Income Inequality and Ethnic Cleavages in Malaysia: Evidence from Distributional National Accounts (1984-2014) Data Appendix

Muhammed Abdul Khalid
Li Yang

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World Inequality Lab

INCOME INEQUALITY AND ETHNIC CLEAVAGES IN MALAYSIA

EVIDENCE FROM DISTRIBUTIONAL NATIONAL ACCOUNTS (1984-2014)*

ONLINE APPENDIX

By Muhammed Abdul Khalid and Li Yang*

This appendix supplements our paper and describes the full set of data files and computer codes (KY2019.zip) that were used to construct the series.

The zip file KY2019.zip includes the following files (in addition to the pdf files of the main paper and present appendix):

KY2019MainFiguresTables.xlsx : figures and tables presented in the main paper

KY2019NationalAccountsData.zip : all national accounts files

PYZ2017DistributionSeries.zip : all distribution series files

PYZ2017IncomeDistributionData.zip : all raw income distribution files

Appendix A. Income concepts and harmonization

A1. Fiscal Income vs. Taxable Income

Conceptually, fiscal income (defined by Inland Revenue Board of Malaysia) includes gross salary, capital income, pension, and business income (see Public Ruling No. 6/2011, In land Revenue Board Malaysia). To recover fiscal income from tabulated data on taxable income, we estimate the average duction for all tax payers basing on "Tax Relief for Resident Individual" published by Inland Revenue Board of Malaysia[1], using various sources, such as Household Income Survey (HIS), Household Expenditure Survey (HES), annual report of Employees Provident Fund (EPF), etc. Below we will explain in details how to estimate the major components of the tax duction/relief one by one using fiscal year 2014 as an example.

1. Relief of RM 9,000 for an individual in respect of himself and his dependent relatives is granted automatically.

    For each tax payers in each tax bracket, the tax relief on this item is RM 9,000.

2. Child relief of RM1,000 is allowed if the individual pays for the maintenance of each unmarried child under the years age 18 years at any time in that year.

    Estimated tax relief = (population under 18/population above 18) * RM 1,000=RM 491

3. Relief of RM8,000 for each unmarried child of 18 years and above on condition that: (i) receiving further education in Malaysia in respect of an award of diploma or higher (excluding matriculation/preparatory courses). (ii) receiving further education outside Malaysia in respect of an award of degree or its equivalent (including Master or Doctorate). (iii) the instruction and educational establishment shall be approved by the relevant government authority.

    Estimated tax relief = (No. of student/adult population (20+)) * RM 4,000=RM 273. For the number of students, we refer to Statistics Yearbook Malaysia.

4. Insurance premiums paid for policies taken on fund the life of an individual, husband or wife are allowable deductions. Insurance premiums on the life of the child does not qualify. Contributions to the Employees Provident Fund or other provident funds or pension schemes approved by the Director General of Inland Revenue. Total relief for the payment of life insurance premiums and contributions to the Employees Provident Fund (EPF) or other approved schemes is limited to RM6,000 each for the individual and his wife who are assessed separately. If the husband or wife elects for joint assessment, the deduction for insurance premiums and EPF contributions is limited to RM6,000.

    Estimated tax relief = Total contribution to EPF / Population of labor force (16-64) = RM 3,182. Total

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[1] See official portal of Inland Revenue Board of Malaysia, http://www.hasil.gov.my.

contribution of EPF from Annual report of EPF and Statistics Yearbook Malaysia.

We have to admit here that this simplistic method for estimating tax relief on social contribution is not ideal. There are two alternatives for estimating the tax relief on social contribution. 1) distribute the total contribution to each income bracket basing on the average income in the bracket, for those whose social contribution is greater than RM 6,000, using RM, 6000 as the estimated tax relief. 2) use the upper limit of tax relief on social contribution, namely RM, 6000 as the estimated tax relief for all the tax payers. Compared to the two alternatives, the current method will produce the low bound of the inequality estimation, while alternative 2) will produce the upper bound of the inequality. In any case, based on the method we are using to correct survey income distribution with fiscal data, these three methods produce almost very similar estimation on income distribution, the difference is negligible.

Besides above mentioned 4 major components of tax relief, which account for more than 95% of the total tax relief/duction, we have also estimated other minor components of tax relief, such as tax relief on medical expense, disable person, disable spouse, disable child, and self-education cost etc. For more details, please see Data Appendix: Malaysia, AP9.

A2. Income Definition: Surveys vs. National Account

In this section, we offer detailed comparison of income definition between Malaysia Household Income Survey and national accounts. Conceptually, for most of the income categories, to the greatest extent the definitions from two sources overlap each other. Especially when we compare the definition of survey based pre-tax fiscal income and national account based pre-tax fiscal income, the difference between is even smaller.

For the definition of national account based pre-tax fiscal income, please see section 2.2 in the paper. For survey based pre-tax fiscal income (pre-tax survey income), the definition is below,

Pre-tax survey income=Earnings + Income from self-employment + Rent of the house – Imputed rent + Property income + Current transfer received + Current transfer paid

There are two main differences between survey based pre-tax fiscal income and national account based pre-tax fiscal income:

a. For the property income, the national account based pre-tax fiscal income include "Property income attributed to insurance policyholders", but the survey based pre-tax fiscal income does not.

b. For the current transfer received, the national account based pre-tax fiscal income include "Social benefit in kind", but the survey based pre-tax fiscal income does not.

Although these two items account for significant part in national account based pre-tax fiscal income (e.g. in 2014, it accounts 13%), unfortunately there is no information of these two items in survey data. Thus, as much as we would like to make corresponding adjustments, we have to leave this part to future improvement.

Source: Malaysia HIS Questionary 2009	Source: Malaysia Distribution & Use of Income Accounts and Capital Account
Reference: The statistics on income published is based on the concepts and guidelines from "A Provisional Framework for Household Income, Consumption, Saving and Wealth" (1995) published by Australian Bureau of Statistics (ABS), guideline of "Final Report and Recommendations of the Expert Group on the Household Income Statistics" (The Canberra Group 2001) and Report II - Household Income and Expenditure Statistics (International Labour Organization, 2003).	*Reference: The compilation of accounts are based on the methodology and concepts outlined in the United Nations' publication entitled 'System of National Accounts 1993' or 1993 SNA for pre 2009,SNA2008 post 200).*

1. Earnings

   a. Wages and salaries (before deduction for income tax, EPF contributions, etc.)

   b. Allowances (e.g : cost of living allowances, specialist allowances, housing allowances, expatriate allowances, etc.)

   c. Bonuses

   d. Other cash (e.g : commissions, tips, earnings from overtime work, etc.)

   e. Free / concessional food, lodging, consumer goods and services

   f. Other payments received in kind (e.g : paddy, rubber, coconut, etc.)

   g. Employer's contributions to EPF, SOCSO, etc.

2. Income from Self-employment

   a. Agriculture

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1. Compensation of Employees

   a. Wages and salaries: (include the values of any social contributions, income taxes, etc.)

     1) Wage and salaries

     2) Allowance (such as housing allowances or allowances to cover the costs of travel to and from work, but excluding social benefits)

     3) Ad hoc bonuses or other exceptional payments

     4) Commissions, gratuities and tips received by employees

     5) Wages or salaries payable to employees away from work for short periods

   b. Wage and salaries in kind

   c. Employers' social contributions

2. Operating surplus/Mixed income i.e. unincorporated enterprises

b. Non-agriculture	a. Operating surplus or mixed income from self-employment
c. Own Consumption	b. Imputed rent
3. Rent of Housing	
a. Imputed rent of owner-occupied house	
b. Rent from houses or other property (includes rent from both land and house)	
c. Rent from lodging (e.g : room rental from the LQ)	**3. Property Income**
4. Property Income	a. Rent on land or subsoil asset
a. Royalties (e.g. copyrights, patents and similar rights)	b. Pure interest (on deposits, loans and accounts receivable and payable)
b. Rent from agricultural land	c. Distributed income of corporations (Dividends **and Withdrawals from qusi-corporation**)
c. Interest (e.g. bank deposits, bills, bonds, loans, etc.)	d. Reinvested earnings on direct foreign investment=0
d. Dividends (e.g. from ownership of shares, unit trusts, etc.)	e. **Property income attributed to insurance policyholders**
	4. Current transfer
5. Current Transfer Received	a. Current taxes on income, wealth ect.
a. Remittances (from other households from within country and overseas)	1) Taxes on income
b. Alimony	2) Other current taxes (tax on capital (land, building, wealth, other assets), poll tax, Expenditure taxes, Payments by households to obtain certain licences, Taxes on international transactions)
c. Scholarships / Bursaries / Fellowships	
d. Pensions	

e. Other periodic payments received (e.g : from an inheritance, trust fund, etc.)

f. Gifts in cash or in kind

6. Current Transfer Paid

a. Income tax

b. Other taxes (e.g : road tax, airport tax, etc.)

c. Compulsory fees and fines (e.g : fees for passport, driving test, motor vehicle registration, driving licence, etc.)

d. Contribution to EPF / Social Security Schemes (employee's and employer's contributions)

e. Compensations paid for injuries, legal damages, etc.

f. Alimony or inheritance paid

g. Scholarships, bursaries and fellowships

h. Contributions to charity or religious organisations

i. Membership dues to trade unions, political parties, social clubs, etc.

j. Gifts in cash or in kind

k. Other transfers (specify)

l. Remittances to other households (Malaysian, Foreign)

b. Social contributions and social benefit other than social benefit in kind

c. Other Current transfer

1) Net ono-life insurance premiums=0

2) Non-life insurance claims

3) Current transfers within general government=0

4) Current international cooperation

5) Miscellaneous current transfers

   5.1 Current transfers to NPISHs

   5.2 Current transfers between households

   5.3 Fines and penalties

   5.4 Lotteries and gambling

   5.5 Payments of compensation

5. Social Benefit in kind

Appendix B. Income distribution series

Our detailed income distribution series are given in the zipped directory **DistributionSeries.zip**. This directory includes our final benchmark distribution series **KY2019FinalDistributionSeries.zip,** as well as alternative series and the complete computer codes and all detailed computations that we used to construct these series. In addition, the zipped directories **IncomeDistributionData.zip** includes detailed raw data and files from household income survey, income tax tabulations, and household wealth surveys.

B1: Benchmark estimates and variants

The general methodology that we use in order to construct our income series is described in the main paper (section 2.4). It basically consists of three steps: in step 1 we use raw household income survey tabulations and generalized Pareto interpolation techniques[2] in order estimate raw series on the distribution of raw survey income and raw fiscal income (before any correction); in step 2 we use tabulations on fiscal income to correct upwards these estimates and obtain corrected estimates of the distribution of fiscal income; in step 3 we use national accounts in order to include tax-exempt capital income data (such as undistributed profits) and to obtain corrected estimates of the distribution of pre-tax national income. All details are provided in the data files and computer codes.

B11: Fiscal data correction

To correct the survey income distribution in the top, we rely on the novel reweighting method proposed in Blanchet, Flores, Morgan (2018). The basic idea is to adjust the weight of the survey using fiscal data in a nonparametric manner under the assumption that tax data sets a credible lower bound on the amount of people with given levels of income. For detailed results, e.g. g-percentile before and after correction, Lorenz curves before and after correction, figures of merging point, please see sub directory Reweighting\Program\Results and Reweighting\Program\Figures in zipped directory **DistributionSeries.zip.** For ccomplete corresponding computer code for applying the method, please see sub directory Reweighting\Program\Do files. For complete description and detailed robustness checked of the method, we refer to Blanchet, Flores, Morgan (2018).

In the case of Malaysia, we include imputed rent in pre-tax fiscal income. Meanwhile to be consistent with the conception of pre-tax fiscal income used by the World Inequality Database (WID.world), we publish the

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[2] Generalized Pareto interpolation allows for the recovery of the distribution based on income tabulations without the need for parametric approximations. This method has demonstrated its ability to produce very precise results and also has the advantage of generating smooth estimates of the distribution, i.e. generating a differentiable quantile function and a continuous density, while other methods introduce kinks around the thresholds used as inputs for the tabulation. For more details please see Blanchet, Fournier and Piketty, 2017. The generalized Pareto interpolation procedure (available online at www.wid.world/gpinter) generates 127 generalized percentiles, namely p0p1, p1p2, ..., p99p100, corresponding to 100 fractiles of the distribution. The top fractile is split into 10 deciles (p99.0 p99.1, p99.1 p99.2,..., p99.9p100), its top decile itself split in ten deciles (p99.90 p99.91, p99.91 p99.92, ..., p99.99 p100), the tenth decile again split in ten deciles (p99.990p99.991, p99.991 p99.992, ..., p99.999p100). The top generalized percentile thus corresponds to the top 0.001% of the population.)

distribution series of pre-tax fiscal income excluding the imputed rent in the database.

B12: Correction for private owned undistributed domestic corporate profit

In this step, we redistribute private owned undistributed corporate profit based on distribution of property income in adjusted surveys. For ccomplete corresponding computer code for applying the method, please see sub directory Reweighting\Program\Do files.

B13: Private owned undistributed abroad corporate profit

One topic that has not been investigated in either the DINA (Alvaredo et al., 2016) guidelines or the related literature is domestic-owned corporate retained earnings abroad. Unsurprisingly, this is due to the constraints of the existing data. To be clear in "Distribution and Use of Income Accounts and Capital Accounts", the distributed income of corporations is defined as dividends and withdrawals from income of quasi-corporations. Apparently it does not include the undistributed corporate profit. Thus in order to estimate the total amount of Malaysian-owned corporate retained earnings abroad, one must first estimate the total corporate retained earnings for each host country of Malaysian investments and then the share of corporate equity owned by Malaysians in the total equity in the host country. However, in many countries, neither of these statistics can be estimated based on existing publicly accessible data.

As we discussed in the paper, from 2002 to 2016, the stock of Malaysia's outward foreign direct investment (FDI) increased from 18% to 67% of the national income. If we include portfolio investments, total stocks increase from 20% to almost 100% of national income. With such a large amount of outward foreign investment, domestic-owned corporate retained earnings abroad would be too significant to neglect.