Social Research*, No.725, pp. 52-71. (in Japanese)
- Hiroyuki YAMAGATA (2020) “Analysis on the Economic Conditions in the U.S. Rust Belt: Dynamics of Industrial Structure and Job Polarization, Changing Situation of Manufacturing Workers, and Limits of State Industrial Policy,” *International Economics*, The Japan Society for *International Economics*, 71, pp. 97-120. (in Japanese)
- Nobuki Kawasaki, Takuro Kawane, and Takeyasu Fujiki (eds.) (2021) *Introduction to Modern U.S. Political Economy*, Mineruba Shobo. (in Japanese)
- Jonathan A. Rodden (2019) *Why Cities Lose: The Deep Roots of the Urban-Rural Political Divide*, Basic Books.
- Justin Buchler (2018) *Incremental Polarization: A Unified Spatial Theory of Legislative Elections, Parties, and Roll Call Voting*, Oxford Univ Pr.
- Neil Irwin and John Katz (2016) “The Geography of Trumpism,” *NYT*.
- Nolan McCarty, Keith T. Poole, and Howard Rosenthal (2008) *Polarized America: The Dance of Ideology and Unequal Riches*, The MIT Press.
- Real Clear Politics (2016) *Polls*, Real Clear Media Group.
- Real Clear Politics (2020) *Polls*, Real Clear Media Group.
- Ronald Inglehart and Pippa Norris (2017) “Trump, Brexit, and the Rise of Populism: Economic Have-Nots and Cultural Backlash,” *Harvard Business School Working Paper*, Harvard Business School.
- Sandy Maisel and Jeffrey M. Berry (eds.) (2010) *The Oxford Handbook of American Political Parties and Interest Groups*, Oxford Univ Pr.
- US Census Bureau (2021a) *American Community Survey 2000 Dataset*, US Census Bureau.
- US Census Bureau (2021b) *Current Population Survey 2020 Dataset*, US Census Bureau.
- US Dept. of Commerce (2018) *County Business Patterns 2016*, US Dept. of Commerce.
- US Dept. of Commerce (2021) *County Business Patterns 2019*, US Dept. of Commerce.
- US Dept. of Labor, BLS (monthly) *Current Employment Survey*, U.S. Dept. of Labor.