Implications of U.S. Trade Policies after the 2020 Pandemic

Domenic Salvatore and Fred Campano [1]

Introduction

The Corona Virus which manifested into a pandemic during 2020 created uncertainty and disillusionment into the world economy leaving most countries with a slowdown of commerce, both domestic and international. Unfortunately, the only defense that countries had to stop the spread of the disease was *social distancing* which meant that production came to a halt in most businesses, and in the advanced countries of the G7, this meant a shutting down of much of the service sector of the economy where most people were employed.

In this paper, we simulate three scenarios to get an idea what to expect over the next four years. It is predicated upon the belief that a vaccine will be in circulation beginning in 2021 which will allow a relaxation of social distancing, and a return to normal production practices. We present three scenarios: a baseline scenario which indicates the path of the economies in the G7 and China based upon the trends from 2010 to 2018, and where these countries would be if there were no changes in the international trade shares that prevailed in 2018 and no COVID 19 disease to interfere with production.

The second scenario introduces a sharp decline of GDP in 2020, but a return to the production parameters calculated over 2010 to 2018 in the year 2021. In this case, the shares in the world trade matrix would remain unchanged. Finally, in the third scenario, we maintain the sharp decline in 2020, but change the shares in the world trade matrix to conform to the U.S. –

China trade agreement which began in 2020. In this way, we will get an idea of the impact in 2024 of both the pandemic and the trade agreement.

1. Methodology

We first put together a world trade matrix which included as individual rows and columns the countries of the G7 and China. Also included as individual rows and columns were 14 other trading partners with the United States which were selected because of their importance in US exports. Among them were Mexico, Korea, Australia, India and others. There were three residual groups: namely, the 22 other countries of the EU, a group containing other European countries not in the EU, and the rest of the world. Each of these groups had a row and a column in the trade matrix. The entire matrix is 24X24. The bilateral trade data came from the United Nations Trade Statistics and is available from the United Nations by the URL *DATA.UN.ORG*.

For each country and group in the trade matrix, we estimated a Harrod-Domar production function, a consumption function and an import function. Government expenditure and gross capital formation were estimated by their average share in GDP in the historical period. In cases where the autonomous consumption estimate turned out negative, we estimated consumption using the average propensity to consume. In some cases we also had to use the average propensity to import rather than the import function. The estimated parameters are in the annex. Incidentally, we used the nation accounts expenditure data compiled by the United Nations, which are in 2015 constant U.S. dollars.

Each model was estimated independently, and then in each scenario we re-estimated the expenditure components of GDP through using the trade matrix to LINK them (see Ball 1973). For each year we used a convergence requirement of less than 1% change in GDP for each of our G7 countries and China (which took on the average three to four iterations).

2. The Baseline Scenario

Our baseline scenario is a projection of the per capita gross domestic product from the year 2019 to 2024 using the trends in the economies that prevailed from 2010 to 2018. This scenario indicates what could be the case if the COVID- 19 never occurred. It also assumes that there were no changes in the trade shares reflected in the 2018 United Nations reported trade commodity data. From that data we constructed a 24 by 24 trade matrix of good and services. Projections of the population for each country or group was done by the UN population division, but the GDP numbers were generated by our estimates using the Harrod-Domar model. Figure 1 below shows a comparison between the Group of Seven and China. Even though China's GDP was growing at more than 8% per annum in the beginning of this scenario, and the Group of Seven mostly had GDP growth rates less than 2% per annum, China's per capita GDP remains well below the others, at $12,635. Italy, which has the lowest per capita GDP in the G7 was estimated to have $34,469.

Table 1		Baseline	Per Capita	GDP	2015	US $		
	China	USA	Germany	Japan	U.K.	France	Italy	Canada
2020	10888	60985	43905	36341	46641	40017	31553	45234
2021	11584	61656	44308	36755	47054	40214	31793	45715
2022	11839	62328	44849	37182	47591	40464	32697	46493
2023	12221	63069	45477	37623	48171	40737	33509	47229

| 2024 | 12635 | 63852 | 46115 | 38125 | 48830 | 41017 | 34457 | 48002 |

3. Scenario 2, COVID in 2020.

    Estimates of the GDP for 2019 and 2020 are incorporated. For the period after 2020, the countries resume their long-term growth rates as in scenario 1, but the projections starting point in 2020 is far lower than in the baseline scenario. Hence, the decline of GDP that occurred in 2020 as a result of the worldwide COVID-19 pandemic, lowers the per capita income of all G7 countries and China in 2024. Table 1 shows a comparison between the two scenarios.

Table 2. A comparison between per capita incomes for 2024 as estimated by scenario 1 and scenario 2.

Scenario 2 2024	USA	China	Japan	UK	Germany	France	Canada	Italy
Baseline	63852	12635	38125	48830	46115	41017	48002	34457
COVID	62341	12184	37786	47868	45483	40612	46391	33279
% diff	-2.37	-3.57	-0.89	-1.97	-1.37	--.99	--3.36	-3.42

In order to reach 63784 in 2024, as in scenario 1, the US per capita income must increase by 2.37%. That means GDP will have to grow at an annual rate of 2.58% from 2020 to 2024. This is a rate almost 1% faster than the historical period (1.70%). In the case of China, GDP was growing at an annual rate over 8% in the historical period. Under baseline its annual growth rate slows down to 4.08%. This happens because the demand for its exports slows down as world GDP slows down. In scenario 2, the annual growth

rate slows down further to 3.45%. Although they also have lower per capita incomes in the year 2024, the decline in the annual growth rate is not as pronounced for the European countries (except Italy).

Scenario 3. The trade agreement between China and the United States is implemented.

The trade agreement between the United States and China, which was signed in April 2020, would increase China's imports from the USA by at least 200 billion dollars over the next 2 years. When we add this amount to China's imports in the trade matrix, it changes the share of imports of China from the USA from about 7.2% to about 10.5%. This of course changes the import share vector in the trade matrix for China. As we can see in table 3, this scenario would put the USA back on its baseline trend in 2024. However, the other members of the G7 do not make it up to their baseline trend.

Table 3. A comparison between per capita incomes for 2024 as estimated by scenario 1 and scenario 3.

Scenario 3 2024	USA	China	Japan	UK	Germany	France	Canada	Italy
Baseline	63852	12635	38125	48830	46115	41017	48002	34457
Agreement&COVID	63826	11692	37534	47553	45188	40431	47175	33272
% diff	-.04	-7.46	-1.55	-2.62	-2.01	-1.43	-1.72	-3.44

Figure 1 is a graph of the per capita GDP from the historical period (2010 – 2018) and projected to the year 2024. It shows that even though China has experienced rapid GDP growth, it is still way below the G7 in terms of per capita GDP.

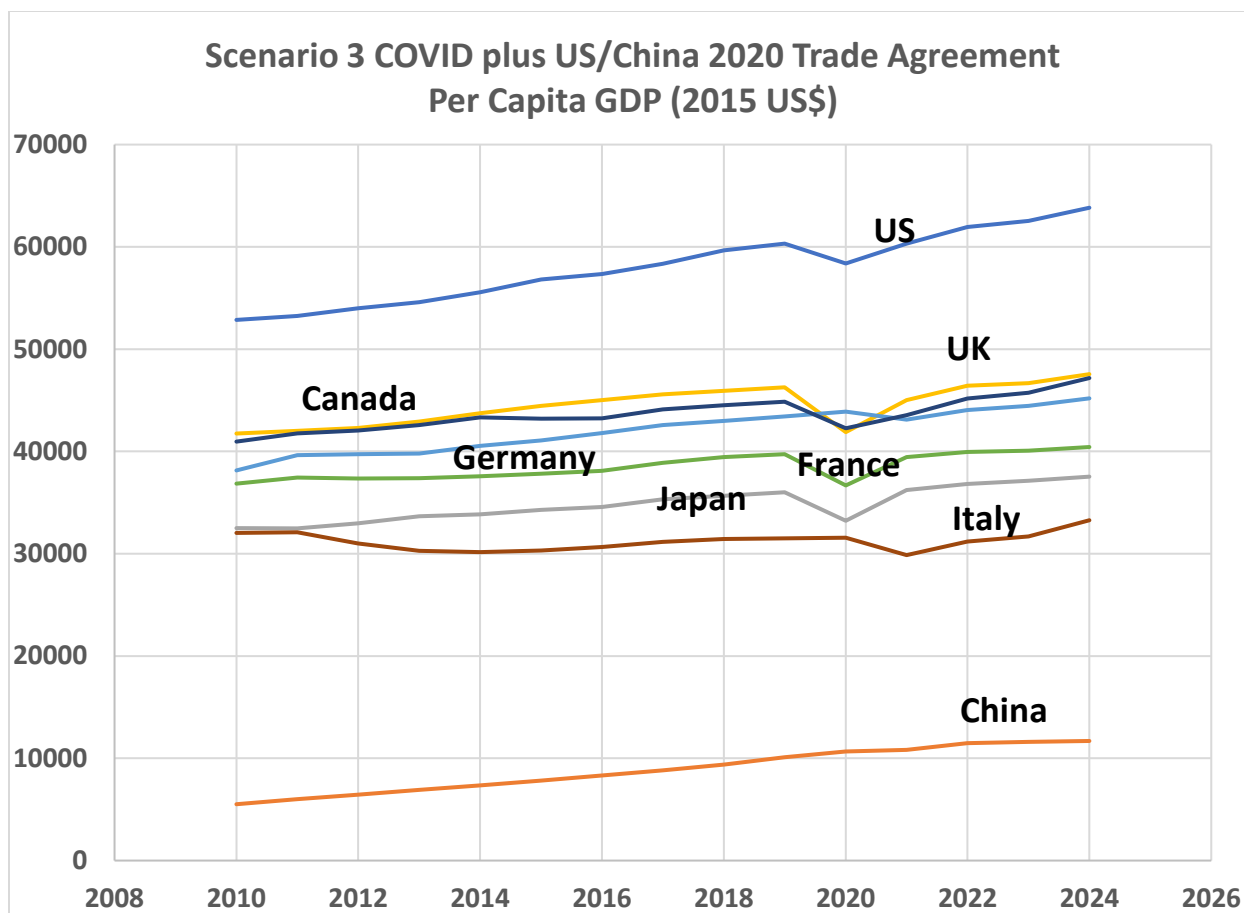**Scenario 3 COVID plus US/China 2020 Trade Agreement Per Capita GDP (2015 US$)**

Figure 1.

Conclusions

Our estimation indicates that there will be a discontinuity in the growth of per capita GDP among the G7 because of the COVID 19 pandemic which occurred in 2020. These countries are among the highest per capita income countries in the world and GDP growth for most of them has been less than 2.0% per annum since 2010. The COVID 19 pandemic has brought the growth of per capita GDP below the trend that prevailed over the 2010 – 2018 period. However, the United States may catch-up to its long-term trend in 2024 if the trade agreement it made with China is sustained.   Likewise, if (in the period following 2020) the G7 can raise its long-term growth rates of GDP above the 2010 – 2018 rates, they can recuperate what was lost

in 2020. For most of these countries this means a marginal increase in growth of GDP on the order of 1%.

In the case of China, the simulation shows a slowing down of the growth of GDP. Since the per capita GDP of China is much lower than that of the G7 countries, this delays their attempt to raise the living standards of all their population. Rising growth rates in the G7 would help China realize its goal of bringing all its population into the modern economy. We think the lesson here is that the world economy is not a zero-sum game. When there is free and open international trade, high growth in the richer countries spurs high growth in the poorer countries as well. When the richer countries slow down, so do the poorer countries.

References

Ball,R.J./Editor

 1973. *The International Linkage of National Economic Models*, New York: North-Holland/American Elsevier.

Appendix

Production Function Parameters/Harrod-Domar Model

Estimation Historical Period 2010 to 2018

Country	Incremental Capital-Output Ratio (ICOR)	Investment Share in GDP (%)	GDP Growth Rate (%)
United States	11.93385	20.27519	1.698965
China	5.51	45.4	8.2384
Japan	36.50075	23.85762	0.65362
United Kingdom	12.20433	16.33451	1.338419
Germany	14.22611	20.62575	1.449851
France	24.50014	22.741	0.928199
Canada	14.42069	24.45612	1.695905
Italy	4336.94	19.55045	0.004508

Demand Equations

Country	Private Consumption	Government	Imports
United States	C=0.675012Y	G=0.149418Y	M=-737861+0.24802Y
China	C=0.369837Y	G=0.142438Y	M= 0.186921Y
Japan	C=1309568+0.2681Y	G=0.197311Y	M=-1394401+0.4929Y
United Kingdom	C=0.648907Y	G=0.196332Y	M=0.28675Y
Germany	C=360623.2+0.42145Y	G=1958Y	M=0.384956Y
France	C=282238.6+0.425562Y	G=0.236389Y	M=-1383230+0.8693Y
Canada	C=0.57604Y	G=0.213405Y	M=-77244.7+0.39037Y
Italy	C=0.606207Y	G=0.191418Y	M=0.265225Y