

**Change in the Electoral Support of the Pan-Blue Coalition  
between 1989 and 2001:  
An Age-Period-Cohort analysis**

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## Introduction

Democratization began in Taiwan in 1987 with the end of martial law. In nearly two decades of electoral contest, the once mighty Kuomintang (KMT) has stepped down from ruling party position, while the Democratic Progressive party (DPP) which is legalized in 1987 has emerged to be the governing party since the Presidential election in year 2000. While the change of electoral support that leads to alternation in power is commonly found in contemporary democracies, the loss of support for a party which is once perceived to have overpowering and well-developed institutional capacity for election campaigning and electoral mobilization is a shock in the course of Taiwan's democratization.

In this paper, we focus on the electoral support of the KMT camp, informally known as the Pan-Blue coalition since the spring of 2003, consisting of the KMT, the People First Party, and the New Party. The formation of the Pan-Blue coalition can be traced back to the early days of 2001, after Lee Teng-hui stepped down from the party chair position. After Lee's expulsion, the Kuomintang began informal but close cooperation with the newly formed People First Party (PFP) and the New Party. Given the fact that most members of the PFP and the New party are originally the KMT members in the past, they closely cooperate in large part to ensure that electoral strategies are coordinated, so that votes are not split among them. After the spring of 2003, the division between the Pan-Blue vs. the Pan-DPP became more evident, as the leaders of the KMT and the PFP begun to run a joint ticket for the 2004 presidential election.

In this paper, we examine the trend of the KMT/the Pan-blue support by estimating age, period, and cohort effects using data from cross sectional time series data from

1989 to 2001. The age-period-cohort approach has been used widely in social sciences and, in political science in particular, it has been used to study voters' turnout and partisanship in the US politics (e.g., Hout and Knoke 1975; Converse 1976; Abramson 1979; Clagget 1981). But little if any research has applied this analytical framework to examine voting choice in Taiwan overtime. In the present research, by using the vote share of the KMT in each age group as the proxy, we examine the age distribution of voting preference overtime during the course of the democratization in Taiwan. Is the change of party support associated with aging (age effect)? Does the electoral support of the KMT fall throughout the entire population from time to time (period effect)? In which generation can we find large-scaled change in electoral support of the KMT (cohort effect)? To explore these questions, the APC analysis is applied to assess the extent to which variation in observed electoral support of the KMT over time is attributable to period, age, and cohort effects, or possibly to interactions of the three.

After briefly discussing past theoretical and empirical work on the transformation and the decline of the KMT, we present cohort tables and graphs to examine basic changes in the KMT supporters. In this analysis, we look at each kind of effect (such as age), controlling for only one other (such as cohort). We then present a limited and simplified "format specification" of age, period, and cohort effects to estimate cautiously each component of change controlling for the other two.

## **Background of the Current Study**

Party or voting preference has been one of the most prolific fields in studying Taiwan's elections. While the dominant research framework varies, most studies

have concluded that voting in Taiwan is closely associated with factors such as ethnic ground, regional difference, national identity, and ideological space (e.g., Hsu 1993; Hsu 2000; Wang 1998; Ho 1991; Lin, Chu, and Hinich 1992). Authors often link these findings to more general arguments about political competition or to the increasing or declining support of political parties. Since the data used in these work often rely on single data point, long term change of party support is largely absent.

In contrast, the overview of the long term change of party support, the transformation of the KMT in particular, can be found from the work delineating the course of democratization in Taiwan. For instance, in Hsiao's work on the relation between the rise of social movements in the 1980s, he pointed out that the dynamic of capitalist development had simply outgrown the political capacity of the KMT controlled state, making the latter difficult to exercise dominance and autonomy vis-à-vis economic and social spheres (Hsiao 1990). Social movements mushroomed during this period and played a significant role in brewing a coalition from the civil society. By demanding the KMT and its controlled state to make reforms and concessions, at least socially and economically, social movements during this period, in tandem with the rise of civil society, had the effect of shaking the very foundation of an authoritarian regime from "hard" to "soft".

While the rise of civil society during the 1980s indeed serves important function to shake to loose the system monopolized by the KMT, scholars of Taiwan politics are less certain as to whether liberalization by itself could lead to the weakening of the organizational strength of the KMT and its proficiency in mobilizing electorates in particular. With specific emphasis on the roles played by the opposition forces before 1990s, Cheng, in his well-cited article in *World Politics*, contends that the

KMT's position remained strong during the entire period of 1980s (Cheng 1989). This was happened despite the fact that growing opposition forces through agenda setting and the expansion of their electoral base had the ability to democratizing "a Quasi-Leninist regime". With the KMT's ability to shape electoral arrangement and to mobilize popular support, Cheng then concludes that "in the foreseeable future, it is unlikely that *"a change in power* will have to be applied, since the DPP is not in a winning position and the KMT has the resource and the institutional framework to maintain itself nationwide" (Cheng 1989:499).

In the work studying specifically on the problems faced by the KMT during democratization, the conclusion is different. Building on Hammel and Janda's integrated theory of party change (1994), Tan investigates the key external and internal factors that have resulted in significant changes in the KMT from the mid-1980s to 2000. According to him, the key external factors include the de-recognition of the U.S in 1979, the democratization wave in neighboring countries in the early 1980s, and the declining electoral support in nation wide elections for the KMT during the 1990s. These external factors, along with the change of party leadership from Chiang Ching-Kuo to Lee Teng-hui in the late 1980s, intensified the pace of change in dominant faction from mainlanders to local Taiwanese in the 1990s. A vicious cycle of conflict within the party was thus evolved into a situation in which the KMT had to redefine its ideological postsigns, on the one hand, and to find ways to dissolve the disputes among different factions, on the other hand. As the KMT was stranded by its coalition politics within the party, updating the party mass base or transforming the party's organization structure becomes problematic. The credibility of the KMT as an effective organ to rule Taiwan is then shaken, which, in one way or the other, leads to the erosion of its mass base and its electoral defeat is just a matter of time.

When did the electoral support of the KMT begin to fall apart? How large is the scale of its falling as far as its electoral share is concerned? While the work discussed above offers theoretical insights, largely absent from these work is the empirical evidence to assess the timing and magnitude of such an electoral change. To certain extent, the generational approach could answer some, if not all, these questions. Using survey data of the 1992 Legislative Yuan election, Liu points out that generation differences in party preference exist with the result that, while the KMT maintains a large margin lead over the DPP, the DPP begins to catch up, especially in younger generations (Liu1994). Nevertheless, given the fact that only a single sample from one data point is used in this work, this approach runs the risk of making faulty inferences about the underlying effects.

To be sure, differences between age groups at any given time may be a function not only of differences in life-cycle position, but also of generational differences. To disentangle life-cycle and generational effect, the obvious preferred data for studying the effects of aging on political activity are longitudinal-panel data. But no such data exist in Taiwan. Instead; the best alternative is to study repeated cross-sectional samples over times. By pooling persons of the same age from other representative samples into a single dataset, aggregate relationships such as party preference can be traced over the life cycle. The constructed age-period-cohort table is then the ideal data to serve this end.

## **Data and Method**

Data in this paper are pooled from five independent surveys on the Legislative Yuan elections from 1989 to 2001. The data of 2001 were collected by the political

science department at National Chung Cheng University in the research project of “Taiwan Election and Democratization: the 2001 Legislative Yuan Election”. The rest of the data were conducted by the department of political science at National Taiwan University under the project named “The Change of Political System and Voting Behavior: the Legislative Yuan Election, 1989-1998”. The five surveys in together produced 7,461 cases for analysis. What is to be noted is that these five surveys cover the Legislative Yuan election from the onset of Taiwan’s democratization until now. The election held in 1989 can be seen as the last election held in the period when Taiwan was governed by a “soft authoritarian regime,” and the 1992 Legislative Yuan Election was the first nation wide election to select a brand new legislative body since 1947.

In each survey, question of voting preference is asked and is recoded into three main political coalitions: the Pan-blue, the pan-green, and the independent voters. Then, we construct the dependent variable, voting percentage for the KMT, according to the percentage of vote share collected by the KMT/Pan-blue coalition in each age group from 1989 to 2001.

The three demographic dimensions were obtained from respondents’ report of their age. Period was measure as the year of the election and birth cohort membership as the difference between the year of the election and the age of the respondent. All three measures were coded into three-year intervals corresponding to the length of time between the Taiwan Legislative Yuan elections (for example, 20 to 22, 23-25, etc).

While the APC analysis is a helpful tool to identify the patterns of change

overtime, as suggested by Mason et al. (1973), its notorious problem in regression analysis would be underidentified: knowing the value of a case on the other, for example, the age dummies and period dummies would permit a close (perhaps perfect) prediction of the person's birth cohort dummy variables. To avoid the problem of collinearity, we perform more traditional APC analysis: first a graphical approach (see, for instance, Reynolds et al. 1998) and second an approach in which two-factors models are estimated. We estimated successively three two-factor models, in which one factor is in turn arbitrarily excluded from the analysis. By comparing goodness of fit of the three models and the sign and variance of the three effect, we then decide whether age, period, and/or cohort effects are present (Hoeymans et al. 1997; Hsu et al. 2001).

### **Age, Period, and Cohort Analysis**

The relationship between the KMT electorate vote share and these three demographic dimensions is displayed in Table 1. 18 age groups in the row and 5 periods in the columns yield 90 finely-graded categories. The percentage of cases in each age-by-period category who reported whether each vote is toward the Pan-Blue coalition is presented in the body of the table. Diagonals running from the upper left to the lower right column contains the 22 birth cohorts identified by age and period combinations.

To read this table, we use 23-25 age group as an example. In 1989, the Pan-Blue supporting rate was 62%. The supporting rate of the Pan-Blue coalition began to have a slight drop in the 1992 Legislative Yuan Election (56%), when this cohort had aged to the 26-28 bracket. In 1995, when the New Party was formed, this

birth cohort aged 29-31 and its supporting rate of the Pan-Blue coalition almost stayed at the same level (55%). The pattern remained the same in 1998 (birth cohort 32-34). It is not until 2001, when this birth cohort aged 35-37; we begin to see a more visible drop of the Pan-Blue coalition (46%).

Not all cohorts show such near linear declining pattern. For those who aged 44-46 in 1989, the rate of support had once increased to 67% in 1992 from previous 44%. Then, we begin to see drops more visibly in 1995 and 1998 (53% in 50-52 aged group and 57% in 53-55 age group). When this birth cohort reached 56-58 in 2001, the rate of supporting the KMT plummeted drastically to 30%.

Table 1: Percent of Pan-Blue Voting Support, by age groups

<i>Age Group</i>	<i>Total</i>	<i>Year</i>				
		<i>1989</i>	<i>1992</i>	<i>1995</i>	<i>1998</i>	<i>2001</i>
20-22yr	0.51%	0.63%	0.65%	0.48%	0.48%	0.29%
23-25yr	0.50	0.62	0.59	0.47	0.39	0.39
26-28yr	0.54	0.58	0.56	0.65	0.57	0.36
29-31yr	0.50	0.53	0.57	0.55	0.44	0.40
32-34yr	0.51	0.52	0.51	0.50	0.54	0.48
35-37yr	0.51	0.51	0.54	0.53	0.52	0.46
38-40yr	0.48	0.44	0.47	0.50	0.53	0.46
41-43yr	0.50	0.52	0.52	0.55	0.50	0.43
44-46yr	0.46	0.44	0.60	0.48	0.47	0.36
47-49yr	0.47	0.52	0.67	0.37	0.53	0.36
50-52yr	0.45	0.35	0.45	0.53	0.63	0.35
53-55yr	0.50	0.50	0.60	0.56	0.57	0.36
56-58yr	0.41	0.53	0.38	0.44	0.54	0.30
59-61yr	0.53	0.68	0.58	0.60	0.46	0.38
62-64yr	0.55	0.72	0.65	0.67	0.47	0.25
65-67yr	0.49	0.56	0.59	0.50	0.55	0.27
68-70yr	0.51	0.35	0.65	0.54	0.63	0.35
71yr-	0.47	0.41	0.54	0.49	0.64	0.36
Total		0.52	0.56	0.52	0.53	0.37
(N)	7,461	1301	1398	1383	1357	2022

In comparison, the period effects are more noticeable. The supporting rate of the Pan-blue camp was the highest in 1992, and, for the most period before 2001, was maintained at 52% and above. In 2001, the vote share of the Pan-blue plunged deeply into 37%, more than 15% of decrease from the previous election. The total turnout rate for the pro-KMT coalition in each period is double checked with the results reported by the Central Election Commission of the Republic of China, the office governing the affair of election in Taiwan. The results up to 1998 are very close to the nation wide results. What is more inconsistent is the difference in the 2001 election, where the difference between survey data and government report is about 11%. We may suggest that the survey data for 2001 might be due in part to sampling variation or to a non-response of pro-KMT voters.

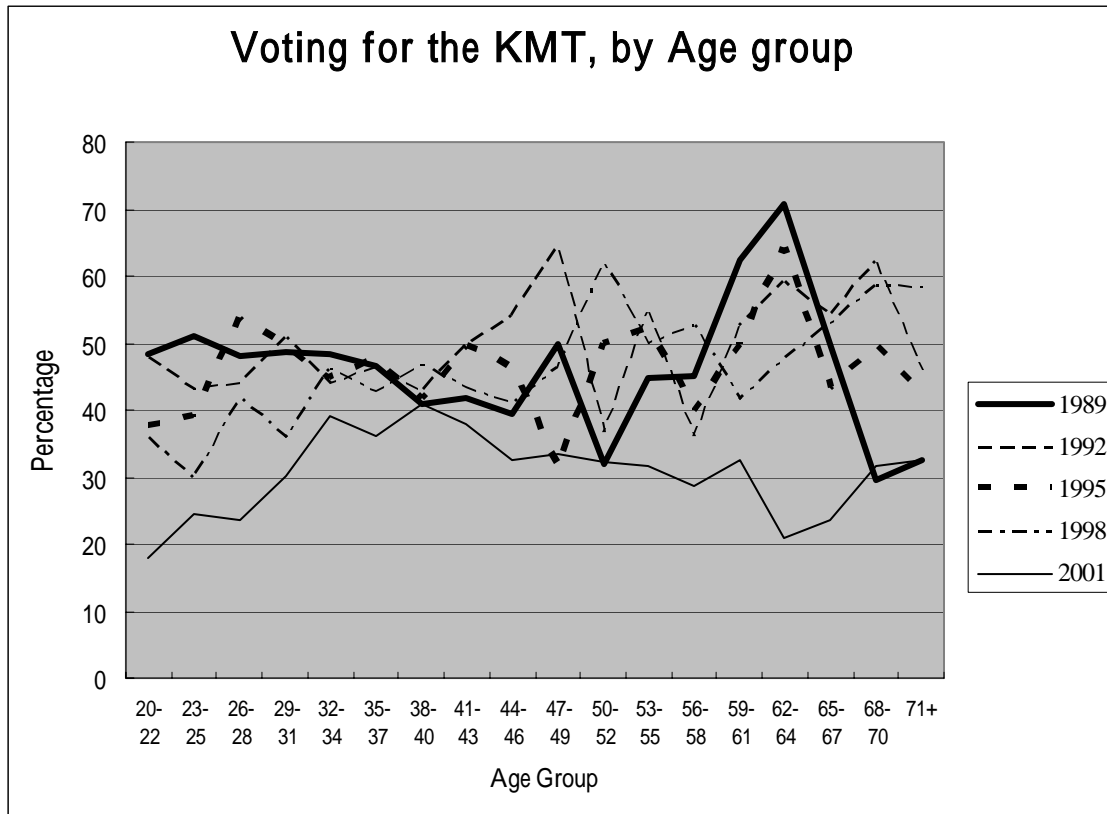
## **Results**

### **The Graphical Approach**

To get initial estimates of net aging effect, we examine graphs show change in the pro-blue percentage from younger to older age groups controlling for election year (Figure 1). Each line in the age graph represents changes in the pan-blue support by age within a given survey year. Figure 1 suggests that age effect varies in each election year. In 1989, younger generations tend to have a slightly higher voting percentage for the KMT than the mid-aged generations. In contrast, the older generations seems be more supportive of the KMT in this election, even though the magnitudes of support vary greatly here. The other finding from Figure 1 is that, while there were variations in the support of the KMT by age groups, patterns remain more or less the similar before 2001. It was not until in the 2001 election that we begin to see a inverted-U shaped pattern of the KMT support: lower rates of

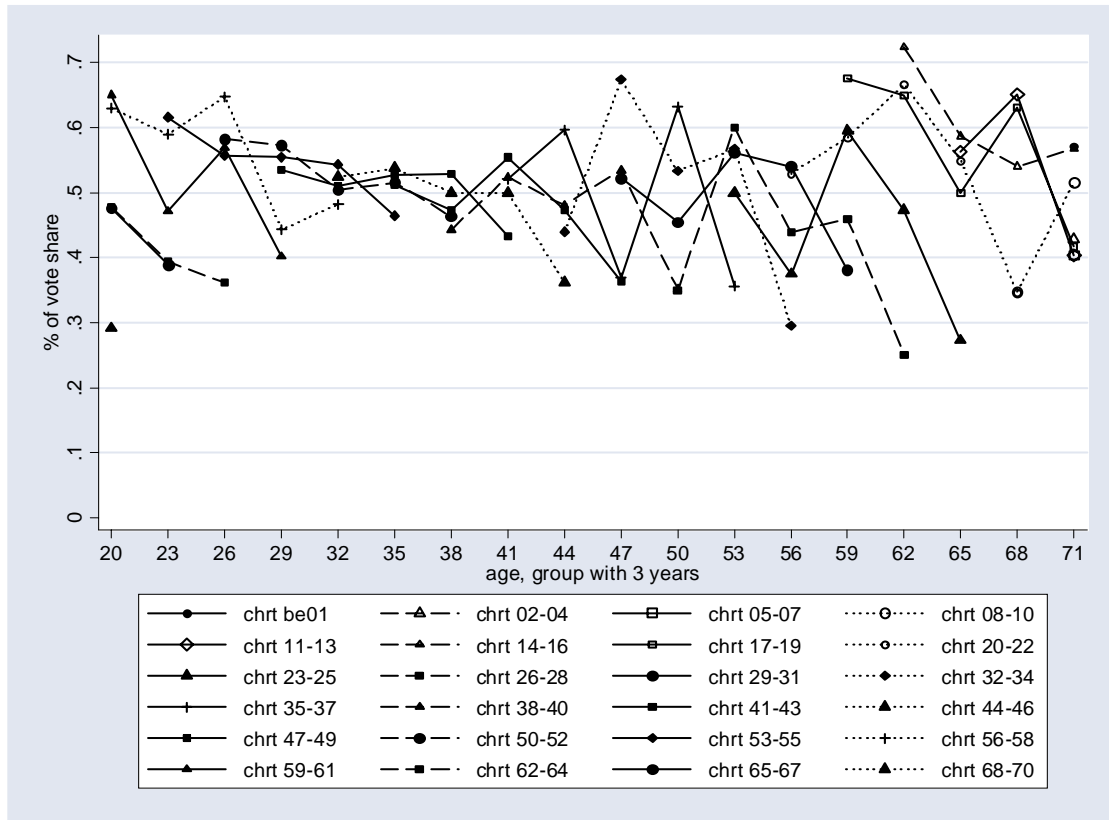
supporting in younger and older generation and higher rates in the middle aged generations (aged between 29 to 44).

Figure 1: Age Trends in the Pan-Blue Electoral Support (within each election year)



To understand cohort effect, Figure 2 is used to display change in the pro-blue percentage from older to younger generations controlling for election year. Several observations can be drawn from Figure 2. First, the magnitude of change varies generations from generations: the largest scale of decline is found among the older generations (aged 50 and above), relatively larger in younger generations (aged 29 and below) and the smallest in middle aged generation (aged 30-49). Second, the sharpest slope of declining pro-KMT support rate is found in generations aged below 26, and the second sharpest in 27-29 and 53-71 aged groups; in contrast, the declining support of the KMT is tapering in middle aged groups.

Figure 2: Cohort Trend of the Pan-Blue Electoral Support (within age groups)



## The Two-Factors Model

The two-factors approach aims at separating the age, period, and cohort effect. Table 2 reports the result of the APC two-factors analysis on the changing electorate vote of the Pan-Blue coalition. Model AP, PC, and AC, stand for the age-period model, the period-cohort model, and the age-period mode. The three models are estimated using Random Effects techniques.

Table 2 Two-Factors APC Model

	Age-Period Model		Period-Cohort Model		Age-Cohort Model	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Constant	0.554	-0.005	0.471	-0.004	0.776	-0.007
		**		***		**
Period		*				*
1989	0		0			
		**				**
1992	0.01	-0.002	0.016	-0.002		***
		*				
1995	-0.016	-0.002	-0.002	0.326		
		*				
1998	-0.031	-0.002	-0.01	-0.002		***
		*				
2001	-0.163	-0.002	-0.129	-0.002		***
		*				
Age						
=20-22	0				0	
		**				**
23-25	0.002	0.004			-0.078	-0.004
		*				*
26-28	0.043	0.004			-0.086	-0.004
		*				*
29-31	0.056	0.004			-0.129	-0.004
		*				*
32-34	0.071	0.004			-0.145	-0.004
		*				*
35-37	0.064	0.004			-0.175	-0.005
		*				*
38-40	0.063	0.004			-0.203	-0.005
		*				*
41-43	0.076	0.004			-0.206	-0.005
		*				*
44-46	0.054	0.004			-0.258	-0.006
		*				*
47-49	0.073	0.004			-0.274	-0.006
		*				*
50-52	0.059	0.005			-0.311	-0.007
		*				*
53-55	0.084	0.005			-0.307	-0.007
		*				*
56-58	0.021	0.005			-0.416	-0.008
		*				*
59-61	0.097	0.005			-0.391	-0.008
		*				*
62-64	0.137	0.005			-0.414	-0.009
		*				*
65-67	0.073	0.005			-0.54	-0.009
		*				*
68-70	0.102	0.005			-0.565	-0.009
		*				*
71+	0.061	0.004			-0.643	-0.01
		*				*

	Age-Period Model		Period-Cohort Model		Age-Cohort Model	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Cohort						**
-1918			-0.055	-0.006 ***	0.268	-0.009 *
1919-21			-0.052	-0.006 ***	0.243	-0.009 *
1922-24			0.047	-0.005 ***	0.321	-0.008 *
1925-27			0.092	-0.005 ***	0.318	-0.007 *
1928-30			0.063	-0.005 ***	0.244	-0.007 *
1931-33			0.035	-0.005 ***	0.174	-0.006 *
1934-36			-0.047	-0.005 ***	0.035	-0.006 *
1937-39			-0.066	-0.005 ***	-0.031	-0.005 *
=1940-42						
1943-45			0.01	-0.005 *	-0.009	-0.006
1946-48			-0.007	-0.004	-0.073	-0.006 *
1949-51			-0.015	-0.004 ***	-0.098	-0.006 *
1952-54			-0.019	-0.004 ***	-0.129	-0.006 *
1955-57			-0.02	-0.004 ***	-0.156	-0.006 *
1958-60			0.005	-0.004	-0.156	-0.006 *
1961-63			0.012	-0.004 **	-0.174	-0.007 *
1964-66			0.01	-0.004 **	-0.2	-0.007 *
1967-69			-0.001	-0.004	-0.249	-0.007 *
1970-72			-0.042	-0.004 ***	-0.309	-0.007 *
1973-75			-0.122	-0.004 ***	-0.425	-0.008 *
1976-78			-0.1	-0.005 ***	-0.441	-0.008 *
1979-81			-0.162	-0.005 ***	-0.597	-0.009 *
N	7461		7446		7446	
R-Squared	0.597		0.72		0.649	

= base category

Results of Model AP and AC are compared first. The age parameters are comparable and jointly significant in both models. In the AP model, the percentage of voting for the Pan-Blue Coalition rises with age from younger to middle-aged generations and stays in the same level until 47-49 aged group. In the older generations, while the percentage of support is a bit higher, the magnitude of fluctuation is larger (from 0.21 to 0.137), indicating that the pattern is not stable in the older generations. However, if we turn our attention to the age coefficients in the AC model, it is clear that the age coefficients are of opposite signs in two models. Consequently conclusion about the age effects on voting preference is not inclusive.

Model AC and PC are then compared to find whether cohort effects are present in the study. Cohort effects are significant in both models. To understand the meaning of these numbers, we need to examine closely whether the signs of cohort coefficients are in the same direction and how consistent and how strong the cohort coefficients, along with comparing the results from the AP model. In so doing, our observations are the followings. First, the cohort effects are found to be important in that, by adding cohort into the equation, the age coefficients immediately weaken more significantly in the AC model than in the PC model. This suggests that the declining support of the Pan-Blue coalition is associated with the cohort effects. Yet, there are caveats and I shall point out in the following.

Second, given the fact that the coefficients of the period effects remains relatively strong after controlling for the cohort effects, the cohort effects have to be studied with the period effects. In our models, the period effects is the strongest in the 2001 Legislative Yuan election, suggesting that this elections is a temporal event that by itself can explain the declining pro-KMT support to a greater extent. Third,

while the cohort effects remain strong in our models, the direction of change is not linear. When the cohort coefficients in the PC and the AC model are compared, the signs in some cohorts are not in the same direction (for instance, those who were born before 1921, and during 1934-36, 1943-45, and 1958-66). As a rule of thumb, we then suggest that the birth cohort effects are not consistent in these birth cohorts.

Fourth, to certain extent, there exists a generation shift. Comparing the cohort coefficients in both the PC and the AC model, the rate of supporting the Pan-Blue coalition levels off in the earlier birth cohorts and then decreases in the younger cohorts greatly. This observation confirms the findings from the graphical approach in the previous sections.

## **Conclusions**

Using the cohort analysis to study the electoral support of the Pan-Blue coalition during the course of Taiwan's democratization, we hope to understand how the basic electoral change during Taiwan's democratization. The finding in this paper confirms the observation that generation change is evident during the course of Taiwan's democratization, especially among the younger generations. In addition, it also finds out that the magnitude of switching votes from the KMT alliance has been greater during elections of the periods investigated. Yet, to make this claim, we have to be cautious, since the change of this type did not occur not until the 2001 Legislative Yuan elections. In other words, at the day of assuming his presidency in 2000, Chen Shui-bian then had the legal right to control executive power and to mobilize the resources previously owned by the KMT, despite the fact that the electoral vote share for him was only 39 percent. As a result, the 2001 Legislative election was in the DPP's advantage, if the party is also adept at election campaigning.

A large scale generational change of vote switching was, and is still, underway, as the electoral result of the 2001 Presidential election shows. As observed by Cheng (2003), if the KMT and its allies simply obstruct the DPP's ability to govern, while failing to find a vision that will give voters strong reasons to support them and to see the party with credibility in the political future market, then the declining electoral support that this paper attempts to address is just the beginning for this aged-old party.

Thus, while this study focuses merely on the change of electoral support of the KMT and its alliance with a simple set of variables, we believe it could unveil one of the most important aspects of change underlying such a great transformation in the history of Taiwan politics. Age, period, and cohort variables only stand proxy for other perhaps more important processes and events. Estimating the separate effects of age, period, and cohort on Taiwan's voting behavior may provide guideline in identifying the some very basic underlying processes in this society.

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