sustainability

MDPI

Article

The Impact of Labor Market Risk on Youth Career Preparation for Sustainable Development: Evidence from Taiwan

Yen-Ling Lin [1,*] and Cheng-Yi Kang [2]

[1] Department of Economics, Tamkang University, 151 Ying-Chuan Road, Tamsui, New Taipei City 25137, Taiwan
[2] Doctoral Program in Foresight for Educational Leadership and Technology Management, Tamkang University, New Taipei City 25137, Taiwan; 155984@o365.tku.edu.tw
* Correspondence: yenling@mail.tku.edu.tw; Tel.: +886-2-26215656-3381

Abstract: The issue of how youth are motivated to prepare for their careers has been longstanding, yet studies in this area remain limited. This study examines the effect of labor market risk, such as wages and unemployment, on the career preparedness of young people, taking the example of Taiwan. Multi-year cross-sectional data from a manpower utilization survey and higher education survey were used, and logit models, including the multilevel-multinomial logit model and ordered models, were employed to analyze the empirical data. The findings suggest that youth career preparation is positively affected by market risk variables. Additionally, school participation and parental employment status appear to play important roles in determining the career preparedness of young people. It is essential that sustainable development is enabled so that today's youth can develop the skills and capabilities necessary for a prosperous future.

Keywords: career preparation; unemployment risk; wage risk; youth

Citation: Lin, Y.-L.; Kang, C.-Y. The Impact of Labor Market Risk on Youth Career Preparation for Sustainable Development: Evidence from Taiwan. *Sustainability* **2023**, *15*, 6857. https://doi.org/10.3390/su15086857

Academic Editor: Franklin G. Mixon

Received: 12 March 2023
Revised: 14 April 2023
Accepted: 16 April 2023
Published: 19 April 2023

1. Introduction

Youth is a crucial labor force for a country's economic development. However, the "World Employment and Social Outlook—Trends 2023" reveals that the average unemployment rate for global youths in 2022 was as high as 13% for those aged between 15 and 24 years old, which is more than twice the average unemployment rate among adults worldwide (5.8%) (International Labor Organization (ILO)). Specifically, the youth unemployment rate in Greece (35.5% in 2021), Italy (30.92% in 2022), Spain (34.8% in 2021), and Romania (21.0% in 2021) already surpassed 20% while the unemployment of youths in the United Kingdom (11.2% in 2019) and the EU (18.8% in 2021) and EURO area (19.8% in 2021) also surpassed 10%. (The data pertain to ILO and can be found at: https://ilostat.ilo.org/data/, accessed on 10 April 2023). China had a youth unemployment rate of 14.3%, Indonesia had 13.9%, and Malaysia had 12%, as of 2021. Brazil had a rate of 28.3% while the United States had 9.7% in 2021. Therefore, youth unemployment has become a global concern. Various studies have addressed related unemployment problems persistently, while youth unemployment has become an emerging issue that prevails in different countries.

The high unemployment rate of youths causes more unemployed youths to become "discouraged workers" or known as youths "without seeking employment", or even part of the new "Yo-Yo" youths ("Yo-Yo" refers to the group torn between choice and risk [1,2]. The main feature of the young Yo-Yo group is the career "de-standardization" and the youth career development that differs from the past standard career mode: study—employment—marriage—having children—retirement. A more diversified development path could appear, e.g., postponed graduation, taking leave, and working holiday. Other features could include the recoverability of a career, implying that young people could still return to the youth period after leaving school and entering the workplace, e.g., resignation for examination preparation or re-study). The main cause of youth

unemployment in general is the lack of adequate career preparation/readiness (Career preparation/readiness is the attainment and demonstration of requisite competencies that broadly prepare college graduates for a successful transition into the workplace) and the lack of an adequate attitude, which includes having an "excellent working attitude", "stability and stress resistance", and "problem-solving capacity". The absence of such capacities which employers give priority to may make it difficult to be employed. As the rising annual youth unemployment rate increases the risk of labor market, the preparation for youths when faced with risks becomes considerably important. Nonetheless, few relevant literatures conduct empirical analysis on the career preparation and attitudes of youth and do not evaluate the level of preparation or responses in terms of higher risks with the labor market. Theil [3] believes that personal attitude is related to the expected remuneration when faced with risks. Under the uncertainty, each unit increased in risk will result in a higher risk premium expected by individuals with a higher level of risk aversion. Individuals with a greater level of risk aversion have a higher expected effect on individuals with a smaller risk level (see Figure 1) [4,5]. When the choice occurs in the future, behavior changes or adjustments for risk are examples of so-called preventive preparation. Some literatures found that the preventive behaviors of labor suppliers when faced with wage risks were consumption reduction [6–8] or saving increase [9–11]. Some literature findings also showed that the income uncertainty will drive households to hold 20~50% of wealth as prevention [12]. Therefore, market risk and personal preventive preparation also presents a positive correlation while individuals with greater risk aversion will have a higher level of preparation or adjustment, as shown in Figure 2. As in the "quasi-labor supply" period, labor market risk may not bring a direct impact on youths during the school period, but it presents an indirect impact on youth's career preparation and behaviors. Although vocational training and industry-academic cooperation are emphasized more nowadays, the problems are not how many resources the government or educational institution spoon-feeds the youths, but rather, how youths lack the sensitivity to labor market and could not positively understand the risk and correctly prepare their own competitiveness. For this reason, even if the government offers some funds and resources, youths may still fail to cope with career preparation in response to employment risks.

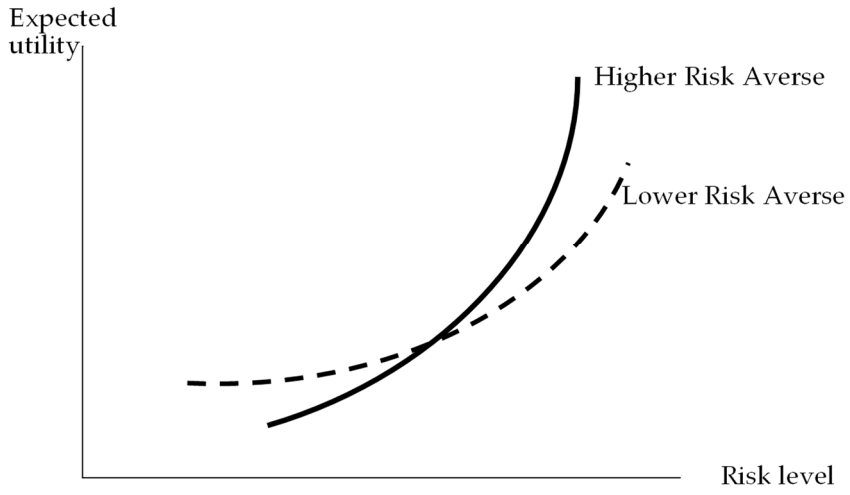

Figure 1. Indifference Curves for Difference Risk Averse Level.

This study investigated youths' career preparation as a possible factor contributing to the increasing youth unemployment rate among those aged between 15 and 24 years old who are still in school in Taiwan. This study aims to examine the lack of adequate career preparation and readiness as the main cause of high youth unemployment. Investing in human capital is critical for youths to succeed in the labor market since their knowledge, skills, and health are essential for enhancing their competitiveness. In the context of youth unemployment, investing in human capital through career preparation and education is

critical to increasing their employability and reducing their risk of long-term unemployment. By developing the necessary skills and knowledge to succeed in the labor market, young people can improve their chances of finding meaningful employment and building a successful career [13,14].

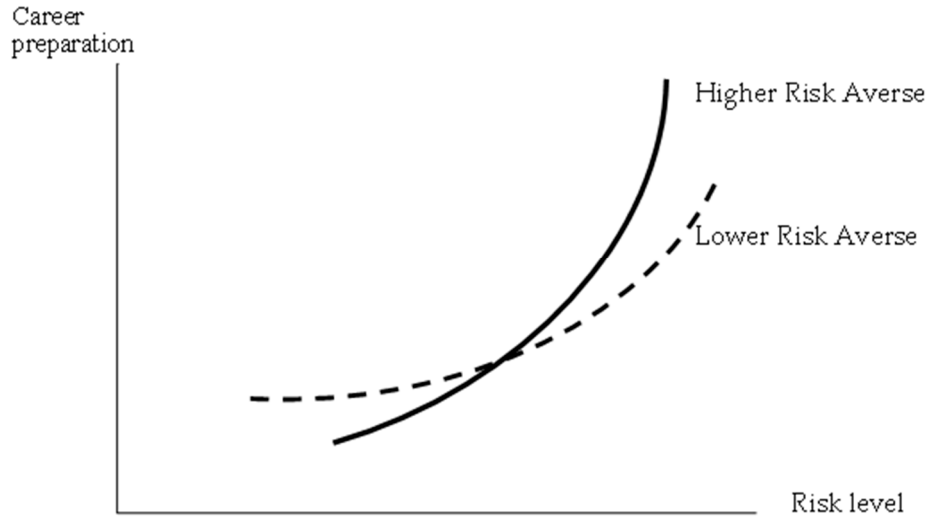

Figure 2. Career Preparation for Difference Risk Averse Level.

This study also considers the labor market risks relating to wages and unemployment. Gustman and Steinmeier [15] mentioned that youth school enrollments and career decisions that are not influenced by labor market information—particularly the wage and unemployment rate—will cause estimation bias. This study further considered youths' self-attitudes, self-awareness of labor conditions, market sensitivity, and autonomous career preparation. We adopted the data "Future Plan" from the "Taiwan Higher Education Data" as the observation variables, and selected university junior students from the database as our research objects. University junior students are not students who will graduate in the current year, but will soon enter the workplace, meaning that career preparation is one of the most important matters for graduation. This study conducts its analysis by using the investigation data on university junior students in 2005 from the "Taiwan Higher Education Data" to avoid the estimation bias of the substantial reform of education funding after 2005 in Taiwan.

Between 2000 and 2022, the unemployment rate among Taiwanese youths aged 20 to 24 rose from 7.36% to 12.7%, representing a 5.34% increase over the 22-year period. (refer to Figure 3) and reaching triple the average unemployment rate. Although the rate was slightly lower than some advanced countries in Europe, the rate was far higher than the rate in Japan (3.67%), the Philippines (6.19%), Singapore (9.29%), and South Korea (10.97%). The trend is expected to continue increasing in the next five years. The behavior of the youth unemployment rate in Taiwan, as shown in Figure 4, shows that the trend before 2000 was smooth, but substantially increased and fluctuated after 2000 (Some of the literature suggest that there is a high correlation between the expansion of higher education and employment in Taiwan since 1994, as a large number of students who graduated with higher education entered the workplace since 2000. Nonetheless, other literature hold different views [16]). Moreover, the discrepancy between the youth unemployment rate and the average overall unemployment rate expanded increasingly. Particularly, the youth unemployment rate of those between 20 and 24 years old was most serious.

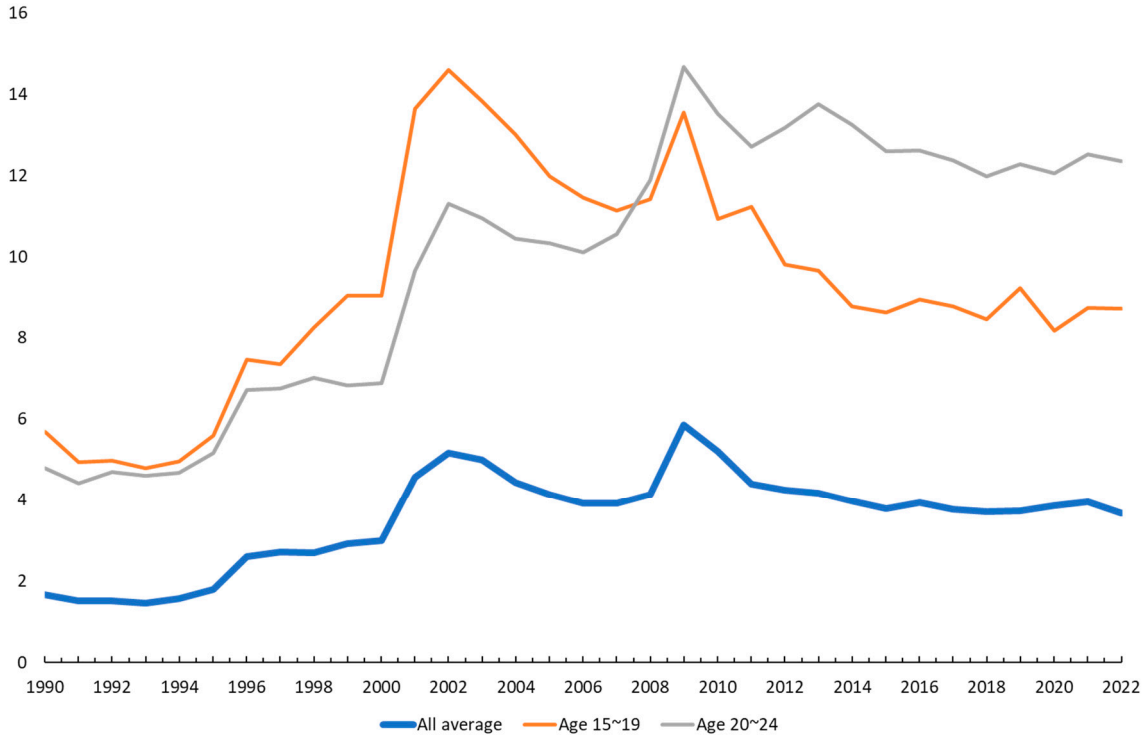

Figure 3. Unemployment Rates(%) of Taiwan from 1990 to 2022. Data source: https://nstatdb.dgbas.gov.tw/dgbasall/webMain.aspx?sys=100&funid=qryout&funid2=A040107010&outmode=8&deflst=1&outkind=1, (accessed on 1 April 2023).

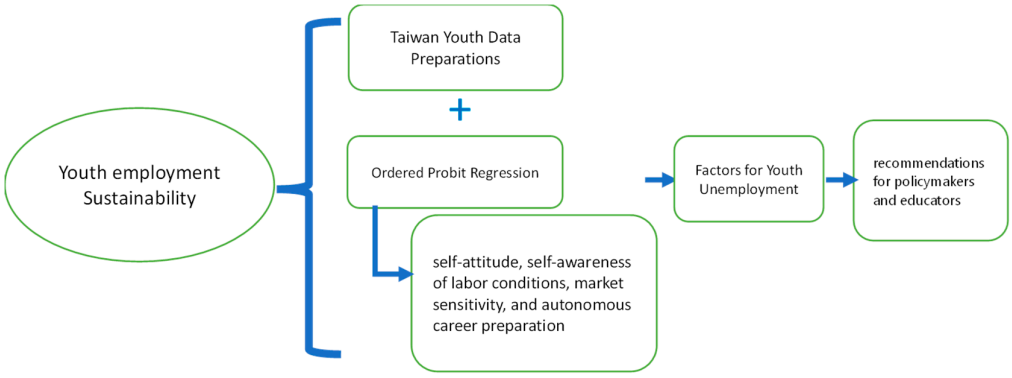

Figure 4. The research area of the study.

With regard to parental occupation has the most direct influence on children, the observation of wage risk in this study is conducted from the employment wage of parents. With regard to unemployment risk, this study considers the influence of parental employment status on the youth unemployment rate. We adopt career preparation as a dummy variable and analyze the influence of risk by a probit model and ordered probit model. The labor market risk is subject to the influence of multiple economies, communities, and international factors rather than just the cause of youths. The empirical analysis of the study control takes into account how possible environmental factors may influence youth career preparation.

The remaining sections of this paper are listed as follows. First, this paper addresses the study area and research scope; second, this study reviews the related literature to support the arguments; third, we address the target data and empirical models; fourth, we present the results of empirical analysis; fifth, we present the discussion; and finally, the conclusions are drawn.

2. The Area of the Study

The area of this study is focused on the issue of youth unemployment with considerations of sustainability, which has become a global concern. This paper specifically examines the youth unemployment rate in Taiwan and highlights the importance of adequate career preparation and attitude in addressing this issue. This study analyzes data from a survey conducted on university junior students in 2005, focusing on their self-attitude, self-awareness of labor conditions, market sensitivity, and autonomous career preparation. The selection of university junior students is appropriate as they are close to accessing the workplace and career preparation is an essential matter for graduation. This study aims to observe the factors that cause the youth unemployment rate increase and provide insights for policymakers and educators to improve the sensitivity of youths to the labor market and help them prepare for employment risks. The study could provide insights and recommendations for policymakers and educators on how to design and implement effective and sustainable career preparation programs that empower youth and promote sustainable economic development in Taiwan. Figure 4 shows the relationship between each research subtopic in this study.

3. Literature Review

In the literature, the preventive preparation of labor supply was sometimes discussed. For example, Eaton and Rosen [17,18] and Hartwick [19] explored the intrinsic influence of wage uncertainty on labor hours. Parker et al. [20] also discovered that the self-employed in the market sustained a higher wage risk, which corresponded to relatively longer working hours. It's suggested that the increase of wage risk will increase the first period of labor supply by individuals (under two phases of models) as the compensation of "insurance" occurred at wage risk because individuals will take future income fluctuations into consideration, forming a preventive motive so that individuals will have a relatively higher motive to increase labor hours compared with groups with a lower wage risk when the individuals are faced with a higher wage risk (even if the risk never comes). Kuhn and Lozano [21], on the contrary, measured wage risk through wage dispersion and discovered that higher wage dispersion will substantially increase preventive labor supply (labor hours). Some literatures argue that even during a more suppressed period, the labor hour will significantly decline due to market deflation, while the existence of a preventive motive still increases the intention for the labor supplier to increase labor hours ([22–24]). Additionally, for preventive saving, the early studies from [9–11] indicate that uncertainty will both increase and reduce preventive saving. For example, the increase of social security will reduce preventive saving or asset accumulation ([25,26]).

Most of the analysis on youths' behavior focuses on the field of sociology, with little analysis in economics. Some studies explore the influence of wages on adolescent school enrollment/dropout rate, and the findings indicate that the drop in the youth unemployment rate will increase adolescent school enrollment because youths can pay for tuition through part-time jobs, particularly youths from families with lower income. Hence, the higher youth unemployment rate will lead to the higher possibility of adolescent school dropout in families living in poverty ([27]). Some literatures reveal that dropouts perform poor in future employment and most of them only receive a minimum-wage income ([28,29]). Gustman and Steinmeier [15] analyze whether the youth school-enrollment rate and labor supply are subject to the influence of the labor market wage and youth unemployment rate. They believe that estimation bias will take place if youth school-enrollment and employment decisions fail to take into consideration the influence of labor market information (particularly when the wage and unemployment rate are indispensable). They adopt data from the 1976 Survey of Income and Education to conduct analysis through a joint decision model. The empirical results indicate that higher wages result in a lower school enrollment rate, particularly among White adolescents. In terms of lower unemployment rates, White adolescent males have relatively lower school employment rates, followed by non-White adolescent males and then White females. Nonetheless, they do not control the family

background of individuals, which could lead to an estimation error. Moreover, wage structure also affects the intention for youth employment. For example, Germany has higher wages for technicians than persons with higher education in recent years, causing dropout rates in higher education to rise year by year. Some literatures also reveal that when the macro-economy thrives, the dropout rate among adolescents also increases ([30]). Some research shows that youth who are indecisive about their career plans have significantly lower wages in adulthood ([31]).

The recent study by Golombek et al. [32] explores the relationship between youth labor market outcomes and educational outcomes in the context of the Great Recession. Using data from the National Longitudinal Survey of Youth 1997 (NLSY97), the authors examine the effects of parents' economic resources, regional economic conditions, and gender on the labor market outcomes of young adults. They find that the Great Recession had a negative impact on the labor market outcomes of young adults, with those from lower-income families and regions with higher unemployment experiencing the greatest negative effect. The authors also find that young women were more adversely affected by the Great Recession than young men. They conclude that the economic downturn had a long-term impact on the labor market outcomes of young adults and suggest policy interventions to help mitigate the economic effects of the Great Recession. Cavaglia et al. [33] examines the impact of the COVID-19 pandemic on youth unemployment in the UK. Using data from the Labor Force Survey, the authors find that the pandemic has had a disproportionate impact on young people, with their employment prospects deteriorating more rapidly than for other age groups. The article discusses the reasons for this, including the concentration of young people in sectors such as hospitality and retail that were hit hard by the pandemic, and the difficulties they face in accessing training and work experience. The authors also consider policy options for addressing youth unemployment in the wake of the pandemic.

This study is distinctive from earlier studies in that it observes the influence on youth behavior regarding labor market risk. While more studies have examined the preventive measures of labor supply, there have been fewer studies that focus on employed youth. Labor market risk can have an indirect impact on youth, but their career preparation can have a substantial effect on their future employment performance, such as wages and the unemployment rate. The employment performance of youths is closely tied to the future economic development of a country, making the analysis and exploration of youth behavior a priority for this study.

4. Empirical Strategies

The research concept of this study starts from market observation, and then considers its causal relationships, rather than starting from a theoretical model. Therefore, it is an empirical study based on market observations.

- A description of the data collection process;
- An explanation of the selection of university junior students as the survey participants;
- A definition of the risk variables;
- A specification of the empirical model by ordered probit model.

4.1. Data

For analysis, this study adopts two data: the Manpower Utilization Survey and Taiwan Higher Education Data. The data from the Manpower Utilization Survey are acquired to calculate wage risk and unemployment risk variables in the labor market, while the level of career preparation is acquired from Taiwan Higher Education Data.

The Manpower Utilization Survey is the additional project survey from the Human Resource Survey—the annual survey data of the Directorate General of Budget, Accounting and Statistics and Council for Economic Planning and Development, Executive Yuan, Taiwan, since 1979. The main purpose of this survey is to control the utilization and transfer of labor force in Taiwan and the status of changes in employment and unemployment, and manpower development trends. The survey and analysis results provide

government-related agencies with reference for developing manpower policies, the promotion of occupational training, and other decisions. The Human Resource Survey provides monthly survey data, and mainly surveys the basic data of individuals in the labor market. The items surveyed for respondents include individual social-economic variables (age, sex, relation with household head, marital status…etc.), labor structure, employment, unemployment, cause of unemployment, and non-labor composition as well as other basic data. The Manpower Utilization Survey surveys the labor market with more detailed information each May. Apart from the existing items in the Human Resource Survey, the items of the survey mostly include three sections: the first section understands the manpower utilization and change of jobs for employees, including the monthly income, weekly regular labor hours, working period of the current job, change of jobs last year, work sites and the positions served, reason for leaving the previous job, method for acquiring the existing job, and if the employees intend to change or increase additional work. The second section surveys the status of the unemployed, including searching for expected occupation and remuneration, work opportunities, and the reason for unemployment during the process of work search, and the sources for livelihood expenses during the search of work. The third section intends to understand the supply of potential labor and the content of the survey includes the working condition of non-labor forces from last year and the reason for work suspension, circumstances for looking for work last year, and the reason for suspending the research for work, employment intention, and expected remuneration. Moreover, the survey also includes the age and number of children, which is conducted among spouses and females living together. The study adopts the database and selects data from full-time employees of private sectors for calculation. With regard to wage distribution, the extremes falling in 1% of the two ends distributed on the left and right are excluded, while the observation value of unreasonable wage data are also excluded, including omissions of wage data and the nonconformance between labor hours and wage data. Hence, the data of this database can yield the wage risk coefficient of each industry and the unemployment rate of youths in county/cities while corresponding these two variables to the parental occupation industry in Taiwan Higher Education Data.

The Taiwan Higher Education Data were a random sampling survey conducted by National Tsing Hwa University for project execution commissioned by the National Science Council between 2003 and 2006, including a questionnaire and interview. The objects comprise higher education institutions (including general university, science and technology universities, and vocational colleges) freshmen, junior students (including the junior follow-up survey on freshmen), and graduating students. The survey questions not only include the attribute variables of individuals and parents, but also the senior high school and vocational senior high school career learning environments among the main survey respondents of freshmen, the survey on living status, and the status of their university career. Junior students and two-year vocational college units are investigated for the learning status of the students, future orientation survey, general lifestyle of students in and outside of school, interests, and the level of utilization of school facilities (such as library). Graduating students are divided into six sections: their current status, employment status, advanced study, university career, respondent opinions, and respondent background.

The paper conducts career preparation analysis on the 2005 junior survey samples taken from the Taiwan Higher Education Data in a total of 46,509 samples. Junior questionnaires consist of the survey for students' "future plan" during the university period, the main items of which include: implementation of academic topic research, preparation for the career certification test, preparation for national exams, overseas study preparation, and preparation for domestic research institutes. The paper takes the "preparation for career certification test" as samples for access to the career preparation of private sectors, "preparation for national exams" as the career preparation for accessing the public sectors, while the "implementation of academic topic research", "overseas study preparation", and "preparation for domestic research institute" are preparations intended to acquire better or higher employment criteria (education), which the paper also regard as career preparation.

Moreover, participation in an enterprise internship is also one direct indicator of career preparation, and it could likely be the atmosphere for the higher education students not as strong for that year, and hence missing the survey for this item. Apart from the items of career preparation, other questions such as clubs, teachers' instruction methods, departments, part-time jobs during study, books reading, exercise, and the educational background of parents, all present a considerate impact on the employment criteria for the individuals in the future. The paper also incorporates these variables into the control variables since different background criteria form different motives for career preparation in order to control the differentiation of employment conditions in different individual samples.

4.2. Definitions of Variables

4.2.1. Wage Risk

We defined wage risk by the coefficient of wage risk and wage inequality. The coefficient of wage risk is based on the concept of Parker et al. (2005), which is when people forecast the future possible wage risk according to the wage fluctuations in the past few periods. The past wage fluctuation is the extrinsic influence factor for current decisions. Since wage growth will show trends following the age and education level of individuals, the data of wages must undergo "detrend" prior to setting up the level of wage risk to avoid having fluctuations of wage risk from due trends. The Equation (1) refers to the wage risk:

$$\sigma_{w,it} = \frac{1}{2}\sum_{j=t-1}^{t} \sqrt{\left(\widetilde{w}_j - \overline{\widetilde{w}_j}\right)^2}. \quad (1)$$

The $\widetilde{w}_j$ in Equation (1) refers to a detrend wage while $\overline{\widetilde{w}_j}$ refers to the mean wage after detrend. Hence, $\sigma_{w,it}$ denotes the level of wage risk for individual i and takes the mean average by industry further. Since the youths of Taiwan Higher Education Data have not been employed, but the majority of labor market information comes from the information related to parents' work, we consider the youths to receive a direct impact from the career market information (wage and employment) of parents (High correlation between income and employment in two generations [34,35]).

In addition, we adopt the mean industry wage risk level of parents in the corresponding Manpower Utilization Survey by industry to set up the wage risk level as 1 (100%) if the parents are unemployed to further control the wage inequality impact of society. The paper utilizes manpower survey data to calculate the wage difference in five equal wage divisions by industry and gender, which corresponds to the gender of the sample and the industry of parents to capture the inequality effect of wage risk.

4.2.2. Unemployment Risk

Unemployment risk represents the possible risk level faced by individuals in the future. Carroll et al. [36] adopted the Probit model to control all the variables related to the individuals' employment, using continued work next year as the dependent variable for predicting the following unemployment rate. This study adopts the unemployment rate of youths aged between 20 and 24 years old from the Manpower Utilization Survey data as the possible risks of unemployment for youths upon graduation. To capture the regional and individual differentiation by gender for the unemployment data, this study calculates the city-level youth unemployment rate.

The pre-warning of unemployment for youths not only comes from the youth unemployment rate, but also from the unemployment of their parents, which could result in career preparation concern. This study incorporates the unemployment status of parents from the samples in Taiwan Higher Education Data to capture the influence of their parents. Moreover, the labor market discrimination will lead to different unemployment possibilities. We calculate the ratio of unemployment for females due to marriage or birth as one of the variables of unemployment risks to capture the discrimination effect in unemployment risk for the labor market.

The descriptive statistics are shown in Table 1. From Table 1, the frequency of participating in club and books/magazine reading has a relatively lower ratio to total frequency among the 2005 junior students, while the part-time working ratio is approximately 20%. The weekly maximum hours for online surfing are seven hours, which is far less than that after 15 years (the year of 2020). Over 60% of parents of university students have a university degree while the ratio of unemployment in mothers (0.0088) is slightly higher than that of fathers (0.0056). Nonetheless, the wage risk of fathers is higher than that of mothers. About 30% of the 2005 junior students participate in projects, 35% of the 2005 junior students prepared for the certification test, 24% of the 2005 junior students participated in public sector exams, 18% of the 2005 junior students prepared for overseas study, and 31% prepared for domestic graduate schools.

Table 1. Variable Description and Descriptive Statistics.

	Variables	Description of Variables	Mean	S.E.	Min.	Max.
➢	Male	Male = 1, Female = 0	0.4763	0.4994	0	1
➢	Participating in clubs	Sum of frequency for participation in clubs	2.1562	3.5663	0	24
➢	Read books/magazines	Sum of frequency in reading all books	5.5488	5.9706	0	21
➢	Cumulative current credit numbers	Total number of credits earned by semester	24.8140	35.0212	0	250
➢	Credit numbers failed	Total number of credits failed by this semester	2.6524	6.4741	0	100
➢	Loans for tuition payment	Tuition source from loans (amount)	5832.56	15,800.31	0	200,000
➢	Loans for living allowance	Living allowance from loans (amount)	666.29	4944.96	0	200,000
➢	Living expenses	Accommodation fees and meal expenses (amount)	6911.60	11,366.01	0	160,000
➢	Books expenses	Textbook and extracurricular books expenses (amount)	1963.58	2661.26	0	30,000
➢	Cram school expenses	Cram school expenses (amount)	849.34	4606.66	0	60,000
➢	Entertainment expenses	Including transportation, telecommunication and entertainment expense (amount)	1299.77	2307.28	0	60,000
➢	Part-time jobs	Part-time job?	0.2050	0.4037	0	1
➢	Park-time job hours	Part-time job hours	3.3595	10.4917	0	168
➢	Part-time job income	Part-time job income (amount)	1259.31	4129.54	0	200,000
➢	Weekly internet hours	Number of hours per week spent on internet	1.7841	2.3212	0	7
➢	Father/mother with university degree	University degree = 1	0.6605/ 0.6088	0.4736/ 0.4880	0	1
➢	Father/mother employed by private-sector enterprises	Employed by private-sector enterprise = 1	0.3353/ 0.2437	0.4721/ 0.4293	0	1
➢	Father/mother are professionals	Professional = 1	0.0498/ 0.0380	0.2176/ 0.1912	0	1
➢	Father/mother are technicians	Technician = 1	0.0471/ 0.0557	0.2118/ 0.2293	0	1

Table 1. *Cont.*

Variables	Description of Variables	Mean	S.E.	Min.	Max.
➢ Father/mother are workers	Worker = 1	0.2535/ 0.1365	0.4350/ 0.3433	0	1
➢ Father/mother are unemployed	Unemployed = 1	0.0056/ 0.0088	0.0087/ 0.0070	0	1
➢ Father/mother wage risk	$\sigma_{w,it}$	8141.75/ 6221.16	4733.84/ 4779.42	6472.37/ 4093.50	27,888.84/ 30,405.34
➢ Having conducted project research	Conducted project research during four years of university study	0.3055	0.4606	0	1
➢ Prepared for career certification test	Prepared for career certification test during four years of university study	0.3559	0.4788	0	1
➢ Prepared for participation in national exams	Prepared for national exams during four years of university study	0.2431	0.4290	0	1
➢ Prepared for overseas study	Prepared for overseas study during four years of university study	0.1836	0.3872	0	1
➢ Prepared for domestic research institute	Prepared for domestic research institute during four years of university study	0.3103	0.4626	0	1

Table 2 shows preliminary findings that the ratio of female university students preparing for exams (including overseas study exams) is higher than that of males, and they have an almost equal ratio for project research and domestic graduate schools, indicating that female students have a higher tendency for career preparation than male students. It is inferred that the result could be because the majority of males in Taiwan need to serve in the compulsory military service, whose time to enter the workplace is postponed by one to two years, and they also show less ambition in the mentality of facing career preparation. University students paying tuition with loans also have a higher ratio in career preparation than university students paying for tuition without loans, indicating that their pressure in life has a positive influence on career preparation. University students with loans may also rely on part-time jobs for living allowance, so university students with part-time jobs compared non-working students have close results in ratio and loans. The unemployment of parents of children who will seek employment becomes important career information. Statistics reveal that unemployment in fathers or mothers will boost the inclination of career preparation in children, indicating that the market warning brought by the employment status of parents will present a reminder effect.

Table 2. Descriptive Statistics by Percentage (%) of Career Preparation.

	Gender		Tuition Loan		Part-Time		Father		Mother	
	Male	Female	YES	NO	YES	NO	Unemployed	Employed	Unemployed	Employed
Conducted project research	30.48	30.60	60.01	24.78	58.71	23.29	57.44	30.07	59.51	30.29
Prepared for career certification test	29.95	40.72	71.18	28.62	71.42	26.35	68.49	35.00	64.69	35.33
Prepared for national exams	20.51	27.77	48.30	19.62	48.21	18.15	44.91	24.34	45.93	24.12
Prepared for overseas study	15.89	20.61	29.68	16.15	36.41	13.17	29.78	18.16	33.58	18.23
Prepared for domestic research institutes	31.74	30.39	57.91	25.78	58.01	24.08	54.96	30.61	55.06	30.82

4.3. Empirical Model

This study estimated the several items of career preparation through the joint probit model as well as the comprehensive impact by the ordered probit model. We adopted the questions on "future plan" from the 2003 and 2005 junior students from the Taiwan Higher Education Data as the variables for career preparation, including "conducting academic project research", "preparing for career certification test", "preparing for public sector exams", "preparing for overseas study", and "preparing for domestic graduate schools", according to the responses: "not yet considering", "tried but gave up", "planning", "in process", and "completed" to set up the values as 0, 1, 2, 3, and 4. When observing the aggregate effect, the five values were summed to yield the figure of level as 0 to 20, with the higher numbers indicating more aggressive career preparation. Independent variables include three dimensions, including "personal characteristics", "parental character variables", and "labor market risk" variables. The ordered probit model is configured in Equation (2):

$$C_i = X_i + \varepsilon_i, \tag{2}$$

In the formula, C_i refers to the level of career preparation that could not be observed, but we can observe the order status $c = 1, 2, 3 \ldots n$ denoting the career preparation level, and applies the interval which each order falls to estimate the likelihood, see Equations (3) to (5). There is one cut (denoted by κ) between each interval and there will be $n - 1$ cuts between n internals:

$$C_i \leq \kappa_j, \tag{3}$$

$$\kappa_{j-1} < C_i \leq \kappa_j, j = 2, 3, \ldots, n-1 \tag{4}$$

$$\kappa_{j-1} \leq C_i. \tag{5}$$

Therefore, we can adopt the maximum likelihood estimation to estimate the coefficient and $n - 1$ cut values, followed by calculating the likelihood of career preparation per interval, as shown in Equation (6):

$$\begin{array}{l} P(c = 1) = P(C_i \leq \kappa_1) = \Phi(-\beta' X_i - \kappa_1), \\ P(c = j) = P(\kappa_{j-1} < C_i \leq \kappa_j) = \Phi(\kappa_j - \beta' X_i) - \Phi(-\beta' X_i - \kappa_{j-1}),\ j = 2, \ldots, n-1, \\ P(c = n) = P(\kappa_{n-1} \leq C_i) = 1 - \Phi(\kappa_{n-1} - \beta' X_i), \end{array} \tag{6}$$

and Equation (7) shows the marginal effect:

$$\begin{array}{l} \frac{\partial P(c=1)}{\partial X_i} = -\varphi(\beta' X_i - \kappa_1)\beta, \\ \frac{\partial P(c=j)}{\partial X_i} = [-\varphi(\kappa_j - \beta' X_i) + \varphi(-\beta' X_i - \kappa_{j-1})]\beta,\ j = 2, \ldots, n-1, \\ \frac{\partial P(c=n)}{\partial X_i} = \varphi(\kappa_j - \beta' X_i)\beta. \end{array} \tag{7}$$

5. Empirical Results

The results are showed in Table 3; Table 4. In Table 3, the estimation results can be divided into three parts: university related variables, father variables, and mother variables. Corresponding with the statistics in Table 2, male inclination in career preparation is a little higher than that of females (coefficient = 0.0169), but it is not significant. The relevant variables of universities include clubs, reading books/magazines, taking credit courses, credits failed, loans, expenses, and part-time jobs. University students participating in clubs show positive and significant performance in career preparation (coefficient = 0.0643), and this is because of the correlation between clubs and society to a certain extent. Moreover, students participating in clubs in general have higher sensitivity towards the workplace, which should be higher than students who have never participated in clubs. University students' habit of reading books and magazines also has a positive (coefficient = 0.1200) and significant impact on career preparation since there will be information in the books/magazines

related to the labor market, which provides some reminder or warning to the university students in career preparation. Moreover, university students with more failing credits show a relatively lower inclination in career preparation (coefficient = −0.0047) because students with more failing credits could not focus on their academic performance, and they do not have enough capacity to take care of their career preparation after graduation.

Table 3. Ordered Probit Regression Results for All Career Preparations.

Variables	Coefficients	S.E
Male	0.0169	0.0134
Participating in student clubs	0.0643 ***	0.0022
Read books/magazines	0.1200 ***	0.0020
Current credits	0.0027 ***	0.0002
Credit numbers failed	−0.0047 ***	0.0010
Loans for tuition payment	-3.66×10^{-7}	3.65×10^{-7}
Loans for living allowance	4.00×10^{-6} ***	1.15×10^{-6}
Living expenses	6.58×10^{-6} ***	5.99×10^{-7}
Books expenses	0.0001 ***	3.27×10^{-6}
Cram school expenses	1.15×10^{-5} ***	1.17×10^{-6}
Entertainment expenses	2.01×10^{-5} ***	3.46×10^{-6}
Part-time jobs	0.1418 ***	0.0197
Park-time job hours	−0.0013	0.0008
Part-time job income	-1.93×10^{-6}	2.15×10^{-6}
Weekly internet hours	0.0430 ***	0.0034
Father with university degree	−0.0825 ***	0.0209
Mother with university degree	−0.3742 ***	0.0230
Father employed by private-sector enterprises	0.0955 ***	0.0171
Mother employed by private-sector enterprises	0.0628 ***	0.0176
Father is a professional	0.2407 ***	0.0314
Father is a technician	0.4093 ***	0.0282
Father is a worker	0.3658 ***	0.0203
Father is unemployed	0.3506 ***	0.0420
Father's wage risk	2.67×10^{-5} ***	1.64×10^{-6}
Mother is a professional	0.1236 **	0.0506
Mother is a technician	0.0842 ***	0.0313
Mother is a worker	−0.0171	0.0217
Mother is unemployed	0.1020	0.0649
Mother's wage risk	1.19×10^{-5} ***	2.38×10^{-6}
Gender unemployment rate	−0.0089 **	0.0037
Observations	46,045	
Pseudo R^2	0.3544	

There are a total of 20 cut points in regressions. *** represents significance at the 1% level; ** represents significance at the 5% level.

Table 4. Probit Regression Results for Each Career Preparation.

Variables	Conducted Project Research	Prepared for Career Certification Test	Prepared for Public Sector Exams	Prepared for Overseas Study	Prepared for Domestic Graduate School
Male	0.2603 *** (0.0169)	−0.2061 *** (0.0172)	−0.1445 *** (0.0168)	−0.1337 *** (0.0176)	0.2772 *** (0.1747)
Participating in student clubs	0.0527 *** (0.0026)	0.0419 *** (0.0025)	0.0511 *** (0.0022)	0.0515 *** (0.0023)	0.0482 *** (0.0025)
Read books/magazines	0.0869 *** (0.0023)	0.0952 *** (0.0024)	0.0843 *** (0.0023)	0.0897 *** (0.0024)	0.0928 *** (0.0024)
Current credits	0.0020 *** (0.0003)	0.0030 *** (0.0003)	0.0017 *** (0.0002)	0.0005 ** (0.0003)	0.0028 *** (0.0003)
Credit numbers failed	−0.0015 (0.0011)	−0.0036 *** (0.0012)	−0.0068 *** (0.0012)	−0.0011 (0.0012)	−0.0082 *** (0.0012)

Table 4. *Cont.*

Variables	Conducted Project Research	Prepared for Career Certification Test	Prepared for Public Sector Exams	Prepared for Overseas Study	Prepared for Domestic Graduate School
Loans for tuition payment	-8.69×10^{-7} *** (4.65×10^{-7})	1.39×10^{-6} *** (4.94×10^{-7})	1.21×10^{-6} *** (4.52×10^{-7})	-3.75×10^{-6} *** (4.90×10^{-7})	1.00×10^{-7} (4.72×10^{-7})
Loans for living allowance	3.22×10^{-6} (1.40×10^{-6})	2.44×10^{-6} * (1.46×10^{-6})	4.09×10^{-6} *** (1.31×10^{-6})	3.32×10^{-6} ** (1.39×10^{-6})	3.31×10^{-6} ** (1.38×10^{-6})
Living expenses	4.23×10^{-6} *** (7.51×10^{-7})	5.89×10^{-6} *** (7.99×10^{-7})	4.15×10^{-6} *** (7.20×10^{-7})	5.19×10^{-6} *** (7.42×10^{-7})	5.71×10^{-6} *** (7.99×10^{-7})
Books expenses	3.68×10^{-5} *** (3.88×10^{-6})	0.0001 *** (4.15×10^{-6})	0.0001 *** (3.70×10^{-6})	3.09×10^{-5} *** (3.78×10^{-6})	0.0001 *** (4.26×10^{-6})
Cram school expenses	9.58×10^{-6} *** (1.51×10^{-6})	5.52×10^{-6} *** (1.58×10^{-6})	1.48×10^{-6} (1.426×10^{-6})	5.46×10^{-6} *** (1.47×10^{-6})	2.65×10^{-5} *** (1.99×10^{-6})
Entertainment expenses	-5.29×10^{-6} ** (3.63×10^{-6})	1.45×10^{-5} *** (4.23×10^{-6})	8.93×10^{-6} ** 3.56×10^{-6}	4.29×10^{-5} (4.40×10^{-6})	2.92×10^{-6} *** (3.79×10^{-6})
Part-time jobs	0.0630 *** (0.0242)	0.1380 *** (0.0256)	0.0911 *** (0.0236)	0.1491 *** (0.0249)	0.0933 *** (0.0249)
Park-time job hours	0.0006 (0.0008)	0.0012 (0.0009)	−0.0004 (0.0008)	−0.0026 *** (0.0009)	−0.0036 *** (0.0009)
Part-time job income	-2.63×10^{-6} (2.34×10^{-6})	-2.62×10^{-6} (2.56×10^{-6})	-2.90×10^{-6} (2.26×10^{-6})	1.47×10^{-6} (2.50×10^{-6})	-1.43×10^{-6} (2.49×10^{-6})
Weekly internet hours	0.0521 *** (0.0041)	0.0310 *** (0.0044)	0.0103 ** (0.0041)	0.0106 ** (0.0043)	0.0483 *** (0.0042)
Father with university degree	−0.1558 *** (0.0257)	−0.1544 *** (0.0267)	−0.0821 *** (0.0256)	0.1303 *** (0.0265)	−0.0103 (0.0267)
Mother with university degree	−0.3825 *** (0.0276)	−0.3994 *** (0.0280)	−0.3094 *** (0.0276)	0.0474 * (0.0285)	−0.2859 *** (0.0286)
Father employed by private-sector enterprises	0.1225 (0.0212)	0.0802 *** (0.0219)	−0.0205 (0.0211)	0.1227 *** (0.2222)	0.0535 ** (0.2173)
Mother employed by private-sector enterprises	0.0625 ** (0.0217)	0.0399 * (0.0224)	0.0288 (0.0214)	0.0540 ** (0.0225)	0.0479 ** (0.2216)
Father is unemployed	0.2745 (0.0528)	0.3486 *** (0.0553)	0.1988 *** (0.0523)	0.1972 *** (0.0549)	0.2462 *** (0.0536)
Father's wage risk	5.12×10^{-6} *** (6.14×10^{-7})	6.89×10^{-6} *** (6.43×10^{-6})	4.49×10^{-6} *** (6.07×10^{-7})	7.25×10^{-6} *** (6.12×10^{-7})	6.69×10^{-6} *** (6.36×10^{-7})
Mother is unemployed	0.0835 (0.0740)	−0.0093 (0.0767)	0.0982 (0.0721)	0.1618 ** (0.0735)	0.0018 (0.0753)
Mother's wage risk	3.32×10^{-6} *** (1.06×10^{-6})	2.57×10^{-6} ** (1.12×10^{-6})	1.65×10^{-6} (1.03×10^{-6})	5.18×10^{-6} *** (1.03×10^{-6})	3.76×10^{-6} *** (1.12×10^{-6})
Gender unemployment rate	−0.1040 *** (0.0046)	−0.0744 *** (0.0047)	0.0163 *** (0.0047)	0.0352 *** (0.0050)	0.0993 *** (0.0048)
Constant	−1.5411 *** (0.0273)	−1.3321 *** (0.0269)	−1.7936 *** (0.0276)	−2.4624 *** (0.0302)	−2.2909 *** (0.0306)
Observations	46,045	46,045	46,045	46,045	46,045
Wald chi2	24,971.81	27,206.16	21,338.10	16,911.31	23,457.20
Pseudo R2	0.4182	0.4894	0.3494	0.3168	0.4504

All the coefficients in this table are the same as those in Table 3. Because of the length of the space, the occupational types of the parents are not listed. *** represents significance at the 1% level; ** represents significance at the 5% level; * represents significance at the 10% level.

University students with loans and more expenses show an inclination of positive significance in career preparation (coefficient = 4.00×10^{-6} for loans, 6.58×10^{-6} for living, 0.0001 for books, 1.15×10^{-5} for cram school, and 2.01×10^{-5} for entertainment), indicating that students in more need of money pay more attention to the career preparation in market. After all, it is important for students to have good career in order to support living. Part-time job students have a higher inclination. Students spending more time on the internet per week tend to show a higher inclination in career preparation (coefficient = 0.0430) since they may also spend the most time checking out market information and hence, increasing their preparation attitude towards the employment market.

The results of university-related variables are compatible with intuition. University students need to participate in clubs more, read more books/magazines, and take an active

approach to reading information on the internet. Parental-related variables represent the most direct market information because parental career status could likely affect the career status of children. Hence, if children observe the career status of parents, they will perceive a warning or work hard to avoid the possible employment difficulty.

The level of parents' education should be the key factor affecting the education period of children. However, the higher the education level of the parents, the freer the development of the child or the choice of looking at the world (coefficient = −0.0825 and –0.3742). If the father is a technician, children will have the highest significant positive inclination in career preparation (coefficient = 0.4093). This is inferred that technical work relies on a higher level of technical skills, and higher techniques will lead to a better career level. When the fathers are technicians, their children could emphasize more on technical accumulation in terms of market observation, and will react in career preparation. Moreover, the wage risk of the market also shows influence, and in particular, the wage risk of fathers has a positive impact (coefficient = 2.67×10^{-5}) on children studying at university in terms of career preparation, indicating that the wage risk of fathers will make children perceive market fluctuation, thereby affecting their career preparation. Nonetheless, the wage risk of mothers is also significant (1.19×10^{-5}). The variables of unemployed fathers show significance because fathers in general are the main source of wage for family income, while the unstable wage of a father could affect the financial status of the entire family.

Table 4 is the result of estimating the items in career preparation separately. In gender, findings show that although males in general have a lower inclination compared with females in terms of career preparation, the aggressiveness in males in terms of conducting project research (coefficient = 0.2603) and domestic research institutes (coefficient = 0.2772) is higher than in females. University students participating in clubs and reading books/magazines show a higher inclination in career preparation. In contrast, students with more failing credits could not take care of their academic study, and hence, show a lower inclination of career preparation.

It is interesting to see that students paying tuition with loans seem to be less inclined to conduct project research (coefficient = -8.69×10^{-7}) or study overseas (coefficient = -3.75×10^{-6}). It is inferred that this should be related to the heavier financial burden. If parents hold higher degrees in education (university degree), children are less inclined to career preparations but more inclined to study overseas.

Furthermore, regardless of the type of career preparation, the unemployment and wage risk of parents have a positive impact on children, especially for preparing them for overseas study. Apart from fathers' unemployment, the unemployment information in the market plays an important warning role and will have positive impact on public examinations and further study.

In sum, the empirical results show that the inclination of career preparation is affected by one's family and the level of market risk. In particular, the financial support offered by fathers turns the career status and wage of fathers into the main information affecting the career preparation of children. The positive and significant correlation implies that youths about to enter the employment market will have a considerable degree of correspondence preparation when coping with market fluctuations. The results of the paper are inferred that the level of career preparation could meet the situation of the career market. Similar to the students having prepared for the course review before the test, the test performance still varies per person because not everyone has made the same preparation. Nonetheless, their preparation and effective preparation could be key to successful employment.

6. Discussions

The literature review suggests that preventive measures of labor supply have been widely discussed, with some studies focusing on the intrinsic influence of wage uncertainty on labor hours, and others analyzing the effect of wage dispersion on preventive labor supply. The review also highlights the impact of uncertainty on preventive saving and the influence of wages on adolescent school enrollment/dropout rate. The empirical findings

indicate that the Great Recession had a negative impact on the labor market outcomes of young adults, particularly those from lower-income families and regions with higher unemployment, and young women were more adversely affected than young men.

This study is distinctive from earlier studies as it observes the influence of labor market risk on youth behavior. While previous studies have examined the preventive measures of labor supply, few have focused on employed youth. The results show that male inclination in career preparation is slightly higher than that of females, but this difference is not significant. The study examines several university-related variables, including clubs, reading books/magazines, taking credit courses, credits failed, loans, expenses, and part-time jobs. University students participating in clubs show positive results for career preparation, whereas credits failed, and expenses have negative effects. Additionally, preventive measures such as taking credit courses, loans, and part-time jobs also show positive effects on career preparation.

The findings of this study have several implications for policy interventions to mitigate the economic effects of the Great Recession on the labor market outcomes of young adults. The study suggests that universities should encourage students to participate in clubs as it positively affects their career preparation. Furthermore, the study highlights the importance of preventive measures such as taking credit courses, loans, and part-time jobs in enhancing career preparation. Policies that provide financial support for students who cannot afford to take these preventive measures could help reduce the negative impact of labor market risk on their career prospects.

The study also sheds light on the need for further research into the factors that influence youth behavior regarding labor market risk. For instance, future studies could explore the impact of family background on career preparation and the role of gender in determining the effectiveness of preventive measures in enhancing career prospects. Such research could provide valuable insights into the mechanisms through which labor market risk affects youth behavior and help policymakers to develop effective interventions to address this issue.

In conclusion, this study contributes to the existing literature by examining the influence of labor market risk on youth behavior. The findings suggest that preventive measures such as taking credit courses, loans, and part-time jobs positively affect career preparation, and universities should encourage students to participate in clubs to enhance their career prospects. These findings also emphasize the crucial role of human capital, including education, skills, and knowledge, in improving labor market outcomes for young adults. The study highlights the need for policy interventions to address the negative impact of the Great Recession on the labor market outcomes of young adults, particularly those from lower-income families and regions with higher unemployment. Further research is needed to explore the factors that influence youth behavior regarding labor market risk in order to develop effective interventions to address this issue.

7. Conclusions

This study examines youths' preventive preparation motive when faced with labor market risk through the perspective of "quasi-labor supply". Previous studies examined the preventive income and savings of labor suppliers, while this paper conducts the analysis from a different dimension in youth topics. Under the circumstances, youth unemployment remaining high, even if the government offers resources or the educational institutions cooperate with industries through industry-academic cooperation, youths' lack of recognition for market risk or poor sensitivity will cause resource waste, making incompatibility between study and practice as well as high youth unemployment rate. This study tackles youth problems from a different perspective, which provides innovative ways to ameliorate this global issue.

Taken Taiwan's experiences as an example, this study uses the Taiwan Higher Education Data and Manpower Utilization Survey to measure the unemployment rate by industry and the compensation risk corresponding to the parents' market risk information affecting

the career preparation of children. Empirical results reveal that the career preparation of children is affected by the significant influence of market risk variables with a positive impact. The influence indicates that the greater the market risk level, the higher the inclination of career preparation for youth. This study found that whether career preparation reaches effective preparation is the issue driving the current high unemployment rate in youths. The findings and explanations for each variable are reasonable, as evidenced by their statistical and economic significance, indicating the appropriateness and accuracy of the empirical model and data used.

Based on the findings, this study suggests that the participation of young people in school also plays an important role in the perception of future employment preparation. It not only allows students to have more interpersonal learning, but also enhances their sensitivity to social conditions through their social participation in clubs, and this further affects students' thinking and preparation for the future. The parental employment status inherited from generation to generation is discussed in the literature (for example, [37,38]). However, for teenagers, the parental employment status mostly affects their stability in their adolescent life, and will more or less influence how they imagine their future. This is also a topic of sustainability. Furthermore, many old occupations will gradually disappear in the future, and new occupations will appear one after another. It is necessary for more and more youth to start earlier to recognize the changes in the job market now.

This study is essential for Taiwan's sustainable economic development, as it reveals the elements that shape youth career preparation. By understanding how labor market risk impacts young people's career readiness, we can craft policies that efficiently tap into the potential of youth and assist them with their career preparations. The results of this study can be used to construct policies that support sustainable economic development in Taiwan and empower young people to develop their skills and locate suitable job openings. One possible sustainable policy that takes into account the background effects of the youth's family and school could be to provide more resources to the families and schools that are having trouble helping youths with their career preparation. This could include creating or expanding existing programs that provide financial aid or tutoring, or introducing mentoring or job shadowing programs that give youth access to professional networks and resources. Moreover, creating more targeted marketing and outreach campaigns to motivate young people to pursue further education or career preparation could also be beneficial. This could include campaigns that are specially designed for traditionally marginalized or underrepresented communities, or providing specialized career guidance services that focus on the needs of each individual student.

Author Contributions: Conceptualization, Y.-L.L.; methodology, Y.-L.L.; software, Y.-L.L.; validation, Y.-L.L. and C.-Y.K.; formal analysis, Y.-L.L.; investigation, Y.-L.L.; resources, Y.-L.L.; data curation, Y.-L.L.; writing—original draft preparation, Y.-L.L.; writing—review and editing, Y.-L.L.; visualization, Y.-L.L.; supervision, Y.-L.L.; project administration, Y.-L.L.; funding acquisition, Y.-L.L. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by Ministry of Science and Technology grant number [MOST-106-2410-H-032-013].

Data Availability Statement: Data is unavailable due to privacy.

Acknowledgments: Thanks for reviewers' commenting on the draft of the work.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Levy, R. Status passages as critical life course transitions. A theoretical sketch. In *Theoretical Advances in Life Course Research*; Heinz, W.R., Ed.; Deutscher Studienverlag: Weinheim, Germany, 1991; Volume 1, pp. 87–111.
2. Pais, J.M. Transitions and youth cultures: Forms and performances. *Int. Soc. Sci. J.* **2000**, *2*, 219–232. [CrossRef]
3. Theil, H. *Optimal Decision Rules for Government and Policy*; North Holland Publishing Company: Amsterdam, The Netherlands, 1964.
4. Sitkin, S.B.; Pablo, A.L. Reconceptualizing the determinants of risk behavior. *Acad. Manag. Rev.* **1992**, *17*, 9–38. [CrossRef]

5. Sitkin, S.B.; Weingart, L.R. Determinants of risky decision-making behavior: A test of the mediating role of risk perceptions and propensity. *Acad. Manag. J.* **1995**, *38*, 1573–1582. [CrossRef]
6. Dynan, K.E. How prudent are consumers? *J. Political Econ.* **1993**, *101*, 1104–1113. [CrossRef]
7. Fuchs-Schündeln, N.; Schündeln, M. Precautionary savings and self-selection: Evidence from the german reunification 'experiment'. *Q. J. Econ.* **2005**, *120*, 1085–1120.
8. Gourinchas, P.O.; Parker, A. Consumption over the life cycle. *Econometrica* **2002**, *70*, 47–89. [CrossRef]
9. Abel, A.B. The implications of insurance for the efficacy of fiscal policy. *J. Risk Insur.* **1988**, *55*, 339–378. [CrossRef]
10. Kimball, M.S. Precautionary saving in the small and in the large. *Econometrica* **1990**, *58*, 53–73. [CrossRef]
11. Sandmo, A. The effect of uncertainty on saving decisions. *Rev. Econ. Stud.* **1970**, *37*, 353–360. [CrossRef]
12. Carroll, C.D.; Samwick, A.A. How important is precautionary saving? *Rev. Econ. Stat.* **1998**, *80*, 410–419. [CrossRef]
13. Mincer, J. Investment in Human Capital and Personal Income Distribution. *J. Political Econ.* **1958**, *66*, 281–302. [CrossRef]
14. Schultz, T.W. Investment in Human Capital. *Am. Econ. Rev.* **1961**, *51*, 1–17.
15. Gustman, A.L.; Steinmeier, T.L. The impact of the market and family on youth enrollment and labor supply. *Rev. Econ. Stat.* **1981**, *63*, 553–560. [CrossRef]
16. Du, Y.Y.; Wu, H.L. Myths regarding higher education in Taiwan: The reality behind the idea that the better educated you are, the higher your risk of unemployment. *Educ. Policy Forum* **2014**, *17*, 1–32.
17. Eaton, J.; Rosen, H.S. Notes on optimal wage taxation and uncertainty. *NBER Working Paper*, August 1979; no. 388.
18. Eaton, J.; Rosen, H.S. Labor supply, uncertainty and efficient taxation. *J. Public Econ.* **1980**, *26*, 303–326. [CrossRef]
19. Hartwick, J.M. Labor supply under wage uncertainty. *Econ. Lett.* **2000**, *68*, 319–325. [CrossRef]
20. Parker, S.C.; Belghitar, Y.; Barmby, T. Wage uncertainty and the labour supply of self-employed workers. *Econ. J.* **2005**, *115*, C190–C207. [CrossRef]
21. Kuhn, P.; Lozano, F. The expanding workweek? Understanding trends in long work hours among U.S. men, 1979–2006. *J. Labor Econ.* **2008**, *26*, 311–343. [CrossRef]
22. Carroll, C.D.; Kimball, M.S. Precautionary saving and precautionary wealth. In *The New Palgrave Dictionary of Economics*, 2nd ed.; Durlauf, N., Blume, L., Eds.; Palgrave Macmillan: London, UK, 2008.
23. Eggertsson, G.B.; Krugman, P. Debt, deleveraging, and the liquidity trap: A Fisher-Minsky-Koo approach. *Q. J. Econ.* **2012**, *127*, 1469–1513. [CrossRef]
24. Mulligan, C.B. Does labor supply matter during a recession? Evidence from the seasonal cycle. *NBER Working Paper*, September 2010; no. 16357.
25. Engen, E.M.; Gruber, J. Unemployment insurance and precautionary saving. *J. Monet. Econ.* **2001**, *47*, 545–579. [CrossRef]
26. Kantor, S.E.; Fishback, P.V. Precautionary saving, insurance, and the origins of workers compensation. *J. Political Econ.* **1996**, *104*, 419–442. [CrossRef]
27. Bowen, W.G.; Finegan, T.A. *The Economics of Labor Force Participation*; Princeton University Press: Princeton, NJ, USA, 1969.
28. Catterall, J.S. *On the Social Costs of Dropping Out of School*; Stanford University Press: Stanford, CA, USA, 1985.
29. Rumberger, R. High school dropouts: A review of issues and evidence. *Rev. Educ. Res.* **1987**, *57*, 101–121. [CrossRef]
30. Dee, T. The complimentarily of teen smoking and drinking. *J. Health Econ.* **1999**, *18*, 681–828. [CrossRef]
31. Staff, J.; Harris, A.; Sabates, R.; Briddell, L. Uncertainty in early occupational aspirations: Role exploration or aimlessness? *Soc. Forces* **2010**, *89*, 659–684. [CrossRef] [PubMed]
32. Golombek, G.; Roth, I.; El-Gabalawy, R.; Conrod, P. Youth labor market outcomes and educational outcomes: Exploring the interplay between mental health and medical conditions. *J. Adolesc. Health* **2020**, *67*, 502–509.
33. Cavaglia, C.; McNally, S.; Overman, H.G. Devolving Skills: The Case of the Apprenticeship Grant for Employers. *Fisc. Policy* **2020**, *41*, 829–849. [CrossRef]
34. Becker, G.S.; Tomes, N. An equilibrium theory of the distribution of income and intergenerational mobility. *J. Political Econ.* **1979**, *87*, 1153–1189. [CrossRef]
35. Solon, G. Intergenerational income mobility in the United States. *Am. Econ. Rev.* **1992**, *82*, 393–408.
36. Carroll, C.D.; Dynan, K.E.; Krane, S.D. Unemployment risk and precautionary wealth: Evidence from household's balance sheet. *Rev. Econ. Stat.* **2003**, *85*, 586–604. [CrossRef]
37. Gubler, M.; Biemann, T.; Herzog, S. An apple doesn't fall far from the tree-or does it? Occupational inheritance and teachers' career patterns. *J. Vocat. Behav.* **2017**, *100*, 1–14. [CrossRef]
38. Won, Y.-Y. Effects of social relationships on the association between family economic status and adolescents' career identity. *J. Korea Converg. Soc.* **2019**, *10*, 251–260.