

The economic impact of Petroleum Subsidy and Subsidy Reform on Household income groups' welfare in Trinidad and Tobago

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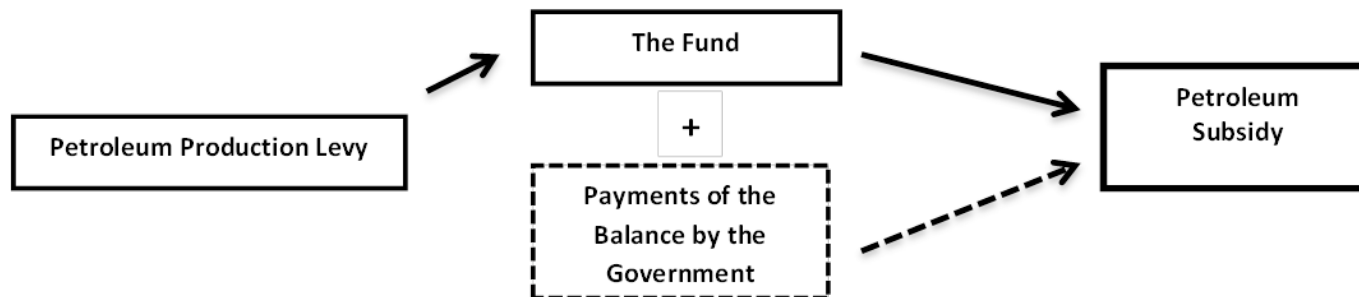
Outline

- Background
- Research Questions
- Literature Review
- Methodology
- Petroleum Subsidy Analysis
- Petroleum Subsidy Reform Analysis
- Conclusion

Background- History and Governance

- History of Petroleum Subsidies in Trinidad and Tobago
 - The Petroleum Production Levy and Subsidy Act of 1974
 - It sought to '*cushion the burden brought about by the high prices of petroleum products*' (Baksh 2004)
 - At present, It is mainly viewed as the direct means through which the population could share in the nation's natural resource wealth
- Governance of Petroleum Subsidy

Figure 1: Petroleum Subsidies Structure

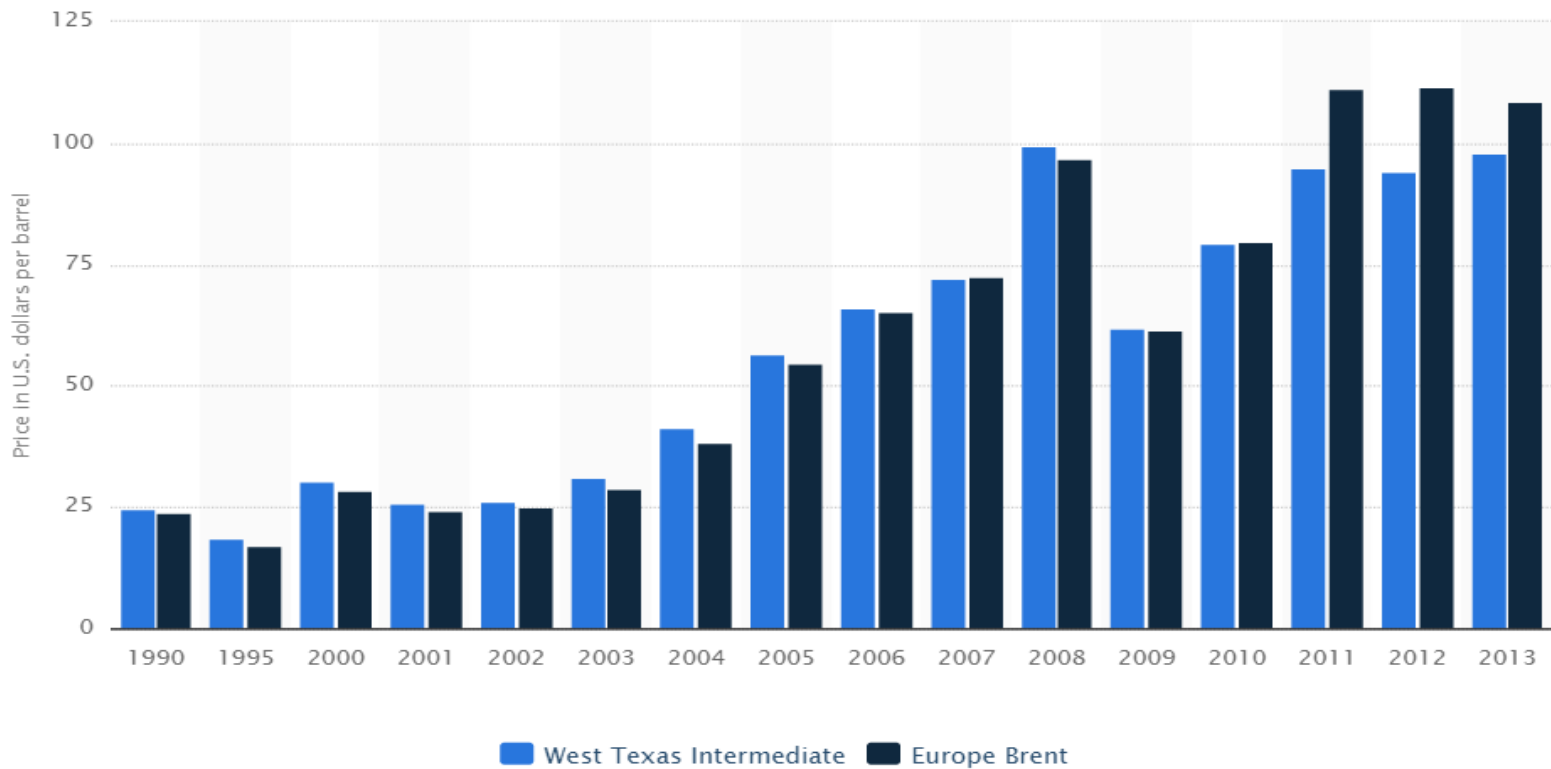


Background- Economic Impact

- Petroleum subsidies amounted to over twenty (20) billion dollars between 2000 -2011.
- It is mainly driven by oil price shocks and changes in domestic demand
- Government would have footed approximately 46.5% of total subsidy payments between (2001 and 2011)

Background- Economic Impact

Figure 3: Annual Average crude oil spot price, 2000- 2011 (Dollars per barrel)

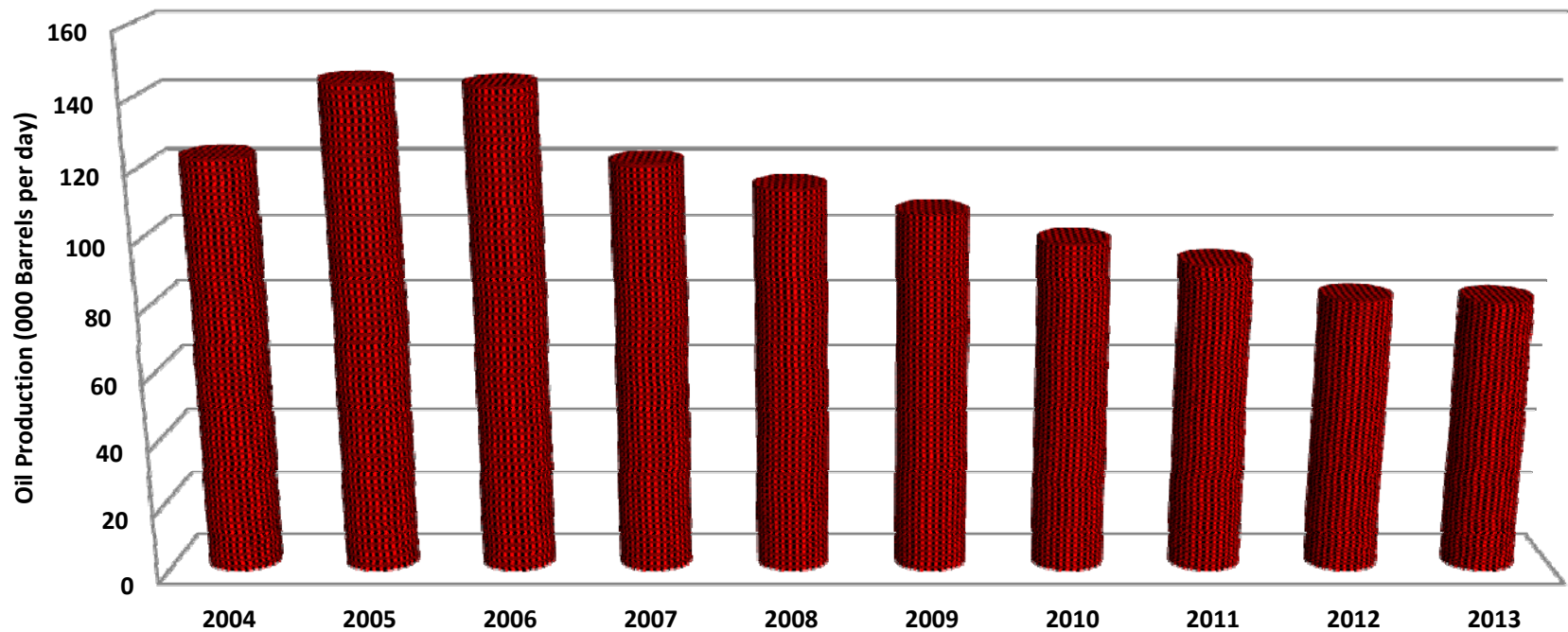


Source: U.S. Energy Information Administration (EIA)

Background- Economic Impact

Figure 4: Trinidad and Tobago Oil Production

Trinidad and Tobago Oil Production (000 Bls/ day)

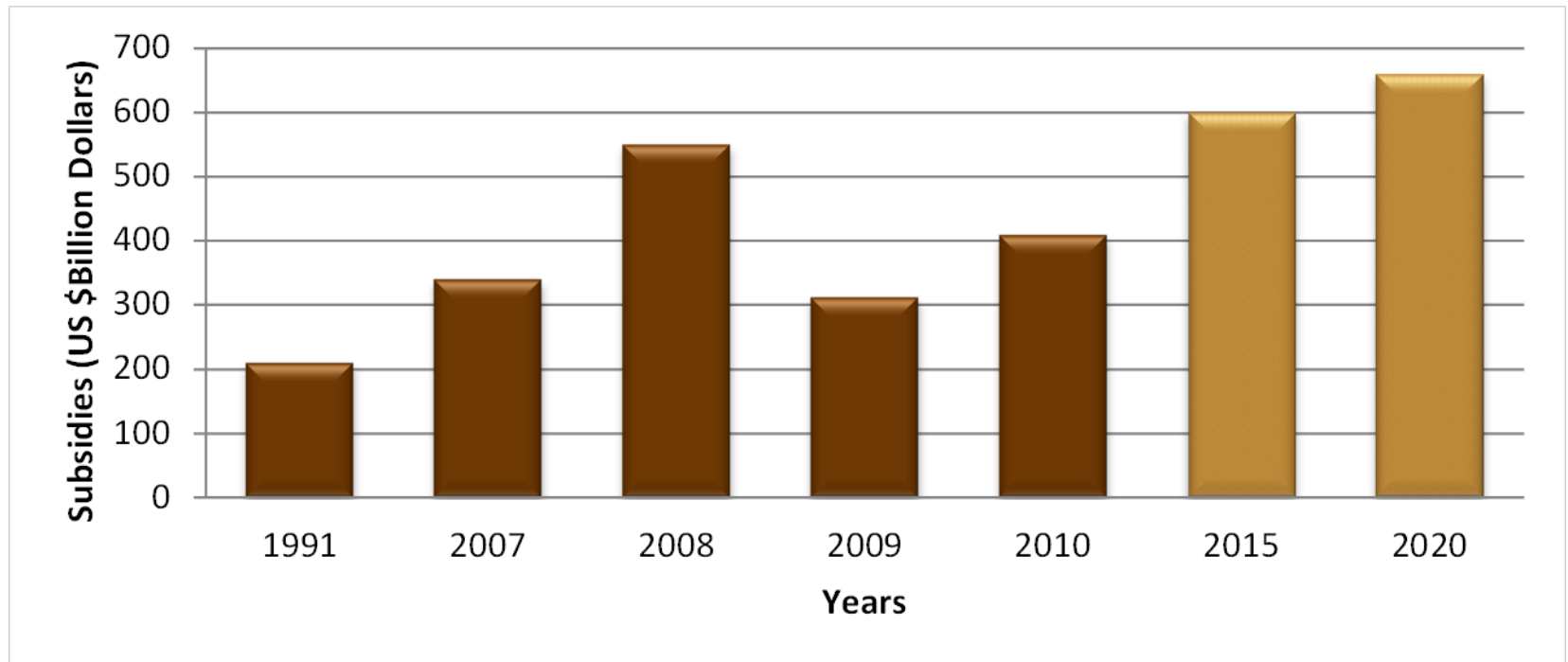


	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
■ Oil Production (000 Bls/ day)	122.896	144.425	143.45	121.265	114.3	106.8	98.2	91.987	81.7348	81.1426

Background- Global Overview of Fossil Fuel Subsidies

- If energy consumption continued at its current rate without effective reform attempts; petroleum subsidies are projected to increase to \$600 and 660 billion dollars by 2015 and 2020 respectively

Figure 5: World Fossil- Fuel Subsidies- Past and Projected (US \$ Billion dollars)



Source: Combination of Larsen (1994) and IEA, OPEC, OECD and World Bank (2011)

Research Questions

- What are the distributional effects of Petroleum Subsidies in Trinidad?
- Are the effects of Petroleum subsidies progressive, neutral or regressive in nature?
- What are the prospective direct and indirect welfare effects of subsidy reform on households in Trinidad?
- Are the effects of subsidies and subsidy reform progressive, neutral or regressive in nature?

Literature Review- Effects of Subsidy Reform on Welfare

- *'Subsidies are not a cost effective way to protect the real income of poor households'* (Coady et al. 2006, 5)
- Fuel Subsidies aimed to expand access to energy, protect the poor, foster industrial development and avoid inflationary pressures from price shocks (Fattouh and El Katiri 2012)
- (Coady et al. 2006) identified the distributionally regressive nature of subsidy reform in Bolivia, Ghana, Jordan and Sri Lanka mainly due to the importance of kerosene in household consumption and significant fuel price increases imposed on the poor.
- Araghi and Bkhordari's 2012 research identified the possible improvement in household welfare once sufficient compensation is given to households from derived savings

Literature Review- Effects of Subsidy Reform on Welfare

Table1: Factors affecting Fossil Fuel Reform Effects on Welfare

Factors → Authors ↓	Provision of Compensation	Price Elasticity of Demand	Degree of Price increase/ Size of Subsidy	Income Elasticity of	Geographic location: Rural/Urban	Subsidies Type	Time Period	Structure of Economy, Type of Fuel and	Budget Share for Petroleum Products (aggregate) and Distribution of expenditure for
(Araghi and Barkhordari 2012)	✓	✓	✓	✓					
(Von Moltke et al. 2004)	✓	✓	✓			✓	✓		
(Jensen and Tarr 2003)	✓				✓	✓			
(De Moor 2001)					✓				
(Freund and Wallich 2000)		✓							
(Breisinger, Engelke and Ecker 2011)	✓								
(Coady et al. 2006)	✓	✓							✓
(Liu and Li 2011)				✓					

Source: As compiled by Author

Literature Review- Subsidy Reform research

Table2: Baksh's 2004 approach to Subsidy Reform

Baksh's Approach to Subsidy Reform
Remove Excise Duties
Restructure VAT
Restructure Subsidy financing

WTI Monthly average (\$US/Barrel)	Percentage Cap (%)
0-39.99	4
40.00- 79.99	6
80.00- 119.99	8
>120.00	10

	Removal	Percentage Reduction		
	100%	75%	50%	25%
Avg. % change in fuel price	86.01475	64.5112	43.00746	21.50373
1% → % change in TI	0.486	0.486	0.486	0.486
1% → % change in RPI	0.552	0.552	0.552	0.552
New Transport Index	41.80317	31.35244	20.90163	10.45081
New Retail Price Index	47.48014	35.61018	23.74012	11.87006

Source: Baksh 2004

Methodology- Research Design

- The Partial Equilibrium model was chosen due to its ability to calculate the distributional effects of public policy and its overall manageable data requirements.

Table 4: Steps to conduct the PEM model

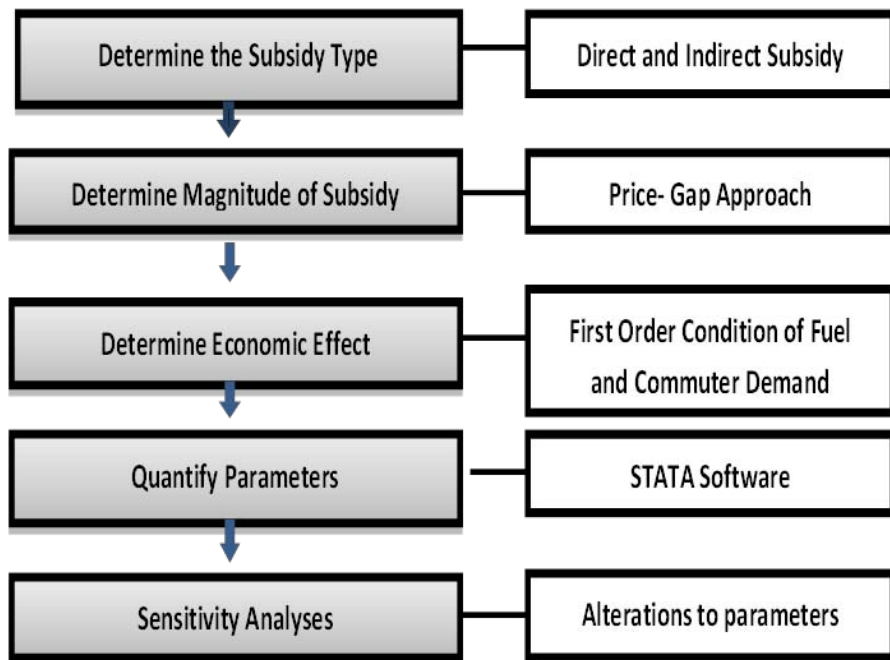
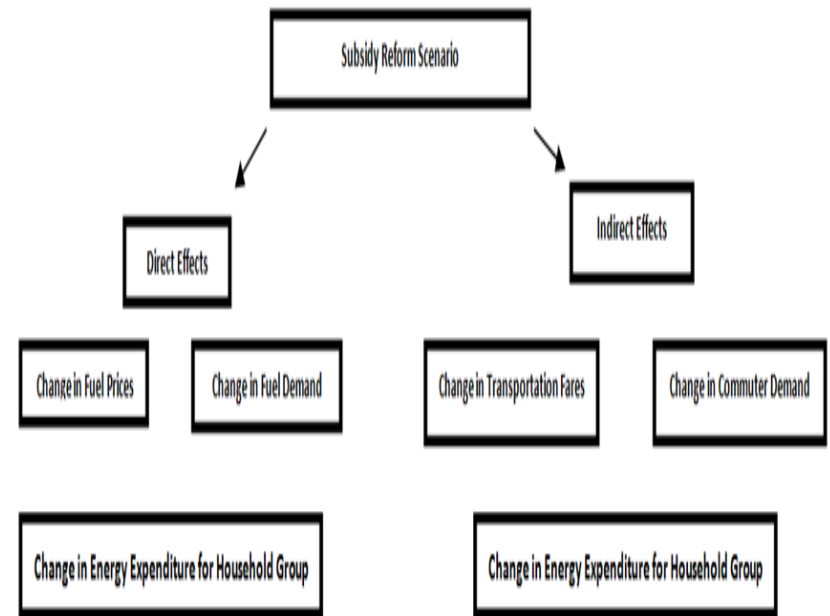


Figure6: Direct and Indirect Effects



Source: As adapted from (Cees Van Beers, van den Bergh, de Moor and Oosterhuis 2007)

Methodology- Research Strategy

- **Population:** households of Trinidad that utilized private and or public transportation in the following municipalities illustrated in Table 7 below.
- **Table 5: Population by Municipality**

Municipality	Location	Total No. of Households	Percent of Total Population (%)
Borough of Point Fortin	South- West	6,680	4
City of San Fernando	South	15,110	8
Mayaro/ Rio Claro	South East	10,351	6
Borough of Chaguanas	Central	24,644	13
Sangre Grande	North East	22,706	12
Tunapuna/ Piarco	North	64,176	35
Diego Martin	North- West	32,404	17
Borough of Arima	North	9,779	5
Total		185,850	100

Source: Trinidad and Tobago 2011 Population and Housing Census Demographic Report

- **Sampling Frame:** CSO's Continuous Sample Survey of Population (CSSP)
- **Sampling Technique:** Stratified Cluster sampling based on the independent variables of interest 'income' and 'Geographic location'.

Methodology- Data Collection

- ***Primary Data Sources-***

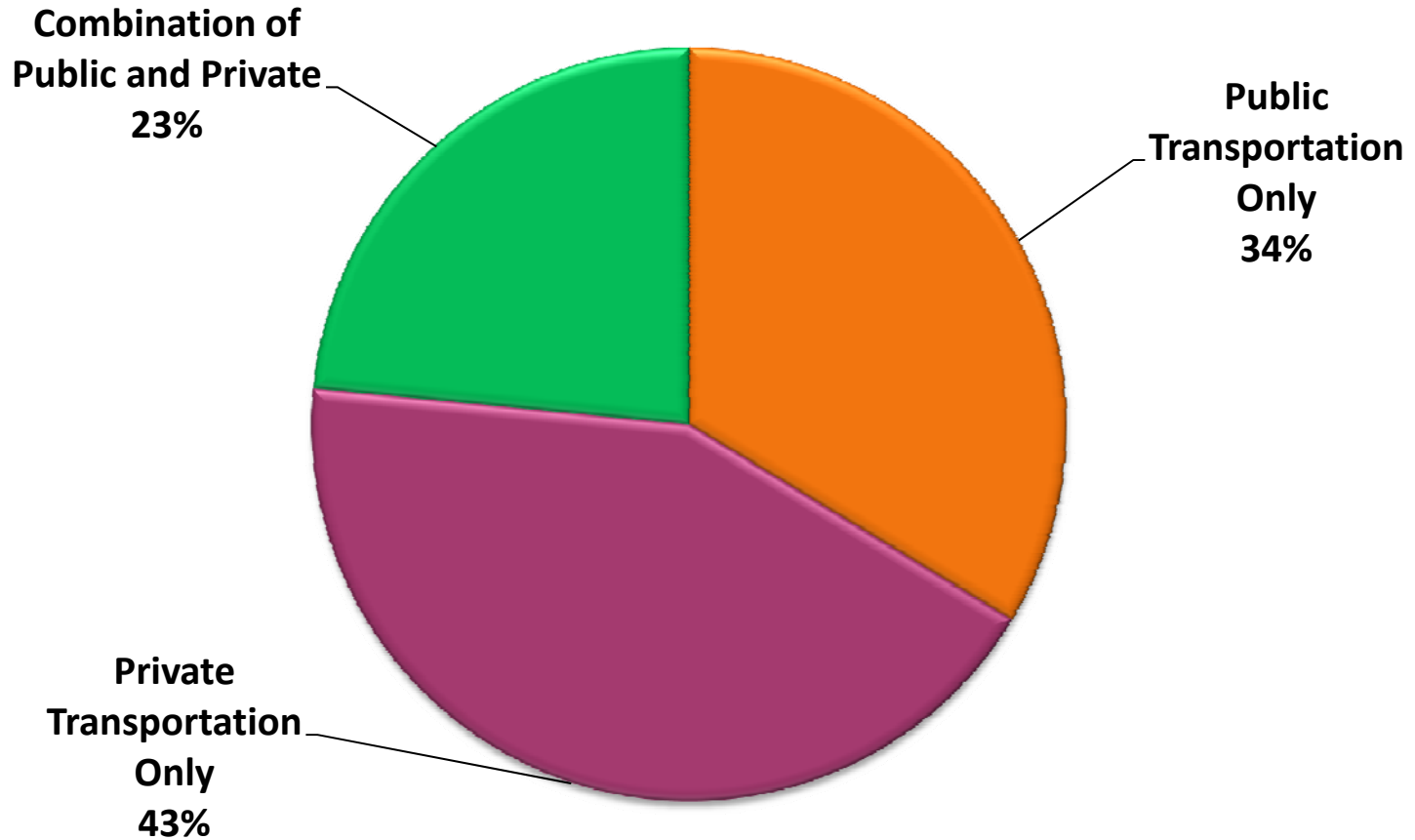
Survey: Target of 500 households across the following municipalities: Point Fortin, San Fernando, Mayaro/ Rio Claro, Chaguanas, Sangre Grande, Arima, Tunapuna/ Piarco and Diego Martin.

Interviews: Central Bank of Trinidad and Tobago
Ministry of Energy and Energy Affairs
Maxi- Taxi- Drivers' Associations

- ***Secondary Data Sources:***

Ministry of Energy and Energy Affairs
CSO's Household Budget Survey 2008/2009
CSO (General info)
Central Bank of Trinidad and Tobago
Energy Consultancies (International and Local)
Ministry of Transport
Public Transport Service Corporation (PTSC) etc.

Figure 7: Distribution of Transportation in Trinidad



Petroleum Subsidy Analysis

- Impact of **Petroleum Subsidies** on household income groups' Energy Transportation Expenditure
- Fuel Transportation Expenditure
- Public Transportation Expenditure

Table 6: Demand for Fuels

Household Income Groups	Premium (X1)	%	Super (X2)	%	Diesel (X3)	%
<i>HH1 (\$0- 8999.00)</i>	640	6.72%	20,571.97	29.13%	5,133.333	22%
<i>HH1 (\$9000.00- 16,999.00)</i>	2,313.043	24.29%	29,274.87	41.45%	6,626.667	29%
<i>HH1 (\$17,000 +)</i>	6,570.435	68.99%	20,784.00	29.43%	11,306.67	49%
Total	9,523.478	100%	70,630.84	100%	23,066.67	100%

Table 7: Distribution of Subsidies Private Transportation

Household Income Groups	HHYG (%)	SMEP \$	SMES \$	SMED \$	Tfuel S \$	%	FS/HH \$
<i>HH1 (\$0- 8999.00)</i>	46.4	-1,22.46	63,548.7	19,294.61	82,720.9	28.33	454.51
<i>HH1 (\$9000.00- 16,999.00)</i>	37	-4,42.60	83,387.6	24,907.59	107,852.6	36.93	743.81
<i>HH1 (\$17,000 +)</i>	16.6	-1,257.25	60,228.7	42,498.25	101,469.7	34.74	1,610.63
Total	100.%	-1,822.32	207,165.	86,700.45	292,043.2	100%	745.00
Fuel Subsidy (%)		-0.63%	70.94%	29.69%	100%		

Table 8: Demand for Public Transportation

Household Income Groups	d1	%	d2	%	d4	%
<i>HH1 (\$0- 8999.00)</i>	31,779.5	35.5	44,096.25	43.3	2,663.4	32.5
<i>HH1 (\$9000.00- 16,999.00)</i>	49,666.1	55.6	47,445.96	46.5	4,665.8	56.9
<i>HH1 (\$17,000 +)</i>	7,954.4	8.9	10,356.56	10.2	872.0	10.6
Total	89,400.0	100	101,898.8	100	8,201.2	100

Table 9: Distribution of Subsidies Public Transportation

Household Income Groups	HHYG (%)	SMMTE	SMTE	SMOTE	TPub S	%	PS/HH
<i>HH1 (\$0- 8999.00)</i>	46.4	5,827.54	24,033.84	4,239.14	34,100.53	42.5	187.36
<i>HH1 (\$9000.00-16,999.00)</i>	37.0	5,156.11	21,950.36	2,649.46	29,755.93	37.1	205.21
<i>HH1 (\$17,000 +)</i>	16.6	2,798.81	10,960.09	2,635.78	16,394.68	20.4	252.22
Total	100.%	13,782.46	56,944.29	9,524.38	80,251.14	100	204.72
Fuel Subsidy (%)		17.2%	70.9%	11.9%	100%		

Preliminary Conclusions

- Petroleum subsidies which facilitate private and public transportation are regressive in nature
- Petroleum subsidy reform is expected to have regressive effects on household income groups' transportation expenditure
- As a direct means through which the population share in the Nation's resource wealth, there is a stringent need for Petroleum subsidies to be allocated more equitably

The way forward

- Survey conducted: 18th August - 3rd October 2014
- Petroleum Subsidy Reform Analysis
- Final Conclusions and Recommendations
- The End

Thank You