International Trade I: Assignment 1

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1. Patterns of Trade

(a)

(i)

```
# Reading and Wrangling DATA
dataex1<- read.csv('/Volumes/External/EconIntl/WorldBankDataMex.csv') %>%
  slice(-c(6:10)) # Deleting NA rows
dataex1<- dataex1[-c(1:4)] #Deleteng first 3 columns

names(dataex1)<- c(1960:2020) #Changin names in data frame

# Variable Handling
GDP<- dataex1[1, ]
exports<- dataex1[2, ]      #Merchandise Exports
imports<- dataex1[3, ]      #Merchandise Imports
gsExports<- dataex1[4, ]    #Goods and services Exports
gsImports<- dataex1[5, ]    #Goods and services Imports
```

Let's take a closer look at the ratios:

```
# Ratios
exportstoGDP <- t(exports / GDP)
importstoGDP <- t(imports / GDP)
merged_merch_GDP <- t((exports  + imports) / GDP)
merged_merch <- data.frame(exportstoGDP, importstoGDP, merged_merch_GDP)

#Before NAFTA
(r1.B_NAFTA <- round(mean(merged_merch_GDP[as.character(c(1960:1993)), ]),4))
```

```
## [1] 0.1823
```

```
(r2.B_NAFTA <- round(mean(exportstoGDP[as.character(c(1960:1993)), ]),4))
```

```
## [1] 0.0863
```

```
(r3.B_NAFTA <- round(mean(importstoGDP[as.character(c(1960:1993)), ]),4))
```

```
## [1] 0.096
```

```
#After NAFTA
(r1.A_NAFTA <- round(mean(merged_merch_GDP[as.character(c(1994:2011)), ]),4))
```

```
## [1] 0.4822
```

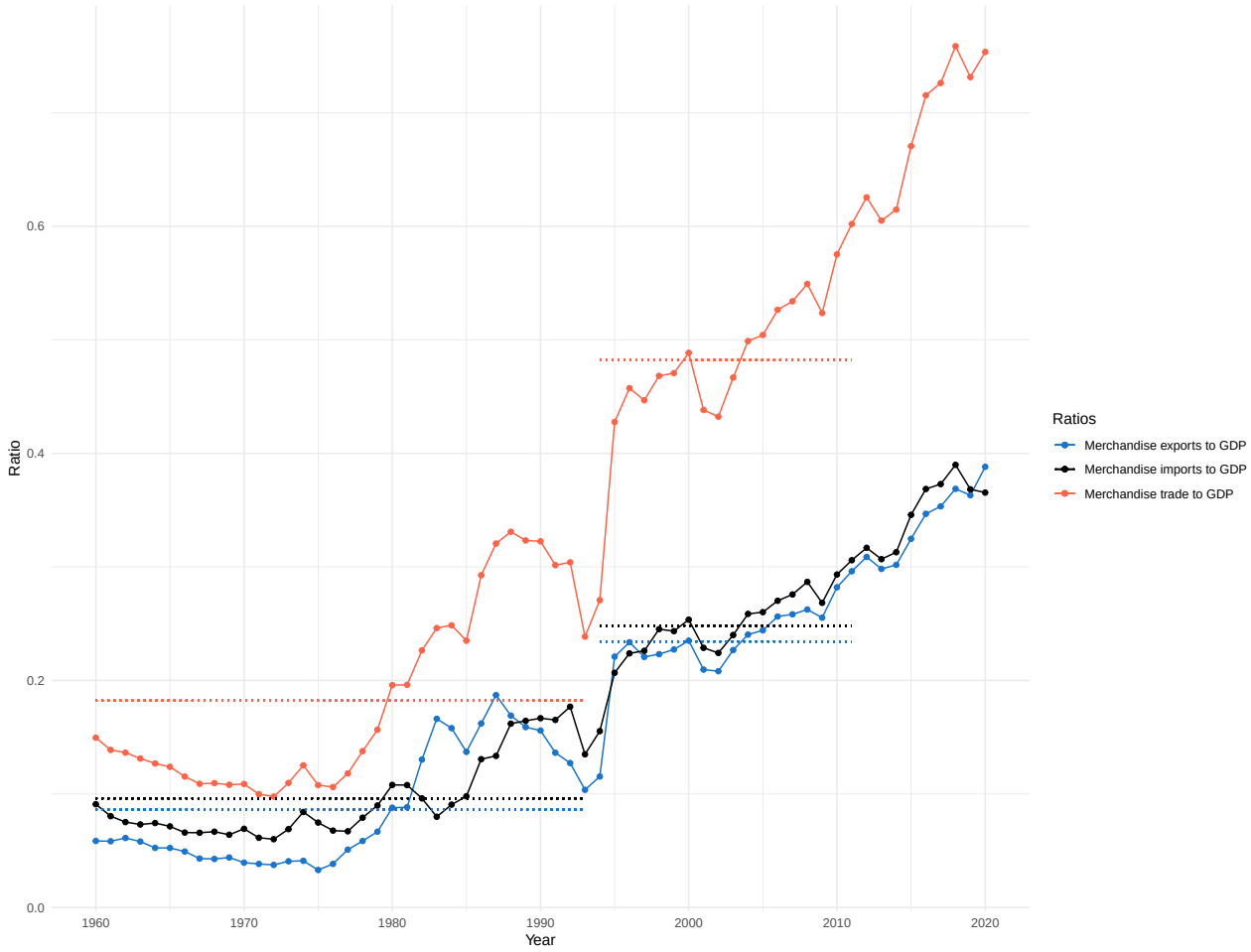
```
(r2.A_NAFTA <- round(mean(exportstoGDP[as.character(c(1994:2011)), ]),4))
```

```
## [1] 0.2342
```

```
(r3.A_NAFTA <- round(mean(importstoGDP[as.character(c(1994:2011)), ]),4))
```

```
## [1] 0.2481
```

Lets'plot:



Mexico started to liberalize trade since the mid 80's and in 1994 the beginning of NAFTA had a huge impact on how trade developed over its tenure. We can see that, practically, since 1997 Mexico has incurred in a trade deficit with respecto to the rest of the world, except in 2019-2020; this means, in overall Mexico was borrowing from the rest of the world experiencing moderate grwoth rates. Clearly, our greatest trading partner has been the U.S. accounting for a total of $614.5 billion USD in total (two way) goods trade during 2019.

(ii)

Ratios	Before NAFTA	After NAFTA
Merchandise trade to GDP	0.1823	0.4822
Merchandise imports to GDP	0.096	0.2481
Merchandise exports to GDP	0.0863	0.2342

Primarily, Mexico was particullarly invested in 'oil', accounting for 75% of total exports by 1978. Monetary and Fiscal policy were characterized by contractionist and protectionism flourished in this period. Mexico was enjoying the fruits of the "Mexican Miracle". As inflation ran uncontrolled towards the sky, crisis struck and a new economic model had to be implmented, this new model led to the signing of NAFTA, implying that the ratio of merchandise trade would increase almost two-fold, imports were given a more important role, as imports-substitution model showed its failures, oil-linked exports decreased and overall merchandise exports increade over NAFTA's tenure.

NAFTA's has been harshly critized by the government in power due to its "inclination or favoritism" towards foreing goods and foreing capital and has been replaced by USMCA.

(iii)

```
#Variable Handling
serviceExports<- gsExports - exports
serviceImports<- gsImports - imports
serv_XtoGDP <- t(serviceExports/GDP)
serv_ImtoGDP <- t(serviceImports/GDP)
servicesToGDP<- t((serviceExports+serviceImports)/GDP)
merged_services<- data.frame(serv_XtoGDP,serv_ImtoGDP,servicesToGDP)

#Before NAFTA
(r1servs.B_NAFTA<- mean(servicesToGDP[as.character(c(1960:1993)), ]))
```

```
## [1] 0.04887223
```

```
(r2servs.B_NAFTA<- mean(serv_XtoGDP[as.character(c(1960:1993)), ]))
```

```
## [1] 0.02740482
```

```
(r3servs.B_NAFTA<- mean(serv_ImtoGDP[as.character(c(1960:1993)), ]))
```

```
## [1] 0.02146741
```

```
#After NAFTA (1994-2011)
(r1servs.A_NAFTA<- mean(servicesToGDP[as.character(c(1994:2011)), ]))
```

```
## [1] 0.03588122
```

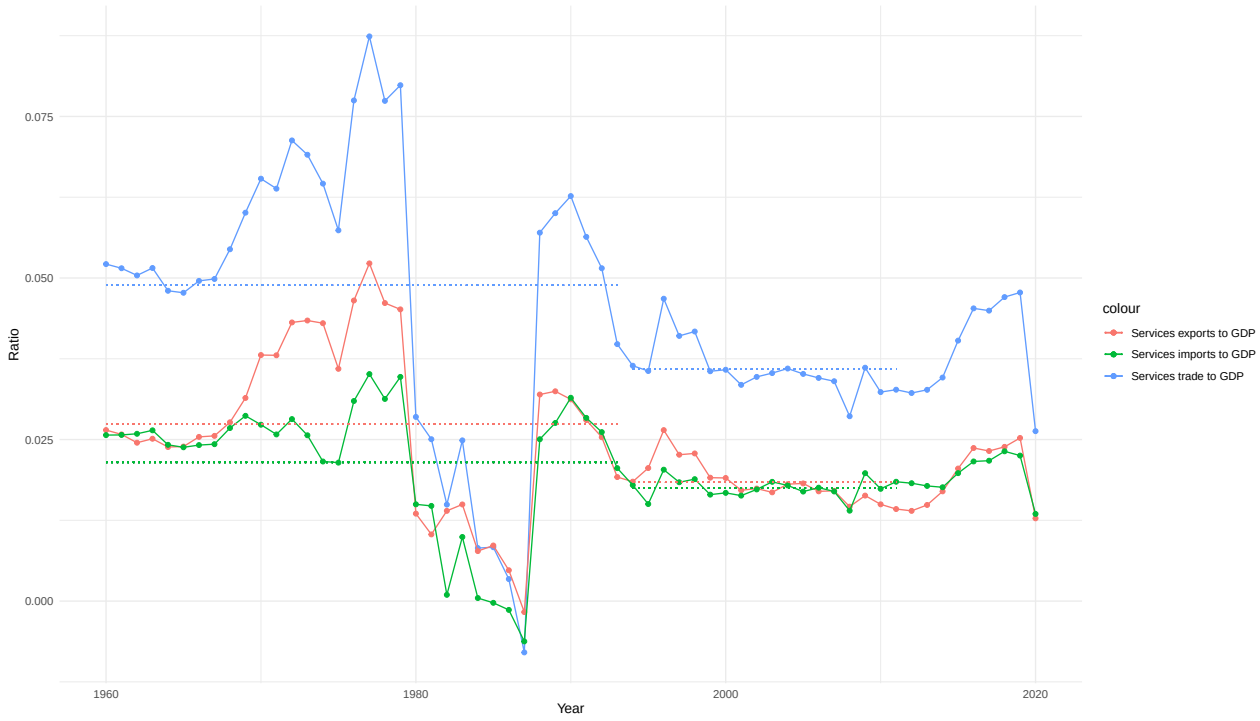
```
(r2servs.A_NAFTA<- mean(serv_XtoGDP[as.character(c(1994:2011)), ]))
```

```
## [1] 0.01839243
```

```
(r3servs.A_NAFTA<- mean(serv_ImtoGDP[as.character(c(1994:2011)), ]))
```

```
## [1] 0.0174888
```

Let's plot:



Ratios	Before NAFTA	After NAFTA
Services trade to GDP	0.0488722	0.0358812
Services Exports to GDP	0.0274048	0.0183924
Services Imports to GDP	0.0214674	0.0174888

Services (sepcially banking) was held by private capital since their conception, few banks were state-held. It's easy to see that services never had a huge impact on GDP(never passed 10%), however we can observe the impact of the nationalization of banks in 1982, services ratio to GDP fell, includign exports and imports. Liberalization of trade, implying the inflow of services to Mexico had an importante recovery since the mid 80's and has been stable up until 2018. The decrease in services to GDP ratio observed in 2008 is primarily due to 2008-2009 global economic crisis.

(b)

```
# Reading and Wrangling DATA
dataex1b<- read.csv('/Volumes/External/EconIntl/MexicoTrade_WITS_DATA.csv')
X.1993 <-
  dataex1b %>% filter(Year == '1993' &
                      TradeFlowName == 'Export') %>%
  select(c('TradeValue.in.1000.USD', 'ProductDescription')) %>%
  arrange(desc(TradeValue.in.1000.USD))
Im.1993 <-
  dataex1b %>% filter(Year == '1993' &
                      TradeFlowName == 'Import') %>%
  select(c('TradeValue.in.1000.USD', 'ProductDescription')) %>%
  arrange(desc(TradeValue.in.1000.USD))
X.2007 <-
  dataex1b %>% filter(Year == '2007' &
                      TradeFlowName == 'Export') %>%
```

```
  select(c('TradeValue.in.1000.USD', 'ProductDescription')) %>%
  arrange(desc(TradeValue.in.1000.USD))
Im.2007 <-
  dataex1b %>% filter(Year == '2007' &
                      TradeFlowName == 'Import') %>%
  select(c('TradeValue.in.1000.USD', 'ProductDescription')) %>%
  arrange(desc(TradeValue.in.1000.USD))
```

(i)

Top 10 Commodity Exports in 1993(in $1000xUSD):

```
kable(
  head(X.1993, 10),
  col.names = c('Traded Value($)', 'Product'),
  align = 'cl'
)
```

Traded Value($)	Product
6485314	Petrol./bitum. oil,crude
4242559	Passenger cars etc
2779688	Electrical distrib equip
2013789	Motor veh parts/access
2008824	Electrical equipment nes
1774014	Television receivers
1719531	Telecomms equipment nes
1653492	Internal combust engines
1465697	Electric circuit equipmt
1226761	Vegetables,frsh/chld/frz

Top 10 Commodity Exports in 2007(in $1000xUSD):

```
kable(
  head(X.2007, 10),
  col.names = c('Traded value($)', 'Product'),
  align = 'cl'
)
```

Traded value($)	Product
37937177	Petrol./bitum. oil,crude
20277045	Television receivers
18684439	Passenger cars etc
12146615	Telecomms equipment nes
11853225	Motor veh parts/access
9771584	UN Special Code
8994584	Goods/service vehicles
8960076	Computer equipment
7780483	Electrical distrib equip
7301003	Electrical equipment nes

Mexican main exports were always linke to oil-products, however they have steadily decreased since NAFTA took over. Television recievers came to be an important part of exports since NAFTA, as do passenger cars

and parts. NAFTA affected largely the mexican supply of crude oil to the world, reflecting on almost a 50% decrease from 1993 to 2007.

(ii)

Top 10 Commodity Imports in 1993 (in $1000xUSD) :

```
kable(
  head(Im.1993, 10),
  col.names = c('Trade value in $$1000$USD', 'Product'),
  align = 'cl'
)
```

Trade value in $1000USD	Product
7503795	UN Special Code
2249819	Valves/transistors/etc
1976657	Electric circuit equipmt
1931746	Electrical equipment nes
1881474	Telecomms equipment nes
1837823	Articles nes of plastics
1806154	Base metal manufac nes
1745784	Electrical distrib equip
1084777	Computer equipment
1061950	Heavy petrol/bitum oils

Top 10 Commodity Imports in 2007 (in $1000xUSD):

```
kable(
  head(Im.2007, 10),
  col.names = c('Trade value in $$1000$USD', 'Product'),
  align = 'cl'
)
```

Trade value in $1000USD	Product
16502191	UN Special Code
15373515	Telecomms equipment nes
13886076	Heavy petrol/bitum oils
12302190	Motor veh parts/access
10141118	Electric circuit equipmt
9436330	Passenger cars etc
6569592	Valves/transistors/etc
6098386	Computer equipment
6096571	Optical instruments nes
5989200	Articles nes of plastics

The expansion of trade since NAFTA has resulted in the creation of vertical supply relationships, especially along the U.S.-Mexico border. The flow of intermediate inputs produced in the United States and exported to Mexico and the return flow of finished products greatly increased the importance of the U.S.-Mexico border region as a production site. U.S. manufacturing industries, including automotive, electronics, appliances, and machinery, all rely on the assistance of Mexican manufacturers.

(iii)

Top 10 commodities with greatest % growth in exports:

```
kable(
  head(deltaX, 10),
  col.names = c('Product', 'Trade value in 1993', 'Trade value in 2007', 'Percentage change (%)'),
  align = 'lrrr'
)
```

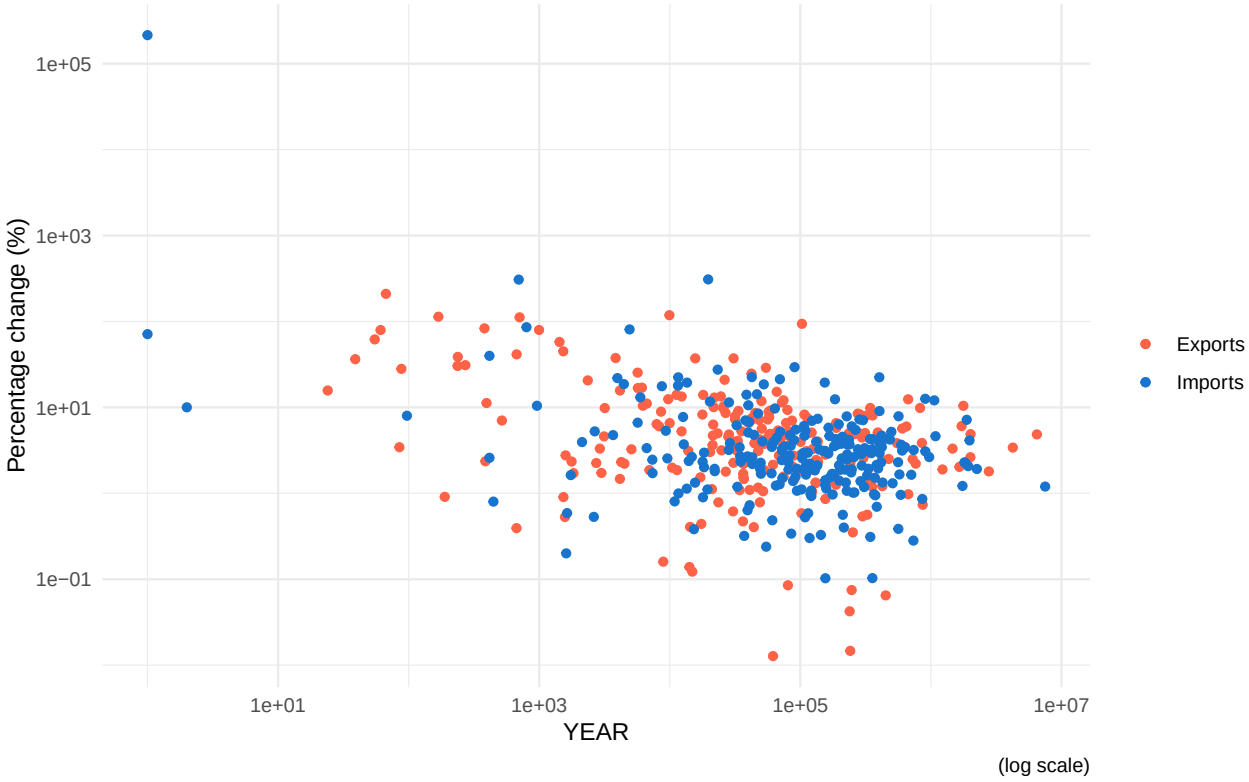
Product	Trade value in 1993	Trade value in 2007	Percentage change (%)
Cheese and curd	67	14125.680	209.83104
Road motor vehicles nes	9942	1186586.096	118.35084
Tea and mate	169	19373.554	113.63641
Iron ore/concentrates	708	79841.827	111.77094
UN Special Code	102909	9771584.007	93.95364
Flour/meal wheat/meslin	381	32065.129	83.16044
Pearls/precious stones	997	80428.061	79.67007
Rice	61	4910.652	79.50249
Butter and cheese	55	3457.157	61.85740
Prefabricated buildings	1431	84074.669	57.75239

Top 10 commodities with greatest % growth in imports:

```
kable(
  head(deltaIm, 10),
  col.names = c('Product', 'Trade value in 1993', 'Trade value in 2007', 'Percentage change (%)'),
  align = 'lrrr'
)
```

Product	Trade value in 1993	Trade value in 2007	Percentage change (%)
Precious metal ore/conc.	1	215157.058	215156.05800
Optical instruments nes	19685	6096571.468	308.70645
Iron ore/concentrates	697	214721.729	307.06561
Tobacco, manufactured	799	69334.933	85.77714
Coal non-agglomerated	4925	403015.007	80.83046
Silk	1	72.245	71.24500
Coin nongold non current	416	16992.294	39.84686
Natural gas	90370	2749684.017	29.42696
Nf base metal waste nes	23304	664650.037	27.52086
Knit/crochet fabrics	42507	1000009.364	22.52576

(iv)



(v)

```
## [1] "Exports correlations: -0.0848513396282853 ,-0.123972645711776 ,-0.171872290667224"
## [1] "Imports correlations: -0.0276848803832632 ,-0.0724633343634976 ,-0.10615588583996"
```

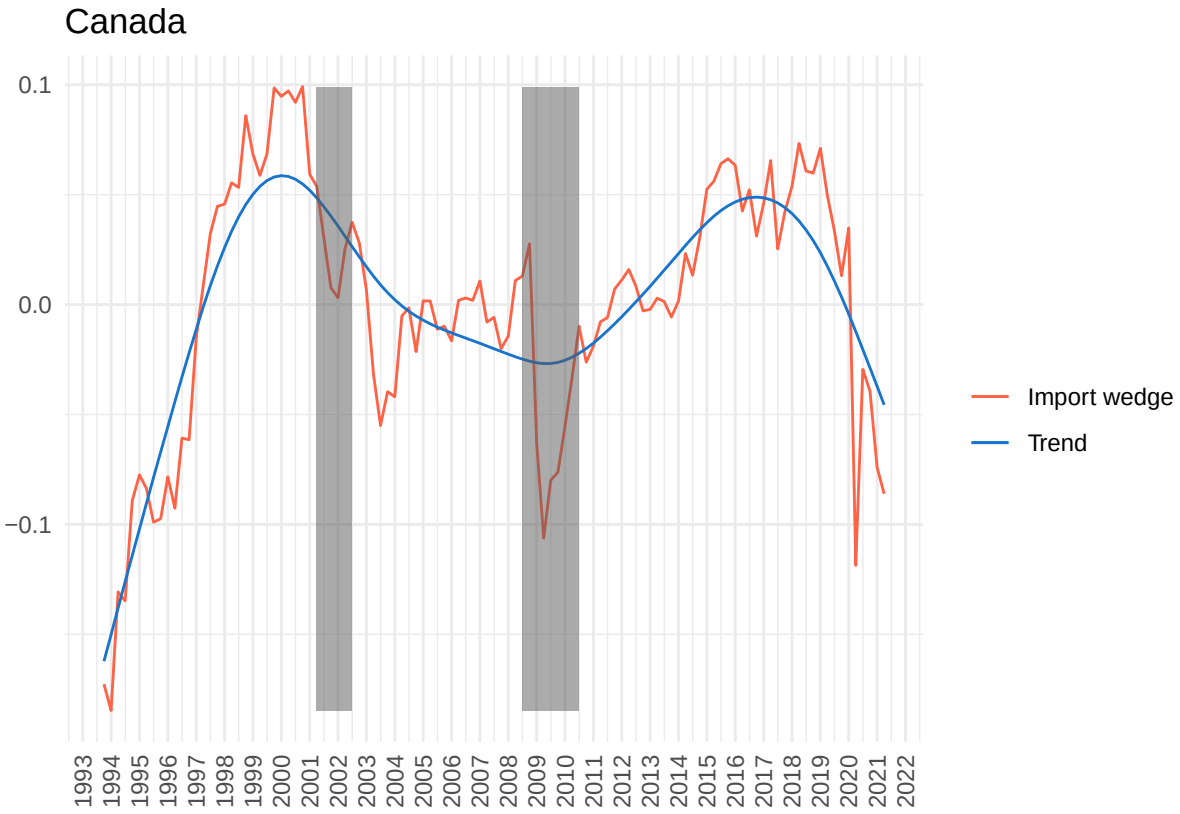
The order of calculation is: Person, Kendall, Spearman (respectively)

We can see that there is not a statistically significant linear relation between 93's data and their change in % shown in 2007(this comes from the interpretation of Pearson's correlation). However, there exists a weak monotonocity relationship between observed data given by Spearman; and, a weak/subtle dependency between variables, given by Kendall.

2. Export and Import Wedges

Using appendix results to log-linearize the model and assuming constant prices in order to get desired results.


Mexico
0.25
0.00
−0.25
−0.50
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Import wedge
Trend
United States of America
0.3
0.2
0.1
0.0
−0.1
−0.2
−0.3
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Import wedge
Trend



Trade policy reforms were perhaps the most striking leading Mexico to become one of the most open economy in the world in less than a decade. Therefore, the Mexican economic environment in those years is particularly suitable for trade exposure on/over firms. Given Mexico's large, diversified market, most U.S. products and services have ample opportunities. The new United States–Mexico–Canada Agreement (USMCA), which replaced the North American Free Trade Agreement (NAFTA) on July 1, 2020, provides additional trade-related benefits for U.S. companies.