# Inflation and Price Dispersion: An Analysis of Micro Data

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I use large data sets on prices by products and stores from recent inflationary periods in Israel to study the relationship between inflation and the variability of the levels of relative prices. I find no clear relationship between inflation and the variance of relative prices in spite of the strong positive relationship between inflation and the unconditional variance of the rates of nominal price change across stores. I use an identity to explain this apparent contradiction.



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## 1. Introduction

Recently, Lach and Tsiddon (1992) looked at disaggregated price data during a high inflation period in Israel (1978-82) and report that individual stores change their nominal prices infrequently and nominal price changes are not synchronized across stores. Another finding is that the variance of the rate of change in nominal prices, across sellers and products, increases with (anticipated and unanticipated) inflation. For example, see Vining and Elwertowski (1976), Parks (1978), Fischer (1981, 1982), Domberger (1987), Van Hoomissen (1988) Lach and Tsiddon (1992) and Tommasi (1993). For related work see Cukierman and Wachtel (1982), Carlton (1986), Hercowitz (1981), Hanoch and Gal-Yam (1985) and Kashyap (1991).

The observation that nominal price changes occur in discrete jumps is usually taken as evidence of price rigidity. And the observation that the variance of the rate of nominal price change across sellers and products increases with inflation is usually taken as evidence for an effect of inflation on the variability of relative prices. For example, Weiss (1993) opens his survey of the empirical literature on inflation and price adjustment with the following statements: "First, came the realization of potentially important empirical regularity, namely, nominal price changes occur in discrete jumps. ...By definition, nominal rigidities affect real variables. The question is whether these effects are in any way systematic. The second discovery was that inflation, combined with nominal rigidities at the level of the firm, indeed affects the <u>distribution</u> of relative

prices in a clear way. As inflation rises, the variance of relative prices across products and sellers increases."[1]

Here I argue against these inferences. The argument is made in terms of the type of models initiated by Prescott (1975) and Butters (1977). They derive price dispersion as an equilibrium outcome. In their equilibrium there is a tradeoff between price and the probability of sale and the expected payoff is the same for all prices which are in the support of the equilibrium distribution. As a result, in a certain range, sellers are indifferent about the quoted price. This idea was later developed among others by Eden (1990), Eden and Griliches (1993), Lucas and Woodford (1994), Rotemberg and Summers (1990) and Williamson (1993).

I use here a competitive monetary version of the above set of models: the sequential trading model in Eden (1994). In this model money surprises have real effects and unlike models which assume price rigidities, there is no room for active monetary policy. The model has the strong prediction that the equilibrium real price distribution does not dependent on the (anticipated and unanticipated) rate of inflation. I test the hypothesis of no relationship between the variance of relative prices and the rate of inflation.

For our purpose, the main difference between the sequential trading model and the (S,s) model is in the shape of the equilibrium expected profit function. According to the (S,s) model there is a unique real price which maximizes the expected profits of the

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[1] For other surveys see Cukierman (1983) and Marquez and Vining (1984). See Hartman (1991) for a critique of some of this literature.

monopoly. In contrast, there is a range of real prices which maximize the expected profits of a seller in the sequential trading model. This is illustrated by Figure 1.

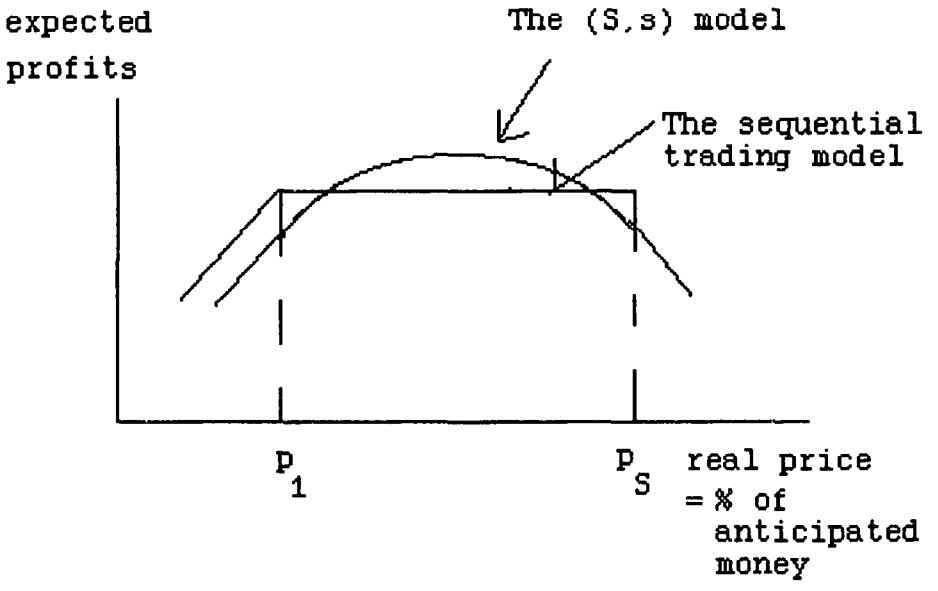


Figure 1

In Figure 1, the equilibrium real price range for the sequential trading model, is $p_S - p_1$. When $p_1 \leq p \leq p_S$ expected profits are constant: a lower real price is associated with a higher probability of sale. When $p > p_S$, the probability of sale drops to zero and therefore expected profits are zero. The probability of sale is unity for all $p \leq p_1$, and therefore reducing the real price below $p_1$, reduces expected profits.

It follows that when inflation erodes the real price, the seller is compensated by an increase in the probability of sale as long as the real price remains in the equilibrium range. In this case there is no reason to change nominal price. From an individual seller's point of view it is perfectly rational to increase his nominal price by $p_S - p_1$ whenever the real price hits the lower bound

$p_1$: This (S,s) policy does not require fixed menu type costs for changing nominal price and monopoly power.

Thus, discrete jumps in nominal prices do not imply price rigidity. I now turn to my second point: The finding that inflation increases the variability of the rates of change in nominal prices does not imply that it increases the variability of the levels of real prices.

To illustrate, I assume that there exists a stationary equilibrium real price distribution as in Eden (1994). The equilibrium distribution of real prices (for a given product, across stores) is depicted by the areas A, B and C of Figure 2 and at time t-1 equilibrium prices prevailed. Between time t and t-1, inflation, at the rate $\pi$, erodes the real prices of all sellers and as a result the distribution at the end of period t-1 shifts to the left: Sellers who were in area A moved to C; sellers who were in B moved to D and those who were in C moved to E. (Thus by construction A = C = E and B = D).

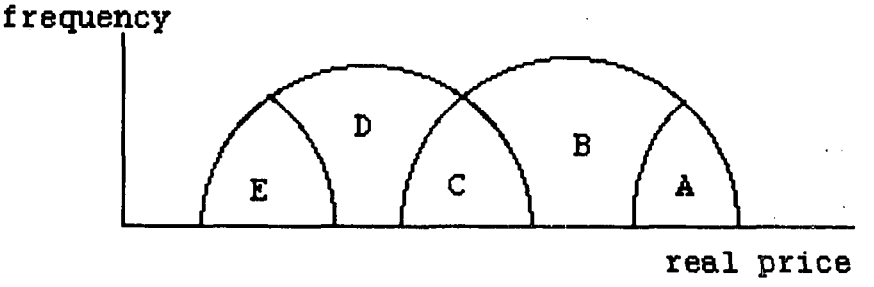


Figure 2

Assume further that, to restore equilibrium sellers adjust nominal prices at the end of period t-1, in the following way. Those who moved from A to C do not change their nominal price. Those who

moved from B to D, move back to B by increasing their nominal price at the rate $\pi$. And those who moved from C to E, move to A by increasing their nominal price at the rate $2\pi$.

The rates of change for the three groups are thus: 0, $\pi$ and $2\pi$. In terms of analysis of variance we have zero variance within each group and positive variance between the means. When $\pi$ goes up these means get further apart and therefore, if the change in the distances between the means dominates the effect of possible changes in the weights of the three groups, the total variance will go up.[1] In this example, inflation increases the variance of the rate of change but not the variance of relative prices: By construction, sellers changed nominal prices to restore the equilibrium relative price distribution.

## 2. DATA

The data was collected by Israel's Central Bureau of Statistics as inputs to the computation of the CPI. It is monthly data from three periods: 1978 - 1979, 1981-1982 and 1991-1992. For the first two periods there are data on the prices of 26 food products (mostly meat and wines). These data were used by Lach and Tsiddon and are described in their 1992 article.

The data from 1991-92 is new and is similar in nature to the Lach and Tsiddon data. It contains 102,751 monthly observations of prices by stores and products. These observations were collected from

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[1] By construction, A = C. Denote the fraction of sellers who were initially in A (C) by $\zeta/2$. Then the mean rate of change is $\pi$ and the variance is $\zeta\pi^2$. The derivative of $\zeta(\pi)\pi^2$ is positive when $\zeta' > -2\zeta/\pi$.

458 stores which sold 390 different products. (Each store sold only a subset of the products). I eliminated all products whose prices are controlled by the government. The definition of a product is rather narrow. There are, for example, 10 different kinds of bread, two kinds of Coca-Cola bottles and three kinds of olives. See the Appendix for a list of the products.

Let $p_{ijt}$ denote the nominal price of good i in store j at month t and let $dp_{ijt} = \ln p_{ijt} - \ln p_{ijt-1}$. I use, N to denote the total number of nominal price changes in the sample;
$\text{Mean}(dp) = \Sigma_t\Sigma_i\Sigma_j\, dp_{ijt}/N$, for the mean rate of nominal price change and $SD(dp) = \{\Sigma_t\Sigma_i\Sigma_j\, [dp_{ijt} - \text{Mean}(dp)]^2/N\}^{.5}$ for the standard deviation.

Summary statistics are in Table 1. There are 12,394 nominal price changes in the 1978-79 sample, when pooling over all stores, products and months. The mean rate of nominal price change of 4.1% is a measure of the monthly rate of inflation during the period. I used three subsamples from the 1991-92 data. The sample "All" refers to all products; "food" to food products and "defined food" to food products in which the quantity is well specified. For example 500 gram Hala bread is in all three categories. See the Appendix for further details.

Table 1 suggests the standard finding of a positive correlation between the standard deviation of the rate of change and the mean.

**Table 1: Summary statistics: unconditional sample**

| | N | Mean (dp) | SD(dp) |
|---|---|---|---|
| 78-79 | 12394 | 4.1% per month | 0.095 |
| 81-82 | 12995 | 6.2% per month | 0.100 |
| 91-92; All | 102751 | 0.7% per month | 0.061 |
| 91-92; food | 56409 | 0.8% per month | 0.060 |
| 91-92; defined food | 18526 | 0.8% per month | 0.064 |

Table 2 looks only at non zero price changes. Although the conditional mean rate of change varied considerably across the three periods, there is very little difference in the standard deviations. This suggests that the relationship between inflation and the unconditional variance of the rate of change is primarily due to the increase in the variance between the means of two groups: Those which changed and those which did not. I now turn to examine this proposition in detail.

**Table 2: Summary statistics for all non-zero price changes (dp≠0)**

| | N | Mean(dp) | SD(dp) |
|---|---|---|---|
| 78-79 | 5633 | 8.9% | 0.124 |
| 81-82 | 7624 | 10.6% | 0.111 |
| 91-92; All | 25228 | 3.1% | 0.120 |
| 91-92; food | 15285 | 3.0% | 0.115 |
| 91-92; All | 5288 | 2.8% | 0.117 |

## 3. VARIABILITY ACROSS SELLERS OF THE SAME PRODUCT

Let $p_{ijt}$ denote the nominal price of good i in store j at time t and let $M_t$ denote the deflator at month t. Because the deflator is common to all stores, the variance of the real price $\ln(p_{ijt}/M_t)$ across j (stores) is the same as the variance of $\ln p_{ijt}$.

I use,

$\text{Mean}(\ln p_{it}) = \Sigma_j \ln p_{ijt}/N_{it}$ ;

$\text{SD}(\ln p_{it}) = \{\Sigma_j [\ln p_{ijt} - \text{Mean}(\ln p_{it})]^2/N_{it}\}^{.5}$ ;

$dp_{ijt} = \ln p_{ijt} - \ln p_{ijt-1}$ ;

$\text{Mean}(dp_{it}) = \Sigma_j dp_{ijt}/N_{it}$ ;

$\text{SD}(dp_{it}) = \{\Sigma_j [dp_{ijt} - \text{Mean}(dp_{it})]^2/N_{it}\}^{.5}$ .

I ran $\text{SD}(\ln p_{it})$ on $\text{Mean}(dp_{it})$ to test the hypothesis (in Eden, 1994) of no correlation between inflation and the standard deviation of real prices.[1] As can be seen from Table 3, the coefficient of

[1] Theorem 1 in Eden (1994) says that the beginning of period distribution of normalized prices (P/M) does not depend on the

Mean($dp_{it}$) is not significantly different from zero, suggesting that there is no clear relationship between inflation and relative price variability across stores.[12]

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anticipated money supply at the end of the period (M) and its rate of change (dM). The rate of inflation according to this model is the change in the anticipated end of period money supply. The anticipation is from the point of view of the price setters and the mean of their price change is an estimate of the anticipated change of the end of period money supply.

[1] The number of observations on (Mean, SD) pairs is less than the number of products times the number of months in each sample, because not all products were sampled in all months.

[2] In a recent study Reinsdorf (1994) reports a negative correlation between inflation and relative price variability as measured by the coefficient of variation of nominal prices across stores which sell the same product. He uses US data from the Volcker disinflation period.

**Table 3: Dependent variable = SD($lnp_{it}$); sample = All**

| observations | | coefficient of Mean($dp_{it}$) | t statistic | adj. t* | prob. of het.* |
|---|---|---|---|---|---|
| 78-79 | 516 | 0.110 | 1.4 | 1.3 | 0.46 |
| 81-82 | 552 | -0.046 | -0.6 | -0.6 | 0.03 |
| 91-92; All | 9568 | -0.072 | -0.8 | -0.9 | 0.00 |
| 91-92; food | 4991 | -0.006 | -0.0 | -0.1 | 0.02 |
| 91-92; defined food | 1196 | 0.418 | 1.3 | 1.5 | 0.01 |
| Regressions weighted by square root of $N_{it}$ | | | | | |
| 78-79 | 516 | 0.128 | 1.4 | 1.3 | 0.00 |
| 81-82 | 552 | -0.036 | -0.5 | -0.4 | 0.00 |
| 91-92; All | 9568 | -0.034 | -0.4 | -0.4 | 0.00 |
| 91-92; food | 4991 | 0.025 | 0.2 | 0.2 | 0.00 |
| 91-92; defined food | 1196 | 0.356 | 1.2 | 1.6 | 0.00 |

* adj. t = t statistic adjusted for asymptotic variance.

prob. of het. = probability of hetroscedasticity.

But, as can be seen from Table 4, there is a strong positive correlation between the unconditional standard deviation of the rate of change in nominal price, SD($dp_{it}$), and the unconditional mean, Mean($dp_{it}$).

**Table 4: Dependent variable = SD($dp_{it}$); sample = All**

| observations | | coefficient of Mean($dp_{it}$) | t statistic | adj. t* | prob. of het.* |
|---|---|---|---|---|---|
| 78-79 | 516 | 0.479 | 12.5 | 6.2 | 0.44 |
| 81-82 | 552 | 0.450 | 11.8 | 4.9 | 0.11 |
| 91-92; All | 9568 | 0.203 | 13.2 | 5.8 | 0.00 |
| 91-92; food | 4991 | 0.229 | 11.9 | 6.4 | 0.00 |
| 91-92; defined food | 1196 | 0.197 | 5.1 | 2.8 | 0.00 |
| Regressions weighted by square root of $N_{it}$ | | | | | |
| 78-79 | 516 | 0.459 | 11.5 | 5.7 | 0.34 |
| 81-82 | 552 | 0.449 | 11.9 | 4.7 | 0.24 |
| 91-92; All | 9568 | 0.189 | 12.4 | 5.8 | 0.00 |
| 91-92; food | 4991 | 0.221 | 11.6 | 6.3 | 0.00 |
| 91-92; defined food | 1196 | 0.178 | 4.7 | 2.4 | 0.00 |

* adj. t = t statistic adjusted for asymptotic variance.

prob. of het. = probability of hetroscedasticity.

Thus, there is no relationship between inflation and relative price variability in spite of the strong positive correlation between inflation and the variance of the rate of change. To explain this apparent contradiction, let G denote the unconditional rate of nominal price change for a randomly selected store:

$$G = \{\beta \text{ with probability } \gamma, \text{ and zero otherwise}\},$$

where the random variable $\beta$ is the rate of change given that a change was made ($dp \neq 0$) and $\gamma$ is the fraction of stores that make a change. I use $\bar{\beta}$ and $\sigma$ to denote the mean and the standard deviation of $\beta$. Since $EG = \gamma\bar{\beta}$ and $EG^2 = \gamma E\beta^2$,

$$(1) \quad \mathrm{Var}(G) = EG^2 - (EG)^2 = \gamma E\beta^2 - (\gamma\bar{\beta})^2 = \gamma(E\beta^2 - \bar{\beta}^2) + \bar{\beta}^2(\gamma - \gamma^2)$$
$$= \gamma\sigma^2 + \bar{\beta}^2\gamma(1-\gamma) .$$

Table 5 shows that in periods with high inflation the conditional mean $\bar{\beta}$ and the fraction $\gamma$ are both high. This is consistent with the behavior of sellers who maintain a stable real price distribution. Using the example of Figure 2, when inflation goes up, the area C shrinks. To restore the equilibrium distribution both the conditional mean $\bar{\beta}$ and the fraction $\gamma$ must go up. The partial derivative of Var(G) with respect to $\bar{\beta}$ is positive. The partial with respect to $\gamma$ is also positive, when $\gamma$ is not too large. Therefore, the unconditional variance increases with inflation, even when the conditional variance, $\sigma^2$, does not increase with inflation.

**Table 5**

| means of: | G | $\beta$ | $\gamma$ |
|---|---|---|---|
| 78-79 | 4.1% | 8.9% | 0.45 |
| 81-82 | 6.2% | 10.6% | 0.59 |
| 91-92; food | 0.8% | 3.0% | 0.27 |

Since both $\gamma$ and $\bar{\beta}$ increase with inflation, identity (1) explains why (anticipated and unanticipated) inflation affects the variability of the rates of change, as was found by Lach and Tsiddon

(1992).[1] Finally, the identity (1) suggests that the relationship between Var(G) and the rate of inflation $\pi$ is not linear. (Otherwise, if there was a perfect linear fit, we could not have run the regressions). Therefore it is not surprising that when running Var(G) = $a + b\pi + c\pi^2$, both b and c are significantly different from zero, as Van Hoomissen (1988) found.

To complete the picture, I now examine the correlation between the conditional standard deviation ($\sigma$) and the conditional mean. As can be seen from Table 6, and as was suggested by the summary statistics in Table 2, there is no positive relationship between the conditional standard deviation and the conditional mean. This is surprising in view of the general feeling that nominal price changes are more chaotic when inflation is high.

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[1] To check the identity (1) for the 78-79 sample, I used Var(G) = $[SD(dp)]^2 = (0.09)^2$ from Table 1, $\sigma^2 = (0.12)^2$ from Table 2; $\bar{\beta}^2 = (0.09)^2$ and $\gamma = 0.45$ from Table 5. It works up to a rounding error.

**Table 6: Dependent variable = SD($dp_{it}$); sample = $dp \neq 0$**

| | observations | coefficient of Mean($dp_{it}$) | t statistic | adj. t* | prob. of het.* |
|---|---|---|---|---|---|
| 78-79 | 462 | -0.024 | -0.6 | -0.2 | 0.40 |
| 81-82 | 542 | 0.128 | 2.9 | 1.0 | 0.15 |
| 91-92; All | 4579 | -0.193 | -15.4 | -6.8 | 0.04 |
| 91-92; food | 2642 | -0.167 | -10.7 | -7.6 | 0.00 |
| 91-92; defined food | 726 | -0.232 | -7.4 | -4.7 | 0.07 |
| Regressions weighted by square root of $N_{it}$ | | | | | |
| 78-79 | 462 | -0.033 | -0.8 | -0.3 | 0.40 |
| 81-82 | 542 | 0.153 | 3.5 | 1.1 | 0.27 |
| 91-92; All | 4579 | -0.187 | -15.2 | -10.0 | 0.03 |
| 91-92; food | 2642 | -0.168 | -11.1 | -8.8 | 0.00 |
| 91-92; defined food | 726 | -0.207 | -7.2 | -5.5 | 0.04 |

* adj. t = t statistic adjusted for asymptotic variance.

prob. of het. = probability of hetroscedasticity.

## 4. VARIABILITY ACROSS PRODUCTS

Most of the literature on inflation and relative price variability talks about the effect of inflation on the variability of the rate of change across products, where the rate of change of a given product is the mean of the rates of change across the different sellers of the product.

Since the variance of the mean of x tends to behave in the same way as the variance of x, we expect that the above finding will carry over to the variability of the means (across products). To illustrate, consider a sample of n, i.i.d., observations, $x_i$. The

variance of the sample mean is: $Var([1/n]\sum_i x_i) = [1/n]Var(x)$. Therefore, if Var(x) is correlated with inflation then $Var([1/n]\sum_i x_i)$ should be correlated and vice versa: lack of correlation of Var(x) with inflation will tend to produce lack of correlation of $Var([1/n]\sum_i x_i)$ with inflation.

The number of months in the data sets I have is not large and therefore these data sets are not very good for the purpose of analyzing the relationship between the variability across products and inflation. I provide the following calculations for illustrative purposes. I use,

$Mean(dp_t) = \sum_i Mean(dp_{it})/N_t$ ;

$SD(dp_t) = \{\sum_i [Mean(dp_{it}) - Mean(dp_t)]^2/N_t\}^{.5}$ .

I then ran $SD(dp_t)$ on $Mean(dp_t)$ both in the unconditional sample and in the sample of non-zero price changes. The results, which are not reported here are consistent with the results in Table 4 and 6. The unconditional sample suggests a positive correlation between $SD(dp_t)$ and $Mean(dp_t)$. The conditional sample reverses the sign of the correlation in 2 out of the three samples, suggesting no strong positive correlation between the two. These correlations can be explained by the identity (1).

Do these correlations tell us anything about the variance of relative prices across goods? I am not sure whether this is a well posed question because the variance of relative prices across different goods depends on the choice of units. To illustrate, I consider an example.

<u>period 0:</u>

price of 100 grams of cheese = 1 dollar

price of 100 grams of honey = 2 dollars

Relative prices are: 1 for cheese and 2 for honey. The variance of relative prices is: Var (RP) = $.5^2$ = .25.

period 1: The same nominal prices as in period 0 (zero inflation)

period 2:

price of 100 grams of cheese = 2 dollar

price of 100 grams of honey = 8 dollars

Relative prices are 1 for cheese and 4 for honey. The variance of relative prices is: Var (RP) = $1.5^2$ = 2.25.

Here there is a positive correlation between Var (RP) and inflation.

Assume now that we define a unit of honey as 10 grams rather than 100 grams. In this case:

period 0:

price of 100 grams of cheese = 1 dollar

price of 10 grams of honey = .2 dollars

Relative prices = 1 for cheese and .2 for honey. Var (RP) = $.4^2$ = .16.

period 1: The same nominal prices as in period 0.

period 2:

price of 100 grams of cheese = 2 dollar

price of 10 grams of honey = .8 dollars

Relative prices = 1 for cheese and .8 for honey. Variance of relative prices is: Var (RP) = $.1^2$ = .01.

Thus, if we make the product that became relatively more expensive, cheaper in the first period (by a choice of units) then we get a negative correlatio between inflation and Var (RP). It follows that the relationship between inflation and the variance of relative prices depends on the choice of units.

## 8. CONCLUDING REMARKS

I used large data sets on prices disaggregated by products and stores. These data sets are from three periods in recent Israeli history: 1978-79 with a monthly inflation rate of 4%, 1981-82 with a monthly inflation rate of 6% and 1991-92 with a monthly inflation rate of 1%.

There is no strong relationship between inflation and the variance of relative prices, in spite of the strong positive correlation between the unconditional variance of the rate of nominal price change and inflation.

The relationship between the variance of the rate of change and inflation is the subject of extensive literature. It can be explained in terms of an identity that relates the variance of the rate of change, Var(G), to the conditional mean (conditioned on a change being made), $\bar{\beta}$, the fraction of sellers that changed their nominal prices, $\gamma$, and the conditional variance $\sigma^2$. The identity is: $\text{Var}(G) \equiv \gamma\sigma^2 + \bar{\beta}^2\gamma(1-\gamma)$. Since inflation is $\pi \equiv \gamma\bar{\beta}$, it is not surprising that high inflation is associated with both high $\gamma$ and high $\bar{\beta}$. The question is whether or not the conditional variance, $\sigma^2$, increases with inflation. Surprisingly, the finding is that it does not.

Since the relationship between inflation and the variance of the rate of change can be explained in terms of an identity, it is

difficult to use it for distinguishing between competing theories. In particular, the fact that anticipated inflation affects the variance of the rate of change does not suggest room for active monetary policy.

The lack of correlation between relative price variability and inflation is consistent with the prediction of the sequential trading model in Eden (1994).

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Appendix: List of Products for the 1991-92 Sample*

| Food | | |
|---|---|---|
| 1 | 101 | Bee Honey, Natural (not a product of Beit Yitzchak 778) |
| 2 | 102 | Fruit jam, Israeli |
| 3 | 103 | Jam, Israeli |
| 4 | 104 | Jam, imported |
| 5 | 105 | Citrus fruit drink, pasteruized (doesn't include pure fruit juice) |
| 6 | 106 | Natural fruit juice, family size |
| 7 | 107* | Carbonated beverage, Coca Cola brand, 1.5 liter, plastic bottle |
| 8 | 108 | Carbonated brand, other than Coca Cola, plastic bottle |
| 9 | 109 | Sweetened drink, plastic bottle, not diet |
| 10 | 110 | Carbonated water, plastic bottle, family size |
| 11 | 111 | Baking soda, packet |
| 12 | 112 | Black olives, canned |
| 13 | 113 | Green olives, canned, not pitted |
| 14 | 114* | Green olives, sold by weight of 100 gram, not pitted |
| 15 | 115 | Pickles, canned |
| 16 | 116 | Pickles, sold by weight of 100 gram |
| 17 | 119 | Tomato paste |
| 18 | 120 | Ketchup |
| 19 | 121 | Sardines, in pure oil |
| 20 | 122 | Tuna, canned |
| 21 | 123 | Mackeral, canned, Israeli |
| 22 | 124 | Garden peas, canned |
| 23 | 125 | Corn, canned, Israeli |
| 24 | 126 | Canned food (not including vegetables) |
| 25 | 127 | Mushrooms, canned, Israeli |
| 26 | 128 | Canned meat, Israeli |
| 27 | 129 | Baby food (rice or fine flour) |
| 28 | 130 | Other baby food (other than rice or fine flour) |
| 29 | 131 | Canned baby food, Gerber |
| 30 | 132 | Apple sauce, canned, Israeli |
| 31 | 133 | Jam, Beit Yitzhak 778 |
| 32 | 501* | Black bread, not packaged, 750 grams |
| 33 | 502* | White bread, not packaged, 750 grams |
| 34 | 503 | Black bread, special |
| 35 | 504 | White bread, special |
| 36 | 506 | Sweet challa |
| 37 | 507* | Challa, 500 grams |
| 38 | 508* | Roll, long variety, 60 grams |

* Defined food products are denoted by a star.

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|---|---|---|
| 39 | 509 | Special rolls |
| 40 | 510 | Pita (ordinary type) |
| 41 | 511 | Diet bread |
| 42 | 512 | Matzot - non Passover variety |
| 43 | 514 | Soup nuts |
| 44 | 515* | White flour, 1 kilogram |
| 45 | 516 | Sifted flour (don't pick with cocoa) |
| 46 | 517 | Matzo Meal |
| 47 | 518 | Corn flour |
| 48 | 519 | Whole wheat flour |
| 49 | 520 | Beans |
| 50 | 521 | Rice, elongated, 1 kilogram package |
| 51 | 522 | Rice, whole |
| 52 | 523 | Dried rice, differnt flavors |
| 53 | 524 | Jello pudding |
| 54 | 525 | Instant pudding |
| 55 | 526 | Whipped topping |
| 56 | 527 | Baking powder |
| 57 | 528 | Flavorings |
| 58 | 530 | Macaroni |
| 59 | 531 | Noodles |
| 60 | 532 | Small squares of dough |
| 61 | 533 | Barley |
| 62 | 534 | Bread crumbs |
| 63 | 535 | Regular fine flour |
| 64 | 536 | Cornflakes |
| 65 | 537 | Granola |
| 66 | 538 | Popcorn kernels |
| 67 | 1011* | Bourkas, small, kilogram |
| 68 | 1501* | Beef, rib, little fat, kilogram |
| 69 | 1502* | Beef, roast, little fat, kilogram |
| 70 | 1503* | Beef, steak, kilogram |
| 71 | 1504 | Beef, chopped |
| 72 | 1505* | Liver, beef, kilogram |
| 73 | 1506* | Lamb, kilogram |
| 74 | 1507 | Beef, shoulder roast, little fast, kilogram |
| 75 | 1508* | Beef, ribs, no fat or bones, kilogram |
| 76 | 1509* | Beef, steak, shoulder, kilogram |
| 77 | 1510* | Beef, from chest, fresh, kilogram |
| 78 | 1511 | Beef, chopped, fresh |
| 79 | 1512* | Liver, beef, fresh, kilogram |
| 80 | 1513* | Internal organs of the cow, kilogram |
| 81 | 2005 | Frozen dough |
| 82 | 2007 | Frozen pizza |
| 83 | 2008 | Frozen bourekas |
| 84 | 2009 | Frozen eggrolls |
| 85 | 2010 | Frozen soup |
| 86 | 2011 | Frozen vegetables, one type |
| 87 | 2012 | Frozen vegetables, mixed variety |
| 88 | 2013 | Frozen french fries |
| 89 | 2501* | Pork chops with little fat, kilogram |
| 90 | 2502 | Pork, steak |

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|---|---|---|
| 91 | 2503 | Franks, non-kosher |
| 92 | 2504* | Salami, standard, pork, 100 gram |
| 93 | 2505* | Salami from pork (not v'shinkin), 100 gram |
| 94 | 2506* | Shinkin, 100 gram |
| 95 | 3001* | Frozen chicken, koshered, without head and internal organs, kilogram |
| 96 | 3002 | Fresh chicken, kilogram (with internal organs) |
| 97 | 3003 | Chicken breasts |
| 98 | 3004* | Chicken livers, frozen, 500 gram packages |
| 99 | 3005 | Chicken parts (aside from bottoms) |
| 100 | 3006* | Bottoms, chicken, 1 kilogram |
| 101 | 3007 | Turkey breasts, boneless |
| 102 | 3008* | Turkey thighs, 1 kilogram |
| 103 | 3009* | Red turkey meat, 1 kilogram |
| 104 | 3010 | Chopped chicken/turkey |
| 105 | 3501 | Salami |
| 106 | 3503 | Salami, kavanus |
| 107 | 3506 | Pastrami, smoked turkey |
| 108 | 3508 | Cognac Franks |
| 109 | 3509 | Franks |
| 110 | 3510 | Cocktail franks |
| 111 | 3511 | Tea salami |
| 112 | 4001* | Carp, live per 1 kilogram |
| 113 | 4002* | St. Peter's fish, kilogram |
| 114 | 4003* | Mackarel, kilogram |
| 115 | 4006 | Filet |
| 116 | 4008* | Sole, frozen, kilogram |
| 117 | 4010* | Tuna, frozen, kilogram |
| 118 | 4501* | Pasteurized milk, 3% fat, liter |
| 119 | 4502 | Long-life milk, carton |
| 120 | 4503 | Chocolate drink |
| 121 | 4504 | Chocolate pudding, per portion |
| 122 | 4507 | Yogurt, fruit flavored, 3% fat |
| 123 | 4510 | Pudding, whipped topping |
| 124 | 4511* | Soft white cheese, 9% fat, 250 gram |
| 125 | 4512 | Soft white cheese, low fat |
| 126 | 4513 | Cottage cheese |
| 127 | 4514 | Sour cream, 30% fat |
| 128 | 4515 | Ripe cheese, no fat |
| 129 | 4516* | Yellow cheese, cow's milk, 100 gram |
| 130 | 4517 | Yellow cheese, goat's milk, by weight |
| 131 | 4518* | Yellow cheese, sliced |
| 132 | 4519 | Salted cheese |
| 133 | 4520 | Cheese triangles |
| 134 | 4521* | Margerine, 200 grams |
| 135 | 4522* | Margerine, in plastic containter, 250 grams |
| 136 | 4523* | Unsalted butter, 100 grams |
| 137 | 4524* | Salted butter, 100 grams |
| 138 | 4525 | Whipped topping, dairy |
| 139 | 4526 | Iced cream |
| 140 | 4527 | Iced cream, with high percentage of fat |
| 141 | 5001* | Soy oil, 1 liter |
| 142 | 5002* | Corn, peanut or sunflower oil, 1 liter |

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|---|---|---|
| 143 | 5003* | Egg, number 1 |
| 144 | 5004* | Egg, number 2 |
| 145 | 5005* | Egg, number 3 |
| 146 | 5007 | Salad |
| 147 | 5010 | Real mayonnaise |
| 148 | 5011 | Mayonnaise, low calorie variety |
| 149 | 5012 | Techina |
| 150 | 5013 | Chumous, canned |
| 151 | 5501* | Wafers, 150-500 gram package |
| 152 | 5503* | Wafers, filled, 150-500 grams |
| 153 | 5504* | Cookies, not filled, 150-500 grams |
| 154 | 5505* | Cookies, filled, 150-1500 grams |
| 155 | 5506* | Biscuits, "Peti-Bar", 150-500 grams |
| 156 | 5507* | Chocolate covered wafers, 150-500 grams |
| 157 | 5508 | Crackers |
| 158 | 5509* | Snacks, salted, 150-500 grams |
| 159 | 5510* | Milk chocolate, Israeli, 100 grams |
| 160 | 5511 | Milk chocolate, fruit filled |
| 161 | 5512 | Milk chocolate, cream filled |
| 162 | 5513 | Milk chocolate, nuts or almonds, 100 grams |
| 163 | 5514 | Chocolate spread |
| 164 | 5515* | Halava, seasame,. 100 gram |
| 165 | 5516* | Taffy, individually wrapped, 100-300 grams |
| 166 | 5517* | Lentils, 100 grams |
| 167 | 5518 | Mint or hard candies |
| 168 | 5519 | Syrup |
| 169 | 5520 | Candy bonboneire |
| 170 | 5522 | Candy |
| 171 | 6002 | Red sweet wine, Israeli |
| 172 | 6005 | Wine, white dry or semi-dry, Carmel Mizrachi |
| 173 | 6007 | Wine, carbonated, Carmel Mizrachi, excluding champagne |
| 174 | 6008 | Champage, Israeli |
| 175 | 6009 | Brandy, Israeli (don't choose medicinal brandy) |
| 176 | 6011 | Vodka Israeli |
| 177 | 6012 | Arak, Israeli |
| 178 | 6013 | Liquer, Israeli |
| 179 | 6014 | Beer, white, Tempo |
| 180 | 6017 | Beer, black, Tempo |
| 181 | 6501 | Cocoa |
| 182 | 6502 | Instant cocoa |
| 183 | 6503 | Turkish coffee |
| 184 | 6505 | Instant coffee (doesn't include de-cafinated) |
| 185 | 6506 | Tea, packaged |
| 186 | 6507 | Tea, tea bags |
| 187 | 6508 | Herbal tea bags |
| 188 | 6509 | Decaffinated coffee |
| 189 | 6701* | Sugar, kilogram |
| 190 | 6702 | Sugar substitutes |
| 191 | 6703* | Table salt, kilogram |
| 192 | 6704 | Black pepper, plastic dispenser |
| 193 | 6705 | Sweet paprika, bag |
| 194 | 6706 | Spices, various |

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|---|---|---|
| 195 | 6707 | Soup mix, chicken |
| 196 | 6708 | Soup mix, all except chicen |
| 197 | 6709 | Techina mix |
| 198 | 6710 | Sauce mix |
| 199 | 6711 | Ready-made sauce, bottle |
| 200 | 6712* | Vinegar, 1 liter |
| 201 | 7001 | Entree |
| 202 | 7002 | Soup |
| 203 | 7003 | Stuffed vegetables, including moussaka |
| 204 | 7004 | Beef with side dishes |
| 205 | 7005 | Lamb with side dishes |
| 206 | 7006 | Chicken with side dishes |
| 207 | 7007 | Fish |
| 208 | 7008 | Dessert (excluding cake) |
| 209 | 7502 | Sandwhich, including toast |
| 210 | 7507 | Drink |
| 211 | 7507 | Tea, hot |
| 212 | 7510 | Coffee |
| 13 | 9501 | Sunflower seeds |
| 214 | 9503 | Peanuts |
| 215 | 9505 | Pistachio nuts |
| 216 | 9506 | Walnuts |
| 217 | 9507 | Almonds |
| 218 | 9508 | Raisins |

Other Products

| | | |
|---|---|---|
| 219 | 10001 | Dish cleanser, non-liquid |
| 220 | 10002 | Dish cleanser, liquid |
| 221 | 10003 | Metal scrubber pad |
| 222 | 10004 | Scotch brite |
| 223 | 10005 | Bleach |
| 224 | 10006 | Cleaning agents |
| 225 | 10007 | Floor cleaner |
| 226 | 10008 | Detergent |
| 227 | 10009 | Detergent, large size, Israel |
| 228 | 10010 | Detergent, large size, imported |
| 229 | 10011 | Detergent, hand wash |
| 230 | 10012 | Detergent for delicate fabrics |
| 231 | 10013 | Insecticide |
| 232 | 10014 | Deodorizer |
| 233 | 10015 | Rag for floor |
| 234 | 10016 | Garbarge bags |
| 235 | 10017 | Toilet paper |
| 236 | 10018 | Plastic tablecloths |
| 237 | 10019 | Towelettes |
| 238 | 10020 | Aluminim foil |
| 239 | 10021 | Disposable diapers, Israel |
| 240 | 10022 | Soap, Israeli |
| 241 | 10023 | Toothpaste, Israeli |
| 242 | 10024 | Toothpaste, imported |

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|---|---|---|
| 243 | 10025 | Shoe polish |
| 244 | 10026 | Sabbath candles |
| 245 | 10027 | Matches, 12 small boxes |
| 246 | 10028 | Liquid detergent |
| 247 | 11001 | Plastic paint, 1 gallon |
| 248 | 11002 | Superlack, 1/2 liter |
| 249 | 11003 | Polyor, 1/2 liter |
| 250 | 11005 | Hammer, wooden handle |
| 251 | 11006 | Pliers |
| 252 | 11007 | Tongs (special type of plier) |
| 253 | 11009 | Screwdriver, regular |
| 254 | 11011 | Nail, iron |
| 255 | 11012 | Nail, |
| 256 | 12001 | Closet, two levels |
| 257 | 12003 | Wood dining room table, without chairs, extends to larger size |
| 258 | 12004 | Wooden chair for dining room, with back and upholstery |
| 259 | 12005 | Wooden chair for dining room, with back and without upoholstery |
| 260 | 12006 | Living room set - including couch, loveseat and chair |
| 261 | 12007 | Wooden coffee table |
| 262 | 12009 | Book shelves |
| 263 | 12012 | Television stand |
| 264 | 12014 | Formica kitchen table |
| 265 | 12015 | Desk |
| 266 | 12016 | Twin bed (without mattress and, box and dresser) |
| 267 | 12017 | Nighttables (2) |
| 268 | 12018 | Youth bed |
| 269 | 12019 | Couch that opens to bed |
| 270 | 12020 | Youth bed with full upholstery |
| 271 | 12501 | Mattress with standard upolstery |
| 272 | 14001 | Oven, without delivery and installation |
| 273 | 14005 | Color television, imported |
| 274 | 14006 | Color television, Israeli |
| 275 | 14007 | Washing machine, Israeli |
| 276 | 14008 | Washing machine, imported |
| 277 | 14009 | Refrigerator, Amcor, Model 4600 |
| 278 | 14010 | Refrigerator, Amcor, Model 4700 |
| 279 | 14011 | Refrigerator, Tadiran, Galaxy 450-453 |
| 280 | 14012 | Refrigerator, imported |
| 281 | 14014 | Vacum cleaner |
| 282 | 14015 | Electric mixer, imported |
| 283 | 14016 | Food processor |
| 284 | 14017 | Portable tape recorder |
| 285 | 14018 | Video recorder |
| 286 | 14019 | Dishwasher |
| 287 | 14020 | Microwave |
| 288 | 14506 | Batteries |
| 289 | 14509 | Electric kettle |
| 290 | 15513 | Stainless steel pot, Soltam |
| 291 | 17003 | Chrysanthemum |
| 292 | 24001 | Tylenol |
| 293 | 24004 | Nose drops |
| 294 | 24005 | Skin cream, antibiotic, tube |

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|---|---|---|
| 295 | 24007 | Antibiotic, tablet or capsule |
| 296 | 24009 | Birth control pills |
| 297 | 24010 | Tranquilizers |
| 298 | 24020 | OXY, acne medication |
| 299 | 24021 | Soap, medicated, acne |
| 300 | 24023 | Nasal decongestant |
| 301 | 24025 | Mediation for indigestion |
| 302 | 24026 | Saline solution for contact lenses |
| 303 | 24501 | Glass lenses for eye glasses |
| 304 | 24504 | Plastic lenses for eye glasses |
| 305 | 25001 | Textbook on Israeli literature |
| 306 | 25002 | Language Style, Verone Bahat |
| 307 | 25003 | Language, Ami Avichezer |
| 308 | 25004 | History Lessons, Center for Planned Learning |
| 309 | 25005 | Chronicles of Time, Ziv, Abramski and Kirshenbaum |
| 310 | 25006 | Algebra, Grades 7-12, Aspis Publications |
| 311 | 25007 | Geometry, Trigonemetry and |
| 312 | 25008 | Physics, Lindman and Lifshutz |
| 313 | 25013 | Language Exercises, Leah Krishberg |
| 314 | 25014 | Reader, E.M.T. |
| 315 | 25015 | Jerusalem, Judea and Samaria, Eliezer |
| 316 | 25016 | Geography of Israel, Harel, Nir |
| 317 | 25017 | Elementary Arab Language, |
| 318 | 25018 | Atlas, Breuer's |
| 319 | 25019 | Hebrew dictionary, Even-Shushan |
| 320 | 25020 | English-Hebrew dictionary, one volume |
| 321 | 25022 | Bible, one volume |
| 322 | 25023 | Plants of Israel, by Michael Zohari |
| 323 | 25504 | Cookbook |
| 324 | 25508 | Baby care book |
| 325 | 25512 | Song book |
| 326 | 25516 | Time Magazine |
| 327 | 25517 | LEXPRESS - French Weekly |
| 328 | 25519 | Burda, monthly |
| 329 | 26002 | Notebook, 40 page |
| 330 | 26003 | Notebook, spiral |
| 331 | 26004 | Paper, two hole paper |
| 332 | 26006 | Pen |
| 333 | 26007 | Pen, Parker with refill |
| 334 | 26008 | Rule, 30 cm |
| 335 | 26009 | Markers, set of six |
| 336 | 26010 | Paints, guash |
| 337 | 26013 | Brush |
| 338 | 26014 | Glue, small package |
| 339 | 26015 | Pencil, #2 lead |
| 340 | 26016 | Crayons |
| 341 | 26017 | Cellophane tape, 1 cm. wide |
| 342 | 28007 | Cassette tape, blank |
| 343 | 28501 | Color picture, 9 x 13 |
| 344 | 28502 | Film, 36 exposure, 35 mm camera, ASA quality |
| 345 | 28503 | Film, 36 exposure, 35 mm camera |
| 346 | 28505 | Film, 110 camera |

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|---|---|---|
| 347 | 29004 | Tennis balls, 3 in package |
| 348 | 29510 | Birdcage |
| 349 | 30004 | Monopoly, Israeli |
| 350 | 30009 | Lotto, small game, Israeli |
| 351 | 31001 | Benzyn 91 octane, liter |
| 352 | 31002 | Benzyn, 96 octane, liter |
| 353 | 31003 | Oil for engine, 1 liter |
| 354 | 31004 | Keresene, home use, 1 liter |
| 355 | 31005 | Car wash |
| 356 | 32001 | Upolstery covers |
| 357 | 32004 | Speaker, 1 set |
| 358 | 32005 | Standard carpeting for car |
| 359 | 32006 | Inside mirror for a car, with panoramic view |
| 360 | 32007 | Steering wheel cover |
| 361 | 32008 | Wax, car |
| 362 | 32009 | Vinyl cleaner |
| 363 | 32502 | Shampoo |
| 364 | 32503 | Moisturizer |
| 365 | 32504 | Moisturizer milk for the face |
| 366 | 32507 | Body lotion |
| 367 | 32509 | Lipstick |
| 368 | 32512 | Soap, Israeli |
| 369 | 32516 | After shave lotion |
| 370 | 32517 | Shaving cream |
| 371 | 32518 | Razor blade |
| 372 | 32520 | Tweezer |
| 373 | 32521 | Toothbrush, adult |
| 374 | 32522 | Deodorant, spray, man's |
| 375 | 33001 | Marriage band, gold |
| 376 | 33002 | Necklace, gold |
| 377 | 33003 | Pendant, gold |
| 378 | 33004 | Bracelet, gold, one piece, no design |
| 379 | 33005 | Bracelet, gold, links |
| 380 | 33011 | Wrist watch strap, man's |
| 381 | 33501 | Haircut, man's |
| 382 | 33503 | Haircut, for child, without wash |
| 383 | 34001 | Haircut with wash and blow |
| 384 | 34002 | Hair cut with wash and dry |
| 385 | 34003 | Permanent |
| 386 | 34004 | Hair streaking |
| 387 | 34005 | Hair coloring |
| 388 | 34006 | Ice skating |
| 389 | 34007 | Child's haircut |
| 390 | 34008 | Manicure, with nail polish |

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