Nominal Rate of Assistance Data Processing Documentation

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1. Introduction

Support to agriculture producers is provided in different forms, including border measures, domestic subsidies and income transfers from taxpayers to producers. The International Food Policy Research Institute (IFPRI) maintains a harmonized database on nominal rate of protection (NRP) for the AgIncentives Consortium (www.ag-incentives.org) constituted by OECD (Organization for Economic Co-operation and Development), FAO (MAFAP), IFPRI, the Inter-American Development Bank (IADB), and the World Bank. The database provides measures of the extent of market price distortion of agricultural products caused by border measures, such as tariffs, quotas, trade bans, export taxes, etc. While the NRP has been the focus of this database to date, the Ag-Incentives Consortium has decided recently to also include estimates of the nominal rate of assistance (NRA) in the database. The NRA includes subsidies and income transfers in addition to price support through border measures, thus providing a more complete picture of the extent of producer support to the agricultural sector.

This document describes the different steps of data processing, mapping of payment types to NRA categories, nomenclatures followed etc. Starting with an overall methodology, the document presents data processing steps and procedures followed for each source of data received from IOs.

2. NRA Methodology

The NRA for a country r, year t, and all products ("Total") is defined as:

$$NRA_{"Total",r,t} = \left(\frac{\sum_{s \in S,i} X_{s,i,r,t}}{\sum_i ValueProduction_{Ref_{i,r,t}}} \right) * 100 \qquad (1)$$

where X denotes the associated transfer from consumers or taxpayers to producers and $ValueProduction\_Ref$ is the value of production valued at farmgate reference prices.

Conceptually, the NRA can be disaggregated along two dimensions. First, along the product dimension (horizontal disaggregation), for each product i, the $NRA_{i,r,t}$ can be computed as:

$$NRA_{i,r,t} = \left(\frac{A1_{i,r,t} + \sum_{p \in P,} X_{p,i,r,t}}{ValueProduction_{Ref_{i,r,t}}} \right) * 100 = NRP_{i,r,t} + \frac{\sum_{p \in P,} X_{p,i,r,t}}{ValueProduction_{Ref_{i,r,t}}} * 100 \qquad (2)$$

Second, along the policy dimension, the NRA can be disaggregated by payments linked to output (i.e., linked to A1 and A2), to inputs (B and C), and to other payments (D, E, F, and G).

An important, non-trivial issue is how to address payments benefiting to a product, but not specific to the product (e.g., fertilizer subsidy benefiting crop producers, and in particular the main crops). At the detailed level of NRA computation, we use value of production as denominator which is measured at reference price.

The database identifies a set of policy instruments that form together the support to agricultural producers:

A1.   Market price support
A2.   Payments based on output
B.   Payments based on input use

C.   Payments based on current A/An/R/I1, production required
D.   Payments based on non-current A/An/R/I, production required
E.   Payments based on non-current A/An/R/I, production not required
F.   Payments based on non-commodity criteria
G.   Miscellaneous payments.

These categories of support measures follow OECD definitions (OECD, 2016). Below (Table *1*) is a general representation of how we have mapped payment categories to different commodities and NRA indicators. Payment categories for NRA databases are based on OECD payment list.

Table 1: General classification of payment categories and NRA indicators

Payment Categories	Com. 1	Com. 2	Group x	Non-MPS	Unallocated	Total
A1. Market Price Support	NRP_1	NRP_2	N.A.	NRP_{XE}		NRP_T
A2. Payments based on output						NRA_Output
B. Payments based on input use						NRA_Input
C. Payments based on current A/An/R/I, production required						NRA_Others
D. Payments based on non-current A/An/R/I, production required						
E. Payments based on non-current A/An/R/I, production not required						
F. Payments based on non-commodity criteria						
G. Miscellaneous payments						
TOTAL by commodity	NRA_1	NRA_2		NRA_{XE}		NRA

For the sake of simplicity, we only visualize one example of a group of products. Group of products could not be an aggregation of existing columns but could include any set of commodities. Columns Non-MPS and Unallocated is combined in the 'aggregated_NRA' section of the database that will be published. In 'Detailed_NRA', these commodity groups are read in and used separately since they represent different data.

We have NRA categories as below:
    i.   NRP that includes elements of A1 only.
    ii.   *NRA_Output* includes the *Payments based on output*. So, it covers elements of A2.
    iii.   *NRA_Input* includes payments on inputs, and factors of production. It includes elements B.
    iv.   *NRA_Others* includes payments of type C, D, E, F and G.

For the website data upload, NRA sectoral disaggregation level is Livestock, Crops, and Non-allocated.

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[1] The letters stand for Area (A), Animal Numbers (AN), Receipts (R) or Income (I).

If payments data is not available, then NRA information for this country/year is not published. The data point for this year or commodity is also not included in aggregate. Payment types included in NRA stops at Category G. For Excess Feed Cost, no action is taken. Average NRP by sector (livestock and crops) is used for Non-MPS commodities (no breakdown by import/export category is conducted).

3. MAFAP Data Processing

We received MAFAP's Public Expenditure (PE) database on September 18, 2020, along with documentation file. The initial PE file included 'PE_by_commodity_v3.xlsx', which was later corrected and was given version 4 of the above. We also received another file named 'MAFAP PE_web_Apr2020.xlsx'. While the 'PE_by_commodity_v4.xlsx' file gives payments data by commodities, this later gives aggregate payment by categories. Therefore, we had to process the detailed or disaggregate file and check for total payments with the numbers appearing at the aggregate level by country and year.

"PE_by_commodity" is payment data by commodity focusing on payments categories B1, B2, B3, C, and D. "PE_web" is payment data for TOTAL (at aggregate level) with all payment types from A to U. MAFAP commented that expenditure types R to U are agriculture supportive expenditures and they should not be considered for analysis. Thus, comparison between "PE_by_commodity" and "PE_web" included expenditures A to G in "PE_web". "PE_web" is found consistent with on the data appearing in the MAFAP website.

After initial processing of data, we find that data is given for 13 countries. Nigeria is missing in the "PE_by_commodity" payment database file for which we have data in NRP. So, we will not publish NRA for Nigeria. We checked if payment data exists in NRP database and found no such data exist at commodity level. Column MPS in "PE_by_commodity" shows what is already included in original MAFAP data for NRP. This was compared to NRP database for consistency. Additional sectors and commodities are in "MPS=NO" label in "PE_by_commodity". Two observations at this stage should be noted:

a. There are about 34 data points for (Ethiopia, Kenya, Burundi, Ghana, Malawi, Mali, Mozambique, Rwanda, Tanzania, Uganda) where commodity payment data does not exist, and NRP data point does.
b. We also checked if payment data exists (marked as MPS) although NRP database does not. This reveals that Burkina Faso-Onions and Ghana-Cassava are such tuples. We changed the label to NO in MPS column in Python implying that NRP database was correct.

3.1 Mapping of MAFAP payment categories

Mapping of MAFAP Payment data in file to Payment Categories for NRA is done as follows. Notable is that MAFAP payment files doesn't have E and G payment categories as well as D. Their currently listed D category is mapped to C.

Table 2: Mapping of payment categories listed in MAFAP

MAPFA payment categories	Mapped to
A. Production subsidies based on outputs	A2
B. Production subsidies based on inputs	B
B1. Variable inputs	B1
B2. Capital (including on-farm irrigation and infrastructure)	B2
B3. On-farm services	B3
C. Income support	F
D. Other payments to producers	C

3.2 Data Processing Steps for MAFAP

We started with 'PE_by_commodity' file and implemented the following:

1. In version 3 file of 'PE_by_commodity' there was unit issue for Benin when we compared the numbers in the 'PE_web' file. This was fixed in version 4 file.
2. In MAFAP "PE_by_commodity", additional sectors are included in payments data (column Sector_final) such as fishery & forestry. We removed fishery & forestry from NRA calculations.
3. We checked data consistency between "PE_by_commodity" expenditure by commodity data and "PE_web" expenditure TOTAL for B1, B2, B3, C, and D categories to see if the payments by types/categories add up to the total expenditure for corresponding categories by countries.

   Summing over all sectors/commodities in "PE_by_commodity" file should give TOTAL data in "PE_web" file for payments B, C, D. We need to avoid double counting.

   a. Tanzania C payments and Burundi B1, B2, B3 payments show a gap.
      To fix this in Tanzania, we took the gap in category C (sum of payments – TOTAL payment), and put it as category A in "PE_by_commodity" file for MAIZE only.
      We replaced the values in C for Maize by the values in C in 'Not-specified' commodity and assign 0 to those payments in C in 'Not-specified' commodity. This is to avoid double counting. Finally, we assigned 0 to payment type A coming from "PE_web" file. We allocated the payments in A to 'unallocated' commodity. This will be only payment A category in "PE_by_commodity" file. We will have NRA forMaize and NRA_Total for Tanzania only.
   b. Burundi is corrected by MAFAP in new file "PE_by_commodity_v4.xlsx".
4. Product nomenclature and mapping:
   a. Product names ('Product_final') follow nomenclatures mapped into FAOSTAT products – to both name and number.
   b. FAOSTAT product names (in column 'FAOSTAT_productname') seems to deviate from the nomenclatures that we use in commodity mapping in Ag-Incentives database. For example, beef is mapped to 'Meat of cattle', not 'Meat, cattle', though the FAOSTAT product number (867) is correct. Some FAOSTAT products don't exist in our commodity mapping file such as "essential oils, nes". This type of data will go to 'Unallocated' or 'Non-MPS' as a general rule.
   c. Mushroom is mapped to 'Crops' from 'Forestry' in Python.
5. We created new product nomenclature to map commodity payment data in 'PE_by_commodity' that are labeled as 'not specified' in the column 'Product_final'. These are 'NonMPS-othercrops', 'NonMPS-other livestock', 'Non-allocated agriculture', 'Non-allocated crops', 'Non-allocated livestock'
   a. 'not specified' with 'Sector_final' as agriculture is mapped to 'Non-allocated agriculture'
   b. 'not specified' with 'Sector_final' as crops is mapped to 'Non-allocated crops'
   c. 'not specified' with 'Sector_final' as livestock is mapped to 'Non-allocated livestock'
   d. 'not specified' with 'Sector_final' as crops and 'Groupofproducts_final' is a commodity name is mapped to 'NonMPS-otherCrops
   e. 'not specified' with 'Sector_final' as livestock and 'Groupofproducts_final' is a commodity name is mapped to 'NonMPS-otherLivestock'

Extracting payment data from MAFAP "PE_web" file is done in the following steps:

1. We read in data in: LCU, nominal | Actual | Total.
2. We read MAFAP "PE_web" data for category A for TOTAL. We map these payments to "Unallocated" in Table 1 for methodology. Here, payment type A in MAFAP is mapped to A2.
3. We checked missing payments in TOTAL payment file.
    a. For Burundi (2012-2015 for D, 2017 for B3 and 2018 for B1 and B2) data exist in commodity breakdown file but no data found in TOTAL payment file. This data was later corrected in new file "PE_by_commodity_v4.xlsx". Commodity payments were corrected to ZERO in new file for Burundi.
    b. For Ghana (2016, B2) data exist in commodity breakdown file but no data found in total payment file. This data was set to ZERO in Python.

4. IDB Data Processing

We used downloaded IDB database from link given by IDB (published on September 2019), available at https://mydata.iadb.org/Agriculture-and-Rural-Development/IDB-Agrimonitor-PSE-Agricultural-Policy-Monitoring/2dqw-u35p/data . Later some new excel files were sent by IDB.

1. Panama example was sent in excel file "Table NRA.xlsx". This was used to understand how to allocate TOTAL and UNALLOCATED.
2. IDB also found a typo in Peru's "Payments based on output" data, it was in wrong units. "Peru PO corrected.xlsx" data was sent on October 15, 2020.
3. On October 13, 2020, IDB sent "NRA notes.xlsx" file to show individual commodity payment data for additional countries.
4. IDB sent individual commodity data in "Matrix-Payment_Data_for_Five_Countries-OS-11.4.2020.xlsx" on November 4, 2020.

Labels in IDB database and mapping to OECD Categories (IDB uses same methodology as OECD) is presented in the following table.

Table 3: Mapping of payment categories listed in IDB

IDB payment categories	Mapped to
Payments based on output (PO)	A2
Payments based on input use (PI)	B
Payments based on current A/AN/R/I, production required (PC)	C
Payments based on current A/AN/R/I, production required, single commodity (PC)	C
Payments based on non-current A/AN/R/I, production required (PHR)	D
Payments based on non-current A/AN/R/I, production not required (PHNR)	E
Payments based on non-commodity criteria	F
Miscellaneous Payments (PM)	G

IDB data is organized by different categories and according to the IO such organization of data is mainly to serve different purposes, e.g. publishing in website etc. These include category 1 (C1), category 2 (C2) and category 3 (C3). Therefore, we had to read in and used C2 data for NRP. Payments relevant to NRA are found in C1 and C3 Category 1 is defined for "Group or not commodities". C2 and C3 are for "commodities". As IDB suggested, we read in C3 for NRA computations. IDB sent a sample data table for Peru (see appendix B) in order to guide us how we should read IDB data that is consistent with the above mapping (Table *3*).

From our initial data check on IDB data file we observe the following:

- Payment data exists for 21 country-commodity tuples (out of 55 total cases). "Group or not commodities" payment data exist for all five countries. Individual commodity payment data exist for 16 cases (country-commodity combination).
- Out of these 16 cases (individual commodity by country), only five has payments based on output (PO) and the rest has data for payments based on input use (PI). Suriname-Rice has both payments based on input (PI) and payments based on current production required, single commodity (PC).

- Payment data doesn't exist at individual commodity level for payment types PHR, PHNR, PC (except Surinam-Rice) and PM
- Data for "Group or not commodities" exist for PO, PI, PHR, PHNR, PC (not single commodity) and PM. Negative payments data exist. We dropped these later in Python. These are Belize – Group or not commodity, PO, 2014; and Dominican Republic -Plantains, PO, 2006, 2007, 2009

4.1 Data Processing Steps for IDB

In IDB methodology, Non-MPS means that transfers are provided to the specific commodities, but those commodities are not in the list of commodities chosen for MPS calculations.

- As per IDB's description: Unallocated = TOTAL - ALL COVERED
- "Group or not commodities" is a very broad label that includes: "All commodities/unspecified group of commodities/commodity label not applicable (i.e. GDP)".
- "Group or not commodities" in C1 = Sum of all MPS commodities + Non-MPS commodities (XE) + unallocated transfers/all commodities (AC)/group of commodities (GC).

Thus, we checked for "GAP = TOTAL - Covered Commodities" is negative or not.

Payment data by categories and specific data instances

Data variable names are the same as OECD, but some Category inconsistencies in published data exist. Below is a description, organized by payment type, how we addressed and implemented in data processing (in Python).

A2. "Payments based on output"

"Payments based on output" for commodities are in C2, C3, or in Both. Payments based on output (PO) have below patterns.

Table 4: Use of 'category' column in IDB source database

Data	Category 2	Category 3	Final use
Data having zeros	Yes	Yes	Discarded
Data non null and not zero	Yes	Yes	Found equal. Used Category 3
Data exist	Yes	No	It means error. We used Category 2
Data exist	No	Yes	No issue. Category 3 was read

Further procedures and checks were made to ensure consistency in data:

- If there are instances where "Payments based on output" are ZERO/NULL in C2 and in C3, we checked if MPS equals/does not equal "Support based on Commodity Outputs". If both are missing, MPS should equal "Support based on Commodity Outputs".
- "Payments based on output" should be in C3 if allocated to commodities and aggregated in Category 1. Category 1 is sum of commodity-specific (in C1), group commodities, all commodities and NON-MPS commodities.
- It is OK if there are no data/zero in C1, C3 is more complete.
- IDB also found a typo in Peru's "Payments based on output" data, it was in wrong units. "Peru PO corrected.xlsx" data was sent on October 15, 2021.

B. "Payments based on non-current A/AN/R/I, production not required"
"Payments based on non-current A/AN/R/I, production not required" line item applies only to "Group or not commodities" (in category 1 only) for all countries. So, these are not linked to any individual commodity payments. In terms of Table 1, they go to TOTAL column.

C. "Payments based on non-current A/AN/R/I, production required"
In category 1, the only commodity is "Group or not commodities". However, there is data in some countries in C1, while no data in C3) for same variable. These are Panama, Trinidad & Tobago.

In general, for IDB database, data in Category 1, while no data in Category 3 means that the payments are not specific to any of the MPS commodities. It should be OK if data in C1 and no data in C3. It means the AC or GC or XE.

- If there is no Category 3 for Panama, Category 1 data is ok.
- For Panama, IDB checked and the payments are for Group commodities of "Grain". We allocated this payment to "Crops" Sector.
- Trinidad & Tobago: IDB checked and data is a typo, it should be in PHNR. This was reallocated to correct payment type. This went to TOTAL column since it is "Group or not commodities". There was already data for Trinidad & Tobago in this category for 2015. IDB told us to add PHR and PHNR and map the sum to PHNR.
- In category 3, we have data for this line item for Guyana and Jamaica.
- IDB confirmed that for Guyana, C3 data for payments should be ZERO.
- IDB also sent information for Guyana: Poultry PHR is error – Payment for this payment type must be = 0.
- For Jamaica, all "NON-MPS commodity" payments are also incorrect. We changed them to ZERO.

In general, in IDB database, data in Category 3 while no data in Category 1 indicates an error.

D. "Payments based on current A/AN/R/I, production required"
This line item is found to exist in "Group or not Commodities" and in category 1 only.

There is data in C3 too for "Payments based on current A/AN/R/I, production required, single commodity". So we considered "Payments based on current A/AN/R/I, production required" for category 1 (total in this case) and "Payments based on current A/AN/R/I, production required, single commodity" for C3 (sub-category for commodity-specific payments) as same payment type. We combined these in Python.

E. "Payments based on current A/AN/R/I, production required, single commodity"
Data exist for this payment type in Category 3. If there are instances where there is data in "Payments based on current A/AN/R/I, production required" at group level and no data in Single Commodity level, it is ok to assume there are no commodity-specific payments (or data not read from country Excels).

We noticed sum of commodities across "Payments based on current A/AN/R/I, production required, single commodity" gives "Payments based on current A/AN/R/I, production required (for Group or not Commodities)", only for Barbados and Suriname.

For other countries such as Bahamas, Ecuador, Peru, Trinidad and Tobago, Uruguay, there is no data in the line item of "Payments based on current A/AN/R/I, production required, single commodity". We allocate these to TOTAL column

4.2 New Data received from IDB for individual commodity payment data

Before we received the RAW data file for additional data from IDB, we prepared excel file that includes a matrix of country-commodity list for five countries, if payment data exist, where do they exist (types of payment, PO, PI, PHR, PHNR, PC and PM), and by category (1,2,3). The file is labeled "Matrix-Payment_Data_for_Five_Countries.xlsx". IFPRI wanted to know if we already had data for "Group or not commodities" since IDB was going to send individual commodities only. We wanted to avoid multiple data. In response to this request, IDB sent "NRA notes.xlsx" file on October 13, 2020 to show individual commodity payment data for additional countries:

Belize: There are Group commodity payments in PM payment type
Dominican Republic: Group commodity categories
Paraguay: commodity categories
Suriname: Group commodity categories
Trinidad and Tobago: Group commodity categories

"IDB_Data_Template_Five_Countries.xlsx" was sent to IDB for new data receipt in an organized manner. Specifically, we asked individual commodity payment data when we do not have it in order not to confuse original data with the new ones. These are:

   a. Belize: PO, PM
   b. Dominican Republic: PI
   c. Paraguay: PI
   d. Suriname: PO, PC
   e. Trinidad & Tobago: PHNR, PC, PM, (PHR)

Finally, we have implemented the following based on our data assessment and consistency check:

- There were 104 cases where payments exist in "Group or not commodities" but no payment exists in commodities. In this case, we assigned payment data to 'Unallocated'. GROUP=TOTAL => Unallocated
- There were 14 cases where payment data exist in commodities but not in "Group or not commodities". In this case we don't have right hand side data to check if sum of payments over commodities (left hand side) equals to TOTAL
- We also had data where sum of payments by payment type over commodities will not add up to the TOTAL. So, we assign the remainder [TOTAL (C1)-Sum of payments over commodities] to 'Unallocated'. These are 22 cases.
- We had 7 cases where sum up is greater than TOTAL. These are Dominican Republic PO payments, Belize PI payments. We dropped these later in Python.
- We also had 14 cases where ratio is undefined or have division error. These are the cases where no payment exists in "Group or not commodities". This is not a problem since this was considered OK by IDB.

After iteration with IDB, we dropped below as a summary. See above for explanations.

- Dominican Republic, PO, 2008, 2011, 2014, 2015, 2016, 2017 (all commodities, TOTAL) 2. Belize, PI, 2011
- Negative Payments (Belize Unallocated PO 2014; Dominican Republic Plantains PO, 2006, 2007 and 2009)
- Guyana, Poultry PHR (should be ZERO)
- Jamaica, PHR NON-MPS payments (should be ZERO)
- Trinidad & Tobago, Unallocated: Add PHR and PHNR and map them to PHNR
- Dominican Republic, Beef and veal PO (should be ZERO)
- Dominican Republic, Plantains PO (ALL should be ZERO)

5. OECD Data Processing

As noted in the technical note on NRA, OECD PSE files are considered benchmark for payment data gathering and compiling into one database. In the PSE files we get the payment types - A2, B, C, D, E, F and G, and market price support (A1) and they are all read from 'TOTAL' sheet. It should be noted that each PSE file contains four types of sheets – TOTAL, SCT GCT, x_SCT and x_MPS. TOTAL sheet contains all types of payments/subsidies and market price support, for single (SCT) and group commodities (GCT), etc. as well as for 'all' or 'unallocated' (e.g. ACT, OTP) type commodity. We have chosen to use 'TOTAL' sheet as it is found that the data for OTP, SCT, GCT, ACT in TOTAL add up to those found in other sheets. See Checks below:

- (combined payments) (B+C+D) in 'TOTAL' sheet=> (BCD) in 'SCT GCT' sheet labeled GCT
- (combined payments) (E+F+G) in 'TOTAL' sheet => (EFG) in 'SCT GCT' sheet labeled OTP

Payment types mapped to group and 'unallocated' commodity
- OTP => is mapped to AC (All Commodities). This will go to "Unallocated" category.
- All AC commodities are mapped to "Unallocated".
- GCT = Group commodities: GCT sheets contain payments made to GCT, ACT (AC), and OTP (AC) commodities.

We noticed 52 observations in OECD has negative payment data and they are spread across payment types. Our review indicates that negative values exist in both sheets - TOTAL and SCT. Out of 52 observations, 27 are MPS commodities, 1 NON-MPS commodity, and 24 GCT and AC types. We kept the negative payments at the beginning.

We read in payment types B1, B2 and B3 alongside B in the payment data. We noticed that for Argentina, for all commodities except XE (Non-MPS), B1, B2 and B3 values are exactly same over the years. We checked both TOTAL and SCT sheet and they reveal the same. We also conducted internal validation of whether B1, B2 and B3 adds up to B. In OECD, they add up.

GCT commodities and harmonization of codes

List of aggregated commodities and commodity codes overlap. We have prepared a list with countries that use same commodity label. Example: GCT10 is used for a total of18 different commodity label. We prepared a mapping table for GCT type payments, whose definition changes for each country. This will help us understand coverage of each sector and was used in R Code for processing of consolidated database.

GCT code up to 9 has the same commodity label. However, GCT codes from 10 onwards had different labels for different countries. We have 46 such combinations for GCT10 to GCT15. Therefore, we decided to tag country ISO3 code after the original GCT code. For example, for GCT10 in Australia, we have coded it as 'GCT10AUS'. In this way we have 1 to 1 mapping for each GCT code and label.

6. Commodity Codes and Harmonization

Payment database file produces a total of 186 commodities, of which 89 has exact match with commodities already exist in the COMMODITY.csv file. Therefore, we need to add 97 commodities in the file and assign appropriate commodity code (AGCOMCODE) with commodity name.

While maintaining 1-1 mapping between AGCOMCODE to OECD_CODE, IADB_CODE and MAFAP_CODE, n-1 mapping for AGCOMCODE to AGPROCODE and 1-1 for FAOCODE to AGCOMCODE, we want to simplify commodity labels and coding to the extent possible. We deal with two related tasks here: simplify and extract unique commodity label and commodity code under AGCOMCODE and AGCOMNAME.

6.1 Commodity relabeling and corresponding modification in Python code

Commodities from payment file can be broadly grouped into synonymous and asynonymous or asynchronous types. The following are the commodities that we merge into based on the description of each commodity.

Beef and milk

For example, beef and milk, milk and beef, DY-BF are all same products but appeared with different labeling and codes. So, they can be relabeled as 'beef and milk'. We have decided to assign OECD_CODE for this as GCTBFMK.

Vegetables

Similarly, Vegetables appeared twice – in Israel and Russia – with two different GCT codes (GCT12 and GCT10). We decided to assign GCTVEG as OECD_CODE.

Grains and oilseeds

And finally, Grains and oilseeds, appeared twice – in Switzerland and Ukraine – with two different GCT codes (GCT10 and GCT11). We decided to assign GCTGNOS as OECD_CODE.

'Unallocated' vs 'Non-allocated agriculture'

We have 'Unallocated' commodity across IOs. However, we also initially labeled a commodity as 'Non-allocated agriculture' coming from MAFAP. After discussing the merit of having these two labels that are apparently synonymous, we decided to merge 'Non-allocated agriculture' with 'Unallocated'.

'Beef and sheep' vs 'Beef and veal sheep'

'Beef and veal sheep' are the same as 'beef and sheep'. So decided to relabel 'beef and sheep' as 'beef and sheep meat' and merge 'Beef and veal sheep' with 'beef and sheep meat'. OECD_CODE would be GCTBFSH.

For all these synonymous products, we label and modify commodity codes in source or input file (in python). For example, all beef and milk including DY-BF must have one commodity label and commodity code in OECD input file. Same is true for vegetables, grains, and oil seeds commodities. And in MAFAP, 'Non-allocated agriculture to be labeled as 'Unallocated'.

Other crops – GCT5

Here definition that is "country specific" as since the other crops could only be understood at the country level as, "all the crops - detailed crops". So, we decided to keep specificity of this commodity in commodity

mapping and assign GCT5ISO (with each country ISO code). A total of 27 countries has this commodity code and so I have assigned commodity code as GCT5ISO for each.

In order to keep 1-1 structure between AGCOMCODE/AGCOMNAME and OECD_OCDE/OECD, I have relabeled this commodity as 'Other crops – Country Name', similar to China – Fruits and Vegetables Imported. Relabel this commodity as 'Other crops – Country Name' with code as GCT5ISO.

'Fruit excluding citrus', 'Oranges and grapefruit'
Above commodities appeared in Israel and it seems that Fruits = Fruits excluding citrus + Oranges and grapefruit. We decided to relabel as 'All fruits – (Oranges & Grapefruit)'. OECD_CODE will remain as GCT10ISR.

6.2 Introduction of new label and code in AGGRPNAME and AGGRPCODE
In certain group transfers we find a set of broad commodities that are difficult to classify into Grains or Horticulture. 'All crops' or 'All arable crops' or 'Other crops – ISO3' are such commodities and therefore we have decided to introduce 'Crops' under AGGRPNAME column and 'CRP' under AGGRPCODE column.

6.3 Assigning AGCOMCODE for AGCOMNAME
Idea is to have unique code for each commodity. We have decided to assign 6-digit code systematically so that we can distinguish crops from livestock and maintain hierarchy in the commodity tree. First digit of the code is either 1, 2 or 3. Here 1 is assigned for crops, 2 for livestock and 3 for non-MPS commodity.

- At the top, we have 'agriculture' where payment is unallocated to any specific commodity or groups of commodities. 399999 was assigned to the 'Unallocated' commodity.
- In the second tier, we have 'crops' and 'livestock'. The codes starting with 11 and 22 go to crops and livestock group respectively.
- Under crops, three commodities exist – allocated, non-allocated, and non-MPS.
- All allocated crops have been assigned codes with 111, non-allocated crops with 112 (only one) and non-MPS crops (only one) with 113 in the first three digits.
- Under crops, we have grains (starting with 1111), fruits & vegetables (starting with 1112), oilseeds (1113), other crops (1114).
- Similarly, in livestock, we get allocated, non-allocated, non-MPS commodities or products.
- Allocates starts with 221, non-allocated with 222 (only one) and non-MPS (only one) with 224 in the first three digits.
- In allocated livestock we have two groups – ruminants (2211) and non-ruminants (2212). The products under these two groups have been assigned respectively starting with 2211 and 2212.

Break in commodity code structure
Product(s) that has combination of both crops and livestock, such as 'All except milk and meat' or 'All-SM', has breaks in the code structure. 'All-SM' is relabeled as 'All supply managed commodities'. These commodities seem at high level in commodity tree, something like at 'agriculture'. I have assigned 225000 and 226000 respectively for these two commodities.

6.4 Commodity labels that are ambiguous and need precise definition and relabeling
In OECD database we get to see a set of commodities, mostly GCT type that have ambiguous definition in the PSE files and therefore we had to review cookbooks of respective countries. Below is the table of these

commodities and decision regarding relabeling and mapping to appropriate columns, the master file for commodity mapping under Ag-Incentives works.

Table 5: Relabeling and mapping of some GCT commodities found in OECD database

Commodity	Description found in cookbook
All crops except wine	Payments for crop production on steep slopes From 1986: payment per hectare of land on slopes with a gradient of more than 18% cultivated in a way to maintain soil productivity and not to be harmful to the environment. Payment rates differ with the slope gradient, and payments are limited to farms bigger than 0.5 hectare. Calculated on a fiscal year basis. <table><tr><td>AGCOMCODE</td><td>AGCOMNAME</td></tr><tr><td>111002</td><td>All crops except wine</td></tr></table>
All crops, cattle, and sheep	This is a group commodity transfer and includes all crops, cattle and sheep. Payments for Ecological Compensation and Extensive Meadows (1992) <table><tr><td>AGCOMCODE</td><td>AGCOMNAME</td></tr><tr><td>111003</td><td>All crops, cattle and sheep</td></tr></table>
Leguminous crops	Area payments for leguminous crops. Oilseeds + Legumes <table><tr><td>AGCOMCODE</td><td>AGCOMNAME</td></tr><tr><td>111004</td><td>Leguminous crops</td></tr></table>
Protein crops	This includes payments per hectare of protein crops, with a rate per ha for any protein crops different from that for cereals or oilseeds. <table><tr><td>AGCOMCODE</td><td>AGCOMNAME</td></tr><tr><td>111005</td><td>Protein crops</td></tr></table>
Cereals, Oilseeds and Protein crops	COP, originally coded, refers to Cereals, Oilseeds and Protein crops. This includes any policy that is available to producers of any COP crop, such as set-aside payments and Agenda 2000 area payments after 2003. Set aside payments, payments for energy crops, payments for all crops <table><tr><td>AGCOMCODE</td><td>AGCOMNAME</td></tr><tr><td>111006</td><td>Cereals, Oilseeds and Protein crops</td></tr></table>
Alternative crops	No definition found <table><tr><td>AGCOMCODE</td><td>AGCOMNAME</td></tr><tr><td>111007</td><td>Alternative crops</td></tr></table>
Non-insured crops	It includes payments under the Non-insured Crop disaster Assistance Program

	AGCOMCODE AGCOMNAME 111008 Non-insured crops
All-SM	Payments are included in All commodities but supply managed group transfers. Crops+livestock AGCOMCODE AGCOMNAME 226000 All supply managed commodities
Biomass	It includes payments under the Biomass crop assistance program. AGCOMCODE AGCOMNAME 111009 Biomass
Fruits flowers, industrial crops	Per hectare payments to assist growers to purchase plants of fruits, flowers, and industrial crops to take advantage of agroclimatic conditions in Michoacán. Calculated on a fiscal year basis. AGCOMCODE AGCOMNAME 111250 Fruits flowers, industrial crops
All except milk and meat	Input subsidy based on VAT accumulation. Subsidy could only be used for purchases of agricultural inputs, such as fuel, seeds, fertilizers, pesticides, and agricultural machinery and equipment; milk and meat producers were not eligible for this regime as they were eligible to support based on "redirection of processors' VAT". AGCOMCODE AGCOMNAME 225000 All except milk and meat
Feed crops	This GCT item found in Kazakhstan data and no detail list of crops is provided in the PSE file. There is another GCT item, named 'Feed' found in Norway PSE file. Payments included all subsidies to coarse feed, including acreage support to mountain farming, and support to meadow seed storage. We decided to merge them into 'Feed crops'. AGCOMCODE AGCOMNAME 111010 Feed crops

6.5 Selected commodities appearing in MAFAP database and their relabeling and mapping

'Sheep meat and wool' vs 'Sheep'

While 'Sheep meat and wool' appears in Island, 'Sheep' comes from MAFAP with commodity code 976. For Island, we get value of production data for both sheep meat and wool in FAOSTAT. On the other hand, it may be found that the countries where the commodity 'Sheep' appears may not have 'wool' industry separately and as such will contain VoP data, we decided relabel 'Sheep' as 'Sheep meat'. This will go to product code 977, instead of 976.

This payment data appears for Ethiopia, Ghana, Malawi, and Rwanda. However, Ethiopia payment is showing zero for Sheep. My suggestion is to replace Sheep with Sheep meat.

'Chickens' vs 'Chicken meat'
This was discussed at length and issue is about payments go to chicken for meat production or chicken for eggs. Since we get VoP for both products and it is not clear from MAFAP whether chickens mean only as animal or chicken meat, we don't know which farmer types receive money. In the case of NRP, the price support is more product specific but in payment this may not be the case in countries.

'Goats'
In FAOSTAT we only have VoP for goat meat and so we may want to relabel this as 'Goat meat' with commodity code as 1017 (instead of 1016). This will then be in the rows against goat meat.

'Pigs'
In FAOSTAT we only have VoP for pig meat and so we may want to relabel this as 'Pig meat' with commodity code as 1035 (instead of 1034). This will then be in the rows against pig meat.

7. Computing Value of Production (VoP)

As NRA is defined as ration of support over value of production at reference price, both measured in current US Dollar, we need to have data on value of production for each commodity and commodity groups or aggregates. Two main sources have been used to gather value of production – one from existing NRP database which contains VoP at reference price, and other from FAOSTAT that gives us VoP data at producer price level. VoP from FAOSTAT have been appropriately aligned with the corresponding VoP at aggregate level exist in the NRP database. The detailed process of compiling this value of production is described in a separate technical note.

Appendix A

Feedback on NRA from OECD

We are commenting on the file **Support_Database_2021_version2.xlsx**, as we saw it included with all the other files in Dropbox.

<u>Worksheet Aggregated NRA</u>

- In the "Read-me" worksheet, there is a note saying that for the variable PROD_USD, the value of production is provided for the NRP component only (to avoid double counting in some aggregation). However, we see that this value is available for all variables in the worksheet Aggregated NRA, not only NRP.
- In the Worksheet Aggregated NRA, maybe the title of the column PROD_USD could be renamed VProd_USD, as it refers to the value of production (and to avoid any confusion with production)?
- Column Countries: would it be possible to add an aggregate for "all countries"? to be able to get data for this aggregate directly?

<u>Worksheet Detailed NRA</u>:

- Column Relevant _Production: we see in the Read_Me part that this should correspond to the "Relevant production associated with this specific row" but for example row 19 for WT for Brazil in 2005, category A2, I see the value 734 774779 but can't find the corresponding one in the PSE file for Brazil (in the WT worksheets), if you can help us to understand what this value means? Thank you.

<u>Worksheet Global Perspective</u>: Thanks for providing the graphs, very informative (see below some comments).

Comparing to the OECD PSE files, we have some comments about your note on the "share of non specifically allocated support received"?
- We understand from the worksheet " Detailed_NRA" that payments labelled "all commodities (AC) and XE" and those classified into the categories E-F and G in the OECD PSE files are categorized as NAL (Non-allocated), please confirm.
- We guess that the various groups of products that we have defined in the OECD PSE files, such as "grains" or "ruminants" for example, are respectively classified under Crops and Livestock groups? Maybe some documentation about this could be useful.

Maybe a short demo of the file could be of interest for the next meeting of the IO Consortium?
Are we finally planning to publish the NRA by commodity (Detailed NRA worksheet) on the website or rather not because of the issue of aggregation mentioned last Sept.?

A few observations on the graphs (we know they are not final but thought it might be useful)

- The stacked area works ok as long as all data are positive - which however isn't always the case given that the NRP frequently takes negative values. Stacked columns can solve that problem.

- More for future thinking: for country- and regional aggregates combining various products, we frequently face the situation where positive and negative levels of price support tent to cancel out each other in the aggregate, which is why we (OECD) have begun to show the positive and negative MPS separately. In principle this could be done with the NRP as well, as de facto these add up in terms of distortions rather than cancelling each other out.

- As a user we would find it quite confusing to see, in the crops and livestock figures respectively, the "non allocated" categories. This would require some further explanation, including where these are included without being indicated (e.g. top figures in regional perspective).

Appendix B
Sample data table for Panama in 2014

	Com. 1	Com. 2								Com. 3	Non-MPS	Group x	Unallocated	Total
	Beef and Veal	Eggs	Maize	Milk	Pigmeat	Pineapples	Plantains	Poultry Meat	Refined Sugar	Rice				
A1. Market Price Support	56.26	26.13	32.40	2.19	52.30	26.68	18.32	4.58	(117.93)	21.77	34.75	na	na	NRP_T
A2. Payments based on output	-	-	-	-	-	-	-	-	-	-	-	-	-	*
B. Payments based on input use	1.00	-	-	-	-	-	-	-	-	-	-	-	26.09	NRA_ Input
C. Payments based on current A/An/R/I, production required	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D. Payments based on non-current A/An/R/I, production required	-	-	-	-	-	-	-	-	-	-	-	3.53	-	NRA_ Others
E. Payments based on non-current A/An/R/I, production not required	na	na	na	na	na	na	na	na	na	na	na	na	na	-

F. Payments based on non-commodity criteria	na	na	na	na	na	na	na	na	na	na	na	na	-	
G. Miscellaneous payments	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOTAL by commodity	57.25	26.13	32.40	2.19	52.30	26.68	18.32	4.58	(117.92)	21.77	34.75	3.53	26.09	
PSCT	*57.25*	*26.13*	*32.40*	*2.19*	*52.30*	*26.68*	*18.32*	*4.58*	*(117.93)*	*21.77*				
Check: sum of total by commodity = PSE		*188.05*												
Check: TOTAL by commodity for single commodities = PSCT	*TRUE*	*TRUE*	*TRUE*	*TRUE*	*TRUE*	*TRUE*	*TRUE*	*TRUE*	*TRUE*	*TRUE*				