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An Examination to the Policy Market Game of the Inflation Reduction Act

--A Response to Energy Revolution

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Abstract: U.S. Inflation Reduction Act as a federal response to energy revolution is a policy game to input least and output most for both legislators and interest groups, resulting in an equilibrium price for demanders of policies to exchange for effective supports of suppliers with re-election resources. The intention of legislators to supply effective supports is subject to ideology preferences, constituent interests and opportunity costs, while the intention of interest groups to purchase their favorite policies is subject to cost-efficient prices of re-election resources. Such an equilibrium theory for examining the Inflation Reduction Act market is able to reflect the U.S. partisan split of ideologies in environment topics, energy revolution in chief sectors of 50 states, U.S. legislative process to pass a bill, but also a huge step to achieve U.S. emission goals or to meet the temperature targets in 2030 that are set in in the Paris Agreement in 2016.

Keywords: Inflation Reduction Act, energy revolution, partisan ideology, legislative system, constituent interest

1. Introduction

The Inflation Reduction Act (IRA), introduced in House in September 2021, signed by President to become Public Law No: 117-169 in August 2022, is an ambitious declaration to tackle climate crisis, also a federal response to energy revolution going on in the United States. IRA Vote Counts, (YEAs 220, NAYs 213) in House, (YEAs 51, NAYs 50) in Senate, represents the policy game between members of congress and interest groups dropping the curtain [1]. This game is in a policy market where members of congress are suppliers of effective supports and interest groups are demanders of IRA or other alternative options that include maintaining status quo [2]. The suppliers adapt to the structure of the legislature but also respond the demanders who are experiencing climate crisis and are participants of energy revolution from all walks of life in the United States.

Standing on the countrywide platform of energy revolution, the research aims to apply the equilibrium framework for examining the political market to IRA climate provisions, in order to review the policy game between suppliers of effective supports and demanders of different climate instruments [2]. In the second part, the research reconstitutes the theory in a clear, brief, accurate way to demonstrate the factors that impact the intention of suppliers to offer effective supports, but also

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the groups of demanders that pay re-election resources to strive for effective supports to their favorite policies. And the subsections are the theory's applications that analyze the fine details of factors in IRA policy market's supply and demand sides. The research is expected to reveal the domestic partisan split in climate issues, legislative system in the United States, a smooth transition between old energy sector and the new one, and a series of topics center on IRA.

2. An Equilibrium Framework to Examine IRA Policy Market

The research adopts the equilibrium framework for examining the political market that proposed by Keohane, Revesz and Stavins in 1998 to review the policy game between IRA or alternative options' support suppliers and policy demanders. In such a policy market, the suppliers are the legislators in House and Senate whose commodities are effective supports to IRA or alternative choices; the demanders are interest groups whose currencies are resources that can facilitate legislators' re-election in constituencies they come from [2]. And the equilibrium price is a cost-efficient point that force eccentric re-election resources or effective supports to retreat from points not worth or too worth, but supply and demand curves implicating marginal issues are simplified as straight lines in Figure 1. The supply line of legislators is moved by ideology preferences to policies, re-election possibilities in constituencies, opportunity costs to expend efforts, while the demand line of interest groups is moved by policy preferences of trade associations, worker groups, consumer groups, and environment associations that are neither exclusive nor exhaustive [2].

Supply preferred point, the intersection of supply line and quantity axis, is effective supports of legislators in the absence of re-election contributions; demand preferred point, the intersection of demand line and price axis, is re-election contributions that interest groups intend to provide in the absence of effective supports [2]. In the case of IRA market, ideology preferences or constituent interests of legislators that support IRA but also result in very few opportunity costs impose positive motions on the supply preferred point; on the contrary, ideology departures or constituent interest departures that result in notable opportunity costs when legislators support IRA impose negative motions on the supply preferred point. On the other hand, interest groups supporting IRA impose positive motions on the demand preferred point when other interest groups are indifferent or oppose to IRA that result in negative impacts on the demand preferred point. The above variables of suppliers and demanders that impact IRA policy market are discussed in details as figure 1.

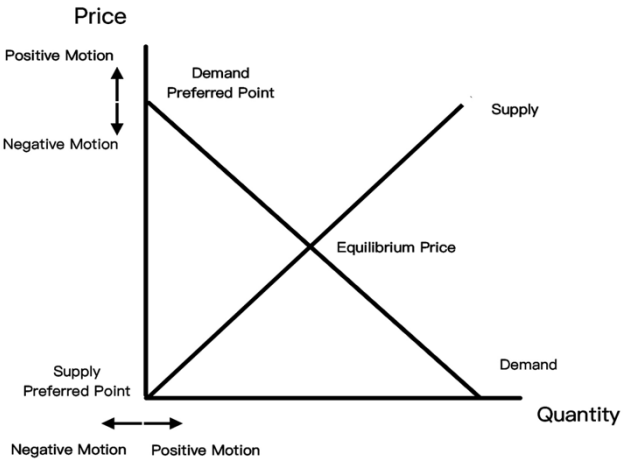

Figure 1: An equilibrium framework to examine IRA policy market (Picture credit : Original).

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2.1. Ideology Preferences and Supply Preferred Point

According to vote counts to pass IRA in Congress.Gov, Democratic party memebers vote YEAs but one NAY when Republican party members vote NAYs but one NOT VOTING, a partisan split that the Democrats view climate change as a top priority for the president and congress to tackle but the Republicans not [1]. However, partisan consensuses cannot eliminate member distinctions, though such a gap existing on IRA passage persists to date. A survey conducted by Pew Research Center in March 2022 found that 78% Democrats describe climate change as a major threat to the country, but 23% Republicans also agree [3]. As a result, parliamentarians whose ideologies do not align to partisan consensuses arise ideology costs when they vote YEAs or NAYs that align to partisan consensuses. In other words, Democratic ideologies are positive toward IRA's supply preferred point but can be negative to minor Democrats; on the contrary, Republican ideologies are negative toward IRA's supply preferred point but can be positive to minor Republicans.

2.2. Constituent Interests and Supply Preferred Point

According to IRA vote summaries in Congress.Gov, legislators from constituencies of Connecticut (YEAs 7, NAY 0), Delaware (YEAs 3, NAY 0), Hawaii (YEAs 4, NAY 0), Massachusetts (YEAs 11, NAY 0), New Hampshire (YEAs 4, NAY 0), Rhod Island (YEAs 4, NAY 0), Vermont (YEAs 3, NAY 0) vote YEAs only [1]. As island, or coastal states that suffer a lot from climate crisis, they come last 20% in energy production, carbon dioxide emission U.S. rankings, also chiefly produce clean energy such as nuclear electric power, wood and waste, noncombustible renewables in 2021 [4]. For example, Connecticut is one of the least energy intensive states, seventh highest share nuclear electric power in the United States, whose energy production, consumption, carbon dioxide emission U.S. rankings are 40, 46, 41 in 50 states [4]. Other seven states have similar patterns in energy production, consumption, carbon dioxide emission as Connecticut, where constituents are positive to IRA climate provisions but also positive on supply preferred point.

On the other hand, legislators from constituencies of Alaska (YEA 0, NAYs 3), Arkansas (YEA 0, NAYs 6), Idaho (YEA 0, NAYs 4), Nebraska (YEA 0, NAYs 5), North Dakota (YEA 0, NAYs 3), Oklahoma (YEA 0, NAYs 7), South Dakota (YEA 0, NAYs 3), Utah (YEA 0, NAYs 6), Wyoming (YEA 0, NAYs 3) vote NAYs only [1]. Except Idaho, Nebraska, North Dakota, they chiefly produce fossil fuels such as crude oil, natural gas, coal in 2021 [4]. For example, Alaska, forth largest crude oil reserve in the United States, whose energy consumption U.S ranking is 1, expenditure 1, is an energy intensive state due to harsh winter, small population, energy intensive industries [4]. As for Idaho, Nebraska, and North Dakota, they chiefly produce renewable energies in 2021 but their Republican voters reverse positive impacts of constituent interests on supply preferred point to negative motions. As shown in Figure 2, fossile capacities of constituencies are negative on supply preferred point when clean capacities of constituencies are positive, but the partisan ideologies can be stronger than constituent interests.

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Figure 2: IRA vote counts by home states (Picture credit : Original)

2.3. Opportunity Costs and Supply Preferred Point

Opportunity costs derive from sponsor, committee or subcommittee makeup, committee meetings, prints or reports participations, amendment propositions, roll call votes; besides, opportunity costs are also influenced by the effectiveness or size of staffs, seniority or leadership position, committee assignments that impact efforts to strive for office brothers' supports [2]. According to actions review in Congress.Gov, IRA, introduced in House by a Democratic representative also committee House-Budget in September 2021, has committee reports 3, committee prints 3, amendments 295, related bills 74, roll call votes 43 before it became a Law in August 2022 [1]. Though expended efforts causing opportunity costs are negative to supply preferred point, to President of the Senate or Vice President, a Democrat who votes a decisive YEA to pass IRA in Senate, effective supports result considerable utilities braking negative motions on supply preferred point.

2.4. Trade Associations and Demand Preferred Point

According to policy certainty to reduce Greenhouse Gas (GHG) emissions, IRA climate provisions has decisive impacts on U.S. energy sector, electric generation, industries, transportation sector. In prediction, IRA contributes to petroleum and natural gas consumption reduction in energy sector, but also drives clean electric generation, reduces coal generation, slows natural gas generation; tax credits invite a broader set of nascent industries to retrofit clean technologies such as carbon capture facilities, while loan programs promote fossil industries to turn to new capacities; domestic electric vehicle supply chain and supply chain in partner countries stand up thank to IRA [5]. As a result, the beneficiaries are trade associations of clean capacities whose demand preferred point is positive, but losers of IRA come from fossil capacities whose demand preferred point is negative, though a buffer is useful to decelerate the shock from such a revolution.

2.5. Worker Groups and Demand Preferred Point

According to World Energy Employment 2023 in IEA, clean energy workers surpassed workers in fossil fuel since 2021, with solar photovoltaic, wind, electric vehicle and battery manufacturing, heat pump, critical mineral mining global employment growth being dominant [6]. Since IRA climate

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provisions accelerate the pace to enlarge clean energy employees, competent workers possessing relevant certifications or degrees are more positive on demand preferred point than that in fossil sectors. At the same time, because younger U.S. adults are more open to completely phase out fossil fuels than older adults who agree to use mix of energy sources including fossil fuels along with clean sources, younger employees are expected to impose more positive motions on demand preferred point than older workers or retirees [3].

2.6. Consumer Groups and Demand Preferred Point

According to IRA climate provisions that reduce the green premium of emerging clean technologies, provide better clean energy products or services such as electric vehicle, sustainable aviation style, affordable resident household costs to customers, relief energy insecurity in lower-income families, improve indoor or outdoor air quality to benefit public health, demand preferred point of consumer groups to IRA is positive [7]. However, the possible electricity price reluctance, interest rate or unemployment issues that may effect consumption abilities, the hassles adopting energy efficiency appliances, passive expectations can impose negative impacts on demand preferred point [8].

2.7. Environment Associations and Demand Preferred Point

In prediction, U.S. net GHG emissions can decline to 32-42% below 2005 level in 2030 due to IRA execution, a huge step to U.S. climate target of 50-52% below 2005 level in 2030, where transport as the highest emission sector decreases 18-26% below 2005 levels in 2030 [5]. Carbon capture or direct air capture technologies act as carbon sinks to stem global warming combining with reforestation projects or forestry conservation programs to meet temperature targets of 1.5 ℃ [9]. Rich financial incentives make islands or coastal communities more resilient to climate crises or extreme weather events such as sea level rise, hurricane, urban heat, drought or wildfire [10]. Undoubtedly, environment associations are so positive to IRA climate provisions that impose positive motions on demand preferred point.

3. Conclusion

In theory, an equilibrium framework for examining policy market is effective supports on sale to voters but cost-efficient re-election contributions to interest groups: A care to re-election trade for a care to IRA. Legislators with environment protection ideologies, constituent interests deriving from clean capacities, moderate opportunity costs supply effective supports to trade associations, worker or consumer groups, environment associations that are neither exclusive nor exhaustive interest groups. In practice, though IRA is an impetus to meet net-zero GHG emission targets or 1.5 ℃ temperature set in the Paris Agreement, additional climate policies are needed to tackle climate crises around the United States. Since a partisan split decided a negative attitude to climate policies if Republicans are in power, clean capacities in the United States today are uncertain in the future but brighter than yesterday.

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