

Analysis of inefficient fossil fuel subsidies in America

--Example of an energy assistance program for low-income families

Zhaoyuxi^{1,2}, Zhangyongxie^{1,3}

¹ Beijing Polytechnic University School of Management and economics, Beijing 100081

² Beijing Economic and social sustainable development research Base, Beijing 100081

³ Yan'an University management College, Yan'an 716000

Abstract: The We inefficient fossil fuel subsidies self-report listed existing fossil fuel subsidies including subsidies for the exploration, Development, Extraction of fossil fuels, subsidies for fossil fuel employed in the residential Sector (represented by the Low-income Home Energy assistance program). This paper chooses low-income Home energy Assistance program (liheap) as a case study. The results show so: ① discriminatory prices of fossil fuels in liheap led to excessive fossil fuel consumption. Compared with 2013, the number of heating subsidies by recipient households reduced by 2.89% in 2014, while Total Expenditure rose by 19.23%; ② During FY1993 to FY1995, FY1999 to FY2001, FY\$ to FY2007, and FY2008 to FY no., Weatherization benefits and crisis benefits showed asynchronous growth; ③ liheap recipient households tended to consume more fossil fuel than low-income and other types of households, particularly in the South Area. Finally, This paper analyzes "External institutional system Then Internal Energy Structure of the US inefficient fossil fuel subsidies Reform, thus provides some policy Implications.

Keywords: fossil fuels; Inefficient fossil fuel subsidies; Low-income Home Energy Assistance program; US

1. Introduction

2016 year Hangzhou G Session, The United States and China together Publish voluntary peer review report on inefficient fossil fuel subsidies, will fossil fuel limited to coal (includes raw coal, solid fuel, gas and coalbed methane, oil (includes crude oil, natural gas liquids and refinery products, natural gas (includes associated gas and non-associated gas body) and heat and power produced by the aforementioned fuel (Non-fuel utilization) fossil fuels not in review). for "fossil fuel supplement" paste, United States Readme Report United States cancellation and normalization of inefficient fossil fuels Material subsidy efforts^[1] (G--us, 2016) With the listed side

Draft date: 2017-08-15

Fund Projects: National Natural Science Foundation Project analysis of implied carbon in foreign trade of BRICS countries and China's countermeasures (approval number: 71273026; Beijing Natural Science Fund face entry "Influence of consumption structure change on carbon emission in Beijing city" approval number: 9172015; General project of Beijing Social Science Foundation Economic benefits of Beijing's export trade and environmental cost research" Periodic research results (approval number: "JDYJB010;

Introduction to authors: Zhao Yuxi, Dr., Associate professor, School of Management and Economics, Beijing Polytechnic University, doctoral Advisor.

Explicitly its contents: One is direct budget support or fiscal expenditure Grant; Two is the tax law measures or tax-incentives; three is used or produced by the Government for the support of fossil fuels for free or below The market price way to provide supplementary funds or services; Four is Ask non-government entities to make fossil fuels at lower market prices producer offers special services, or require non-governmental entities to buy Super The amount of fossil

Copyright ©

This is an open-access article distributed under the terms of the Creative Commons Attribution Unported License

(<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

fuel or related services on market demand.

The US Readme report lists the existing in the United States Item fossil BurnMaterial Subsidy, including fossil fuel exploration, Development and mining subsidies with and using fossil fuel supplements for the residential sector represented by LIHEAP paste. And clearly indicates the exploration of fossil fuels. Development and mining supplement paste a total of items are inefficient fossil fuel subsidies. For LIHEAP, The Panel's expert opinion and the United States Government had a disagreement. Review small experts in the group think that using general assistance instead of LIHEAP more appropriate; US State not fully confirm LIHEAP for inefficient fossil fuel supplement, not intended to be reformed, and consider this subsidy to be a (G20-US, 2016).

This article chooses to study U.S. inefficient fossil fuel subsidies, not only the lies in its reform of inefficient fossil fuel subsidies in countries such as China "meaning", more focused on its search for inefficient fossil fuel in the U.S. Post reform path, and global low-effect fossil fuel supplement Post the reform push.

2. U.S. low-efficiency fossil fuel subsidies overall and features

2.1 Basic content of inefficient fossil fuel subsidies in the United States

collation and analysis of existing policies for U.S. fossil fuel subsidies This is an important part of canceling and standardizing inefficient fossil fuel subsidies. Text based on America's effort to abolish and regulate inefficient fossil fuel subsidies Force (G20-US, 2016) To summarize the relevant content of, and update individual data.

oil production must not exceed 1000 Barrels, Daily natural gas production must not exceed 1000 barrels of oil in natural gas equivalent. solid fossil fuels including lignite, Secondary bituminous coal, bituminous coal, Anthracite or oil shale. managing the marginal well, the IRS (IRS) defined average daily output less than 3 barrels of oil well producers. the recommendation to repeal the implementation of the subsidy is 2016 Year 2 Month, final regulations are planned for the 2016 Publish at the end of the year. 2014 Year Month One Day, The maximum limit on the amount of oil pollution cleanup costs that oil companies should pay for destroying natural resources from 7500 Upto 1.34 billion \$. original policy more than 7500 The fact that the million dollar portion is actually shared by the American public will no longer exist. for families with a lower income than poor families 150% or the middle income level of the home state 60% Home. U Project is a special case, Was originally 2007 Year Revocation, actually lasted until now.

estimated financial cost in the US Readme report, 2016 fiscal year U.S. fossil fuel subsidies are expected to be 81.57 billion \$, its, producer allowance is 47.57 billion \$, consumer subsidy for billion \$. on this, Different research institutes concluded differently than large. The British Overseas Development Research Institute considers that in the 2013 year and 2014 years, The United States annually provides the domestic fossil fuel producers with a billions of dollars in subsidies (BastE, et al. 2015. Rozhensching Feng wave (2016)^[3] use the list method as the basis, Subsidy link and Policy tool combined measurement Framework, View 2015-2019 The U.S. federal fossil fuel subsidy total is expected to be reaches 922.24 billion \$, The average annual size of is expected to reach 184.45 billion \$, to consider the Readme submitted by the United States Government The survey is significantly smaller.

2.2 features of inefficient fossil fuel subsidies in the United States

First, Policy Standard for the United States to implement fossil fuel subsidies The is heavier than the technical standard. from table 1 to see, except that the fact has been lost effect Subsidy item (as U Ten and U One) and not implemented or realistic insignificant items (like U, U.S. fossil fuel subsidies The project has clear and unambiguous specifications.

Second, Plan reform of the U.S. fossil fuel subsidy policy is very clear, does not take such a near-term, Medium forward etc time Blur concept. such as U1 for taxpayers The intangible drilling cost of the oil and gas fields located in the United States by, Taxpayer can choose cost to pay or take place at cost minus (=cost, can not be capitalized). Select deductal oil companies with intangible drilling cost, The of its production well invisible Drilling cost 30% must be capitalized (count people assets cost, instead of in the current period as a cost deduction, and to be amortized after? months. is similar to, except Ua and U Project is actually out of effect, Most other subsidy items choose over 2016 Fiscal Year Plan reform or revocation.

Third, Most of the fossil fuel subsidies in the United States belong to the health production side, only a few items are consumer side. From Table 1 to learn, United States Item fossil fuel subsidy project 1-u belong to producer benefits, only U\$ belongs to consumer benefits. With 2016 fiscal year data for example, The biggest subsidy is U17 entry mesh, belongs to consumer side subsidies, ratio to 41.68%; U1, U2 and U3 The subsidy ratio for projects is in 10% above; entire production The side subsidy is up to 58.32%.

Fourth, government role in U.S. fossil fuel subsidy reform The bit is relatively clear. Overall, United States fossil fuel subsidy (s) However there is also the intention to help manufacturers hedge against market price fluctuations, and to some extent reflects the interests of large enterprises, but country Home More are the regulators and supervisors of subsidy rules, is fossil The maintainer of the fuel market rules.

3. The plight of inefficient fossil fuel subsidies in the United States--with

liheap as an example

liheap The is designed to ensure that houses scattered across the states Heating and refrigeration under extreme weather conditions. Federal policy House Rule^[4], when the Family does not exceed the income standard for poor families The 150% or the middle level of the home state's 60%, can apply for the energy subsidy program (US-HHS, 2015). on liheap allocation ratio for subsidized funds, altogether with heating allowance, refrigeration subsidy, response to crisis subsidies, House Change Create subsidies and other total 5 spending items, where heating subsidies are expenditure takes up most of the amount of subsidized funds, fiscal year more all reached 54.2%.

liheap to boost energy security for American low income families all have special meaning. from the area covered by the aid group and the family fields, receive a heating subsidy and winter the/all year crisis assistance the subsidy is distributed in the,,, accept the refrigeration subsidy every year have 20 state around, Accept housing energy efficiency subsidy in around. There are old people in the recipient family, disabled and children's 3 The proportion of households in the overall beneficiary family in the 2013 fiscal year up to through 92.3%. has research that cancels liheap decrease 17% Energy Security home number for^[5] (Murray AG, Mills BF, 2014). simply look at the level of benefit promotion, liheap Yes is an important part of the American welfare system.

but, is undeniable, liheap Fuel Type for is More of a negative externality that can create a larger environment (global warming, Large Gas and water pollution, traffic jams) (Parry et al., 2014) fossil fuel^[6], with 2014 Year for example, liheap recipient heating allowance in court (oil), Natural gas and LPG account for before 3-bit (US-HHS, 2015). at the same time, not to be ignored is, liheap Implementing low-income home energy assistance effects and benefits promote at the same time, to stimulate the excessive consumption of fossil fuels by assisted households, make liheap No reduced to de facto inefficient fossil fuel subsidies, And make it difficult to Trap, Urgent need for reform.

3.1 liheap The differentiated price of fossil fuels causes Excessive consumption of fossil fuels

with 2013 Year Ten Month is bounded, previous fuel and propane (Liquid LPG (a) only house prices based on home heating,, after the home heating house price and wholesale prices of the district is divided into. theoretically, in the case of an established subsidy limit, either by pressing Monthly purchase of fossil fuels based on domestic prices or heating season Acquisition of fossil fuels based on wholesale prices, discrimination or disambiguation The apparent price mechanism can theoretically inspire a consumer's opportunity trend, make its choice to have more fossil burns in quantity material. 2013 year and 2014 Annual heating season liheap fiscal year

3.2 liheap There are concurrent increases for alternative subsidy items Long. theoretically, liheap heating subsidy and housing modification subsidy the has a partial substitution relationship. generally, When housing modification subsidy When expenditure increases, means the energy use of the recipient family Items Improved, Energy efficiency Promotion,, which in turn reduces the ability to Source Subsidy requirements. without considering the growth of the recipient family next, tends to be the opposite of changing trends, but liheap The fiscal year report for does not support the above judgment. as shown 1,, 1993-1995 fiscal year, 1999-2001 fiscal year, 2005-2007 fiscal year, 2008-[] fiscal year 4 interval, heating subsidy and room changes in housing subsidy trends are converging.

3.3 liheapPolicy Making a low income family in the same situation tends to consume more fossil fuels to meet heating requirements.

This article selects liheap Fiscal Year report, to the U.S. national, East North, Midwest, South, West 5 range, 4 type of family (all families, Non-low income family, low-income home, liheap Recipient Home, 5 Fuel Type (Natural gas, Power, Fuel, kerosene and liquefied petroleum gas)), Select it in 2007-2014 fiscal Year for a total of 960 Group data based on different combination forms.

Data Source: liheap 2014 fiscal Year report.

Note: The data in the diagram is calculated by the author.

As shown in figure 2 shows, 2007-2014 fiscal Year U.S. 4 type

all fuel consumed by home heating (Natural Gas, Power, Fuel, oil, Weighted average of heating consumption for kerosene and liquefied petroleum gases number) data indicates, liheap Average annual heating for assisted families consumption not only in each fiscal year is more than the same as their economic situation, and beyond the annual average of all families in the U.S. The weighted average value of heating consumption, including high income family annual average heating consumption, that is liheap Policy enables low income families to tend to consume more fossil fuels in the same case to meet heating requirements. In other heating areas, like Northeastern United States, Midwest, South, West also has varying degrees of presence in this trend. As table 3, North-East for example, all fuels, fuel and kerosene this 3 type of fuel is sorted by consumption, complies with non-low-income people home > all home > liheap Recipient Home > Low-income Family This sequence. Also, Low income family only power and liquid LPG. These two fuel types consume more than liheap subject help home, gas consumption is essentially the same. In other words, liheap the recipient family is outside of the power and liquefied petroleum gas ("") He consumes less than the same economic situation in his fuel type. Home more fuel, This also proves liheap policy fired Excessive consumption of fossil fuels.

Table 3 2007_2014 fiscal year Northeastern United States 4 type Home, 6 Heating consumption data for fuel type

Table 4 2007_2014 Fiscal Year use assignment method based on fuel type and household type of U.S. regional heating consumption sort

liheap Recipient Home 4 Family Type, and then based on the fuel type Total heating consumption by family type, thereby Draw Table 4 results. To sort the total fuel consumption of a table 4

Results Follow the 4-3-2-1 by assigning, Select low-income family's representations H3 and liheap Beneficiary Home Description H4 plus to compare, make an assignment plus total contrast. On 4 type heating area, H3 have total assignment score less than H4, liheap recipient Home Lower-income households tend to consume more fossil fuels to full foot heating requirements. In the south of the United States, This trend is particularly obvious.

liheap The dilemma of is not only Close, More with US inefficient fossil fuel subsidy reform face the outside of the the is closely related to the internal institutional environment of the energy environment.

4. U.S. inefficient fossil fuel subsidy reform energy cycle Context and institutional environment

4.1 external energy for inefficient fossil fuel subsidy reform in the United States Environment

External of U.S. fossil fuel and inefficient fossil fuel reform The environment forms a different trend from the past year New trends, Main Performance is in the following two areas.

U.S. energy security issues have been mitigated, Overall energy supply Abundant. month of year, with shale gas wide Generic mining, Natural gas in the United States is basically fully self-sufficient; with water The technical innovation represented by drilling and cracking in the United States at home increase crude oil production to close to previous record level; coal Basically fully self-sufficient, and yield is trending down. United States the country's natural gas

accounted for much more than the world's primary energy structure 2016 average (+ year, US 31.3%, World Average 23.8%, crude oil accounted for more than the world and Asia-Pacific average waterpiping, raw coal ratio significantly below Asia Pacific and world average waterpiping. overall, USA Once energy supply has been rendered High oil, High gas, Low Coal Characteristics of the.

4.2 U.S. energy policy has planned to clean energy and more efficient conversions. general view, with China and other regions energy at two-way causal relationship between consumption and carbon emissions^[7], North United States and other developed regions with carbon emissions to economic growth and Energy junction construct one-way causality^[8]. year after, in view of greenhouse gas emission pressure, US Federal government releases Clean Power Plan. This plan implements new carbon pollution labels for new and converted plants. Quasi, requires existing power plants to meet specific emission performance metrics or total emission reduction equivalent. as shown 3, 2001-2015 Annual United States The power production department's fuel-generating ratio is in the, and, year down trend unusually obvious, coal power generation accounted for a steady drop, Natural gas generation takes a step up. overall, fossil fuel generation ratio line down, where 2005 year 2009 year and % year is next drop more obvious.

Note: 1. for other energy sources for power generation such as petroleum coke, other gas, Wood material and energy loss not taken into account, simultaneously on distillate fuel oil, remaining fuel Oil and other petroleum products are integrated under the Oil project processing, does not do subdivision processing.

5. for ease of comparison from absolute count, All energy conversion to million Ton Tce.

Data Source: U.S. Energy Information Agency; Is compiled by the author to calculate the results of.

These two new trends form the U.S. inefficient fossil fuel subsidy. The tone of the external energy environment for reform, also makes us inefficient stone fuel subsidy reform in a better historical position, on put fossil fuel subsidies are no longer the US government avoids producers for. The excuse for closing the operation well in response to a sudden price drop. fact on, 2014 year to 2015 after oil price plunge, oil "" producers can still keep profit^[9]" (Decker, 2016).

4.2 internal system of inefficient fossil fuel subsidy reform in the United States Environment

5.1 internal system of inefficient fossil fuel subsidies in the United States border highlighted in the energy industry strong private ownership tradition, Government The industry controls for are gradually weakened and discarded. take the oil industry for example, U.S. oil exploitation is entirely in the hands of private enterprises., though Is based on the 1973 Arab oil embargo, producers cannot go Mouth crude oil (can export oil products), But the ban is already in the 2015 Year Month Cancel. overall, USA to domestic oil markets are less regulated and open to competition.

5.2 internal system of inefficient fossil fuel subsidies in the United States is also reflected in U.S. government support for fossil fuel subsidies no fundamental changes. For example, with oil and gas extraction Groundbreaking progress, and production of shale and tight oil Level Up, the U.S. oil and gas energy market structure has taken a big jump change, The applicable condition of the existing oil and gas fossil fuel subsidy occurs change. at the same time, United States government also with the 2015 end of year as a large sub-subsidy repeal or reform deadline. But based on an existing "the repeal of a stone fuel subsidy must comply with U.S. congressional authorization legislation", Otherwise the government cannot take independent action. so, United States government to Oil and gas fossil fuel subsidies are relatively stable in type and range, As a whole, the support for oil and gas fossil fuel subsidies is relatively clear long. compared to the consumer side fossil fuel subsidy, production side of fossil fuel subsidies not only the number of large, type more, more what's important is, such as foreign tax credits and unconventional energy student tax credits such as the tax credit are not counted as fossil fuel subsidies. and, Most of the U.S. fossil fuel subsidies are written into the United States The permanent terms of the tax law, The difficulty of reform is conceivable^[ten].

5.3 The path to the inefficient fossil fuel subsidy reform in the United States has special. subject to U.S. political system, US fossil fuel subsidy reform proposals usually encounter obstacles in the legislative phase of Congress. Obama

administration from Fossil fuel subsidy reform in successive years scheme, less understood and supported by ordinary people. Trump the government has a tendency to cure fossil fuel subsidies in traditional industries such as coal. to US low-efficiency fossil fuel subsidy Readme report says, on United States promotion of inefficient fossil fuel subsidy reform, only follow from bottom on the path, That only a sufficient number of ordinary people have understood the Necessity of the reform, and enough to affect the Congress that represents them members when, The political agenda for the reform of fossil fuel subsidies can only be pushed move. and this path was declared by the Trump government in the United States. "Paris contract becoming more and more ambiguous.

based on the traditional private ownership of the fossil fuel industry in the United States, Government The support position of the and the particularity of the reform path, Compare external to Source Environment, American inefficient fossil fuel subsidy reform internal system Environment is still not optimistic. liheap reform is the United States An example of China's inefficient fossil fuel subsidy reform.

6. Policy recommendations

liheap as a representative of American inefficient fossil fuel subsidies, The Future path choice for its reform also heralds the inefficient fossil fuel of the United States materials subsidy reform possible path. based on liheap "reality" borders, This article proposes the following for the American inefficient fossil fuel subsidy reform recommendation:

6.1 for liheap, The first consists in confirming that it caused the The excessive consumption of fossil fuels, belong to certain inefficient fossils Fuel Subsidy. Second Select pilot area, to cancel Liheap Scenarios and use the general assistance system instead of liheap sex reform test.

6.2 The United States should make full use of the enabling energy environment, Take full Advantage of the G and APEC and other international energy cooperation framework effect, full respect for and adherence to the voluntary peer review system this New international cooperation mechanism, continue to promote inefficient fossil fuel subsidies Reform.

6.3 The United States should respect greenhouse gas emissions reduction by the international total General, Let enough ordinary people know about inefficient fossil fuel subsidies the need for reform, then affect congressional legislation, bottom-up Push Dynamic inefficient fossil fuel subsidy reform.

6.4 The United States should adopt measures such as taxing fossil fuels Promote inefficient fossil fuel subsidy reform, and explore the area Environment Protection, Unified Platform for carbon reduction technologies and domestic cross Carbon Abatement cooperation in administrative regions^[one] new carbon emissions trading mechanism role in inefficient fossil fuel subsidy reform, to more Large-scale international low-efficiency fossil fuel subsidy reform new Road.

References

1. G20-US the The United States⁵ effort to phase out and rationalise its Inefficient fossil-fuel subsidies[R]. 2016.
2. Bast E., doukas A., Pickards. et al. Empty promises. G subsidies too oil, gas and, coal production[R]. oversea Development Institute (ODI), and oil change International (OCI), 2015.
3. Rozhensching, Feng Wave. U.S. federal fossil fuel subsidy scale analysis[J]. China Energy, 2016, 38 (one): 19-24.
4. U.S. Department to Health and Human Services. low-income Home Energy Assistance program: onto Congress for, fiscal Year 2014 [R]. Administration For Children then families, Office of Community Services, Division of Energy Assistance, Washington, D.C, 2015.
5. Murray AG, Mills BF. The Impact of of low-income home Energy Assistance program participation on household Energy insecurity[J]. Contemporary economic Policy, 2014 (4): 811-825.
6. Parry IWH, Heine MD, Lis E, et al. getting Energy prices right: from principle to Practice[R]. International monetary Fund, 2014.
7. Zhao Yuxi, Wang Hu. The impact of energy consumption and economic growth on carbon emissions in Beijing,

- Tianjin and Hebei provinceresearch[J].China Energy,2016,38:34-40.
8. SoumyanandaDinda,dipankorcoondoo,manoranjPal.Air Qualitytheneconomicgrowth:anempiricalStudy[/J] .Ecological Economics, Watts (3): 409-423.
 9. DeckerR,flaaenA,TitoMD.UnravelingOilconundrum:Productivityimprovementsandcostdeclinesin theUSShaleOilIndustry[R].BoardtogovernorsTo theTheReserveSystem(US), 2016.
 10. Angel.Review of the status of international fossil fuel subsidies[J].China Energy,,():37-41.
 11. ZhaoYuxi,Kontriting,Lihao.decoupling of economic growth and carbon emissions in the Beijing-Tianjin-Hebei regionresearch[J].China Energy,2017,39 (a):20-26.