

## Financing Small Scale Contractors through Mobilization Advance Payments for Improved Performance: The Case of the Tamale Metropolis

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### Abstract

The construction industry plays an important role in any economy, and its activities are vital to the achievement of the socio-economic development goals of a nation.

In Ghana, the construction and housing industry plays an immeasurable role in the national developmental agenda. What however, appears to be debatable is whether the industry wields the much expected driving force required to pronounce its vital contribution towards accelerated national growth in terms of infrastructural development. This paper assesses the extent to which Mobilization Advance Payment (MAP) contribute to the output of small scale contractors in the Tamale metropolis. Thirty (30) construction firms, fifteen (15) consultancy firms and fifteen (15) financial institutions were surveyed, and Chi-Squared (X<sup>2</sup>) test at  $\alpha=0.05$  was run on responses using SPSS. The study revealed that 49% of key stakeholders in the construction industry in the Tamale metropolis see mobilization advance payment from clients as the most accessible and affordable form of construction financing. This was closely followed by Banks/Saving & Loans (regulated financial institution) with 43%, and 8% for non-regulated financial institutions. A significantly high number of consultants (60%) agreed that mobilization advance payment is the most accessible and affordable form of construction financing. The Chi-Squared (X<sup>2</sup>) Test on MAP and contractors performance also revealed an X<sup>2</sup> statistic of  $\approx 0.711$  for a degrees of freedom of 4 which means that MAP arrangements for contractors contribute significantly to their output.

Regrettable though, the misappropriation or misuse of such funds by some contractors has resulted in difficulties in accessing mobilization advance payments even by genuine contractors in dire need of working capital. Abandoned projects, delay in project delivery, cost overruns and employment of unqualified personnel among others result from the unavailability of this accessible and affordable form of construction financing. This adversely affects the performance of contractors and the overall project success. It was strongly recommended that clients strive to make mobilization advance payments available and easily accessible to contractors to enhance their performance.

**Keywords:** Contractors, Construction, Finance, MAP, Performance.

### I. INTRODUCTION

The construction industry accounts for a significant portion of the world's Gross Domestic Product (GDP). The government of Ghana Growth and Poverty Reduction Strategy (GPRS) reported that the construction industry contributed 8.8% to GDP in 2003 and 2004, ranking third behind agriculture (35.99%) and government services (9.98%) [1].

In the developing world, the construction sector provides a substantial source of employment to poor citizens of those countries and also serves as a platform upon which other sectors of the economy are developed [2].

In economic terms, the sector is known to offer a sound basis for revenue collections, thereby providing government with direct and indirect taxes.

Construction firms pay direct taxes to local and central government through the normal taxable incomes and mandatory taxes before participating in public procurement. Indirectly, the firms pay taxes through the materials they purchase for construction works [3].

The construction industry in every country faces problems and is beset with all sorts of challenges. However, in developing countries these difficulties and challenges come alongside a general situation of socio-economic stress, long standing resource shortages, institutional weaknesses and a general inability to deal with the key issues [4].

Undesirable project performance results are a major problem affecting construction industries worldwide and mostly developing countries. Gyadu-

Asiedu [5], notes that in developed countries efforts are being made to use performance assessment to monitor and control projects to ensure favourable outcomes in order to obtain value for money and reap other economic benefits. However, one of the major challenges that hinder progress of projects for effective assessment of the industry is the access to finance by contractors.

The rest of the paper is organized as follows: section 2 discusses construction financing; sections 3, 4 and 5 are devoted to the methodology, results and discussion, and conclusion and recommendations respectively.

## II. CONSTRUCTION FINANCING

### 2.1 Working Capital

From the inception of a construction project, the project manager is required to make numerous decisions that will determine the success or failure of the project both in physical and monetary terms. One such decision is the working capital requirement for the successful completion of the project. Working capital is capital available for conducting the day-to-day operations of a project and accounts for about 60% of total investments [6].

Every project needs adequate liquid resources to maintain day-to-day cash flows and pay wages and salaries, and creditors if it is to keep its workforce and ensure its supplies. Working capital finance is required to bridge the time between expenditures and revenues [7]. Maintaining adequate working capital is not just important in the short term but also in the long term to ensure the survival of the business [8].

According to Eyah and Cook [9] contractors' effective participation in the industry has been affected by several constraints in Ghana. Lack of access to finance is arguably the most critical of these constraints. Contractors do not have sufficient collateral to obtain finances from commercial banks since most indigenous contractors in Ghana have been classified under the Small and Medium Scale Enterprises (SME) category of businesses. In essence one of the most pressing problems of small and medium scale contractors is obtaining the working capital required for projects [10].

#### 2.1.1 Funding Sources for Working Capital

Common sources of financing for working capital in a typical construction project include: trade credit, accrued expenses, differed income and bank borrowing [11].

- Trade Credit

Credit that a contractor gains from suppliers of goods in the normal course of business in a day before payment is made is referred to as trade credit. With this kind of arrangement, the contractor does not have to pay cash immediately for any purchases made. Rameezdeen and Amaratunga [12] explains

that small scale contractors heavily depend on trade credit as a source of finance since they find it difficult to raise funds from banks or other sources in the capital market. Trade credit is a spontaneous source of financing. The major advantages of trade credit include easy availability, flexibility, and informality. Trade credit appears to be cost free since it does not involve explicit interest charges though in practice, it involves implicit cost.

- Accrued Expenses

An accrued expense is another spontaneous source of short term financing. Accrued expenses are a more automatic source since by definition they permit the contractor to receive services before paying for them. Therefore, they represent spontaneous, interest-free sources of financing. The most important components of accruals are wages and salaries, sub-contractor payments, taxes and interest.

- Differed Income

Deferred income represents funds received by the contractor for the services he or she has agreed to supply in the future. These receipts increase the contractor's financial strength in the form of cash. Therefore, this constitutes an important source of financing. Advance payment made by the client constitutes the main item of deferred income.

- Bank Borrowing

Banks are the main institutional sources of working capital finance. After trade credit, bank credit is the most important source of financing working capital requirements. A contractor can draw funds in the form of overdrafts, cash credits, purchase or discounting of bills, letter of credit, and working capital loans. Banks generally do not provide working capital finance without adequate security.

### 2.2 The Concept of Mobilization

Construction firms are always faced with the huge burden of securing funds for executing work on contracts. Rameezdeen and Amaratunga [12] explain the concept of mobilization advance payment as an important mechanism used to overcome contractors' financial problems in developing countries.

Mobilization advance is a monetary payment made by the client to the contractor for initial expenditure in respect of site mobilization, and a fair proportion of job overheads or preliminaries [4].

The main objective of Mobilization Advance Payment (MAP) is to help overcome financial difficulties of small and medium scale contractors. It was promoted by the World Bank as a temporary measure to develop small and medium scale contractors in the early 1980s and usually constitutes

20% of the initial contract price. It is also considered to be a win-win option of initial financing for both clients and contractors due to its positive impact on contractors' cash flow. Advancement of money to contractors before project execution reduces contractors' need to lobby for working capital. Unfortunately, some contractors misuse their mobilization advance payments and fail to fulfill their contract obligations [10].

#### 2.2.1 Merits of granting MAPs to Contractors

The research conducted by Rameezdeen and Amaratunga [12] in Sri Lanka and in some developing countries revealed the following as merits of providing mobilization advance payments to contractors.

- Financial assistance

MAP provides a means of financial assistance to most medium and small scale contractors and even large scale contractors who do not have sufficient working capital to finance construction projects. It relieves most contractors of difficulties they encounter in securing bank loans and reduces overall cost of financing.

- Interest free loan

MAP is an interest free loan given by clients to enhance contractors' working capital and cash flow.

- Repayment based on value of work executed

If a contractor borrows money from a bank he or she has to repay irrespective of the value of work completed. However, the repayment of mobilization advance payments is proportionate to the amount of cumulative work completed.

- Informal security given by clients The practice of clients providing a 'Payment Guarantee' is not popular in most developing countries.

- Motivator

Mobilization advance payment motivates the contractor at different stages of the project life cycle. It motivates the contractor to bid for projects. Then at inception, the contractor is motivated to commence work at the earliest possible date. Finally, it motivates the contractor to complete a project on time and with the desired quality.

#### 2.2.2 Demerits of granting MAPs to Contractors

- Misappropriation of MAPs

Contractors use the excess money on other projects and even on non-construction activities.

- Difficulties in obtaining guarantee

In order to benefit or gain access to MAP, the contractor has to provide an unconditional first-hand demand guarantee from a bank. This is purely a financial guarantee as it is in lieu of the funds provided by the client. Most often small and medium scale contractors do not have enough resources to secure a guarantee of such an amount or nature.

- Cost to the client

Even though MAP is an interest free loan, there is an opportunity cost for the client. This is very often overlooked by many practitioners.

### III. METHODOLOGY

#### 3.1 The Study Area

The Tamale Metropolis is centrally located in the Northern region of Ghana and occupies approximately 750 km sq. It shares boundaries with Savelugu-Nanton District to the north, Tolon-Kumbungu District to the west, Central Gonja District to the south-west, East Gonja District to the south and Yendi District to the east.

Population of the metropolis is estimated at 537,986. This is made up of 49.1% male and 50.9% female. It is the only predominantly urban area in the region with an urban population of 67.1% [13].

#### 3.2 Target Population and Sampling Techniques

The population for the study consisted of contractors or their project managers from building construction firms, the professionals i.e., quantity surveyors, engineers, architects from construction consultancy firms and credit officers or managers in the financial institutions in the Tamale Metropolis.

Aimed at obtaining an understanding of how access to finance by small scale contractors affect the entire industry performance, the major stakeholders identified as units of enquiry in the industry were contractors and construction managers in the built environment, financial institutions and the professionals who coordinate and supervise the projects.

Purposive sampling was used in the study by identifying the various respondents in the sample elements and issuing them questionnaires to respond.

#### 3.2.1 Sampling Size Determination

The Ministry of Water Resources, Works and Housing has a little over 20,000 registered building contractors in Ghana and approximately 1% of these building contractors are in the Tamale metropolis. This means that, the metropolis has approximately 200 registered building contractors. The minimum sample size of these registered contractors in a metropolis can be calculated as a basis for determining the actual size of the firms by using the formula propounded by Kish (1965) as cited in [14] as below:

$$n = \frac{k}{1 + \frac{k}{N}} \quad (3.1)$$

where  $n$  = sample size,  $N$  = population size.

$$k = \frac{S^2}{V^2} \quad (3.2)$$

where  $S$  = maximum standard deviation in the population element (total error = 0.1 at a confidence level of 95%)

$$V^2 = \text{standard error of sampling distribution} = 0.05$$
$$S^2 = P(1 - P) \quad (3.3)$$

where  $P$  is the population elements.

Therefore, given  $P$  as 0.5 and by substitution into (3.3):  
 $S^2 = 0.25$

In determining the minimum sample size of contracting firms in the Tamale metropolis given that  $N$  is 200 with an  $S^2$  value of 0.25 and by substituting  $S^2$  into (3.2):

$$k=100$$

Given  $k=100$ , (3.1) is evaluated to give an  $n$  value of 66 meaning that the minimum sample size of contracting firms in the metropolis appropriate for the study was about 66. This figure helped in estimating the actual sample size for the study.

Oladapo [15] and other researchers have indicated that a response rate of 30% is good enough for analysis in construction research. Thus, given a minimum sample size of 66 and a response rate of 30%, the actual sample size used for the study was 60.

In order to obtain results that can be generalized for the entire industry, the study also took into account the views of construction consultancy firms and financial institutions whose population data in the Tamale metropolis were non-existent. Therefore, 30 construction firms were sampled following the assertion made by [15]. The sample size for consultancy firms and financial institutions were 15 each respectively.

### 3.3 Data Collection Procedures

The study utilized both primary and secondary sources of data. The primary data were collected through the use of questionnaires and interviews administered to managers and staff of the case institutions. Secondary sources of data included desk studies, which involved in-depth review of published and unpublished material in the area of financing of small scale contractors and mobilization advance payments on contractors' performance in the construction industry. Questionnaires were administered to major stakeholders of the construction industry namely; the professional practitioners or consultants (Architects, Engineers, Quantity Surveyors and Technicians), the financiers i.e., financial institutions or banks and finally the contractors or their project managers in the Tamale metropolis.

### 3.4 Data Analysis

Primary data generated by the study were cleaned to ensure consistency and transcribed into coded form using the Statistical Package for Social Scientists (SPSS).

The data was examined, categorized, tabulated and recombined to address the research objectives. It was also edited and tallied in frequency tables and charts. The values corresponding to frequencies were then converted into percentages.

The Chi-Square ( $X^2$ ) test was employed to infer whether differences existed in the responses from all categories of firms and test of hypothesis. Sixty (60) firms were surveyed with thirty-five (35) responding.

## IV. RESULTS AND DISCUSSION

### 4.1 Effects of Difficulty in Accessing Funds for Projects

Difficulties serve as major barriers to the development or growth of businesses thereby crippling their sustainability as the engine of growth of developing economies of which the construction industry is no exception. Difficulties in accessing funds for projects the study revealed, lead to abandoned projects, delay in project delivery and cost overruns. This is illustrated in fig. 4.1.

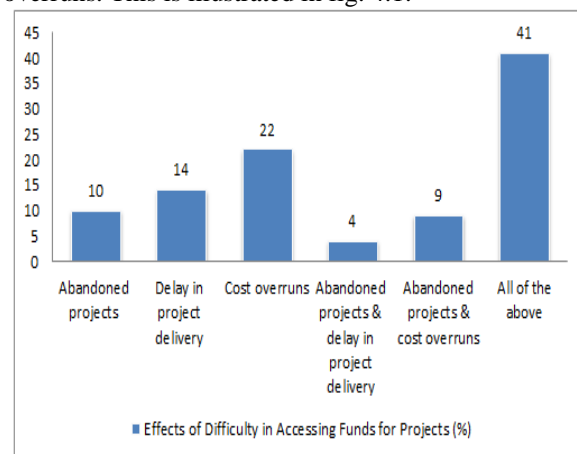


Figure 4.1: Effects of difficulty in accessing funds for projects

Source: Field Survey, June 2012

41% of respondents comprising consultants, contractors and financiers indicated that the difficulty in accessing credit facilities for projects leads to abandoned projects, delay in project delivery and cost overruns. 22%, 14% and 10% of respondents affirmed that difficulty in accessing funds for projects leads to cost overruns, delay in project delivery and abandoned projects only, respectively. 4% of the respondents indicated that abandoned projects and delay in project delivery is as a result of difficulties in accessing credit facilities while 9% thought that these difficulties result in abandoned projects and cost overruns.

These effects have rippling repercussions on the economy of the nation. For instance, cost overruns due to fluctuations in cost of materials and labour wage rates swell government budgetary allocations and expenditure.

According to Badiane [16] completed projects are vital to the pursuit of economic activities as they provide the platform needed for the production of all goods and services, and mainly employs unskilled,

semi-skilled and skilled labour force thereby influencing the rate of employment.

#### 4.2 Mobilization Advance Payment and its Accessibility

The study also sought to identify how mobilization advance payments to construction firms help in the face of these difficulties. The assertion made in the literature is that mobilization advance payment is the most accessible and affordable form of construction financing. Table 4.1 shows responses of the major stakeholders for the most accessible and affordable forms of funds for construction projects.

Table 4.1: Stakeholders reaction to the most accessible and affordable forms of funds

Occupation	Banks/Savings & Loans (%)	Mobilization Advance Payment from clients (%)	Non-regulated Financial Inst. (%)	Total (%)
Consultancy Firms	40	60	0	100
Construction Firms	31	44	25	100
Financial Institution	57	43	0	100
Average ratings	43	49	8	100

Source: Field Survey, June 2012

With an average response rate of 49%, the respondents comprising of consultants, contractors and financiers indicated that mobilization advance payment from clients to contractors is the most affordable form of construction financing. It was also observed that 43% of respondents saw Banks/Saving & Loans (regulated financial institution) as the most accessible and affordable forms of construction financing. The relatively high average rating for Banks/Saving & Loans was largely as a result of more response for that option from the financial institutions as it falls in their interest. 8% of the respondents saw non-regulated financial institutions as the most accessible and affordable form of construction financing.

Mobilization advance payment according to Rameezdeen and Amaratunga [12] is an interest free loan that clients grant contractors to relieve them from the burden of finding initial working capital for project execution. It also helps the construction firms in maintaining a consistent cash flow thereby enhancing the contractor's ability in the attraction and retention of high calibre professionals for the execution and management of projects. However, in Ghana most contractors do not get any assistance from clients in terms of mobilization advance payments even though 60% of consultants agreed that mobilization advance payment is the most affordable form of construction financing.

#### 4.3 Chi-Squared (X<sup>2</sup>) Test on MAP and Contractors Performance

Chi-Squared test was used to determine whether differences existed in responses from all the categories of firms. The result of Chi-Squared test is achieved by stating the hypothesis, computing the observed and expected values from the responses, computing the X<sup>2</sup> statistic and p-value.

The X<sup>2</sup> statistic measures how far away the observed value is from the expected one and it is the sum of each of the contributions from the category of responses. The p-value is computed by reading under the Chi-square table with its corresponding degrees of freedom (see Appendix).

Table 4.2 shows the results of computed observed values and expected values on MAP on contractors' performance from respondents

Table 4.2: Chi-square table for MAP on contractors' performance

Responses	Observed N	Expected N	Residual	Chi-square value
Strongly Agree	17	7	10	X <sup>2</sup> <sub>cal</sub> =26.571 Df= 4 Asymp Sig = .000
Agree	11	7	4	
Somewhat Agree	4	7	-3	
Disagree	2	7	-5	
Strongly Disagree	1	7	-6	

Source: Field Survey, June 2012

- Hypothesis

H<sub>0</sub> : Mobilization advance payment arrangements for contractors do not enhance their output.

H<sub>1</sub> : H<sub>0</sub> is not true (two-tail)

where, H<sub>0</sub> denotes the null hypothesis and H<sub>1</sub> denotes the alternative hypothesis with a significant level (α) = 0.05

H<sub>0</sub> is rejected when X<sup>2</sup><sub>cal</sub> > X<sup>2</sup><sub>0.05,4</sub> and H<sub>1</sub> accepted.

- X<sup>2</sup> Statistic

The X<sup>2</sup> statistic is calculated using (4.1) below:

$$X^2 = \sum_{i=1}^n (\text{observed proportions} - \text{expected proportions})^2 / \text{expected proportions} \quad (4.1)$$

The observed and expected proportion values are generated from SPSS. All responses indicated in Table 4.2 are computed from (4.1). For instance, the X<sup>2</sup> for the 'strongly agree' response is calculated as follows: X<sup>2</sup> = (17 - 7)<sup>2</sup> / 7 = 14.29

Thus, the X<sup>2</sup> statistic = 26.571 which is the sum of each response in Table 4.2.

- Degrees of freedom

The degree of freedom is 4. This is then read from the Chi-square table (see Appendix) under significant level ( $\alpha$ ) = 0.05. This gives an  $X^2$  value of  $\approx 0.711$ .

Since  $X^2_{cal} > X^2_{0.05,4}$  i.e.,  $26.571 > 0.711$ , the null hypothesis ( $H_0$ ) is rejected and  $H_1$  accepted. This means that mobilization advance payment arrangements for contractors contribute significantly to the output. This also means that there is evidence of a relationship between responses from consultants, contractors and financiers on mobilization advance payments enhancing industry performance.

## V. CONCLUSION AND RECOMMENDATIONS

Difficulties in accessing funds for initial take-offs of projects contribute negatively to project success thus hindering the overall performance of the construction industry. For instance, the inability to gain access to funding for projects leads to the difficulty of firms to retain qualified personnel. Project managers are therefore, tempted to engage less qualified personnel to perform functions of otherwise highly qualified professionals to reduce costs which affect the project output. Most clients are often left dissatisfied since their project outputs are not value for the investment.

For both public and private sector clients in Ghana, it has become the norm for construction work to drag on well beyond stated completion dates, overrun of budget and no delivery of the quality of work required. There have also been incidents of customer dissatisfaction resulting from the inability of products and services delivered by the firms to aptly meet the needs and expectations of customers. Clients of the construction industry continue to complain about the industry's performance and its seeming inability to deliver projects on time, within budget and to expected quality standards [17].

These effects have rippling repercussions on the economy of the nation as delays in project delivery due to fluctuations in cost of materials and labour wage rates swells government budgetary allocations and expenditure.

The study observed that granting of mobilization advance payments to contractors by clients and consultants improves credit accessibility which enhances the performance of contractors.

It is therefore strongly recommended that clients strive to make mobilization advance payment available and easily accessible to contractors to enhance their performance and save them the burden of relying on banks for initial working capital with high charges that robs them of their profits. This would also help construction firms engage qualified personnel to produce excellent outputs.

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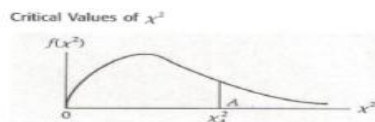
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**APPENDIX**

**Chi-Squared ( $\chi^2$ ) Table**



DEGREES OF FREEDOM	$\chi^2_{0.995}$	$\chi^2_{0.990}$	$\chi^2_{0.975}$	$\chi^2_{0.950}$	$\chi^2_{0.900}$	$\chi^2_{0.850}$	$\chi^2_{0.800}$	$\chi^2_{0.750}$
1	0.000393	0.0001571	0.0009821	0.0039321	0.0157908	2.70954	3.84146	5.02385
2	0.0100251	0.0201007	0.0506356	0.102587	0.210720	4.60517	5.99147	7.37776
3	0.0717212	0.114832	0.215795	0.351846	0.584375	6.25139	7.81473	9.34840
4	0.206990	0.297110	0.484419	0.710721	1.063623	7.77944	9.48773	11.1433
5	0.411740	0.554300	0.831211	1.145476	1.61031	9.23635	11.0705	12.8325
6	0.675727	0.872085	1.237347	1.63539	2.20413	10.6446	12.5916	14.4494
7	0.989265	1.239043	1.68987	2.16735	2.83311	12.0170	14.0671	16.0128
8	1.344419	1.646482	2.17973	2.73264	3.48954	13.3616	15.5073	17.5346
9	1.734926	2.087912	2.70039	3.32511	4.16816	14.6837	16.9190	19.0228
10	2.15585	2.55821	3.24697	3.94030	4.86518	15.9871	18.3070	20.4831
11	2.60321	3.05347	3.81575	4.57481	5.57779	17.2750	19.6751	21.9200
12	3.07382	3.57056	4.40379	5.22603	6.30380	18.5494	21.0261	23.3367
13	3.56803	4.10691	5.00874	5.89186	7.04150	19.8119	22.3621	24.7356
14	4.07468	4.66043	5.62872	6.57063	7.78953	21.0642	23.6848	26.1190
15	4.60094	5.22935	6.28214	7.26094	8.54675	22.3072	24.9958	27.4884
16	5.14224	5.81221	6.90766	7.96164	9.31223	23.5418	26.2962	28.8454
17	5.69724	6.40776	7.56418	8.67176	10.0852	24.7690	27.5871	30.1910
18	6.26481	7.01491	8.23075	9.39046	10.8649	25.9894	28.8693	31.5264
19	6.84398	7.63223	8.90655	10.1170	11.6509	27.2036	30.1435	32.8523
20	7.43386	8.26040	9.59083	10.8508	12.4426	28.4120	31.4104	34.1696
21	8.03366	8.97720	10.28293	11.5913	13.2396	29.6151	32.6705	35.4789
22	8.64272	9.54249	10.9823	12.3380	14.0415	30.8133	33.9244	36.7807
23	9.26042	10.19567	11.6885	13.0905	14.8479	32.0069	35.1725	38.0757
24	9.88623	10.8564	12.4011	13.8484	15.6587	33.1963	36.4151	39.3641
25	10.5197	11.5240	13.1197	14.6114	16.4734	34.3816	37.6525	40.6465
26	11.1603	12.1981	13.8439	15.3791	17.2919	35.5631	38.8852	41.9232
27	11.8076	12.8786	14.5733	16.1513	18.1138	36.7412	40.1133	43.1944
28	12.4613	13.5648	15.3079	16.9279	18.9392	37.9159	41.3372	44.4607
29	13.1211	14.2565	16.0471	17.7083	19.7677	39.0875	42.5569	45.7222
30	13.7867	14.9535	16.7908	18.4926	20.5992	40.2560	43.7729	46.9792
40	20.7065	22.1643	24.4331	26.5093	29.0505	51.8050	55.7585	59.3417
50	27.9907	29.7067	32.3574	34.7642	37.6886	63.1671	67.5048	71.4202
60	35.5346	37.4848	40.4817	43.1879	46.4589	74.3970	79.0819	83.2976
70	43.2752	45.4418	48.7576	51.7393	55.3290	85.5271	90.5312	95.0231
80	51.1720	53.5400	57.1532	60.3915	64.2778	96.5782	101.879	106.629
90	59.1963	61.7541	65.6466	69.1260	73.2912	107.565	113.145	118.136
100	67.3276	70.0648	74.2219	77.9295	82.3581	118.498	124.342	129.561

SOURCE: From C. M. Thompson, "Tables of the Percentage Points of the  $\chi^2$ -Distribution," *Biometrika* 32 (1941); by permission of the Biometrika Trustees.