

Bank of Finland

Statistical Services Department
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**ENTERPRISE SURVEYS USED IN THE COMPILATION OF FINNISH BALANCE OF
PAYMENTS STATISTICS**

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4. Determination of the 'Potential' Respondent Population
5. Formation of the Enterprise Samples and Control of Coverage and Quality
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ENTERPRISE SURVEYS USED IN THE COMPILATION OF FINNISH BALANCE OF PAYMENTS STATISTICS

1. Introduction

This paper deals with the role of enterprise surveys in the compilation of Finnish balance of payments statistics. The survey method adopted by the Bank of Finland is examined. In addition, the determination and distribution of respondent groups is discussed.

The main purpose of balance of payments statistics is to present the asset and liability relations between an economy and the rest of the world, as well as changes therein. The balance of payments is, by definition, always in balance since the real side - the current account - is equal to financial transactions, i.e. capital movements and the change in the central bank's foreign exchange reserves (appendix 1). In balance of payment statistics, economic transactions are studied in terms of both flows and stocks. The net foreign debt is the cumulative sum of current account deficits over time.

International recommendations for the compilation of statistics are set out in the Balance of Payments Manual published by the International Monetary Fund (IMF). The fifth edition will soon be available. For the first time, the new edition gives concrete recommendations for data collection methods. The manual includes model formats for surveys, a reflection of the growing significance of enterprise surveys in the compilation of balance of payments statistics.

During the past few years, the compilation and use of balance of payments statistics have undergone great changes. Controls on capital flows have been dismantled almost everywhere; statistical systems and data based on exchange control have lost their importance. All that remains of the former system is the monitoring of payment flows whereas exchange control records have largely been replaced by surveys on stocks of foreign assets and liabilities.

As financial flows have become increasingly international, the analytical use of balance of payments statistics has changed. There is no longer much interest in the details of capital movements. Rather, a more important role is played by the current account and net foreign debt, which

measure the overall equilibrium, performance and soundness of the economy. Capital movements are also indicators of conditions on the foreign exchange and money markets. Aggregate indicators have become increasingly important as a rapid source of information for the markets.

As integration proceeds, the need for harmonized statistics also increases. The recommendations given by the IMF so far have been vague. In contrast, tangible steps are being taken to harmonize statistics within the EEC. The EFTA countries have also been participating in this work.

2. Enterprise Surveys in the Finnish Balance of Payments System

According to the widespread international practice, balance of payments statistics are compiled by the central bank. The Bank of Finland produces primarily aggregate balance of payments data. It has undertaken to publish preliminary balance of payments data on a monthly basis, about four weeks after the end of the month concerned.

According to Finland's Foreign Exchange Act and the Foreign Exchange Regulations based on it, enterprises, banks and even natural persons are obliged to supply the Bank of Finland with data required for compiling statistics.

The resource inputs and systems used in this balance of payment statistics work are continuously compared with international practice, taking the size and openness of the economy into consideration. In the Bank of Finland, some 30 people in the Statistical Services Department are involved in drawing up the balance of payments.

The production of preliminary statistics on balance of payments flows requires the use of all primary sources of information (appendix 2); i.e. extensive monitoring of foreign payments and surveys of companies, including banks.

Foreign payments

In addition to providing rapid data, the system for monitoring foreign payments serves as a register of companies engaged in foreign activities. It also prevents magnitude errors in the balance of payments statistics.

The data on foreign payments that banks are required to report to the central bank are very much the same as those needed when effecting

payments. Thanks to computerization, the amount of additional work needed is small. The main problem with payments data, however, is presented by major coding mistakes and discrepancies between payer/payee data and debtor/creditor data. Therefore payments data for many capital movements can be used for comparison only.

Surveys on financing and direct investment

The purpose of surveys is to collect data on the stock of assets and liabilities as well as more detailed breakdowns of data on capital movements. The surveys deal with direct investments and other foreign assets and liabilities. Surveys on direct investments are annual whereas surveys on other foreign items are conducted on a monthly basis.

The respondents to the surveys include banks, other financial institutions, securities broking firms, enterprises, certain local authorities and the central government. For banks and financial institutions the surveys are complete in their coverage. Banks are granted licences of various kinds to engage in foreign activities and surveys on financing are based on these licences.

Surveys directed to enterprises (excl. banks) include monthly surveys on financial assets and liabilities as well as annual surveys on direct investment. Some twelve persons work directly on enterprise surveys, although, in practice, the quality control of the balance of payments data and the monitoring of the surveys involve nearly all those who take part in the compilation of the balance of payments.

Direct contacts between large enterprises and the Bank of Finland were created during the era of exchange control. Besides authorization needed for foreign exchange transactions, inquiries on foreign financing needs were used in the Bank's planning activities. When exchange control and the licence procedure were abolished, not only the registers remained but also the direct contacts facilitating cooperation between the central bank and enterprises.

The new survey procedure has been welcomed as an improvement on the earlier licence procedure. The data may now be given afterwards and in less detail than during the foreign exchange control. Monthly surveys on financing were started at the beginning of 1991.

Direct investment has been monitored by means of surveys for exchange control purposes since the

early 1980's. After liberalization, this survey has also been simplified and the principle of complete coverage abandoned. In order to specify data on foreign liabilities and correct it for earlier asymmetries, a new survey on foreign direct investment in Finland was necessary. This survey was first conducted on the basis of 1990 data.

3. Data Collection and Processing Procedure

Surveys on foreign financing

For the survey on financing, a questionnaire is sent to nearly one hundred enterprises. There are a maximum of twenty questions on the questionnaire each month. In practice, only the biggest enterprises acquire foreign financing in such varied forms that they need to reply to all or nearly all the questions. Replies must be returned by the 15th of the month following the reporting month. The data are delivered to the Bank of Finland at the end of the response time, usually by fax. Instead of a follow-up letter, enterprises who are late are reminded by telephone.

The data are preliminarily processed in a few days. The net flows of capital movements obtained from the surveys are already used in the first preliminary statistics published. Naturally, the checking and quality control of the survey data continue after the first publication.

Surveys on direct investment

As for the annual surveys on direct investment, the surveys are conducted in spring when most enterprises are expected to have completed their annual accounts for the preceding year. The questionnaires are sent out in April and replies have to be returned by the end of June. The respondent population consists of a few hundred enterprises, and is thus significantly larger than that for the monthly surveys. The number of enterprises involved differs from year to year depending on direct investment flows during the preceding year.

In addition to questions on direct investment stocks and investment flows, the survey includes questions on turnover, profitability and profit distribution. Data on the previous year are published for the first time in the balance of payments notification at the end of August. A separate notification on the surveys is also

released. The surveys also affect the current account since they provide data on reinvested earnings/losses from direct investment.

4. Determination of the 'Potential' Respondent Population

Population of foreign financing surveys

For the survey on foreign financing, the company population is based on a combination of data from the official register of enterprises and establishments and data on foreign payments, particularly payments concerning capital movements.

Originally, the survey on foreign financing was constructed on the basis of exchange control data available up to the year 1990, which was assumed to have complete coverage; the survey conducted at the end of 1991 covered a couple of hundred enterprises. However, it was soon discovered that the exchange control data age quickly.

Consequently, the population of the survey is now based not only on the official register of enterprises and establishments but also on the comprehensive foreign payments data obtained by the Bank of Finland.

The main advantage of such a combination of data is that it makes it possible to restrict the size of the population. The official register of enterprises and establishments maintained by the Statistics Finland contains about 200,000 legal units. The Bank of Finland receives a quarterly updated version of this register. When these registered data are combined with data on foreign payments, the number of 'enterprises' that are of interest as regards the compilation of the balance of payments statistics is cut down to about 30,000 units. These are enterprises with regular foreign payments. In practice, detailed data for the statistics on capital movements and foreign claims and liabilities are collected from a considerably smaller number of enterprises.

In this paper 'enterprise' refers as a rule to a unit handling matters connected with the Bank of Finland surveys. Some multibranch enterprises have been divided into separate entities, each with their own corporation number. On the other hand, there are cases where the central managing unit having financial decision-making power also takes care of the Bank of Finland surveys.

Enterprises using foreign financing are primarily enterprises who have internationalized in other respects as well. For example, the firms using direct foreign financing are basically the same ones that make direct investments abroad. The survey population is defined on the basis of payments on capital movements. These payments tend to be heavily concentrated among a relatively small number of enterprises.

The majority of the 30,000 enterprises referred to above are enterprises whose foreign transactions involve importing. Liabilities related to imports can be determined by comparing flows of goods and services with payments in foreign trade. This can be done either at aggregate or enterprise level.

Another indicator of capital transactions is exports. All in all, there are about 5000 Finnish enterprises involved in exporting. Finnish exports are highly concentrated: about 125 firms account for 80 per cent of Finland's total export earnings. There are just over 600 Finnish firms with annual exports exceeding FIM 10 million. The cumulative distribution function for the value of exports in order of enterprise size is shown in appendix 3.

Population of direct investment surveys

Compared with the foreign financing surveys, the direct investment surveys are even more strictly based on complete coverage, using data originally compiled in the exchange control period and subsequently carefully updated with reports.

Several dimensions need to be taken into consideration as regards direct investments. Different aspects must be studied from the perspective of both the direct investor and the direct investment enterprise. Moreover, it must be possible to classify both investors and investments according to e.g. industrial activity and country. This multidimensional aspect makes it difficult to restrict the size of the surveys because it is essential that the survey results are also reliable as regards geographical location and industry.

All direct investments must be reported. These reports are available to the balance of payments authority when follow-up inquiries are drawn up. Reported data are slightly more accurate compared with the data usually obtained on foreign payments.

As regards direct investments, the potential survey population comprises enterprises who have made investments in earlier years and enterprises who have reported the making of a direct investment during the previous year. Some of these firms have ceased operations or disposed of their investment (disinvestment). At the time of the survey last year, about 1400 Finnish enterprises had direct investments abroad and about 1000 foreign enterprises had direct investments in Finland.

5. Formation of the Enterprise Samples and Control of Coverage and Quality

Speed and accuracy goals

The main purpose of statistics is the rapid provision of aggregate data. In addition, the double entry nature of the balance of payments permits easy observation of errors and omissions. These facts must be taken into consideration when setting accuracy goals for the surveys.

Looking at the balance of payments only, rapid provision of aggregate data is considered far more important than the accuracy of details. Those involved in the preparation of statistics are therefore urged to restrict the size of samples and concentrate on essential data.

Samples, coverage and quality of financing surveys

Bearing in mind the objective of providing rapid aggregate data, the number of enterprises covered in the monthly survey on foreign financing has been cut to a minimum. Last year 89 enterprises were requested to supply monthly survey data. There is an evident danger of under-coverage unless the enterprises are well known. The coverage of the surveys is constantly monitored by comparing net changes in the sum of various capital movements, which are reported in the surveys, with corresponding changes obtained from the foreign payments data.

The sample for the monthly survey is renewed annually since many institutional changes take place in enterprises, such as acquisitions and demergers. Once a year a slightly more extensive survey is made to collect data on the structure of assets and liabilities, such as currency and country distribution. This type of data is not included in the monthly survey. The renewal of the sample and the extensive survey is planned in the

autumn on the basis of data obtained during the previous six months. The extensive survey is conducted at the end of the year.

Since the aim is to keep the surveys as small as possible, there is a constant search for good 'x-variables' independent of survey data. So far only data on foreign trade and related payments have been organized in a way which enables comparisons with the surveys. The data on payments referring to capital movements were not systematized until the beginning of this year. Experiments carried out so far reveal that enterprises' exports alone are not a suitable x-variable for e.g. their foreign indebtedness.

Comparison of surveys and payments also serves the needs of quality control. In the comparisons, attention must be paid to the different definitions employed. Other sources are also used to monitor the activities of the sample enterprises. Our aim is to get to know these enterprises so well that 'impossible' replies can easily be identified and corrected.

As for the organization of the work, the persons responsible for the surveys also monitor the capital flows of the enterprises surveyed in the payments data. In addition, payments data items included in the current account are regularly checked. Data on foreign trade flows obtained from the Customs authorities are also used.

Samples, coverage and quality of direct investment surveys

In the quality control of direct investment, there are also many 'non-quantitative' aspects. Acquisitions of foreign units by Finnish enterprises are often highly publicized. Annual and interim reports are also public. It is important to combine data obtained from these different sources with data obtained from payments and surveys. At the same time, attention must be paid to differences in definitions and timing since these may cause significant differences between statistics and other data.

The enterprise sample for the direct investment surveys is also checked annually. For outward direct investment, the group of potential respondents, as defined above, is restricted on the basis of the balance sheet total of the direct investment enterprise. Enterprises are required to reply to the survey if the balance sheet total of the direct investment enterprise exceeds FIM 50 million. Balance sheet figures are public and they

can be checked. For direct investments with a balance sheet total below this limit, the investing enterprise is required to report the existence of such an investment. The 1990 survey covered about 200 Finnish direct investors. Data provided by the survey on the stock of direct investment have been corrected in regard to coverage before using them in the statistics.

Direct investment in Finland is surveyed using stratified sampling. The survey covers all direct investments made in industry and the financial sector as well as other investments involving stock of direct investment of more than FIM 5 million. Sampling is used in strata containing enterprises operating in sectors other than industry or financing. The sample includes about every tenth enterprise. Last time the survey covered more than 400 companies, 78 of which were selected on the basis of sampling. Without sampling, the survey would have covered 325+650 enterprises rather than 325+78.

In the quality control of the balance of payments statistics, the size and variance of errors and omissions is monitored. In Finland the error term of the balance of payments is close to zero on average. However, its variance has increased lately. Due to timing factors, the error term is relatively larger on a quarterly basis than it is on an annual basis (appendix 4). According to international standards, balance of payments statistics are considered to be good if the error term tends to stay below 5 per cent of current account earnings. In Finland this corresponds to about FIM 5 billion per year.

As regards preliminary data, it is important that the current account data are reliable. If so, the error term can be assumed to be due to capital movements and, most likely, to heavy short-term financing flows. Analytically, studying these flows in any other form than aggregate net form is not even meaningful.

On the other hand, direct investment is by its very nature something which involves similar structural data requirements as e.g. domestic capital stock or capital formation. The perspective clearly extends beyond just the balance of payments and, therefore, the basic data to be obtained must be classified in more detail. In addition, European integration increases the need for statistics which can be combined by country. Consequently, basic data on other capital

movements must also be obtained by country with attention to representativeness. These requirements increase the size of the surveys.

6. Distributions and Statistical Properties of the Samples

Finally, I consider the possibilities to restrict sample size on the basis of Finnish data. The size distributions of foreign financial assets and liabilities and the size distributions of direct investments, as calculated from the enterprise samples of the surveys, are discussed by means of examples. The financial data date from the end of 1991, whereas data on direct investments date from 1990. A cumulative distribution function has been constructed for the variables in order of enterprise size as well as a frequency distribution for assets and liabilities classified according to size (ln).

Based on the sample, the cumulative distribution functions for bonds are shown in appendix 5, foreign liabilities excluding bonds in appendix 6 and foreign assets in appendix 7. These show that eight enterprises account for 90 per cent of bonds issued abroad, 36 enterprises for 90 per cent of other foreign liabilities and 24 enterprises for 90 per cent of foreign assets.

As regards Finnish direct investment abroad (appendix 8), the 90 per cent limit is reached with 32 enterprises (groups). In contrast, for foreign direct investment in Finland more than 110 enterprises are needed to reach the same percentage (appendix 9).

As an indicator of concentration for these distributions, the Gini co-efficient, ($0 \leq G \leq 1$), has been calculated. This is shown in the following table.

	G	n
Foreign bonds	0.60	21
Other foreign liabilities	0.79	142
Foreign assets	0.83	107
Exports	0.94	4787
Direct investment abroad	0.73	108
Direct investment in Finland	0.77	347

When studying the results, it should be noted that we are dealing with samples that have already been screened according to some criteria. For example, exports include companies with annual exports exceeding FIM 50,000. The high G-coefficient and the form of the distribution function indicate the areas where additional restrictions regarding aggregates might be needed in the survey.

In the literature, enterprises' size distributions are often said to be lognormal. In order to test whether enterprises' foreign capital stocks are similarly distributed, logarithmic frequency distributions have been constructed for the key variables in the enterprise surveys. Indicators for the distributions have also been calculated (mean, standard deviation, skewness and kurtosis). The distributions with the indicators and related test statistics are presented in appendices 10 - 13. The distributions are slightly negatively skewed (to the higher side of the mean), except for direct investments made in Finland.

In a distribution approaching a normal distribution, the measure of kurtosis is close to three. Normality has been tested on the basis of skewness and kurtosis. However, the distributions of balance of payment surveys are composed of such small enterprise populations that the test is not necessarily able to reject even an erroneous normality hypothesis.

7. Conclusions

Examination of empirical distributions suggests that the number of enterprises in the survey can be kept quite small. With regard to speed and accuracy requirements for statistics, restricting the size of the surveys does not involve significant risk of error. On the other hand, the register system and the enterprise monitoring system must be well organized since the enterprise population is constantly changing. Even large enterprises may undergo substantial changes due to mergers.

On the basis of the distribution data, a decision was made to conduct the monthly survey on foreign financing in a substantially restricted form compared with the survey described here which was conducted at the end of 1991. As regards aggregate data, the survey on direct investment in Finland could also be restricted. However, industry line and country data require more detailed basic data.

The reporting requirements imposed by EC integration will, however, increase the need for disaggregated country data. A separate balance of payments will have to be constructed among EC-EEA countries and a separate one with the rest of the world.

Appendix 1

BALANCE OF PAYMENTS 1991	FIM billion
CURRENT ACCOUNT	-23.8
* Goods	4.6
* Services	-7.8
* Investment income, net	-15.6
* Transfers and other, net	-5.1
CAPITAL ACCOUNT	
* Direct investment	-8.4
* Portfolio investment	35.2
* Loans	11.8
* Other long-term capital	0.5
* Short-term capital	-21.6
* Change in foreign exchange reserves (- increase; + decrease)	6.4
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EXPORTS BY ENTERPRISES
% of total exports 1991

Number of enterprises
G = 0.94

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August 27, 1992

Appendix 2

Appendix 5

BONDS ISSUED ABROAD
% of outstanding debt in 1991

Number of enterprises

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Appendix 6

FINNISH ENTERPRISES' FOREIGN LIABILITIES (EXCL. BONDS)

% of outstanding debt in 1991

Number of enterprises

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Appendix 7

FINNISH ENTERPRISES' FOREIGN ASSETS
% of outstanding assets in 1991

Number of enterprises
G = 0.83

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Appendix 8

FINNISH DIRECT INVESTMENT ASSETS ABROAD
Stock of direct investment
% of outstanding direct investment assets in 1990

Number of enterprises
G = 0.73

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Appendix 9

DIRECT INVESTMENT IN FINLAND

% of outstanding investment assets in 1990

Number of enterprises
G = 0.77

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Appendix 10

FINNISH ENTERPRISES' OTHER LIABILITIES (LOG)
FREQUENCY DISTRIBUTION

Number

Number

Mean

10.664

Standard Deviation

2.469

Skewness

-0.078

Kurtosis

2.268

Normality test

Chi-2 (2) = 3.291

Other liabilities, natural logarithm for FIM thousands

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Appendix 11

FINNISH ENTERPRISES' FOREIGN ASSETS (LOG)
FREQUENCY DISTRIBUTION

Number

Number

Mean

Standard Deviation

Skewness

Kurtosis

Normality test

Finnish enterprises' foreign assets, natural logarithm for FIM
thousands

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Appendix 12

DIRECT INVESTMENT IN FINLAND (LOG)

FREQUENCY DISTRIBUTION

Number

Number

Mean

Standard Deviation

Skewness

Kurtosis

Normality test

Chi-2

Direct investment in Finland, natural logarithm for FIM thousands
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Appendix 13

FINNISH DIRECT INVESTMENT ABROAD (LOG)
FREQUENCY DISTRIBUTION

Finnish direct investment abroad,
natural logarithm for FIM thousands

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Speed and accuracy goals

The main purpose of statistics is the rapid provision of aggregate data. In addition, the double entry nature of the balance of payments permits easy observation of errors and omissions. These facts must be taken into consideration when setting accuracy goals for the surveys.

Looking at the balance of payments only, rapid provision of aggregate data is considered far more important than the accuracy of details. Those involved in the preparation of statistics are therefore urged to restrict the size of samples and concentrate on essential data.

Samples, coverage and quality of financing surveys

Bearing in mind the objective of providing rapid aggregate data, the number of enterprises covered in the monthly survey on foreign financing has been cut to a minimum. Last year 89 enterprises were requested to supply monthly survey data. There is an evident danger of under-coverage unless the enterprises are well known. The coverage of the surveys is constantly monitored by comparing net changes in the sum of various capital movements, which are reported in the surveys, with corresponding changes obtained from the foreign payments data.

The sample for the monthly survey is renewed annually since many institutional changes take place in enterprises, such as acquisitions and demergers. Once a year a slightly more extensive survey is made to collect data on the structure of assets and liabilities, such as currency and country distribution. This type of data is not included in the monthly survey. The renewal of the sample and the extensive survey is planned in the

autumn on the basis of data obtained during the previous six months. The extensive survey is conducted at the end of the year.

Since the aim is to keep the surveys as small as possible, there is a constant search for good 'x-variables' independent of survey data. So far only data on foreign trade and related payments have been organized in a way which enables comparisons with the surveys. The data on payments referring to capital movements were not systematized until the beginning of this year. Experiments carried out so far reveal that enterprises' exports alone are not a suitable x-variable for e.g. their foreign indebtedness.

Comparison of surveys and payments also serves the needs of quality control. In the comparisons, attention must be paid to the different definitions employed. Other sources are also used to monitor the activities of the sample enterprises. Our aim is to get to know these enterprises so well that 'impossible' replies can easily be identified and corrected.

As for the organization of the work, the persons responsible for the surveys also monitor the capital flows of the enterprises surveyed in the payments data. In addition, payments data items included in the current account are regularly checked. Data on foreign trade flows obtained from the Customs authorities are also used.

Samples, coverage and quality of direct investment surveys

In the quality control of direct investment, there are also many 'non-quantitative' aspects. Acquisitions of foreign units by Finnish enterprises are often highly publicized. Annual and interim reports are also public. It is important to combine data obtained from these different sources with data obtained from payments and surveys. At the same time, attention must be paid to differences in definitions and timing since these may cause significant differences between statistics and other data.

The enterprise sample for the direct investment surveys is also checked annually. For outward direct investment, the group of potential respondents, as defined above, is restricted on the basis of the balance sheet total of the direct investment enterprise. Enterprises are required to reply to the survey if the balance sheet total of the direct investment enterprise exceeds FIM 50 million. Balance sheet figures are public and they

can be checked. For direct investments with a balance sheet total below this limit, the investing enterprise is required to report the existence of such an investment. The 1990 survey covered about 200 Finnish direct investors. Data provided by the survey on the stock of direct investment have been corrected in regard to coverage before using them in the statistics.

Direct investment in Finland is surveyed using stratified sampling. The survey covers all direct investments made in industry and the financial sector as well as other investments involving stock of direct investment of more than FIM 5 million. Sampling is used in strata containing enterprises operating in sectors other than industry or financing. The sample includes about every tenth enterprise. Last time the survey covered more than 400 companies, 78 of which were selected on the basis of sampling. Without sampling, the survey would have covered 325+650 enterprises rather than 325+78.

In the quality control of the balance of payments statistics, the size and variance of errors and omissions is monitored. In Finland the error term of the balance of payments is close to zero on average. However, its variance has increased lately. Due to timing factors, the error term is relatively larger on a quarterly basis than it is on an annual basis (appendix 4). According to international standards, balance of payments statistics are considered to be good if the error term tends to stay below 5 per cent of current account earnings. In Finland this corresponds to about FIM 5 billion per year.

As regards preliminary data, it is important that the current account data are reliable. If so, the error term can be assumed to be due to capital movements and, most likely, to heavy short-term financing flows. Analytically, studying these flows in any other form than aggregate net form is not even meaningful.

On the other hand, direct investment is by its very nature something which involves similar structural data requirements as e.g. domestic capital stock or capital formation. The perspective clearly extends beyond just the balance of payments and, therefore, the basic data to be obtained must be classified in more detail. In addition, European integration increases the need for statistics which can be combined by country. Consequently, basic data on other capital

movements must also be obtained by country with attention to representativeness. These requirements increase the size of the surveys.

6. Distributions and Statistical Properties of the Samples

Finally, I consider the possibilities to restrict sample size on the basis of Finnish data. The size distributions of foreign financial assets and liabilities and the size distributions of direct investments, as calculated from the enterprise samples of the surveys, are discussed by means of examples. The financial data date from the end of 1991, whereas data on direct investments date from 1990. A cumulative distribution function has been constructed for the variables in order of enterprise size as well as a frequency distribution for assets and liabilities classified according to size (ln).

Based on the sample, the cumulative distribution functions for bonds are shown in appendix 5, foreign liabilities excluding bonds in appendix 6 and foreign assets in appendix 7. These show that eight enterprises account for 90 per cent of bonds issued abroad, 36 enterprises for 90 per cent of other foreign liabilities and 24 enterprises for 90 per cent of foreign assets.

As regards Finnish direct investment abroad (appendix 8), the 90 per cent limit is reached with 32 enterprises (groups). In contrast, for foreign direct investment in Finland more than 110 enterprises are needed to reach the same percentage (appendix 9).

As an indicator of concentration for these distributions, the Gini co-efficient, ($0 \leq G \leq 1$), has been calculated. This is shown in the following table.

	G	n
Foreign bonds	0.60	21
Other foreign liabilities	0.79	142
Foreign assets	0.83	107
Exports	0.94	4787
Direct investment abroad	0.73	108
Direct investment in Finland	0.77	347

When studying the results, it should be noted that we are dealing with samples that have already been screened according to some criteria. For example, exports include companies with annual exports exceeding FIM 50,000. The high G-coefficient and the form of the distribution function indicate the areas where additional restrictions regarding aggregates might be needed in the survey.

In the literature, enterprises' size distributions are often said to be lognormal. In order to test whether enterprises' foreign capital stocks are similarly distributed, logarithmic frequency distributions have been constructed for the key variables in the enterprise surveys. Indicators for the distributions have also been calculated (mean, standard deviation, skewness and kurtosis). The distributions with the indicators and related test statistics are presented in appendices 10 - 13. The distributions are slightly negatively skewed (to the higher side of the mean), except for direct investments made in Finland.

In a distribution approaching a normal distribution, the measure of kurtosis is close to three. Normality has been tested on the basis of skewness and kurtosis. However, the distributions of balance of payment surveys are composed of such small enterprise populations that the test is not necessarily able to reject even an erroneous normality hypothesis.

7. Conclusions

Examination of empirical distributions suggests that the number of enterprises in the survey can be kept quite small. With regard to speed and accuracy requirements for statistics, restricting the size of the surveys does not involve significant risk of error. On the other hand, the register system and the enterprise monitoring system must be well organized since the enterprise population is constantly changing. Even large enterprises may undergo substantial changes due to mergers.

On the basis of the distribution data, a decision was made to conduct the monthly survey on foreign financing in a substantially restricted form compared with the survey described here which was conducted at the end of 1991. As regards aggregate data, the survey on direct investment in Finland could also be restricted. However, industry line and country data require more detailed basic data.

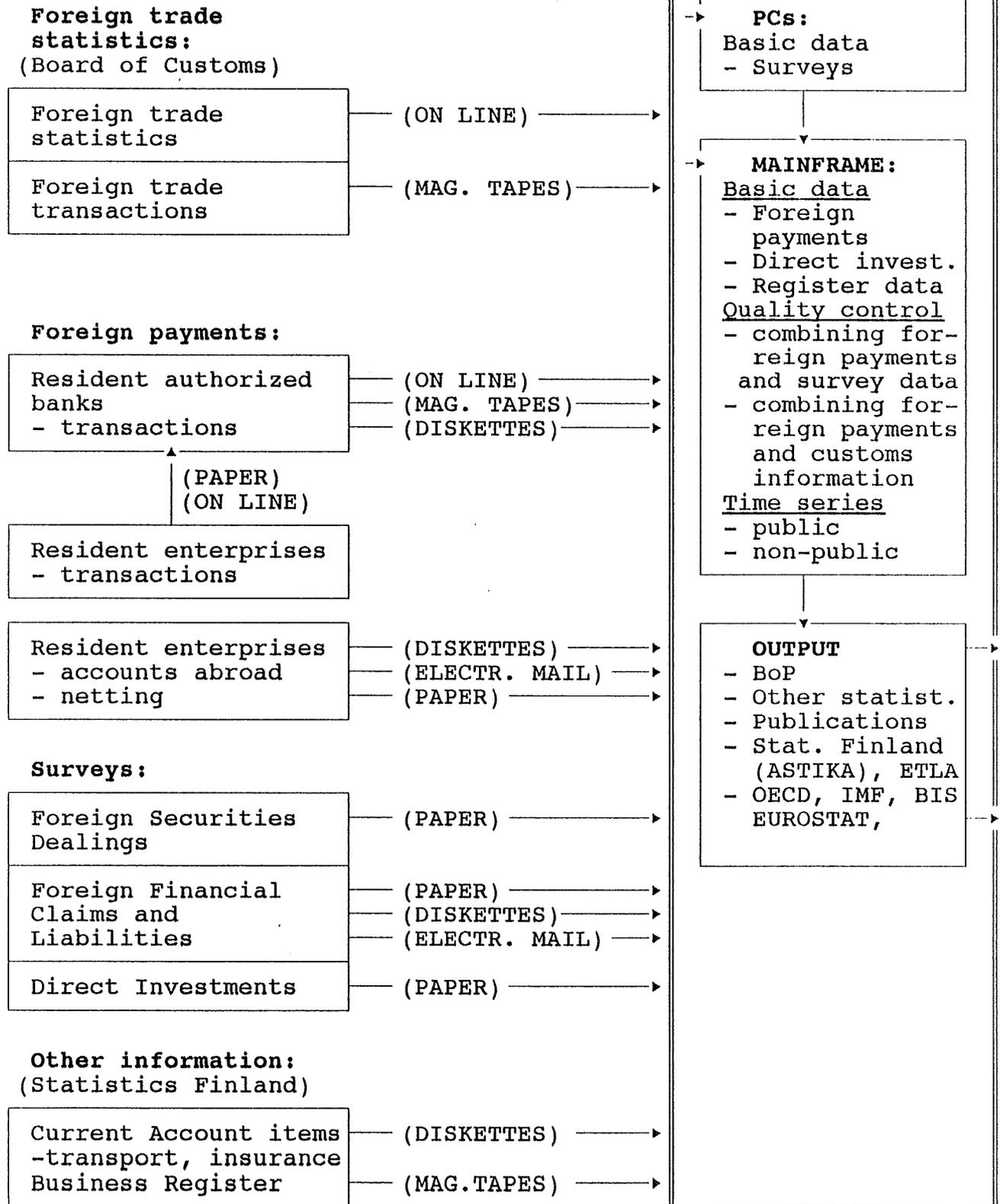
The reporting requirements imposed by EC integration will, however, increase the need for disaggregated country data. A separate balance of payments will have to be constructed among EC-EEA countries and a separate one with the rest of the world.

Appendix 1

BALANCE OF PAYMENTS 1991	FIM billion
CURRENT ACCOUNT	-23.8
* Goods	4.6
* Services	-7.8
* Investment income, net	-15.6
* Transfers and other, net	-5.1
CAPITAL ACCOUNT	
* Direct investment	-8.4
* Portfolio investment	35.2
* Loans	11.8
* Other long-term capital	0.5
* Short-term capital	-21.6
* Change in foreign exchange reserves (- increase; + decrease)	6.4
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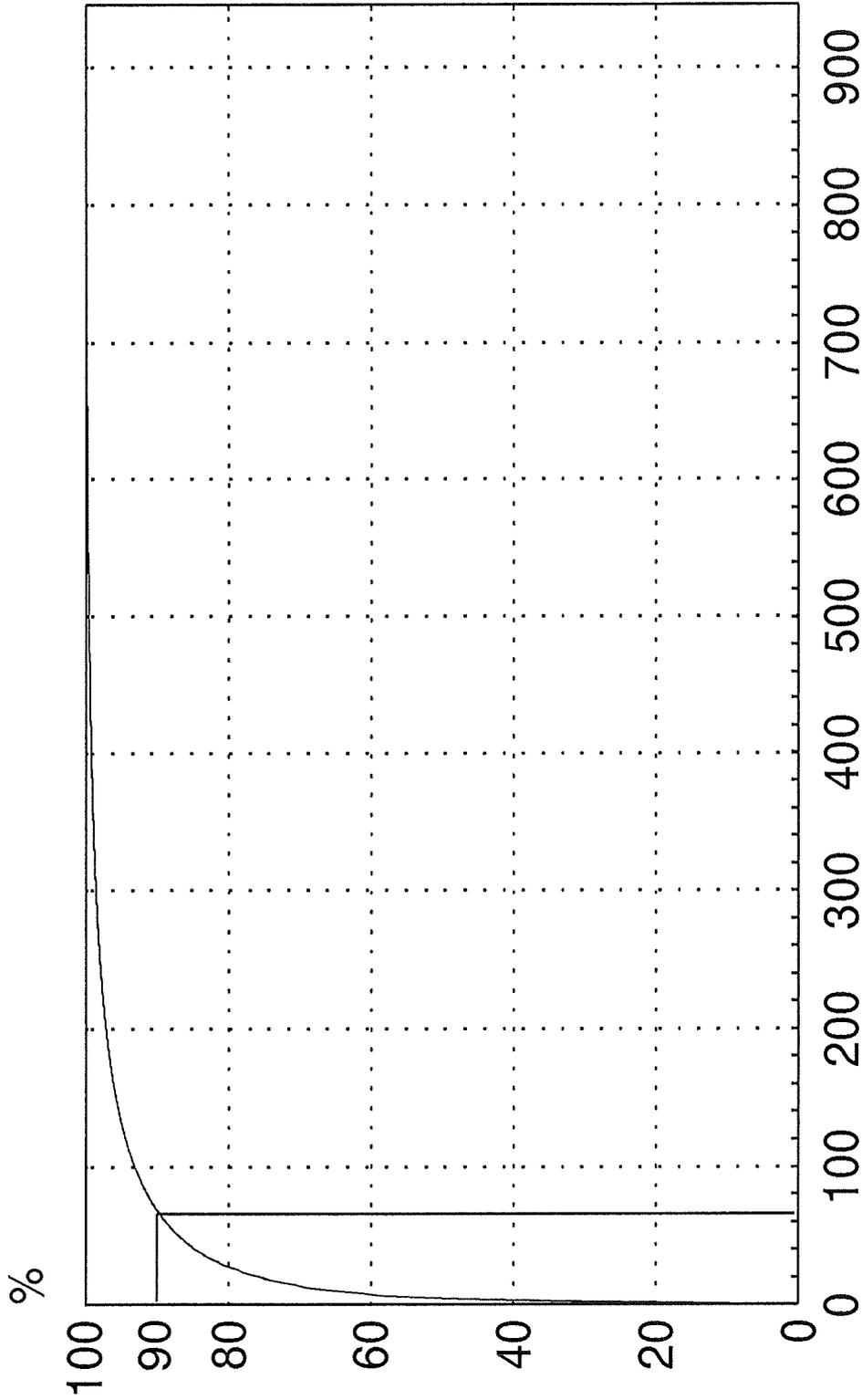
BALANCE OF PAYMENTS REPORTING FLOWS, GENERAL DESCRIPTION:

BANK OF FINLAND
 Statistical Serv. Dept.



EXPORTS BY ENTERPRISES

% of total exports 1991

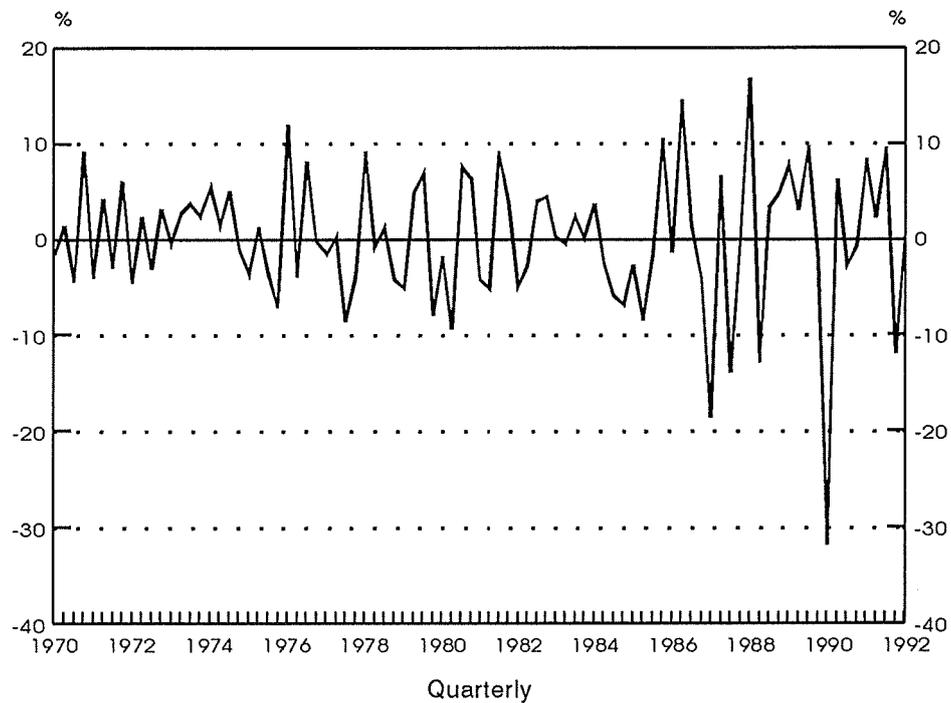
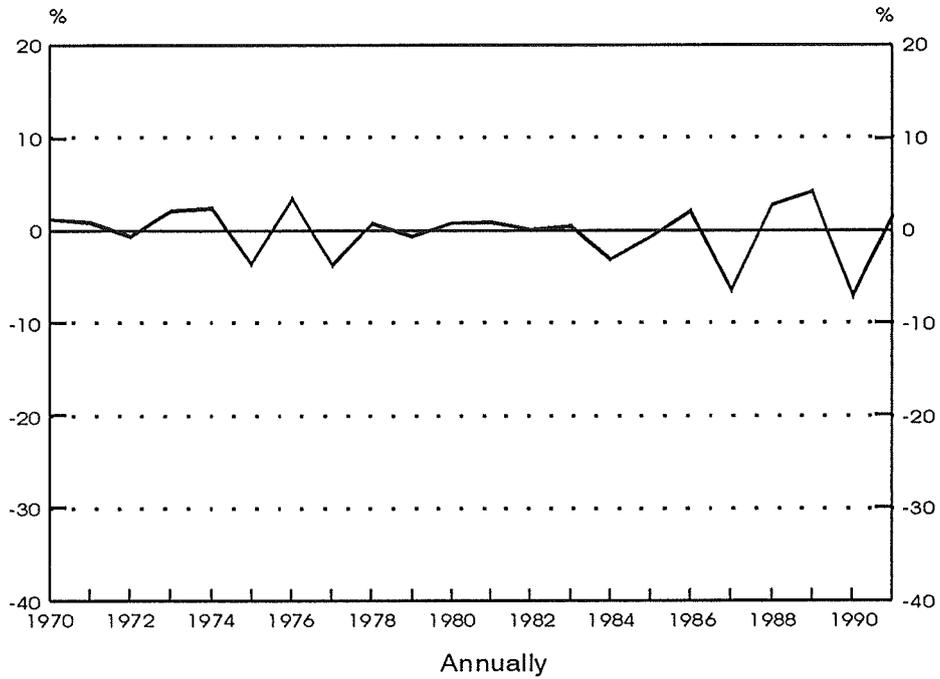


Number of enterprises

$G = 0.94$

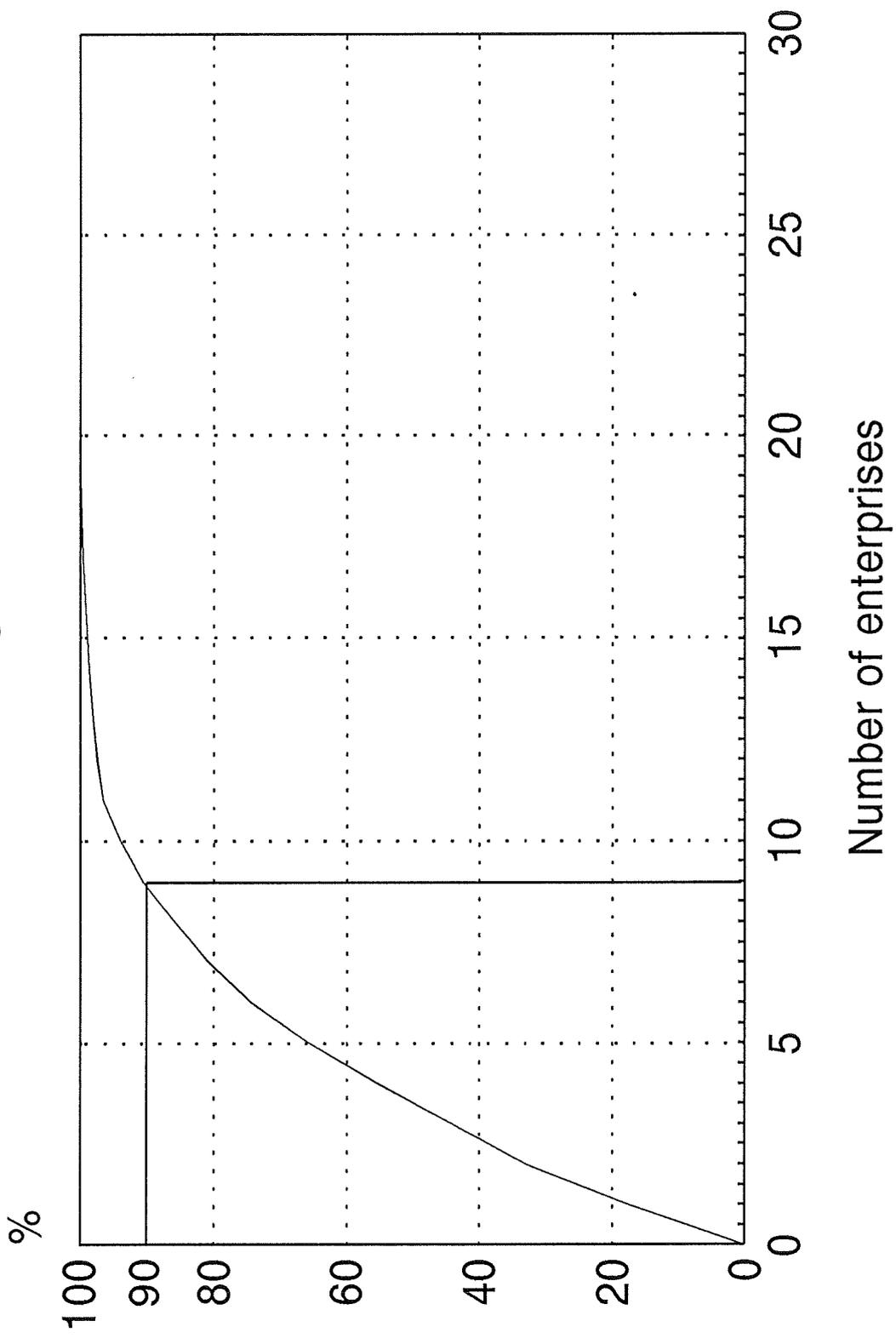
Bank of Finland
Statistical Services Department
August 27, 1992

ERRORS AND OMISSIONS OF BALANCE OF PAYMENTS % OF CURRENT ACCOUNT REVENUE



BONDS ISSUED ABROAD

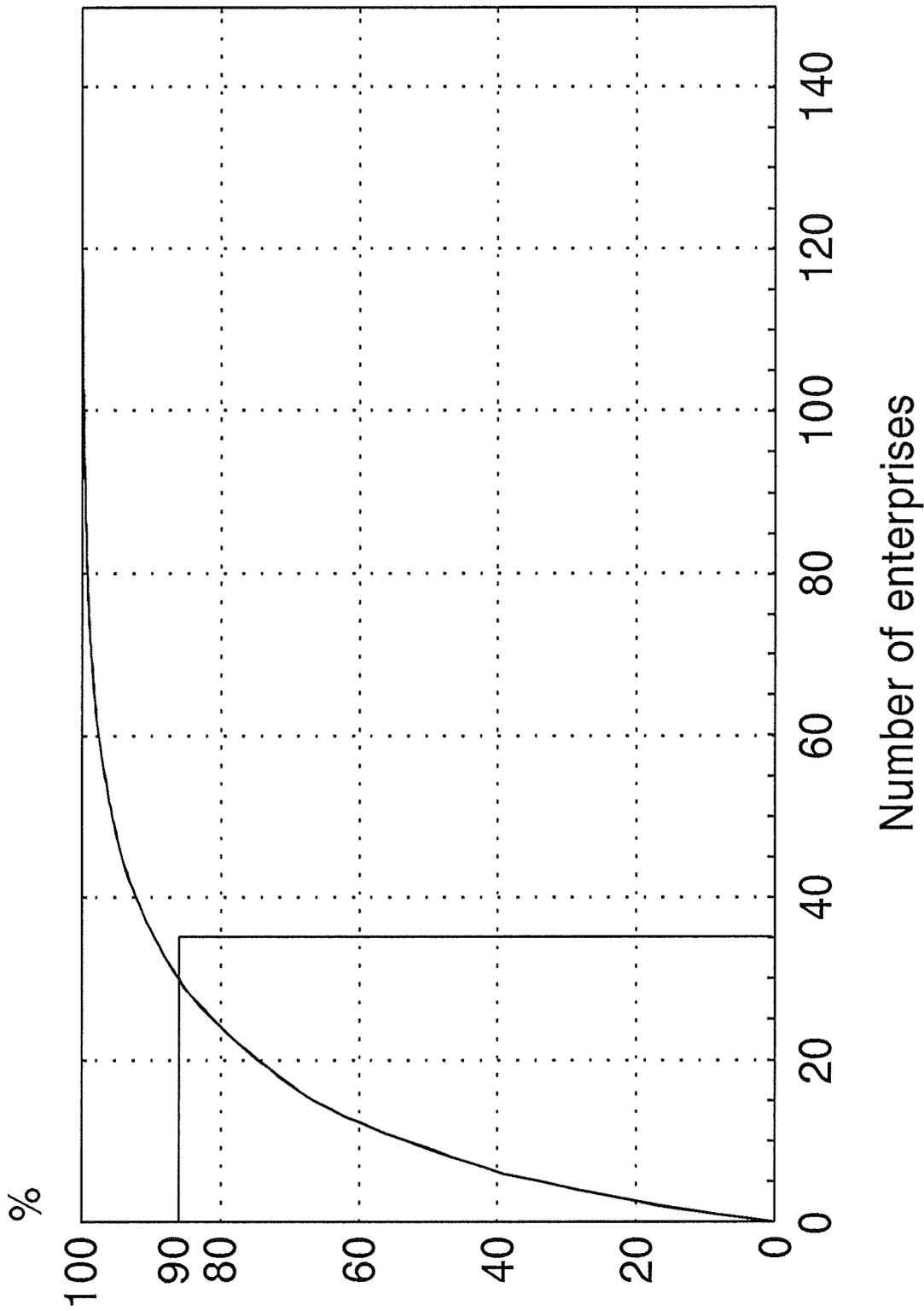
% of outstanding debt in 1991



G = 0.60

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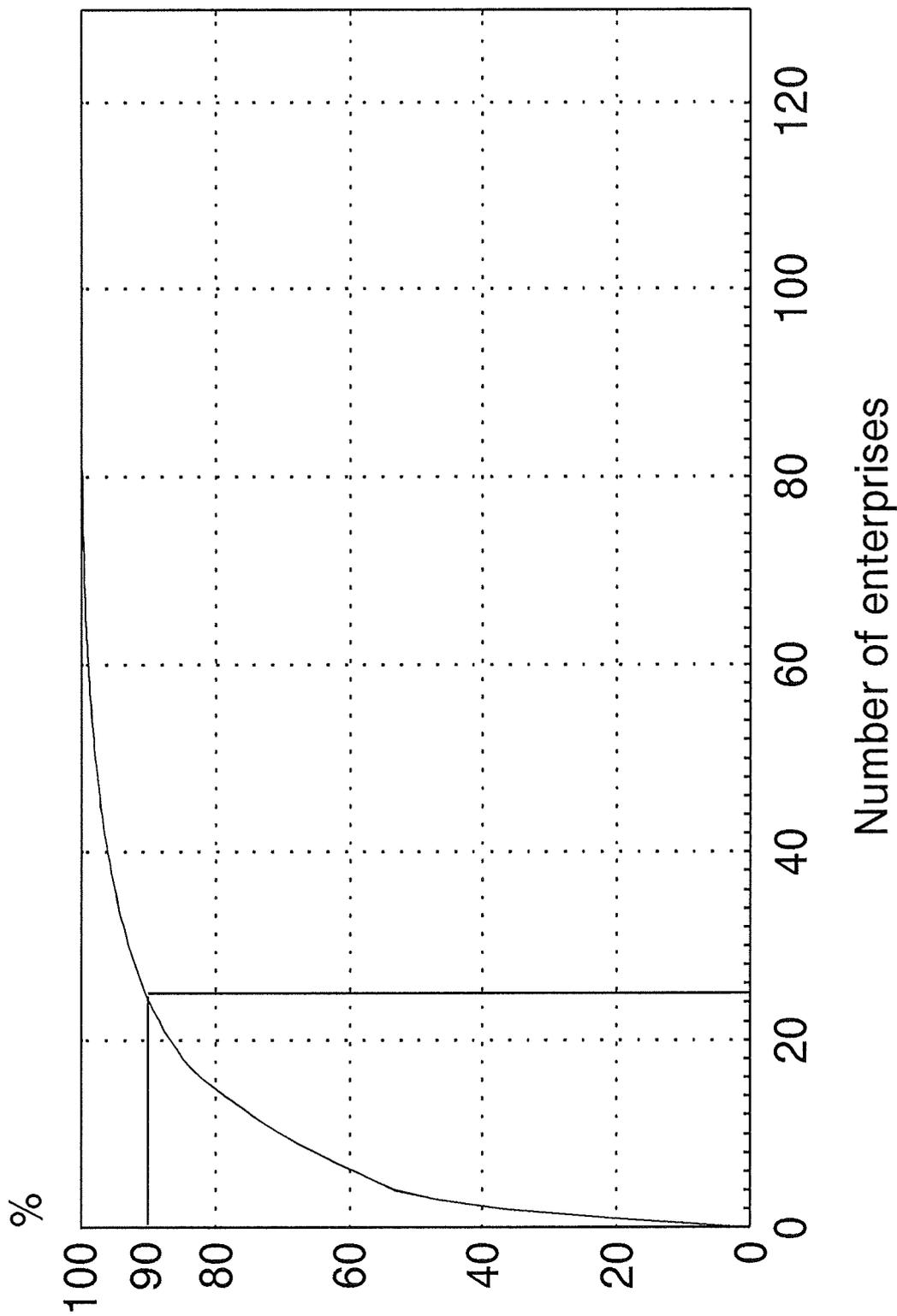
FINNISH ENTERPRISES' FOREIGN LIABILITIES (EXCL. BONDS) % of outstanding debt in 1991



$G = 0.79$

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Statistical Services Department
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FINNISH ENTERPRISES' FOREIGN ASSETS % of outstanding assets in 1991

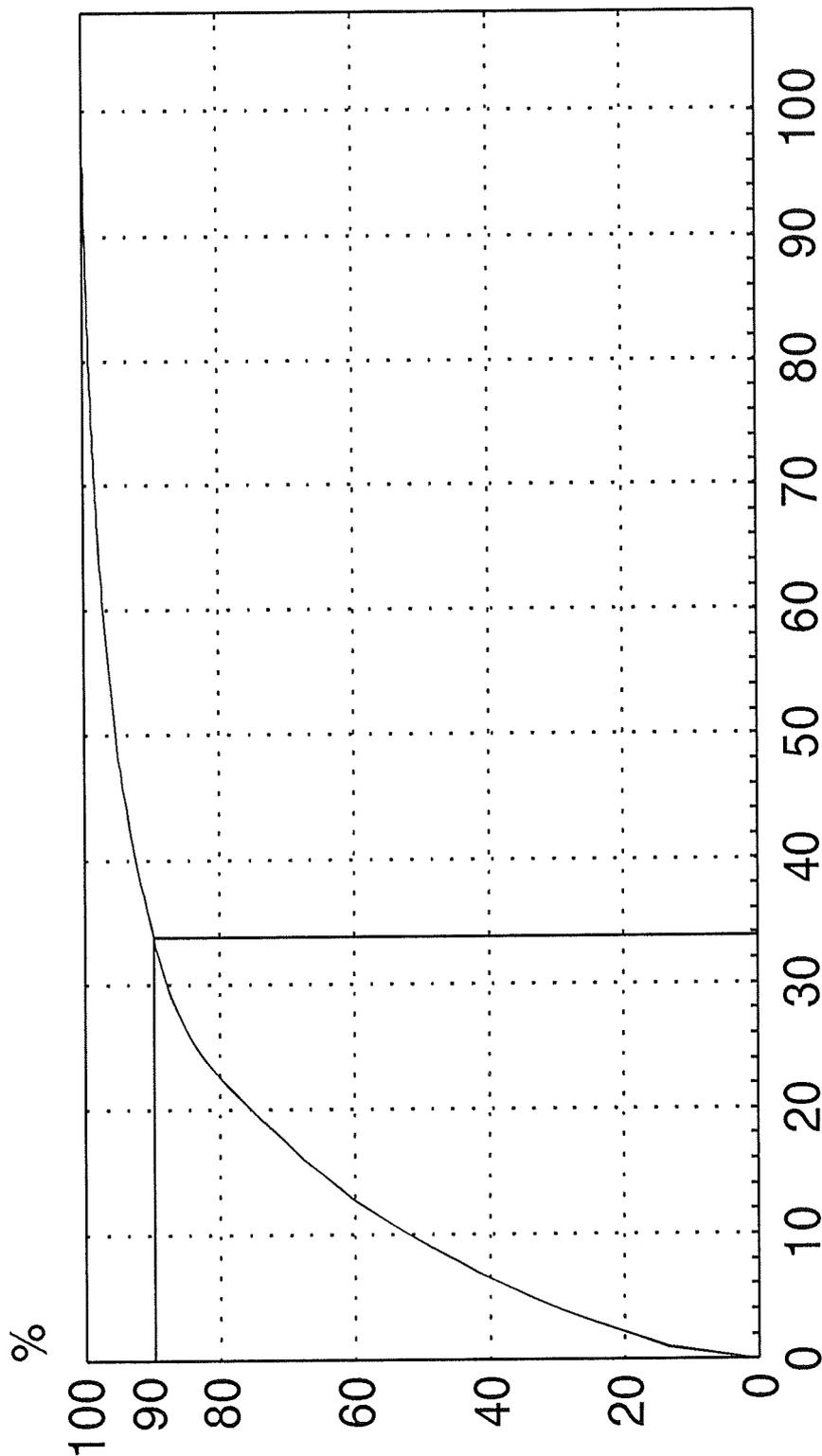


$G = 0.83$

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FINNISH DIRECT INVESTMENT ABROAD

Stock of direct investment /group
% of outstanding direct investment assets in 1990



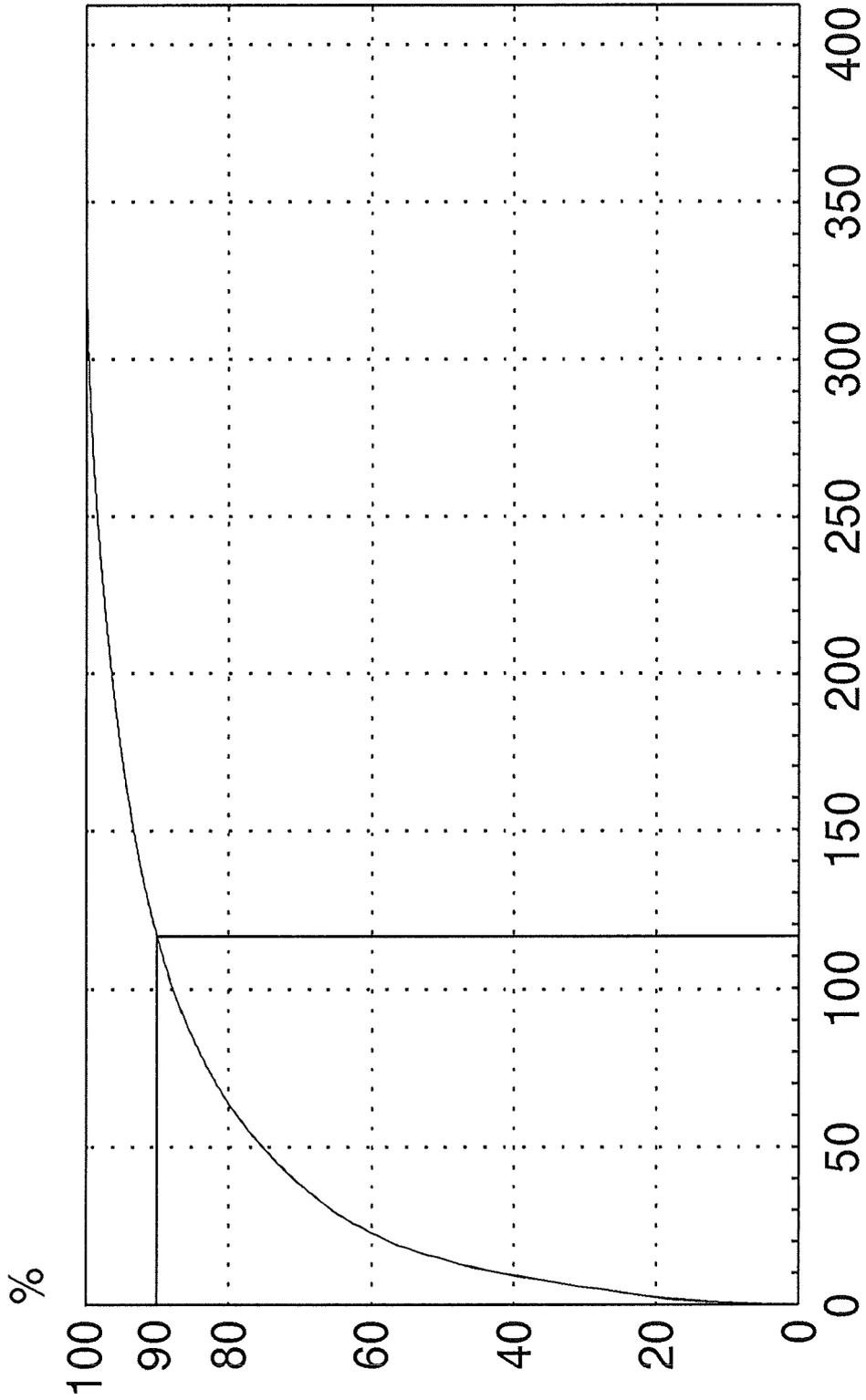
Number of enterprises

$G = 0.73$

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DIRECT INVESTMENT IN FINLAND

% of outstanding investment assets in 1990

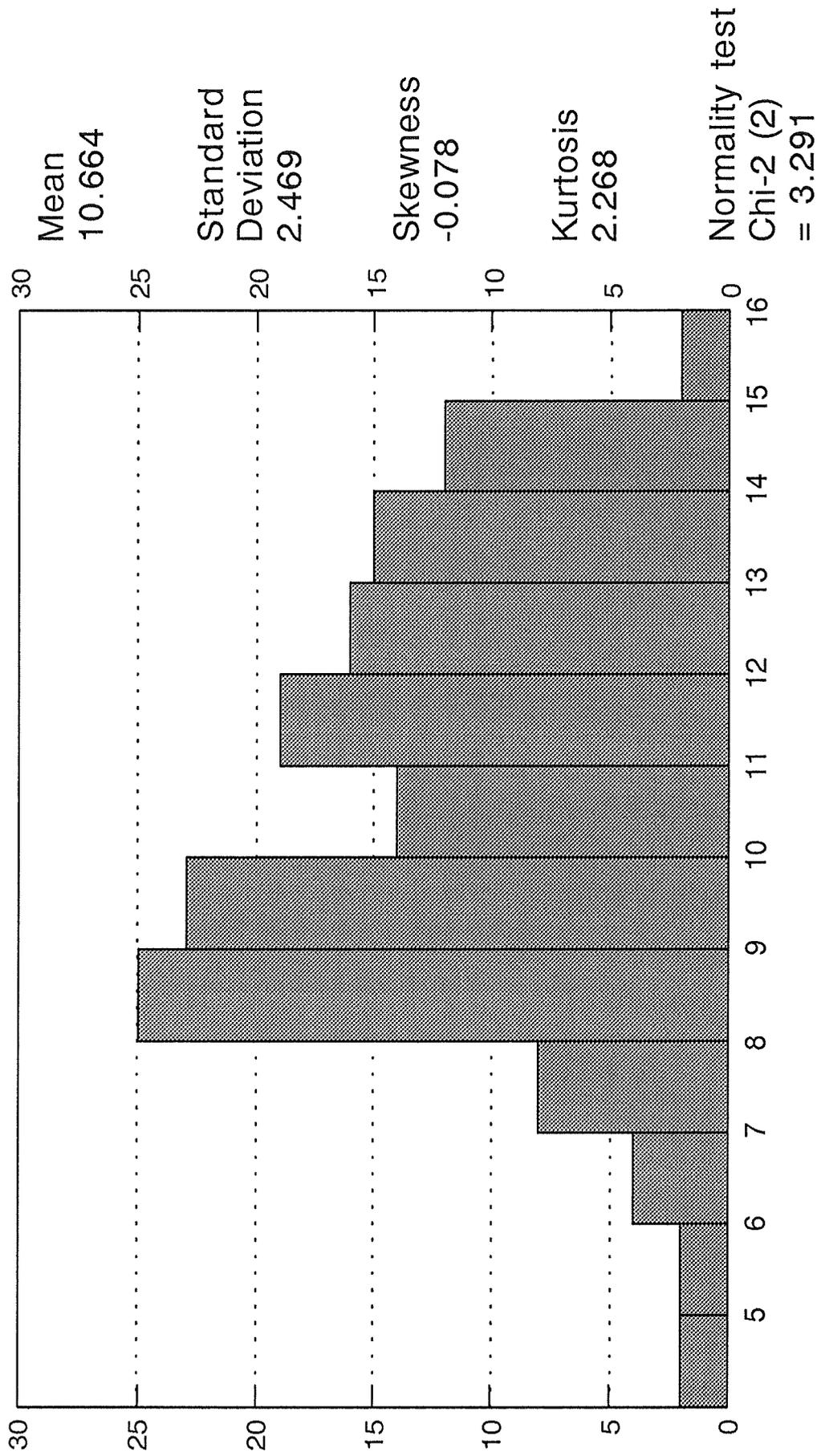


Number of enterprises

$$G = 0.77$$

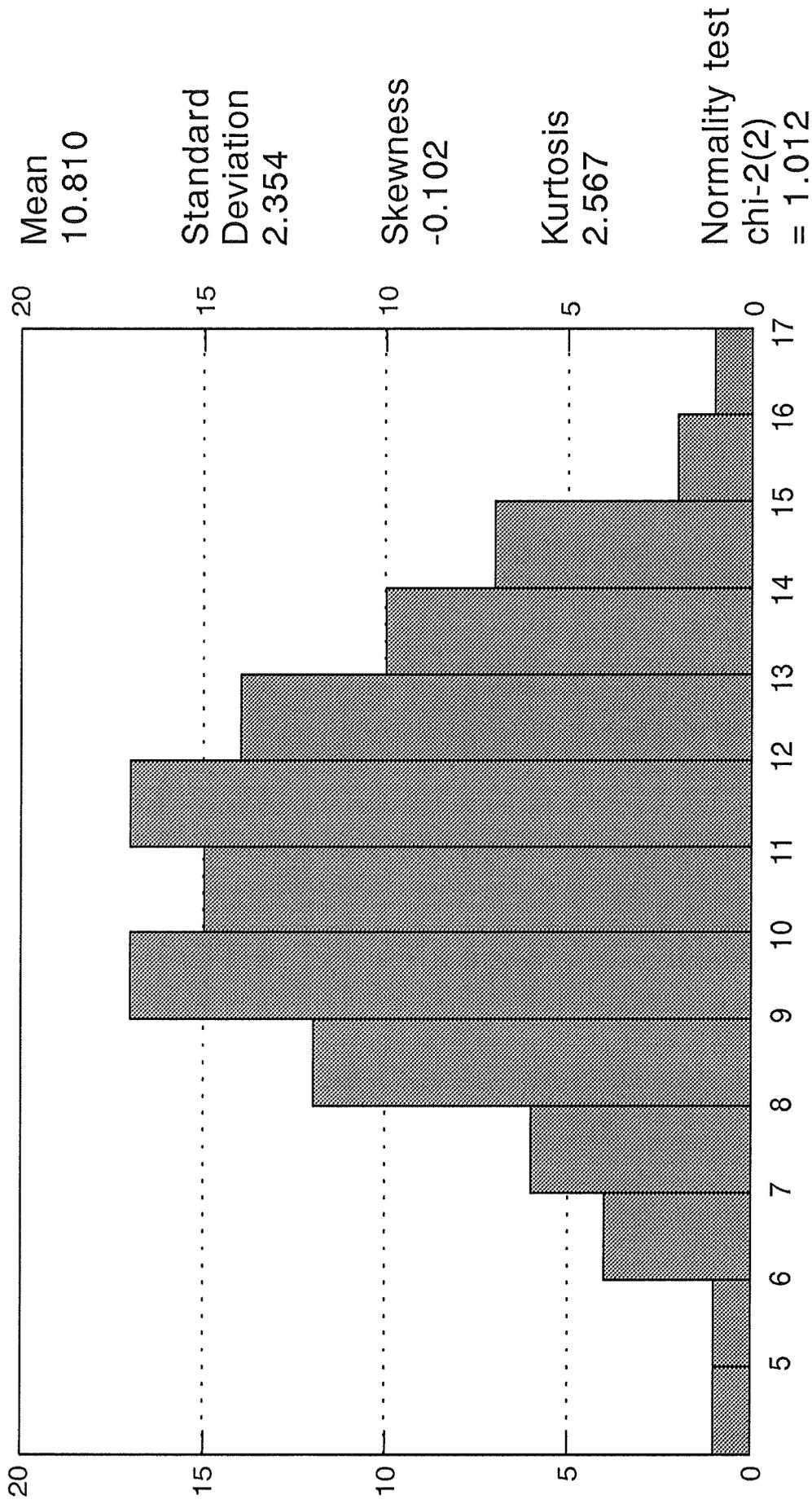
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FINNISH ENTERPRISES' OTHER LIABILITIES (LOG) FREQUENCY DISTRIBUTION



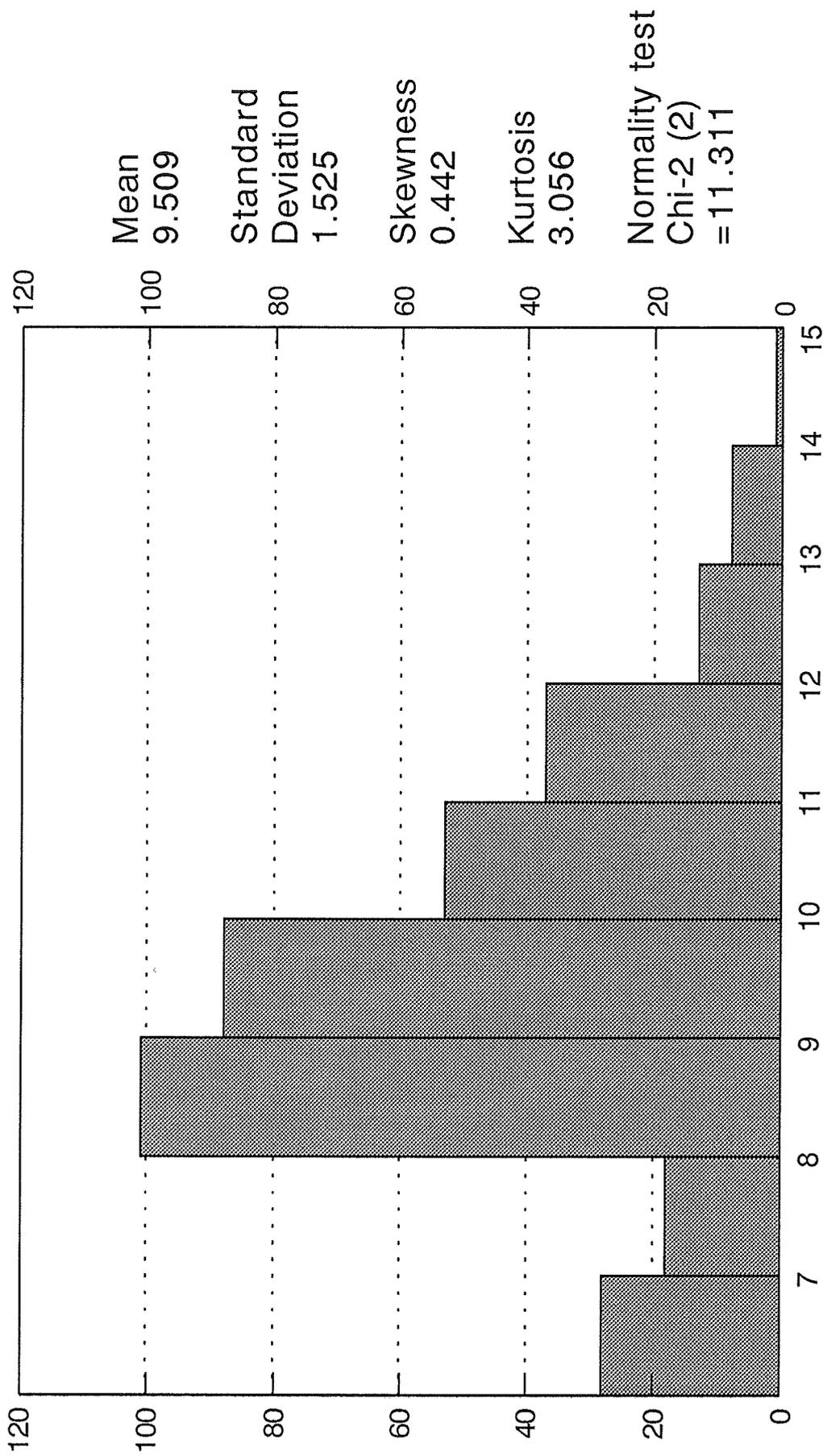
Other liabilities, natural logarithm for FIM thousands

FINNISH ENTERPRISES' FOREIGN ASSETS (LOG) FREQUENCY DISTRIBUTION



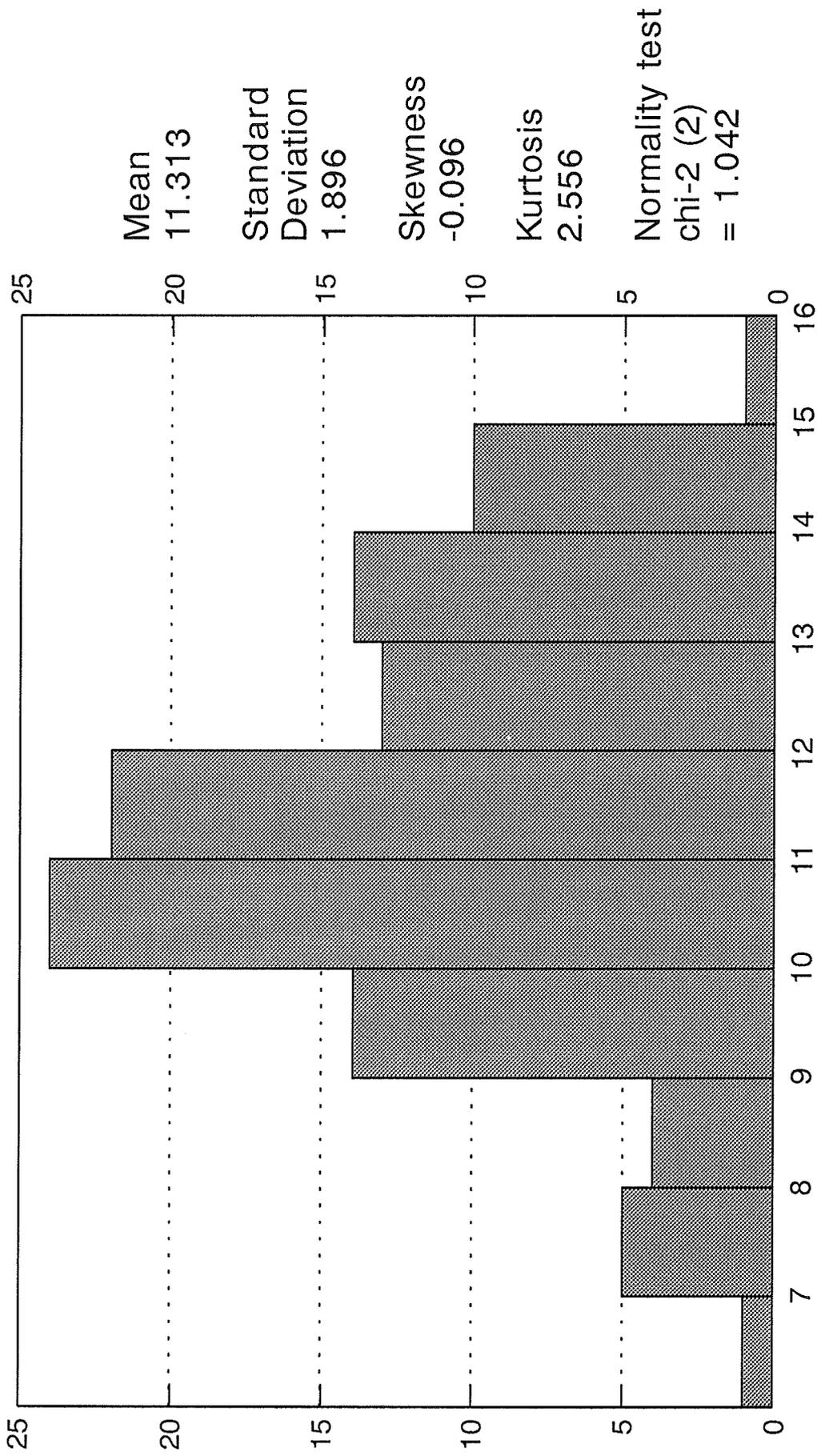
Finnish enterprises' foreign assets, natural logarithm for FIM thousands

DIRECT INVESTMENT IN FINLAND (LOG) FREQUENCY DISTRIBUTION



Direct investment in Finland, natural logarithm for thousands

FINNISH DIRECT INVESTMENT ABROAD (LOG) FREQUENCY DISTRIBUTION



Finnish direct investment abroad, natural logarithm for FIM thousands