SCRIPT DESCRIPTION:
«OECD Inter-Country Input-Output (ICIO) Tables» to generalize database on country-industry base (for further analyses)

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What does the script do?

What are OECD Inter-Country Input-Output (ICIO) Tables? ICIO - spreadsheets that track how goods and services flow between different sectors of the economy, across different countries.

Global trade picture: ICIO tables provide a comprehensive view of international trade by capturing the intermediate flows of goods and services between industries worldwide.

Global Value Chain (GVC) analysis: They allow you to pinpoint how much value a particular country adds at each stage of the production process for a good or service.

Trade in Value Added (TiVA): TiVA goes beyond traditional trade statistics by showing the domestic value added embodied in international trade flows.

The script transforms the data to upper level of 3 key indicators and 19 computed indicators, providing opportunity for ML and data analyses on level of Year, Country and Industry.

Data source: https://www.oecd.org/sti/ind/inter-country-input-output-tables.html

Files are in csv format, data matrix 3649x4109, 1995-2020. The data is regularly updated by OECD (once a year).

The data may be further enriched from other sources with the keys: Year (annual), Country, Industry (in chosen sections).

Instruction

Prerequisites: Python 3.12.x

1) Download the needed tables from chosen years from link:
https://www.oecd.org/sti/ind/inter-country-input-output-tables.html

2) Put downloaded files to folder database.

3) Adjust input1.csv and input2.csv:
- in input1.csv delete countries you don't need for your analyses (if needed)
- in input2.csv delete industries you don't need for your analyses (if needed)

4) Turn on the script with terminal.

5) The data is saved to output.csv

Results (I): consumption data

Column	Tag	Description
KEY DATA		
1	**Year**	**Year of analyzed data from csv [Key1, 1999-2020, annual]**
2	**Country**	**Chosen country codes [Key2, description in Annex]**
3	**Industry**	**Chosen industry code [Key3, description in Annex]**
CONSUMPTION DATA (OF CHOSEN KEY-COUNTRY – KEY-INDUSTRY FOR THE YEAR)		
4	Import	Consumption of chosen country-industry from foreign countries (USD PPP)
5	LocalConsumed	Consumption of chosen country-industry from all local industries (USD PPP)
6	GrossConsumed	Gross Consumption of country-industry (USD PPP)
7	Taxes	Gross taxes on Value Added of country-industry (USD PPP)
8	ValueAdded	Gross value added of country-industry (USD PPP)
9	OutPut1	Total production of country-industry (USD PPP)

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Results (I): output data

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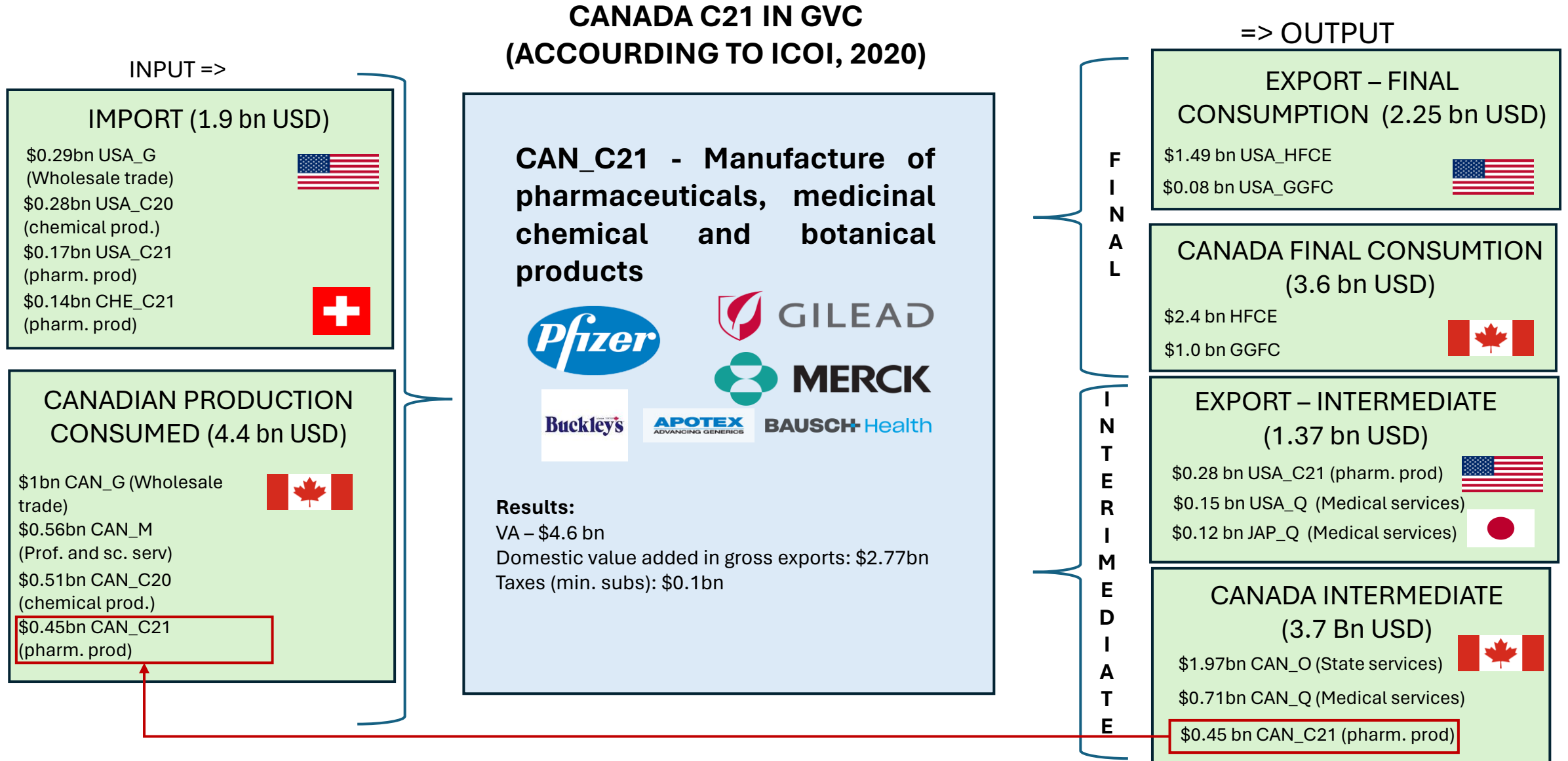| Column	Tag	Description
OUTPUT RESULTS (OF CHOSEN KEY-COUNTRY – KEY-INDUSTRY FOR THE YEAR)		
10	HFCE	Household Finance and Consumer Expenditure (Final consumption, Local consumers) (USD PPP)
11	NPISH	Non-Profit Institutions Serving Households (Final consumption, Local consumers) (USD PPP)
12	GGFC	Final consumption expenditure of government (Final consumption, Local consumers) (USD PPP)
13	GFCF	Gross Fixed Capital Formation (Final consumption, Local consumers) (USD PPP)
14	INVNT	Inventory (Final consumption, Local consumers) (USD PPP)
15	DPABR	Direct purchases abroad by residents (Final consumption, Local consumers) (USD PPP)
16	4ExportInterim	∑ export to all foreign countries other industries consume of the products (USD PPP)
17	4LocalInterim	∑ of other local country industries consume of the products (USD PPP)
18	4ExportConsumption	∑ export to all foreign countries fin. cons.: HFCE, NPISH, GGFC, GFCF, INVNT, DPABR (USD PPP)
19	4LocalConcumption	∑ local country final consumption: HFCE, NPISH, GGFC, GFCF, INVNT, DPABR (USD PPP)
20	NetProduction	Net Local Production: (4LocalConcumption + 4LocalInterim) - LocalConsumed
21	NetExport	Net Export: (4ExportInterim + 4ExportConsumption) - Import
22	NetVA	Net Value Added by industry: (4ExportInterim + 4LocalInterim +4ExportConsumption + 4LocalConcumption) - GrossConsumed
23	TotalProduction	Check field, (='OutPut1')

EXAMPLE: HOW ICOI WORK

Example: how ICOI works

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CANADA C21 IN GVC (ACCOURDING TO ICOI, 2020)

INPUT =>

IMPORT (1.9 bn USD)

$0.29bn USA_G (Wholesale trade)
$0.28bn USA_C20 (chemical prod.)
$0.17bn USA_C21 (pharm. prod)
$0.14bn CHE_C21 (pharm. prod)

CANADIAN PRODUCTION CONSUMED (4.4 bn USD)

$1bn CAN_G (Wholesale trade)
$0.56bn CAN_M (Prof. and sc. serv)
$0.51bn CAN_C20 (chemical prod.)
$0.45bn CAN_C21 (pharm. prod)

CAN_C21 - Manufacture of pharmaceuticals, medicinal chemical and medicinal botanical products

GILEAD
Pfizer
MERCK
Buckley's   APOTEX ADVANCING GENERICS   BAUSCH + Health

Results:
VA – $4.6 bn
Domestic value added in gross exports: $2.77bn
Taxes (min. subs): $0.1bn

=> OUTPUT

F I N A L

EXPORT – FINAL CONSUMPTION (2.25 bn USD)

$1.49 bn USA_HFCE
$0.08 bn USA_GGFC

CANADA FINAL CONSUMTION (3.6 bn USD)

$2.4 bn HFCE
$1.0 bn GGFC

I N T E R I M E D I A T E

EXPORT – INTERMEDIATE (1.37 bn USD)

$0.28 bn USA_C21 (pharm. prod)
$0.15 bn USA_Q (Medical services)
$0.12 bn JAP_Q (Medical services)

CANADA INTERMEDIATE (3.7 Bn USD)

$1.97bn CAN_O (State services)
$0.71bn CAN_Q (Medical services)
$0.45 bn CAN_C21 (pharm. prod)

ANNEX (DICTIONARY)

Annex – country abbreviations

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77 COUNTRIES:

ARG - Argentina	HKG - Hong Kong	PHL - Philippines
AUS - Australia	HRV - Croatia	POL - Poland
AUT - Austria	HUN - Hungary	PRT - Portugal
BEL - Belgium	IDN - Indonesia	ROU - Romania
BGD - Bangladesh	IND - India	RUS - Russia
BGR - Bulgaria	IRL - Ireland	SAU - Saudi Arabia
BLR - Belarus	ISL - Iceland	SEN - Senegal
BRA - Brazil	ISR - Israel	SGP - Singapore
BRN - Brunei Darussalam	ITA - Italy	SVK - Slovakia
CAN - Canada	JOR - Jordan	SVN - Slovenia
CHE - Switzerland	JPN - Japan	SWE - Sweden
CHL - Chile	KAZ - Kazakhstan	THA - Thailand
CHN - China	KHM - Cambodia	TUN - Tunisia
CIV - Côte d'Ivoire	KOR - South Korea	TUR - Turkey
CMR - Cameroon	LAO - Lao People's Democratic Republic	TWN - Taiwan
COL - Colombia	LTU - Lithuania	UKR - Ukraine
CRI - Costa Rica	LUX - Luxembourg	USA - United States
CYP - Cyprus	LVA - Latvia	VNM - Viet Nam
CZE - Czech Republic	MAR - Morocco	ZAF - South Africa
DEU - Germany	MEX - Mexico	ROW – Rest of the World
DNK - Denmark	MLT - Malta	
EGY - Egypt	MMR - Myanmar	
ESP - Spain	MYS - Malaysia	
EST - Estonia	NGA - Nigeria	
FIN - Finland	NLD - Netherlands	
FRA - France	NOR - Norway	
GBR - United Kingdom	NZL - New Zealand	
GRC - Greece	PAK - Pakistan	
	PER - Peru	

Annex – Industry codes (I)

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Script Codes	Industry	ISIC Rev.4	ISIC Rev.4 Divisions
A01_02	Agriculture, hunting, forestry	A	01, 02
A03	Fishing and aquaculture		03
B05_06	Mining and quarrying, energy producing products	B	05, 06
B07_08	Mining and quarrying, non-energy producing products		07, 08
B09	Mining support service activities		09
C10T12	Food products, beverages and tobacco	C	10, 11, 12
C13T15	Textiles, textile products, leather and footwear		13, 14, 15
C16	Wood and products of wood and cork		16
C17_18	Paper products and printing		17, 18
C19	Coke and refined petroleum products		19
C20	Chemical and chemical products		20
C21	Pharmaceuticals, medicinal chemical and botanical products		21
C22	Rubber and plastics products		22
C23	Other non-metallic mineral products		23
C24	Basic metals		24
C25	Fabricated metal products		25
C26	Computer, electronic and optical equipment		26
C27	Electrical equipment		27
C28	Machinery and equipment, nec		28
C29	Motor vehicles, trailers and semi-trailers		29
C30	Other transport equipment		30
C31T33	Manufacturing nec; repair and installation of machinery and equipment		31, 32, 33

Annex – Industry codes (II)

Script Codes	Industry	ISIC Rev.4	ISIC Rev.4 Divisions
D	Electricity, gas, steam and air conditioning supply	D	35
E	Water supply; sewerage, waste management and remediation activities	E	36, 37, 38, 39
F	Construction	F	41, 42, 43
G	Wholesale and retail trade; repair of motor vehicles	G	45, 46, 47
H49	Land transport and transport via pipelines		49
H50	Water transport		50
H51	Air transport	H	51
H52	Warehousing and support activities for transportation		52
H53	Postal and courier activities		53
I	Accommodation and food service activities	I	55, 56
J58T60	Publishing, audiovisual and broadcasting activities		58, 59, 60
J61	Telecommunications	J	61
J62 63	IT and other information services		62, 63
K	Financial and insurance activities	K	64, 65, 66
L	Real estate activities	L	68
M	Professional, scientific and technical activities	M	69 to 75
N	Administrative and support services	N	77 to 82
O	Public administration and defence; compulsory social security	O	84
P	Education	P	85
Q	Human health and social work activities	Q	86, 87, 88
R	Arts, entertainment and recreation	R	90, 91, 92, 93
S	Other service activities	S	94, 95, 96
T	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	T	97, 98