

**Voorburg Group on Service Statistics**

**Service Price Index for Investigation and Security  
Services**

**Sima Assaf**

**Central Bureau of Statistics  
Israel**

**August 2005**

## **Background**

1. Service industries have come to play an increasing role in the Israeli economy. In 2003, trade and service industries accounted for slightly over 73.5 percent of Israel's Gross Domestic Product.<sup>1</sup> These industries accounted for almost 73.1 percent of employment (not including military service). Over time, the percentage has grown steadily.

2. Development of specific service sector price indices has begun in Israel in 2003 as an extension of the familiar PPI system for estimating prices in the production sector. It was decided to initially focus on the primary industry of "business activities" since it is the largest industry of services in the economy in term of revenues. Developing a price index for investigation and security services began on the basis of a survey of that sector in Israel. The international PPI Manual was used as the basic model for developing the index, and was then adapted to the unique features of the Israeli economy. Different models of investigation and security services were examined as well, some of which were developed in countries such as Finland and France, and some emanate from our experience in developing a price index for legal services and accounting services.

### **Description of investigation and security service activities in Israel**

3. The industry of investigation and security services in Israel in 2004 accounts for approximately 1.02 percent of the total turnover of services in Israel.

4. The investigation and security industry is relatively concentrated. The enterprises in this industry usually comprise of a few large and medium-size companies, and a host of small companies. The market consists of ten large firms, which control approximately 40% of the market.

---

<sup>1</sup> State of Israel Central Bureau of Statistics, Productivity, labor compensation and capital return 2000-2003, 25/2004.

According to data from the “Dealers and Revenue of Economic Industries”<sup>2</sup>, 74% of security and cleaning companies have annual revenue of up to 1 million Shekels (equivalent to approximately 225,000 USD), which constitute 7% of the entire annual revenue of the industry. 19% of security firms have annual revenue in the range of 1-5 million Shekels (equivalent to 200,000 USD to 1 million USD), which are 17% of the entire annual revenue of the industry. 1.0% of security firms have annual revenue of 40 million shekels or more, which are 40% of the entire annual revenue in the industry.

5. Larger companies in security services are typically more stable and professional than the smaller ones, they tend to hire more qualified staff and provide a wider range of services. These large companies offer a wide variety of services, affiliated with some of the largest international networks worldwide. Even in the alarm monitoring services, larger companies use superior technological devices and employ a greater number of patrolpersons, which expedite their response time. Due to severe threats of terror attacks, and its rising level of sophistication, the portion of defense expenditures in the governmental budget is of the highest in the world. There is also a large expense associated with services of security, which require strict professional standards and considerable experience and expertise.

6. There are three kinds of customers in this market, as follows:

- Public sector – protecting public institutions such as government offices, the President’s office, facilities of the defense ministry, Israel Port Authority, Israel Postal Authority, Israel broadcasting authority, airlines companies and etc,
- Companies, including banks and health centers.
- Small businesses, including cafes and restaurants.

All public institutions in Israel that are also funded (at least partially) by the government are subject to the Auctions Act. This law lists various conditions for eligibility, including a certain minimal size, experience and the submission of references.

---

<sup>2</sup> State of Israel Central Bureau of Statistics, Dealers and revenue of economic industries according to value added tax 2003

When the demand for security services is on the rise (especially for restaurants and cafés) many small security companies enter the market and tend to employ low-skilled personnel. Some are poorly managed and disappear after a short period. Since a correlation has been observed between the size of the company and the skill of its employees, it has been decided to focus on big and medium-size companies, while devoting somewhat less attention to smaller ones.

7. In Israel, security services have been divided especially into four service types:

I. Security services- include mobile patrol services, licensed mobile guards traveling between sites, ensuring that building and properties are secure.

II. Alarm monitoring services- this item includes provision of electronic surveillance of properties providing base alarms, surveillance equipment and close circuit television equipment, at base station, and services consisting of confirming or checking that all systems are properly functioning, and dispatching police officers, fire department or other designated parties.

III. Armored car services- this includes provision of service for the transportation of cash in a secure vehicle by licensed car crew and armored vehicle operators<sup>3</sup>.

IV. Investigation services- services provide by licensed private investigators, surveillance operatives, and process servers in investigating cases submitted by the client, relating to crimes, theft, fraud, shoplifting, dishonest, missing persons, domestic relations and other unlawful or lawful practice.

The share of the turnover of investigation service in Israel is very small so the methods described here are mainly valid for the security part of the activity.

---

<sup>3</sup> In this stage no price data have been available for money transport services, as their collecting is problematic.

## **The classification and the main services of the industry**

8. The classification of the price-index should be based on the following classification principles: The classification of the main industries will be determined according to combined classification method, called ISIC “International standard industrial classification of all economic activities 1993” after making the needed modification to the structure of the Israeli market.

<b>Description</b>	<b>CPC code</b>
Investigation and security services	852
Investigation services	8521
Security consultation services <sup>4</sup>	8522
Alarm monitoring services	8523
Armored car services	8524
Guard services	8525
Other security services	8529

## **Sample design**

9. Four potential frames were analyzed in order to sample security firms:

- ❖ The sample already used for the “Central Bureau of statistics”.
- ❖ Business Register
- ❖ Dun’s Guide
- ❖ Internet

The sample in the “Survey of Trade and Services” is based on the revenues of the firms but does not give any information about the distribution of revenue among sub groups

---

<sup>4</sup> In Israel, security consultation service is negligible as each public institution or business has its own security officer determine the level of the guard coordinated with the army and the police.

that fit lower degrees of the classification. Therefore, it does not address all the criteria required in order to select firms into the sample of a price index for the investigation and security service group.

Another source of data is the “Dun’s Guide” file which is a business guide that includes data on companies in Israel and lists of big security firms and their specialization fields.

In 2003 the Business Register was completed in Israel. Every business is listed with identifying details, revenue information, and the number of employees.

Information regarding revenue is taken from the Business Register, in order to ease the burden on companies and to gain greater cooperation from them.

10. Ten security firms and two investigation firms were sampled from this combined frame where sample size is based on our experience with the sample size in the PPI of manufacturing, determined by revenue and variance of price movements.

The actual firms sampled by a combined method of judgmental and cut-off sampling. Firms that employ less than 10 employees were not included in the sample.

Because the structure of the investigation and security services industry is relatively centralized, and because most of the firms are homogeneous and focus on provision of those services, it can be assumed that the level of prices, price movements is determined mainly by the large firms rather than by the small firms.

In the price indices, the risk of using a non-probability sample is relatively small because the variance over time of the price changes between the producers of those products is relatively small. Additionally, because the small firms are unstable, a probability estimate would not have yielded the desired results. Finally, the sample size reflects the relative weight of the specific industry out of all service industries.

## **Weights**

11. At the lowest level of aggregation, all contracts of each enterprise and service type, are assigned equal weights. At the next level of aggregation, service type weights within each enterprise, are based on turnover shares of each service type. The enterprise weights are calculated from the data of “trade services, transportation and communication” and from the business register.

## **The data collection and pricing methods**

12. The enterprises were each visited by economists from the Central Bureau of Statistics at least once, in order to urge the firms to report the necessary information, and to fully understand their methods of determining their rates. In determining pricing methodologies, a visit at the firm is conducted in order to study the main characteristics of the industry, its main areas of activity, its pricing methods, its acquisitions and contracts and its discount offerings. It is then determined which types of activities are measurable accurately, while keeping quality fixed. We also agree on a uniform pricing method that reflects the actual prices of transactions. The intention is to measure actual transactions of firms that offer security services to typical clients over time, in order to reflect actual price changes, not declared prices.

13. The principal task was to establish a sample selection of actual contracts which were representative of the services typically provided by the firm. The goal of this procedure is to ease the calculation of reliable indicators based on periodical changes in prices.

The selection of the pricing method must take into account the special characteristics of pricing in the industry. It is typical to employ long-term contracts, tailored to customer needs, that specify in great detail the nature and price of the service.

14. In the security services industry list price is not available. The objective is always to monitor finalized prices, that is, after allowing for any discount. The selection of approach in each case depends upon the pricing practices in the industry and the availability of data.

15. In Israel, the most common transaction in security services is one composed of an hourly rate. So the pricing method is based on working time especially charge-out rate. The advantages are its ability to reflect market conditions and consideration of high availability. Charge-out rate measures labor costs, it suits the special conditions of Israeli security service market.

The hourly pricing gives an accurate picture of real transaction price movement, requires the respondent to quote in each period a price for a standard service whose specifications are held constant and is almost effective as model pricing<sup>5</sup>.

16. Tariffs for services provided for hour at night are greater by 50% than during day time. Price variation during weekends is identical to variations during day time.

The interviews went generally smoothly, with cooperation obtained from the respondents, and with no more difficulties than in legal and accounting services.

At the first stage, the services price index will be published on a quarterly basis. In the future it may be published each month.

### **Issues in maintaining constant quality**

17. Defining the unique output and assuring the measurement of a constant quality service is a challenge in virtually all service industries. Defining the unique output in services industries is usually not straightforward and is often extremely difficult. To define a unique output, it is necessary to understand what is being transacted between the service provider and the customer. In all cases, the providers must have practical knowledge regarding its essence and price.

18. In the investigation and security services, changes in quality mainly arise from variations in the composition of the agreed services. In order to keep quality fixed we focused on specific components of any particular service.

---

<sup>5</sup> For more details see paragraph 18



For example, when an employee is paid hourly, the measurement is classified according to:

- ❖ the company's fields of activity and specific service group
- ❖ Tariff of a specific customer
- ❖ location, the price of the service may depend on the place where it's supplied
- ❖ the guards' professional level

There are three types of guards level, the differences between them relates to age difference, level of experience and employee skill. The levels of guards are:

- ❖ Unarmed guard
- ❖ Guard
- ❖ Security guard
- ❖ Body guard

Each category of guard is further divided into sub-categories and each of them is assigned a different tariff.

It is important to choose stable and large customers in order to determine the changes of prices over time. It is also advised to always measure the same service.

### **Parameters which have influence on the price change**

19. The main factors, affecting changes in labor cost in Israel, are as follows:

- ✓ cost of living allowance
- ✓ minimum wage
- ✓ demand and supply

Most contracts are automatically adjusted to variations in the costs of living and of minimum wage regulations. The payment is mostly for labor, when the minimum wage rises, the security companies usually do not raise their wages by the full increased amount, due to their strong bargaining power and an aggressive competition.

### The calculation of the price index

20. The PPI uses the Laspeyres formula. The price indexes are calculated for extended periods.

The calculation is divided in three stages:

1. In the first stage the firms specific service type indices  $I_{t,c}$  are calculated from matching contracts from current  $t$  and previous  $t-1$  periods. Due to the lack of weighting information the geometric average is used:

$$\sqrt[n]{\prod_{s=1}^n \frac{P_{t,s}}{P_{t-1,s}}} = I_{t,c}$$

where  $n$  is the number of matching contracts and  $P_{t,s}$  is the price of a certain contract in time period  $t$ .

2. The second stage is to calculate the firms indices  $I_{t,f}$  by weighting together the firm specific service type indices  $I_{t,c}$  for each firm:

$$I_{t,f} = \sum_{c=1}^{n^f} w_{t,c} I_{t,c}$$

Where  $n^f$  is number of service types in firm  $f$ . The  $w_{t,c}$  is the turnover share of the service type  $c$  inside the firm  $f$ .

3. In the third stage the total index link for investigation and security services  $I_t$  is calculated, by weighting together the indices calculated in second stage.

$$I_t = \sum_{f=1}^n w_{t,f} I_{t,f}$$

The sum over all firms were  $w_{t,f}$  is the turnover of firm  $f$  divided by the sum of the turnover of the firms included into the sample.

21. One of the limitations of using a Laspeyres index is non reflection of substitution effects over time. The basic bundle is used for extensive periods of time with the same weights. The use of these weights becomes increasingly inaccurate the more time passes from the base period. It is therefore necessary to perform frequent updates to make sure that the weights reflect the economic reality.

## **Conclusion**

22. The Israeli Central Bureau of Statistics is currently within the final stage of developing a price index for investigation and security services. Data on prices are collected primarily from the largest companies in the industry whose combined market dominance is considerable. These companies primarily offer security services. The prices of the services are monitored quarterly and the index is calculated as a Laspeyres type of chain index. At the first stage the index will be experimental; it is still at the testing phase, and has not yet been published.

The main goal is that from beginning of 2006 the security services price index will be calculated. The base year will be 2005, which will be accorded 100 points.