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NOTE ON THE TREATMENT OF START-UPS IN THE NATIONAL ACCOUNTS

Working paper submitted by the Central Bureau of Statistics, Israel\*

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## **Introduction**

1. In the last ten years an impressive number of start-ups have been set up in Israel - recently about 3,000 start-ups have been counted. Annual investments in start-ups account for nearly one percent of GDP. There have been some factors fuelling the boom in start-ups: in the beginning of the 90's the Ministry of Commerce and Manufacturing and the Finance Ministry established joint-venture funds which helped finance the first start-ups. Later on private joint-venture funds (many of them from abroad) have been willing to invest large amounts in start-ups.

2. This note includes a brief description of the problem of estimating the start-ups output and its uses, some possible solutions and proposed plans for collection of data on start-ups.

## **The problem**

3. When recording start-ups production activities in the national accounts, there are some serious problems linked to data collection, but apparently no conceptual ones. They are mainly engaged in producing R&D and software. Most of them do not register sales at the early stages and in many cases they are not routinely included in survey samples. The SNA93 has clear accounting rules for measuring output that has not been sold. It should be valued "at the basic prices at which they could be sold if offered for sale in the market" (par. 6.85). When reliable market prices are not available, which is the case for the special and unique products generated by start-ups, a recommended second best is to value output for own final use as "equal to the sum of their cost of production" (par. 6.85). This second option seriously undervalues the output of the start-ups and a different solution should be found.

4. Some of the start-ups that succeeded to produce a marketable product are sold for very high prices, which have no apparent relation to their recorded production costs, operating surplus or sales. Of course, from a formal point of view no problems exist since a change in ownership takes place and the accounting rules of the system are applied: If start-ups are sold to residents, the corresponding flows will be registered in the financial accounts of both parties; if sold to non-residents, the flows will be registered in the resident sector's and the rest of the world's financial accounts.

5. It is necessary to define what has been bought. The experience shows that most of the start-ups have been purchased to obtain the R&D and software

products generated by them. The high price paid, or a large part of it, may reflect the market prices of these unique products (which only a few of the start-ups succeed to develop). If that is the case, a serious under-valuation of the start-ups output exists. Since most of the sold start-ups have been bought by non residents corporations, also exports are undervalued if, for example, previously generated software is transferred to the new non-resident owner. Of course, one should be very cautious when trying to find an implicit value for the output, since in some cases a large part of the price paid by a start-up may be explained by other factors (e.g. expectations of large increases in the market prices of these units and high-tech corporations ).

6. Once a market value is available, how should the difference between this value and the previously applied cost or cost plus mark-up valuation of the output be treated?

#### **Possible solutions**

7. Three optional solutions are going to be applied and their results analyzed:

8. To see the difference as an increase in the price of the product that took place between the time of production and the time when a market price is available. If this treatment is chosen, one has to reevaluate the fixed asset between the two periods. It seems a problematic treatment - increasing the "price" of an asset that was not previously transacted in the market.

9. Once a market value for the output is available, to revise the applied mark-up retroactively, at the time that production took place. If the production has been distributed over a number of periods, the value of production should be distributed over these periods in proportion to the cost in each period. This treatment is similar to the treatment proposed in SNA93, paragraphs 6.94-6.100. However, it is worth mentioning that in the case of high-tech start-ups the difference between market price and cost may be very large and difficult to estimate in advance. The SNA93 cautions against using cost plus mark-up estimates in such case.

10. Instead of using the estimated value of the output generated by the start-ups that succeeded and to revise mark-up estimates retroactively, one could perhaps in the first place rely on data on returns to venture-capital funds invested in start-ups to obtain the percentage of operating surplus to add as a mark-up to the production costs of all the start-ups. One would in a sense

be looking at the production costs of all start-ups as the cost of the few that succeed.

11. As said before, the use in some specific cases of the price paid for some start-up (or a given percent of it) as the market value of what has been produced by them, must be carefully analyzed. To give only one example: in 1998 three young owners of a start-up sold it to a non-resident corporation, one and a half year after they established it, for 400 million dollars, while the value of the input was relatively non significant. On the one hand the sale included a new kind of software, but on the other hand before the sale the start-up had also been distributing services free of charge to millions of internet-users. When such a start-up is sold, some (perhaps quite a large part) of the high price paid covers the goodwill created by the enterprise's activity.

12. It is worth noting that the previously mentioned under-valuation of exports of R&D and software products may occur in well established enterprises. This is the case of subsidiaries of foreign corporations that produce software and R&D to be used by the foreign parent corporation. The generated output is transferred abroad, but in practice, exports may not be accounted for, neither in the rest of the world account nor in the balance of payment. Output has been produced in the country, the non-resident parent corporation has financed the production costs, but no use of the output is registered, or it is wrongly accounted for as output for own final use of the subsidiary. Even if the sales between the subsidiary and the parent corporation are reported by the subsidiary, they are generally valued at cost and not at the market value of the generated R&D or software. In both cases, exports are undervalued. However, it must be recognized that practical solutions are difficult to implement. On the other hand the values involved are substantial and are expected to continue to grow very rapidly in the Israel economy.

#### **Improving the data collection on start-ups**

13. As said above, start-ups usually don't sell anything, and may not be included in the regular surveys. There may even be a delay before they are included in the business registers.

14. The statistics on of sales of start-ups to abroad come from the banking system. In all cases only the financial transactions have been recorded.

15. The lack of adequate data means that special information has to be gathered through careful scanning of newspapers, tax registers and other

sources. The proposal is to establish a database with data on start-ups gathered this way. Comparisons with the business registers and survey frames will be made frequently to establish which start-ups are not included, and if any activity is measured or imputed for them. Data for a sample of start-ups will be gathered and estimates of their activity will be prepared and added to the national accounts.

16. Also a list of data on sales of start-ups will be made and updated daily. This list will be compared with banking data, to check how the transactions are registered.

17. Until such databases are established, data on finance of start-ups has been used to create rough estimates of the activity of start-ups. Most start-ups in Israel are financed by venture capital funds. Statistics on new investments in start-ups in Israel gathered by the Venture Capital Funds Association and other sources have been used to prepare such estimates. The estimates come to nearly one percent of GDP.

### **Conclusion**

18. The impressive growth in start-ups lead to a need for changes in the way data are collected and guidelines for treatment of the activity of start-ups.

19. The main problem is how to ensure that the activities of the start-ups are included in the national accounts and how to value these activities. The problem becomes especially complicated in the many cases when the start-ups are sold before they have any sales.

20. The mechanical application of the SNA second best recommendations for measuring output for own final use by using production costs instead of basic prices may seriously undervalue output of R&D and software in the Israeli economy. The possible solutions mentioned in this note will be checked further.

21. A plan for the improvement of collection of data on start-ups is proposed. The plan calls for the establishment of a database including information gathered through careful scanning of newspapers, tax registers, financing sources and others. Comparisons with the business registers and survey frames should be made frequently to establish which start-ups are not included, and if any activity is measured or imputed for them. Data for a sample of start-ups not included in surveys should be gathered and estimates of their activity prepared to be included in the national accounts. A list of data on sales of start-ups

should also be maintained and compared with banking data, to check and revise registrations.

22. In addition a method for separating implicit exports of R&D and software, when start-ups are sold to abroad will have to be developed.

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