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Decoding the Inflation Reduction Act

Introduction

The Inflation Reduction Act (IRA) passed in August 2022 by President Biden is considered to be the most transformative law of our time in meeting the United States' climate goals. It in time intends to curb inflation, in reference to the name, by decreasing the federal government budget deficit, making health care more economical for the public, and as will be discussed in this paper, by investing in clean and domestic energy. The IRA over a decade foresees $739 billion in revenue while investing $369 billion into the improvement and remodeling of the current American energy system. With the addition of other clean energy-related policies, the IRA is predicted to augment 2030 economy-wide greenhouse gas (GHG) emissions to below 2005 levels by 40%. The IRA plans to decarbonize the sectors under electricity production using advancements in renewable energy technologies. If successful, this can align with the US's goal of net-zero emissions by 2050. In addition to the reduction in GHG-related pollution emissions, a dispersal of lower energy costs amongst consumers, energy security enhancement, and an improvement in human health are expected. Clean energy developments are also expected to create more jobs and ultimately contribute to American economic growth. A main objective of the IRA is to provide environmental and green energy solutions to predominantly low-income communities who have particularly been more affected by the externalities caused by emissions

and environmental inequalities. This aims to amend past environmental injustices that have been prevalent throughout history. Through tax incentives, grants, loans, and other programs will the IRA be set to accomplish these targets. The purpose of this paper is to evaluate and critique the Inflation Reduction Act in how effective it is in terms of energy and climate change, and how the American economy is affected overall. Additionally, it will explore the challenges that surface within the act, and propose further recommendations or modifications to enhance its efficacy in addressing them.

How is it Paid for?

The Inflation Reduction Act is the biggest investment into energy and climate change that the nation has seen. But how exactly will this be paid for, and how will this affect consumers of energy? The IRA will accomplish these promises by addressing financial gaps as it "closes tax loopholes" (American Progress, 2022) that are often utilized by big corporations that fail to pay all or any of their tax responsibilities. This design is extended by combating tax evasion or dodging by the wealthy, as this is where the largest percentage of unpaid taxes comes from (American Progress, 2022). A crucial piece of the overall funding involves enforcing a 15% minimum corporate tax rate on large corporations. This is expected to generate a substantial amount of revenue needed to fund the IRA. Taxes are increased on a big scale, however, they do not apply to individuals who make less than $400,000 annually, focusing on taxing the wealthy. This provides an incentive for common people to engage and be invested in this act.

Credits and Incentives Overview (PTCs and ITCs)

Many credits and tax incentives fall under the Inflation Reduction Act that benefit operators, consumers, and American families, while also contributing to a reduced carbon footprint. Production tax credits (PTCs), or specifically Renewable Energy Production Tax Credits under

the IRA, give a credit for up to 2.75 cents/kwh produced (relative to 2022 dollars and adjusted annually) for electricity developed from certified renewable energy sources. A 10% bonus credit for energy developments that meet the domestic production qualification can also be applied to the credit amount. To earn the bonus tax credit facilities must (1) use any iron and steel products 100% produced in the US and (2) at least 40% of the overall expenses for all 'manufactured products' used within the facility must have been produced in the US (Debin, Roberts, 2023). Investment tax credits (ITCs) are used in the IRA as they allow businesses to deduct a specific percentage of investment costs in renewable energy from taxes. According to The White House's Department of Treasury (2022), eligible recipients for an ITC are, "Facilities that generate electricity with a greenhouse gas emissions rate that is not greater than zero and qualified energy storage technologies" (The White House, 2022, sec. 13702). The base credit amount is 6% of the qualified investment, with bonus credit amounts available additionally if other requirements are met such as for domestic content, etc. Both PTCs and ITCs are effective in their design to incentivize businesses to invest in renewable and cleaner energy technologies (Congressional Research Services, 2022).

Credits and Incentives Impacts

The development of wind farms and solar arrays in the US has increased drastically due to the implementation of ITCs in the IRA. Tax credits for American households include investing in technologies that can in the long term save them money, and protect them from the price volatility of fossil fuels (different volatilities per different fossil fuels) while reducing energy waste. These involve tax credits for appliances that use less electricity including heat pumps, rooftop solar, and new and used electric vehicles. Rebates are often associated with purchases of these technologies, further offering incentives for long-term investments. This law includes

almost $9 billion for programs that provide consumer rebates for home energy, particularly targeting low-income consumers (The White House, 2022). The given examples of tax credits ultimately lower energy costs for households and businesses, reducing retail electricity rates. In the long term, this saves consumers money on their bills while reducing their carbon footprint. As there is a particular aim to provide access to clean energy to disadvantaged communities, there are specific grants and funds that will benefit them specifically, making these communities more likely to avail of tax credits. The Environmental and Climate Justice Block Grants give $3 billion in addition to the $27 billion GHG Reduction fund to communities that suffer disproportionate energy and pollution-related externalities. These funds are efficient in making sure that all communities have equal access to the benefits that fall under the clean energy section of the IRA. The Advanced Energy Project Credit invests $4 billion in places that are currently or have in the past hosted fossil fuel energy infrastructures in their communities. This will specifically give money to industrial and manufacturing facilities to produce clean electricity. These initiatives are anticipated to drive economic growth in these communities, as without them, they could have been negatively affected by the decarbonized economic transition.

Employment

The Inflation Reduction Act estimates that with the implementation of more clean energy facilities and technologies, the economy will grow with the presence of more jobs created. Over 1.5 million jobs over the next decade are presumed to be created from the IRA (The White House, 2022). Most of the needed jobs over the next decade will include experienced trade workers such as electricians, construction workers, and plant technicians to maintain plants and contribute to the production of renewable technologies like EVs, solar panels, and batteries (SNL Energy Renewable Energy Week, 2022). Amongst other sectors will similar employees be

needed. As of right now, a year after the Biden-Harris administration passed the IRA, 170,000 jobs in the clean energy sector alone have been created (The White House, 2023). Job opportunities have been dispersed throughout communities including those that are disadvantaged and have suffered from the effects of fossil fuel pollutants, offering them equal advantages and benefits. These jobs will be suitable replacements for low-income individuals currently in fossil fuel industries. This growth of employment includes the incorporation of union jobs, of high-quality and good benefits that are intended to build a path to the middle class (The White House, 2022). However, what this fails to consider is how many people are currently employed through the fossil fuel industry, and how there may not be as many jobs created as they think there will be.

The Power Sector

Within the power sector under the IRA, an acceleration of clean energy generation and substitution is expected. There are several transmission programs in addition to a new tax incentive for energy storage that could help better execute this, by offering more funding to electricity transmission infrastructures. Improvements to the current US transmission system are thought to allow for an increase in the use of wind and solar energy while becoming more resilient to severe weather events (Congressional Research Service, 2022). In Part 5, Subtitle A, Title V of the IRA, approximately $2.9 billion in transmission provisions would be appropriated specifically for transmission project developments and provisions. Through new technologies including nuclear, carbon capture and storage (CCS), long-duration energy storage, clean hydrogen, direct air capture, geothermal, etc., can renewable energy through the power sector begin to take off efficiently and successfully (US Department of Energy, Office of Policy, 2022). These technologies play significant roles in advancing the renewable energy scope by

conquering challenges associated with intermittency, storage, and emissions. They are expected to affect prices in the power sector by lowering consumer electricity rates and causing negative prices in some wholesale markets (National Bureau of Economic Research, 2022). The IRA aims to lower emissions by making renewable energy-powered sources more affordable for consumers and accomplishes this by tax credits, subsidies, and more.

The Industry and Building Sectors

Under the industry sector, the IRA issues financial assistance to businesses that plan to and are already using environmentally friendly advanced technologies. Such technologies include electrification, low-carbon fuels, carbon capture, and other high-tech manufacturing processes. Electrification replaces traditional, typically fossil-fuel-based systems with electric-powered alternatives. Electricity as the primary source of energy for transportation, heating, and industrial processes is relied on, and can lead to a reduction in the dependence on the fossil fuel industry, decreasing GHG emissions. Procurement provisions through the federal government make it possible for companies conscious of the climate and materials used that could lead to climate change by allowing buyers to purchase cleaner materials at a fairer price. This approach not only fosters the adaptation and innovation of technological advancements but also supports industries in making environmentally responsible choices in their procurement processes. In the buildings sector, tax incentives are used for homes and commercial buildings, offering rebate programs incentivizing home efficiency and electrification. Appropriate amounts of funding by the IRA are given to buildings to comply with local codes and regulations as well, creating fair costs for installments. An improvement in building efficiency through the use of electrification will also provide lower costs to consumers with an average of $100 saved in energy bills annually (US

Department of Energy, 2022). Annually this is estimated to save households approximately $1 billion while targeting low-income consumers (US Department of Energy, 2022).

The Transportation Sector

Provisions in the IRA in the transportation sector are geared towards the goal of advancing the production and consumption of zero-emission vehicles (ZEVs). This goal concludes the minimum 50% of all new passenger cars and light trucks sold in 2030 to be ZEVs. ZEVs include devices such as battery electric, plug-in hybrid electric, or fuel cell electric vehicles (EVs), that help improve fuel economy and the environment, as they do not emit pollutants. In 2020, 27% of US GHG emissions came from road transportation, the largest GHG emission-producing sector (The White House, 2022). Not only is the transportation sector responsible for emitting the most GHGs into the atmosphere, but also smog-forming chemicals and particulate matter, which have historically affected the health of humans, particularly low-income communities. Low-income communities have often faced the full impact of these environmental burdens, experiencing increased exposure to these transportation-causing pollutants due to factors including communities' historic proximity to highways and industrial zones. To meet the goals included in this act under the transportation sector, the IRA gives tax credits for vehicles that adopt clean advanced technologies, reducing emissions and lowering operating costs. The IRA's Clean Vehicle Credit transitions the transportation sector into an environmentally friendly future as it reduces GHG emissions and pollution while American supply chains for minerals and battery production grow (U.S. Department of Energy, 2022). This credit, with a maximum of $7,500, is given to consumers who purchase new cars that meet the requirements of being either battery electric, plug-in hybrid, or fuel cell EVs. This also secures a trustworthy supply of minerals necessary for EVs (The White House, 2022). Half of the $7,500 credit can be received if at least

40% of the EV battery consists of critical minerals either extracted from the US or from a nation the US has a free trade agreement with, further proving the necessity of a reliable supply (Congressional Research Service, 2022). Clean transportation options through the government's efforts of tax credits are easily more accessible to lower-income drivers who have owned clean vehicles in the past. A crucial environmental offender is the kinds of fuels used in vehicles within the transportation sector. The IRA gives tax credits to further incentivize the use of cleaner fuels, like biodiesel, hydrogen fuel, and renewable diesel, which are clean-burning and offer good alternatives to petroleum diesel, an emitter of pollutants. Overall, tax credits implemented by the IRA allow for more populations within the US, including lower-income communities, to be able to contribute and participate in lowering emissions within the transportation sector by making EVs more affordable.

Grid Reliability

The emergence of renewable energy sources as feasible alternatives in the energy sector gives rise to certain concerns. Renewable energy- mostly in the forms of solar and wind- faces one main issue when concerning grid reliability, the problem of variability. This makes it challenging for the power supply to remain stable and reliable. To meet President Biden's goal of a decarbonized electricity grid with the integration of renewable energies, it is estimated that, for example, the daily rate of solar capacity will need to approximately quadruple (Hale, 2022). The scale of transformation necessary for renewable energy to take off and provide what it needs to is quite drastic. The production of electricity from sources like wind and solar can fluctuate based on their location and weather conditions. Generation of these energies is inconsistent and does not provide a suitable amount of energy to be baseload power sources on their own without further technological advancements in energy storage. With the attempt to implement renewable

energies as baseload power sources, critical sources already meeting these standards like coal and natural gas are going to slowly die off (Parker, 2023). This can lead to the much-needed decline in fossil fuels, but also to the grid's overall dispatch reliability without proper technology. However, the reduction of the use of fossil fuels in the long run will align with the ultimate purpose of the IRA, which is to transform the energy sector in alliance with the nation's climate goals.

International Impacts

While an increase in domestic energy production is good in terms of energy security and resistance to price volatilities, it leads to less dependence on international organizations, which is not favored by trade partners, the big one being Europe. The EU estimates that about $207 billion in US subsidies from the IRA violate World Trade Organization (WTO) regulations (Friedman, 2023). As the US is putting high investments in domestically produced energy, the global competitiveness of European economies can be negatively affected, altering their fiscal, monetary, and clean energy policies, ultimately causing global and geopolitical disputes in the long run (Friedman, 2023). For example, an attempt to reduce inflation can cause higher interest rates, which can attract foreign capital, causing national currencies to appreciate, further reducing competitiveness in global markets. Relationships between countries may be affected, impacting overall trade deals, something important to consider when discussing the economic and geopolitical impacts of the Inflation Reduction Act.

Monetary over Fiscal Policy

How the IRA proposes to meet these goals by relying on subsidies, stimulus packages, and other fiscal measures may do more harm than good in the long run. A reliance on fiscal measures can create even more of a government deficit or surplus, depending on the tax revenues. Monetary

policies are suggested over fiscal measures, as the IRA goals of reducing inflation and economic growth are typically influenced by monetary policies, or are in addition. Research and experts show that monetary policy is more effective than fiscal policy in meeting these targets given by the IRA, especially following the Covid-19 crisis (Friedman, 2023). Government spending as an effective policy tool regarding the IRA raises some level of concern, as it may provide a short-term boost to the economy and its goals, but will eventually have some long-term consequences. An increase in government spending results in the expansion of the money supply, ultimately introducing inflationary pressures to the economy, causing a decrease in economic activity and setting in motion an increase in unemployment. In the past, fiscal policies have helped the US economy come out of recessions, but in the long term in hopes of reducing inflation, it may not be as effective and may cause inflation due to a rise in nominal interest rates and increases in marginal costs.

Methods to Enhance the Act's Shortcomings

While the Inflation Reduction Act sounds appealing on paper, some issues still arise from it. It is argued that the IRA does not complete the clean energy transition on its own, and would still require city and local climate action plans to attempt to meet the IRA's goals (Levy, 2022). Some action plans could include various programs that fully commit cities and residents to using more renewable energy sources as a means of electricity. Additionally, educational workshops could be implemented to show residents and consumers how they can benefit from what the IRA offers consumers, further increasing overall investment and engagement. Inflation is a challenging thing to correct by implementing government policies through fiscal policy. One way the IRA could improve this would be to rely on monetary policies over fiscal policies. Inflation reduction is the name of the act, and monetary policies would be a better policy to fight this. Another thing

the IRA fails to consider about jobs gained in the clean energy sector is what occurs on the other side of things, the loss of jobs in fossil fuel industries. A method to aid this transformation and truly emphasize the jobs that will be created should be a job transition program of sorts. This could include transitioning those employed in fossil fuel industries into the clean energy sector. The IRA deems to be beneficial on a domestic scale, but not on a global one. If clean energy policies could be enacted in correspondence with international policies, especially with current or prospective trade partners, the fear of losing relationships with other countries can decrease. Further technological advancements in terms of energy storage when dealing with renewable energy intermittency and variability are crucial in making the clean energy transition successful. This additionally gives a further decline in the reliance and power to fossil fuel industries.

Conclusion

The Inflation Reduction Act represents a monumental shift in the United State's attempt to address climate change and use clean energy. This act affects all of the sectors under electricity generation and consumption including the power, industry, transportation, and buildings sectors, as the act encourages the use of clean technologies. It accomplishes this through implementing strategies including tax incentives, rebates, and grants. The IRA not only aims to curb GHG emissions, but also emphasizes job creation, and overall economic growth across the nation. The effectiveness of this act raises some challenges concerning the reliability of renewable energy sources, the impact on existing fossil fuel industries, and the reliance on fiscal measures to meet these goals. To further enhance the effectiveness of the IRA, changes in monetary policies, collaboration with local climate action plans, and solving the international implications that arise in the United State's transition can be beneficial. The transformation into clean and renewable energy alternatives proves to not be easy, however, the administration's implementation of the

Inflation Reduction Act is a step in the right direction in the US becoming a nation that relies less on fossil fuels and emission polluters.

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