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Macroeconomic Modelling Tool for Malaysia (MMT)

COVID-19 Policy Impact Simulations and Results

REPORT 2

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This is the second of two reports, with the first providing a technical account of the development of the MMT based on an updated Malaysia's Social Accounting Matrix (SAM) (developed by a separate consultant, Dr Bazlul Haque Khondker).

The lead author is Datuk K. Yogeesvaran. The views expressed in this publication are those of the author(s) and do not necessarily reflect the views or policies of the United Nations (UN). The research team has made its best effort to ensure the accuracy of the data and information included in this publication and assumes no liability or responsibility.

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Executive Summary

Macroeconomic Modelling Tool for Malaysia is a basic General Equilibrium (GE) model commissioned by the United Nations to enable independent economic policy analysis.

Specifications and technical details are provided in a forerunner report, but in summary, the MMT is a SAM-based multiplier model, with two satellite (sub) models (for poverty and employment respectively). However, we note that it was not possible at this stage, to fully complete the poverty sub-module. The MMT has been developed with inputs from the Department of Statistics Malaysia (DOSM) as an open-source tool for use by UN agencies, NGOs/ CSOs, think tanks, and academics.

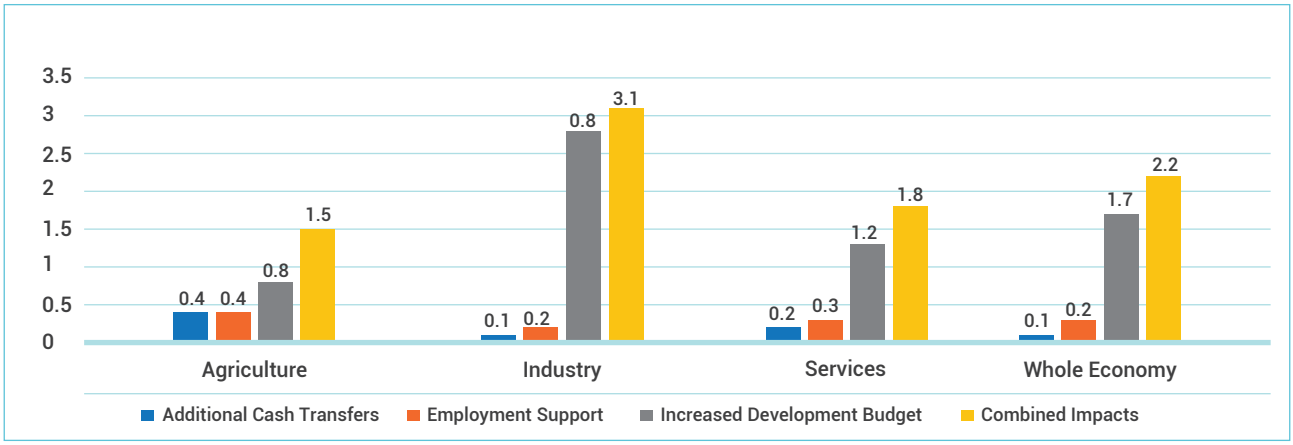
This report presents a worked example of the MMT's capacities to demonstrate its policy analysis value and to test its robustness.

This case example focusses on the three key elements of the Government of Malaysia's COVID-19 stimulus measures adopted in the 2022 budget. Specifcally: (1) additional cash transfers under the Bantuan Keluarga Malaysia (BKM) initiative (MYR 3.2 billion); (2) the new Jamin Kerja employment support package (MYR 5.2 billion); and (3) a large expansion in Malaysia's Development Budget (MYR 26.2 billion). These measures were modelled separately and as a joint (fourth) scenario.

The results, which effectively simulated the impact had these policies been adopted in 2020, show that all three measures contribute positively to output growth, factor incomes, and household consumption, and additionally, would deliver reductions in unemployment.

The change over the business-as-usual position for GDP by sector (which overall was a decline in GDP of 5.6% in 2020) is shown in the Chart below. The disaggregated results also suggest that measures have positively distributional impacts, with the gains disproportionately benefiting those at the lower end of the income distribution.

Chart: Simulated changes in GDP over the Business as Usual (BAU) position for each policy measure



Of the three policy measures, the increased development budget was estimated to have the highest impact, with economic growth improving by some 1.7% overall.

While noting that this is driven to a large extent by the size of the fiscal input, analysis also suggests this measure has the highest multiplier effects.

While the results largely validate the model, some of the disaggregated data (for household types) raises questions that require further investigation.

This will be undertaken in the next round of development of the model.

Acronyms and abbreviations used in this report

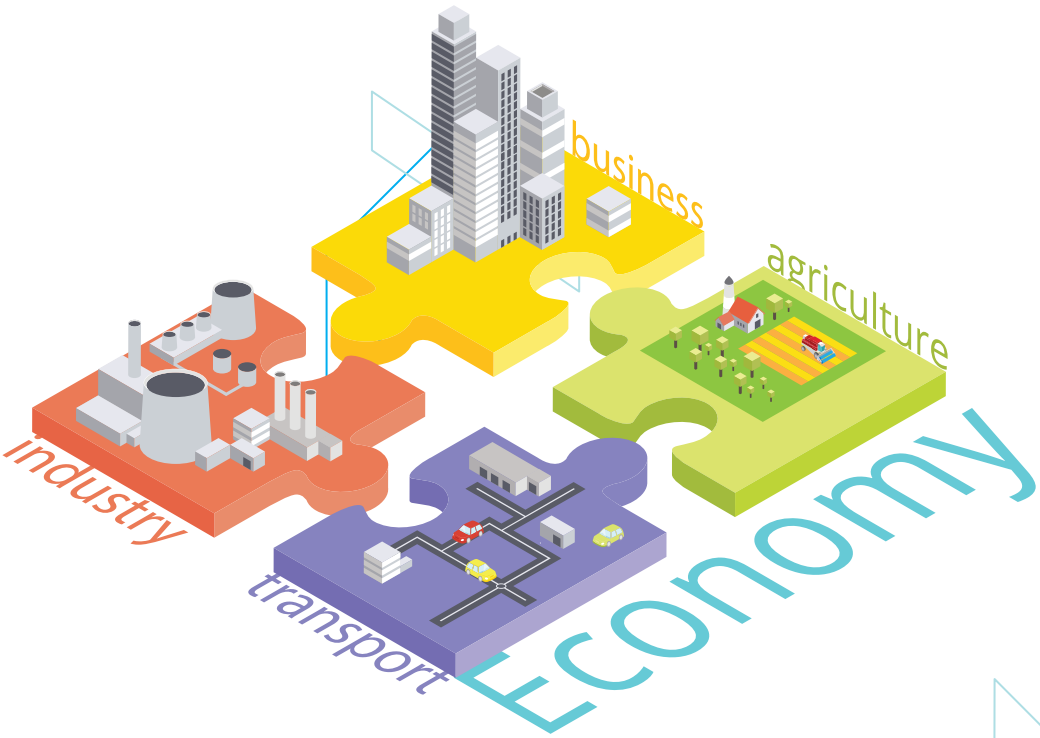
MMT	Macroeconomic Modelling Tool for Malaysia
B40	Bottom 40 percent of the income distribution
BKM	Bantuan Keluarga Malaysia (Malaysian Family Assistance)
BPR	Bantuan Prihatin Rakyat (People's Care Assistance)
COVID-19	Disease caused by SARS corona virus 2
CSO	Civil Society Organization
DOSM	Department of Statistics Malaysia
EPF	Employees Provident Fund
GE/CGE	General Equilibrium/Computable GE
GLC	Government Linked Companies (SOE)
M40	Middle 40 percent of the income distribution
MOF	Ministry of Finance
UMIC/MIC	Upper Middle-Income Country/MIC
MPC	Marginal Propensity to Consume
MY	Malaysia
MySTEP	Malaysia Short-term Employment Programme
NGO	Non- Governmental Organization
RC/RCO	UN Resident Coordinator/RC's Office
MYR	Malaysian Ringgit
SAM	Social Accounting Matrix
SIM 1/2/3	Simulation 1st/2nd/3rd/4th
SOCSO	Social Security Office
UN	United Nations
UNCT	UN Country Team

1. Introduction

This report is the second of two on the development of the Macroeconomic Modelling Tool for Malaysia. It presents the results of a series of simulations using the MMT, which is a modelling framework developed by Dr Bazlul Haque Khondker (refer to Report 1 on the technical specification of the tool). The report's objective is to illustrate the MMT's application and value for analysis to support policymaking. The selected simulation scenarios are the three major socioeconomic policy responses to the impacts of the COVID-19 pandemic adopted in Malaysia's 2022 federal budget.

Developed with cooperation from DOSM, the MMT's purpose is to provide United Nations agencies, think tanks, academics, and other researchers with an independent tool to undertake economic policy analyses. The intent is to offer MMT as an online and open-source public good. This will be provided under the working arrangements set out in a Declaration of Intent soon to be adopted by the UN and DOSM. It is acknowledged that the Government already has sophisticated modelling capacity, and the aim is not to compete, replace or displace this.

Rooted in a General Equilibrium (GE) approach, the MMT will be developed over time, with successive levels of sophistication. The initial tool (MMT 1.0) is a multiplier-type model derived from an updated 2019 Social Accounting Matrix (SAM) data framework for Malaysia. It is envisaged in the future, and subject to demand, that the model be developed to deliver a full Computable GE capability, first as a static (MMT 2.0) and second as a dynamic model (MMT 3.0). Three further sections follow. The first provides a brief description of the current model. The second following section presents the key ingredients of Budget 2022, as these are used to inform the modelling scenarios. The third section discusses the results of simulation of three budget measures, namely: the impact of direct cash assistance under the Bantuan Keluarga Malaysia (BKM); employment subsidies under the Jamin Kerja Programme; and the large increase in development expenditure. These are simulated separately, and jointly providing four sets of simulation results.

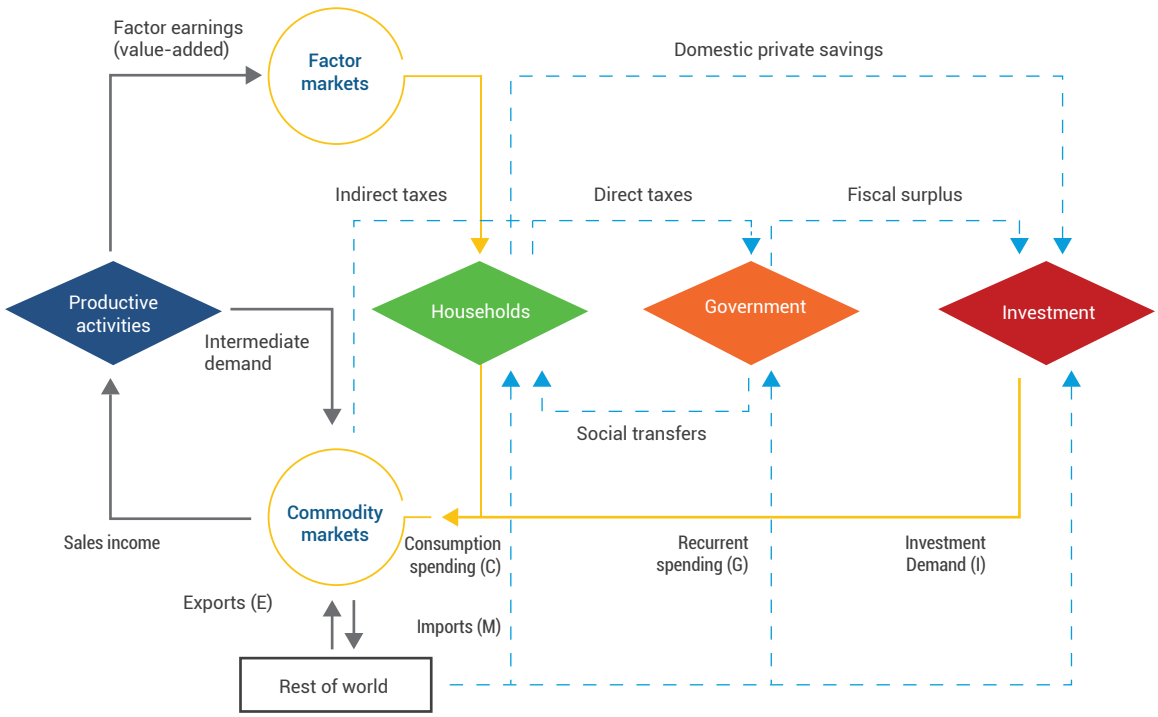


2. Macroeconomic Modelling Tool for Malaysia (MMT)

The MMT is a SAM basic multiplier model[1]. A SAM is a representation of the economy based on an accounting framework that assigns values to income and expenditures incurred by institutions (key actors) in the economy within the circular flow (see Figure 1 below). Crucially by marrying macro to micro data, the SAM allows the disaggregation between different types of households (by locality income, ethnicity and so forth).

The SAM not only offers a comprehensive representation of an economy but provides the basis for General Equilibrium (GE) modelling to assess policy simulations to generate outcomes for informed options for policymakers.

Figure 1: Circular Flow in the Economy

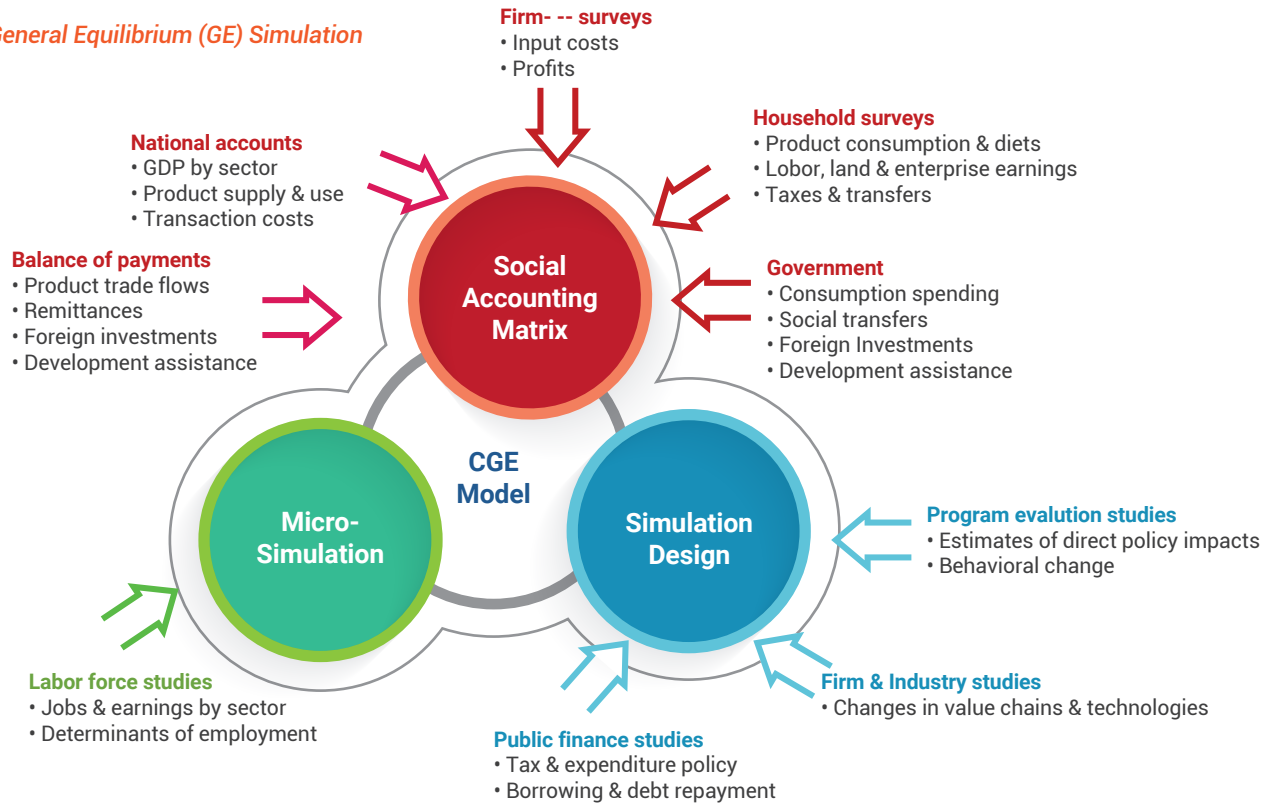


Source: Breisinger et al. (2009)

Figure 2 below illustrates the scope of GE policy simulation and key elements. A SAM or multiplier model (the form adopted in the MMT) is the most basic of GE models, and can be derived directly from the SAM. It is noted also that MMT comprises a core macro module augmented by two satellite modules derived from micro simulations – to gauge poverty and employment impacts.

[1] *Extracted from 'Updating of Malaysia SAM for 2019: Methods and Results' Report for UN Malaysia, Singapore and Brunei by Dr Bazlul Haque Khondker*

Figure 2: General Equilibrium (GE) Simulation



The latest SAM available for Malaysia was derived based on 2015. For the purpose of constructing the model, the SAM was updated to 2019, being a normal year before the on-set of the Covid-19 pandemic.The updated SAM was to enable more accurate policy simulation and assess policy impact, particularly related to Covid-19 and recent measures introduced by the Government to bring about social and economic recovery.

The 2015 SAM for Malaysia identifies economic relationship through 4 types of accounts. They are namely, one, production activities and commodities with accounts for 33 products and services; two, 14 factors of production with 13 types of labour and one type of capital; three, current account transactions among the 4 institutional agents, that is, households, unincorporated capital, corporations, government, and rest of the world; and four, consolidated capital account with flows of savings and investment.

The 2015 SAM account was updated with data from several sources including 2019 activity value-added, general government consumption expenditure in current prices, final consumption expenditure in current prices and gross capital formation in current prices from DOSM. Export and import of commodities data by 4-digit level from ITC Comtrade was also used. Updating of the 2015 SAM was a 2-step process. The first step was the construction of a Macro SAM 2019 account using the data from different sources mentioned above. This was followed by balancing of the Macro SAM account by adjusting the activity and commodity accounts. The second step was the compilation of Micro SAM 2019 comprising the Production, Factor and Institutional accounts including by various household types.

The MMT remains a work in progress which will be further improved by incorporating Corporation and Financial Accounts and by replacing 2015 shares with 2019 shares for the Factor and Household accounts and for the Rest of the World as data becomes available. The plan is to thereafter undertake further sophistication and customization of the model in 2022 towards construction of a static CGE model and progressing to a dynamic CGE model over the next two years.

As noted, the MMT includes two further modules - one for poverty and one for employment. These, which rely on micro-simulation techniques using survey data, will allow us to extend the scenario to gauge the effects of a policy measure on household incomes, and hence on the level of incidence of poverty, and on employment creation and hence, the unemployment rate. While it has been possible to fully complete the employment sub-model, this was not the case for the poverty sub-model, where further information related to Malaysia's system of poverty thresholds is required. This task will be taken up during the next stage of the MMT's development, noting also that as an interim measure the team will develop an alternative poverty estimation approach.

3. Highlights of Budget 2022

Budget 2022 was presented to parliament on 29 September 2021 by the Minister of Finance. It was formulated during a very challenging and unprecedented period and even unlike formulating budgets during economic downturns, which has been done many times in the past. Malaysia like many countries was confronted with devastation of the economy due to protracted lockdown of domestic economic activities and the slumping global economy due to the Covid-19 pandemic. The economy had contracted, many businesses closed down, and social retrenchment and unemployment had increased.The capacity and capability of the health and medical services was severely tested. The wellbeing and standard of living of the people was negatively impacted with the incidence of poverty increasing and many from the M40 income segment slipping into the B40 segment.

Moreover, in 2020 and 2021, in response to the Covid-19 pandemic, the Government had introduced eight economic assistance and stimulus packages totaling some MYR530 billion, but also noting that the fiscal injection was lower at MYR 93 billion[2]. These allocations to mitigate the impact of the pandemic on people's livelihood and businesses had stretched the Government's fiscal position, with a fiscal deficit running at 6% of GDP, and the accumulated Federal Government debt level at 63.3% of GDP in 2021.

In formulating Budget 2022, the Government had the formidable task of balancing between providing the impetus for economic recovery and adequate social assistance to maintain basic living standards versus ensuring medium term fiscal sustainability. This was done while also facing uncertainties and downside risks from possible new waves of the Covid-19 pandemic, prolonged recovery of the global economy and trade as well as geopolitical risks.

Budget 2022 was anchored in 3 key pillars – strengthening recovery, building resilience, and driving reforms. The strategies and initiatives under the Budget were structured under 3 focus areas namely, first, people's wellbeing; second, resilient businesses; and third, a prosperous and sustainable economy. It is also aligned with the Twelfth Malaysia Plan 2021-2025 and follows on from the eight previous economic assistance and stimulus packages. It is an expansionary budget with the largest allocation thus far, amounting to MYR322.1 billion. From this amount, MYR233.3 or 72.4% is allocated for operating expenditure, MYR75.6 billion for development expenditure or 23.5% and MYR23 billion for the Covid-19 Fund.

The development expenditure allocation of MYR75.6 billion is also the highest amount ever recorded. The development allocation had traditionally been about MYR50 billion annually, which was increased to MYR62 billion in 2021. From the total development expenditure allocation for 2022, MYR40.2 billion or 53% goes to the economic sector; MYR22.7 billion or 30% to the social sector; MYR8.9 billion to the security sector; and MYR3.7 billion for general administration. Within the economic sector, the biggest share (38%) was for transport infrastructure which increased by 19.2% compared with the allocation in 2021. Within the social sector, the largest share (52%) was allocated for education and training, which increased by 47.3% compared to the previous year.

Under the first focus area to uplift the well-being of the people, a key initiative was the provision of direct income support, in the form of cash assistance, through the introduction of the BKM Programme which would channel a one-off payment of MYR2,000 to households with 3 or more children, earning less than MYR2,500 per month. This assistance is an increase from the previous Bantuan Prihatin Rakyat (BPR) with the highest rate of MYR1,800 per month. Under the BKM, single parent households earning less than MYR5,000 per month would also receive an additional assistance of MYR500; and senior citizen households would receive an additional MYR300. In total, the BKM is expected to benefit 9.6 million recipients with an allocation of MYR8.2 billion, compared with 8.6 million recipients and MYR7 billion under BPR.

[2] *See Mohammed Khalid et al (forthcoming) Enabling Concrete Human Rights Pathways for a new, post COVID-19 Social Contract in Malaysia, UN, Putrajaya*

The outreach for social protection was also expanded by increasing the threshold for welfare assistance eligibility to the Hardcore Poverty Line of MYR1,169 from the 2016 Poverty Line of MYR980.This is to ensure that the most challenged segments of society receive welfare benefits. In total, MYR2.4 billion would be allocated for the provision of welfare assistance, benefitting 440,000 households.

Another significant initiative that was introduced in Budget 2022 to restore the livelihood of the people was related to generating and sustaining jobs following the unemployment rate peaking to 5.3% in 2020 and moderating to 4.6% in August 2021.The government introduced the Jamin Kerja Keluarga Malaysia Programme (JaminKerja). Under this programme the Government would guarantee 600,000 jobs with an allocation of MYR4.8 billion. In addition, SOCSO's hiring incentive programme will be incorporated under JaminKerja benefitting 300,000 people with an allocation of MYR2 billion. Under this programme, employers who hired Malaysians who had not been actively employed for a salary of more than MYR1,500 per month, would receive an incentive of 20% of the salary for the first 6 months and 30% for the subsequent 6 months. These measures had no prior counterparts.

To encourage employers to hire disabled persons, Orang Asli (indigenous people) and ex-prisoners, an incentive of 30% of the monthly wage and 40% for the subsequent 6 months for wages of MYR1,200 and above would be provided. This Incentive is also extended to employers who hire women who have not been working for 1-year, single mothers and housewives. In addition, the Malaysia Short-term Employment Programme (MySTEP) would continue in 2022, offering 80,000 contract jobs with 50,000 from the Public Sector and 30,000 from GLCs.

4. Policy Simulations

4.1 Simulation Scenarios

GE modelling operates via simulating outcomes based-on changed input parameters (due to policy choices, shocks, and other external events). It offers a snapshot form of analysis as opposed to a projection. The approach requires the specification of scenarios and their modelling within a given base-year and their comparison against a Business as Usual (BAU) position, to estimate impacts on key economic parameters, and by extension poverty and employment levels (noting that the former is not yet available in the MMT).

Here the purpose of simulations is to illustrate the impact of Covid-19 policy choices on key economic parameters. Simulations are undertaken based on 3 key measures under the Budget 2022, these are run separately and jointly, hence providing four simulations. These three key measures are simulated as if they were implemented in 2020 to see the impact on GDP, Factor Income and Household Consumption, as well as via a separate model, employment levels. Essentially, the results of the simulation illustrate the outcomes if the 3 selected Budget 2022 measures had been implemented in 2020. For this purpose, SAM 2019 is rebased to 2020. The simulations are presented below. We note also that as we model changed parameter inputs, the difference in an injection over the base is modelled.

Simulation 1: Implementation of the BKM direct transfer programme in 2020

Taking into account the pre-existing direct transfers in 2020, this policy choice involves an additional injection of MYR3.2 billion. The assumed distribution of this additional injection to four poor household groups for the simulation is as in Table 1 (SIM1) below. This was arrived at judgmentally, informed by the size of these groups but restricting the allocations to the low-income categories.

Table 1: SIM1 - Additional 3.2 billion transfers to four household groups

SAM ref.	Household category	Cash Transfer (Million MYR)
HHLD1	Urban High Income Bumiputera	
HHLD2	Urban High Income Non-Bumiputera	
HHLD3	Urban Mid Income Bumiputera	
HHLD4	Urban Mid Income Non- Bumiputera	
HHLD5	Urban Low Income Bumiputera	1,502.8
HHLD6	Urban Low Income Non-Bumiputera	725.4
HHLD7	Rural High Income Bumiputera	
HHLD8	Rural High Income Non-Bumiputera	
HHLD9	Rural Mid Income Bumiputera	
HHLD10	Rural Mid Income Non-Bumiputera	
HHLD11	Rural Low Income Bumiputera	845.1
HHLD12	Rural Low Income Non-Bumiputera	126.7
HHLD13	Non-Citizens	
	Total	3,200

[2] See Mohammed Khalid et al (forthcoming) Enabling Concrete Human Rights Pathways for a new, post COVID-19 Social Contract in Malaysia, UN, Putrajaya

Simulation 2: Package to Create and Sustain Employment

Under Budget 2022, several measures were introduced to encourage firms to create and sustain employment with the major one being the JaminKerja Programme. Taking into account these measures will involve an injection of MYR5.2 billion for the employment package in 2020, as this was a wholly new programme. The distribution of this allocation for the 13 labour classes based on their shares in SAM 2019 for the purpose of simulation is shown in Table 2 (SIM2) below.

Table 2: SIM2 - Employment package (MYR 5.2 billion)

SAM ref.	Household category	Employment Package (Million MYR)
LAB1	Urban High Income Bumiputera	516
LAB2	Urban High Income non-Bumiputera	620
LAB3	Urban Mid Income Bumiputera	976
LAB4	Urban Mid Non-Bumiputera	835
LAB5	Urban Low Income Bumiputera	879
LAB6	Urban Low Income Non-Bumiputera	581
LAB7	Rural High Income Bumiputera	65
LAB8	Rural High Income Non-Bumiputera	29
LAB9	Rural Mid Income Bumiputera	222
LAB10	Rural Mid Income Non-Bumiputera	58
LAB11	Rural Low Income Bumiputera	353
LAB12	Rural Low Income Non-Bumiputera	66
LAB13	Non-Citizens	516
	Total	**5,200**

Simulation 3: Expanded Development budget

Budget 2022 allocated the largest development expenditure ever, with a significant increase compared with previous years. The increase in the development allocation over 2020 will involve an additional MYR26.2 billion over 2020 with the largest portion going for infrastructure. The distribution of the additional development expenditure by sector based on their shares in the SAM 2019 for the purpose of the simulation is as in Table 3 (SIM3) below.

Table 3: SIM3 - Development budget (26.2 billion MYR)

SAM ref.	Sectors	Development Budget (Million MYR)
AC14	Electrical, electronic and optical products	7,860
AC15	Transport equipment and other manufacturing	
AC16	Construction of buildings	13,100
AC17	Civil engineering	5,240
	Total	**26,200**

4.2 Simulation Results

The impact of the 3 scenarios independently and the cumulative impact of all three scenarios (SIM4) on GDP growth, Factor Incomes, Household consumption is presented below. Through the employment module, the assessment also looks at the impact on unemployment. Again, we underline that this exercise is to vouch and illustrate the analytical value of the modelling framework, and this is a key consideration in examining the results.

GDP Growth

The outcome of the 4 simulations on GDP growth is in Table 4 below. Key observations are as follows:

i) The results suggest that SIM 3, that is increased development expenditure, has the most significant impact on the improvement in the GDP growth rate. SIM 2 and SIM 3, that is the employment package and direct transfers, respectively contribute minimally to overall increases in GDP growth.

ii) However, it is worth observing that this is largely a product of the size of the injection (an additional MYR26.2 billion for development expenditure versus MYR5.2 billion for employment support and MYR3.2 billion more for cash transfers). Indeed, while we note that SIM 3 (development expenditure) does have a higher GDP multiplier (of around 1.0), those for cash transfers (at 0.9) and employment support (at 0.8) are not substantially lower. But also, we find the scale and that the variations for output multipliers are more marked (noting that output is GDP gross of intermediate consumption). This is indicative of wider linkages to other economic activities for development spending, given its focus on the construction sector.

iii) According to the results of the joint simulation, the industrial sector would see the biggest gains, and based on individual simulations, these gains overwhelmingly accrue from increased development expenditures. In contrast, both cash transfer and employment initiatives have a relatively higher impact on agricultural output. These results are in line with expectations.

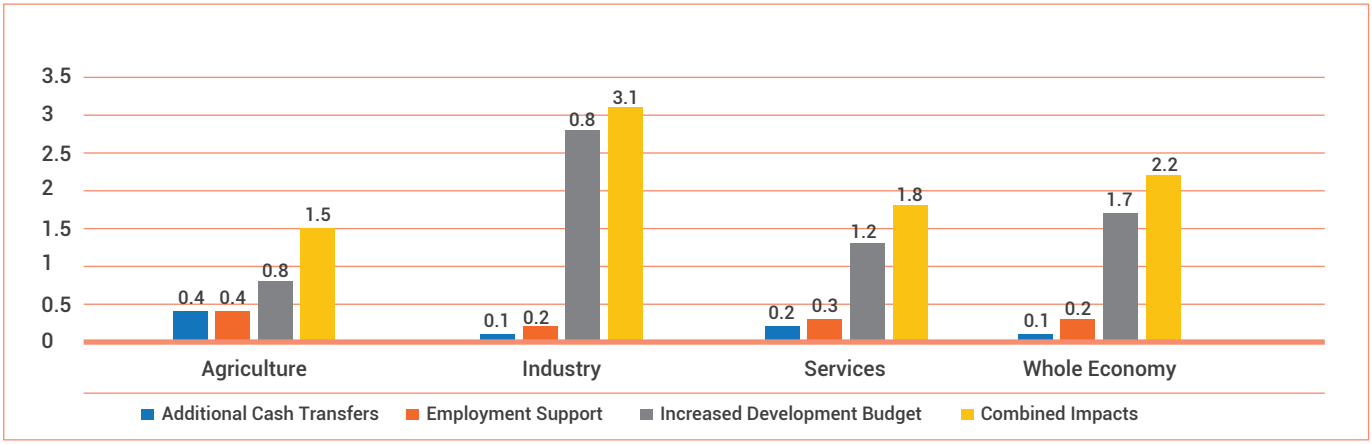
iv) If all the three interventions were implemented, the GDP growth rate would have improved to -3.4 % instead of -5.6 %, that is, a gain of 2.2 percentage points in GDP (see Figure 3). This implies that the three interventions can be important policy levers for economic recovery and the implementation of these measures under Budget 2022 will contribute to considerably stronger GDP growth in 2022.

Table 4: GDP growth rate by broad sectors (2020,% change over 2019)

	Business as Usual (BAU)	Additional cash transfers (SIM 1)	Employment Support	Increased Development Budget (SIM 3)	Combined Impacts (SIM 4)
Agriculture	-2.2	-1.8	-1.8	-1.4	-0.7
Industry	-6.2	-6.1	-6.0	-3.4	-3.1
Services	-5.7	-5.5	-5.4	-4.5	-3.9
Whole Economy	-5.6	-5.5	-5.4	-3.9	-3.4

[3] *Output multipliers: SIM1 cash transfers, 1.780; SIM2, employment package, 1.539; and SIM3, development spending 2.431. GDP multipliers: SIM1, 0.882: SIM2, 0.771; and SIM3, 0.982.*
[4] *MCO and Impact on Construction Industry, CIDB IBS, August 2020 by Dr Datuk Ir Ahmad Asri Abdul Hamid, Ahmad Fairin Mokhtar and Che Saliza Che, 'The construction industry has a 2.03 multiplier effect, supporting around 196 industries and consuming 15% of total manufacturing output.'households. The MPC vary from 0.81 for those earning less than MYR1,000 to 0.25 for those earning above MYR10,000.'*

Figure 3: Net change in GDP by sector, and in total, over the BAU position



Factor Incomes

The changes in factor incomes for the four simulations over the BAU scenario are as in Table 5 and Figure 4 below. The following are some observations:

i) The employment package (SIM 2) and development expenditure (SIM 3) result in relatively larger increases in factor income as they potentially create new employment and new income (while also increasing productive capacity). The increase in labour income is especially striking for the employment package given the fiscal injection is relatively modest.

ii) Although urban and rural low labour categories were the direct beneficiaries of the direct income transfer under SIM1, all classes of labour gain equitably from this intervention. This could be attributed to the high marginal propensity to consume with little or none of the direct income transfer retained as savings among the low-income categories .

iii) The change in factor incomes (for all simulations) is generally higher for the rural labour categories compared with their urban counterparts.This again reflects positive distributional effects.

iv) Non-Bumiputera groups (except for Rural Low Income and Rural Mid Income categories, and to a lesser extent Urban High-Income households) tend to see a relatively higher change in factor incomes. This could imply that non-Bumiputera households have seen relatively higher gains from these interventions. This is somewhat counter intuitive for the direct cash transfers and the employment package, given Bumiputera households are generally relatively poorer, though not so for the large uplift in development expenditures.

v) The impacts on non-citizen labour and returns to capital are delivered via linkages and interdependence of the agents in the economy. This is to be expected and a key advantage of 'general equilibrium' type models, in mapping these knock-on effects.

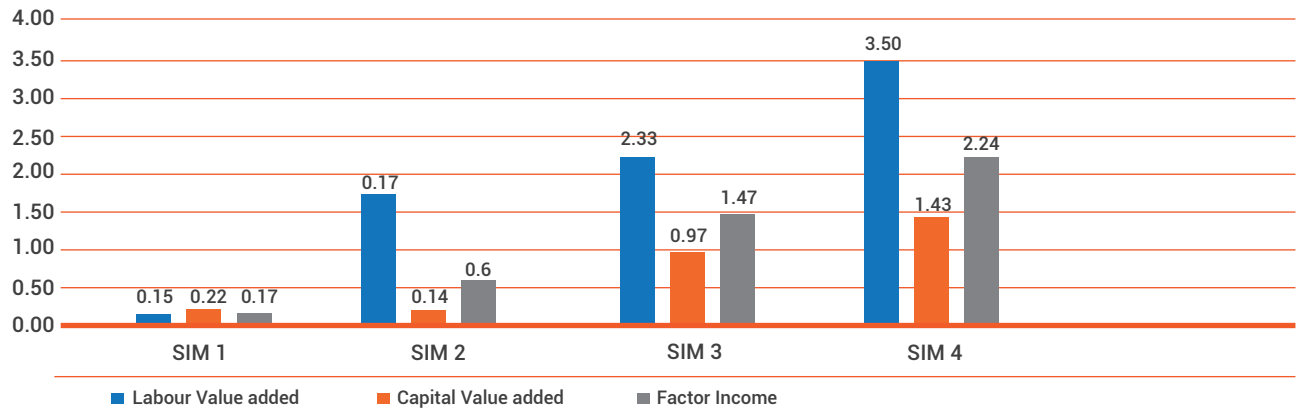
vi) The gains in factor income are larger for labour factors compared to capital. This could somewhat be partly attributed to the direct impact of income transfers, and the employment package which, obviously, were targeted at labour, but this pattern (perplexingly) is also seen in relation to the increased development expenditures.

[5] BNM Working Paper 2013 by Dhruva Murugasu, Ang Jian Wei, Tng Boon Hwa 'Using Household Expenditure Survey data, this paper estimates MPC out of disposable income for Malaysian households and examines how propensities differ across income brackets. We find that that MPC for lower income households is higher than that for higher income households. The MPC vary from 0.81 for those earning less than MYR1,000 to 0.25 for those earning above MYR10,000.'

Table 5: Factor income change (% change over base values – 2020)

SAM ref.	Labour factor categories	SIM 1	SIM 2	SIM 3	SIM 4
LAB1	Urban High Income Bumiputera	0.419	1.383	1.790	3.011
LAB2	Urban High Income Non-Bumiputera	0.376	1.571	2.084	3.569
LAB3	Urban Mid Income Bumiputera	0.270	1.219	1.340	2.516
LAB4	Urban Mid Income Non- Bumiputera	0.398	1.508	2.017	3.392
LAB5	Urban Low Income Bumiputera	0.382	1.531	1.858	3.264
LAB6	Urban Low Income Non-Bumiputera	0.494	1.707	2.011	3.496
LAB7	Rural High Income Bumiputera	1.276	1.909	2.546	3.432
LAB8	Rural High Income Non-Bumiputera	1.391	1.948	2.850	3.737
LAB9	Rural Mid Income Bumiputera	2.285	3.144	3.393	4.511
LAB10	Rural Mid Income Non-Bumiputera	1.927	2.782	3.342	4.508
LAB11	Rural Low Income Bumiputera	4.274	5.283	5.868	7.197
LAB12	Rural Low income Non-Bumiputera	2.760	3.643	4.120	5.336
LAB13	Non-Citizens	0.174	0.230	2.348	2.753
CAP	Capital	0.223	0.142	0.966	1.433
	All	0.171	0.598	1.470	2.239

Figure 4: Change in Factors of Production (% changes over the base values)



Household Consumption

The changes in household consumption under four simulations over the BAU scenario are as in Table 6. The following are some observations:

i) The increase in household consumption is the largest for urban and rural low households, which illustrates relatively higher marginal propensity to consume among these households. This also highlights the importance of targeted cash transfer programmes to improve distributional outcomes. Crucially, these results illustrate that targeted direct cash transfers for low-income households while improving wellbeing of these households will potentially have a positive impact on the economy as a whole.

ii) While all three interventions contribute substantially to change in consumption, the largest impact on consumption generally for all households comes from development expenditure followed by employment packages. This is likely to be attributed however to the value of the increased injection, which, as noted, dwarfs the employment package (by a factor of 5) and direct cash transfers (by a factor of 8).

iii) Non-citizens also gain from higher consumption following these interventions, again underlining the knock-on GE effects. This also further demonstrates the likely high MPCs of the initial recipients.

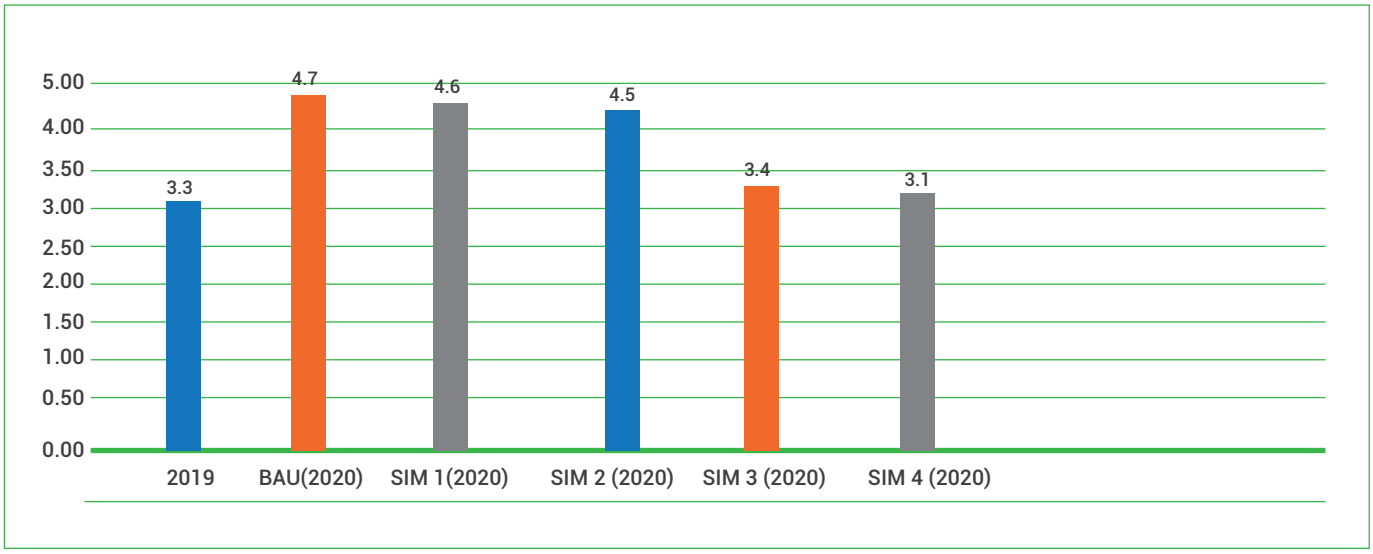
Table 6: Household consumption change (% change over base values – 2020)

SAM ref.	Representative households	SIM 1	SIM 2	SIM 3	SIM 4
HHLD1	Urban High Income Bumiputera	0.103	0.716	1.099	1.918
HHLD2	Urban High Income non-Bumiputera	0.118	0.808	1.305	2.231
HHLD3	Urban Mid-Income Bumiputera	0.103	0.786	1.000	1.890
HHLD4	Urban Mid-Income Non-Bumiputera	0.121	0.843	1.380	2.344
HHLD5	***Urban Low Income Bumiputera***	***1.327***	***0.864***	***1.209***	***3.400***
HHLD6	***Urban Low Income Non-Bumiputera***	***1.027***	***0.899***	***1.317***	***3.243***
HHLD7	Rural High Income Bumiputera	0.087	0.478	0.921	1.486
HHLD8	Rural High Income Non Bumiputera	0.129	0.534	1.241	1.904
HHLD9	Rural Mid-Income Bumiputera	0.106	0.691	0.970	1.767
HHLD10	Rural Mid-Income Non-Bumiputera	0.133	0.748	1.276	2.158
HHLD11	***Rural Low Income Bumiputera***	***1.424***	***0.713***	***1.254***	***3.391***
HHLD12	***Rural Low Income Non-Bumiputera***	***1.130***	***0.711***	***1.216***	***3.056***
HHLD13	Non Citizens	0.164	0.218	2.159	2.542
	All	0.487	0.768	1.231	2.486

Employment

Drawing on the results of the employment module, we can also offer simulated unemployment rates associated with each of the three simulations (as a % of labour force), as captured in Figure 5 below. Recalling that the BAU unemployment rate was 4.7% in 2020, SIM3 (increased development spending) as with GDP, delivers the largest gain in employment (to 3.4%). Again, this is likely to be a function of the relative size of the transfer, but nevertheless, cash transfers, and more surprisingly the employment support package deliver only limited improvements in unemployment (to 4.6 and 4.5% respectively). Indeed, if we ratio the incurred fiscal injection to the change in employment, we see every 0.1% fall in the unemployment rate requires MYR 3.2 billion in the case of cash transfers, MYR 2.6 billion in the case of the employment package and MYR 1.6 billion in respect of increased development expenditure. Indeed, if we ratio the incurred fiscal injection to the change in employment, we see every 0.1% fall in the unemployment rate requires MYR 3.2 billion in the case of cash transfers, MYR 2.6 billion in the case of the employment package and MYR 1.6 billion in respect of increased development expenditure.

Figure 5: Simulated Unemployment Rates



Source: Authors' calculations

5. Conclusions

This worked example, which draws on a real-world policy controversy, has shown the value of the MMT as a mechanism for economic policy analysis in Malaysia. Moreover, it enables disaggregated results by household type – given by ethnicity, income level and locality; and through the two satellite models, the MMT allows for the estimation of employment effects, and will later allow for the estimation of the poverty effects, of policy choices.

The model results themselves are largely as might be expected and offer something of a justification of the approach adopted by the Government. These show clear gains in output, incomes and employment as a result of the three measures adopted. Moreover, there is also evidence of distributional benefits with greater gains accruing to households at the bottom of the income distribution. And the joint scenario (SIM4), suggests some level of complementary of the measures with the outcomes here being greater than the sum of outcomes under the individual simulations.

The results of the exercise are generally robust and validate the modelling framework. Nevertheless, several findings are somewhat counterintuitive and merit follow-up. This is most notably true with regard to the relatively higher gains accruing to non-Bumiputera households. These require further follow-up and investigation during the next round of model development.

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