Institutional Changes and Breakpoints in Israeli Trade

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Abstract

This paper examines the structural changes in Israeli trade trends since the 1970s. Structural change tests do not reject the null of no breaks in Israeli trade trends after Israel signed FTA agreements with the EEC and the US, or after Israel's 1991 new trade policy. The tests, however, show significant evidence for breakpoints in 1993 in Israel's trade shares with three countries who had adhered strongly to the Arab boycott. This result suggests that the Middle East peace process, which began in 1991, considerably weakened the boycott and brought about positive changes in Israeli long-term trade patterns.

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1. Introduction

One of the most influential factors to have marred Israel's trade relations with a large part of the world was the Arab boycott. Since the establishment of the state of Israel in 1948, Arab countries have been imposing economic and political boycotts on Israel in order to terminate Israeli occupation of Arab lands and to cause Israel to recognize the rights of the Palestinians to a state of their own.

Throughout the past fifty years, Israel has made many efforts to counteract the Arab boycott and to improve its trade relations with the world. In 1975 Israel signed a Free Trade Area (FTA) agreement with the European Economic Community (EEC), and in 1985 with the US. These FTA agreements brought about a protectionist policy toward third countries (countries which had no free trade agreements with Israel), which resulted in trade diversion to the EEC countries and the US. In 1991, in an effort to expose the Israeli economy to foreign trade, the Israeli government decided to pursue a unilateral trade policy according to which non-tariff restrictions on imports from third countries would be replaced with tariffs that would gradually be reduced to reach a range of 8-10%. At the same time that the new trade policy was introduced, peace talks between Palestinians and Israelies were taking place, which ultimately led to the Declaration of Principles in September 1993. Since Israel's foreign trade patterns were largely influenced by the Arab boycott, the questions we pose in this paper concern if and how the peace process in the Middle East and the new trade policy contributed to shifts in Israel's trade trends.

A natural framework to investigate the behavior of Israeli trade patterns in the past three decades are tests for structural change in a univariarte time series. The early tests for detecting structural changes were done under restrictive assumptions such as i.i.d, non-trending, and stationary data. In this paper, we utilize tests for detecting and estimating breakpoints in the trend functions of a time series developed by Vogelsang (1997). These tests have the major advantage of allowing for trending and serial correlation data, and are valid whether or not the series is stationary.

We use these tests to detect structural changes in bilateral trade between Israel and 15 countries whose trade relations with Israel were most likely to be affected by geopolitical developments and trade agreements. Included in these 15 countries are 10 third countries and five countries who had signed FTA agreements with Israel. Three of the third countries had adhered strongly to the Arab boycott and seven had been less strict. Our results show that trend breaks in Israel's trade shares with India, Korea, and Thailand, countries with whom Israeli trade had previously been severely limited by the non-primary Arab boycott, took place around mid-1993. However, no such breakpoints were detected in the other third countries' shares in Israel's total imports after the 1991 new trade policy. For comparison, we tested for structural changes in Israel's trade trends with countries that had signed FTA agreements with Israel, namely, the EEC in 1975 and the US in 1985, and again we could not find significant trend shifts after these agreements were signed. These findings suggest the important effects of the peace process in Israel's long term trade patterns in comparison to the other two institutional changes, namely, the FTA agreements and Israel's 1991 new trade policy.

The paper is organized as follows. Section 2 reviews, in brief, the history of the Arab boycott and its impact on the Israeli economy and then describes Israeli efforts to oppose and counteract the boycott. Section 3 describes Israel's trade policies since the 1970s, in particular the FTA agreements with the EEC countries in 1975 and with the US in 1985. In Section 4, we discuss the liberalization of Israeli trade with the third countries. Section 5 presents a description of the political events that took place in the Middle East in the past two decades and their influence on the boycott. Section 6 describes the data and the empirical analysis we used for determining the trend breaks in Israeli trade, as well as the empirical findings. Section 7 concludes the paper.

2. The Arab Boycott

The Arab boycott against Israel was established by the Arab League Council in 1945. At first the boycott was primary, aimed at Israeli companies only and banning any direct economic relations between the boycotting countries and Israel. In 1952 a secondary boycott was added that targeted non-Israeli companies doing business with Israel. These companies comprised what was known as the boycott "blacklist." In later years a tertiary boycott was introduced, which banned all Arab business relationships with companies doing business with firms on the blacklist. In May 1951, the Arab League established the Central Boycott Office in Damascus, Syria for the purpose of coordinating the implementation of the boycott. Since then each Arab country has established its own headquarters. The ultimate purpose of the boycott was to terminate Israeli occupation of Arab territories. The boycott particularly became crucial when Arab leaders realized that a military solution to the Arab-Israeli conflict was becoming virtually impossible (Chill, 1976).

In addition to obstructing trade between Israel and its neighboring Arab countries which, had it been otherwise, would have lowered transportation and oil costs for the Israeli economy, the boycott deterred international firms from non-Arab countries to trade with or to invest in Israeli enterprises (Sarna, 1986). Furthermore, the boycott made it difficult and expensive for Israel to get the raw materials and capital it needed to maintain its industrial sector. This was a critical factor since Israel possesses few natural resources of its own. Obviously, the boycott cost the Israeli economy dear. Official estimates put these costs at between $45-$49 billion for the period 1950-1990. To counteract some of these effects, the Israeli government spent a large share of the national budget on developing the Israeli infrastructure, on advancing research and development, and in supporting various sectors of the economy.

The high oil prices of the 1970s and the great wealth derived from this source for the Arab Gulf states encouraged foreigners to trade with Arab countries and to invest

there rather than in Israel. To make matters worse, companies wishing to trade with or invest in Arab states were required to cut-off any direct or indirect relations with the Israeli economy. The 1973 war, the sudden increase in the wealth of the Arab Gulf states, and the huge volume of the Arab market relative to the small Israeli economy, all served to strengthen the boycott so as to isolate Israel both politically and economically. Furthermore, threats by Arab oil producing countries to impose an oil embargo on countries partial to Israel undermined Israel's efforts to convince foreign governments to cooperate with them to end the boycott.

2.1 Israeli Counteractions to the Boycott

According to Rolef (1989), Israel's main effort to counteract the Arab boycott was to bring the boycott issue to the discussion table at international forums such as the United Nations and the International Chambers of Commerce Congress. Pressure against the boycott was also exerted by international Jewish organizations abroad, especially those in the US. However, Rolef notes that Israel learned to cope with the boycott by developing its own technologies and by establishing its own merchant marine and airline.

The most notable achievement to emerge from Israel's efforts to counteract the boycott was the American Anti-Boycott Law in 1977 as well as a similar law promulgated by France earlier that same year. Nevertheless, it is difficult to estimate the extent to which such legislation succeeded in creating any significant changes. Trade with the US, as will be discussed later, did not show any statistically significant break after this legislation was passed or even after an FTA agreement between Israel and the US was signed in 1985. Even worse, trade with France showed a significant negative breakpoint in 1977, contrary to what had been expected.

3. Free Trade Area Agreements

The Israeli economy is strongly dependent on the EEC and the US markets for its foreign trade. Therefore, Israel sought to establish trade agreements with these markets in order to ensure free access and customs preferences for its exports. Israel signed FTA agreements with the EEC in 1975 and with the US in 1985. This made it the only country in the world to have FTA agreements with the two largest markets in the world. However, as we shall see this factor as well had no influence in creating any significant changes in Israeli trade.

3.1 The FTA Agreement with the EEC

Israel first began its negotiations with the EEC governing bodies to establish a trade agreement in 1958. A limited agreement was reached in 1964 and was followed by a partial preferential trade agreement in 1970. In 1975 Israel signed an FTA agreement with the EEC countries. According to this agreement, customs duties were removed entirely from Israel's industrial products and were lowered somewhat on several agricultural products. On its side, Israel was to lower existing duties on industrial goods originating in the EEC countries until their final removal on January 1, 1989 (Pridan, 1988).

3.2 The FTA Agreement with the US

Israel signed an FTA agreement with the US in 1985 for the purpose of strengthening economic ties. It stipulated that all trade barriers, duties and other restrictive regulations on trade be eliminated. A partial agreement granting Israel preferential customs treatment had already been reached in 1975. In return, Israel was to extend to the US the same favorable treatment given to the EEC countries by lowering duties (Pridan, 1988).

4. Israel's New 1991 Trade Policy

After the Israeli 1985 Economic Stabilization Program, a number of structural reforms were devised that aimed at reducing government involvement in economic matters and promoting the private sector. Among the most significant of these was the 1991 trade reform. According to this plan, tariffs would be reduced gradually over a period of six years to reach a range of 8-10%. The object of the reform was to open the Israeli market to third countries, and to enhance the competitiveness of Israeli companies. As a first step, tariffs replaced licenses, quotas, and other non-tariff schemes. In fact, in September 1991, when this policy was first implemented, tariffs were not reduced, and in some cases the new rates were even higher than the tariff equivalents before the reform.

According to Razin and Sadka (1993), the low shares of trade between Israel and the third countries can be explained by the Arab boycott and Israel's extensive protectionist policies. These authors anticipated that no significant increase in Israeli trade with the world would result from the new trade policy because excise taxes on commodities that were not produced domestically, which averaged 7.6 % in 1990, were not part of the plan. According to a Bank of Israel report published 4 years after the reform: "The liberalization of trade that began in September 1991 should have had an effect on Israel's imports, though to date it has been felt more in the composition of goods imported than in their regions of origin." Goods that were subject to liberalization showed an increase in their imports, but from the traditional trade partners of Israel rather than from the third countries (Bank of Israel, 1995, p. 146).

5. The Political Developments of the Past Two Decades

In 1979, Egypt signed a peace treaty with Israel making Egypt the first Arab country to establish diplomatic and economic relations with the state of Israel.

Because the boycott was imposed for political reasons mainly, it was expected that the boycott would be relaxed as a result of these peace developments. However, because neither the Arab countries nor the Egyptian people themselves were at rest with the treaty, Egypt continued to boycott Israel. As such, this treaty cannot be considered a major turning point in the history of the boycott.

Israel was experiencing major economic hardships when it signed the peace treaty with Egypt. Furthermore, Egypt was boycotted by all Arab countries, and the fact that major boycotting Arab countries (Gulf states) were experiencing unprecedented wealth as a result of the steep rise in oil prices produced no turn in the prolonged active Arab boycott.

The Palestinian *Intifada* and the Peace Talks

At the end of 1987, as a result of Israel's continuing efforts to occupy Arab territories concomitant with the decreasing standard of living in the West Bank and Gaza, the mass civil uprising known as the *intifada* broke out in the Palestinian territories. Even though the *intifada* began as a mass civil protest against the Israeli occupation, economic sanctions that included boycotting Israeli products as well as the proclamation of a ban to work in Israel soon ensued. Therefore, the *intifada* was not only costly to Israel in terms of exports, tourism, but even more so in the loss of Palestinian workers who had been a major labor force in the Israeli construction and agriculture sectors (Fishelson, 1993). However, a different effect was that the threatening presence of the *intifada* convinced Israeli leaders that a settlement to the prolonged political conflict would not be achieved without significant concessions. Consequently, for the first time Israeli and Palestinian leaders were ready to meet face to face to negotiate a peace resolution. The 1990 Gulf war further strengthened this feeling among Israelis and Palestinians, leading to secret negotiations that resulted in the Oslo agreement between the Palestine Liberalization Organization (PLO) and

Israel in 1993. The next section shows the role all these geopolitical developments and trade agreements played in Israeli trade relations.

6. Trend Breaks in Israeli Trade

Israeli trade trends reveal sharp shifts since 1993, particularly with those countries who had been extreme adherents of the Arab boycott. This increase in trade shares was accompanied by a sharp increase in foreign direct investments in Israel. What is of significance here is the timing of these changes in that they began at the height of the Israeli-Palestinian peace talks. These developments and some signals from Kuwait and other Gulf countries about their willingness to end their non-primary boycott of Israel made the prophecy of ending the boycott self-fulfilling.

Countries whose economic relations with Israel had been extremely limited because of the boycott, such as Japan and Korea, began to increase their presence in the Israeli market. The import of Japanese cars to Israel particularly contributed to the feeling that the boycott was weakening, especially since Japanese auto manufacturing companies were not boycotted after they began to trade with Israel at the end of 1991.

In the following section we describe the methodology of the structural change tests in a univariate time series. Then we apply the test to Israeli bilateral trade with a group of countries. Our sample includes countries that signed FTA agreements with Israel, countries that had no FTA agreements with Israel but had complied with the Arab boycott, and countries that had no FTA agreements with Israel but nonetheless did not strictly comply with the boycott.

6.1. Trend Break Tests

This section describes the structural change tests we employ to detect trend breaks in Israeli bilateral trade with a group of 15 countries, as described earlier. Earlier works on structural changes in a univariate time series were done under

restrictive assumptions such as independent and identically distributed data, non-trending data, and/or stationary data. In this paper we apply tests for detecting shifts in the trend function of a dynamic time series developed by Vogelsang (1997) that successfully relaxed these assumptions thus allowing for both serial correlation and trending data, and are valid whether or not the series is stationary.

The Vogelsang's (1997) Sup Wald (or SupW_t) test for one break in linear trending data involves estimating the following version of the Augmented Dickey-Fuller (ADF) regressions,

$$\Delta y_t = \mu + \theta DU_t + \beta t + \gamma DT_t + \alpha y_{t-1} + \sum_{i=1}^{k} c_i \Delta y_{t-i} + \varepsilon_t \quad (1)$$

where DU_t and DT_t are break dummy-variables that take the values:

$$DU_t = \begin{cases} 1 & if\ t > T_B \\ 0 & otherwise \end{cases} \qquad \text{and} \qquad DT_t = \begin{cases} t - T_B & if\ t > T_B \\ 0 & otherwise \end{cases}$$

Equation (1) is a special case of Vogelsang's (1997) model where the trend function is a polynomial of order $p \geq 0$. This equation is estimated sequentially for each T_B with 15% trimming, i.e. for $0.15T < T_B < 0.85T$, where T is the number of observations. The SupW_t statistic is the maximum, over all possible trend breaks, and equals twice the standard F statistic for testing the null hypothesis of no trend break, namely $\theta = \gamma = 0$.

For each T_B, the value of k, the number of lags in the right-hand side of equation (1), has to be chosen as considerable evidence suggests that data-dependent methods for selecting the value of the lag length k are superior to making an *a priori* choice of a fixed k. We adopt an approach suggested by Perron and Vogelsang (1992). We start with an upper bound of $k=10$, where if c_{10} is significant, k will take the value 10; otherwise we choose $k=9$ and check again if c_9 is significant. We continue thusly until the last lag becomes significant, otherwise $k=0$ will be chosen.

As we mentioned, the Vogelsang (1997) tests, which we use to determine the existence and timing of the trend breaks, are valid whether or not a unit root is present in a series. The critical values, however, depend on whether the series is stationary or contains a unit root. If the calculated values of the SupW_t statistic are larger than the critical values under the unit root case calculated in Vogelsang (1997), we reject the null hypothesis of no trend break regardless of whether or not the data have a unit root. If these values are smaller than the critical values of SupW_t with a unit root, but larger than those in the stationary case, we have to test for unit roots in the presence of shifts in the trend function, as will be seen in the next section. If these tests reject the null of unit root then we can conclude that a breakpoint exists.

6.2 Unit root tests

Perron (1989) showed that standard unit root tests, such as the Dickey-Fuller test, are biased towards the non-rejection of the unit root null if the series is stationary around a trend break and if that break is not modeled. For this reason we use a test developed by Zivot and Andrews (1992) that incorporates trend breaks. Zivot and Andrews's (1992) test involves estimating Equation (1) from the previous section. The null hypothesis, that the series $\{y_t\}$ is an *I(1)* process without a structural break, is tested against the alternative hypothesis where $\{y_t\}$ is trend-stationary with a one-time break in the trend function that occurs at an unknown time.

The same procedure for finding the most plausible breakpoint using Vogelsang's (1997) test is applied here but this time the breakpoint is selected by choosing T_B for which we get the minimum value of the Dickey-Fuller t-statistic for testing $\alpha=0$. The null is rejected if the minimum value of the Dickey-Fuller t-statistic is smaller than the critical values reported in Zivot and Andrews (1992).

6.3 Data and Empirical Results

For the third countries, the following univariates were chosen to test for trend breaks:

a) For countries who were adherent to the Arab boycott (Group A) we take as our univariates the share of Israeli trade with country *i*, defined as the sum of imports and exports in Israel's total trade, and the share of Israeli trade with country *i* in country *i*'s total trade. These data are quarterly and seasonally adjusted for the period 1983:1 to 1997:3.

Group A includes India, South Korea and Thailand. Prior to 1992 India had no diplomatic relations with Israel. India actively participated in the boycott to gain favor with the Arab world in support of India's continuing conflict with Pakistan, a Moslem country, and to appease its discontented Moslem population (Sarna, 1986). Until 1994 South Korea refused to allow Israel to reopen its embassy after it was closed down in 1978 for budgetary reasons. Korea was the second industrialized country after Japan least willing to take any measures to fight the Arab boycott, and until the early 1990s its economic relations with Israel were extremely limited as a result (Feiler, 1998).

b) For the other third countries (Group B), we test for the effects of the new trade policy of 1991. Since this policy was a unilateral one, we test for breakpoints in Israeli imports from country *i* in Israel's total imports. The reason we use the trade shares for Group A rather than import shares is because the Arab boycott affected both Israeli exports and imports and therefore Israel's total trade. The data for Group B countries are quarterly and seasonally adjusted for the period 1983:1 to 1997:3.

For the countries that had FTA agreements with Israel (Group C) the univariates consist of natural logaritms of trade between Israel and each country in Group C, and

the share of trade between Israel and that country in Israel's total trade. These data are annual and span from 1960 to 1997.

Data on Israeli bilateral trade were taken from various issues of the International Monetary Fund's *Direction of Trade.* Israel's and the third countries' total imports and export data were taken from the International Monetary Fund's CD-ROM *International Financial Statistics.* The choice of the periods for testing for breakpoints in Israeli trade was governed by the availability of data.

6.4. Empirical Results

Third Countries: Group A

From Table 1 we could reject the null of no breakpoints in all of the six cases in Group A with a 1% significance level if we were confident that all the series are trend stationary. But, because we are not sure about trend stationarity we use the critical values for the *I(1)* case and still find trend breaks in four out of the six cases. In the other two cases, the calculated values of the SupW_t statistic are between the critical values in the stationary and the unit root cases. The results in Table 2 of the Zivot and Andrews (1992) sequential unit root test suggest that all the series are trend stationary around a breakpoint. Therefore, taking the results of Tables 1 and 2 together, we can reject the null hypotheses for no trend breaks in all six cases.

The test detects breakpoints both in the trade share of India in Israel's total trade and in the trade share of Israel in India's total trade. The two breaks coincide since they both occur in 1993:2 (Figures 1 and 2). The test also detects a breakpoint in the trade share of Korea in Israel's total trade in 1993:2, and for Israel's share in South Korea's total trade in 1992:4 (Figures 3 and 4). Finally, the test finds 1993:3 to be the point where breaks in Israel's share in Thailand's total trade, and Thailand's share in Israel's total trade took place. Figures 5 and 6 illustrate these results.

One interesting result of these findings is that the trend break in Israel's trade share in total trade of country *i* and county *i*'s share in Israel's total trade occurred

simultaneously, with the exception of South Korea. In the latter case the lag between the two was merely two quarters. Another important result is that all these breaks occurred almost simultaneously with a maximum lag of three-quarters. Another country that never had diplomatic or economic relations with Israel and was also adherent to the Arab boycott is Vietnam. Vietnam established diplomatic relations with Israel in 1993 and bilateral trade figures were published only since then. Therefore 1993 marked a breakpoint in the bilateral trade between Israel and Vietnam.

In support of our results, in his comprehensive and updated study of the Arab boycott, Feiler claims that by the beginning of 1993 boycott implementation had visibly weakened in most of the Arab countries (Feiler, 1998).

Third Countries: Group B

We applied the same structural change test to the shares of imports from countries in Group B in Israel's total imports. Group B includes two East Asian countries – Hong Kong and Singapore; four Latin American countries - Argentina, Brazil, Chile and Mexico; and South Africa. None of these countries have FTA agreements with Israel. But at the same time they never evidenced strict adherence to the Arab boycott. From the results in Table 3, we see that according to the SupW_t test statistic we can reject the null of no breakpoint in the trend of Israeli imports from Argentina regardless of whether or not the series has a unit root. In the cases of Hong Kong and Mexico, according to the results of the Dickey-Fuller t-test statistic we reject the null hypothesis of unit root in both cases. Furthermore, since the values of the SupW_t statistic are between the critical values in the stationary and unit root cases, we can claim that breakpoints in Israeli imports from these two countries did take place in 1990:2 in the case of Hong Kong, and in 1993:1 in the case of Mexico. In the case of Argentina, the imports trend was downward sloping until 1991:1. Since then the share of imports from Argentina in Israel's total imports has stabilized around the

0.2% level. In the other two cases, Hong Kong and Mexico, the breaks were negative. Based on these results, we cannot say that the new trade policy was responsible for any significant positive break in Israeli imports from any of the above third countries.

As we mentioned earlier, when the policy was first introduced there was a shift from a non-tariff policy to a tariff one where the new rates were in some cases even higher than the tariff equivalents before the reform. Our results are consistent with results obtained by Halevi (1994). In that study, Halevi tried to assess the effect of Israel's new trade policy on import diversion from EEC and the US to third countries. His conclusions were contrary to what one would expect in that he claimed that imports diversion was from third countries to Israel's traditional trade partners. He explained that this was the case because there was no decrease in effective tariffs and that in some cases these rates had actually increased.

Group C

We also apply Vogelsang's test to detect possible trend breaks in trade volume between Israel and some countries who had FTA agreements with Israel. Table 4 shows results for the US and for four EEC countries: France, Germany, Portugal, and the UK. Based on the results from the SupW_t and Zivot test statistics, we conclude that there were significant trade breaks in bilateral trade between Israel and each of these countries. Trend breaks in Israeli trade with the former countries all occurred in the 1970s and the early 1980s. In all of these cases, there was a drop in trade growth with Israel. One possible reason for this is the slowdown in Israeli economic growth that had begun in the early 1970s. More probably, it results from the greater enforcement of the Arab boycott in the 1970s.

Testing for trend breaks in the trade shares of the aforementioned countries in Israel's total trade, the SupW_t test detects breaks only in the cases of Portugal and the UK, two members of the EEC. The time of the break for the UK is 1976; since then the trade share has stabilized at a level of 8%. The time of the break for Portugal is

1984, almost a decade after an FTA agreement was signed between Israel and the EEC. In the case of France, even though the break was not significant, the trade share trend after the break is below what it was before the break. Based on these findings, it cannot be claimed that the FTA agreements were responsible for any shifts in Israel's bilateral trade. Even in the case of the UK, the negative breakpoint in the trade level suggests that the breakpoint in the trade share can only be attributed to the general decline in Israeli total trade and not to the FTA agreement. Following the energy crisis in 1973, France, more than any other western country, began to make deals with Arab oil-producing countries. In 1974, France agreed to supply fighter planes and heavy weapons to Saudi Arabia and Kuwait in exchange for oil. It also negotiated a series of trade agreements with several Middle Eastern countries to cope with costs of oil on the balance of payments and as a means of recycling petrodollars (Lieber, 1976). On this basis it could only be expected that France would be strict in complying with the Arab boycott and would not be interested in increasing its trade with Israel. Hence, our results indicate both that the FTA agreements did not bring any structural changes in Israel's trade relations with the EEC countries or the US, and that the boycott was responsible in part for the downward breakpoints of the 1970s.

7. Conclusion

In this paper we have tried to demonstrate the effect of geopolitical developments in the Middle East on Israeli bilateral trade relations and to show that FTA agreements and Israel's 1991 new trade policy had little influence. On the other hand, the Gulf war and the peace process in the Middle East between Arab countries and Israel resulted in relaxation of Arab enforcement of the non-primary boycott, and consequently produced changes in Israel's trade relations.

The findings in this paper show that trend breaks in Israeli trade began to take place around when the Declaration of Principles between Israel and the PLO was signed in September 1993. Using a statistical test for detecting breaks in the trend function of a univariate time series, we found several significant trend breaks in the trade shares of India, South Korea, and Thailand, all of which are third countries who had complied strictly with the boycott in Israel's total trade.

The peace process and the relaxation of the Arab bocyott not only resulted in trend breaks in Israeli trade, but has also continued to attract enormous amounts of FDI into Israel, where the annual average since 1993 is as large as four times the figure for 1992. This is an issue that deserves future analytical and statistical investigation on its own.

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Table 1. Sequential trend break tests for Israel's trade with group A countries

Country	Estimated Date of Break	SupW_t statistic	k
Shares of trade between Group A countries and Israel in Israel's total trade Quarterly data for the period 1983:1 – 1997:3			
India	1993:2	25.99	8
South Korea	1993:2	25.10	9
Thailand	1993:3	15.90	0
Shares of trade between Israel and Group A countries in each of these countries total trade Quarterly data for the period 1983:1 – 1997:3			
India	1993:2	40.93	9
South Korea	1992:4	19.00	1
Thailand	1993:3	24.52	7

Critical values for the 10, 5, and 1 percent significance levels of the SupW_t statistic with trimming ratio $\lambda = 0.15$ are 11.25, 13.29, and 17.51 in the stationary case and 22.29, 25.10, and 30.36 in the unit root case, respectively. Source: Tables 1, and 2 in Vogelsang (1997).

Table 2. Sequential unit root tests

Country	Estimated Date of Break	Dickey-Fueller t-Statistic	k
Shares of trade between Group A countries and Israel in Israel's total trade Quarterly data for the period 1983:1 – 1997:3			
India	1993:2	-5.75	8
South Korea	1991:3	-5.05	1
Thailand	1993:3	-6.84	0
Shares of trade between Israel and Group A countries in each of these countries' total trade Quarterly data for the period 1983:1 – 1997:3			
India	1993:2	-6.71	8
South Korea	1992:4	-5.09	1
Thailand	1993:3	-5.25	7

Critical values for the 10, 5, and 1 percent significance levels of the Dickey-Fuller t-statistic are -4.82, -5.08, and -5.57, respectively. Source: Zivot and Andrews (1992).

Table 3 Sequential trend break tests for shares of group B countries in Israel's total imports

Country	SupW_t	Estimated Date of Break	DF t-statistic for Zivot test
Argentina	28.26	1991:1	-6.40
Brazil	9.72	1992:3	-4.60
Chile	12.23	1994:3	-4.00
Hong Kong	14.46	1990:2	-4.94
Mexico	17.17	1993:1	-5.60
South Africa	13.30	1987:1	-3.95
Singapore	8.37	1990:1	-8.47

Critical values for the 10, 5, and 1 percent significance levels of the SupW_t statistic with trimming ratio $\lambda = 0.15$ are 11.25, 13.29, and 17.51 in the stationary case and 22.29, 25.10, and 30.36 in the unit root case, respectively. Source: Tables 1, and 2 in Vogelsang (1997).

Critical values for the 10, 5, and 1 percent significance levels of the Dickey-Fuller t-statistic are -4.82, -5.08, and -5.57, respectively. Source: Zivot and Andrews (1992).

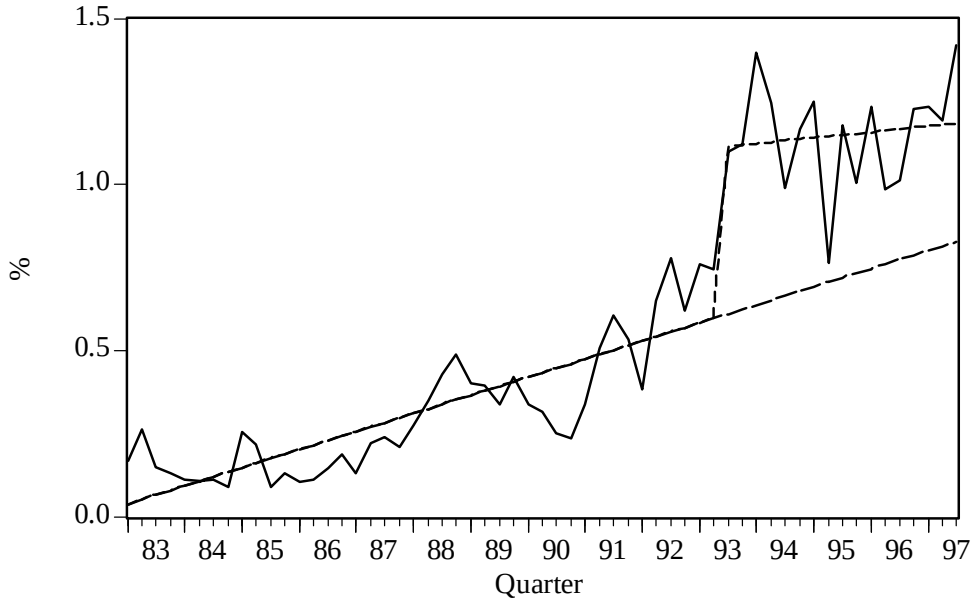
Table 4. Sequential trend break tests for Israel's trade with group C countries

Country	Estimated Date of Break	SupW_t	k	DF t-statistic for Zivot test
	Natural logarithm of trade between Israel and country *i* Annual data for the period 1960 – 1997			
France	1977	52.22	4	-6.03
Germany	1972	39.55	1	-6.18
Portugal	1984	42.14	6	-7.96
UK	1980	17.88	1	-4.87
US	1977	21.83	6	-5.13
	Share of trade between Israel and country *i* in Israel's total trade Annual data for the period 1960 – 1997			
France	1976	13.23	9	-4.19
Germany	1989	4.25	6	-4.04
Portugal	1984	21.36	2	-5.17
UK	1976	49.50	2	-6.14
US	1986	8.90	2	-2.39

Critical values for the 10, 5, and 1 percent significance levels of the SupW_t statistic with trimming ratio $\lambda = 0.15$ are 11.25, 13.29, and 17.51 in the stationary case and 22.29, 25.10, and 30.36 in the unit root case, respectively. Source: Tables 1, and 2 in Vogelsang (1997).

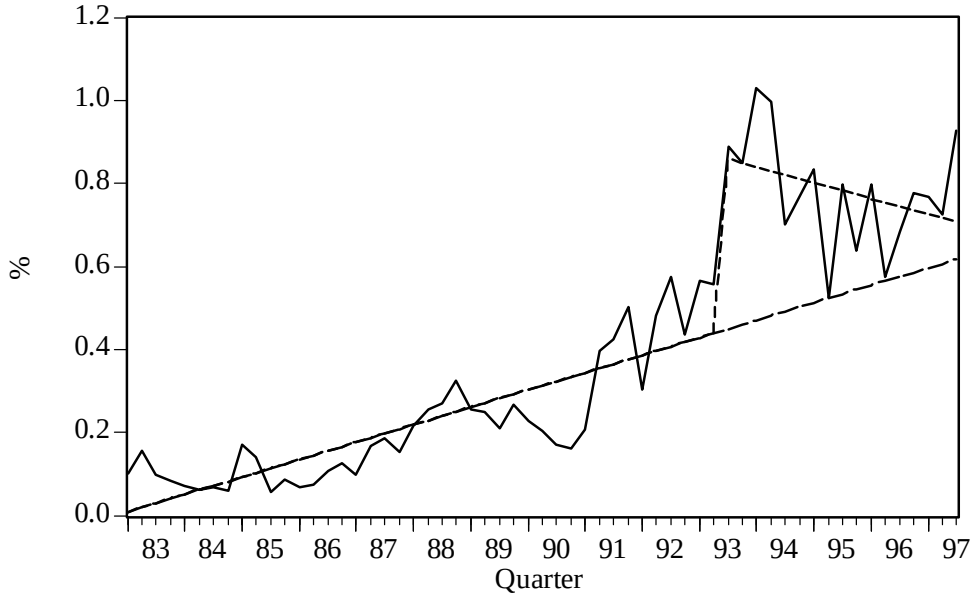
Critical values for the 10, 5, and 1 percent significance levels of the Dickey-Fuller t-statistic are -4.82, -5.08, and -5.57, respectively. Source: Zivot and Andrews (1992).

Figure 1



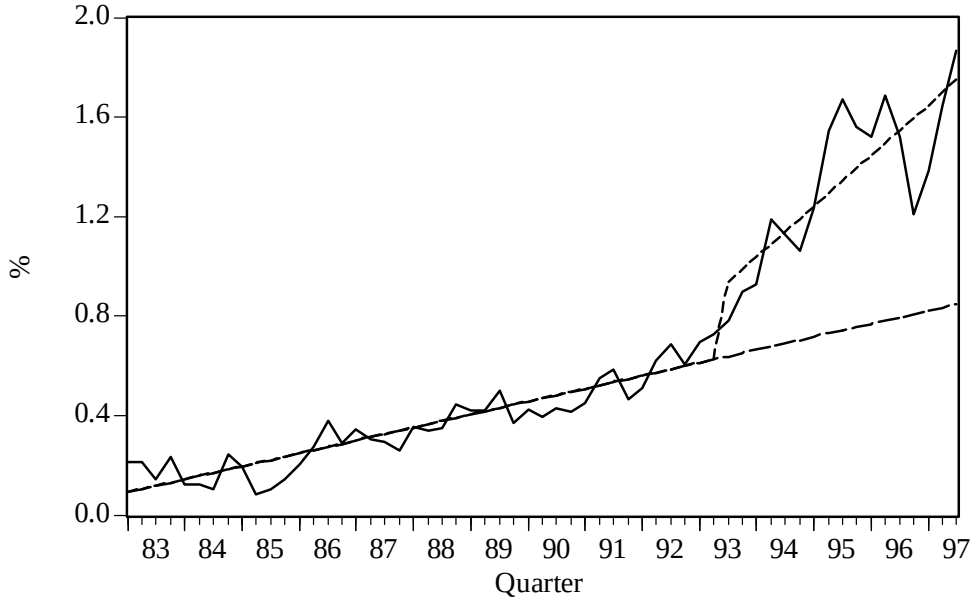
India's share in Israel's total trade. Breakpoint: 1993:2

Figure 2



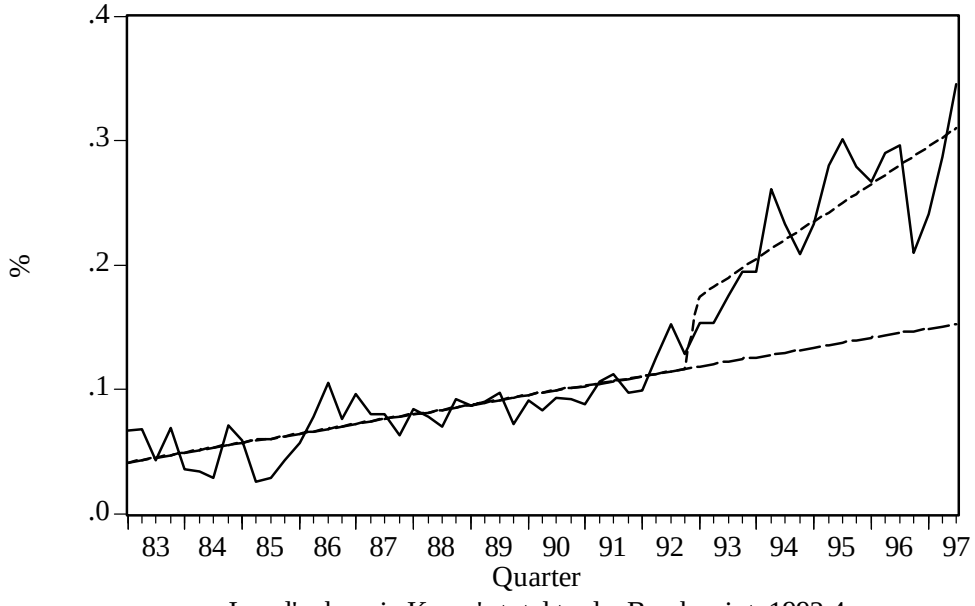
Israel's share in India's total trade. Breakpoint: 1993:2

Figure 3



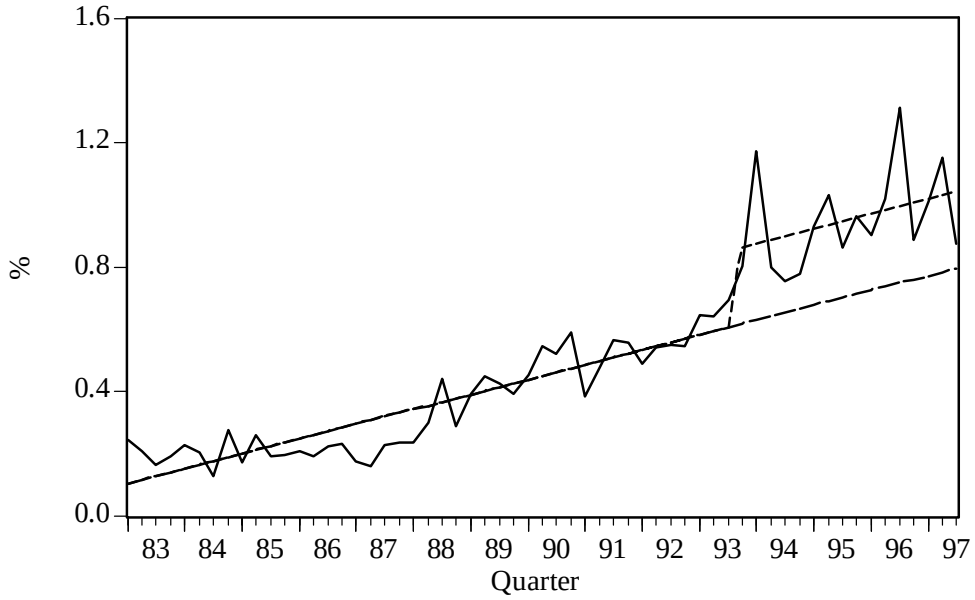
Korea's share in Israel's total trade. Breakpoint: 1993:2

Figure 4



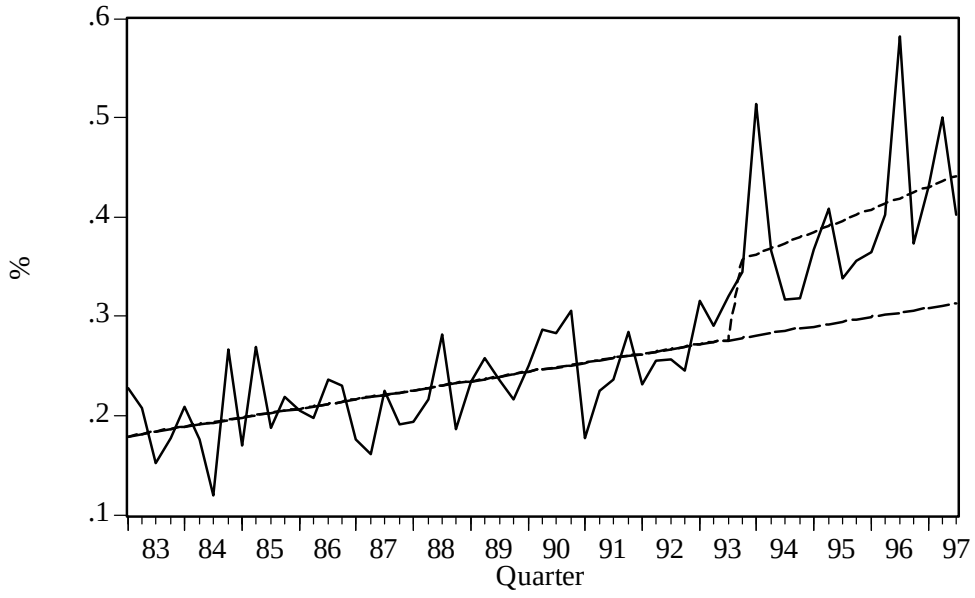
Israel's share in Korea's total trade. Breakpoint: 1992:4

Figure 5



Thailand's share in Israel's total trade. Breakpoint: 1993:3

Figure 6



Israel's share in Thailand's total trade. Breakpoint: 1993:3