Comparative U.S. and Chinese Investment in Latin America, 2000 – 2020

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Abstract

This study examines the roles played by the United States and China regarding investment in 21 Latin American nations. Using data from the CIA World Factbook, U.S. department of state, centro de estudios China-Mexico, and the Wilson Center, we argue that from the most part Chinese and U.S. investment in the region distributes evenly, creating a stable environment for economic development.

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The Literature on BiPolar Investment in Developing Nations

The literature on bipolar hegemonic creates varied expectations. Robert Keohane (1984, 253) argues that capital flows towards area by investors who perceive nations as stable environments, which favors conservative rather than leftist governments. Daalder and Lindsay (2003, 7-14) argue that during the Bush (43) administration unilateral internationalism and active attempts towards regime change replaced an older tendency towards isolationism in U.S Policy preferences Doyle (1986, 1163) argues that democratic hegemons emphasize Republican constitution (i.e., those with representative governments with separation of powers), federations of free states and cosmopolitan laws of universal hospitality. Ikenberry (1996, 84-87) argues that democratic hegemons since 1945 have emphasized economic openness, active management of the Western political order, stable economies that provide welfare nets for their citizens and constitutionalism. Wendt (1995,72-78) argues that hegemonic structures are social in their base rather than material and second that structures shape actors identities, interest, and behaviors. These structures feature shared knowledge, material resource, and practices. He also points out here that Realpolitik is an unlikely occurrence as proven by the continue existence of so many relatively helpless-nation states such as Sweden, Norway, Luxenbourg and Benin.

There is also an extensive literature specifically on hegemonic investment in developing nations. Banik and Bull (2018, 532) argue that Chinese investment has highly varied impacts but tends to strengthen the elites currently in power in any given recipient nation. Bernal et al. (2016,6,17) argue that recipient nations showed changed attitudes concerning corruption after receiving direct foreign investments from China. Blanchard (2016, 45) argues that while Chinese outward foreign direct investment has political ramifications there is no transformative relationship. In other words, recipient nations continue to pursue self interest rather than bending to the will of the hegemonic investor. Ding et al. (2021,2) argue that while originally China focused direct investment in sectors where it had a relative disadvantage with countries holding a relative advantage, beginning in 2013 China has invested in the following sectors with a relatively equal distribution: consumer goods, financial resources, industrial goods, telecommunications and utilities. Dollar (2017, 17-19) argues that China focuses direct investment on regions with better governance. They also tend to focus investments on environmental and social safeguards, while tending not to invite investment reciprocity. Dussel (2019, 10) argues that there are variable outcomes by country, but increased investment diversity over time. He adds that China and host nations have limited understanding of each other’s resources (i.e., labor, environment, suppliers, clients and socioeconomics factors). Farah and Babinear (2019, 96) argue that China has sought to build long term economic relationships with any willing partner in the region while asking for little in return other than nonrecognition of Taiwan. The authors describe China as tolerant of numerous ideologies and pragmatic. Kueblboeck, Troester and Ambach (2019, 6) observe that Chinese investments has risen twentyfold since 2000. Until 2018 China focused mostly on raw materials. There are three concerns regarding China’s influence: (1) diplomatic tact downplays environmental and labor insecurity; (2) the emphasis on raw materials deindustrializes the labor force; and (3) China’s ideology is thought by some to challenge the liberal trade order China responded to these concerns with two policies, a 1+3+6 model and a 3\*3 model. The 1+3+6 model emphasizes trade, investment, infostructure, financial cooperation, energy, resources, scientific and technical expertise, agriculture and manufacturing. The 3\*3 model emphasizes logistic, energy, information, business, society and government. Nolte (2018, 8) argues that while China has surpassed Europe as the second largest investor in Latin America, this is no cause for alarm because China is not replacing Europe. Rather, China is filling a void left by Europe’s neglect. Piccone (2020, 1-5) observes that when China presses its advantage, it is on their own issue sets like nonrecognition of Taiwan and looking the other way on China’s human rights record. They add that there appears to be no looming conflict between the U.S. and China concerning Latin America. Zhang (2019, 961-969) argues that three new trends in China’s direct foreign investment: (1) a transformation from resources to a market focus; (2) more diverse sectoral; and (3) China tends to avoid investing in nations that trade actively with Taiwan.

Hypotheses

From our varied literature review above we can arrive at the following hypotheses:

H0: China and the United States have no contemporary disproportionate investments in styles of Latin American development.

H1: China and the United States cultivate contrasting styles of development in Latin America, resulting in domestic and regional conflict.

H2: China and the United States cultivate similar styles of development in Latin America resulting in a burgeoning and conflict free environment.

The Variables

C.I.A Data. C.I.A data offer us numerous proxies for development. These data tend to be one to four years old, therefore contemporary measures (of the present moment). Because they do not go back in history beyond recent years we will not be advancing causal arguments using just these figure. These include:

LEXTOT: This is life expectancy for the total population as found in the C.I.A Worldfactbook at [www.CIA.gov](http://www.CIA.gov).

LEXM: this is life expectancy for the male population of each country.

LEXW: This is life expectancy for women in each country.

GDPPC: These are gross domestic product per capital levels for each country.

GINI: The Gini coefficient is a measure of wealth dispersion name for the mathematician who invented it.

LITT: This is total literacy in each country.

LITM: This is the literacy rate for men in each country.

LITW: This is the literacy rate for women in each country.

INFMORT: This is the number of infant deaths per one thousand population in each country.

CIAIMPPUS (independent variable): This is the percent of host nations’ imports that come from the U.S.

CIAIMPPC (independent variable): This is the percent of host nations’ imports that come from China.

Wilson Data. These data are pandemic aid statistics from 2020. As such, they are contemporary with CIA data and we should not regard them as causally related to the CIA data.

USFH: These are the number of covid era field hospitals built by the United States in Latin American host nations.

CHINAFH: These are the number of covid era field hospitals built by China in Latin American host nations.

USV: This is the number of covid vaccines donated to Latin American nations.

CHINAV: This is the number of covid vaccines donated to Latin American nations.

CRS Data. These data are from the congressional research service as dictated from the department of state between the years 2016 to 2020. We believe the data go far enough historically to allow us to entertain the possibility of causality with a more recent C.I.A data.

CRS16: These are state department data on U.S. foreign assistance to Latin America from 2016.

CRS17: These are state department data on U.S. foreign assistance to Latin America from 2017.

CRS2018: These are state department data on U.S. foreign assistance to Latin America from 2018.

CRS2019: These are state department data on U.S. foreign assistance to Latin America from 2019.

CRS2020: These are state department data on U.S. foreign assistance to Latin America from 2020.

CRSCUM: These are state department data on U.S. foreign assistance to Latin America for the cumulative period of 2016 to 2020.

ECLAC. These data are from the Economic commission on Latin America and the Caribbean from 2009 to 2012. We believe these data are long ago enough to entertain the possibility of causal relationship with the C.I.A data.

ECLAC9: These are ECLAC data from 2009.

ECLAC10: These are ECLAC data from 2010.

ECLAC11: These are ECLAC data from 2011.

ECLAC12: These are ECLAC data from 2012:

ECLACCUM: These are ECLAC data from the cumulative period of 2009 to 2012.

DUSSEL, 2000-2018. These are ECLAC data from 2000 to 2018 on China foreign direct investment in Latin America. We believe the data are sufficiently old enough to entertain the possibility of causal relationship with C.I.A data.

DUSSEL20002005: These data are ECLAC statistics on Chinese direct investment in Latin America from 2000 to 2005.

DUSSEL2006: These data are ECLAC statistics on Chinese direct investment in Latin America from 2006.

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DUSSEL2016: These data are ECLAC statistics on Chinese direct investments in Latin America from 2016.

DUSSEL2017: These data are ECLAC statistics on Chinese direct investments in Latin America from 2017

DUSSEL2018: These data are ECLAC statistics on Chinese direct investments in Latin America from 2018

DUSSELCUM: These data are ECLAC statistics on Chinese direct investments in Latin America from the cumulative period of 2000 to 2018.

Data Analysis

Our first data run focuses exclusively on the relationship among C.I.A data, specifically on the relationship among percentage of imports from China and the United States and various proxies for development, including life expectancy (of total population and controlling for gender) , gross domestic product per capita, unemployment, literacy (of total population and controlling for gender) and infant mortality. A few caveats are in order. First, the data are roughly contemporaneous, in most cases vary in age from one to four years old. For this reason, causal arguments are inappropriate, as we are not sure which variables pre-date each other. We use multi-variate regression simply to find out whether imports from China and the United States coincide with increases or decreases in the values of our proxies for development.

Table 1.1: Latin American imports from China and the U.S. as percentage of total imports, by total literacy, literacy for men and literacy women.

B Std. Error Sig.

U.S. W

China W

U.S. M

China M

U.S. Tot.

China Tot.

|  |  |  |
| --- | --- | --- |
| -.22 | 1.478 | .884 |
| .249 | .518 | .637 |
| -.162 | .183 | .391 |
| -.091 | .064 | .176 |
| -.119 | .193 | .549 |
| -.097 | .068 | .172 |

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As we can see above in table 1.1 there are no statistically significantly relationships among percentage of imports from China and the United States with our first three proxies of development (total literacy, male literacy, and female literacy). In table 1.2 below we measure the relationship between percentage of U.S. and Chinese imports and gross domestic product per capita, GINI (wealth dispersion) and unemployment.

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Table 1.2: Percent U.S. and Chinese Imports by GDPPC, GINI and Unemployment

Source B Std. Error Sig. R2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| China GDPPC | 107.212 | 380.303 | .782 | .028 |
| U.S. GDPPC | -65.552 | 133.254 | .629 | .028 |
| China GINI | .321 | .795 | .692 | .01 |
| U.S. GINI | .02 | .279 | .945 | .01 |
| China UNEMP | .735 | .398 | .083 | .196 |
| U.S. UNEMP | .173 | .139 | .233 | .196 |

As we can see above there is no statistical relationship between import percentage and gross domestic product per capita or GINI coefficient. There is also no relationship between U.S. imports and unemployment though there is statistical relationship between unemployment percent of Chinese imports and unemployment (Sig.= .083, R2=.196). That is, there is a positive relationship between the level of unemployment and the percent of imports coming from China. We believe causal inferences are inappropriate here, as the data are contemporary to one another. We suggest rather that there’s a possibility that China intentionally exports products to places with high unemployment, and/or that places with high unemployment seek to import Chinese products. In Table 1.3 below we measure the relationship between import percentages and literacy rates (total population, male and female).

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Table 1.3: Percent Chinese and U.S Imports by Total Literacy, Male Literacy and Female Literacy

Source B Std. Error Sig. R2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| China TOTLIT | -.212 | 4.27 | .626 | .158 |
| U.S TOTLIT | -.259 | .15 | .103 | .158 |
| China LITM | -.268 | .37 | .48 | .195 |
| U.S LITM | -.255 | .13 | .067 | .195 |
| China LITW | -.158 | .495 | .754 | .128 |
| U.S LITW | -.264 | .173 | .148 | .128 |

As we can see in Table 1.3 above the total literacy rates and male literacy rates vary negatively with percentage of imports from the United States (Sig. = .103, .067; R2 = .158, .195). We believe because the data are roughly contemporary that causal inference is inappropriate here. More likely is that the United States prefers to export goods to places with low literacy rates and /or places with low literacy rates intend to import American goods. In table 1.4 below we analyze the relationship among percentage of imports from China and the U.S. relative to infant mortalitly in 21 latin American cases.

Table 1.4: Percent Chinese and U.S Imports by Infant Mortality

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B | Std. Error | Sig. | R2 |
| China IMP | .196 | .542 | .722 | .021 |
| US IMP | .104 | .19 | .591 | .021 |

As we can see above, there are no stastitical relations among imports from China and the United States with infant mortality. To sum up CIA Factbook data Chinese and U.S. exports to Latin America on the whole do not favor most proxy for development. Nor do they inhibit most proxies. Possible exceptions are the positive relationship between imports from China and unemployment, and also the negative relationship between imports from the United States and literacy. We next turn to examine the relationship between U.S. and Chinese pandemic-related aid and the same proxies for development. Again, these data are loosely contemporaneous to one another so we will avoid drawing causal inferences. In table 2.1 below, we examine the relationships among pandemic aid from the U.S and China to life expectancy (total, men and women).

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Table 2.1: Pandemic Aid (Field Hospitals) from China by Total, Male and Female Literacy

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Source by Proxy | B | STD.error | SIG. | R2 |
| China by totlit | -3.951 | 4.368 | .379 | .082 |
| U.S by totlit | .498 | .503 | .337 | .082 |
| China by litm | .387 | .59 | .656 | .026 |
| U.S by litm | -.007 | .068 | .915 | .026 |
| China by litw | .643 | .6604 | .303 | .074 |
| U.S by litw | -.044 | .07 | .533 | .074 |
|  |  |  |  |  |

As we can see in table 2.1, there are no statistical relationships between the prevalence of Chinese and U.S field hospital donations and life expectancy (total, male and female). In table 2.2 below we will analyze the statistical relationships among U.S. and Chinese field hospital donations and proxies for wealth. (Gross Domestic Product per Capita, GINI coefficient and unemployment).

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Table 2.2; Chinese and U.S field hospital donations by GDPPC, GINI, and unemployment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| FH by Proxy | B | Std. Error | SIG. | R2 |
| China by GDPPC | 1974.833 | 1055.782 | .08 | .197 |
| U.S by GDPPC | 17.671 | 121.539 | .886 | .197 |
| China by GINI | 2.307 | 2.3 | .331 | .113 |
| U.S by GINI | .191 | .265 | .48 | .113 |
| CHINA BY UNEMP | .460 | 1.32 | .732 | .05 |
| U.S by UNEMP | -.138 | .152 | .378 | .05 |

As we can see above in table 2.2 it appears that China built field hospitals in primarily high income nations (China by GDPPC Sig. = .08, R2 = .197). In table 2.3 below we analyze the statistical relationships among U.S. and Chinese field hospitals donated and literacy rates (total, male and female).

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Table 2.3: Chinese and U.S. Field Hospitals Donated by Literacy (Total, Male and Female)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| FH by Literacy | B | Std. Error | Sig. | R2 |
| China by TOTLIT | .949 | 1.374 | .5 | .068 |
| U.S by TOTLIT | -.154 | .158 | .344 | .068 |
| China by LITM | .542 | 1.246 | .67 | .021 |
| U.S. by LITM | -.071 | .143 | .627 | .021 |
| China by LITW | 1.377 | 1.515 | .377 | .124 |
| U.S by LITW | -.243 | .174 | .182 | .124 |

As we can see in Table 2.3 above, there are no statistically significant relationships between the number of field hospitals donated by China and the U.S. and literacy rates (total, male and female). In Table 2.4 below, we examine the relationships among Chinese and U.S. donated field hospitals and infant mortality rates.

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Table 2.4: Chinese and U.S. Field Hospital Donations and Infant Mortality Rates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| FH by INFMORT | B | Std. Error | Sig. | R2 |
| CHINAFH by INFMORT | -.998 | 1.644 | .552 | .033 |
| USFH by INFMORT | .107 | .189 | .58 | .033 |
|  |  |  |  |  |

In Table 2.4 above we can see that no statistically significant relations exist among Chinese and U.S. field hospital donations and infant mortality rates (Sig. =.552, .58).

In table 3.1 below we will analyze the statistical relationships among U.S and Chinese covid vaccination donations by life expectancy (total, male and female) from data reported in 2020.

Table 3.1: U.S and China 2020 Covid Vaccine Donations by Life Expectancy (Total, Male and Female)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Vaccine by LEX | B | Std.Error | Sig. | R2 |
| China by LEXTOT | -.935 | 23.71 | .969 | .115 |
| U.S by LEXTOT | 4.152 | 2.886 | .17 | .115 |
| China by LEXM | -.004 | 3.304 | .999 | 0 |
| U.S by LEXM | -.006 | .402 | .989 | 0 |
| China by LEXW | -.942 | 3.459 | .789 | .007 |
| U.S by LEXW | .076 | .421 | .858 | .007 |

As we can see in table 3.1 above there are no statistically significant relationships among vaccines donated and life expectancies (total, male and female). In table 3.2 below we examine the statistical relationships among Chinese and U.S. vaccine donations and proxies for wealth (G.D.P.P.C, G.I.N.I and unemployment).

Table 3.2: Chinese and U.S Vaccine Donations by G.D.P.P.C, GINI and Unemployment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Vaccine by proxy | B | Std. Error | SIG. | R2 |
| China by GDPPC | -4881.923 | 6331.05 | .452 | .054 |
| U.S by GDPPC | -451.858 | 770.716 | .566 | .054 |
| China by GINI | 4.862 | 13.259 | .719 | .035 |
| U.S by GINI | -1.065 | 1.614 | .519 | .035 |
| China by Unemp | -3.736 | 7.325 | .617 | .042 |
| U.S by Unemp | -.607 | .892 | .508 | .042 |

As we can see in table 3.2 above there are no statistically significant relationships among U.S and Chinese vaccine donations and proxies for wealth (GDPPC, GINI and unemployment). Significance= .452, .556, .719, .519, .617 and .508. In table 3.3 below we examine the relationships among U.S and Chinese vaccine donations and literacy rates (total, male and female).

Table 3.3: Chinese and U.S vaccine donations by literacy rates (total, male and female)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Vaccine donation by literacy | B | Std. Error | SIG. | R2 |
| China by totlit | 1.356 | 7.846 | .865 | .004 |
| U.S by totlit | -.163 | .955 | .867 | .004 |
| China by litm | 3.316 | 6.909 | .638 | .014 |
| U.S by litm | -.02 | .841 | .981 | .014 |
| China by litw | -.451 | 8.927 | .96 | .005 |
| U.S by litw | -.299 | 1.087 | .787 | .005 |

As we can see in table 3.3 above there are no statistical relationships among Chinese and U.S. Vaccine donations and literacy rates (significance= .865, .867, .638, .981, .96, .787.) In table 3.4 below we examine the statistical relationships among Chinese and US vaccine donations by infant mortality rates.

Table 3.4: Chinese and US vaccine donations by infant mortality

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Vax by INFMORT | B | STD. Error | Sig. | R2 |
| China | 6.137 | 9.105 | .51 | .029 |
| US | -.14 | 1.108 | .901 | .029 |

As we can see above in table 3.4 there are no statistically significant relationships among Chinese and the US vaccine donations and infant mortality rates (Sig.=.51,.901).

We next turn to state department data as collected by the congressional research service from 2016 to 2020. We will entertain the notion that because data go back 6 years that causality is a possibility. In table 4.1 below we examine the cause of relationships among US direct investment in Latin America and life expectancy rates (total, male & female).

Table 4.1: US direct investment in Latin America 2016-2020 and cumulative by total male, and female life expectancy

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| US INV by Proxy | B | STD. Error | Sig. | R2 | |
| CRS 16 by LEXT | .5 | 2.179 | .822 | .232 | |
| CRS 17 by LEXT | -7.375 | 4.534 | .13 | .232 | |
| CRS 18 by LEXT | 2.567 | 3.628 | .493 | .232 | |
| CRS 19 by LEXT | -2.967 | 1.624 | .093 | .232 | |
| CRS 20 by LEXT | -1.264 | 1.193 | .310 | .232 | |
| CRSCUM by LEXT | 1.626 | 1.122 | .173 | .232 | |
| CRS 16 by LEXM | .255 | .251 | .33 | .476 | |
| CRS 17 by LEXM | -.194 | .523 | .717 | .476 | |
| CRS 18 by LEXM | -.678 | .418 | .131 | .476 |
| CRS 19 by LEXM | -.108 | .187 | .574 | .476 |
| CRS 20 by LEXM | -.174 | .138 | .23 | .476 |
| CSRCUM by LEXM | .168 | .129 | .22 | .476 |
| CRS 16 by LEXW | .273 | .241 | .279 | .564 |
| CRS 17 by LEXW | -.284 | .501 | .581 | .564 |
| CRS 18 by LEXW | -.881 | .401 | .048 | .564 |
| CRS 19 by LEXW | -.184 | .179 | .325 | .564 |
| CRS 20 by LEXW | -.189 | .132 | .178 | .564 |
| CRSCUM by LEXW | .24 | .124 | .077 | .564 |

As we can see in table 4.1 above total life expectancy rates from 2019 varied positively with US direct investment in Latin America (Sig. =.093, R2= .232). Because 2009 co-insides roughly with our CIA data dates, we will not regard this causally. As we can see as well US investment in Latin America varies negatively with women’s life expectancy from 2018 and positively with women’s cumulative life expectancy from 2016 to 2020 (Sig.=.048, .077, R2=.564). In table 4.2 below we analyze the relationships among gross domestic product per capita, GINI, and unemployment by Congressional Research Service state department data from 2016 to 2020. Because the data go back 6 years, we can entertain the possibility of a causal relationship.

Table 4.2: GDPPC, GINI and Unemployment by CRS 16, CRS17, CRS 18, CRS 19, CRS 20 and CRS Cum

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proxy by CRS Cohort | B | STD. Error | Sig. | R2 |
| GDPPC by CRS 16 | 250.371 | 550.844 | .658 | .351 |
| GDPPC by CRS 17 | -108.279 | 1146.201 | .928 | .351 |
| GDPPC by CRS 18 | -280.872 | 917.16 | .765 | .351 |
| GDPPC by CRS 19 | 71.069 | 410.452 | .865 | .351 |
| GDPPC by CRS 20 | -229.88 | 301.596 | .461 | .351 |
| GDPPC by CRS Cum | 43.197 | 283.59 | .881 | .351 |
| GINI by CRS 16 | -.889 | 1.189 | .468 | .245 |
| GINI by CRS 17 | .765 | 2.469 | .764 | .245 |
| GINI by CRS 18 | 1.1 | 1.977 | .587 | .245 |
| GINI by CRS 19 | .077 | .884 | .932 | .245 |
| GINI by CRS 20 | -.256 | .648 | .699 | .245 |
| GINI BY CRS cum | -.163 | .612 | .794 | .245 |
| UNEMP by CRS 16 | -.912 | .523 | .107 | .558 |
| UNEMP by CRS 17 | 1.505 | 1.087 | .191 | .558 |
| UNEMP by CRS 18 | .524 | .87 | .558 | .558 |
| UNEMP by CRS 19 | .567 | .389 | .171 | .558 |
| UNEMP by CRS 20 | -.06 | .286 | .837 | .558 |
| UNEMP by CRS Cum | -.279 | .269 | .319 | .558 |
|  |  |  |  |  |
|  |  |  |  |  |

As we can see in table 4.2 above there are no statistically significant relationships among GDPPC, GINI, unemployment, and CRS 16 through CRS 20 or their combined index. This suggests that aid from the United States has no ideological strings attached. The aid does not go disproportionately to any particular proxy or lack thereof. In table 4.3 below we will analyze the relationships among literacy (total, male and female) by congressional research service department of state data from 2016 to 2020 and the cumulative index.

Table 4.3:

Literacy (total, male and female) by CRS16, CRS17, CRS18, CRS19, CRS20 and CRSCUM.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proxy by CRS Cohort | B | Std. Error | Sig. | R2 |
| LITT by CRS16 | .5 | .534 | .366 | .576 |
| LITT by CRS17 | -1.57 | 1.109 | .18 | .576 |
| LITT by CRS18 | -.315 | .888 | .728 | .576 |
| LITT by CRS19 | -.566 | .397 | .178 | .576 |
| LITT by CRS20 | -.011 | .291 | .972 | .576 |
| LITT by CRSCUM | .347 | .275 | .229 | .576 |
| LITM BY CRS16 | .476 | .509 | .375 | .527 |
| LITM BY CRS17 | -1.653 | 1.056 | .142 | .527 |
| LITM BY CRS18 | -.073 | .846 | .932 | .527 |
| LITM BY CRS19 | -.597 | .378 | .139 | .527 |
| LITM BY CRS20 | -.025 | .277 | .931 | .527 |
| LITM BY CRSCUM | .332 | .262 | .227 | .527 |
| LITW BY CRS16 | .542 | .581 | .368 | .602 |
| LITW BY CRS17 | -1.474 | 1.206 | .244 | .602 |
| LITW BY CRS18 | -.598 | .966 | .547 | .602 |
| LITW BY CRS19 | -.53 | .432 | .241 | .602 |
| LITW BY CRS20 | .012 | .316 | .971 | .602 |
| LITW BY CRSCUM | .363 | .299 | .246 | .602 |

As we can see in table 4.3 above none of the literacy measures (total, male and female) had statistically significant relationships with the congressional research service state department data from 2016 to 2020, inclusive of the cumulative index. In table 4.4 below we analyze the statistical relationship among infant mortality data from the CIA Factbook and CRS data on the state department from 2016 to 2020, including the cumulative index.

Table 4.4: Infant mortality by CRS16, CRS17, CRS18, CRS19, CRS20 and CRSCUM

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PROXY BY CRS COHORT | B | STD. ERROR | SIG. | R2 |
| INFMORT BY CRS16 | -.092 | .825 | .913 | .219 |
| INFMORT BY CRS17 | -.166 | 1.714 | .924 | .219 |
| INFMORT BY CRS18 | 1.205 | 1.372 | .396 | .219 |
| INFMORT BY CRS19 | .119 | .613 | .849 | .219 |
| INFMORT BY CRS20 | .009 | .45 | .984 | .219 |
| INFMORT BY CRSCUM | -.205 | .425 | .637 | .219 |

As we can see in table 4.4 above there are no statistical relationships among C.I.A factbook data on infant mortality and CRS state department data on U.S. direct investments in Latin America from 2016 to 2020, cumulative index inclusive.

In table 5.1 below we analyze the statistical relationships among life expectancy (total, male and female) by economic commission on Latin America and the Caribbean from 2009 through 2012.

Table 5.1: Total, male and female life expectancy by ECLAC 2009, ECLAC 2011, ECLAC 2012 and ECLAC cum

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proxy by ECLAC cohort | B | Std. Error | Sig. | R2 |
| LEXT by ECLAC09 | .027 | .033 | .565 | .628 |
| LEXT by ECLAC11 | .074 | .085 | .547 | .628 |
| LEXT by ECLAC12 | .017 | .047 | .777 | .628 |
| LEXT by ECLAC cum | -.026 | .033 | .574 | .628 |
| LEXM by ECLAC 09 | -.001 | 0 | .365 | .979 |
| LEXM by ECLAC 11 | -.001 | .001 | .552 | .979 |
| LEXM by ECLAC 12 | -.002 | 0 | .171 | .979 |
| LEXM by ECLAC Cum | .001 | 0 | .35 | .979 |
| LEXW by ECLAC 09 | -.002 | 0 | .176 | .972 |
| LEXW BY ECLAC 11 | -.003 | .001 | .237 | .972 |
| LEXW by ECLAC 12 | -.003 | .001 | .117 | .972 |
| LEXW by ECLAC cum | .002 | 0 | .165 | .972 |

As we can see above in table 5.1 there are no statistical relationships among literacy (total, male and female) by ECLAC 2009 to 2012, inclusive of the cumulative. In table 5.2 below we examine the statistical relationships among Gross Domestic Product, GINI and Unemployment by ECLAC cohorts.

Table 5.2 Developmental Proxies by ECLAC Cohorts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proxy by ECLAC Cohort | B | Std. error | Sig. | R2 |
| GDPPC by ECLAC 09 | -.102 | 3.722 | .983 | .691 |
| GDPPC BY ECLAC 11 | 3.359 | 9.714 | .788 | .691 |
| GDPPC by ECLAC 12 | -4.012 | 5.36 | .591 | .691 |
| GDPPC by ECLAC cum | .249 | 3.774 | .958 | .691 |
| GINI by ECLAC 09 | .01 | .024 | .74 | .515 |
| GINI by ECLAC 11 | .028 | .062 | .728 | .515 |
| GINI by ECLAC 12 | .01 | .034 | .82 | .515 |
| GINI by ECLAC Cum | -.009 | .024 | .777 | .515 |
| UNEMP by ECLAC 09 | .001 | .001 | .513 | .973 |
| UNEMP by ECLAC 11 | .004 | .002 | .372 | .973 |
| UNEMP by ECLAC 12 | 0 | .001 | .827 | .973 |
| UNEMP by ECLAC cum | -.001 | .001 | .683 | .973 |

As we can see above table 5.2 there are no statistically significant relationships among GDPPC, GINI and Unemployment by ECLAC cohorts from 2009 to 2012, inclusive of the cumulative index. In table 5.3 below we will examine the statistical relationships among literacy rates (total, male and female) by economic commission on Latin American and the Caribbean cohorts from 2009 to 2012, including the cumulative index.

Table 5.3: Total Male and Female Literacy by ECLAC Cohort

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Literacy by ECLAC Cohort | B | Std. Error | Sig. | R2 |
| LITT by ECLAC09 | .001 | .001 | .599 | .862 |
| LITT by ECLAC11 | .005 | .004 | .429 | .862 |
| LITT by ECLAC12 | -.001 | .002 | .649 | .862 |
| LITT by ECLACCUM | -.001 | .001 | .641 | .862 |
| LITM by ECLAC09 | .002 | .001 | .338 | .891 |
| LITM by ECLAC11 | .007 | .003 | .286 | .891 |
| LITM by ECLAC12 | .001 | .002 | .702 | .891 |
| LITM by ECLACCUM | -.002 | .001 | .339 | .891 |
| LITW by ECLAC09 | 0 | .002 | .915 | .893 |
| LITW by ECLAC11 | .002 | .004 | .691 | .893 |
| LITW by ECLAC12 | -.004 | .002 | .352 | .893 |
| LITW by ECLACCUM | 0 | .002 | .814 | .893 |

As we can see in table 5.3 above there are no statistically significant relationships among literacy (total, male and female) and ECLAC cohorts, including the cumulative index. In table 5.4 below we will examine the statistical relationships among CIA infant mortality data and ECLAC cohorts from 2009 to 2012, including the cumulative index.

Table 5.4: Infant Mortality by ECLAC COHORTS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proxy by ECLAC COHORT | B | Std. Error | Sig. | R2 |
| INFMORT by ECLAC09 | .001 | .004 | .795 | .685 |
| INFMORT by ECLAC11 | .001 | .011 | .966 | .685 |
| INFMORT by ECLAC12 | .006 | .006 | .492 | .685 |
| INFMORT by ECLACCUM | -.002 | .004 | .749 | .685 |

As we can see above in table 5.4 there are no statistically significant relationships among C.I.A. infant mortality data and ECLAC COHORTS from 2009 to 2012, including the cumulative index.

In Table 6.1 below we analyze the statistical relationships among life expectancy (total, male and female) and Dussel’s data on China’s direct investment in Latin American nations. The 2006, 2013, 2017, 2018 and cumulative indexes were the only years without collinearity problems.

Table 6.1: Life Expectancy (Total, Male and Female) by Dussel Cohorts on Chinese Direct Investment in Latin America

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proxy by Dussel cohort | B | STD. Error | Sig. | R2 |
| LEXT by Dussel 2006 | 122.673 | 163.774 | .591 | .782 |
| LEXT by Dussel 13 | 10.94 | 11.189 | .507 | .782 |
| LEXT by Dussel 17 | 18.036 | 18.3 | .505 | .782 |
| LEXT by Dussel 18 | -11.008 | 10.593 | .488 | .782 |
| LEXT by Dussel CUM | -1.883 | 1.379 | .402 | .782 |
| LEXM by Dussel 06 | -12.319 | 17.881 | .616 | .556 |
| LEXM by Dussel 13 | .392 | 1.222 | .802 | .556 |
| LEXM by Dussel 17 | .64 | 1.998 | .803 | .556 |
| LEXW by Dussel 06 | -17.787 | 15.671 | .46 | .632 |
| LEXW by Dussel 13 | .302 | 1.071 | .825 | .632 |
| LEXW by Dussel 17 | .218 | 1.751 | .921 | .632 |
| LEXW by Dussel 18 | .466 | 1.014 | .726 | .632 |
| LEXW by Dussel CUM | -.044 | .132 | .796 | .632 |
|  |  |  |  |  |
|  |  |  |  |  |

As we can see above in table 6.1 there are no statistically significant relationships among life expectancy data (total, male and female) and the Dussel cohorts. In table 6.2 below we analyze the relationships among gross domestic product per capita, GINI COEFFICIENTS, Unemployment by Dussel cohorts.

Table 6.2: GDPPC, GINI Unemployment by Dussel Cohorts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proxy by Dussel Cohort | B | STD. Error | Sig. | R2 |
| GDPPC by Dussel 06 | -45662.54 | 11106.291 | .152 | .968 |
| GDPPC by Dussel 13 | 1460.162 | 758.772 | .305 | .968 |
| GDPPC by Dussel 17 | 2192.083 | 1241.043 | .238 | .968 |
| GDPPC by Dussel 18 | 1005.229 | 718.393 | .395 | .968 |
| GDPPC by Dussel CUM | -140.439 | 93.484 | .374 | .968 |
| GINI by Dussel 06 | 33.115 | 37.386 | .539 | .958 |
| GINI by Dussel 13 | 3.078 | 2.554 | .441 | .958 |
| GINI by Dussel 17 | -16.372 | 4.178 | .159 | .958 |
| GINI by Dussel 18 | 8.31 | 2.418 | .18 | .958 |
| GINI by Dussel CUM | 1.326 | .315 | .148 | .958 |
| UNEMP by Dussel 06 | -4.657 | 3.593 | .418 | .985 |
| UNEMP by Dussel 13 | .775 | .245 | .195 | .985 |
| UNEMP by Dussel 17 | -1.452 | .401 | .172 | .985 |
| UNEMP by Dussel 18 | .555 | .232 | .253 | .985 |
| UNEMP by Dussel CUM | .193 | .03 | .099 | .985 |

As we can see above in table 6.2 there are for the most part no statically significant relationships among GDPPC and GINI Coefficients with Dussel cohorts, including the cumulative index. The only exception is the cumulative index for unemployment (Sig.=.099). In table 6.3 below we will analyze the statistical relationships among CIA fact book data on literacy rates (total, male and female) with Dussel cohorts.

Table 6.3: Literacy Rates (Total, Male and Female) by Dussel Cohorts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Literacy by Dussel Cohort | B | Std. Error | Sig. | R2 |
| LITT by Dussel 06 | -7.6 | 13.045 | .664 | .686 |
| LITT by Dussel 13 | .985 | .891 | .468 | .686 |
| LITT by Dussel 17 | .001 | 1.458 | 1 | .686 |
| LITT by Dussel 18 | .242 | .844 | .823 | .686 |
| LITT by Dussel CUM | -.072 | .11 | .632 | .686 |
| LITM by Dussel 06 | .194 | 9.712 | .938 | .791 |
| LITM by Dussel 13 | 1 | .663 | .373 | .791 |
| LITM by Dussel 17 | .387 | 1.085 | .782 | .791 |
| LITM by Dussel 18 | .135 | .628 | .865 | .791 |
| LITM by Dussel CUM | -.098 | .082 | .444 | .791 |
| LITW by Dussel 06 | -15.688 | 15.469 | .496 | .713 |
| LITW by Dussel 13 | .948 | .1057 | .535 | .713 |
| LITW by Dussel 17 | -.341 | 1.729 | .876 | .713 |
| LITW by Dussel 18 | .273 | 1.001 | .831 | .713 |
| LITW by Dussel CUM | -.05 | .13 | .767 | .713 |

As we can see above in table 6.3 there are no statistically significant relationships among literacy rates (Total, Male and Female) and Dussel cohorts, including the cumulative index. We turn now in table 6.4 below to analyze the relationships among infant mortality data and the Dussel cohorts.

Table 6.4: Infant Mortality Data by Dussel Cohort

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proxy by Dussel Cohort | B | Std. Error | Sig. | R2 |
| INFMORT by Dussel 06 | 47.596 | 11.137 | .146 | .967 |
| INFMORT by Dussel 13 | -1.111 | .761 | .382 | .967 |
| INFMORT by Dussel 17 | -2.429 | 1.244 | .301 | ,967 |
| INFMORT by Dussel 18 | -.777 | .72 | .476 | .967 |
| INFMORT by Dussel CUM | .218 | .094 | ,257 | .967 |

As we can see above in Table 6.4 there are no statistically significant relationships among infant mortality data and Dussel cohorts, including the cumulative Index. We turn next in Table 7.1 below to analyze life expectancy (total, male and female) by Chen cohorts from 2009 to 2012, including a cumulative index.

Table 7.1: Life expectancy (Total, Male and Female) by Chen Cohorts in Chinese Direct Investment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Life Expectancy by Chen Cohort | B | Std. Error | Sig. | R2 |
| LEXT by Chen 09 | 13.23 | 23.087 | .607 | .285 |
| LEXT by Chen 11 | 39.409 | 77.246 | .645 | .285 |
| LEXT by Chen 12 | 1.949 | 57.819 | .975 | .285 |
| LEXT by Chen CUM | -12.883 | 35.463 | .74 | .285 |
| LEXM by Chen 09 | 1.362 | 1.519 | .436 | .461 |
| LEXM by Chen 11 | 7.157 | 5.082 | .254 | .461 |
| LEXM by Chen 12 | 3.651 | 3.804 | .408 | .461 |
| LEXM by Chen CUM | -3.093 | 2.333 | .277 | .461 |
| LEXW by Chen 09 | .444 | 1.692 | .81 | .285 |
| LEXW by Chen 11 | 5.041 | 5.663 | .439 | .285 |
| LEXW by Chen12 | 2.319 | 4.239 | .622 | .285 |
| LEXW by Chen CUM | -2.098 | 2.6 | .479 | .285 |

As we can see aboe in Table 7.1, there are no statistically significant relationships among life expectancy data (Total, Male and Female) and Chen cohorts from 2009 to 2012, including the cumulative index. In table 7.2 below we now analyze the statistical relationships among gross domestic product per capita, GINI coefficient, unemployment and the Chen cohorts from 2009 to 2012, including the cumulative index.

Table 7.2: GDPPC, GINI and Unemployment by Chen Cohorts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proxy by Chen Cohort | B | Std. Error | Sig. | R2 |
| GDPPC by Chen 09 | 1253.001 | 2061.997 | .586 | .815 |
| GDPPC by Chen 11 | 21307.916 | 6899.268 | .054 | .815 |
| GDPPC by Chen 12 | 11858.929 | 5164. | .105 | .815 |
| GDPPC by Chen CUM | -9266.029 | 3167.393 | .061 | .815 |
| GINI by Chen 09 | 6.657 | 11.279 | .597 | .404 |
| GINI by Chen 11 | -8.312 | 37.74 | .84 | .404 |
| GINI by Chen 12 | -10.831 | 28.249 | .727 | .404 |
| GINI by Chen CUM | 6.557 | 17.326 | .73 | .404 |
| UNEMP by Chen 09 | .435 | 1.635 | .807 | .546 |
| UNEMP by Chen 11 | .995 | 5.472.867 | .867 | .546 |
| UNEMP by Chen 12 | -.295 | 4.096 | .947 | .546 |
| UNEMP by Chen CUM | .098 | 2.512 | .971 | .546 |

In table 7.2 above there are directly proportional linear relationships with GDPPC and the 2011 and perhaps even the 2012 cohorts (Sig.=.054, .105), but when the combined figures of the cumulative index, the relationship is negative (Sig.=.061). These could indicate mutual affinities (for two years, wealthier nations sought investment from China, and China invested, but over time, less wealthy nations seek investment from China and China invests). Given that the date are from a full decade ago or more, these could also indicate cause (that China’s investment over time leads to lower gross domestic products per capita for the host nation). In table 7.3 below we turn to an analysis of statistical relationships among literacy rates (total, male and female populations) and Chen cohorts, including the cumulative index.

Table 7.3: Literacy Rates (total, male and Female) by Chen Cohorts of Chinese Investment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Literacy by Chen Cohort | B | Std. Error | Sig. | R2 |
| LITT by Chen 09 | -.295 | .97 | .712 | .708 |
| LITT by Chen 11 | 3.121 | 3.246 | .407 | .708 |
| LITT by Chen 12 | -.372 | 2.43 | .888 | .708 |
| LITT by Chen CUM | -.861 | 1.49 | .604 | .708 |
| LITM by Chen 09 | .59 | .918 | .566 | .699 |
| LITM by Chen 2011 | 4.41 | 3.072 | .247 | .699 |
| LITM by Chen 12 | .433 | 2.3 | .863 | .699 |
| LITM by Chen CUM | -1.458 | 1.41 | .377 | .699 |
| LITW by Chen 09 | -1.378 | 1.259 | .354 | .681 |
| LITW by Chen 11 | 1.534 | 4.212 | .74 | .681 |
| LITW by Chen 12 | -1.439 | 3.153 | .679 | .681 |
| LITW by Chen CUM | -.109 | 1.934 | .958 | .681 |

As we can see in Table 7.3 above, there are no statistical relationships among CIA literacy data and the Chen cohorts, including a cumulative index. In Table 7.4 below we turn now to a statistical analysis of CIA infant mortality data by Chen cohorts, including a cumulative index.

Table 7.4: Infant Mortality Data by Chen Cohorts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proxy by Chen Cohort | B | Std. Error | Sig. | R2 |
| INFMORT by Chen 09 | -.912 | 2.482 | .738 | .731 |
| INFMORT by Chen 11 | -19.065 | 8.304 | .105 | .731 |
| INFMORT by Chen 12 | -11.332 | 6.216 | .166 | .731 |
| INFMORT by Chen CUM | 8.657 | 3.812 | .108 | .731 |

In Table 7.4 above, the 2011 Chen Cohort has a possible inversely proportional linear relationship with infant mortality, while the cumulative index has an overall directly proportional linear relationship with infant mortality. Focusing just on the cumulative index, we may interpret this as a mutual affinity where nations with high infant mortality prefer Chinese investment and China invests in them. Given the age of the Chen cohorts (more than ten years old), we can entertain a causal inference, that relying on Chinese investment resulted in higher infant mortality rates, though it is difficult to understand why this would be the case.

Concluding Remarks

To evaluate the data on the whole, let us take a counterfactual set of assumptions from an excessively realist bent. One could imagine a hawkish scenario where ideologue hegemons tried to use investment and aid as leverage to re-create the global commons in their image. China would try to create only a socialist environment while the United States would waver between Democratic party welfare state values and Republican party free market values. We have used quite a few proxies for development to measure whether U.S. and Chinese aid and investment coincide with higher and lower values in the following proxies for development: literacy, life expectancy, gross domestic product per capita, GINI coefficients, unemployment rates and infant mortality rates. The vast majority of data runs revealed no directly or indirectly proportional relationship between hegemonic investment and the proxies for development we chose. We review the few exceptions. In table 1.2, percent of Chinese imports varied positively with unemployment. In table 1.3, percent of U.S. imports varied negatively with male literacy rates. In table 2.2, Chinese 2020 Covid-19 field hospitals varied positively with gross domestic product per capita, which probably suggests they wanted to build infrastructure in the places that had adequate existing infrastructure to vaccinate people. There was a similar relationship in table 2.3 with the number of field hospitals donated and literacy levels. In table 4.1, there was an inversely proportional relationship between State Department direct investment data and life expectancy for women (for the years 2017 and the cumulative index). In table 4.2 there was an inversely proportional. In table 6.2 there was a directly proportional linear relationship between unemployment and the Dussel cumulative index. In table 7.2 there was an inversely proportional relationship between GDPPC and the Chen cumulative index. In table 7.4 there was a directly proportional relationship between Chinese direct investment and infant morality. These were the exceptions, and none of these exceptions paint a picture of hegemons making ideological demands of developing nations in exchange for investment and aid. Most of the data runs showed no relationship between the level of investment and any particular proxy for development. Hegemons with contrasting values are investing in a developing region that needs the resources.

Appendix A: List of POL 100 Students Who Helped Build Our Dataset

  Frida Aispuro, Enrique Amador, Ayleen Anaya,  Gustavo Ayala, Joshua Basaba, Thomas Byrne, Giselle Cantero, Kariel Castellanos, Ashley  Cital, Chandra Creasia, Jennine Dahdul, Hazar Diaz, Jason Escareno, Fanny Flores, Hiedi Flores,  Tiffany Garces, Ryan Gardiner, Jonathan Gaspar, Gabriela Gomez, Leslie Hernandez, Susana  Hernandez, Miyu Hoshi, Sydney King, Betzua Lopez, Monica Lopez, Rogelio Lopez, Sarahfina  Luuga, Julio Magdaleno, Laura Marrufo, Stephanie Mendez, Luis Mendez, Kayla Murray,  Alexia Ochoa, Kassandra Ortiz, Kariela Perez, Jose Quintero, Yadira Ramirez, Natalie Salazar,  Bryan Shihad, Pebbles Stallion, Malini Subramaniam, Nina Tang, Jeydon Vargas, Briana  Vergara, Treasure Warren, Bryana Zamudio, Samantha Alvarez, Denise Aparicio, Mauro  Barcenas, Litzy Benitez, Eleny Bonilla, Shamarkae Campbell, Jacob Campos, Gabrielle Cannon,  Amy Carretero, Sarah Castanon, Cynthia Chavez, Victor Chukwuemeka, Karla Contreras, Leslie  Cruz, Fabiola De Santiago, Jose Domingues, Kate Flores, Jaelin Fowler, Briani Fulwilder, Bagy  Garcia, Maria Guzman, Paige Henderson, Briyith Hermosillo, Aaron Hoang, Alondra Ibanez,  Karina Lozano, Ashley Madrigal, Carlos Meza, Paola Moreno, Ismael Munoz, Maricela Nava,  Nicole Pinzon, Itzel Ramirez, Jonathan Ramirez, Ricardo Reyes, Jade Rico, Cristina Rivas,  Dulce Rivera, Frankie Rivera, Bryan Rodriguez, Crystal Romero, Ezequiel Romo, Karla Rubi,  Mymona Sharna, Victor Trujillo, Jeffrey Tucker, Dejonna Weems, Vanessa White and Alberto  Zelaya.

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