Universidad de San Andrés

Departamento de Economía

Maestría en Economía

A gendered fiscal incidence analysis for Barbados

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Washington D.C.

31 de diciembre, 2019

Tesis de Maestría en Economia de

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"Un análisis de incidencia fiscal de género para Barbados"

Resumen

Este esfuerzo es un estudio integral de los efectos asistenciales y distributivos del sistema fiscal integral (impuestos, contribuciones y transferencias) a través de una perspectiva de género, mediante la integración de conceptos de ingresos armonizados de la metodología del Compromiso con la Equidad, instrumentos para estudiar la pobreza, la distribución, el empobrecimiento, así como otras dimensiones de bienestar centradas en la comprensión de las disparidades entre grupos demográficos. Este estudio aporta una nueva contribución al análisis de la incidencia fiscal, al incorporar el género como un aspecto fundamental para promover la equidad utilizando las metodologías del Compromiso con la Equidad recientemente desarrolladas, así como al proporcionar insumos relevantes para el género a los encargados de la formulación de políticas. Los resultados muestran que el efecto combinado de las intervenciones directas e indirectas aumenta las tasas de pobreza de todos los hogares de tipo género. Aunque las intervenciones directas tienen un efecto de reducción de la pobreza, las intervenciones indirectas tienen un efecto mayor, lo que da lugar a un aumento general de los índices de pobreza. Las intervenciones fiscales directas reducen la brecha de género en la tasa de pobreza, mientras que las intervenciones indirectas aumentan esa brecha. La movilidad de la pobreza es generalmente baja para todos los hogares de tipo de género. En cuanto a la dimensión de género de la movilidad de la pobreza, tanto la movilidad ascendente como la descendente fueron ligeramente superiores en los hogares de tipo masculino que en los de tipo femenino después de todas las intervenciones.

Palabras clave: género, incidencia fiscal, distribución, progresividad

"A gendered fiscal incidence analysis for Barbados"

Abstract

This effort is a comprehensive study of the welfare and distributive effects of the integral fiscal system (taxation, contributions and transfers) through a gender perspective, by integrating harmonized Commitment to Equity methodology income concepts, instruments to study poverty, distribution, impoverishment as well as other welfare dimentions focused on understanding disparities between demographic groups. This study provides a fresh contribution to fiscal incidence analysis, by incorporating gender as a fundamental aspect to promoting equity using recently developed Commitment to Equity methodologies, as well as providing gender-relevant inputs for policy makers. Results show that the combined effect of direct and indirect interventions increases poverty rates for all gender type households. Although direct interventions have a poverty reducing effect, indirect interventions have a greater effect, resulting in an overall increase in poverty rates. Direct fiscal interventions reduce the gender gap in the poverty rate, while indirect interventions increase this gap. Poverty mobility is generally low for all gender type households. In terms of the gender dimension of poverty mobility, both upward and downward mobility were slightly higher for male type households than female types after all interventions.

Keywords: gender, fiscal incidence, distribution, progressivity

Códigos JEL: J16, H22, D31

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Introduction

Taxation and redistribution are at the core of public policy agendas, political discourses and public sector finance, and hold a primordial role in individuals' welfare. This taps into the underlying fiscal policy debate about the extent of government provision of services, who the beneficiaries of these services should be, as well as whether consumers, workers, employers should bear the burden of financing these services. The effects of government spending decisions have significant tangible effects on individuals' purchasing power, expenditure patterns and access to social welfare nets, which become crucial when considering the welfare of the most vulnerable. This turns fiscal incidence analysis a vital topic both to understand how policies affect individuals' welfare, as well as to provide empirical foundations for driving public policy that promote distributive mechanisms to the most vulnerable population.

One fundamental aspect of understanding distributive mechanisms are gender-based disparities. Although welfare differences between males and females have been at the center of a significant portion of distributional literature, this has been focused on diverse range of conceptual lenses that have received very different levels of attention. Social relations ascribe specific roles, responsibilities and obligations to females that derive in differences in numerous economic aspects. Some affect women directly through disparities in labor market opportunities, lower returns to education and disparities in salaries and other labor income. Others have indirect effects through social power relations within households where there is only one adult breadwinner, and the dependent spouse faces lower bargaining power with respect to the household's allocation of resources.

Labor market gender disparities have been one of the topics of public interest. Although female labor force participation rates are growing since 1970, educational levels have risen and fertility rates have lowered, this has not been accompanied by a sustained equality in women's economic conditions. (Klasen 2019; Gehringer and Klasen 2017; Goldin and Mitchell 2017). There is still a prominent gap in labor remuneration, occupational and sectoral segregation remains a relevant issue and the child care burden for children and elderly continues to disproportionately fall on women, restricting time they could allocate to remunerated occupations (World Bank 2011; Juhn and McCue 2017; Folbre 2018). Other studies have focused on challenges such as gender-based violence, male educational under-achievement, poor health care access especially for reproductive health and limitations in child care access, as well as civic under representation of women, as well as limited female presence in business and political leadership (Baksh and Vassell 2013).

The effect of taxation on gender disparities has focused on factors involved in understanding these issues including systemic factors rather than explicit rules, norms that are openly biased. Studies have shown that implicit gender biases may occur as a product of differences in social and economic behaviors of men and women (Grown and Valodia 2010; Stotsky 1997). In a study for Jamaica, Christie (2014)[1] finds that while current tax legislation does not hold any explicit gender-biased differential treatment for females, the number of employed, and differences in dependency ratios have indirect effects on tax burdens households face due to structures of tax exceptions on personal income tax and expenditure patterns of female and male type households. There has not

[1] Manuscript submitted for publication at the Interamerican Development Bank.

been a published comprehensive study of the distributive effect of the combined effect of the whole fiscal system (taxation, contributions and transfers) through a gender perspective, incorporating harmonized Commitment to Equity methodology income concepts, although Greenspun (forthcoming) has been working on a gender sensitive fiscal incidence analysis for Brazil, Colombia, Dominican Republic, Mexico and Uruguay. This work focuses on Barbados, for which no gendered fiscal analysis has been done.

For this purpose, this work integrates the commitment to equity methodology development of income concepts (Lustig 2018), instruments to study poverty and distributional analysis between demographic groups (Lustig 2015) and approaches on how to address the differential impact of fiscal interventions on gender in the context of households with different individual-level characteristics (Grown and Valodia 2010). . The Distributional Impact of the Fiscal System and Reforms in Barbados (Arayavechkit and Garcia-Peña and Cesar, 2019)[2] provides a detailed framework of the data and fiscal interventions incorporated into fiscal incidence analysis for Barbados. This study incorporates the dataset and fiscal interventions modeled in this analysis.

The work is organized as follows: The first sections will describe the methodological aspects of integrating gender into fiscal incidence analysis, measuring income using the Commitment to Equity Approach, and describing welfare indicators used for incidence analysis between demographic groups, followed by a description of the data used and the Barbados fiscal system and policy interventions. Following these, the distributive analysis is decomposed into nine sections evaluating different welfare indicators: (1) mean income and income gap, (2) characteristics of the poor, (3) fiscal effect on poverty by intervention, (4) poverty indicators for aggregate fiscal interventions, (5) contribution to overall inequality, (6) progressivity, (7) net payment of all interventions in the fiscal system, (8) fiscal impoverishment and poverty mobility and (9) probability of escaping poverty and pro-disadvantaged groups.

Integrating gender into fiscal incidence analysis

Analyzing fiscal interventions through a gender perspective has fundamental conceptual and empirical challenges. One of the main drawbacks consists on surveys recollecting expenditure data at a household level, since most goods and services are consumed collectively by members of the household. An initial approach to analyze gender at the household level is to classify households according to the gender of the household head (Bird and Miller 1989). However, there are various shortcoming from this classification. The standard definition of the head of household is a person who is considered so by the household members and generally contributes for a large part of the household's income and also has the responsibility of managing the household's allocation of resources and management of expenditures. However, in practice these two roles may be assigned to different members of the household. Also, different countries use different decision criteria for determining the household head, making cross-country comparisons problematic. For example, in some countries, if the head of household is absent during the survey collection, an acting head is established and there is no posterior distinction in the data.

The issue of aggregate intrahousehold consumption data brings attention to the discussion as to how best to target gender analysis so as to capture intrahousehold dynamics. The main two

[2] Submitted for publication at the World Bank Group.

concepts that are used are the gender composition of households and classification by the gender of the household's primary breadwinner (Grown and Valodia 2010; Thomas 1993; Doss 2006). Gender composition measures the share of adults in a household by gender. By this approach, households are classified into those that have a female adult majority, those that have a male adult majority, and those that have an equal share. This classification is a proxy to see how expenditure patterns vary between genders, for it assumes that households with majority of females will have different preferences in expenditures and thus be differentially impacted by consumption taxes than male majority households. However, this classification also provides overall information on the characterization of the vulnerability of these types of households, and how the fiscal system impacts them.

The second approach is to divide households by the gender of the main breadwinner. In this sense, households are classified into female-breadwinner households (where there are no male earners), male-breadwinner households (where there are no female earners), dual earner households and households with no employed adults. This measure is a proxy for bargaining power within the household. The prior is that female bread-winner households should have greater bargaining power over the expenditure patterns of households than their male equivalent. This classification is also useful to analyze labor income related fiscal interventions. For example, personal income tax will have a prominent effect for households that have labor income-earners.

This analysis will focus primarily on female and male type households since the focus of this study is understanding differences between households with different gender types but otherwise similar composition and labor income conditions (female and male breadwinners, and female and male majority households). Dual earner households, those with no employed adults, and those with equal gender shares are not the primary focus of this study since they have diverse demographic characteristics that lead to different patterns in labor income, old-age pensions dynamics among others.

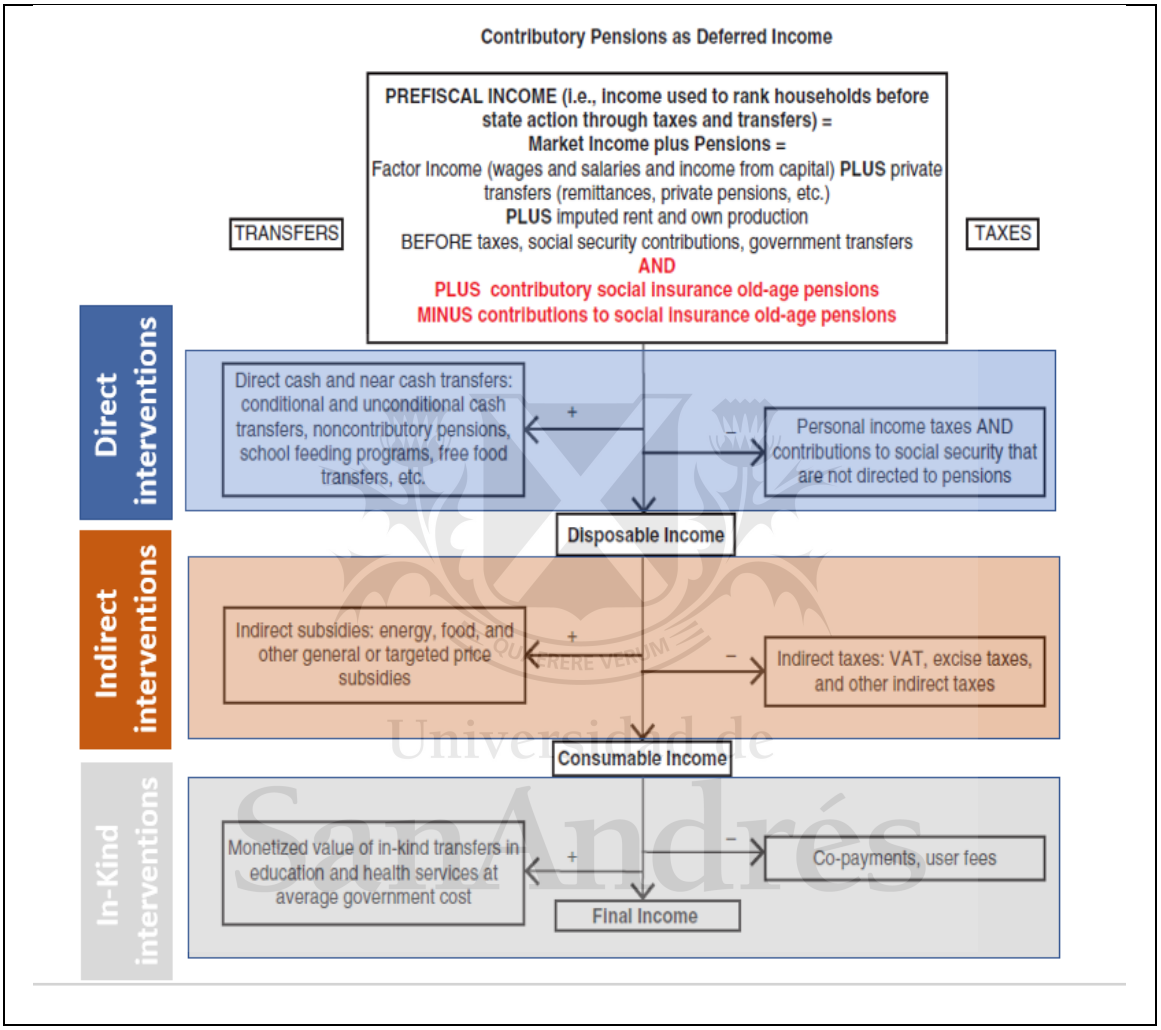
There are other important differences to highlight between the two types of categorizations. The first is that household gender classification by main breadwinner considers households that by definitions have employed income-earning adults, while gender composition does not take this dimension into account. This implies that analyzing households by gender composition will be useful in analyzing dynamics at the lower portion of the income distribution, since adults in these groups may not necessarily be employed. In contrast, the categorization by breadwinner can be more insightful to understand labor market dynamics in relation to the fiscal system.

Measuring incidence of fiscal interventions through the Commitment to Equity Approach

The main contribution of the methodology developed by Lustig (2018) is to use microlevel household budget and expenditure data to estimate how much households receive or spend on different fiscal interventions such as taxes, transfers and social security contributions. It uses an accounting approach where a household's pre-fiscal income is used as a baseline, and subsequent interventions are then included or excluded from this income. These estimates create new income concepts that are then used to measure poverty and distribution following interventions, as shown in Figure 1. This work will focus on three main income concepts: pre-fiscal income, disposable

income and consumable income and on two types of fiscal interventions: direct and indirect interventions.

Figure 1: Income concepts in CEQ assessments: pensions as deferred income (PDI)



Source: Lustig and Higgins (2018)

Pre-fiscal income

Pre-fiscal income is the baseline income concept in the commitment to equity framework. It captures the income households receive before any fiscal intervention. There are two main approaches to conceptualizing pre-fiscal income. The first is to consider only market income, defined as income derived from wages, salaries, capital such as rents, profits, dividends and interest, private pensions, private transfers such as remittances and alimony, as well as imputed rent from owner-occupied dwellings, and the equivalent value of a household's production destined to self-consumption.

The second is to also include contributory old age pensions net of social security contributions. If an individual contributes to a pension system where he or she will receive this income in the future, it is considered an intertemporal reallocation of the individual's income. In this case, pre-fiscal income is composed of market income in addition to contributory pensions. In Barbados, pre-fiscal income is defined through the second classification, where contributory old-aged pensions are added to market income ad deferred income. However, non-contributory pensions are considered as government transfers, since the criteria to receive these is independent of an individual's past wages or salaries.

Direct interventions and disposable income

This study divides the analysis into direct and indirect fiscal interventions. While direct interventions affect household income directly through cash or near-cash transfers and payments, indirect interventions are implemented indirectly through households' consumption of goods and services. Disposable income captures the effect of direct interventions. These consist of direct taxes such as income and investment tax, as well as direct cash or near cash transfers. They are paid or received directly by the household. To analyze direct fiscal interventions, I use the pre-fiscal income baseline and construct the following income concepts:

(1) Pre-fiscal income – direct taxes (income and investment tax)

(2) Pre-fiscal income – social security contributions (non-pension)

(3) Pre-fiscal income + direct transfers (cash or near-cash transfers)

(4) Disposable income = Pre-fiscal income – direct taxes – contributions + direct transfers

Indirect interventions and consumable income

Consumable income captures the effect of indirect interventions[3]. These are interventions that affect household income indirectly through the household's consumption of goods and services. Indirect interventions include indirect taxes such as value added tax, excise and vehicle and fuel related taxes[4]. Similarly, I use an analogous income concept framework to analyze indirect fiscal interventions:

(1) Disposable income – value added tax

(2) Disposable income – excise tax

[3] In the methodology, there is another income concept denominated final income. This seeks to capture the effect of benefits from public services such as education and health. It is constructed by adding to consumable income, in-kind transfers, namely social spending on education and health, and other relevant public services. However, in the Barbados Commitment to Equity project, in-kind transfers (such as education and health care) were not considered as in some other country fiscal incidence assessments, due to limitations in the access to administrative level data.

[4] The country's fiscal system does not count with consumption related subsidies, so indirect interventions are composed of value added tax, excise tax and other vehicle and fuel related taxes.

(3) Disposable income – vehicle and fuel related taxes

(4) Consumable income = Disposable income – value added tax – excise tax – vehicle and fuel tax

Measuring welfare in fiscal incidence analysis between demographic groups

Country specific fiscal incidence studies using the Commitment to Equity methodology have focused on the distributive impact of the integral fiscal and welfare system on the overall country's population. However, fewer studies have focused on analyzing the differential impact of fiscal interventions between sub-groups of the population, or at an individual or intra-household level. Although there have been some approaches to analyze fiscal incidence on gender, there has not been a country specific study using the detailed and standardized construction of income concepts specific to the commitment to equity approach.

This study uses the methodology proposed by Lustig (2015) to study the effect of fiscal interventions on different population groups building on the Commitment to Equity Approach. Specifically, Lustig studies the etho-racial divide in various Latin American countries, focusing on the difference in welfare impacts of fiscal interventions on indigenous populations and African descendants in Bolivia, Brazil, Guatemala and Uruguay. She builds on welfare indicators used in country specific fiscal incidence analysis to study the overall population and proposes a parallel set of indicators specific to evaluate differences between population groups. These new indicators have the benefit of exploring not only the distributional impact of fiscal policies, but also to understand which interventions widen welfare gaps between populations, and which ones contribute to generating greater equality between these groups.

To measure differences in welfare between gender type households, this work integrates standard measures of poverty such as the poverty gap, poverty severity with the methodology, indicators developed by Lustig (2015) to study differences in fiscal incidence between groups (with methodological modifications on the definition of income concepts) as well as another conception of progressivity that captures micro-level incidence patterns at a household level. The benefit of using analogous indicators for cross-group analysis proposed by Lustig (2015) is the setting of a common methodology for future gender and other inter-group studies integrating the Commitment to Equity Approach.

The welfare indicators incorporated in this study are the following:

Income gap: The gender income gap is measured by taking the ratio of mean per capita incomes between different groups.

Contribution to overall inequality: The contribution to the gender gap to overall inequality can be estimated using the Theil Index. This measure can decompose total inequality into inequality between the groups analyzed and inequality within each group. For gender analysis, this can be used to measure the inequality between gender type households, and inequality between households of the same gender type.

Poverty headcount rate: The differences in the probability of being poor can be measured by the difference in the poverty headcount rates between female and male type households. The poverty headcount rate is defined as the share of individuals with a household per capita income that is lower than the relevant poverty line.

$$FGT_0 = \frac{N_p}{N}$$

where N_p the number of poor individuals, N is the total population.

Poverty gap index: The poverty gap index measures the extent to which individuals fall below the poverty line (the poverty gaps) as a proportion of the poverty line. The sum of these poverty gaps gives the minimum cost of eliminating poverty, if transfers were perfectly targeted.

$$FGT_1 = \frac{1}{N}\sum_{i=1}^{N_p}\left(\frac{z - y_i}{z}\right)$$

where N_p the number of poor individuals, N is the total population, z is the poverty line and y_i is the actual income.

Poverty severity index: The poverty severity index combines information on both poverty and inequality. It averages the squares of the poverty gaps relative the poverty line.

$$FGT_2 = \frac{1}{N}\sum_{i=1}^{N_p}\left(\frac{z - y_i}{z}\right)^2$$

where N_p the number of poor individuals, N is the total population, z is the poverty line and y_i is the actual income.

Progressivity: Conceptually, progressivity measures whether higher income individuals pay a greater share of their income in taxes than lower income individuals. However, when considering progressivity between groups there are three angles this concept can be measured. The first two were proposed by Lustig (2015) and relate to the aggregate population and aggregate amount paid/received by a group. This work will refer to these concepts as *aggregate progressivity measures*, since they consider the aggregate amount received by each group without incorporating household-level dynamics. The two aggregate progressivity measures are absolute and relative progressivity between groups.

The third conception captures household level patterns of the share of interventions. This concept is similar to other works that use consumption expenditures and gross income (Grown and Valodia, 2010; Stotsky, 1997; Christie, 2014), but this work is the first to use this third concept of progressivity in the context of Commitment to Equity income concepts for gender analysis.

Aggregate progressivity measures: Lustig (2015) describes between-group progressivity in the following manner:

> Progressivity can be measured by ranking individuals by their per capita pre-fiscal income and a tax will be defined as progressive (regressive) if the share paid by the group with the highest per capita income is higher (lower) that their pre-fiscal income share. Subsequently, a transfer will be considered progressive (regressive) if the share received by the gender

group with the lowest per capita income is higher (lower) than their market income share. A transfer will be defined as progressive in absolute terms if the share received by the group with the lower per capita income is higher than their population share.

Absolute progressivity captures the relationship between fiscal interventions and population shares. It measures the share of the aggregate amount of a fiscal intervention (tax/contribution/transfer) as a share of the total group's population. If the group with lower per-capita pre-fiscal income pays (receives) a lower (higher) share of the tax (transfer), then the fiscal intervention is progressive. This can be defined as: [5]

$$Absolute\ progressivity = \frac{\sum_{j=1}^{J} t_j}{\sum_{n=1}^{N} t_n} \Big/ \propto_j N$$

where t_j is the aggregate amount of the intervention received by group j, t_n is the total intervention received by the groups considered and $\propto_j$ is the share of the population of group j.

Relative progressivity captures the relationship between fiscal interventions and a group's income share. It measures the share of the aggregate amount of a fiscal intervention (tax/contribution/transfer) as a share of the group's income share. If the group with lower average per-capita income pays (receives) a lower (higher) share of the tax (transfer), then the fiscal intervention is progressive. This can be defined as: [6]

$$Relative\ progressivity = \frac{\sum_{j=1}^{J} t_j}{\sum_{n=1}^{N} t_n} \Big/ \frac{\sum_{j=1}^{J} s_j}{\sum_{n=1}^{N} s_n}$$

where t_j is the individual amount of the intervention for group j, t_n is the interventions received by the all of groups considered, s_j is the income for individuals in group j, s_n is the income received by the groups considered.

Household-level progressivity: However, this work also introduces a different perspective to understand progressivity not used in Lustig's ethno-racial analysis. This concept is related to other evaluate gendered fiscal-incidence analysis (Grown and Valodia, 2010; Stotsky, 1997; Christie, 2014). However, these works evaluate other measures such as consumption expenditures, and do not use the Commitment to Equity income concept framework incorporated in this analysis. While aggregate measures capture the overall share of a fiscal intervention with respect to the aggregate group's market income, it is also interesting to see how much of the tax is paid by the household as a share of their income. This household measure captures the household level dynamics, while the aggregate perspective captures how much of the total amount corresponds to each of the population groups.

Household-level progressivity consists of the average amount each household pays/receives for the intervention as a share of the total household's income. [7]

[5] Author's visualization and formula based on Lustig (2015).
[6] Author's visualization and formula based on Lustig (2015).
[7] Author's measure of household-level progressivity.

$$Household\ level\ progressivity = \frac{1}{J}\sum_{j=1}^{J}\frac{t_j}{s_j}$$

where t_j is the amount of the intervention received by each household, s_j is the household's income, and J are the total households of group J.

Analyzing the optimal income concept is also a relevant dimension for measuring progressivity. As discussed in the previous section, the Commitment to Equity framework distinguishes between direct and indirect fiscal interventions and builds corresponding income concepts to capture fiscal incidence of these interventions. To measure progressivity, this work uses pre-fiscal income as the baseline (s_j) for direct interventions, and disposable income for indirect interventions. The reason behind this methodological decision is that while direct interventions are paid/received from pre-fiscal income, indirect interventions are paid as a portion of disposable income. This influences progressivity measures, especially in the case of indirect taxation. For example, if an individual is unemployed and has zero market income, but they receive direct transfers such as unemployment insurance or invalidity assistance, measuring indirect taxes (such as value-added tax) as a share of their pre-fiscal income will overestimate how much of their disposable income is allocated to payment of indirect taxes.

Net payment of the fiscal system: This measure captures the net benefit of all interventions in the fiscal system. It is composed of households' aggregate transfers received subtracted by their total tax and contributions payments.

Fiscal impoverishment and poverty mobility: This work will refer to *upward poverty mobility* in the case of population that has become richer due to fiscal interventions while *downward poverty mobility* will refer to those who have become poorer after fiscal interventions.

This is an important welfare dimension to consider since fiscal interventions may generate fiscal impoverishment even in when they lower aggregate poverty rates, social welfare is increased, and the tax-benefit system is globally progressive (Higgins and Lustig 2013). This is also relevant for public policy since it provides information of specific income groups and their mobility through poverty thresholds for different fiscal interventions.

Probability of escaping poverty: Fiscal impoverishment is used to evaluate poverty mobility and the probability of escaping poverty. Poverty mobility captures the extent or the capacity of individuals to move across poverty thresholds. If a greater share of poor become non-poor after taxes and transfers, there is a higher poverty mobility than in the case where the poor remain poor after fiscal interventions. The probability of escaping poverty is then measured as the total number of individuals who mobilized from being poor to non-poor (upward mobility) minus those who were non-poor and became poor (downward mobility) divided by those who were poor in the pre-fiscal scenario:[8]

[8] Author's visualization based on Higgins and Lustig (2013) and CEQ Institute excel master workbook.

$$Probability\ of\ escaping\ poverty = \frac{\#(Poor_t \rightarrow Non\ poor_{t+1}) - \#(Non\ poor_t \rightarrow Poor_{t+1})}{\#Poor_t}$$

where t is the pre-fiscal scenario and $(t+1)$ is the scenario after fiscal interventions.

Formally, the probability of escaping poverty can be estimated using a Markovian transition matrix that Higgins and Lustig (2013) called a "fiscal mobility matrix" (FMM). Fiscal mobility is the directional movement between the before and after taxes and transfers situations among k pre-defined income categories. It can be represented by the $k \times k$ transition matrix P, where the ijth element of P, denoted p_{ij}, can be interpreted as the probability of moving to income group j after taxes and transfers for individuals who were in income group i before taxes and transfers.

The Barbados Survey of Living Conditions data and fiscal system

The Distributional Impact of the Fiscal System and Reforms in Barbados (Arayavechkit and Garcia-Peña and Cesar, 2019)[9] provides a detailed framework of the data and fiscal interventions incorporated into fiscal incidence analysis for Barbados. This study incorporates the dataset and fiscal interventions modeled in this analysis. The 2016 Barbados Survey and Living Conditions (BSLC) uses individual and household-level data, which collects data on education, health, housing, farming, income, and consumption. For construction of Commitment to Equity income concepts, data on wages, salaries, overtime work, tips and bonuses from both the main job as well as other secondary jobs were used to construct labor income. Other survey inputs for non-labor income include data on rents, government pensions, private pensions, contributory and non-contributory pensions from the National Insurance Scheme, public assistance, alimony, remittances, scholarships, dividends and income derived from interest payments. A household's agricultural production income was estimated by reported agricultural production from the total sales from cultivated crops, raised animals, by-products net of agricultural input expenses. Government programs and transfers include welfare, childhood, unemployment youth and vocational training programs, scholarships and educational grants. To construct CEQ income concepts related to consumption related government interventions, the BSLC includes consumption and expenses modules that report personal expenses, food consumption and non-food expenditures at the household level.

Direct taxes

In Barbados, direct taxes imposed on households include both personal income tax and taxes on investment income. All income sources are collected in the BSLC. While the Barbados tax schedules are used to calculate direct taxes paid by households, the application of the methodology was different for both types of income.[10] In 2016, the personal income tax is 16% for individuals earning a yearly income below Bds$35,000 and 33.5% above this threshold. In Barbados, the sources of income subject to personal income tax include primary/secondary/other occupations

[9] Submitted for publication at the World Bank Group.
[10] Since there is no payroll tax in Barbados, this was not considered.

and agricultural production, as well as private transfers such as alimony, maintenance, child support money received from relatives in Barbados, remittances from abroad, and insurance annuities. Contributory and private pensions are included in the construction of taxable income. These include pensions from former employers as well as contributory pensions from the National Insurance Scheme.

The personal income tax system allows for several allowances and deductions.[11] Allowances include a tax-free income threshold of up to Bds$40,000 for those over 60 years of age and receiving a pension, and up to Bds$25,000 for individuals who have resided in the country more than 182 days during the year and those who have a co-habiting spouse with an annual income/investment income of Bds$800 or less. Tax allowances worth Bds$1,000 are available for up to two children per household, including legally adopted children or stepchildren.[12] In addition, employed individuals who earn less than $18,000 per annum enjoy the benefit of a 'Reverse Tax Credit' grant of Bds$650. In the Barbados CEQ framework, the reverse tax credit will be treated as a direct cash transfer.

Reported income from investments is considered after-tax income. Income from investments includes rental income received from houses, land and other property, dividends on local and foreign investment, and interest on local and foreign bank deposits and bonds, stocks, shares, treasure bills and other investments. Although income from investments is subject to tax, these taxes are usually withheld at source, and households do not receive the gross income from these sources. It is therefore assumed that reported income from these sources is considered after-tax income. The rate of withholding tax on dividends and interest payments made to resident persons was 12.5%. Net residential rental income was taxed at 15%.

Social security contributions

Data on social security contributions is obtained from the National Insurance Scheme (NIS). It provides information on pensions, employment injury, unemployment, health services, training levies and catastrophe fund contributions. According to the NIS contribution schedule, these are assigned according to type of employment and age. Reported income and employment types obtained from the BLSC and the NIS contribution schedule, are used to calculate the amount of contribution that individuals contribute to the NIS. It is assumed that employers place the contribution burden on employees in a form of lower wages. Note that the health services contribution did not exist in 2016 as it was introduced in 2018.

The treatment of NIS contributions is different by employment types. While employers and employees might report remuneration net of NIS contribution, self-employed workers might report gross income before incorporating these contributions. It is assumed that private

[11] There are three types of deductibles allowed in the Barbados tributary system. However, two are not identifiable from survey data. These include subscriptions to trade unions and systems installed to produce electricity from sources other than fossil fuels. The third type is an amount of up to Bds$750 for persons above 40 years old who have had a comprehensive medical examination. For this type of deduction, available information on individuals getting a general medical checkup at least once a year is used. We assume that (taxable) individuals receiving the medical examination will claim for the corresponding deduction. Results do not change significantly if we do not make that assumption.

[12] Source: Barbados Revenue Authority.

employees, government employees, and apprentices report their income net of contributions. For self-employed workers, their reported gross income includes contributions.

The methodology considers implications that may be derived from labor informality. Individuals who do not work in an institution that is registered in the NIS are considered informal workers. The methodology assumes that individuals employed by a business not registered in the NIS system are informal workers, and therefore do not present NIS contributions. This assumption proves important when running the macro-validation exercise, as it yields a better match in terms of total revenue collected from social security contributions between official administrative records and survey data calculation.

Direct cash and near-cash (in kind) transfers.[13]

This component includes cash or in-kind transfers received by households as reported in the BSLC. In the case of Barbados, the BSLC includes the amount of benefits from social protection programs including

- Social assistance programs from the Ministry of Social Care, Constituency Empowerment and Community Development (MPE). These include the Child Care Program, Community Program, ISEE BRIDGE, Relief in kind, rental and utilities, assistance for school such as uniforms and textbooks.
- Employment and skills training programs such as apprenticeship, welfare to work, skills training, employment and training fund, NVQ/CVQ and A Ganar.
- Social insurance programs such as sickness, maternity, unemployment, invalidity, injury, funeral, survivors. It also includes net income from non-contributory pensions, which in the CEQ setting are considered as a public transfer.

Indirect taxation

There are two main indirect taxes in Barbados: the VAT and the excise tax. In 2016, the standard VAT rate was 17.5%. The VAT rate for the telecommunications sector was 22%, and the VAT rate for tourism related services was 7.5%. Meanwhile, basic food items, prescription drugs, and crude oil were zero-rated VAT items. Other VAT exemptions include financial services, real estate, medical services, education, water and sewerage services, public postal services, transportation services, and betting and gaming.

The amount of VAT paid by each household is calculated using information on household expenditure reported in the survey and the Input-Output table, following three steps:

1. Direct effect on non-exempted goods. Assume that R_j is the VAT rate and EXP_{hj} is household's *h* expenditure on product *j*. Then, the direct VAT paid by household *h* when buying product *j* is $\mathrm{VAT_{hj}} = EXP_{hj} * R_j/(1 + R_j)$. Then, the total direct VAT paid is

[13] If transfers are reported at a household level, benefits are assumed to be spread equally between individuals in the household.

calculated by summing up all products consumed by household *h*: $\mathrm{VAT_h} = \sum_j EXP_{hj} * R_j/(1+R_j)$.[14]

2. Indirect effect on exempted goods. This step calculates the VAT component "hidden" in exempted goods, which use non-exempted goods as intermediate goods in their production process.
3. Indirect effect of exempted goods on non-exempted goods. Given that exempted goods break the value chain and increase the VAT component, the indirect effect on non-exempted goods in addition to the direct effect in (1) applies to all non-exempted goods that use exempted goods as intermediate inputs.

In 2016, there were four categories of goods subject to excise taxes: motor vehicles, alcoholic beverages, tobacco products and petroleum products. Each of which had its own differentiated rate. Most excisable goods were subject to specific (per quantity) tax rates, with the exception of motor vehicles, which were subject to *ad-valorem* rates.[15] The baseline CEQ framework also includes a road tax for private vehicles as part of indirect taxes paid by households. The road tax ranged from Bds$400 per year for private vehicles to Bds$1,600 per year for commercial vehicles. Car owners paid effectively from Bds$33 per month up to Bds$133 per month.

1. Mean income and income gap

Figure 2 displays mean income for pre-fiscal income, with the inclusion of each of the direct fiscal interventions (direct taxes, contributions and transfers) as well as the combined effect of all direct interventions (disposable income). Direct taxes do not have a significant difference between gender type households in the decline in mean income for direct taxes and contributions. For breadwinners, female types see a decrease of 6.4 percent of their pre-fiscal income while male types see a 6.6 percent decline. Similarly, female majority households' mean income decreases by 5.7 percent for direct taxes, not significantly different than 5.6 percent for male types. However, transfers do have a differential effect by gender type, disproportionately benefiting male type households' mean income for both breadwinners and gender majority households. While transfers benefit male breadwinner (majority) types by 5.2 (6.4) percent, this is only 3.8 (5.9) for females.

[14] Note that for goods with zero-rated VAT, prices remain the same. These goods are not affected because producers could claim all VAT paid on inputs.

[15] Excise tax on motor vehicles varies according to motor size and monetary value. Given that the 2016 BSLC only provides information on the amount spent on motor vehicles, we assume that the engine capacity of vehicles is below 1,600cc. Then, we apply different excise rates (46.95% and 64.35%) to expense values above/below Bds$ 45,000.

Figure 2: Mean income and gender income gap for direct fiscal interventions

Mean income for direct fiscal interventions					
	Pre-fiscal income	Prefiscal - direct taxes	Prefiscal + contributions	Prefiscal + transfers	Disposable income
Female breadwinner	688.3	644.2	676.9	714.6	662.6
Male breadwinner	710.8	664.1	699.6	747.8	692.8
Dual earner	945.6	892.1	931.5	960.5	896.5
Gender income gap (%)	3.2%	3.0%	3.2%	4.4%	4.4%
Female majority	629.6	594.0	620.6	666.7	624.9
Male majority	784.4	740.5	774.3	834.9	784.2
Equal share	699.7	654.9	689.7	736.2	684.4
Gender income gap (%)	19.7%	19.8%	19.8%	20.2%	20.3%

Percentage change in mean pre-fiscal income by intervention					
	Pre-fiscal income	Prefiscal - direct taxes	Prefiscal + contributions	Prefiscal + transfers	Disposable income
Female breadwinner	0.0%	-6.4%	-1.7%	3.8%	-3.7%
Male breadwinner	0.0%	-6.6%	-1.6%	5.2%	-2.5%
Dual earner	0.0%	-5.7%	-1.5%	1.6%	-5.2%
Gender income gap (%)	0.0%	-0.2%	0.1%	1.4%	1.2%
Female majority	0.0%	-5.7%	-1.4%	5.9%	-0.8%
Male majority	0.0%	-5.6%	-1.3%	6.4%	0.0%
Equal share	0.0%	-6.4%	-1.4%	5.2%	-2.2%
Gender income gap (%)	0.0%	0.1%	0.1%	0.5%	0.7%

Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

The gender income gap measures the percentage difference between male and female average income. There is a significant difference in the level of disparities between breadwinner and gender majority households. While gaps range between 3.0 and 4 percent for breadwinners, they increase to between 19.7 and 20.3 percent for gender majority composition. The combined effect of all direct interventions translates into an overall increase in the gender income gap for both gender household categorizations. This is mainly due to a disproportionate increase in transfers on male type households' income.

Figure 3: Mean income and gender income gap for indirect fiscal interventions

Mean income for indirect fiscal interventions					
	Disposable income	Disposable income - VAT	Disposable income - Excise	Disposable income - Vehicle tax	Consumable income
Female breadwinner	662.6	603.2	652.6	660.1	594.4
Male breadwinner	692.8	625.9	679.8	689.7	611.4
Dual earner	896.5	834.1	884.6	894.2	820.1
Gender income gap (%)	4.4%	3.6%	4.0%	4.3%	2.8%
Female majority	624.9	572.3	616.0	622.7	564.9
Male majority	784.2	711.6	771.2	781.1	698.6
Equal share	684.4	621.7	673.1	681.8	612.1
Gender income gap (%)	20.3%	19.6%	20.1%	20.3%	19.1%

Percentage change in mean disposable income by intervention					
	Disposable income	Disposable income - VAT	Disposable income - Excise	Disposable income - Vehicle tax	Consumable income
Female breadwinner	0.0%	-9.0%	-1.5%	-0.4%	-10.3%
Male breadwinner	0.0%	-9.7%	-1.9%	-0.4%	-11.8%
Dual earner	0.0%	-7.0%	-1.3%	-0.3%	-8.5%
Gender income gap (%)	0.0%	-0.7%	-0.4%	-0.1%	-1.5%
Female majority	0.0%	-8.4%	-1.4%	-0.3%	-9.6%
Male majority	0.0%	-9.3%	-1.7%	-0.4%	-10.9%
Equal share	0.0%	-9.2%	-1.6%	-0.4%	-10.6%
Gender income gap (%)	0.0%	-0.8%	-0.2%	0.0%	-1.3%

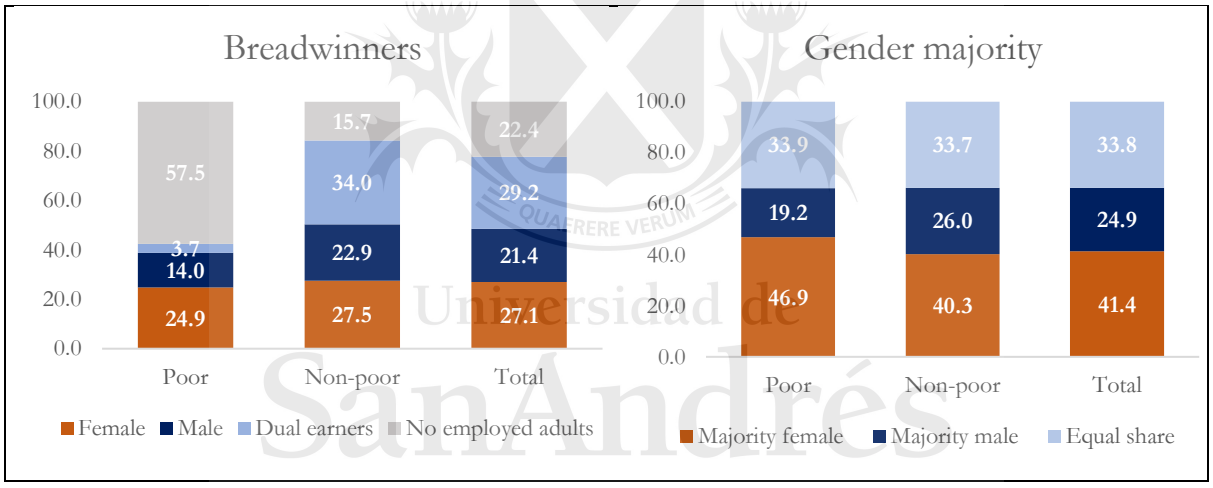
Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

Figure 3 displays mean income for disposable income (income after all direct fiscal interventions), with the inclusion of each of the indirect interventions (value-added tax, excise and vehicle tax) as well as the combined effect of all interventions (consumable income). Out of all fiscal interventions the value-added tax has the greatest impact over household's income, with a reduction in mean income between 7.0 and 9.7 percent. Additionally, value-added tax has a greater effect over male-type households, with a decrease of 9.7 (9.3) percent for male breadwinner (majority), with respect to 8.4 (9.0) percent decrease for female breadwinner (majority) households. Male-types also bear a higher burden of excise tax, while gender differences in vehicle tax are not significant. While all indirect interventions contribute to decrease the gender income gap (from 4.4 to 2.8 percent), value-added tax contributes most to the reduction of the gender gap. As mentioned, male-type households hold a greater burden of the value added tax. This will be discussed in later sections of the analysis.

2. Characterization of the poor

Figure 4 shows the pre-fiscal composition of gender household types by poverty status *($5.50 USD PPP 2011)*. Although female-type households represent a larger share of total households relative to male-type households both in terms of breadwinner classification as well as in gender majority composition, there are different characteristics both between the two classifications as well as between the poor and non-poor. The difference in shares is more prominent among the poor, where female breadwinner households made up a higher proportion with a difference in 10.9 percentage points which largely contrast the equivalent difference of 4.6 percentage points within the non-poor households. In terms of classification by gender composition, while within the poor there is a 27.7 percentage point difference in shares, within the non-poor this represents 14.3 percentage points. This suggests there are stark differences not only in the total composition of households but suggests there are underlying mechanisms that mark different gender household characteristics between poor and non-poor in a pre-fiscal scenario. In this context, it is relevant to study whether government interventions are contributing to closing these gender welfare gaps, which will be analyzed in the next sections.

Figure 4: Pre-fiscal income poverty composition by gender household types ($5.50 USD PPP 2011)[16]



Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

3. Fiscal effect on poverty by intervention

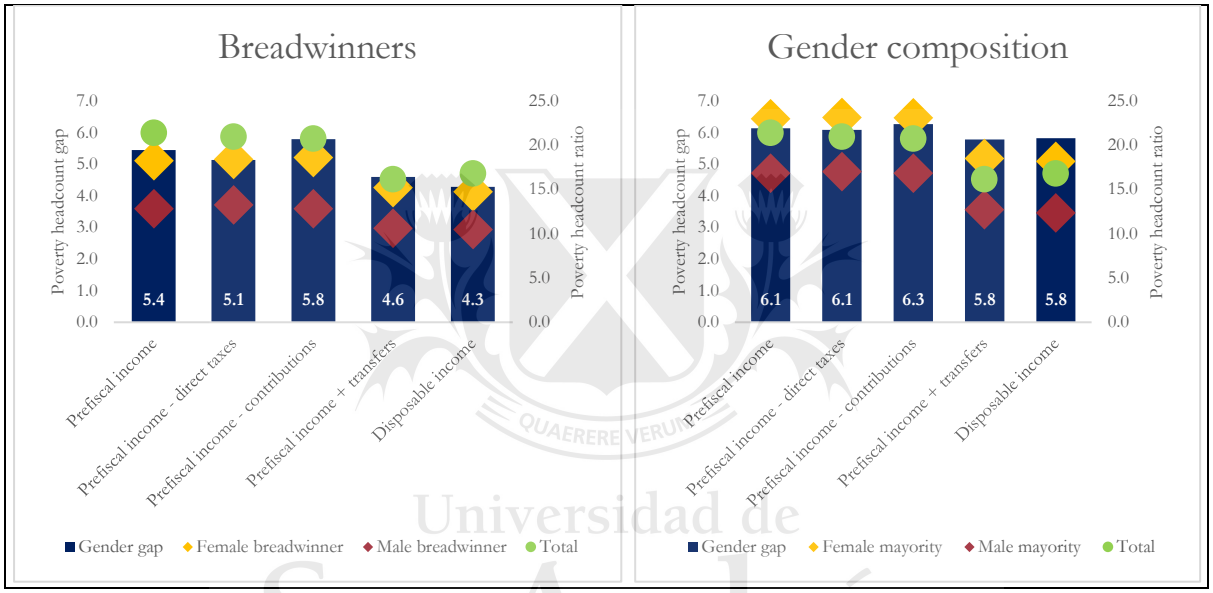
The section is organized as follows. The first part looks at the effect of specific fiscal interventions on poverty reduction. Direct interventions include direct taxes, social security contributions and transfers. The second section analyzes the equivalent aspect for indirect interventions including value added tax, excise and vehicle related taxes. The last part analyzes the overall effects of all interventions on poverty rates, poverty gap and poverty severity.

[16] This work will primarily be using the international upper-middle income poverty line of $5.50 USD at 2011 purchasing power parity, since Barbados is considered an upper income country. Also, since it had a relatively small population (around 285,000 in 2016), and indicators are segmented by household types, some sub-groups of household gender classifications have few observations for individuals living below $1.90 or $3.20 USD PPP 2011.

Direct fiscal interventions

Figure 5 shows the effects on poverty rates due to direct fiscal interventions. The poverty headcount ratio is higher for female breadwinner households than male breadwinner households for all direct fiscal intervention income definitions (direct tax, contributions and transfers). The pre-fiscal income poverty rate for female breadwinner households is 18.3 percent as opposed to 12.8 percent for male breadwinner households. However, after all direct fiscal interventions, the overall poverty reduction is greater for female type households (3.5 percentage points) than for male type households (2.4 percentage points), but lower than the reduction seen in the total population (4.6 percentage points).

Figure 5: Shifts in poverty from direct fiscal interventions ($5.50 USD PPP 2011)



Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

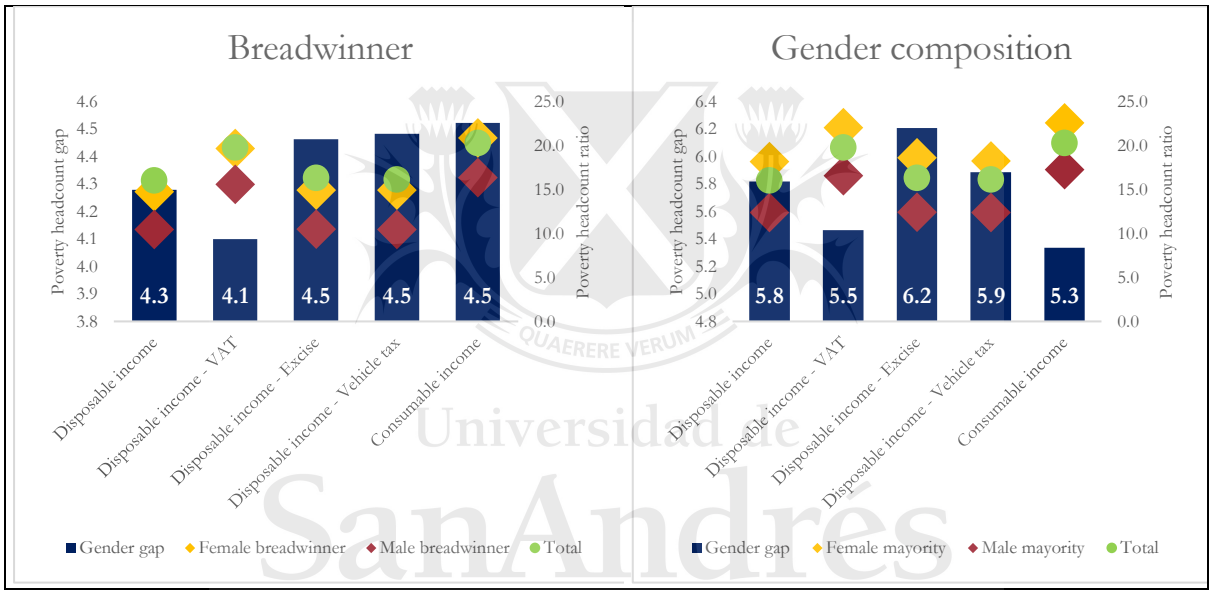
With respect to the two types of gender household classification types, both poverty rates as well as gaps in poverty rates are higher when households are classified by gender majority than by breadwinners as expected, since households classified by gender majority do not necessarily receive labor income, while breadwinner household classification do by construction. While direct taxes and contributions don't play a significant role in poverty reduction in terms of gender classification, transfers do have a poverty reducing effect and more so for female majority households than their male counterparts. While transfers reduce poverty by 4.5 percentage points for female majority households, this corresponds to only 4.1 percentage points for equivalent male type households. Gender gaps in the poverty rates are also greater for households by gender majority than breadwinners, and the overall effect of all direct interventions (from pre-fiscal income to disposable income), there was a greater reduction in the gender poverty gap for breadwinners than for gender majority households.

Indirect fiscal interventions

Indirect fiscal interventions tend to increase poverty rates for all household types. From all indirect interventions, value added tax generates the most significant increases in poverty rates as well as the gender gap in the poverty rate. The poverty rate increases for female breadwinner households

by 4.9 percentage points (from 14.7 to 19.7 percent), and for male breadwinner households by 5.1 percentage points (from 10.5 to 15.6 percent). Similarly, for female majority households it increased by 3.9 percentage points (from 18.2 to 22.1) while for male types by 4.2 percentage points (from 12.4 to 16.6). Although value added tax contributes to decreasing the gender gap, increases in poverty rates for all groups exemplifies this measure as welfare reducing for the population.

Figure 6: Shifts in poverty from indirect fiscal interventions ($5.50 USD PPP 2011)



Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

4. Poverty indicators for aggregate fiscal interventions

While the previous section analyzed effects on the poverty rate and gender gap in the poverty rate for each type of fiscal interventions, this section analyzes the aggregate effect of all direct interventions (captured in the shift from pre-fiscal to disposable income), the effect of indirect interventions (captured in the shift from disposable to consumable income) and the effect of all interventions (captured in the shift from pre-fiscal to consumable income). It also includes not only the poverty rate, but other poverty related indicators like the poverty gap and poverty severity.

Figure 7: Poverty indicators by gender of household breadwinner ($5.50 USD PPP 2011)

Poverty indicator	Breadwinner household types	Pre-fiscal income	Disposable Income		Consumable Income		
		Rate	Rate	Direct interventions effect	Rate	Indirect interventions effect	All interventions
Poverty rate	Female Breadwinner	18.3%	14.7%	-3.5%	20.9%	6.1%	2.6%
	Male Breadwinner	12.8%	10.5%	-2.4%	16.4%	5.9%	3.5%
	Dual Earner	1.8%	2.0%	0.2%	3.5%	1.5%	1.7%
	Total	21.4%	16.8%	-4.6%	20.3%	3.5%	-1.1%
Poverty gap	Female Breadwinner	7.2%	5.7%	-1.5%	9.4%	3.7%	2.2%
	Male Breadwinner	6.0%	4.9%	-1.1%	7.9%	2.9%	1.8%
	Dual Earner	0.6%	0.4%	-0.1%	1.5%	1.1%	1.0%
	Total	12.2%	8.5%	-3.7%	12.4%	3.8%	0.1%
Poverty severity	Female Breadwinner	4.5%	3.5%	-1.0%	6.4%	2.9%	1.9%
	Male Breadwinner	4.3%	3.2%	-1.1%	5.5%	2.3%	1.2%
	Dual Earner	0.2%	0.2%	-0.1%	1.0%	0.9%	0.8%
	Total	9.4%	6.0%	-3.4%	9.9%	3.9%	0.5%

Figure 8: Poverty indicators by gender composition ($5.50 USD PPP 2011)

Poverty indicator	Gender composition household types	Pre-fiscal income	Disposable Income (direct interventions)		Consumable Income (direct and indirect interventions)		
		Rate	Rate	Direct interventions effect	Rate	Indirect interventions effect	All interventions
Poverty rate	Female majority	23.0%	18.2%	-4.8%	22.6%	4.4%	-0.4%
	Male majority	16.8%	12.4%	-4.5%	17.3%	4.9%	0.4%
	Equal share	20.6%	16.1%	-4.5%	19.7%	3.6%	-0.9%
	Total	21.4%	16.8%	-4.6%	20.3%	3.5%	-1.1%
Poverty gap	Female majority	7.7%	3.8%	-3.9%	8.3%	4.5%	0.6%
	Male majority	5.5%	3.0%	-2.5%	7.0%	4.1%	1.6%
	Equal share	5.7%	3.5%	-2.2%	7.3%	3.8%	1.6%
	Total	6.5%	3.5%	-2.9%	7.7%	4.2%	1.2%
Poverty severity	Female majority	10.7%	6.6%	-4.1%	10.8%	4.2%	0.1%
	Male majority	7.8%	5.0%	-2.7%	8.7%	3.7%	0.9%
	Equal share	9.0%	5.9%	-3.1%	9.6%	3.7%	0.6%
	Total	9.4%	6.0%	-3.4%	9.9%	3.9%	0.5%

Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

Figures 7 and 8 show the effect of fiscal interventions on poverty indicators. Although the fiscal system generates a slight reduction in the total population's poverty rate (1.1 percentage points), it increases poverty for all gender type households except for female majority households where there is a slight decrease of 0.4 percentage points. Although direct interventions have a poverty reducing effect, indirect interventions have a greater effect, translating in an overall negative effect from the fiscal system on gender type households. Direct interventions have a greater poverty reducing effect over female type households than for male types. While direct interventions reduce poverty for female breadwinners by 3.5 percentage points in contrast with 2.4 percentage points for male breadwinners, and in terms of gender composition female majority types have a 4.8 percentage point poverty reduction, with respect to 4.5 for male majority households. Indirect interventions also disproportionately affect women breadwinner households, where they see a 6.1 percent poverty increment with respect to 5.9 for male breadwinners. However, male majority households see a greater increase in their poverty rate of 4.9 percentage points, while female majority see an increase of 4.4 percentage points.

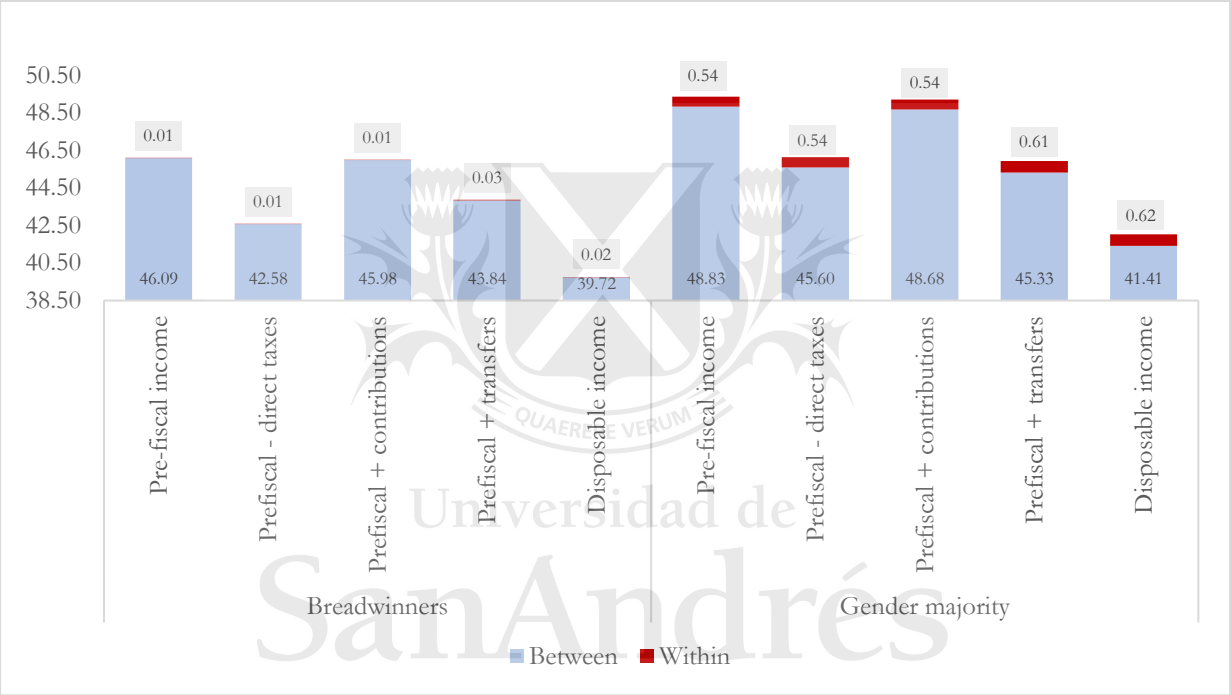
The poverty gap and poverty severity index are other poverty related welfare measures that seek to capture not only whether individuals fall below the poverty line, but the extent of their poverty. The poverty gap measures the differences between individual's income and the poverty line, which translates into how much income an individual would require to surpass the poverty threshold. In terms of these indicators, female type households are also further from surpassing the poverty threshold than their male counterparts, and more so in the case of indirect interventions than for direct ones. While the gender poverty gap is 0.8 percentage points for direct interventions (5.7 for female types and 4.9 for male types), this increases to 1.5 points for indirect interventions (9.4 for female types with respect to 7.9 points for males). This effect is similar for classification by gender majority where it corresponds to 0.9 percentage points for female types and 1.3 for male types respectively.

Poverty severity not only considers the distance from the poverty line, but gives greater weight to poorer individuals, which seeks to capture the intensity of welfare of the poorest individuals Poverty severity follows a similar pattern as the two previous indicators. Indirect taxes have a more prominent effect than direct interventions translating into a net increase in poverty severity. This indicates that the combined effects of the whole fiscal system have disproportionately larger effect on the poorest. Although poverty severity is higher for women types for all stages of fiscal interventions, the overall effect of all fiscal interventions on poverty severity is more prominent for male majority households (an increase in 0.9 percentage points) than female types that do not see a significant change (only 0.1 percentage points).

5. Contribution to overall inequality

The Theil index measures the total inequality in the distribution of income and can be decomposed into inequality due to differences in income within each gender type household group, and inequality between gender type groups. Although households categorized by gender majority experience higher levels of overall inequality than breadwinners, both household gender categorizations follow similar patterns. Almost all income inequality is due to differences between male and female type households with very small disparities attributed to differences within groups. Overall all direct interventions decrease inequality, with a reduction in the Theil Index of 6.4 points for breadwinners and 7.3 for gender majority households (between pre-fiscal and disposable income).

Figure 9: Theil Index for direct fiscal interventions and Theil decomposition



Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

Direct taxes (personal income tax and investment tax) have an equalizing effect. This is consistent with males earning higher labor income and correspondingly paying a higher amount of personal income tax. This tendency will be seen in more detail in the section pertaining the progressivity of the fiscal system. The effect of direct taxes translates in a reduction in the Theil Index by 3.5 for breadwinners and 3.2 for gender majority households. Transfers also have both an overall equalizing effect and more so for gender majority households, where the Theil Index is reduced by 3.4 points, while breadwinners see a decrease of 2.2 points. Social security contributions do not have significant equalizing effects.

Figure 10: Theil Index for indirect fiscal interventions and Theil decomposition

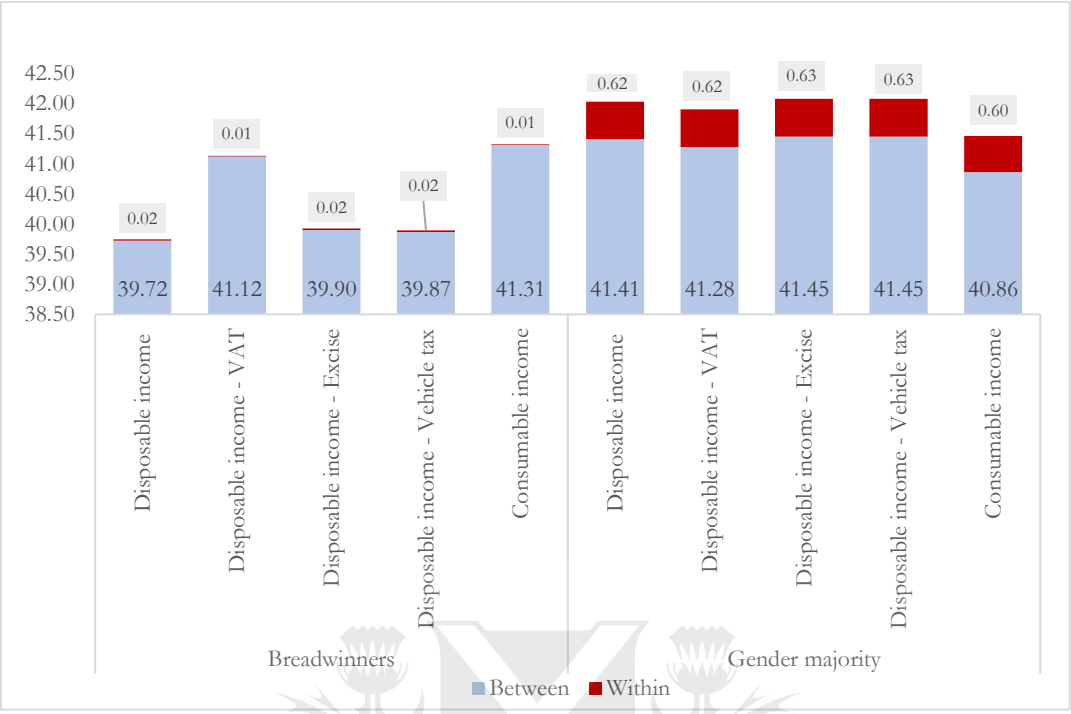


Figure 10 shows the decomposed Theil Index for indirect fiscal interventions. The distributive effects of indirect interventions are minor in comparison with direct interventions. While the overall effect of direct fiscal interventions is 6.4 (7.3) points for breadwinner (gender majority) households, for the effect over inequality of indirect interventions there is an increase of 1.58 points for breadwinners and a decrease of -0.56 points for gender majority households. Effects of indirect interventions over income inequality varies significantly between gender household categorization. While households classified by gender majority see a decrease in inequality due to indirect interventions of only 0.6 points, breadwinners see an increase of 1.6 points in the Theil Index. Also, the magnitude of the effect is much lower for indirect interventions than for direct ones. While the overall effect of direct interventions generates changes of 6.4 and 7.3 points, indirect interventions only vary by 1.6 and 0.6 points in the Theil Index. In terms of specific indirect taxes, effects on inequality are also not significant. Apart from value-added tax that increase inequality for breadwinner households by 1.4 points, other interventions do not generate changes of more than 0.2 points in the Theil Index.

6. Progressivity

Figure 11: Progressivity indicators by gender type households

Progressivity type	Aggregate progressivity								Household-level progressivity					
Gender type households	Breadwinners				Gender majority				Breadwinners			Gender majority		
Indicator	Shares		Progressivity		Shares		Progressivity		Shares		Progressivity	Shares		Progressivity
Types	Female	Male	Relative	Absolute	Female	Male	Relative	Absolute	Female	Male	Household	Female	Male	Household
Total population	55.8	44.2			62.4	37.6								
Direct interventions														
Pre-fiscal income	55.3	44.7			57.2	42.8								
Direct taxes and contributions														
Personal income tax	55.0	45.0	1.00	0.99	58.1	41.9	1.01	0.93	4.2%	6.6%	2.45%	3.2%	5.0%	1.78%
Investment tax	44.5	55.5	0.81	0.80	43.9	56.1	0.77	0.70	0.1%	0.3%	0.13%	0.2%	0.5%	0.29%
Social security contributions	56.5	43.5	1.02	1.01	59.6	40.4	1.04	0.96	1.4%	1.3%	-0.08%	1.0%	0.9%	-0.06%
Total direct taxes	54.6	45.4	0.99	0.98	57.5	42.5	1.00	0.92	4.3%	6.9%	2.58%	3.4%	5.5%	2.07%
Transfers														
Non-contributory pensions	48.7	51.3	0.88	0.87	68.1	31.9	1.19	1.09	0.7%	1.2%	0.42%	23.9%	15.1%	-8.86%
Social assistance MPE	45.5	54.5	0.82	0.82	74.1	25.9	1.29	1.19	0.2%	0.2%	0.03%	12.0%	1.8%	-10.19%
Training programs	14.7	85.3	0.27	0.26	64.2	35.8	1.12	1.03	0.1%	1.7%	1.60%	1.5%	0.3%	-1.23%
National inssurance assistance	62.7	37.3	1.14	1.12	66.7	33.3	1.16	1.07	3.6%	1.7%	-1.89%	20.1%	1.4%	-18.68%
Government invalidity program	59.1	40.9	1.07	1.06	48.1	51.9	0.84	0.77	2.0%	1.5%	-0.42%	17.7%	119.4%	101.68%
Unemployment benefits	15.0	85.0	0.27	0.27	36.2	63.8	0.63	0.58	0.6%	3.4%	2.88%	3.7%	1.3%	-2.37%
Homecare program	47.9	52.1	0.87	0.86	62.2	37.8	1.09	1.00	0.1%	0.1%	-0.03%	0.9%	1.6%	0.71%
Total transfers	47.5	52.5	0.86	0.85	55.1	44.9	0.96	0.88	7.3%	9.9%	2.59%	79.9%	141.0%	61.06%
Indirect interventions														
Disposable income	55.0	45.0			57.1	42.9								
Indirect taxes														
Value added tax	53.1	46.9	0.97	0.95	54.7	45.3	0.96	0.88	17.3%	21.9%	4.53%	34.4%	39.0%	4.57%
Excise	49.1	50.9	0.89	0.88	52.0	48.0	0.91	0.83	1.6%	3.2%	1.51%	10.7%	5.2%	-5.50%
Vehicle taxes	49.4	50.6	0.90	0.88	52.4	47.6	0.92	0.84	2.5%	4.0%	1.49%	12.0%	7.7%	-4.30%
Total indirect taxes	52.4	47.6	0.95	0.94	54.3	45.7	0.95	0.87	19.9%	25.9%	6.02%	46.4%	46.7%	0.28%

Progressive intervention Regressive intervention Differences across indicators

Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

Figure 11 displays progressivity measures for each fiscal intervention analyzed for Barbados. Pre-fiscal income is the income baseline used to analyze direct fiscal interventions, while disposable income is used as the baseline for indirect interventions. The aggregate progressivity section displays the shares of population, pre-fiscal and disposable income, as well as each intervention for each of the gender type households. Relative progressivity captures the relation between the fiscal intervention and the group's aggregate income. It is calculated as the ratio between a group's share of the total fiscal intervention and the share in the total income (pre-fiscal/disposable). Absolute progressivity captures the relation between a fiscal intervention and a group's population. It is calculated as the ratio between the share of the fiscal intervention received by the group and the share of the group in the population considered.[17] For taxes and contributions (transfers), an intervention is progressive (regressive) if the indicators are less than 1, and regressive (progressive) if they are greater than 1.

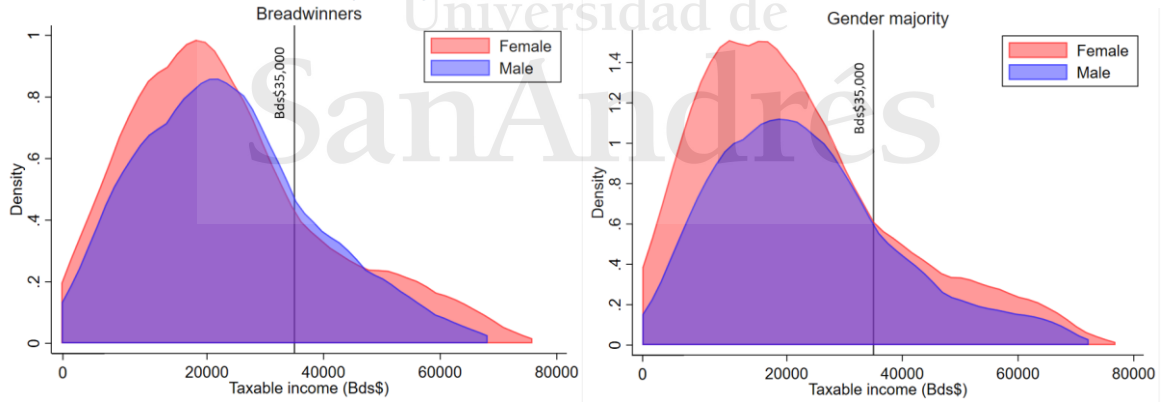
Household-level progressivity is calculated as the average of each household's share of the amount received from the intervention with respect to the household's income. If the share of taxes (transfers) paid (received) by female-type households in less than (greater than) the shares of male-type households then the intervention is progressive. In some cases, shares of direct transfers may

[17] Since the focus of this study is to compare female and male type households, the population considered is narrowed to only these two types.

have values above 100%. This is due to some households with no pre-fiscal income for which transfers are their main source of income. This is the case for example of households having individuals with invalidity, who are not employed or receive contributory pensions and therefore have zero pre-fiscal income, but nonetheless receive transfers from the Government invalidity program.

Direct taxes (personal income and investment tax) are progressive by all progressivity indicators; although personal income tax is slightly regressive when measured through relative progressivity, the magnitude is trivial (1.01). Progressivity of direct interventions is mostly explained by personal income tax which holds a higher share with these interventions. Personal income tax affects households the most, ranging between 3.2 and 6.6 percent of households' pre-fiscal income, while investment tax and contributions range between 0.1 and 1.4 percent. In 2016, the personal income tax was 16% for individuals earning a yearly income below Bds$35,000 and 33.5% above this threshold. The rate of withholding tax on dividends and interest payments made to resident persons was 12.5%. Net residential rental income was taxed at 15%. Figure 12 displays the distribution of annual taxable income by gender type household, showing female-type households have lower taxable income than male-type households. Median income is 25.6 percent higher for male breadwinners, and 27.3 percent higher for male majority households. Also, while 17.0 (15.0) percent of women earners surpass the personal tax threshold of Bds$35,000 for breadwinner (female majority) households, this is 18.0 (17.0) percent for male income earners by breadwinner (majority). These results are consistent with findings by Sewanyana et al. (2010) in Uganda and Aryeetey et al. (2010) in Ghana, where they also find that personal income tax is progressive since men have higher earnings.

Figure 12: Distribution of annual taxable income by gender type household



Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

Aggregate transfers are regressive for both household classifications. However, specific transfers have different effects for breadwinner households than gender majority composition. Most transfers are regressive for breadwinners (non-contributory pensions, MPE social assistance, training programs, unemployment benefits and the homecare program), except for the government invalidity program and national insurance assistance. However, there is a converse effect for female majority households, where most transfers are progressive (non-contributory pensions, MPE social assistance, training programs and national insurance assistance) except for the government invalidity program is regressive. Unemployment benefits show mixed results

according to different measures of progressivity, as well as the Homecare Program, although the latter is not of significant magnitude. While they are regressive by aggregate progressivity indicators, they are progressive when measured through household-level progressivity. This means that at a household level, the average share of unemployment benefits received by female majority households is greater than male majority, even though their aggregate share in the total amount destined to unemployment benefits for all gender-type households is less than their market income and population shares. Since female-type households have on average less pre-fiscal income, unemployment benefits could correspond to a smaller share of their income, although if the magnitude of their aggregate income is considered (as in aggregate progressivity measures), then this intervention is regressive. In terms of policy recommendations, in order to improve progressivity of unemployment insurance in female majority households, it is important to allocate aggregate spending towards these types of households, keeping into account that at a household level this intervention none the less proportionally benefits female majority households.

Total indirect taxes are progressive, with value-added tax being progressive across all measures, while excise and vehicle taxes are progressive in aggregate measures of relative and absolute progressivity, but regressive when measured through household level progressivity. These last two interventions show the inverse mechanism as unemployment insurance. Although in the aggregate, the amount paid by gender type households is greater for male majority households (both in levels as well as with respect to their disposable income and population share), at the household level, differences in the disposable income composition result in a higher tax burden for female majority households.

Value added tax is progressive by all measures. Household-level progressivity show that on average male type households bear a greater burden for value-added tax than female-type households. This may be due to differences in the compositions of goods and services consumed by gender type households, consistent with other studies on Jamaica, India, and Ghana that found similar results (Christie 2014; Aryeetey et al. 2010; Chakraborty et al. 2010). In the case of Barbados, women type households spend a greater share of their disposable income on food items, which have zero value-added tax. This tendency is greater among households classified by gender majority than breadwinners.

As seen in Figure 13, while female majority households spend 30.6 percent of their disposable income on food expenditures, only 27.2 percent is destined to this for male majority households. Similarly, for female breadwinner households, this corresponds to 22.7 percent while male breadwinner households spend 22.1 percent. This pattern is more prominent within poor households ($5.50 USD PPP 2011), where the poor's higher marginal propensity to consume translates into food expenditures. Poor female breadwinner (majority) households spend 15.8 (17.5) percentage points more on food than their male counterparts, compared to 3.0 (2.8) percentage points less for non-poor female breadwinners (majority), and 0.4 (3.4) for all poor and non-poor female breadwinner (majority) households.

Figure 13: Food expenditure and VAT as a share of household disposable income

Gender type households	Food expenditure			Value-added tax		
	Poor	Non-poor	All	Poor	Non-poor	All
Female breadwinner	60.4%	18.8%	31.2%	23.5%	10.1%	17.3%
Male breadwinner	44.6%	21.7%	53.5%	20.8%	12.1%	21.9%
Female majority	76.7%	20.1%	59.8%	24.4%	10.1%	34.4%
Male majority	59.2%	22.9%	88.9%	22.6%	11.8%	39.0%

Gender-types	Food expenditure			Value-added tax		
	Poor	Non-poor	All	Poor	Non-poor	All
Female breadwinner	60.4%	18.8%	23.5%	23.5%	10.1%	17.3%
Male breadwinner	44.6%	21.7%	23.1%	20.8%	12.1%	21.9%
Female majority	76.7%	20.1%	30.6%	24.4%	10.1%	34.4%
Male majority	59.2%	22.9%	27.2%	22.6%	11.8%	39.0%

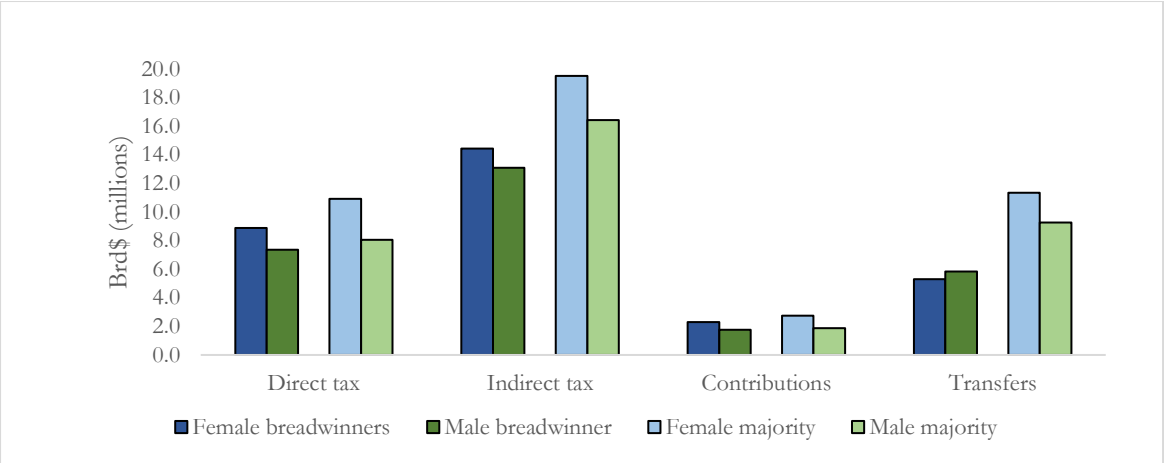
Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

7. Net payment of all interventions in the fiscal system

Analysis of net fiscal payment measures the net benefit of all interventions in the fiscal system. It is composed of households' transfers received subtracted by their total tax and contributions payments. It answers the question of whether households pay more than they receive (net payers) or do their tax payments get redistributed though safety nets and other transfers. In the case of Barbados, tax and contribution payments are higher than transfers received, making individuals net payers of the fiscal system. However, it is important to note that this analysis does not consider in-kind transfers, indirect benefits, or public goods provided by the State. It might be the case that although households do not receive cash or near-cash transfers, they have access to a wide range of public services such as education and healthcare that are not captured in this analysis. However, this is beyond the scope of this analysis, which considers the fiscal system as the conjunction of direct transfers, and the net effect of direct taxes, contributions, transfers and indirect taxes.

Figure 14 depicts the aggregate amount of taxes and contributions (transfers) paid (received) by gender type households. Overall these results demonstrate that the aggregate taxes and contributions paid by households are much higher than the total transfers they receive, and the payment in indirect taxes is much higher than direct taxes. The aggregate amount of taxes and contributions paid by female-type households is higher than male types, but it is important to note that they also compose a greater share of households. Female (male) breadwinners correspond to 27.7 (21.4) percent of total households, while female (male) majority households represent 41.4 (24.9) percent.

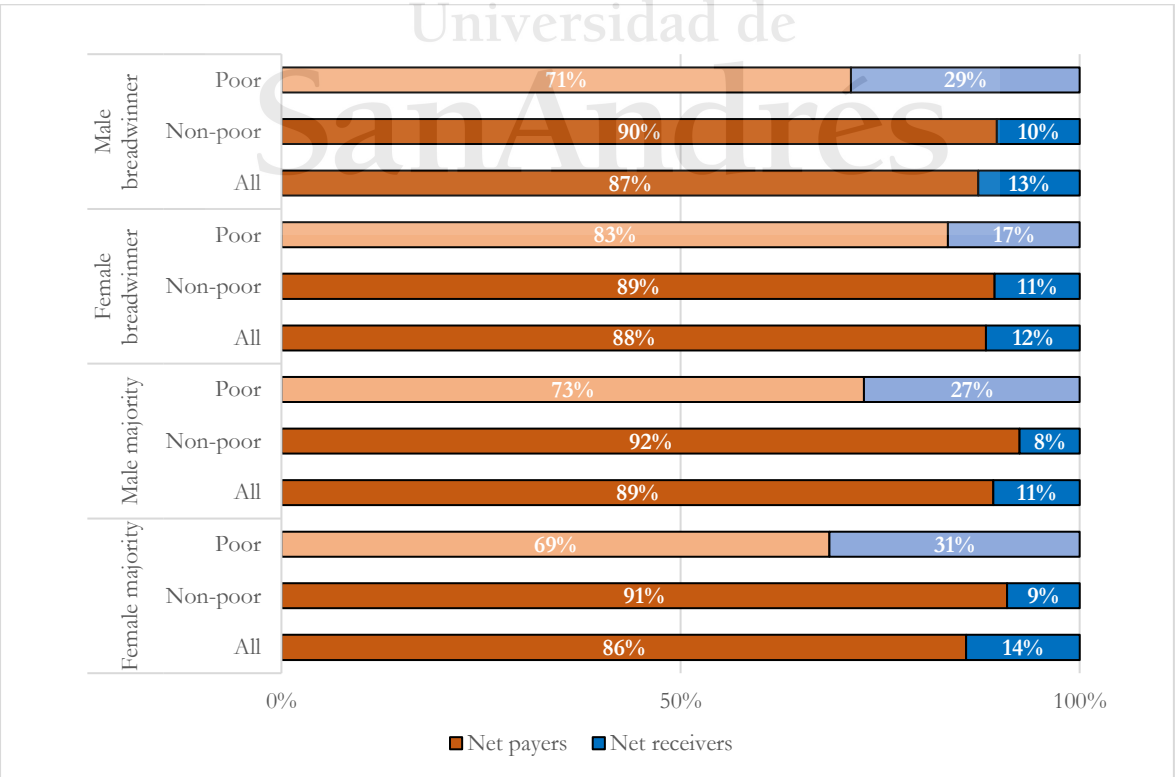
Figure 14: Aggregate interventions paid/ received by gender type households



Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

Figure 15 shows the composition of net payers of the fiscal system by gender type and poverty status. The share of net payers is high among all population groups considered. For female majority households, net receivers are a higher amount (14.2 percent) than male (10.8 percent). Between breadwinners there isn't a significant difference. However, within the poor there is a higher share of net receivers than for other groups. This is especially prominent for female majority households where 31.3 percent of households are net receivers of the fiscal system.

Figure 15: Net payers of the fiscal system by gender type and poverty status ($5.50 USD PPP 2011)



Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

8. Fiscal impoverishment and poverty mobility

This section analyzes fiscal impoverishment and poverty mobility. Fiscal impoverishment captures how fiscal interventions affect an individual's poverty status by tracking the same individual through different fiscal scenarios and analyzing their mobility between poverty thresholds after each fiscal intervention. This measure addresses the difference between the aggregate change in the poverty rates and evaluating whether those who were originally poor were made poorer or richer, or non-poor individuals became poor through fiscal interventions.[18] Figure 16 display the fiscal mobility matrices for direct fiscal interventions as well as all fiscal interventions for the $5.50 USD PPP 2011 poverty line, while Figures 17 and 18 decompose this poverty mobility into income groups for five poverty thresholds ($1.90, $3.20, $5.50, $13.00 USD PPP 2011).[19] Shifts from pre-fiscal to disposable income capture the changes generated by the post-fiscal scenario of direct fiscal interventions (direct taxes, contributions and transfers), while shifts from pre-fiscal to consumable income denote the post-fiscal scenario after all direct in addition to indirect interventions (value-added tax, excise and vehicle taxes). Fiscal mobility matrices display the pre-fiscal income groups in the first vertical column, and each of the post-fiscal income groups in the first row. Each cell denotes the percent of the population in the pre-fiscal income group that has mobilized to the corresponding post-fiscal income group. In this study, *upward mobility* will be used to refer to population groups that have become richer due to fiscal interventions (cells highlighted in green), while *downward mobility* will be used for population that has become poorer (cells highlighted in orange) and cells in gray denote the population that has remained in the same income group after fiscal interventions.

Figure 16: Fiscal Mobility Matrices by gender type households ($5.50 USD PPP 2011)

Direct fiscal interventions				
		Disposable income groups		
Gender types	Pre-fiscal income group	Below $5.50	Above $5.50	Total
Female breadwinner	Below $5.50	79.3%	20.7%	100.0%
	Above $5.50	0.3%	99.7%	100.0%
Male breadwinner	Below $5.50	78.1%	21.9%	100.0%
	Above $5.50	0.5%	99.5%	100.0%
Female majority	Below $5.50	78.2%	21.8%	100.0%
	Above $5.50	0.3%	99.7%	100.0%
Male majority	Below $5.50	72.3%	27.7%	100.0%
	Above $5.50	0.2%	99.8%	100.0%
Direct and indirect fiscal interventions				
		Consumable income groups		
	Pre-fiscal income group	Below $5.50	Above $5.50	Total
Female breadwinner	Below $5.50	85.6%	14.4%	100.0%
	Above $5.50	6.4%	93.6%	100.0%
Male breadwinner	Below $5.50	83.2%	16.8%	100.0%
	Above $5.50	6.6%	93.4%	100.0%
Female majority	Below $5.50	82.9%	17.1%	100.0%
	Above $5.50	4.7%	95.3%	100.0%
Male majority	Below $5.50	76.4%	23.6%	100.0%
	Above $5.50	5.5%	94.5%	100.0%

Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

[18] This idea was developed by Higgins and Lustig (2013).

[19] These correspond to the World Bank's poverty lines in USD PPP 2011: $1.90 (International), $3.20 (lower middle-income), $5.50 (upper middle-income), and the range of individuals living between $5.50 and $13.00 a day are the vulnerable population. For more details, see Jolliffe and Prydz (2017).

Figure 17: Fiscal Mobility Matrices for direct fiscal interventions by poverty income groups

Direct fiscal interventions (Pre-fiscal to disposable income)

Female breadwinner						
	Disposable income groups					
Pre-fiscal income group	**Below $1.90**	**$1.90 - $3.20**	**$3.20-$5.50**	**$5.50 - $13.00**	**Above $13.00**	**Total**
Below $1.90	86.3%	7.8%	0.0%	0.0%	5.9%	100%
$1.90 - $3.20	0.0%	46.3%	31.1%	20.2%	2.3%	100%
$3.20-$5.50	0.0%	0.0%	73.9%	26.1%	0.0%	100%
$5.50 - $13.00	0.2%	0.0%	0.7%	86.6%	12.5%	100%
Above $13.00	0.0%	0.0%	0.0%	1.2%	98.8%	100%
Male breadwinner						
	Disposable income groups					
Pre-fiscal income group	**Below $1.90**	**$1.90 - $3.20**	**$3.20-$5.50**	**$5.50 - $13.00**	**Above $13.00**	**Total**
Below $1.90	50.9%	31.1%	0.0%	13.7%	4.4%	100%
$1.90 - $3.20	4.3%	64.7%	21.1%	0.0%	9.8%	100%
$3.20-$5.50	2.6%	0.0%	66.4%	30.0%	1.0%	100%
$5.50 - $13.00	0.2%	0.0%	1.2%	92.1%	6.4%	100%
Above $13.00	0.0%	0.0%	0.0%	0.6%	99.4%	100%

Female majority						
	Disposable income groups					
Pre-fiscal income group	**Below $1.90**	**$1.90 - $3.20**	**$3.20-$5.50**	**$5.50 - $13.00**	**Above $13.00**	**Total**
Below $1.90	56.2%	12.8%	11.1%	15.6%	4.4%	100%
$1.90 - $3.20	0.0%	69.9%	14.7%	4.0%	11.4%	100%
$3.20-$5.50	0.0%	0.7%	72.4%	23.5%	3.4%	100%
$5.50 - $13.00	0.3%	0.0%	0.5%	87.6%	11.6%	100%
Above $13.00	0.0%	0.0%	0.0%	1.8%	98.2%	100%
Male majority						
	Disposable income groups					
Pre-fiscal income group	**Below $1.90**	**$1.90 - $3.20**	**$3.20-$5.50**	**$5.50 - $13.00**	**Above $13.00**	**Total**
Below $1.90	54.6%	15.5%	1.5%	14.5%	13.9%	100%
$1.90 - $3.20	5.3%	81.0%	13.7%	0.0%	0.0%	100%
$3.20-$5.50	2.1%	0.1%	62.8%	34.0%	1.0%	100%
$5.50 - $13.00	0.3%	0.0%	0.7%	87.3%	11.7%	100%
Above $13.00	0.0%	0.0%	0.0%	2.9%	97.1%	100%

Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

Figure 18: Fiscal Mobility Matrices for direct and indirect fiscal interventions by poverty income groups

Direct and indirect fiscal interventions (Pre-fiscal to consumable income)

Female breadwinner						
	Consumable income groups					
Pre-fiscal income group	Below $1.90	$1.90 - $3.20	$3.20-$5.50	$5.50 - $13.00	Above $13.00	Total
Below $1.90	94.1%	0.0%	0.0%	0.0%	5.9%	100%
$1.90 - $3.20	37.2%	40.3%	0.0%	20.2%	2.3%	100%
$3.20-$5.50	3.5%	12.5%	68.4%	15.6%	0.0%	100%
$5.50 - $13.00	1.2%	0.3%	14.3%	78.0%	6.3%	100%
Above $13.00	0.4%	0.0%	0.4%	8.9%	90.4%	100%
Male breadwinner						
	Consumable income groups					
Pre-fiscal income group	Below $1.90	$1.90 - $3.20	$3.20-$5.50	$5.50 - $13.00	Above $13.00	Total
Below $1.90	68.5%	13.5%	0.0%	13.6%	4.4%	100%
$1.90 - $3.20	16.2%	74.0%	0.0%	0.0%	9.8%	100%
$3.20-$5.50	14.5%	12.4%	54.1%	18.0%	1.0%	100%
$5.50 - $13.00	0.3%	2.3%	15.1%	76.2%	6.1%	100%
Above $13.00	0.3%	0.0%	0.0%	7.3%	92.4%	100%

Female majority						
	Consumable income groups					
Pre-fiscal income group	Below $1.90	$1.90 - $3.20	$3.20-$5.50	$5.50 - $13.00	Above $13.00	Total
Below $1.90	65.6%	10.2%	8.8%	11.1%	4.4%	100%
$1.90 - $3.20	50.4%	34.3%	0.0%	4.0%	11.4%	100%
$3.20-$5.50	15.3%	14.0%	50.4%	16.9%	3.4%	100%
$5.50 - $13.00	1.1%	0.2%	11.3%	81.7%	5.7%	100%
Above $13.00	0.2%	0.0%	0.2%	13.0%	86.5%	100%
Male majority						
	Consumable income groups					
Pre-fiscal income group	Below $1.90	$1.90 - $3.20	$3.20-$5.50	$5.50 - $13.00	Above $13.00	Total
Below $1.90	71.4%	1.6%	0.0%	14.1%	12.9%	100%
$1.90 - $3.20	42.1%	55.3%	2.5%	0.0%	0.0%	100%
$3.20-$5.50	6.0%	11.6%	56.9%	24.5%	1.0%	100%
$5.50 - $13.00	3.8%	1.8%	13.4%	71.8%	9.3%	100%
Above $13.00	0.4%	0.5%	0.0%	10.4%	88.8%	100%

Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

Overall, poverty mobility is low for all gender type groups. For all income ranges analyzed, more than 50 percent remained in the same income group before and after all fiscal interventions, in some cases reaching more than 97 percent of the population. This is even more pronounced when looking at the aggregate poor and non-poor using only the $5.50 dollar a day poverty threshold. In this case, those remaining in their original income group after incorporating all fiscal interventions range between 76.4 and 95.3 percent of the population.

In terms of the gender dimension of poverty mobility, both upward and downward mobility were slightly higher for male type households than female types after all interventions for the $5.50 a day poverty line (Figure 16). While 14.4 percent of the pre-fiscal poor population living in female breadwinner households became non-poor after all fiscal interventions, this was equivalent to 16.8 percent for male breadwinner households. This gap is even wider in gender majority categorization. While 23.6 percent of poor from male majority households became non-poor, this was only 17.1 percent of the poor from female majority households. However, from the non-poor, a greater portion of male-type individuals became poorer after all fiscal interventions. While 6.4 (4.7) percent of non-poor female breadwinner (majority) types became poor after fiscal interventions, this was 6.6 (5.5) percent for male breadwinner (majority) gender types.

While direct interventions generate more upward mobility than indirect interventions, this is more prominent for male-type households than female-types. Fiscal mobility matrices displaying the effect of direct interventions on the $5.50 dollar a day threshold show an upward mobility ranging from 20.7 to 27.7 percent, while those including indirect interventions range from 14.4 to 23.6 percent. For the pre-fiscal poor living below $5.50 a day female (male) breadwinner households, 20.7 (21.9) percent of the population became non-poor. Similarly, for female (male) majority households, 21.8 (27.8) percent became non-poor. This is also the case for the poor breadwinners living below the $1.90 international poverty line, where female (male) breadwinners 13.7 (41.9) percent became non-poor. However, the inverse occurs by gender majority categorization were out of the poor female (male) majority households 45.4 (34.4) percent became non-poor due to direct fiscal interventions.

Incorporating indirect interventions translates into a more pronounced downward mobility than direct fiscal interventions. For the non-poor ($5.50 a day), downward mobility due to direct interventions range between 0.2 and 0.5 percent, while after incorporating indirect interventions, the range broadens to between 4.7 and 6.6 percent of the non-poor population. This may also be seen in in Figure 18, for a greater disaggregation of income groups, where the combined effect of direct and indirect interventions (pre-fiscal to consumable income) show significantly higher percentage of downward mobility (highlighted in orange) than matrices corresponding to direct interventions (Figure 17). This is more so for poor individuals with a pre-fiscal per capita income between $1.90 and $3.20 a day, who became poorer (less than $1.90 a day). Especially for female type households, where downward mobility including indirect interventions was 37.2 (50.4) percent for female breadwinner (majority) while only 16.2 (42.1) percent for male breadwinner (majority) households.

9. Probability of escaping poverty and pro-disadvantaged groups

Measuring the probability of escaping poverty incorporates fiscal impoverishment and poverty mobility data from fiscal mobility matrices to determine an aggregate measure of a population group's extent of moving across poverty thresholds, by integrating the net effect of upward and downward mobility of the poor. The probability of escaping poverty is then measured as the total number of individuals who mobilized from being poor to non-poor (upward mobility) subtracted by those who were non-poor and became poor (downward mobility) divided by those who were poor in the pre-fiscal scenario.

Figure 19 shows each gender type group's probability of escaping poverty ($5.50 dollars a day) for direct and indirect fiscal interventions. The probabilities are consistent with the previous section's analysis on fiscal mobility. Direct fiscal interventions tend to have greater upward poverty mobility, and lower downward mobility, translating into a higher probability of escaping poverty. Incorporating indirect interventions increases downward mobility and decreases upward mobility, resulting in lower probabilities of escaping poverty. In the case of Barbados, the large extent of downward mobility with respect to upward mobility is sufficient to result in a negative probability of escaping poverty, where individuals actually have a higher probability of becoming poorer after being subject to all fiscal interventions.

Figure 19: Probability of escaping poverty by household gender type ($5.50 USD PPP 2011)

Gender type	Direct interventions	Direct and indirect interventions
	Disposable income	Consumable income
Female breadwinner	19.3%	-14.3%
Male breadwiiner	18.3%	-27.6%
Female majority	20.8%	1.6%
Male majority	26.5%	-3.5%

Source: Author's calculations using the 2016 Barbados Survey of Living Conditions.

Female breadwinner household types have a greater probability of escaping poverty after direct fiscal interventions than their male counterparts. While female types have a 19.3 percent chance of escaping poverty, this is 18.3 percent for male types. Although after incorporating indirect interventions as well female breadwinners increase their probability of *entering* poverty, this effect is almost half of that faced by male breadwinner households (14.3 in comparison to 27.6 percent). For female majority households, effects are mixed. While female majority have a positive but lower probability of escaping poverty (20.8 percent) after direct fiscal interventions than male majority (26.5), they are the only gender type group that has a positive probability of escaping poverty after all fiscal interventions.

Conclusion

This study provides a contribution to fiscal incidence analysis, by incorporating gender as a fundamental aspect to promoting equity, relevant both for widening the fiscal incidence research agenda, as well as providing gender-relevant inputs for policy makers in Barbados. The benefit of a comprehensive fiscal incidence analysis incorporating a wide variety of welfare measures is that it paints a complex picture of the overall impact of the fiscal system, arriving at different insights on gender-based disparities in the distributive mechanisms of fiscal policy in Barbados.

Analysis on the gender income gap show that the combined effect of all direct interventions translates into an overall increase in the gender income gap for both gender household categorizations, while indirect interventions contribute to decrease the gender income gap. The direct effect is mainly due to a disproportionate increase in transfers on male type households' income, while for indirect interventions males bear a larger burden on value-added tax, contributing to most to the reduction of the gender gap.

Poverty indicators show that female-type households are generally poorer, have a wider poverty gap and severity. In terms of direct interventions, while direct taxes and contributions don't play a significant role in poverty reduction in terms of gender classification, transfers do have a poverty reducing effect and more so for female majority households than their male counterparts. Indirect fiscal interventions tend to increase poverty rates for all household types. From all indirect interventions, value added tax generates the most significant increases in poverty rates as well as the gender gap in the poverty rate. The combined effect of direct and indirect interventions increases poverty rates for all gender type households. Although direct interventions have a poverty reducing effect, indirect interventions have a greater effect, resulting in an overall increase in poverty rates.

Decomposition of inequality between gender type households and within each group show that most inequality is due to differences between groups and almost no differences within each group. Direct fiscal interventions decrease inequality, due especially to direct taxes including personal income tax. Indirect interventions show mixed results depending on the household gender classification type. While breadwinners see an increase in inequality mainly due to value added tax, there is no clear pattern for households classified by gender majority.

In terms of progressivity of interventions, direct taxes are progressive, mainly due to the effect of personal income tax. Males tend to pay more income tax since they have higher income earnings. Aggregate transfers are regressive for both household classifications. However, specific transfers have different effects for breadwinner households than gender majority composition. Total indirect taxes are progressive, with value-added tax being progressive across all measures. This may be explained by female type households spending a greater portion of their disposable income on food expenditures that have zero value added tax. This is especially relevant for poor female type households.

In the case of Barbados, most individuals are net payers of the fiscal system; the tax and contribution payments are higher than transfers received. Although there are mixed results by gender type households, the poor have a higher share of net receivers than non-poor. This is especially prominent for female majority households where 31.3 percent of households are net receivers of the fiscal system.

Poverty mobility is generally low for all gender type households. In terms of the gender dimension of poverty mobility, both upward and downward mobility were slightly higher for male type households than female types after all interventions. While direct interventions generate more upward mobility than indirect interventions, this is more prominent for male-type households than female-types. Incorporating indirect interventions translates into a more pronounced downward mobility than direct fiscal interventions. Since direct fiscal interventions tend to have greater upward poverty mobility, and lower downward mobility, translating into a higher probability of escaping poverty. Incorporating indirect interventions increases downward mobility and decreases upward mobility, resulting in lower probabilities of escaping poverty. However, effects are mixed by gender type household classification.

These findings are relevant since the effects of government spending decisions have significant tangible effects on individuals' purchasing power, expenditure patterns and access to social welfare nets, which become crucial when considering the welfare of different gender type households, specifically for the most vulnerable. This turns fiscal incidence analysis a vital topic both to understand how policies affect individuals' welfare, as well as to provide empirical foundations for driving public policy that promote distributive mechanisms to the most vulnerable population.

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