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INEQUALITY MITIGATION: TAIWAN'S APPROACH TO WEALTH REDISTRIBUTION IN CONTRAST

Prof. Chao-Yang Lin Wang and Dr. Hsin-Yi Chen Liu
Department of Economics, Chinese Culture University

Abstract
This paper examines the puzzle of why blue-collar workers in many democracies tend to support right-wing parties despite these parties wanting to limit income redistribution. The paper reviews the literature on the heterogeneous effects of democracy on tax and inequality, and argues that the preferences of blue-collar workers are shaped by a number of factors, including their economic insecurity, their cultural values, and their perceptions of the welfare state. The paper concludes by discussing the implications of these findings for the future of democracy and inequality.

Keywords: Blue-collar workers, Right-wing parties, Income redistribution, Democracy, Inequality, Economic insecurity, Cultural values, Welfare state

Introduction

Since the income of poor voters is less than the mean, then hypothetically they should prefer a tax rate of unity and fully redistribute all income to the mean. However, in many democracies, the real fact is that blue-collar workers tend to support right-wing parties despite these parties wanting to limit income redistribution. Although the literature attempting to explain this puzzle is expansive, the results are quite diverse for the sake of heterogeneous effects of democracy on tax and inequality as surveyed by Acemoglu et al. (2015). For instance, Olson (1993), McGuire and Olson (1996), and Niskanen (1997) show that, when democracy gives poor people the right to vote, their overall tax bills are lower than those in non-democracies. On the other hand, Meltzer and Richard (1981) argue that an expansion of democracy should lead to greater tax revenues and redistribution. Aidt et al. (2006) and Aidt and Jensen (2009) also use historical panel data of democratization in Europe and find robust positive effects of suffrage on tax revenues as a percentage of GDP.

There are good reasons for being skeptical about the earlier literature, since the effect of democracy on taxation identified in these models typically fails to "fully" capture the impact of omitted fixed effects, such as religious values, racial discrimination, and other sub-cultural traits. Due to the complicated interactions of these factors with democracy, the association between voting and tax redistribution becomes difficult to interpret and inconclusive. To avoid biases from these unobserved heterogeneities, our research uses a particularly simple case - Taiwan's democratization -to filter out interactions that are likely to bias the estimates. The case of Taiwan is interesting based on its special political relations with China, the bitter ideological contradiction between the country's two main political parties - the KMT (Kuomintang, forming the Pan-Blue Coalition) and the DPP (Democratic Progressive Party, forming the Pan-Green Coalition)-and the parties' supporters. From the perspective of empirical studies, using this case to investigate the relationship between democratic election and tax redistribution is easy and correct as there are not any public debates on left-right dimension, racial discrimination, religious beliefs, and cultural difference in Taiwan. The "only" issue that generally matters in Taiwan's politics is "independence vs. reunification" with China, which concerns contested

national identities. This dichotomy gives rise to there being only two major political parties in Taiwan, with the pro-independence DPP and the anti-independence KMT. This clear and easy framework thus allows researchers to investigate the impact of national identity on the relation between election and taxation in an "other things being equal" environment, almost like a scientist conducting an experiment in a designated science laboratory.

We specifically focus on the voter mobilization strategy of both parties and as how tight is the link between income inequality and voting behavior in Taiwan? Does the electoral competition between the two parties focus on the economic context in which voters' preferences toward redistribution can be inferred from their incomes?

Does the importance of non-economic issues (such as national identity) compete or even dominate that of economic redistribution? If so, then how do voters' preferences on national identity correlate with their socioeconomic status such as income and education? More importantly, do poor voters place greater weight on noneconomic issue preferences than rich voters, as proposed by some Marxian thinkers, e.g., Roemer (1998)? Since these issues cannot be addressed without resorting to micro-level individual voter behaviors, we thus use Taiwan Social Image Survey(TSIS, hereafter) data and World Values Survey (WVS, hereafter) data, which cover income, education, and ideology patterns of more than 3,000 adult respondents across Taiwan society.

Finally, our results show in Taiwan that poor voters tend to prefer the ideology of national identity rather than material benefits of redistribution, but rich voters want the opposite. This encourages both parties not only to disregard income inequality as a problem, but also to compete at cutting taxes and to offer other rich-friendly policies to cater to the rich. More importantly, our empirical study shows that this is the case in large part, because the median voters in the spectrum of unification/independence are wealthier than the polarized voters of Pan-Blue and Pan-Green (or the mean income of the population). This evidence provides an empirical support to the argument of Roemer (1998).

The remainder of this paper is organized in the following manner. Sections II and III discuss Taiwan's politics and Taiwanese people's national identity after democratization. Section IV models the linkages among income distribution, national identity, and taxation. Section V present data description and empirical findings. Section VI concludes the paper.

II Taxation and Inequality after Taiwan's Democratization

The death of the KMT political strongman, Chiang Ching-kuo (蔣經國), was a pivot to divide Taiwanese politics into two regime types: autocracy and democracy. Figure 1 illustrates his death in 1988 as a watershed for the state capacity to tax in Taiwan. Before democratization, the Chiangs' authoritarian regime empowered the government with enough capacity to enforce tax rules. During the period of autocracy, the ratio of tax to GDP exhibited a pronounced increasing trend due to a centralized strongman governance. However, as Taiwan began intensive democratization in the late 1980s, the politics of the island nation presented two critical trends.

State capacity to collect tax. The development of democratization produces extraordinary pressures from various interest groups 淤 engaging in rent-seeking to ensure advantageous tax treatment, especially regarding capital gains. This in turn pushed government tax revenues to exhibit a downward trend from 1988 onwards. Figure 1 shows that the ratio of tax revenues to GDP has been on a significant long-term decline since the 1990s due to a series of tax cuts for rich capitalists and landlords, e.g., implementing an integrated income tax system in 1998 (兩稅合一), reducing the land value increment tax by 50% in 2002 and 2004 (土地增值稅減半徵收), permanently reducing the land value increment

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tax rate in 2005 (調降土地增值稅率), and reducing the rate of inheritance tax and gift tax from 50% to 10% in 2009 (調降遺贈稅率) and the tax rate of dividend income from 45% to 28% in 2019.

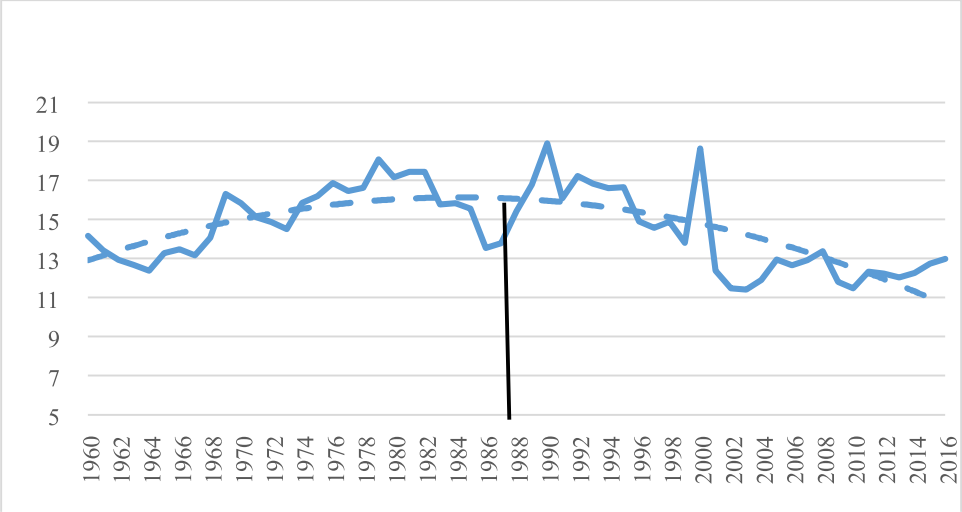

Figure 1: Ratio of Tax Revenues to GDP (%)
Notes: The black straight line indicates the year of Chiang's death. The blue line indicates the ratio of total tax to GDP. The dotted line denotes the long-term trend. Source: Taiwan Statistical Data Book (2017) published by the National Development Council.

Even worse, 70% of the increase in Taiwanese wealth has resulted from land appreciation and gains in securities, which are subject to low tax rates as well as various tax credits and exemptions. Therefore, the de facto income tax rate for capitalists and landlords is merely 8-10%, which is much lower than the maximum income tax rate (40%) or AMT (alternative minimum tax, 20%). Therefore, a series of tax cuts has reduced the ratio of tax revenue to GDP from 19% in 1990 to 13% in 2016, which is even lower than the 16% for Sub-Saharan Africa (2013 data),[1] not to mention the 26% for the U.S. (2017), 31% for Japan (2015), and 34.3% (2017) for OECD countries.[2]

Worsening income distribution. Before democratization, the Taiwan government used martial law to regulate strikes by workers and to repress trade unions. After democratization, the policies against poor laborers were mostly relaxed or lifted, and hence one would expect an improvement in income distribution when political power shifts to the poorer segments of society through the channel of election. However, after democratization in the 1980s, income inequality in Taiwan conversely began to significantly worsen. Figure 2 shows that the ratio of the richest 20%'s income to the poorest 20%'s income rose from 4.9 in 1989 to 6.1 in 2017. Although various factors influence the growth in the gap between rich and poor (e.g., globalization), there is no doubt that the government's low tax rate with little redistribution has an important role.

III Several Stylized Facts and National Identity

This section presents several stylized facts about Taiwan politics as follows.

[1] The data are obtained from the World Development Indicators published by the World Bank. https://data.worldbank.org/indicator/gc.tax.totl.gd.zs (2018/10/2).

[2] The data are obtained from the Revenue Statistics, published by the OECD. https://www.oecd.org/tax/revenue-statistics-united-states.pdf (2018/10/2)

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A-1. Left/Right party cleavage is not apparent. Most Taiwanese people are under the impression that the KMT has an advantage in promoting economic growth, while the DPP's advantage is in advocating social welfare. The literature of class politics (e.g., Hu and Lin, 2010) also shows that the bulk of DPP supporters are blue-collar workers, farmers, and self-employed citizens, while KMT supporters are mainly middle-class and capitalists. This can be seen by a question of the WVS survey,in which the respondents are asked to indicate their income positions. The answers are scaled from 1 (lowest income) to 10 (highest income). The evidence shows that the average income rank of PanBlue voters (5.3) is significantly higher than that of Pan-Green voters (4.5). The TSIS data also show that the median monthly income of Pan-Blue supporters (NT$35,118) is higher than that of Pan-Green supporters (NT$30,605).

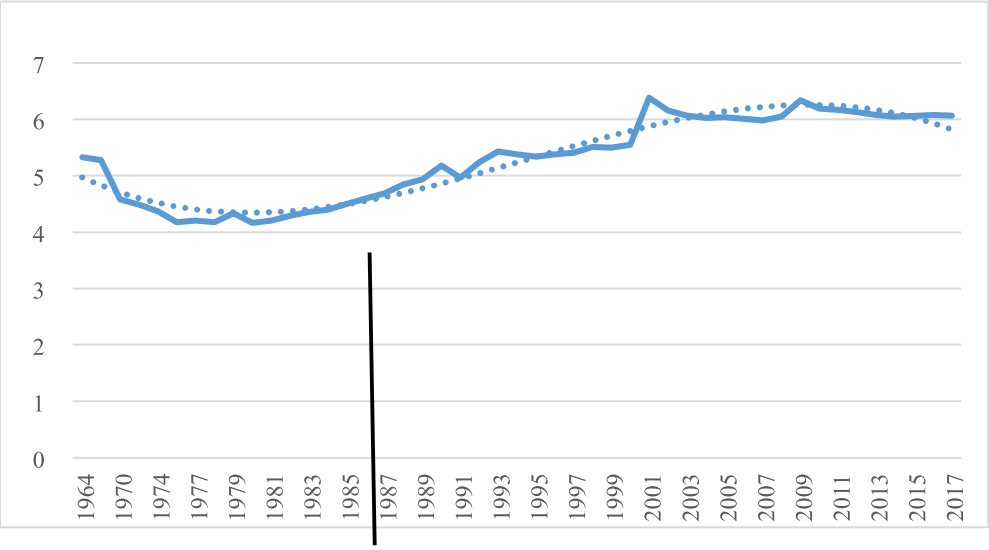

Figure 2: Ratio of the Richest 20%'s Income to the Poorest 20%'s Income
Notes: The black straight line indicates the year of Chiang's death. The blue line indicates the ratio of the richest 20%'s income to the poorest 20%'s income. The dotted line denotes the long-term trend.
Source: Database of the Directorate-General of Budget, Accounting and Statistics.

In order to better serve its supporters, the DPP should theoretically seek to tax the rich and redistribute society's wealth. However, as previously argued, the real fact is that both parties coincidentally impose a low tax (especially on capital gains) to benefit the rich and hence shift the tax burden to wage earners. Therefore, a welldesigned progressive tax system has never appeared in Taiwan. Both parties implement almost the same policies toward internal affairs, economic development, religion, and justice, except that the DPP opposes teaching Chinese history in favor of Taiwan history. This means the traditional left-right dichotomy cannot describe Taiwanese elections at all.

A-2. Non-economic dimension increases in importance in Taiwan politics. Although Taiwan society lacks stable "class identification", its politics are deeply influenced by "national identification". Since 1996, when Taiwan held its first presidential campaign, the issue of Taiwan independence has especially become the major focus in electoral politics and has dominated the issue of income redistribution. This makes the controversy of ideology as the major factor delineating political parties on either side of the "Taiwan independence/China unification" axis. On the other hand, income redistribution becomes the accessory to national identity. This can be seen by the TSIS data that show respondents preferring to "maintain status quo indefinitely" decreased from 66.9% to 44.6% between 2009 and 2015. However, respondents who support moving toward independence or unification

increased substantially (see Table 1). This evidence implies that the conflict of national identity has become more severe in Taiwan.

Table 1: Taiwanese voters' stances on the independence/unification issue

Voters	2009	2010	2015
Maintain status quo, but move toward independence	24.70%	21.00%	38.50%
Maintain status quo indefinitely	66.90%	69.60%	44.60%
Maintain status quo, but move toward unification	8.50%	9.40%	16.90%
Sample size	1,043	1,084	1,088

Notes: "Maintain status quo, but move toward independence" includes both "Independence as soon as possible" and "Maintain status quo & move toward independence." "Maintain status quo, but move toward unification" includes both "Unification as soon as possible" and "Maintain status quo & move toward unification." Data are collected from the TSIS dataset in 2009, 2010, and 2015.

A-3. Both parties divergent in Taiwan independence, but convergent in low taxes. Although both the KMT and the DPP stand together in cutting taxes for the rich, their positions in the spectrum of Taiwan independence are quite different. The KMT is opposed to independence and leans toward reunification, while the DPP advocates or at least pays lip service to independence. This can be seen by the perception of the electorate toward both parties. Of PanGreen voters, 22 + 36 = 58% tend to support Taiwan independence as soon as possibleand slowly moving toward independence, while only 2.6 + 8.9 = 11.5% of Pan-Blue votersagree with these issues (see Table 2). One thing worth mentioning is that most Pan-Blue voters and non-partisan voterstypically cling to the status quoindefinitely.The TSIS survey also shows that most Pan-Green voters call for a Taiwanese national identity, but only few Pan-Blue voters support unification with China. Hence, the real political debate should be "proindependence vs. anti-independence," rather than "independence vs. unification with China." Based on this evidence, the rest of the paper assumes that both parties have heterogeneous preferences in "Taiwan intendance", rather than "unification with China."

Table 2: Taiwanese voters' stances on the independence/unification issue

Voters	Pan-Green (1)	No partisanship (2)	Pan-Blue (3)
Independence as soon as possible	22.0%	9.5%	2.6%
Maintain status quo & move toward independence	36.0%	13.4%	8.9%
Maintain status quo indefinitely	35.3%	69.8%	70.0%
Maintain status quo & move toward unification	5.0%	5.3%	13.9%
Unification as soon as possible	1.7%	2.1%	4.6%
Observation number	897	1,026	1,292

Note: The sample covers3,215 respondents surveyed by the Taiwan Social Image Survey in the years 2009, 2010, and 2015.

A-4. Poor voters are concerned more on national identity, but the rich think otherwise. Some researchers find little to no significant effect of economic voting on the Taiwanese electorate (e.g., Hsieh et al. 1996). To our mind, these studies generally fail to account for the heterogeneity of the electorate. Although conforming to their argument that poor and low-educated voters indeed are concerned more about national identity than economic redistribution, the rich and educated voters seem to be more concerned with taxation and reluctant to redistribute their income to the poor. This can be verified by the evidence provided by Table3, which uses TSIS data to show that the average years of schooling and average monthly income (12.65 years and NT$35,375) of the respondents who believe that national sovereignty is more important than economic interests are significantly lower than those with the opposite view (13.49 years and NT$40,218). Moreover, the education and income levels of respondents who support independence or unification as soon as possible (12.32 years and NT$34,151) are lower than those preferring to maintain the status quo currently or indefinitely (13.32 years and NT$39,126).

Table 3: Education and income level of Taiwanese voters with different thinking on cross-strait negotiations

	Prefer economic interests to Prefer national sovereignty to national sovereignty or are economic interests concerned with both	
Average years of schooling	12.65 t value = 6.36	13.49
Average monthly income (NT$)	35,375 t value = 2.37	40,218
	Support independence or Maintain the status quo unification as soon as possible currently or indefinitely	
Average years of schooling	12.32 t value = 4.93	13.32
Average monthly income (NT$)	34,151 t value = 2.79	39,126

Notes: All data are collected from the TSIS datasets in 2009, 2010, and 2015.The pooled dataset includes 3,215 observations.

Some rich people admittedly may be indistinguishable from the poor in their preferences on national identity dimension. However, it is reasonable to expect that a sufficient percentage of them cares more about economic redistribution in spite of their political ideology. In order to protect her economic interests, a rich PanGreen(or Pan-Blue) voter would vote for the KMT (or DPP) if the party proposes a relatively low tax rate with little redistribution. Hence, perhaps because of loss aversion, there is asymmetry whereby the rich base 淤 their votes primarily on their economic interests, whereas the dimension of religious values is more salient among the poor.

At this point, even though the DPP (or KMT) has large numbers of poor pro-independence (or anti-independence) electorate, as long as the sense of national identification is highly salient among these voters, both parties will have strong incentives to sacrifice the material benefits of their poor supporters in order to win the critical support of the rich voters. This unsurprisingly moves the tax policy outcome away from the poor constituency's ideal point. As indicated by a DPP scholar (Chen, 2010), a political consultant of President Tsai, although the DPP self-motivates to represent the disadvantaged classes and attempts to change the electoral mobilization campaign from identity cleavage to class cleavage, this approach has not succeeded owing to a growing sense of national identity, which makes Taiwan independence become the main focus of the campaign. In order to win the election, even if the DPP wants to move to the left, it still cannot propose a tax policy with a high redistribution rate, since it needs support from the rich voters, especially the ones with a neutral perception of Taiwan independence. At this point, the issue of redistribution at best is only a secondary factor in the voting campaigns of Taiwan.

A-5.Low-income voters with strong national identity tend to be DPP supporters. One thing worth emphasizing is that the low-income voters with strong national identity are mostly DPP supporters, as previously described in Subsection III-A-1. In other words, Pan-Green with a strong sense of national consciousness are generally poorer than PanBlue or "secular" voters. At this point, if her ideological identity is stronger than her need for redistribution, then she will vote for the DPP no matter how low the tax rate is that the DPP proposes. This gives the DPP an incentive to cut the tax rate in order to please rich voters, even though it wants to turn to the left rather than right.

B. Why do the poor not expropriate the rich? One of the reasons that the Chiang regimes did not extend suffrage is because they believed that, were the poor to be given the vote, they would soon expropriate the rich industrialists. Nevertheless, after democratization, Taiwan's suffrage has not engendered the expropriation of the rich through taxation, but rather has seen it go the other way round.

When addressing this issue, the literature mostly focuses on the following two explanations: (1) poor voters expect themselves or their children will someday become rich (e.g., Piketty, 1995; Benabou and Tirole, 2006); (2) the poor believe that there would be adverse effects to expropriating the rich, who have productive talents that would cease to be supplied under high tax rates, and all would consequently suffer (e.g., Shayo, 2009). However, the literature is hardly applicable to the case of Taiwan based on the following two reasons. First, most of these studies are performed under a one-dimensional spatial model, in which the policy space is about tax redistribution and voters' preferences are driven primarily by their places in the income spectrum. Second, even some research studies, such as Poole and Rosenthal (1991), Roemer (1998), and De La O and Rodden (2008), treat a democratic

election as a two-dimensional issue over redistribution and religion, in which (1) the proletarian voters want more redistribution; while the capitalists want the opposite; or (2) the religious voters want more police, illegalization of abortion, and the death penalty; while the secular voters want the respective opposites. However, in their models, the left and the right always have divergent tax policies in that the left proposes a higher tax rate than the right one. However, Taiwan's election politics are different in that both the DPP and the KMT unanimously converge to the same low tax rate. Due to the fierce conflict over Taiwan independence, Taiwan's politics neither involves issues regarding religion nor class consciousness, as stressed by those other authors. In other words, "pro-independence vs. anti-independence" is the only issue that matters in Taiwan's politics.

In order to explain both parties (especially the DPP) favoring the rich over the poor and their failures to favor a high tax for redistribution, the researchers should focus on the differences in ideological patterns between rich and poor voters.

We hence instead propose national identity as a possible explanation for the non-expropriation of the rich in Taiwan's form of democracy. This approach leads to a two-dimensional platform in which political parties compete in a policy space with two issues: taxation (economic dimension) and national identity (non-economic dimension); and both have the potential to interfere with each other. Under Taiwan's unique democratic regime, we believe that this specification may help to explain through which channel can national identity lead to reduced support for redistribution.

National identity. Our viewpoint is quite consistent with the Marxist argument formalized by Roemer (1998), in which the explanation for the reduced support of the proletarian voters for redistribution is that they do not appreciate their economic self-interest in progressive taxation and redistribution. This unawareness provides politicians an opportunity to mobilize the voters more easily around the issue of group identities, causing the equilibrium amount of redistribution to decrease. In fact, a fairly robust literature has shown that non-economic factors (e.g., religion) are surprisingly powerful and stable predictors of voting behavior, whereas the importance of economic factors(e.g., class conflict) continues to decline. For instance, De La O and Rodden (2008) show that political religion may generate a "moral puritanism effect," which induces an electorate to prefer lower redistribution. Scheve and Stasavage (2006) also argue that religious individuals may prefer lower levels of income redistribution, because they could derive psychic benefits from the religion that serves as a substitute for the welfare state in buffering individuals against adverse life events. Basically, this approach highlights a Marxian perspective that preferences on non-economic issues that have a disproportionate pull on the poorest, least educated voters, whereas rich and educated voters are still more concerned with economic self-interest (Frank, 2004).

Based on this line of argument, we believe that national identity can develop to support the formation of "political religion", especially for poor voters. This implies that individuals with more religion in national identity would have significantly different preferences than secular individuals on both economic and non-economic dimensions, and these differences may become a powerful predictor of differences in their vote choices.

Sociotropic and pocketbook voting. This subsection focuses on individual variations in the levels of education and income that influence voters to vary in their abilities to clearly attribute the responsibility for pecuniary changes to the government. In general, recognizing the linkage between politics and personal well-being requires higher cognitive ability than identifying the political relevance of national identity. Well-informed voters can easily link governmental actions and personal economic conditions, while such attribution is more difficult forthe less informed (Duch, 2001; Gomez and Wilson, 2006). On the other hand, national identity is to some extent determined by ethnicity and

language, which are manifest to anyone (Edwards, 2009). Therefore, concerning the ability to recognize the impact of politics on an individual's material interests, pocketbook voting based on personal material interests is stronger among the informed electorate, while non-economic (sociotropic) voting based on national identity is more likely to occur among the less-informed (De La O and Rodden, 2008).

In Taiwan politics, the above argument is supported by Choi (2010),who proposes that it is a well-informed electorate rather than a less-informed one that can be involved in both sociotropic and pocketbook voting, because these voters can assign responsibility for both personal income and national identity to the government. On the other hand, low-educated individuals are less informed at being able to ascertain how governmental policy affects their personal incomes. They thus can only focus more on a sociotropic issue (Taiwanese identification), which more or less connects the subethnic cleavage between benshengren (Taiwanese people of local origin) and waishengren (Taiwanese people of recent China descent). For this reason, sociotropic voting should be more prevalent among the less-informed electorate. Since this cohort constitutes a significant portion of diehard supporters of the DPP and KMT, both parties hence have strong incentives to mobilize voters by highlighting national identity to expand their social bases.

IV. Two-Dimensional Voting model

This section establishes a two-dimensional model grounded in the previous stylized facts to investigate the roles of national identity and redistribution in the competition between the KMT and the DPP.

Tax and utility. Let the space of voters' traits be $\Sigma = Y \times A$, with generic element (y , a). Here, is the set ofy, which is the pre-tax income of an individual, and A, taken to be real number line, is the set of national identity views a. We use the degree of a voter's support for independence to measure national identity. The higher a is, the more she supports Taiwan independence. A voter's material benefits can be proxied by after-tax income $(1 - t) + k$, where t∈[0,1]is the tax rate, and:

$$k = (t - \beta), \qquad (1)$$

in which y is the mean of y, and t is a uniform tax rate on income. Equation (1) represents a standard model of redistribution financed by distortionary taxation (Bolton and Roland, 1997; Shayo, 2009), in which income taxation involves quadratic deadweight losses. These losses include a tax-levying cost, government corruption, and resource misallocation driven by income tax (e.g., unproductive use of resources, capital and talent outflow, and rent-seeking by interest groups).

The model includes two political parties: the DPP represents voters with traits(y , a); whereas the KMT represents voters with (y , a).They respectively propose a policy pair τ(t , z), in which z is the party's position toward support for Taiwan independence. Finally, the utility function of a voter with traits (y , a) over policies is (t , z ; y , a), and a > .

Utility for different patterns of national identity. Assume that both parties are heterogeneous in national identity such that, in a Hotelling line representation of Taiwan independence, the position of DPP (KMT) is denoted by z (z), and is located at the RHS (LHS) of the spectrum representing $z > z$ or "pro-independence vs. antiindependence". Furtherassume that both parties are not Downsian in that they wish to maximize the probability of winning the election in order to implement pro- or anti-independence policies.This involves two conflicting incentives: (1) both parties take different ideological preferences and have divergent incentives to adopt a platform that is truthful to their policy preferences; (2) however, since their preferences cannot be translated into real-world policy without winning the election, they thus have the incentive to move toward the middle so as to increase the

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chances of winning. These contrasting incentives (policy goals and electoral needs) create an outcome of "partial convergence" in that both parties propose similar policy packages except their most favored policies, i.e., pro- and anti-independence.

Two-dimensional politico-economic model. The DPP claims that it serves the interests of workers and farmers and always wins more votes from the poor than the KMT. However, in the real governance of taxation, the DPP has never adopted a tax policy that expropriates incomes from the rich and gives to the poor. The following twodimensional model modifies the setup of Roemer (1998) and uses a voter's preference to explain why the DPP would not propose a highest possible tax rate (redistribution) at the cost of losing the votes of the better-off individuals.

A voter's optimization problem contains two issues: taxation and national identity. Following Roemer (1998), we assume that a voter with an ideological view, a, has a utility function toward the government's ideological position $(z\,;a) = -\alpha/2(z-a)$, in which a higher value of z implies a more independence-leaning policy. A positive number $\alpha \geq 0$ is used to measure the salience of the national identity. Finally, assume that the voter is risk neutral with the von Neumann–Morgenstern utility function, and her utility at tax rate t is the post-tax income and the government's independence policy, z. Therefore, at policy (t, z), the indirect utility function of a voter with the combination of economic income and political preference(y, a) becomes:

$$(t, z; y, a) = (1-t) + (t - \bar{\beta})y - (z-a). \quad (2)$$

A political party chooses tax rate (t) and ideology position (z) to maximize the probability of winning the election, meaning that it must do its best to satisfy the needs of the electorate. Differentiation gives the equilibrium conditions in a tie-in electoral vote:

$$\frac{\Delta t}{\Delta z} = \frac{(\bar{z}-a)}{(1-\beta t)-y} \quad (3)$$

Here, $\bar{z} = (z+)\,2/$ represents the average of both parties' attitudes toward independence, and hence$z > \bar{z} > z$. Equation (3) shows that the relationship between t and z depends on the distributions of a and y. When the deadweight losses associated with the income tax is low, $\beta \leq (y-y)/t\,y$, a poor voter can benefit from the redistribution of higher tax rates:

$$\frac{\partial y}{\partial t} = \frac{\partial}{\partial t}(1-t) + (t-\beta) = (1-\beta t)\bar{y} - y > 0. \quad (4)$$

However, the following will show that if she prefers being a citizen of the Republic of Taiwan much more than being a beneficiary of redistribution, then her preference will encourage the DPP to choose a lower tax rate to appeal to rich voters rather than to enforce a high tax redistribution to represent its poor supporters' economic interests.

D.DPP's electoral strategy toward poor Pan-Green supporters. Using equation (3), one may compute the precondition that a poor Pan-Green supporter $(a > \bar{z})$will sacrifice her redistribution benefits and vote for the policy package of DPP, $\tau(t, \tau)$:

$$\frac{\Delta t\,[y - (1-\beta t)]}{\alpha\,\Delta z} \leq a - z, \quad (5)$$

in which $\Delta t = t - t < 0$ and $\Delta z = z - z > 0$. Since she is poor and "Green", we have both $y - (1-\beta t)\bar{} < 0$ and $(a - z) > 0\bar{}$. However, under a Downsian model of political competition, regardless of her economic interests, the DPP may choose low tax redistribution to maximize the probability of winning the election, if the following two conditions hold.

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(1) The non-economic political dimension becomes more salient in the electoral arena(meaning that the value of α is large enough to ensure equation (5)), such that many poor Pan-Green voters will vote for the DPP even if the DPP sets a tax rate lower than the KMT.
(2)The ideologically median voters concern themselves with economic benefits rather than political identity and hate to split their incomes with others. More importantly, as indicated by Roemer (1998), they must be wealthier than Pan-Green voters, andso a low tax rate not only caters to these median voters, but it also will not drive away poor polarized voters.
This certainly encourages the DPP to increase z toward a more ideological pole and, in the meantime, to lower taxes to please rich voters. Hence, the more salient the national identification (α) issue is, the more likely that the DPP sets a lower rate than the KMT.
As to the variable β, equation (5) shows that if low-income voters do not believe that the government is efficient and honest enough to implement redistribution, then an increase in β will discourage the DPP to propose a lower tax rate. Regrettably, the WVS data show that the ratio of Taiwanese respondents who have "quite a lot confidence" in government has significantly dropped from 60.6% in 1995-1999 to 39.4% in 2010 to 2014, implying that it is increasingly difficult for the political parties to cater to poor voters by tax redistribution.
DPP's electoral strategy toward ideologically neutral voters. Since ideologically neutral voters are in the median position of the independence spectrum, we have $a - \bar{z} \cong 0$. If the mean wealth of ideologically neutral voters is greater than that of the entire population, $[y - (1 - \beta t)y] > 0$, and if this cohort is concerned more about the redistribution issue than the others, then the DPP caneasily win their votes by setting $\Delta t = t - t \leq 0$to make the following equation hold true:

$$\Delta t \left[\frac{D\, y_{\text{rich}} - (1-\beta t)\bar{y}]}{a - \bar{z} \cong 0} \right] \leq \alpha \Delta z \qquad (6)$$

Again, this unsurprisingly encourages the DPP to propose a lower taxation than that of the KMT.
KMT's electoral strategy and Stackelberg equilibria. In the same way, we may expect that the KMT will choose the same low tax strategy as that of the DPP. The basic premise is that the "religious" issue is so salient that both parties can do nothing but to propose a low tax rate. This low tax rate equilibrium can be explained by a Stackelberg two-stage game. Assume that the DPP is the incumbent and the KMT is the challenger, where the challenger moves first. One may solve the game by backward induction and assume that the KMT sets a tax rate . However, no matter how low t is, in order to win the election, the DPP will set $t \leq t$ to cater to ideologically neutral voters. Likewise, the same is true forwhen the KMT is the incumbent. When operationalized as party alternation, hypothetically, if $\alpha \to \infty$, then the convergence of this iteration may generate a unique electoral equilibrium $t^* = t^* = 0$.
An intuitive explanation. Suppose that poor voters are concerned more with national identity than income redistribution; while the rich score the other way around. As long as the KMT (DPP) proposes a more antiindependence (pro-independence) policy than the DPP (KMT), there will be a significant number of poor voters who are so pro-independence (anti-independence) that they will not vote for the KMT (the DPP) even if it proposes a higher redistribution rate than that of the DPP (the KMT). Given that they prefer ideological orthodoxy to material interest and hold a belief, "Vote for the DPP, even if even if it makes us hungry!「肚子餓扁也要投阿扁」", the DPP predictably will propose a low tax rate, thereby winning the votes of rich voters who are neutral toward independence, but are concerned about a tax increase or redistribution. From a welfare perspective, the DPP's low taxation strategy not only can help to win the election, but also can maximize the expected welfare of both poor pro-independence and rich anti-redistribution constituents. However, this also makes the Pan-Green

poor voters, who act against their material interests, become addicted to the opiate of ideological identity.

V. Data Description and Empirical Setting

Two preconditions. This section uses probit analysis to prove two propositions of previous studies: (1)People with higher income and better education tend to be ideologically neutral voters rather than polarized voters (no matter whether pro-independence or anti-independence). The reverse is also true for poor and loweducated voters.(2)People with higher income and better education tend to be concerned more about economic interest than political identity. The reverse is also true.

Data description. The data are drawn from TSIS and WVS that collected the information annually on respondents' age, education, income, their attitudes toward economic opportunity, and political participation. Even more favorably, in the years of 2009, 2010, and 2015, the TSIS had special issues on "Taiwan independence vs. reunification with China," which provide pertinent information concerning national identity. Across these three years, the TSIS dataset comprises1,043observations for 2009,1,084 for 2010, and 1,088 for 2015. Totally, we have a pooled dataset of 3,215 observations to perform the empirical study. On the other hand, the WVS dataset includes 2,789observations (707 for 1995, 1,125 for 2006, and 957 for 2010). Table A-I in the Supplemental Materials[3] provides the text of the questions for the key variables. Tables A-II, A-III, and A-IV list the definitions and descriptive statistics of each variable and how they are constructed based on the respondents' answers to the survey. We now briefly describe variables used in this study.

1.Median: This is a binary variable used to denote whether or not the respondent is a median voter in the spectrum of Taiwan independence. With reference to questions asked in TSIS, there are two related to political ideology. The first one is regarding national identity in which the respondents are asked to answer the following "thermometer" question: "There are several views on the relationship between Taiwan and China. Which one do you prefer?" The response categories include (1) independence as soon as possible; (2) maintain status quo & move toward independence; (3) maintain status quo indefinitely; (4) maintain status quo & move toward unification; and (5) unification as soon as possible. The second one regards the preference for Taiwan's relationship with China: "In cross-strait negotiations, which one do you think is more important, economic interests or national sovereignty?" (1) national sovereignty; (2) both; (3) economic interests. We use a respondent's answers to these two questions to identify if she is a median voter. If her response for the first question is "maintain status quo"[(2)+(3)+(4)] and also her response for the second question is "both" or "economic interests" [(2)+(3)], then she is identified as a median voter, and the observation of her response will be recorded as $Median = 1$;otherwise,she is a polarized voter, and $Median = 0$. Hence, the median voters are those who prefer to maintain status quo and meanwhile are concerned about economic interests.

2. Income and Education: We use the monthly income (20K, 40K, 60K, 80K, 100K)[9]of a respondent as the proxy for the income status of a respondent. Rows (1) and (2) in Table 4give the mean incomes of median voters and polarized voters. Row (5) also shows that the income of the median cohort is significantly higher than that of the polarized cohort.[10]The same conclusion also applies to the education level (Bachelor, Senior high, Junior high) (see the average years of schooling in Rows (6) to (8)). This preliminary evidence seems to indicate that median voters are wealthier and better educated than the polarized ones.

Table 4: Salience of national identity in Taiwan

[3] Supplemental materials are available from authors upon request.

(1) Mean Income of Median Voters (μ)

NT$40,534

(2) Mean Income of Polarized Voters (μ)

NT$35,552

(3) Size of Median Cohort

1,883

(4) Size of Polarized Cohort

1,332

(5) Pr ($\mu \geq \mu$)

99.99%

(6) Average Level of Median Cohort's Education (e)

13.57 years

(7) Average Level of Polarized Cohort's Education (e)

12.64 years

(8) Pr ($e \geq e$)

99.99%

Note: The figures are computed by using the data of TSIS.

3. Exogenous Controls (X): A set of exogenous variables is used to control for possible heterogeneity across observations. These individual-specific variables comprise gender (Female),marital status (Divorced, Married), employment status(Unemployment, Retired, Housekeeper, Student), year dummy (2015Y,2010Y), partisanship (Pan-Green, Pan-Blue), ethnicity (Aborigine, Waishengren, Benshengren), and resident districts (Eastern Taiwan, Southern Taiwan, Central Taiwan).

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C-1. Empirical results: neutral voters are wealthier and better educated. We first prove the proposition that higher income and better education tend to influence a voter to be neutral in political ideology. As our dependent variable (Median) is binary, we thus use a probit model to estimate the effects of income and education on Median.

$$(Median = 1 \mid Education, Income, \boldsymbol{X}) = P(Z \leq \beta + \beta\ Education + \beta\ Income + \boldsymbol{\Omega}\ \boldsymbol{X})$$
$$= F(\beta + \beta\ Education + \beta\ Income + \boldsymbol{\Omega}\ \boldsymbol{X}),$$

in which Median is a binary dependent variable, E is an individual's education level, Y is her income, and X is a set of control variables. $P(Median = 1 \mid E, Y, \boldsymbol{X})$ is the probability that she is an ideologically neutral voter, given the values of E, Y, $\boldsymbol{X}$. Z is a standard normal variable (i.e., Z ~ (0,)), and F is a standard normal CDF.

Table 5 Empirical results of the Probit model for Median

	Model A		Model B		Model C	
	coeff	M.E.	coeff	M.E.	coeff	M.E.
Intercept	0.307		0.231		0.466	
Age	-0.008**	-0.0033	-0.008**	-0.0030	-0.010**	-0.0038
Female	0.213**	0.0851	0.234**	0.0933	0.212**	0.0832
Divorced	0.096	0.0382	0.147	0.0587	0.099	0.0390
Married	0.021	0.0085	0.069	0.0274	0.029	0.0115

These income variables are all binary in that, for instance, 20K denotes that the monthly income of a respondent is between NT$20,000 to NT$39,999; while40K denotes income between NT$40,000 to NT$59,999. The reference group is no income and less than NT$20,000.

[9] Using the Central-limit-theorem test, we find that the probability of $\mu > \mu$ is at the significance level of 1%.

Unemployment	-0.143	-0.0572	-0.176	-0.0701	-0.159	-0.0625
Retired	0.081	0.0323	0.106	0.0422	0.074	0.0289
Housekeeper	0.000	0.0001	0.004	0.0017	-0.002	-0.0009
Student	-0.036	-0.0145	-0.070	-0.0279	-0.064	-0.0253
Bachelor	0.257**	0.1024	0.295**	0.1174	0.193*	0.0757
Senior high	0.272**	0.1083	0.298**	0.1186	0.224**	0.0881

Junior high	-0.043	-0.0171	-0.009	-0.0035	-0.066	-0.0260
100K	0.289**	0.1152	0.230*	0.0915	0.263**	0.1031
80K	0.163	0.0652	0.141	0.0564	0.126	0.0493
60K	0.133	0.0530	0.161	0.0640	0.131	0.0513
40K	0.044	0.0175	0.021	0.0082	0.022	0.0086
20K	0.053	0.0212	0.023	0.0091	0.046	0.0181
2015Y	-0.026	-0.0105	-0.027	-0.0827	-0.017	-0.0066
2010Y	-0.015	-0.0058	-0.083	-0.0332	-0.046	-0.0181
Pan-Green	-0.756**	-0.3015			-0.738**	-0.2896
Pan-Blue	0.354**	0.1411			0.326**	0.1279
Aborigine			-0.246	-0.0981	-0.373	-0.1463
Waishengren			0.507**	0.2018	0.276**	0.1085
Benshengren			-0.080	-0.0318	-0.048	-0.0188
Eastern			0.081	0.0322	-0.066	-0.0261
Southern			-0.092	-0.0365	-0.052	-0.0206
Central			-0.021	-0.0085	-0.057	-0.0225

Notes: If the respondent is a median voter, then the dep. variable=1; otherwise, the dep. variable=0. M.E. is the marginal probability effect. Symbols * and ** represent the p-value is smaller than 10% and 5%, respectively.

Table 5 presents the result of the effects of Education and Income on Median, while controlling for other exogenous variables. The result evidently shows that the highest variable of personal income (100K) has a significantly positive effect on Median. In other words, an individual with a monthly income greater than NT$100,000 tends to have no particular interest in national identity (no matter whether anti-independence or pro-independence). In terms of the magnitude of effect size, the likelihood that she will be an ideologically neutral voter is higher than others by 9.15~11.52%.

Education also has a significantly positive effect to prevent an individual from taking extreme political positions. A college (and above) or senior high graduate voter is more likely to become a median voter than the others by 7.57~11.74% or 8.81~11.86%. This evidence provides concrete support for our proposition that ideologically neutral voters are wealthier and better educated than polarized voters.

As to the estimation of other independent variables, the result shows that an individual's partisanship is important in determining her political view. A respondent voting for the KMT (DPP) camp is more

likely to be a median (polarized) voter. This evidence provides some support to our argument that the DPP has more polarized supporters than the KMT. Moreover, a voter whose father is a waishengren tends to take a more median political position than those of other groups. Finally, a young or female voter is also more likely to be a median voter.

C-2. Neutral Voters Are Concerned More About Economic Interests. We now examine if a neutral voter is concerned more about economic interests. As TSIS does not explicitly ask participants to rank the importance of economic interests and national identity, we thus turn to WVS, in which two questions are somehow related to our research interests. The first one can be used to assess a respondent's attitude on whether or not income distribution should be equal. The answers are scaled from 1(completely agree with the statement "Income should be made more equal") to 10 (completely agree with the statement "We need larger income differences as incentives for individual effort").We take the Taiwanese respondents to construct a variable referred to as Income Difference, which is used to identify if a respondent would like to sacrifice her material interests to reduce income inequality. The second question is used to identify if a respondent expects the government to improve income distribution. The answers are also scaled from 1(completely agree with the statement "Government should take more responsibility to ensure that everyone is provided for") to 10(completely agree with the statement "People should take more responsibility to provide for themselves"). We also use a respondent's response to construct a variable referred to as Personal Responsibility, which is used to identify if she desires government policies to reduce income inequality. The larger the values of Income Difference and Personal Responsibility are, the less a respondent agrees with tax redistribution.

Finally, Income Difference and Personal Responsibility, taken together, are used to identify if she is a voter who believes in individualism and does not want to redistribute income. If her responses to the two questions are both higher than 5(Income Difference>5 and Personal Responsibility>5), then she is identified as an individualistic voter and the observation is recorded as $Individualistic = 1$; otherwise,$dividualistic = 0$. As this dependent variable is binary, we still use a probit model to estimate the effects of income and education on Individualistic.

Table 6 presents the results of the effects of Education and Income on Individualistic, while controlling for other exogenous variables. The results evidently show that the family income has a significantly positive effect on Individualistic. An individual in the richest 10% of families is more likely to become an individualistic voter by 22~23% than one in the poorest 10% of families, implying that rich voters tend to support an anti-redistribution party. As to the impact of education on Individualistic, a college and above graduate voter (Bachelor)also has no interest in reducing income inequality. In terms of magnitude, the likelihood that she will be an individualistic voter is higher than others by 5.86~6.46%.

Table 6 Empirical results of probit model for Individualistic

	Model A		Model B		Model C	
	coeff	M.E.	coeff	M.E.	coeff	M.E.
Intercept	-0.878		-1.006		-1.002	
Age	0.001	0.0004	0.002	0.0005	0.002	0.0005
Female	-0.009	-0.0033	-0.014	-0.0046	-0.013	-0.0044
Divorced	0.002	0.0007	0.002	0.0008	0.004	0.0012

Married	0.097	0.0349	0.096	0.0324	0.097	0.0329
Unemployment	-0.086	-0.0310	-0.081	-0.0274	-0.080	-0.0272
Retired	0.079	0.0284	0.086	0.0291	0.086	0.0290
Housekeeper	-0.031	-0.0112	-0.028	-0.0096	-0.029	-0.0098
Student	0.018	0.0064	0.024	0.0081	0.025	0.0085
Bachelor	0.163*	0.0586	0.189*	0.0639	0.191*	0.0646
Senior high	0.075	0.0269	0.097	0.0327	0.098	0.0333
Junior high	0.089	0.0319	0.101	0.0340	0.101	0.0343
Household income	0.063**	0.0226	0.064**	0.0216	0.064**	0.0218
2010Y	-0.116	-0.0419	-0.136*	-0.0461	-0.136*	-0.0462
2006Y	0.025	0.0090	0.015	0.0050	0.014	0.0048
Pan-Green	-0.033	-0.0119			-0.016	-0.0054
Pan-Blue	0.010	0.0036			-0.001	-0.0004
Aborigine			0.253	0.0853	0.256	0.0866
Waishengren			-0.036	-0.0121	-0.034	-0.0114
Benshengren			0.114	0.0384	0.111	0.0377
Eastern			-0.052	-0.0176	-0.051	-0.0171
Southern			0.034	0.0114	0.032	0.0109
Central			-0.057	-0.0191	-0.057	-0.0194

Notes: If the respondent is an individualistic voter, then the dep. variable=1; otherwise, the dep. variable=0. M.E. is the marginal probability effect. Symbols * and ** represent the p-value is smaller than 10% and 5%, respectively.

The evidence above supports our proposition that wealthier and better educated voters are concerned more about their own economic interest. They tend to exhibit individualism, highlight personal functions, and believe that income inequality is one's personal responsibility and not the government's. Therefore, the government should not pursue income redistribution as a taxation policy. Since they generally prefer the median position in the ideological spectrum of Taiwan independence, both the DPP and KMT thus have no choice but to reduce taxes in order to cater to these voters.

C-3 Testing for Endogeneity. An individual's partisanship is influenced by her preference on national identity (Median)or economic benefits (Individualistic), meaning that the causality might run from

Median to partisanship, but not in the other direction. This raises an endogeneity concern, since a reverse causality exists between partisanship and Median(or Individualistic).To address this issue, we apply a two-stage probit model and use subethnic group ethnicity (Aborigine, Waishengren, Benshengren), resident districts (Eastern Taiwan, Southern Taiwan, Central Taiwan)as instrumental variables. The OIR test fails to reject the null hypothesis of no endogeneity. Since the two-stage estimation may lead to a loss of precision, we still stick to the estimation results presented in Tables5 and 6 to preserve estimation efficiency.

VI. Conclusion

This research uses Taiwan's democratization as the research subject to explore the relationship between democratic election and tax redistribution. We first explain that the policies of the KMT and DPP are convergent in terms of a tax cut for the rich, but divergent in the sense that both propose contrasting national identities. In order to explain this, our empirical study shows that, for some low-income voters, the salience of the national identity issue has surpassed that of the income redistribution issue such that national pride is associated with reduced support for redistribution. At this point, both parties have no choice but to reduce taxes in order to cater to rich voters. Therefore, under democracy, although the poor are the majority and they vote sincerely, the equilibrium tax rate is still not the tax most favorable to themselves .Our result thus provides some support to the Marxian argument that the poor—especially the "religious" poor—do not pay attention to their economic interests when voting, whereas the wealthy tend to ignore the national identification dimension and vote based on their own interests.

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