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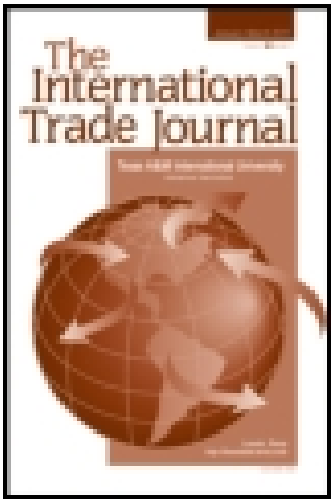

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Does the WTO Increase Trade and Cause Convergence?

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Does the WTO Increase Trade and Cause Convergence?

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China and India implemented the World Trade Organization (WTO) agreements, removing restrictions with the intent to increase international trade and foreign investment. This article aims to examine whether this objective was achieved by analyzing trends in exports and imports, and determining Granger Causality among FDI, exports, and imports during the pre- and post-WTO periods. Our results show that India's imports have more than doubled throughout the post-WTO period, indicating substantial WTO effectiveness in India, while the WTO's effect in China is mixed and not that significant. Further, four theoretical propositions have been posited to encourage further research.

KEYWORDS exports, FDI, Granger Causality, imports, trend analysis, WTO

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I. INTRODUCTION

On January 1, 1995, the World Trade Organization (WTO) succeeded the General Agreement on Tariffs and Trade (GATT). The WTO is the legal and institutional framework of the multilateral trading system as redefined and extended by the Uruguay Round of trade negotiations held in 1986–1994 (the "Uruguay Round"). A unique organization because of its expansive reach, the binding nature of its contractual obligations, and strong enforcement mechanisms built into its integrated dispute settlement system, the WTO may transform international business in favor of multinational firms (Czinkota 1995). Among its many responsibilities, the organization imposes and enforces trade sanctions (Nordstrom 2005), and provides a forum to

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negotiate agreements, contributing to economic development by reducing barriers to international trade and ensuring a level playing field for all (Lawton and McGuire 2001; Rose 2004). This organization emerged from negotiations; the bulk of its obligations were established in the Uruguay Round and GATT (Kurihara 2012). Due to its broad influence, the WTO has emerged as the most powerful business regulator, facilitating and controlling international business (Paul 2011).

Until the WTO's advent, developing countries' trade policy focused on quota restrictions (QRs) on imports and regulations on foreign direct investment (FDI), enforcing licensing of all imports and strict FDI policy. Then, trade policy was founded on import substitution and domestic industry protection. But since the WTO's inception, FDI, exports, and imports have surged, the latter two becoming the most dynamic variables in developing countries' industrialization processes (Paul 2011). Industrialization generates a heavy demand for capital goods, equipment, machinery, and raw materials, which must be imported from highly industrialized countries (Armstrong and Read 1998). Facilitating industrialization, the WTO's main objective is trade liberalization, which allows for imports of raw materials and capital goods at a lower cost to producers.

Despite the WTO agreements' crucial role in enabling foreign trade and investment, few studies have focused on this topic or analyzed the WTO's impact on imports and exports in different countries. One such study is Denis (2003), which analyzed the WTO's effect on international marketing by studying the effects on the 4Ps of marketing—product, price, promotion, and place—finding that firms have increasing market access because of the WTO's trade agreements. Nevertheless, the relationship among FDI, trade openness, and economic growth in host countries remains an important issue in economic literature, recently receiving attention from countries suffering from unemployment and technological stagnation (Belloumi 2014). This area still remains unexplored as far as top business and economics journals are concerned.

China and India have emerged as the hub for international business in goods and services, respectively (Paul and Gupta 2014). This article aims to fill that gap by analyzing how the WTO has eased international trade and assessing whether the organization has increased trade in the two fastest growing emerging markets: China and India. The following section reviews extant literature in this area of study. Section three states our research objectives and hypotheses, section four describes our methodology, and section five establishes our trend and Granger Causality analyses within the Vector Autoregression (VAR) framework. The article concludes with four theoretical propositions based on our findings, which may engender future theory and improve management.

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II. LITERATURE REVIEW

The WTO has undoubtedly fueled globalization by instituting, regulating, and safeguarding trade liberalization. Member governments of the WTO have taken away non-tariff and tariff barriers after the organization was established in 1995, which, in turn, has facilitated exports across countries (Suh and Poon 2006). Reviewing structural changes in Indian trade and trade policies in the pre-WTO periods 1960–61 and 1984–85, Panchamukhi (1987) studied the share of exports and imports in GDP and world trade, trade balance and terms, quantity and unit value index, geographical pattern, and commodity composition. His findings show a deteriorating and fluctuating trend in Indian trade during the study periods. In the post-WTO period, however, import liberalization became an integral part of globalization (Nayyar 1997), and has varied implications on economies' industrial performance. For instance, Banerji (2000) showed that a reduction in a commodity's import tariff may lead to an increase in imports; however, a rise in imports of intermediate goods should lead to a surge in exports by shifting cost curves downwards. Focusing on India, Bhattacharya and De (2001) empirically assessed whether the Indian corporate sector's import-dependence has grown in the post-liberalization period for most industries and/or subgroups, finding that this sector is increasingly becoming import-oriented, although the relationship between trade liberalization and export growth is not definite. They also found that import liberalization stimulated exports in 10 industry groups/subgroups out of 18 industry groups/subgroups included in their sample.

In general, trade liberalization can be analyzed in two phases (Bhagwati and Srinivasan 1984). The first phase, intermediate liberalization, promotes free trade in raw materials and machinery, lowering imported inputs' price. The availability of imported intermediate goods and technology, whether licensed or embodied by imported capital goods, is a benefit of shedding a restrictive trade system. The second phase, full liberalization, permits free trade of finished goods, including noncompetitive consumer goods.

Although GATT had already liberalized trade to some extent, the WTO's potential to regulate national affairs far surpassed GATT's, presumably making its effect more significant. While GATT was limited to trade in goods, excluding certain sectors such as agriculture and textiles/apparel, the WTO's role goes beyond fostering trade by barring countries from instituting trade policies detrimental to others or themselves. Although mostly rich countries and multi-national corporations took initiative to set up the WTO, its greatest beneficiaries may be developing countries (Deardorff and Stern 2001). Supporting this argument, Zaki (2014) found that the WTO's trade liberalization favors developing over developed countries in terms of trade increase and/or welfare gains. These findings also support the popular notion that the WTO boosts both intra- and inter-regional trade. Expounding on the WTO's

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reach, Lawton and McGuire (2001) showed how the WTO's disciplines affect firms and countries with reference to government subsidies.

China's inclusion in the WTO in 2001 is widely accepted as a landmark for the multilateral trade system. The implications of China's WTO membership have been researched (Teng 2004; Chartier 1998). China's increasing integration into the global economy has contributed to sustained international trade growth. As Chinese exports have further diversified, China's greater penetration into industrial markets has been accompanied by a surge in imports from all regions. Prior to its inclusion in the WTO, China had implemented tariffs reforms in the 1980s and, after joining the WTO, the country committed to additional far-reaching and challenging reforms (Rumbaugh and Blancher 2004).

Nevertheless, the large-scale WTO-plus commitments have been heavily criticized and their effectiveness questioned (He 2014). Such a critic is Rose (2004), who did not find evidence that GATT and WTO membership had a strong positive effect on international trade, despite the fact that the WTO's General Selling Point (GSP) has been a promise of doubling trade. This finding suggests that some aspects of the multilateral trading system seem to matter; but not the obvious ones. Rose's findings were so provocative that they spawned multiple studies attempting to validate or overturn them. For instance, Subramanian and Wei (2007) showed that GATT and the WTO's impact depend on how a country takes advantage of its membership, and with whom and which products it negotiates. These researchers found that the WTO promotes trade in developing countries. Similarly, Foster, Poeschl, and Stehrer (2011) considered how Preferential Trade Agreements' (PTAs) affected volume and variety of bilateral trade, finding that they generate trade by increasing contemporaneous exports by approximately 12%. According to these researchers, PTAs' trade-creating effects are more significant for underdeveloped countries.

GATT and WTO not only increased trade at the margin among existing trade partners, but also forged new trade relationships at the extensive margin (Subramanian and Wei 2007). Most extant studies exclude zero trade observations, ignoring the extensive margin (Liu 2009). Using a large bilateral panel dataset including zero trade flows, those studies found that the GATT and the WTO had promoted international trade at both the intensive and extensive margins (Suh and Poon 2006; Subramanian and Wei 2007; Liu 2009). Suh and Poon (2006) examined how Korea's computer industry has benefited from the creation of the WTO based on a survey of 50 of the largest Korean computer firms. The results show that firms experienced higher annual export growth rates in 1995–2002 compared to the pre-WTO period of 1990–1994.

Nonetheless, the WTO's influence on international trade remains in dispute. Hufbauer and Cimino (2013) assessed what can be salvaged from the WTO and the associated global payoffs and provide guidelines for

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maintaining the relevance of the WTO moving forward. Some experts argue that the WTO inherently disadvantages developing countries (Ford 2002). On the other hand, trade liberalization measures as part of economic reforms and the WTO have substantially reduced tariffs. Quantitative Restrictions on imports have also been removed in 99% of items in emerging countries such as India (Paul and Gupta 2012).

Highlighting the WTO's inequities, Balding (2010) found that the WTO affected exports more than imports. According to this study, the WTO frequently causes imports and exports to move in opposite directions, nullifying any net trade increment. In short, the WTO influences imports and exports differently according to countries' economic development. Eicher and Henn (2011) demonstrated that the WTO intensifies trade among developing economies. By contrast, in a recent study, a researcher found little evidence of the WTO's role in promoting members' international trade (Kurihara 2012).

While labor standards and environmental concerns have captured worldwide attention, the underlying forces behind globalization have been FDI and trade in goods and services, both of which have been heavily promoted by WTO. The relationship between WTO's trade liberalization and FDI generation has theoretically been framed as follows. Lowering tariffs affects relative prices and reallocates resources towards FDI production activities. A boost in FDI, imports, and exports results in economies of scale adjusted to technological innovation, new infrastructure, and evolving competition patterns (Paul and Ramanathan 2000). As FDI strengthens, so do exports; in fact, so interrelated is FDI to exports that any FDI stagnation will halt exports, reducing economic growth. A reduction in economic growth causes supply bottlenecks, fueling domestic inflation and thereby encouraging domestic sales over exports (Bhagwati and Srinivasan 1984; Chen 2009).

Concretizing this theory, Joia and Huidumac-Petrescu (2012) studied Romania's FDI flows related to the WTO's Trade Related Investment Measures (TRIMs) over the last 20 years, finding that WTO-sanctioned agreements to provide national treatment to FDI had brought FDI into Romania. The study's econometric analysis highlighted the fact that, for countries such as Romania, investment inflows and outflows, and FDI stock are extremely important for sustained economic growth.

In light of this, regarding developing countries, including China and India, exports play a dual role. In these countries, exports are related to income through the foreign trade multiplier. Moreover, foreign exchange earnings obtained from exports enable imports expansion, which is necessary for these countries' industrialization processes. China's and India's industrialization has generated a heavy demand for capital goods, equipment, machinery, and oil and petroleum materials, which must be imported from foreign countries as domestic industries cannot meet demand.

Concerning China in particular, the Chinese foreign trade and investment regime has also substantially transformed in the past decade, becoming

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far more liberal and transparent (Chen 2009). Regarding the effect of China's WTO membership on its foreign trade, Qin (2007) concluded that, while the government had begun to liberalize the Chinese economy long before joining the WTO, the inclusion induced regulatory, institutional, and normative policies that fueled Chinese trade and investment.

In light of the limited literature found, we agree with Levy (2007), who argued that, despite the intense debate about the relationship between trade and economic growth in business and management studies, research about globalization deserves further attention. Therefore, we hereby intend to contribute to the literature with an integrated approach.

III. RESEARCH OBJECTIVES

Our literature review suggests that WTO membership affects exports, imports, and FDI, especially in emerging countries. Suh and Poon analyzed the WTO's impact on a specific industry using firm-level data. We specify our research objectives at the macro-level, intending to conduct the analysis using country-level data. As the WTO's GSP is a promise of doubling trade (Rose 2004), our research objectives are to:

(RO-1) determine WTO membership's impact on foreign trade in China and India; and
(RO-2) assess whether the WTO has led to convergence of Chinese and Indian markets with the global market with respect to exports, imports, and FDI.

WTO's influence can be analyzed by comparing export and import growth rates. Following the previously mentioned studies' approach, particularly those of Rose (2004) and Kurihara (2012), RO-1 may be discussed under hypotheses H_1 and H_2 stated below. We heavily relied on Rose (2004) to postulate H_1 and H_2.

H_1 on RO-1: If a country's export and import growth have approximately doubled after becoming a member, WTO facilitates international trade.
H_2 on RO-1: If a country's export and import growth increase by more than 50% after becoming a member, WTO favorably affects, but does not facilitate, international trade.

As part of RO-2, we assume that countries exhibit a converging trend if a relationship among FDI, exports, and imports is found, and intend to examine WTO's effectiveness on the basis of causality among these variables by

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contrasting the pre- and post-WTO periods. Based on these assumptions, we posit the following seven hypotheses to empirically examine causality among FDI, exports ("EXP"), and imports ("IMP"):

1. FDI growth leads to EXP growth;
2. FDI growth leads to IMP and EXP growth;
3. IMP growth leads to FDI and EXP growth;
4. FDI and IMP growth lead to EXP growth;
5. EXP and IMP growth lead to FDI growth;
6. FDI and EXP growth lead to IMP growth; and
7. IMP growth leads to FDI growth.

To test these hypotheses, the Block Granger Non-Causality Tests were put forth to find any differences in the pattern of causal relationships implicit in the interdependence of export and import. All seven hypotheses were tested for pre- and post-WTO periods.

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IV. METHODOLOGY

All data were extracted from the United Nations Conference on Trade and Development (UNCTAD). Following Rose (2004) and Suh and Poon (2006), we analyzed the WTO's impact by focusing on pre- and post-WTO periods. We compiled time series data on FDI, exports, and imports (constant prices) to discuss RO-1 and RO-2 (see Table 2a and 3a). We conducted trend analysis and employed Compound Annual Growth Rate (CAGR) to compute the extent of increase (trend) in exports and imports as part of RO-1 for the pre- and post-WTO periods. Addressing RO-2 (convergence and integration), we used a Block Granger Non-Causality Test within the Vector Autoregression (VAR) framework. The likelihood ratios estimation was conducted via Microfit software. This software automatically captures lag (as per the model) when values of variables are keyed into the VAR framework. Facilitating computation, each value was entered in its logarithmic form. Prior to conducting causality analysis and following Subramanian and Wei's (2007) and Belloumi's (2014) method, we converted the data series into percentage change and ran the unit root test, avoiding spurious results. All series were found stationary.

CAGR Trend Analysis

Following our literature review and assuming that the WTO's implementation has had a direct (visible) effect on exports and imports and indirect (invisible) effect on FDI, to discuss RO-1 the variables "exports" and "imports" were taken into account, excluding "FDI."

While India has been a WTO member since 1995, China joined the organization in 2001. Although India was a GATT member, only after the country joined the WTO did its government implement massive trade liberalization policies, particularly the bulk removal of QRs on imports of 1,429 items in 2000 and 2001 (Paul 2011). The CAGR comparison for India is focused on two periods: 1980–1995 (pre-WTO period) and 1996–2012 (post-WTO period). On the other hand, the CAGR estimation for China was conducted for 1980–2001 (pre-WTO period) and 2001–2012 (post-WTO period).

Causality Test Description

The Block Granger Non-Causality Test (Pesaran and Pesaran 1997) is based on the following VAR (p) general form:

$$z_t = a_0 + a_1 t + \sum_{i=1}^{p} \phi_i z_{t-i} + \psi w_t + u_t \quad (1)$$

where:

z_t expresses an m × 1 vector of jointly determined (endogenous) variables;

t denotes a linear time trend;

w_t represents a q × 1 vector of exogenous variables; and

u_t signifies an m × 1 vector of unobserved disturbances.

Based on the estimated VAR equations, the log-likelihood ratio statistic for testing the null hypothesis is that coefficients of a subset of jointly determined variables are equal to zero. This is known as the Block Granger Non-Causality Test, which provides a statistical measure of the extent to which lagged values of a set of variables, say z_{2t}, are predictors of another set of variables, say z_{1t}, once lagged values of the latter set are included in the model. For instance, in Equation (1), let $z_t = (z'_{1t}, z'_{2t})'$, where z_{1t} and z_{2t} are m1 × 1 and m2 × 1 subsets of z_t. Consider the following equations:

$$z_{1t} = a_{10} + a_{11} t + \sum_{i=1}^{p} \phi_{i,11} z_{1,t-i} + \sum_{i=1}^{p} \phi_{i,12} z_{2,t-i} + \psi_1 w_t + u_{1t} \quad (2)$$

$$z_{2t} = a_{20} + a_{21} t + \sum_{i=1}^{p} \phi_{i,21} z_{1t-i} + \sum_{i=1}^{p} \phi_{i,22} z_{2,t-i} + \psi_2 w_t + u_{2t} \quad (3)$$

The hypothesis that subset z_{2t} does not "Granger-cause" z_{1t} is defined by:

$$H_0: \phi_{12} = 0 \text{ where } \phi_{12} = (\phi_{1,12}, \phi_{2,12}, \ldots\ldots\ldots \phi_{p,12})$$

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The maximized log-likelihood values for the restricted and unrestricted equations were computed and the likelihood ratio ("LR") test in the form of chi-square was applied to test the H_0: $\phi_{12} = 0$ against H_1: $\phi_{12} \neq 0$, as per the model.

The previously described block exogenity test was originally proposed by Sims (1980) as a multivariate specification of the Granger Causality Test, and tests whether omitting a particular variable from a system leads to any information loss. Thus, this non-causality test is more robust than traditional bivariate testing.

V. RESULTS

Tables 1a and 1b provide the data used in calculating CAGR trend analysis, and Tables 1b, 1c, 2b and 2c state the results for the variables "exports" and "imports," respectively.

CAGR Trend Analysis Results

While the CAGR for India's exports in the pre-WTO period was 9.2%, the growth rate augmented substantially during the post-WTO period at the annual average rate of 14.4% (see Table 1b). Thus, we found a 63.9% increase in Indian exports in the post-WTO period, supporting H_2 on RO-1; namely, that the WTO favorably affects (but does not facilitate) Indian exports. These findings corroborate the findings of Suh and Poon (2006), who showed that Korea's exports have increased because of WTO. The Table 2b results show a CAGR on India's imports of 6.9% during the pre-WTO period and of 15.5% during the post-WTO period, revealing a 124.6% increase in India's imports.

Since India's imports have more than doubled due to WTO's trade liberalization agreements, we find that, evidencing H_1 on RO-1, WTO facilitates India's imports. This finding is in line with Bhattacharya and De's (2001) conclusion that the Indian corporate sector has become import-intensive.

Regarding China, while the CAGR of Chinese exports during the pre-WTO period exhibited an average annual growth of 13.9%, during the post-WTO period it was 20.4%, representing a 46.8% increase. As per H_2 on RO-1, since the increase is less than 50%, we conclude that the WTO is not sufficiently effective at increasing Chinese exports.

The Table 2c results show a CAGR on China's imports of 13.1% during the pre-WTO period, and of 20.1% during the post-WTO period. This signifies a 53.5% increase in China's imports due to WTO's agreements. Even though this result leads us to accept H_2 on RO-1 with reference to China's imports, it indicates a marginal effect of WTO on China's imports compared to a true effect on India's imports.

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TABLE 1A Exports from China and India (in US$ Million, Constant Prices)

Year	China	India
1980	17,144	8,303
1981	20,916	8,437
1982	21,125	9,226
1983	20,707	9,770
1984	23,905	10,192
1985	25,108	9,465
1986	25,756	10,248
1987	34,734	11,884
1988	41,054	13,510
1989	43,220	16,144
1990	51,519	18,286
1991	58,919	18,095
1992	69,568	20,019
1993	75,659	22,016
1994	102,561	25,523
1995	128,110	31,239
1996	151,077	33,737
1997	182,670	35,702
1998	183,529	34,076
1999	194,716	36,877
2000	249,131	43,247
2001	266,075	44,793
2002	325,651	51,141
2003	438,270	60,893
2004	593,393	77,939
2005	762,484	102,176
2006	969,682	123,768
2007	1,220,060	153,784
2008	1,434,700	198,598
2009	1,200,000	168,220
2010	1,580,000	225,930
2011	1,900,000	299,034
2012	2,060,000	290,708

Source: UNCTAD Statistics 2013.

TABLE 1B CAGR—Exports (%) during 1980–2012

Period	China	India
1980–1995	14.3	9.2
1996–2012	17.7	14.4
Increase (%)	23.8	63.9

Although not considered in our hypotheses, CAGR results of Chinese FDI show that China attracted more FDI and recorded higher CAGR during the pre- than in the post-WTO period. By contrast, CAGR on Indian FDI is relatively high in the post-WTO period (see Table 3b), implying that China had opened up its economy before joining the WTO, while India attracted

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TABLE 1C CAGR—Exports (%) during Pre- and Post-WTO Periods

Period	China
1980–2001	13.9
2001–2012	20.4
Increase (%)	46.8

TABLE 2A China and India's Imports (in US$ Million)

Year	China	India
1980	17,434	13,947
1981	19,177	14,149
1982	16,876	14,046
1983	18,717	13,868
1984	23,891	14,216
1985	38,231	15,081
1986	34,896	15,687
1987	36,395	17,661
1988	46,369	20,091
1989	48,840	22,254
1990	42,354	23,437
1991	50,176	21,087
1992	64,385	22,931
1993	86,313	24,108
1994	95,271	29,673
1995	110,060	37,957
1996	131,542	43,789
1997	136,448	45,730
1998	136,915	44,828
1999	158,734	45,556
2000	214,657	53,887
2001	232,058	51,212
2002	281,484	54,702
2003	393,902	68,081
2004	534,410	95,539
2005	628,295	134,692
2006	751,936	166,572
2007	904,115	208,611
2008	1,074,050	291,740
2009	954,000	247,908
2010	1,330,000	322,154
2011	1,660,000	415,800
2012	1,740,000	437,843

Source: UNCTAD Statistics 2012.

TABLE 2B CAGR—Imports (%) during 1980–2012

Period	China	India
1980–1995	13.1	6.9
1996–2012	17.5	15.5
Increase (%)	33.6	124.6

Note: This table is provided for comparison, not to show WTO's effect on the Chinese market.

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TABLE 2C CAGR—Imports (%) during Pre- and Post-WTO Periods

Period	China
1980–2001	13.1
2001–2012	20.1
Increase (%)	53.4

TABLE 3A FDI from 1980 to 2012 (US$ Million)

Year	China	India
1980	1,074	452
1981	1,339	544
1982	1,769	616
1983	2,685	621
1984	4,104	641
1985	6,060	747
1986	8,304	864
1987	10,617	1,077
1988	13,811	1,168
1989	17,204	1,420
1990	20,691	1,657
1991	25,057	1,732
1992	36,064	1,984
1993	63,579	2,516
1994	74,151	3,490
1995	101,098	5,641
1996	128,069	8,166
1997	153,995	10,630
1998	175,156	14,065
1999	186,189	15,052
2000	193,348	16,339
2001	203,142	19,676
2002	216,503	25,826
2003	228,371	32,549
2004	245,467	38,060
2005	272,094	43,202
2006	292,559	70,870
2007	327,087	105,790
2008	378,083	125,212
2009	473,083	171,218
2010	587,817	205,580
2011	711,802	206,435
2012	832,882	226,345

Source: UNCTAD Statistics 2012.

TABLE 3B CAGR—FDI (%) 1980–2012

Period	China	India
1980–1995	35.4	18.3
1996–2012	12.4	23.1
Increase/Decrease (%)	−65.4	26.2

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more FDI during the post-WTO period. This phenomenon may be referred to as the "China-India (CHINDIA) Paradox."

Block Granger Causality Analysis (VAR Framework)

Regarding RO-2, as mentioned, the Block Granger Non-Causality Test was carried out separately for India and China for the pre- and post-WTO periods. Our results and findings are stated in the following:

Causality Analysis (India)

The results of the LR test of Block Granger Non-Causality within the VAR framework for India are presented in Table 4.

In light of the Table 4 results, we find that:

1. For the pre-WTO period, none of the seven null hypotheses are statistically significant; and
2. For the post-WTO period, all null hypotheses, except IMP $\neq$ FDI, are significant at the 5% level.

The results thus convey that, during the post-WTO period, the Indian economy and market have integrated due to bidirectional causal links among FDI, exports, and imports. However, imports do not show a causal link with FDI, if taken in isolation (H_{vii}).

Causality Analysis (China)

The LR test results of Block Granger Non-Causality within the VAR framework for China are presented in Table 5.

Table 5 reveals that:

TABLE 4 Results of the LR Test of Block Granger Non-Causality within the VAR Framework for Pre-WTO (1980–95) and Post-WTO Period (1996–2012) in India

Sr. No.	Null Hypotheses	Chi-square (1980–2001)	Chi-square (2001–2012)
1	FDI $\neq\geq$ EXP	0.59	18.29**
2	FDI $\neq\geq$ IMP & EXP	0.58	12.54**
3	IMP $\neq\geq$ FDI & EXP	5.80	12.11**
4	FDI and IMP $\neq\geq$ EXP	6.92	21.09**
5	EXP and IMP $\neq\geq$ FDI	4.83	9.82**
6	FDI & EXP $\neq\geq$ IMP	4.66	11.21**
7	IMP $\neq\geq$ FDI	4.71	6.93**

Note: **significant at the 1% level and **significant at the 5% level

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TABLE 5 Results of LR Test of Block Granger Non-Causality within the VAR Framework for Pre-WTO (1980–2001) and Post-WTO (2001–2012) Periods in China

Sr. No.	Null Hypotheses	Chi-square (1980–2001)	Chi-square (2001–2012)
1	FDI $\neq\geq$ EXP	4.78**	9.81**
2	FDI $\neq\geq$ IMP & EXP	11.22**	10.74**
3	IMP $\neq\geq$ FDI & EXP	6.24**	5.75**
4	FDI and IMP $\neq\geq$ EXP	5.70**	9.85**
5	EXP and IMP $\neq\geq$ FDI	7.01**	10.25**
6	FDI & EXP $\neq\geq$ IMP	4.95**	9.72**
7	IMP $\neq\geq$ FDI	4.59**	4.86**

Note: **significant at the 5% level

1. According to the estimated chi-square values, all null hypotheses pertaining to the pre-WTO period, except H_{ii} (FDI $\neq>$ EXP and IMP), are not statistically significant; and
2. In the case of the post-WTO period, however, five of the null hypotheses are statistically significant at the 5% level. Conversely, H_{iii} (IMP $\neq>$ FDI and EXP) and H_{vii} (IMP $\neq>$ FDI) are not statistically significant.

These results indicate that, in respect to China over the post-WTO period, FDI, exports, and imports have been interdependent. The causation between FDI and exports is evinced by the post-WTO period results. In fact, even in the pre-WTO period, the causality running from FDI to exports is significant; in other words, FDI causes exports as well as imports in both periods. Moreover, this finding also shows that all three variables moved in the same direction during the post-WTO period, and imports was not a causal variable in either period (see H_{iii} and H_{vii} results).

VI. DISCUSSION AND PROPOSITIONS

Our findings can be discussed and summarized as follows.

1. Despite the fact that the WTO's trade liberalization policies have stimulated both exports and imports in India and China, CAGR trend analysis indicates that the WTO's policies facilitate international trade and have been instrumental in opening India's doors to imports. This finding implies that exporting firms targeting Indian consumers have greater market access and opportunities in India during the WTO era. Anchored on this Chindia Paradox, we posit the following proposition:

   P-1: Foreign export companies identify more international sales opportunities in India than in China during the post-WTO period.

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2. Our results show that China had achieved relatively higher export growth, even before joining the WTO, suggesting that many factors have also affected Chinese exports. Similarly, China had attracted much more FDI before joining WTO (see Table 3b).
3. Based on these findings, we postulate the following verifiable propositions:

   P-2: Chinese exports are not WTO-dependent. Non-WTO factors influence Chinese export growth.

   P-3: Multinational corporations that have invested in China have focused on China's favorable and unique factors, rather than on WTO membership.

   P-4: Exporters and importers from some emerging economies have been true beneficiaries of the WTO, while business has not been completely reliant upon WTO agreements in some other emerging economies.

4. Regarding RO-1, we overturn Rose's (2004) results in the context of India and corroborate his findings (WTO does not facilitate international trade) with reference to Chinese exports and imports. Our results are also in line with Subramanian and Wei (2007), who found that WTO promotes trade in developing countries. Based on our findings, we conclude that Rose's (2004) study on the WTO's effect on international trade was too premature.
5. Concerning RO-2, our results evince Chindia's convergence and an increasing interdependence among variables in the external sector (imports, exports, and FDI) during the post-WTO period due to Indian and Chinese foreign trade policy.

A major policy implication of our findings is that organizations and local governments can succeed in their efforts, if they have appropriate policies and business plans.

VII. CONCLUSION

We conclude that the WTO has integrated the Indian economy and market with the world more than it has China's. The WTO has facilitated India's imports and has been partially effective in increasing Indian exports. However, the WTO's effect on Chinese exports is not significant, while the organization has partially affected China's imports. In sum, the results of this study imply that trade liberalization under the aegis of the WTO has

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undoubtedly opened the Indian market to imported products and converged it with the global market. Nevertheless, the WTO's effect on China is somewhat different and unique. China had achieved export success with its own efforts, and the role of the WTO in promoting China's exports is limited. This implies that governments and firms from a developing country can succeed in exports if they create a facilitating business environment and policies.

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