PASS-THROUGH FROM THE EXCHANGE RATE TO PRICES[1]

- Starting from the second half of 2022, the pass-through from the shekel-dollar exchange rate to inflation in Israel has become stronger. While the average pass-through in the samples ending between June 2017 and June 2022 was 18 percent, it rose to 28 percent in the sample up to the end of 2022. Since then, it has remained at a similar rate (27 percent at the end of the period reviewed, namely the sample ending in June 2023).
- The strengthening of the pass-through from the shekel-dollar exchange rate is evident in both the tradable goods price index and the nontradable goods price index.
- The strengthening of the pass-through in Israel is consistent with the positive association found in the literature between the level of inflation and the degree of pass-through from local currency exchange rates to inflation, against the backdrop of a significant rise in global inflation. In the current analysis, it was found that the pass-through in Israel becomes significantly stronger when inflation exceeds the upper limit of the inflation target range (3 percent).
- The pass-through from the shekel-euro exchange rate is much weaker than that from the shekel-dollar exchange rate, and during most of the period examined, it was not statistically significant.

1. Introduction

In a small and open economy, the exchange rate plays an important role in determining the prices of tradable goods and, in turn, the rate of inflation. As a result, the exchange rate is an important pass-through channel of monetary policy to inflation in Israel. An accommodative monetary policy is expected to create pressure for devaluation and therefore accelerate inflation, while a contractionary monetary policy is expected to bring about appreciation and slow down inflation. This explains the importance of evaluating the strength of this channel.

The exchange-rate pass-through (ERPT) to prices, hereinafter referred to as the "pass-through," is defined as a change in prices that is correlated with a change in the exchange rate. The pass-through has a rate and a speed: the rate of pass-through is the extent to which a change (of one percent, for example) in the exchange rate affects prices, while the speed of pass-through is the time it takes for the change to be transmitted to prices. Full pass-through occurs when a change in the exchange rate leads to an identical change in prices. The pass-through reflects the correlation between the exchange rate and prices, which depends on, among other things, the average mix of shocks to the economy during the sample period[2], though it does not necessarily reflect a clear causal relationship.

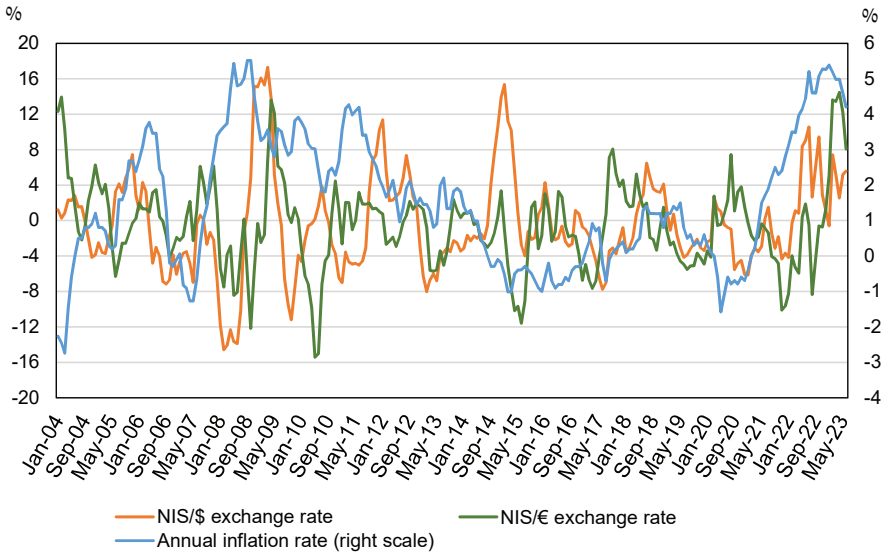
1 Authors: Uri Anzel, Eden Anavim and Ari Kutai. Thanks go to Ariel Zingler at the Bank of Israel for his help in data processing.

2 Pass-through reflects, among other things, the response of monetary policy, and therefore may vary according to the sample period being examined. For further details, see Forbes et al. (2018). To strengthen the assessment that pass-through reflects a causal relationship between the exchange rate and prices, it is customary in the literature to add controls for additional explanatory variables that may explain the correlation between the two variables, as was done in this analysis.

The economic literature on inflation and exchange rate pass-through points to a positive correlation between the inflation rate and the pass-through rate. Taylor (2000) argued that a low inflationary environment leads to weaker pass-through from exchange rates to local prices. The theoretical mechanism he proposes is based on the perception of individuals in the economy that changes in costs are less persistent in a low inflationary environment, and therefore pass-through is weaker.[3] Choudhri and Hakura (2006) examined this claim empirically over time for a panel of countries, finding strong and statistically significant evidence of a positive relationship between the pass-through rate and the average inflation rate, both over time and across countries. Similar findings were recently reported in the BIS Annual Economic Report (2022), which also relied on a panel of countries.[4] Given the relatively high inflation in Israel over the past two years, the question arises as to whether the pass-through from exchange rates to local prices in Israel has strengthened.

During 2022, there was a mixed trend in the shekel exchange rate, which exhibited high volatility (see Figure 1).[5] The development of the shekel during 2022 reflected a mix of a strengthening against the dollar and a weakening against the euro (for further details, see Section 3 of the Monetary Policy Report for the second half of 2022). In light of these trends, it is important to continue to test whether the pass-through rate from the shekel-dollar exchange rate to local prices is similar to that from the shekel-euro exchange rate.

Figure 1
Annual Inflation Rate vs. the Semiannual Change in the NIS/$ and NIS/€ Exchange Rates (monthly average)
January 2004–June 2023



SOURCE: Bank of Israel.

3 The economic literature offers additional explanations for the association between inflation and the strength of pass-through, among them changes in the market power of firms and their ability to engage in price discrimination in international markets (Goldberg and Knetter, 1997).

4 See Panel C, Figure 3 in the BIS report.

5 The analysis focuses on the pass-through from the exchange rate to changes in the CPI in the subsequent month, over a period of 6 months (a three-month moving average and its three-month lag; see the section on Methodology below). Figure 1 is intended to show the correlation between the variables over time, by displaying the semi-annual rates of change in the shekel-dollar and shekel-euro exchange rates relative to annual inflation.

In the current analysis, we conduct an updated estimation of the short-term pass-through from the shekel-dollar and shekel-euro exchange rates to inflation in Israel. The pass-through was examined using rolling linear regressions with a four-year window, based on monthly data since 2000.

Several studies have previously investigated the pass-through in Israel. Soffer (2006) investigated the pass-through rate for 31 CPI components and found that it was about 32 percent during the period 1991–98, declining to 23.5 percent during 1999–2004. In the early 1990s, inflation was high in Israel, reaching a peak of 20 percent; however, during those years, inflation declined until reaching the vicinity of price stability. Therefore, the findings of Soffer (2006) are consistent with the economic literature, which points to a positive association between the pass-through rate and inflation.

Orfaig (2015) proposed another method for examining pass-through that involved the calculation of the tradable portion of the CPI, which is meant to be affected by changes in the exchange rate.[6] She therefore assumed that in the long term the pass-through to the tradable goods components of the index is complete and found a pass-through rate of 36 percent. Kuzin (2019), who used a method similar to that presented in the current analysis, found that the pass-through from the shekel-dollar exchange rate strengthened starting from mid-2017, following a period of negligible pass-through since the beginning of 2010. Furthermore, he found that in the four-year window ending in June 2018, the pass-through was 18 percent and statistically significant. In this analysis, we extend the period examined by Kuzin (2019) and broaden the scope of the investigation to include the pass-through from changes in the shekel-euro exchange rate.

2. Methodology – calculation of the pass-through

We estimate the pass-through from changes in the exchange rate to prices using an OLS regression based on monthly data, from January 2000 to June 2023, using a rolling window of four years (48 months). This estimation allows us to test whether the pass-through has changed during the sample period. We include as explanatory variables the rate of change in the shekel-dollar or shekel-euro exchange rate (three-month moving average) and its three-month lag. To limit the possibility that the correlation between the exchange rate and inflation is due to a third factor, we include several control variables commonly used in the literature on exchange rate pass-through, namely the index of consumer goods import prices in Israel ("Paasche Index") in dollars (three-month moving average) and the rate of change of oil prices (three-month moving average)[7], as well as their three-month lag. To account for seasonality, we also include dummy variables for the months.[8] We also examine partial CPI series (hereafter referred to as the "General Price Index"): the index of tradable goods prices, the index of nontradable goods prices and the CPI excluding energy and fruits and vegetables. Accordingly, we estimate the following equation:

6 The estimation was based on the weight of the tradable components according to the input-output tables of the various sectors of the economy and their classification according to the CPI categories.

7 The price of Brent oil in dollars.

8 To ensure that the results are not biased due to the small number of observations relative to the number of variables, we conducted a sensitivity analysis that is described below. It confirms the conclusions using a seasonally adjusted CPI series without dummy variables. In addition, we carry out an estimation using the Weighted Least Squares method, in which the sample is longer and more weight is given to recent observations.

$$(1)\ \Delta cpi_t = Constant + \beta_1 \cdot \Delta e_{[t,t-2]} + \beta_2 \cdot \Delta e_{[t-3,t-5]} + \beta_3 \cdot \Delta pim_{[t,t-2]} + \beta_4 \cdot \Delta pim_{[t-3,t-5]} + \beta_5 \cdot \Delta oil_{[t,t-2]} + \beta_6 \cdot \Delta oil_{[t-3,t-5]} + \sum_{i=1}^{11} \gamma_i \cdot month\ dummy_{i,t} + \epsilon_t$$

Where:

ΔCpi_t – The monthly change in the log of the CPI;

$\Delta e_{[t`,t``]}$ – Moving average, from month t′ to month t″, of the log-change of the exchange rate (dollar or euro);

$\Delta pim_{[t`,t``]}$ – Moving average, from month t′ to month t″, of the log-change of the consumer goods import price index;

$\Delta oil_{[t`,t``]}$ – Moving average, from month t′ to month t″, of the log-change of the oil price index;

ϵ_t – The stochastic error.

3. Results

In this analysis, we define the pass-through from the exchange rate as the sum of the exchange rate coefficients (). The main assumption underlying this definition is that after controlling for import prices, oil prices, and seasonality, the exchange rate coefficients reflect the average pass-through from the exchange rate. A dynamic analysis of the changes in the dollar exchange rate to the General Price Index (using a moving window of 48 observations) shows that from the end of the first half of 2017 to the end of the first half of 2022, the pass-through was positive and statistically significant (at a level of at least 10 percent) and ranged from 11 to 26 percent (see Figure 2).

For samples ending in 2018 and 2019, the estimated pass-through was relatively high, at around 20 percent, but for samples that ended starting from the second half of 2020 until the second half of 2022, the pass-through was significantly weaker. In samples that ended early in the second half of 2022 and later, the pass-through from the shekel-dollar exchange rate strengthened and rebounded, and by the end of 2022, it reached its peak in over a decade at 28 percent. It has since then remained similar.[9,10] Looking at a slightly longer period, the pass-through remained weak relative to the beginning of the sample period, after declining during the period 2004–2011.[11] A similar decline in pass-through has been found in previous studies (for further details, see Kuzin, 2019).

9 The increase in the second half of 2022 relative to the average pass-through level since the end of the first half of 2017 (subsequent to the significant strengthening of pass-through from a negligible level) is not statistically significant. For more details, see Table A.2 in the appendix.

10 Detailed results of the pass-through coefficients, the pass-through for the previous three months (β1) and for the previous three months lagged (β2) are presented in appendix Tables A.1 to A.4.

11 One explanation for the weakening of the pass-through during these years is the intensification of competition in Israel. The Bank of Israel Annual Reports for 2016 and 2017 point to changes in consumer behavior in Israel, partly due to technological improvements that facilitated the comparison of prices and the option of purchasing products online. For further details, see Kuzin (2019).

The main results regarding the pass-through to the General Price Index are robust to changes in the estimation method, including the method for dealing with seasonality in the price index over the course of the year, namely: employing a seasonally adjusted CPI published by the CBS, rather than dummy variables; testing the pass-through derived from changes in the shekel-dollar exchange rate over a period of six months (rather than a three-month average and its lag); adding a control for changes in the CPI in the previous month; changing the rolling window size to three years; and how import prices are controlled for (by using the US Import Price Index rather than Israel's). None of these modifications in the estimation method alter the conclusions.[12] To ensure that the results are not biased because of the small sample size, we carry out an estimation using Weighted Least Squares, which assigns greater weight to more recent observations. We find that the average pass-through ranges from 15 to 19 percent, depending on the rate of decay in the weights over time and the sample size. We also conduct a Leave One Out Cross-Validation test to see if the trends observed are explained by a small number of outlier observations. In particular, we examine the excess decline in pass-through between 2014 and 2016 and the sharp increase observed in 2017. The test shows that omitting one or two outlier observations can, at most, slightly mitigate the decrease or increase in pass-through, but does not eliminate it (which is also the case when omitting a larger number of observations).[13,14]

To ensure that the results reflect broad effects of the exchange rate on prices in Israel, we also examine the pass-through to the CPI without the more volatile components of energy and fruits and vegetables. We find that the strengthening of the pass-through in the second half of 2022 is more pronounced when excluding these components. The pass-through to the adjusted index is 26 percent (at the end point of the data in June 2023; Figure 3).[15]

In line with the findings in the economic literature that there is a positive association between the strength of pass-through and inflation, we find that in Israel, the pass-through has likely strengthened in recent years, in parallel to the increase in inflation.[16] To further explore this conclusion, we expand the investigation by directly testing whether the pass-through rate depends on the annual rate of inflation. Korenok et al. (2022) found that the threshold at which individuals in the economy start to notice inflation is between 2 and 4 percent. Based on these results, we test whether the pass-through changes if inflation in the previous month was particularly high, i.e., more than 3 percent, which is the current upper bound of the inflation target range, and also more than 4 percent. Results are presented in Tables A.3 and A.4 and are consistent with findings in the literature.[17] Specifically, we find a heterogeneous effect in the average pass-through based on the sample starting in January 2010 (Table A.3). Thus, when inflation is below 3 percent, pass-through is weaker (about 8 percent), and when it is above 3 percent, pass-through is significantly stronger (20 percent). We obtain similar results with respect to inflation both below and above 4 percent. The

12 The results based on the US Import Price Index are similar to those of the baseline estimation and in particular in the trends over time. However, this approach yielded a weaker pass-through.

13 We noted that even after removing the 10 extreme outliers, which significantly reduces the sample size (which is based throughout on 48 observations at each point), the decrease and increase in pass-through remain.

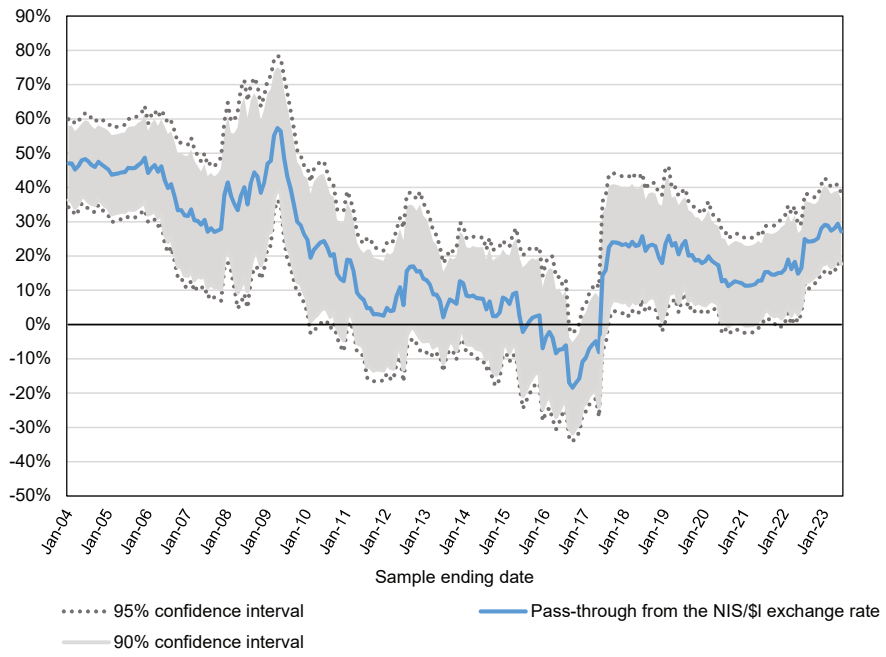
14 The additional results are available from the authors.

15 The trend in pass-through to the CPI excluding fruits and vegetables is similar to that of the pass-through to the General Price Index, and at the endpoint it is 27 percent. The decline in pass-through from the dollar exchange rate to the General Price Index to negative levels in 2016–17 is explained by changes in the pass-through from energy prices.

16 See footnote 8.

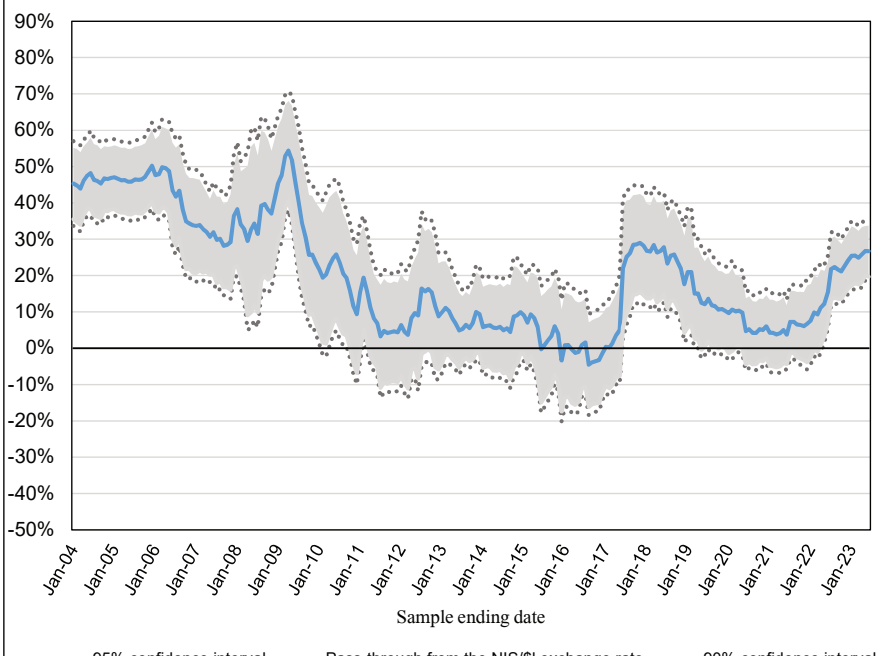
17 The tables present the pass-through when we allow the effect to depend on the annual rate of inflation rate: Table A.3 – In the period starting from 2010, the year in which the new Bank of Israel Law – 2010–11 established the Monetary Committee. The Committee convened for the first time a year later, in October 2011. Table A.4 – in the full sample starting from 2000.

Figure 2
Pass-through from the Dollar to Inflation
Ending date of the 48-month rolling window, January 2004–June 2023



Note: The figure presents the coefficient amounts of the NIS/$ exchange rate $(\beta_1 + \beta_2)$ from equation 1 for the regression in which the dependent variable is the CPI.
SOURCE: Bank of Israel.

Figure 3
Pass-through from the Dollar to Inflation net of Energy and Fruit and Vegetables
Ending date of the 48-month rolling window, January 2004–June 2023



Note: The figure presents the coefficient amounts of the NIS/$ exchange rate $(\beta_1 + \beta_2)$ from equation 1 for the regression in which the dependent variable is the CPI net of energy and fruit and vegetables.
SOURCE: Bank of Israel.

differences are statistically significant at a level of 10 percent.[18] Unreported results show that there is no increase in pass-through at rates of inflation above the target range midpoint (i.e., 2 percent).

4. Prices of tradable and nontradable goods

The pass-through to prices of tradable goods, which consist of imported products or products with import substitutes, are expected to be stronger than the pass-through to prices of non-tradable goods. However, a weaker, but still significant effect is expected for nontradable goods prices since some of them are produced using imported inputs (for example, in transportation where fuel is a major input). A dynamic analysis of the pass-through shows a strengthening of the pass-through from the shekel-dollar exchange rate to the price indices of both tradable and nontradable goods (Figures 4 and 5). In samples ending in the first half of 2020, the pass-through to tradable goods prices steadily weakened, and in the sample ending in May 2022, it reached a low point of only 14 percent. However, in the second half of 2022, the trend reversed and the pass-through strengthened. By the end of 2022, the pass-through to tradable goods prices stood at 37 percent, just below the peak recorded before the start of the downward trend, and since then it has remained at a high level. The confidence interval of the pass-through to the tradable goods price index is significantly broader than in the case of the nontradable goods price index.[19]

As expected, the pass-through to the nontradable goods price index has been weak during most of the period. From June 2017 to June 2021, it was weak and stable (about 10 percent). Since July 2021, there has been a gradual increase in pass-through, and the pass-through is statistically significant at the 5-percent level. The pass-through to the nontradable goods price index was 23 percent at the end of 2022 and has been stable since then. In the longer term, the pass-through to nontradable goods price index has much weakened, reaching negligible rates from 2009 to 2016, reaching negligible rates. The pass-through in the initial years of the sample was stronger because rental contracts were linked to the dollar. For further details, see Kuzin (2019).[20]

5. Pass-through from the shekel-euro exchange rate

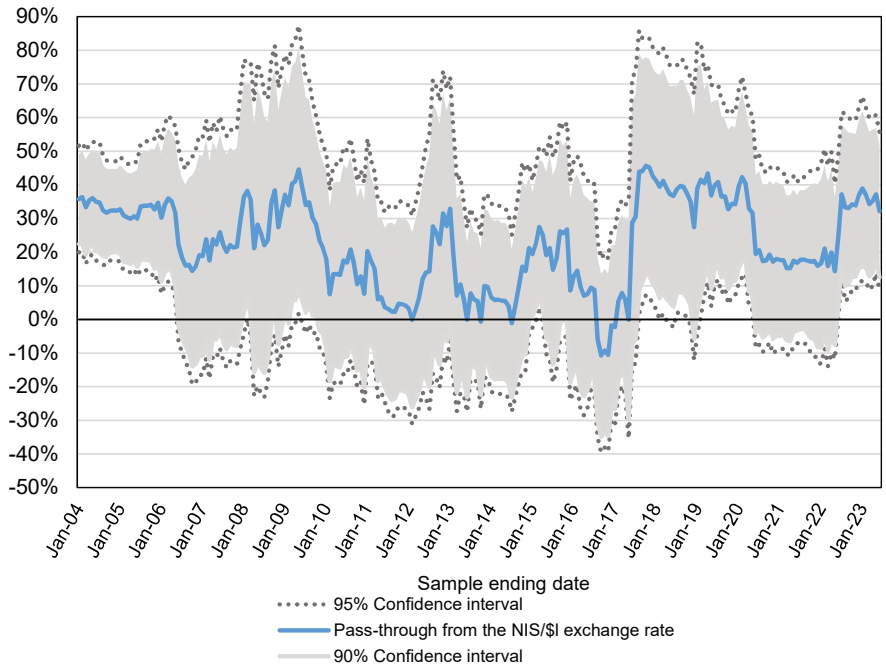
The nominal effective exchange rate remained largely unchanged in the second half of 2022; however, this stability reflected a mix of strengthening against the dollar and weakening against the euro. Due to these mixed trends, it is also important to estimate the pass-through from the shekel-euro exchange rate. Therefore, in addition to the pass-through from changes in the shekel-dollar exchange rate, we investigate the pass-through from changes in the shekel-euro exchange rate. We find that the pass-through from the shekel-euro exchange rate is negligible or very weak throughout most of the sample period (Figure 6),

18 In a longer sample, starting in January 2000 (full sample), we find the differences to be not statistically significant. However, in an analysis that included the US Import Price Index as the alternative index for import prices, those same differences are found to be statistically significant at a level of 5 percent when inflation exceeded 4 percent. (The results are available from the authors.)

19 Table A.2 presents results when we allow for a heterogeneous effect, a different effect starting from the second half of 2022. The strengthening of pass-through to the tradable goods index, relative to the average pass-through since 2017, is not statistically significant.

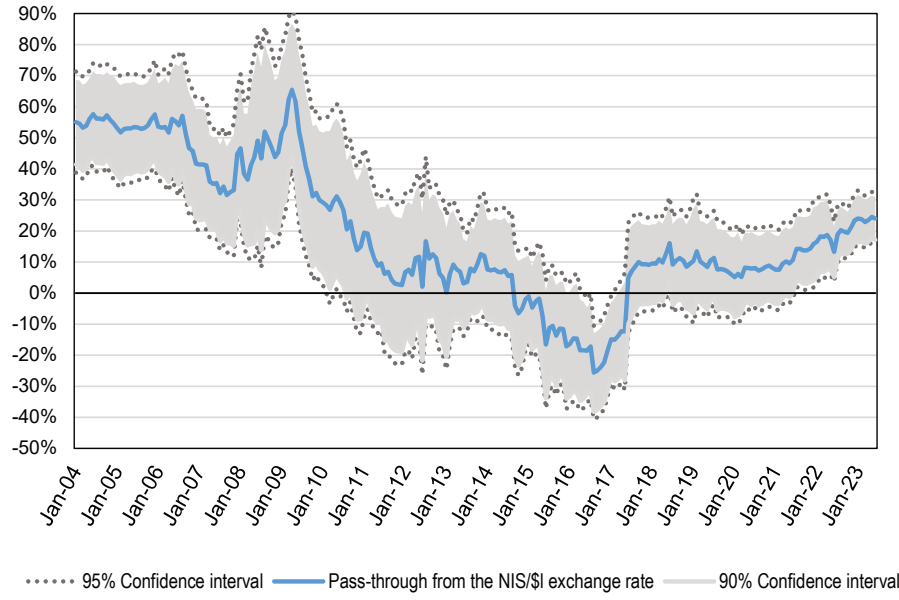
20 Unreported results regarding the heterogeneous effect of changes in exchange rates suggest that in samples starting from June 2017, the pass-through to the prices of tradables is similar for appreciation and depreciation, and is near 32–33 percent. The effect of a depreciation on prices of non-tradables is 24 percent, but the estimates for pass-through from an appreciation are volatile—it is sometimes close to the pass-through from a depreciation, sometimes close to zero, and on average negligible. The difference in pass-through to the prices of non-tradables between depreciation and appreciation for the sample since June 2017 is statistically significant at a level of 10 percent. Findings for the long samples are not unambiguous.

Figure 4
Pass-through from the Dollar to Tradables Prices
Ending date of the 48-month rolling window, January 2004–June 2023



Note: The figure presents the coefficient amounts of the NIS/$ exchange rate $(\beta_1 + \beta_2)$ from equation 1 for the regression in which the dependent variable is the CPI net of energy and fruit and vegetables.
SOURCE: Bank of Israel.

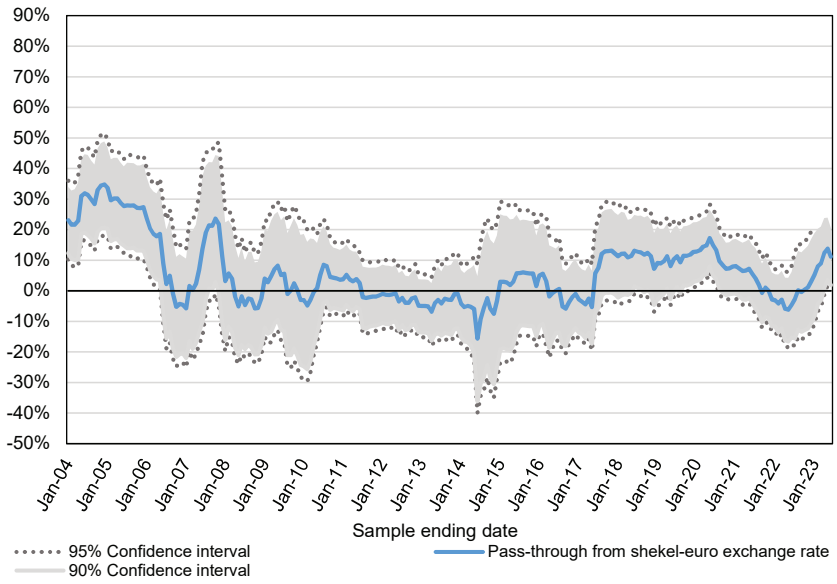
Figure 5
The Pass-through from the Dollar/Shekel Exchange Rate to Inflation
Ending date of the rolling 48-month window, Januarey 2004 - June 2023



Note: The figure presents the coefficient amounts of the NIS/$ exchange rate $(\beta_1 + \beta_2)$ from equation 1 for the regression in which the dependent variable is the nontradables CPI. SOURCE: Bank of Israel.

particularly at the endpoint when it reaches about 10 percent. This conclusion remains valid even after disaggregating the impact between the tradables and nontradables indices.[21] These results are in line with the Dominant Currency Paradigm, which states that most global foreign trade transactions are denominated in dollars. An analysis by the Export Institute from 2017 shows that 71 percent of Israel's imports of goods (excluding diamonds) are denominated in dollars, compared to only 22 percent in euros.[22] According to the paradigm, changes in the exchange rate of the dominant currency (the dollar) have a relatively strong pass-through in the short to medium term compared to changes in the bilateral exchange rate with the trading partner.[23] Furthermore, to support the findings that changes in the shekel-euro exchange rate do not have a strong impact on prices in Israel, we reestimate the pass-through from the shekel-dollar exchange rate, but with an additional control for changes in the cross dollar-euro exchange rate. The results indicate that the pass-through from the shekel-dollar exchange rate remains similar. In addition, no clear evidence is found that changes in the cross euro-dollar rate affect prices in Israel.[24]

Figure 6
The Pass-through from the Euro/Shekel Exchange Rate to Inflation
Ending date of the rolling 48-month window, January 2004–June 2023



Note: The figure presents the coefficient amounts of the NIS/$ exchange rate ($\beta_1 + \beta_2$) from equation 1 for the regression in which the dependent variable is the CPI.
SOURCE: Bank of Israel.

21 The results are available from the authors. The pass-through is weak for non-tradables, at about 7 percent. The pass-through to tradables is stronger at the endpoint, but is volatile.

22 For further information, see: Export Institute (2017), "Developments and Trends in Israeli Exports – Summary Report for the First Half of 2017". [Hebrew]

23 For further information on the "Dominant Currency Paradigm", see Chapter 3 of the Bank of Israel Report for 2017 and Gopinath and Itskhoki, 2021.

24 The results are available from the authors.

6. Conclusion

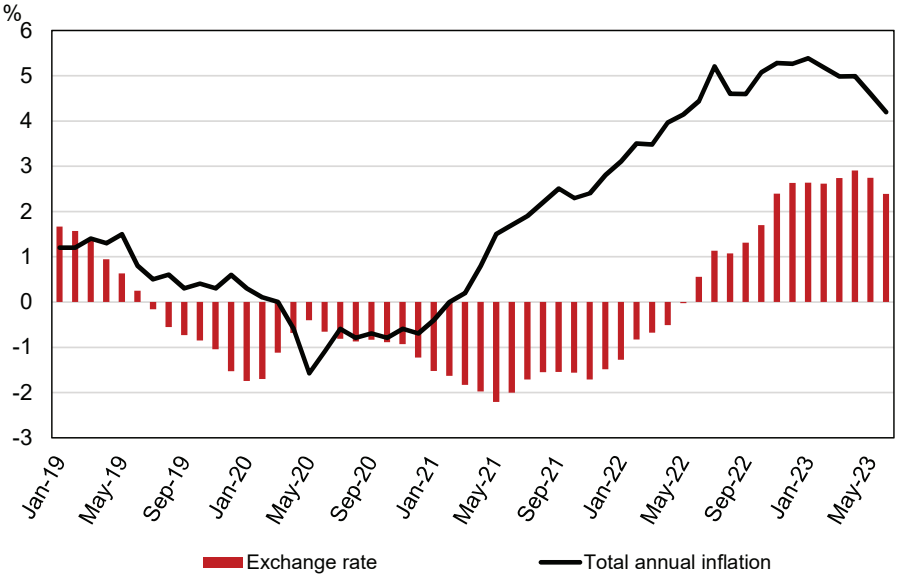
The pass-through rate is a critical variable in monetary policy decision-making. In an updated estimation, we find that the estimated pass-through from the shekel-dollar exchange rate has significantly strengthened in recent years, and in particular the pass-through to the prices of tradable goods. These results are in line with the economic literature, which indicates a positive relationship between the pass-through rate and inflation. An increase in the pass-through rate may suggest that changes in monetary policy that affect the exchange rate are having a greater impact on inflation than in the past. Based on the updated estimation of pass-through from the shekel-dollar exchange rate, it is estimated that the shekel's weakening by about 10 percent in 2022 (from an average level of 3.13 shekels per dollar in December 2021 to 3.45 shekels per dollar in December 2022) contributed approximately 2.5 percentage points to the increase in annual inflation (Figure 7).[25] In the first half of 2023, the shekel weakened by an additional 6 percent, leading to a further 1 percentage point increase in annual inflation. This contrasts with a negative contribution resulting from the strengthening of the shekel by about 1.5 percentage points each year from 2019 to 2021.[26]

We emphasize that this finding and its implications should be treated with caution due to the short period in which the increase in pass-through was observed and due to the uncertainty reflected in the confidence interval around the pass-through rate estimate, particularly in the case of the tradable goods price index. Nonetheless, it can be said that the current pass-through rate is in the higher part of its historical range.

Furthermore, while there is significant pass-through from changes in the shekel-dollar exchange rate to prices in Israel, the impact of changes in the shekel-euro exchange rate is usually very weak and not statistically significant, a result that is consistent with the Dominant Currency Paradigm. Therefore, we conclude that when analyzing the development of inflation in the short term (up to six months), greater attention should be paid to the shekel-dollar exchange rate than the shekel-euro exchange rate or the nominal effective exchange rate.

[25] The estimated contribution of the actual change in the exchange rate, namely, given the monetary policy that was implemented.
[26] The contribution is based on an estimate of the pass-through from a sample of 48 observations ending in June 2023.

Figure 7
The Estimated Contribution of the (NIS/$) Exchange Rate to Annual Inflation
January 2019 to June 2023



SOURCE: Bank of Israel.

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Appendices

Table A.1
Pass-through from the NIS/$ exchange rate
Monthly data, July 2019–June 2023

Variable	(1) General CPI	(2) Tradables index	(3) Nontradables index	(4) CPI net of energy, fruit and vegetable components
$\Delta e_{[t,t-2]}$	0.247***	0.426***	0.144***	0.199***
	(0.054)	(0.111)	(0.039)	(0.040)
$\Delta e_{[t-3,t-5]}$	0.025	-0.104	0.096**	0.068
	(0.055)	(0.115)	(0.040)	(0.041)
$\Delta pim_{[t,t-2]}$	0.246	0.521	0.075	0.280
	(0.288)	(0.597)	(0.210)	(0.213)
$\Delta pim_{[t-3,t-5]}$	0.206	0.331	0.124	0.154
	(0.189)	(0.391)	(0.137)	(0.140)
$\Delta oil_{[t,t-2]}$	0.014**	0.031**	0.004	0.006
	(0.007)	(0.014)	(0.005)	(0.005)
$\Delta oil_{[t-3,t-5]}$	-0.003	-0.018	0.006	0.002
	(0.009)	(0.018)	(0.006)	(0.007)
Dummy variables for months	+	+	+	+
Observations	48	48	48	48
R^2	0.705	0.642	0.764	0.784

* The results include controlling for the effects of seasonality via dummy variables for months.
The F-test to total the coefficients that represent the change in exchange-rate passthrough was found to be statistically significant at a 5% significance level for the CPI (F-test value is 7.25) and at a significance level of less than 1 percent for the other indices. F-test values are 22.24 for the headline CPI, 32.74 for the nontradables index, and 39.18 for the CPI net of the energy and fruit and vegetable components.

Table A.2
Pass-through from the NIS/$ exchange rate—heterogeneous impact from the second half of 2022
Monthly data, June 2017–June 2023

Variable	(1) CPI	(2) Tradables index	(3) Nontradables index
$\Delta e_{[t,t-2]}$	0.120**	0.183**	0.079**
	(0.048)	(0.090)	(0.035)
$\Delta e_{[t-3,t-5]}$	0.059	0.103	0.036
	(0.046)	(0.087)	(0.034)
$\mathbf{D}_{\mathbf{mid2022}}$	0.002	-0.0003	0.003***
	(0.001)	(0.003)	(0.001)
$\mathbf{D}_{\mathbf{mid2022}} \cdot \Delta e_{[t,t-2]}$	0.045	0.218	-0.065
	(0.099)	(0.186)	(0.073)
$\mathbf{D}_{\mathbf{mid2022}} \cdot \Delta e_{[t-3,t-5]}$	-0.031	-0.101	-0.024
	(0.102)	(0.193)	(0.076)
$\Delta pim_{[t,t-2]}$	0.109	0.117	0.110
	(0.152)	(0.286)	(0.113)
$\Delta pim_{[t-3,t-5]}$	0.029	0.124	-0.044
	(0.131)	(0.247)	(0.097)
$\Delta oil_{[t,t-2]}$	0.019***	0.039***	0.006
	(0.005)	(0.010)	(0.004)
$\Delta oil_{[t-3,t-5]}$	0.003	0.001	0.006
	(0.006)	(0.010)	(0.004)
Dummy variables for months	+	+	+
Observations	73	73	73
R^2	0.648	0.600	0.704

*The table presents the shekel-dollar exchange rate passthrough to inflation, when permitting a heterogeneous impact on the period that begins from July 2022. The results also include controlling for the seasonal effects via dummy variables for months.
F-tests for totaling the coefficients that represent the passthrough from the exchange rate are found to be statistically significant at a significance level of 5 percent for the CPI an the nontradables index (F-test values are 5.64 and 5.43, respectively) and 10 percent for the tradables index (F-test value is 3.65). The change in the exchange rate transmission in the second half of 2022 (total of coefficients) is not statistically significant.
** $D_{mid2022}$ is the variable that receives the value 1 when the reference is to a period after the middle of 2022, and 0 if otherwise.

Table A.3
Pass-through from the NIS/$ exchange rate—heterogeneous impact dependent on the inflation rate
Monthly data, January 2010–June 2023

Variable	(1) General CPI	(2) General CPI, inflation >3%	(3) General CPI, inflation >4%
$\Delta e_{[t,t-2]}$	0.094***	0.068**	0.076***
	(0.024)	(0.029)	(0.026)
$\Delta e_{[t-3,t-5]}$	0.053**	0.013	0.016
	(0.025)	(0.029)	(0.028)
$\pi > 4\%$			0.001
			(0.001)
$\pi > 3\%$		0.001**	
		(0.001)	
$\Delta e_{[t,t-2]} \cdot \pi > 4\%$			0.045
			(0.062)
$\Delta e_{[t-3,t-5]} \cdot \pi > 4\%$			0.099
			(0.062)
$\Delta e_{[t,t-2]} \cdot \pi > 3\%$		0.033	
		(0.052)	
$\Delta e_{[t-3,t-5]} \cdot \pi > 3\%$		0.086*	
		(0.050)	
$\Delta pim_{[t,t-2]}$	0.243***	0.173**	0.177**
	(0.082)	(0.084)	(0.085)
$\Delta pim_{[t-3,t-5]}$	-0.109	-0.153**	-0.131*
	(0.067)	(0.071)	(0.069)
$\Delta oil_{[t,t-2]}$	0.022***	0.022***	0.023***
	(0.004)	(0.004)	(0.004)
$\Delta oil_{[t-3,t-5]}$	0.005	0.004	0.005
	(0.004)	(0.004)	(0.004)
Dummy variables for months	+	+	+
Observations	162	162	162
R^2	0.511	0.542	0.540

*The table presents the results of the shekel-dollar exchange rate passthrough to inflation: The overall CPI (1), if permitting a heterogeneous impact on the period when: the annual inflation rate for the preceding year (t-1) exceeds 3 percent (2); the inflation rate exceeds 4 percent (3). The results also include controlling for the seasonal effects via dummy variables for months.
The F-test for totaling the coefficients that represent the passthrough from the exchange rate when inflation exceeds 3 percent and 4 percent are found to be statistically significant at a significance level of 10 percent (F-test values are 2.86 and 3.07, respectively).
** The variable π represents the annual inflation rate in the preceding month, in percent.

Table A.4
Pass-through from the NIS/$ exchange rate—heterogeneous impact dependent on the inflation rate
Monthly data, January 2000–June 2023

Variable	(1) General CPI	(2) General CPI, inflation >3%	(3) General CPI, inflation >4%
$\Delta e_{[t,t-2]}$	0.143***	0.139***	0.126***
	(0.019)	(0.025)	(0.021)
$\Delta e_{[t-3,t-5]}$	0.050***	0.036	0.035
	(0.019)	(0.024)	(0.023)
$\pi > 4\%$			0.001**
			(0.001)
$\pi > 3\%$		0.001**	
		(0.0005)	
$\Delta e_{[t,t-2]} \cdot \pi > 4\%$			0.028
			(0.040)
$\Delta e_{[t-3,t-5]} \cdot \pi > 4\%$			0.011
			(0.039)
$\Delta e_{[t,t-2]} \cdot \pi > 3\%$		-0.016	
		(0.034)	
$\Delta e_{[t-3,t-5]} \cdot \pi > 3\%$		0.004	
		(0.033)	
$\Delta pim_{[t,t-2]}$	0.212***	0.177***	0.178***
	(0.060)	(0.062)	(0.063)
$\Delta pim_{[t-3,t-5]}$	-0.056	-0.089	-0.079
	(0.052)	(0.054)	(0.054)
$\Delta oil_{[t,t-2]}$	0.027***	0.028***	0.028***
	(0.003)	(0.003)	(0.003)
$\Delta oil_{[t-3,t-5]}$	0.005	0.005	0.005
	(0.004)	(0.004)	(0.004)
Dummy variables for months	+	+	+
Observations	282	282	282
R^2	0.502	0.513	0.512

*The table presents the results of the shekel-dollar exchange rate passthrough to inflation: The overall CPI (1), the passthrough if permitting a heterogeneous impact when: the annual inflation rate for the preceding year (t-1) exceeds 3 percent (2); the inflation rate exceeds 4 percent (3). The results also include controlling for the seasonal effects via dummy variables for months.
The F-test for totaling the coefficients that represent the passthrough from the exchange rate when inflation exceeds 3 percent and 4 percent are found to be not statistically significant (F-test values are 0.07 and 0.61, respectively).
** The variable π represents the annual inflation rate in the preceding month, in percent.